MTU Aero Engines

20

Annual Report

MTU AERO ENGINES AG

FISCAL YEAR 2020

Key facts and figures with year-on-year comparison

[T1] Selected consolidated financial information and key figures at a glance

in € million (unless stated otherwise)	2020	2019	Change against previous year in %
Revenue and earnings			
Revenue	3,977	4,628	–14.1
thereof: commercial engine business [1] (prior-year amounts adjusted, see segment reporting)	1,052	1,537	–31.6
thereof: military engine business [1]	483	459	5.3
thereof: commercial maintenance business [1]	2,522	2,711	–7.0
Gross profit	492	931	–47.2
Earnings before interest and taxes (EBIT)	262	706	–62.9
Net income	147	488	–69.8
Adjusted earnings			
Adjusted earnings before interest and taxes (adjusted EBIT)	416	757	–45.1
Adjusted EBIT margin (in %)	10.5	16.4	
Net income	294	538	–45.2
Balance sheet			
Total assets	8,104	7,765	4.4
Equity	2,635	2,421	8.8
Equity ratio (in %)	32.5	31.2	
Net financial debt	781	961	–18.7
Cash flow			
Cash flow from operating activities	386	832	–53.6
Cash flow from investing activities	–245	–472	48.0
Free cash flow	105	358	–70.8
Cash flow from financing activities	504	–324	>100
Number of employees at year end			
Commercial and military engine business	6,409	6,698	–4.3
Commercial maintenance business	3,904	3,962	–1.5
Total number of employees	10,313	10,660	–3.3
Share indicators			
Earnings per share in €			
Basic earnings per share	2.63	9.23	–71.5
Diluted earnings per share	2.59	8.46	–69.4

[1] Before consolidation.

Table of contents

To our shareholders

Letter to our shareholders

Dear shareholders,

In this Annual Report, we review a year that will be remembered for a long time because of the Covid-19 pandemic. As well as endangering the health of the world's population and therefore our employees, the pandemic plunged the aviation sector into the worst crisis in its history. Although the risk of the virus has not yet been eliminated and our sector and MTU will feel the effects for years, I can nevertheless say that, so far, we have mastered the challenges associated with the coronavirus crisis well and have excellent prospects for future growth.

Most importantly, everyone at MTU played their part in protecting the health of our employees and minimizing infection rates. It was impressive to see how our global workforce pulled together and confronted the crisis with maximum discipline and exceptional commitment. Without the tremendous support of our employees, we would not have come through this challenging year so well. On behalf of the entire Executive Board, I would like to thank everyone most sincerely for that. We would also like to thank our managers and the Supervisory Board for their contribution to our relief fund for those suffering hardship in the coronavirus crisis, which enabled us to provide rapid and unbureaucratic financial support for employees.

We are also grateful to our customers and business partners for their trusting support. More than ever, strong and reliable partners are the basis for success. Thanks also to our shareholders for their open dialog and their trust in MTU. That trust is important to us, especially in difficult times. We continue to do everything we can to secure the sustained and long-term success of MTU and ensure it is reflected in our earnings and share price – so that loyalty pays off.

In 2020, the far-reaching effects of the coronavirus crisis were clearly reflected in the price performance of MTU shares. Although we outperformed our peer group over the year, we significantly underperformed the DAX index. That is due to the fact that the entire aviation sector has been particularly badly affected by the crisis. Even so, it is unsatisfactory.

For the 2020 fiscal year, we nevertheless propose to pay a dividend of €1.25 per share as our business figures testify to MTU's resilience and crisis resistance. Naturally, we were, and still are, affected by the unprecedented market slump caused by the Covid-19 pandemic. Moreover, our performance falls short of our record expectations at the start of the year and we had to revise our guidance downwards in 2020 because of the market situation. Nevertheless, we can be satisfied with our figures: We ended 2020 with revenue of just under €4 billion. Our operating profit was €416 million and net income was €294 million. The free cash flow was clearly positive at €105 million. These results show that MTU is well positioned and that even in the toughest operating and market conditions we are able to stay on course and reliably achieve our targets - or even, exceed them, as in the case of earnings.

Our clear ability to limit the financial impact of the Covid-19 pandemic on MTU was attributable to systematic implementation of a range of measures. We gave top priority to safeguarding liquidity and increased our liquidity reserves to around €1.5 billion. That has given us headroom for future growth. In addition, we stepped up our cost control programs. Capacity was another focus: In March, we decided to temporarily suspend production at our locations in Germany and Poland. We used short-time working as a tool at our German sites in 2020 and comparable measures were implemented at

our international network of sites. In view of the market situation, we need to adjust our capacity by ten to 15 % by the end of 2021. I would explicitly like to stress that this is not primarily about cutting jobs. Rather, we want to make MTU even fitter for the future and continue to focus on operational excellence and technology and cost leadership. To that end, we will be investing in digitalization and automation and driving forward the flexibility of our company.

Strategically, we are focusing on what we do best: our core business. We are concentrating on our strengths and extending that competence. The clear priority is on the aviation issues of the future, for example, sustainable mobility and emission-free flying. We took early action to drive forward sustainable aviation in collaboration with Pratt & Whitney through our quiet, fuel-saving Geared Turbofan™ (GTF). This engine has an excellent market position. The ongoing development of the GTF should cut fuel consumption by a total of 25 % and halve noise.

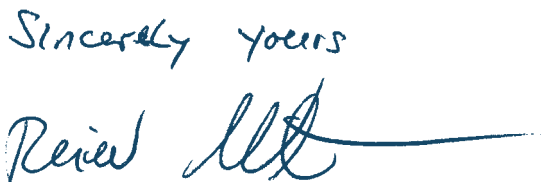
In addition, new and revolutionary engine concepts are needed for emission-free flying. Here, we are working in particular on hydrogen and flying fuel cells. Our aspiration is clear: We want to shape the future of MTU with innovative, technology-leading products and services, support the sustained growth of our sector and secure an above-average share of that growth.

The preconditions for that are good: The long-term growth trends in our markets are intact. Numerous analyses assume that following a brief re-start phase, aviation will return to the pre-crisis level from 2024 and should then really take off.

So what does that mean for our immediate future, in other words, for this fiscal year? We expect that in 2021 recovery from the impact of the coronavirus crisis will be strongest in commercial maintenance. The spare parts business should also pick up. Key drivers here are our strong position in engines for short- and mid-haul aircraft and our many customers in the freight sector, which has proven robust in the crisis. We expect revenue to increase slightly in the commercial series business. Here, the reduction in aircraft production rates is reflected in engine production. In the mid term, a renewed ramp-up of production is on the cards, especially for the A320neo. On the engines side, we are optimally prepared for that. The military business has not been affected by the coronavirus crisis and should post further slight growth in 2021.

All in all, I can say that MTU is strong; that has not changed. We are well-positioned for sustainable and profitable growth. We have a future-oriented business model and a global presence. We are the technological leader in many areas and we have an enormous knowledge base. Furthermore, the company has a very solid financial position. MTU will remain a leading supplier in the sector in the future and be the supplier of choice for engines.

We have every intention of retaining that position in the long term, for the benefit of our customers, partners, employees and shareholders. I look forward to your continued support on this journey.



The Executive Board

Reiner Winkler

Chief Executive Officer (CEO), *born 1961, appointed until September 30, 2024*

Reiner Winkler has been CEO of MTU Aero Engines AG since January 2014. His responsibilities include human resources, strategy, corporate communications and legal affairs. From May 2005 to December 2017, Winkler was MTU's Chief Financial Officer – and during the last four years of this period, he served as CFO in addition to his role as CEO. On joining MTU in 2001, Winkler, who has a degree in business administration, was placed in charge of the finance, human resources and IT departments.

Prior to that, he was managing director for finance and controlling at TEMIC Telefunken microelectronic GmbH. Further career milestones included posts with Daimler Benz AG and Siemens AG.

Peter Kameritsch

Chief Financial Officer (CFO) and Chief Information Officer (CIO),
born 1969, appointed until December 31, 2025

Peter Kameritsch has been a member of the MTU Executive Board since January 2018 with responsibility for finance and IT.

He has degrees in physics and business administration. Kameritsch joined MTU in 1999 and has worked since then in management positions in finance, investor relations and corporate strategy at various MTU locations.

Before his appointment to the Executive Board, he was Senior Vice President for Finance.

Lars Wagner

Chief Operating Officer (COO), *born 1975, appointed until December 31, 2025*

Lars Wagner was appointed as MTU's Chief Operating Officer in January 2018 with responsibility for technology and development, procurement, production, assembly and quality assurance.

Wagner has a degree in mechanical engineering and an MBA. He joined MTU as Executive Vice President for OEM Operations in July 2015 after holding a number of management positions with Airbus, including international assignments, most recently in Hamburg.

Michael Schreyögg

Chief Program Officer (CPO), *born 1966, appointed until June 30, 2026*

Michael Schreyögg joined the Executive Board in July 2013 with responsibility for marketing/sales and MTU's commercial and military OEM programs. In this capacity, he oversees new engine and spare parts business with OEM partners and military customers as well as aftermarket service activities for airlines. Since 2018, he has also been responsible for the MTU Maintenance sites.

Schreyögg joined MTU in 1990 with a degree in mechanical engineering. Since that time he has headed various commercial and military engine programs before assuming overall responsibility for the company's defense programs from 2008.

Report of the Supervisory Board

Klaus Eberhardt
Chairman of the Supervisory Board

Activities of the Supervisory Board

In this report, the Supervisory Board provides information in accordance with Section 171 (2) of the German Stock Corporation Act (AktG) on its activities in fiscal 2020 and the results of its review of the annual financial statements and consolidated financial statements. In 2020, which was dominated by exceptional challenges due to the coronavirus pandemic, the Supervisory Board carried out with due care the duties of oversight and advice with which it is entrusted by law and under the terms of the company's articles of association and its own rules of procedure.

The Supervisory Board regularly advised the Executive Board on the running of the company, continually supported and monitored the management of all business activities, and assured itself that the Executive Board's dealings were proper and lawful. The Supervisory Board was informed and consulted in a direct and timely manner on all decisions of consequence for the company. The Executive Board provided the members of the Supervisory Board with regular, prompt and comprehensive information on the company's situation. The Supervisory Board received written monthly reports on the company's net assets, financial position and results of operations. New plans were explained in detail to the Supervisory Board.

The Supervisory Board discussed the strategy and all important projects with the Executive Board. After examination and careful deliberation, the Supervisory Board endorsed the company's strategic orientation with its focus on profitable organic and sustainable growth. The Supervisory Board passed resolutions on all transactions for which its approval was required in accordance with the law, the company's articles of association or the Executive Board's rules of procedure after reviewing and discussing them with the Executive Board. As needed, employee representatives or shareholder representatives meet in separate groups for discussions with members of the Executive Board as preparation for meetings of the Supervisory Board. Preparatory meetings can also take place without the Executive Board as necessary. Similarly, the Supervisory Board scheduled and held regular meetings without the Executive Board.

As in previous years, the Supervisory Board paid special attention to the internal control mechanisms at MTU, especially the risk management system, internal auditing and legally compliant corporate governance. The Supervisory Board examined these aspects with the support of the Audit Committee on the basis of the documents submitted to it and in dialogue with the Executive Board and reached the conclusion that the company has effective systems in place, in particular an effective internal control and risk management system for the accounting process.

The Supervisory Board's compliance monitoring activities are supplemented by those of the Audit Committee, which has a special responsibility in this respect. The internal auditors and the managers responsible for compliance regularly present their findings to the Audit Committee and report to it on the latest developments in the field of compliance.

Meetings of the Supervisory Board

The Supervisory Board held six routine meetings in 2020. Due to the pandemic, some were held exclusively as conference calls or video conferences, while some were hybrid meetings (some Supervisory Board members were present in person while others took part by video conference).

Attendance at meetings of the Supervisory Board and its committees was 97.22 %. The only absences were at the Supervisory Board meetings on December 14, 2020 and March 17, 2020, which Dr. Geißinger and Mr. Gross did not attend due, respectively, to illness and a justified excuse. Between official meetings, the chairman of the Supervisory Board was regularly briefed on the company's current situation, significant business transactions and important pending decisions. This entailed regular meetings with the Executive Board, including consulting on strategy, the status of planning, the progress of business, the company's risk situation, the risk management system and compliance.

At its meetings, the Supervisory Board and the Executive Board discussed the business performance of MTU and all its affiliated companies. The Supervisory Board reviewed the allocation of the net profit for 2019 available for distribution and approved the Executive Board's profit distribution proposal. A legal minimum dividend payment of €0.04 per share eligible for the dividend was proposed at the Annual General Meeting on August 5, 2020, which was held remotely for the first time due to the coronavirus pandemic. A further question dealt with by the Supervisory Board was the appointment of an external auditor. Following the recommendation of the Audit Committee, the Supervisory Board proposed that Ernst & Young GmbH Wirtschaftsprüfungsgesellschaft, Munich, should be appointed to audit the financial statements and consolidated financial statements and to review the half-year financial reports for 2020. The Annual General Meeting approved this proposal with a majority of 93.88 %.

Further, at its meetings the Supervisory Board discussed the extension of the contracts with the Executive Board members Peter Kameritsch, Chief Financial Officer and Chief Information Officer, Lars Wagner, Chief Operating Officer, and Michael Schreyögg, Chief Program Officer. One item on the agenda at every meeting was the coronavirus crisis and its implications for MTU. In this context, the principal focus was on so-called coronavirus scenarios (rolling forecasts of the company's business development in the 2020 and 2021 fiscal years) and the long-term implications of the Covid-19 pandemic for air traffic. Further topics were the issuance of a €500 million corporate bond, new engine concepts for the shift to lower emission or emission-free aviation, MTU's eco roadmap to achieve climate neutrality in production and information on the planned additional site for MTU Maintenance Zhuhai in China and the planned repair location in Serbia.

Other issues examined in detail by the Supervisory Board were the operational business plans and budget for 2021, the short-term incentive (STI) payable to the members of the Executive Board for 2019, definition of the targets and bandwidths for the award of STI payments to Executive Board members for 2020, and compliance with the German Corporate Governance Code. In this context, the Supervisory Board also thoroughly discussed the provisions of the German Act Implementing the Second Shareholder Rights' Directive (ARUG II) and the recommendations of the German Corporate Governance Code, which have led to changes in the compensation of the

Executive Board. The Supervisory Board reviewed the appropriateness of the Executive Board's compensation. Based on the recommendations of an independent external compensation expert and an examination of appropriateness, the Supervisory Board adopted a new remuneration system for the Executive Board, which takes into account the new provisions of ARUG II and the GCGC. The new system integrates sustainability targets and provides for appropriate and motivating compensation.

In view of the new legal requirements for stock corporations which impose an obligation to obtain the consent of the Supervisory Board for certain related party transactions, the Supervisory Board adopted an internal procedure to comply with these requirements. In the reporting period, there were no transactions requiring consent or disclosure.

Corporate governance

The Supervisory Board is convinced that the company's success is based on good corporate governance. For this reason, in 2020 the Supervisory Board looked in detail at the application and implementation of the applicable new version of the German Corporate Governance Code. Furthermore, the Supervisory Board regularly discusses the composition of the Executive Board and Supervisory Board with a view to diversity and the appropriate inclusion of women.

In addition, the Supervisory Board explicitly stated that, in the nominations it proposes to the Annual General Meeting, it takes into account the principles of avoidance of conflicts of interest and will continue to do so. When nominating candidates for election, the Supervisory Board discloses any personal ties or business relations the candidates may have with the company, its governing bodies and/or major shareholders. There is an onboarding process for new members of the Supervisory Board. This gives them a thorough insight into corporate governance, MTU's product portfolio and how the Supervisory Board works.

The Supervisory Board also undertook a detailed examination of the new recommendations of the GCGC on the independence of the members representing the shareholders. The Supervisory Board deems all of its members to be independent. This expressly applies to the employee representatives and to Prof. Dr. Steffens, who ceased to be a member of MTU's Executive Board in 2004. Moreover, it applies to Mr. Eberhardt and Dr. Geißinger, who, like Prof. Dr. Steffens, have been members of the Supervisory Board for more than 12 years. The Supervisory Board has set four terms of office as the maximum for membership of the Supervisory Board and considers this to be appropriate for MTU. Consequently, all Supervisory Board committees consist exclusively of independent members. Members of the Supervisory Board undertake training on their own responsibility, with support from MTU where necessary. MTU may also defray the costs of training. In 2020, the company organized training for members on the Supervisory Board and its committees on the virtual Annual General Meeting, related party transactions in the context of the German Act Implementing the Second Shareholder Rights' Directive (ARUG II), the European Single Electronic Format (ESEF), the new engine concepts and the term of office of Supervisory Board members in Germany compared with other European countries.

In consultation with the Executive Board, the Supervisory Board ensures long-term succession planning for appointments to the Executive Board. To this end, the Supervisory Board regularly reviews the present term of all Executive Board contracts, taking into account the age of each member, the competency profile of potential candidates and the defined diversity objective for the Executive Board.

The Supervisory Board regularly assesses how effectively the Supervisory Board as a whole and its committees perform their tasks. In 2020, the Supervisory Board conducted a self-assessment of the work of plenary sessions

and the Audit Committee by evaluating feedback from a questionnaire developed by an external law firm. The result was that the work of both the plenary session and the Audit Committee is prepared and performed efficiently. Focal areas of the self-assessment were the timeliness and scope of information provided to Supervisory Board members, the preparation and conduct of meetings of the Supervisory Board and its committees, and the composition and structure of the Supervisory Board and its committees, including the allocation of tasks between the full Supervisory Board and its committees, and the expediency of the committees that have been established, the appropriateness of the list of business activities requiring approval, the information provided to plenary sessions of the Supervisory Board by the chairpersons of the committees on the work of their committees, monitoring the cost-effectiveness of new projects, even after approval by the Supervisory Board, and examining training requirements.

Cooperation between the Supervisory Board and the Executive Board, and among the members of the Supervisory Board, was judged to be very good in 2020.

No conflicts of interest arose between MTU and any member of its Executive Board or Supervisory Board.

In a joint declaration with the Executive Board dated December 14, 2020, in accordance with the requirements of Section 161 of the German Stock Corporation Act (AktG), the Supervisory Board states that MTU Aero Engines AG complies with all the recommendations of the German Corporate Governance Code. MTU's declaration of conformity is reproduced in this Annual Report *in the section of the management report headed "Corporate governance statement"*, together with a more detailed description of the company's corporate governance system. The declaration has also been posted *on the MTU website*.

Committee meetings

By convention, the Supervisory Board has three committees with equal numbers of employee and shareholder representatives: an Audit Committee, a Personnel Committee and – in compliance with Section 27 (3) of the German Codetermination Act (MitbestG) – a Mediation Committee. Each of these committees presents regular reports on its activities at the plenary meetings of the Supervisory Board.

A Nomination Committee, which meets on an ad hoc basis, has been set up in accordance with the recommendations of the German Corporate Governance Code. The task of the Nomination Committee is to find suitable candidates for election to the Supervisory Board. The members of this committee are Klaus Eberhardt (Chairman) and Dr. Jürgen M. Geißinger. The Nomination Committee held one meeting in 2020.

The Personnel Committee comprises Klaus Eberhardt (Chairman), Dr. Jürgen M. Geißinger and two employee representatives, Josef Mailer and Roberto Armellini. Among other things, it deals with the employment contracts of Executive Board members, including their compensation and the recommendation of candidates. The Personnel Committee convened four times in 2020 (with an attendance rate of 100 %). Issues examined included the short-term incentive (STI) payable to the members of the Executive Board for 2019, definition of the targets for the award of STI payments to Executive Board members for 2020, the Supervisory Board's efficiency review and the recommendation to the Supervisory Board for the appointment and compensation of members of the Executive Board. The committee also discussed in detail the new remuneration system for the Executive Board. In addition, there were extensive discussions about extending the contracts of three Executive Board members, Peter Kameritsch, Lars Wagner and Michael Schreyögg.

The Mediation Committee, whose members are identical with those of the Personnel Committee, did not have to convene in 2020.

The members of the Audit Committee are Dr. Joachim Rauhut (Chairman), Dr. Christine Bortenlänger (from April 22, 2021), Klaus Eberhardt (until April 21, 2021), Heike Madan and Josef Mailer. This committee met six times in 2020. Attendance was 100 %. It focused on reviewing the annual financial statements, the consolidated financial statements and the combined management report, including the non-financial statement of the MTU Group and MTU Aero Engines AG as well as the company's net assets, financial position and results of operations, and the annual and half-year reports and quarterly statements.

Further, the Audit Committee discussed the additional services provided by the auditor and the granting of the audit mandate. The Audit Committee specified the key areas for the audit of the annual financial statements and consolidated financial statements for 2020 and concluded the audit contract with Ernst & Young Wirtschaftsprüfungsgesellschaft. In addition, the committee obtained the auditor's statement of independence in accordance with Section 107 (3) Sentence 2 of the German Stock Corporation Act (AktG) and also monitored the auditor's independence. Furthermore, the procedure for procuring non-audit services provided by the auditors was reviewed and affirmed and the content and fees for such services provided by the auditor in the reporting period were approved on a case by case basis.

At four of its meetings and in additional direct discussions outside of such meetings, the Audit Committee obtained reports from the auditor on its audit strategy and approach, the audit process, especially its effectiveness and progress, and asked critical questions. Moreover, it examined the qualification of the persons engaged in the audit and the auditor's general quality assurance concept and its practical application. During the reporting period, the committee supplemented this with publicly available information on the quality controls performed by the auditor and its competitors.

To assist the committee members in their tasks, they and all other members of the Supervisory Board received copies of the reports prepared by Ernst & Young concerning the audit of the annual financial statements, the consolidated financial statements and the combined management report. These documents were reviewed in detail in the presence of Ernst & Young.

As a result, the committee recommended that the Supervisory Board should adopt the financial statements, approve the combined management report and consent to the Executive Board's profit distribution proposal.

In accordance with statutory requirements, the Audit Committee monitored the accounting process, the accounting-related internal control and risk management system and the internal auditing system, which it judged to be effective. It oversaw the company's compliance activities and received reports from the internal auditors.

The Audit Committee also oversaw the placement of a corporate bond with a total nominal value of €500 million. The bond matures in five years on July 1, 2025. The committee also examined the issue of aircraft funding and the coronavirus scenarios used to forecast the company's business development in 2020 and 2021, the economic situation of MTU Maintenance Zhuhai, the revision of the pension rules for senior managers, the reports on risk management, non-audit services and the audit fees, the reappointment of Ernst & Young as the auditor, the status of the convertible bond 2023, the EMIR audit, the debt position of the companies accounted for using the equity method and the organization of accounting at MTU.

Adoption of the annual financial statements, the approved consolidated financial statements and the management report

The annual financial statements, consolidated financial statements and combined management report of the MTU Group and MTU Aero Engines AG for 2020 were audited by Ernst & Young, Munich, whose appointment was approved by the Annual General Meeting. Ernst & Young issued an unqualified audit opinion. This was signed by Siegfried Keller and Gerhard Stummer, who have audited MTU since 2014 and 2020, respectively. The audit reports and documents to be reviewed were submitted in good time to all members of the Supervisory Board. The Supervisory Board conducted a thorough review of the annual financial statements, consolidated financial statements and the combined management report, including the non-financial statement of the MTU Group and MTU Aero Engines AG for 2020 and the Executive Board's proposal for the distribution of the net profit. Its review was based on the audit by Ernst & Young, on which the Chairman of the Audit Committee had reported in full to the Supervisory Board. The auditor attended the meeting of the Audit Committee of MTU Aero Engines AG on March 2, 2021, and the meeting of the Supervisory Board to discuss the financial statements on March 9, 2021, and presented the main findings of the audit. The Supervisory Board reviewed the annual financial statements, consolidated financial statements, combined management report including the non-financial statement, and the Executive Board's profit distribution proposal, and raised no objections. The company's annual financial statements and consolidated financial statements for 2020, as submitted by the Executive Board, were approved at the Supervisory Board's meeting on March 9, 2021. The annual financial statements are therefore adopted. The Supervisory Board agreed to the Executive Board's proposal for the distribution of the net profit after giving due consideration to the interests of the company and its shareholders. A dividend payment of €1.25 per share eligible for the dividend will therefore be proposed to the Annual General Meeting.

Changes in the governing bodies, extensions of terms of office

There were two changes on the Supervisory Board in 2020. On the employees' side, Angelo Gross left the Supervisory Board. He was succeeded on May 1, 2020, by Michael Winkelmann. On the shareholders' side, Prof. Dr. Steffens stepped down on December 31, 2020. The Supervisory Board would like to thank both long-standing members for their constructive and competent work on the Supervisory Board.

Dr. Rainer Martins was appointed to the Supervisory Board by court decision as successor to Prof. Steffens effective January 26, 2021. He will be nominated for election to the Supervisory Board at the Annual General Meeting on April 21, 2021.

Klaus Eberhardt is stepping down as a member of the Audit Committee from the end of the Annual General Meeting on April 21, 2021. Dr. Christine Bortenlänger has been elected to succeed him on the committee effective April 22, 2021.

The Supervisory Board would like to thank the Executive Board for its close and constructive collaboration.

It would also like to thank all employees and the Works Council for their successful work and enormous commitment in 2020. Moreover, the Supervisory Board is grateful to all MTU's shareholders for the trust they place in the company.

Munich, March 9, 2021

Klaus Eberhardt
Chairman of the Supervisory Board

The Supervisory Board

Members of the Supervisory Board and the additional mandates they hold on supervisory boards or comparable oversight bodies of other business enterprises in Germany or abroad

Klaus Eberhardt
Chairman of the Supervisory Board
Independent consultant
Former CEO of
Rheinmetall AG, Düsseldorf

ElringKlinger AG

Roberto Armellini
Second authorized representative and director of
IG Metall, Munich

Dr. Christine Bortenlänger
Chief Executive of Deutsches Aktieninstitut,
Deutsches Aktieninstitut e.V., Frankfurt am Main

Covestro AG
Covestro Deutschland AG (Covestro Group)
OSRAM Licht AG, until February 23, 2021
OSRAM GmbH (OSRAM Group), until February 23, 2021
Siemens Energy AG, since September 25, 2020
Siemens Energy Management GmbH
(Siemens Energy Group), since September 25, 2020
TÜV Süd AG

Thomas Dautl
Director Supplier Quality and Development,
MTU Aero Engines AG, Munich

Dr.-Ing. Jürgen M. Geißinger
Independent entrepreneur
Former CEO of Schaeffler AG, Herzogenaurach

AAA Accelerator Group Europe AG (Switzerland),
until December 31, 2020
Bizerba Management SE, since April 27, 2020
Bizerba SE & Co. KG (Bizerba Group), since April 27, 2020
Hilotherm Holding AG (Switzerland),
until October 31, 2020

Josef Mailer
Deputy Chairman of the Supervisory Board
Chairman of the Group Works Council of
MTU Aero Engines AG, Munich
Chairman of the Works Council of
MTU Aero Engines AG, Munich

Angelo Gross, until April 30, 2020
Member of the Group Works Council of
MTU Aero Engines AG, Munich
Deputy Chairman of the Works Council of
MTU Maintenance Hannover GmbH, Hannover

MTU Maintenance Hannover GmbH,
until April 30, 2020

Anita Heimerl
Member of the Group Works Council of
MTU Aero Engines AG, Munich
Full-time member of the Works Council of
MTU Aero Engines AG, Munich

Heike Madan
Trade union company policy department,
Head of the union workplace representatives and company policy division, IG Metall, Frankfurt am Main

Dr. Rainer Martens, since January 26, 2021
Independent consultant
Formerly Chief Operating Officer of
MTU Aero Engines AG, Munich

Dr. Joachim Rauhut
Independent consultant
Former member of the Executive Board of
Wacker Chemie AG, Munich

B. Braun Melsungen AG
creditshelf AG
J. Heinrich Kramer Holding GmbH
Stabilus S. A.

Prof. Dr.-Ing. Klaus Steffens, until December 31, 2020
Independent consultant

Former CEO of MTU Aero Engines AG, Munich

Morvern Group

Prof. Dr. Marion A. Weissenberger-Eibl
Director of the Fraunhofer Institute for Systems and Innovation Research ISI in Karlsruhe and holder of the Chair of Innovation and Technology Management at the Karlsruhe Institute of Technology

HeidelbergCement AG
Rheinmetall AG

Michael Winkelmann, since May 1, 2020

Deputy Chairman of the Group Works Council of MTU Aero Engines AG, Munich

Chairman of the Works Council of MTU Maintenance Berlin-Brandenburg GmbH, Ludwigsfelde

MTU Maintenance Berlin-Brandenburg GmbH

SUPERVISORY BOARD COMMITTEES

Personnel Committee
Klaus Eberhardt, Chairman
Roberto Armellini
Dr.-Ing. Jürgen M. Geißinger
Josef Mailer

Audit Committee
Dr. Joachim Rauhut, Chairman
Dr. Christine Bortenlänger, from April 22, 2021
Klaus Eberhardt, until April 21, 2021
Heike Madan
Josef Mailer

Mediation Committee
Klaus Eberhardt, Chairman
Roberto Armellini
Dr.-Ing. Jürgen M. Geißinger
Josef Mailer

Nomination Committee
Klaus Eberhardt, Chairman
Dr.-Ing. Jürgen M. Geißinger

The MTU share

Equity markets affected by the coronavirus crisis

The equity markets were heavily influenced by the Covid-19 pandemic.

The German blue-chip index, DAX, made gains at the start of the year, but the global stock exchanges nosedived in February and March as the spread of the pandemic gained pace. The DAX dropped to a low for the year of 8,442 points on March 18, 2020. The coronavirus crisis continued to dominate the capital markets in the following months.

In the second quarter, the equity markets recovered noticeably and the DAX topped 13,000 points again in July. At year-end, in particular, positive news about coronavirus vaccines fueled further price gains on the stock markets. The Dow Jones, the leading US index, even registered an new all-time high of 30,606 points on December 31, 2020. In Germany, the DAX rose to a high for the year of 13,790 points on December 28, 2020 and ended December 2020 at 13,719 points, a slight gain of 3.5 % over the year.

The price performance of many shares was highly sector-dependent in 2020. Some stock corporations that were particularly badly affected by the economic knock-on effects of the Covid-19 pandemic and the global lockdowns saw their share prices drop significantly over the year. For example, aviation stocks suffered considerable price setbacks. MTU shares are included in the Stoxx Europe TMI Aerospace & Defense Index, along with companies such as Airbus Group, Safran and Rolls-Royce. This index was very volatile in 2020 and the overall trend was downward. Although it recovered at year-end, it underperformed the DAX over the year. In all, the Stoxx Europe TMI Aerospace & Defense Index fell 26 % during the year.

MTU shares stabilized in the second half of 2020

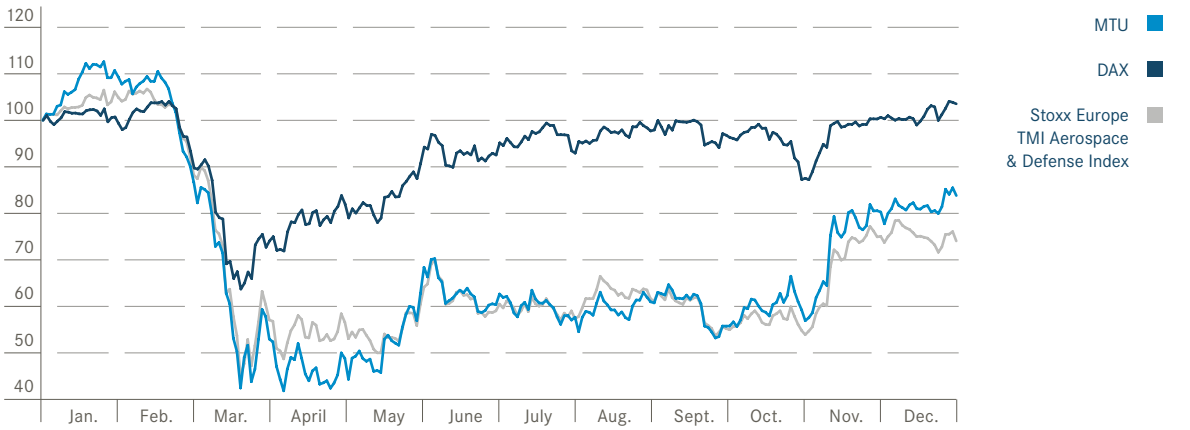
Shares in MTU started the year at €258 and rose to a high for the year of €286.70 on January 24, 2020. The share price then remained stable until mid-February. The spread of the coronavirus had a strong impact on MTU shares: aviation stocks such as MTU suffered far more than other shares. The price fell sharply until mid-March and reached a low for the year of €106.50 on April 3, 2020.

MTU shares rallied strongly in the second quarter. The company published positive quarterly results at the end of April and in June it successfully placed a corporate bond with a nominal value of €500 million on the capital market.

At the end of July, MTU published new guidance for the fiscal year 2020, based on the aircraft manufacturers' updated production rates and delivery schedules. The shares rose slightly as a result, but continued their volatile sideways trend. The share price only gained considerable momentum towards the end of the year, rising above €200 again in November, when positive news about a vaccine against the coronavirus contributed to a positive trend for aviation stocks. Shares in MTU nevertheless ended 2020 down 16% at €213.40.

They therefore underperformed the DAX but outperformed the Stoxx Europe TMI Aerospace & Defense index. Market capitalization was around €11.4 billion at year-end 2020.

[T2] MTU share performance in 2020 compared with stock market indices (indexed; Dec. 31, 2019 = 100)



[T3] Year-on-year indicators for shares in MTU

		2020	2019
Highest price for the year[1]	€	286.70	264.80
Lowest price for the year[1]	€	106.50	156.20
Price at start of year[1]	€	258.10	158.80
Year-end price[1]	€	213.40	254.60
Performance over the year[2]	%	–16	+61
Market capitalization at year end	€ million	11,381	13,518
Average daily trading volume	€ million thousand shares	63 392	32 146
Earnings per share	€	2.63	9.23

[1] Xetra closing price.
[2] Based on Xetra year-end share price (Dec. 31).

Dividend

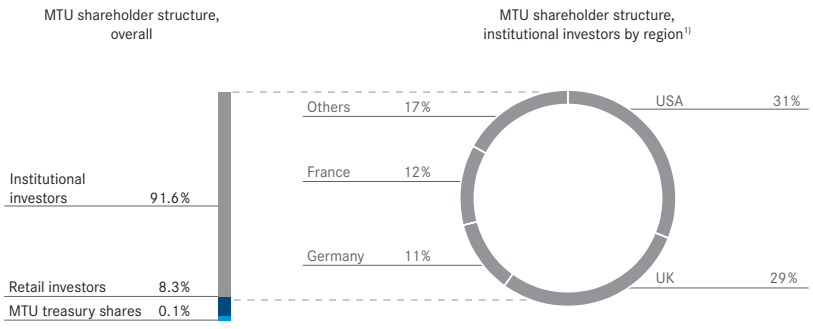
Shareholders participate in MTU's success through a dividend. The Executive Board and Supervisory Board have decided to pay a dividend for 2020. At the Annual General Meeting on April 21, 2021, they will propose payment of a dividend of €1.25 per share for the fiscal year 2020. The dividend would be paid on April 26, 2021. The payment ratio would be 22% of MTU's adjusted net profit. As a result of the coronavirus crisis, only the minimum dividend of €0.04 per share was paid in 2020.

Trading volume

In 2020, the average number of MTU shares traded via Xetra trading was 392,000 shares per day, compared with 146,000 per day in 2019. The highest number of shares traded was 1,093,591 on June 9, 2020. The average daily trading volume was around €63 million (previous year: €32 million).

At the end of 2020 MTU ranked 31st in the DAX index in terms of market capitalization (previous year: 25th in the DAX). Based on trading volume, it was 23rd in the ranking of all DAX shares (previous year: 33rd).

[T4] Shareholder structure



[1] Approximation based on top 100 shareholders.
Source: SID, December 2020.

High proportion of institutional shareholders

There was a year-on-year rise in the number of voting rights to 53,332,259 preemptive shares. The free float was 100% on December 31, 2020. 0.1% of the shares are held by the company. Around 91.6% of the free float was held by institutional investors and 8.3% by retail investors.

The majority of institutional investors are based in the USA, Germany, France or the UK. At the end of 2020, notifications under Section 21 (1) of the German Securities Trading Act (WpHG) had been received from the following institutional shareholders:

[T5] Institutional investors with voting rights > 3%

DGAP	Investor	Voting rights in %	No. of MTU shares
Apr. 20, 2020	The Capital Group Companies, USA	14.62%	7,761,535
Dec. 30, 2020	BlackRock, Inc., USA	9.02%	4,789,699
Mar. 19, 2020	Allianz Global Investors GmbH, Germany	5.09%	2,701,651
Sept. 26, 2018	Massachusetts Financial Services Company, USA	4.93%	2,561,829
Apr. 23, 2020	EuroPacific Growth Fund, USA	4.87%	2,583,956
Mar. 27, 2020	Comgest Global Investors SAS, France	3.09%	1,641,501

Broad coverage by analysts

In 2020, 26 analysts were reporting regularly on MTU. Buy recommendations were issued by 4 of these financial institutions, while 15 gave MTU stocks a hold rating and 7 had it on sell (previous year: 7 “buy,” 13 “hold,” 5 “sell”). The average price target was €176.

[T6] The following financial institutions report regularly on MTU:

Alpha Value Research	Goldman Sachs	Nord LB
Barclays	Hauck & Aufhäuser	ODDO Securities Research
Berenberg	HSBC	Pareto
BernsteinResearch	Independent Research	Société Générale
BoA Merrill Lynch	JPMorgan Cazenove	Stifel
Citi Global Markets Research	Kepler Cheuvreux	UBS
Commerzbank	Landesbank Baden-Württemberg	Vertical Research
DZ Bank	Metzler	Warburg Research
Exane BNP Paribas	Morgan Stanley	

Intensive investor relations work

Many of MTU’s IR events were held remotely in the reporting period. The company held a total of nine roadshows, where the Executive Board and IR team had a presence. In addition, MTU took part in 21 international investors’ conferences, including the Commerzbank German Investment Seminar New York, the Kepler Cheuvreux German Corporate Conference Frankfurt, and Goldman Sachs Industrials Conference.

A key platform for dialog with shareholders was once again the MTU Annual General Meeting, which was held digitally on August 5, 2020 as a video webcast. Around 72% of the share capital with voting rights was represented (previous year: 78%).

Similarly, many discussions with investors took place digitally in 2020. In all, MTU had around 1,300 contacts with investors. The annual Investor and Analyst Day took place on November 19, 2020. As a result of the coronavirus pandemic, the Executive Board of MTU and over 200 analysts and investors met up virtually at this conference. The focus was on the impact of the Covid-19 pandemic on MTU’s business environment and the measures taken to address the resulting challenges, the long-term growth prospects and an initial outlook for 2021.

Information on IR topics can be found in the Investor Relations section of the MTU website (*www.mtu.de*). You are also welcome to contact the IR team by calling +49 (0)89 1489-4787.

Combined management report

Combined management report

The management report of MTU Aero Engines AG and the group management report for the fiscal year 2020 have been combined in accordance with Section 315 (5) of the German Commercial Code (HGB) in conjunction with Section 298 (2) of the German Commercial Code (HGB).

The MTU Group

Business activities and markets

MTU's portfolio covers the entire lifecycle of commercial and military aircraft engines and aero-derivative industrial gas turbines. The company's activities range from development, manufacturing and marketing to maintenance.

MTU has technological expertise in low-pressure turbines, high-pressure compressors and turbine center frames, and in repair techniques and manufacturing processes. It is involved in important national and international technology programs and cooperates with the top names in the industry (GE Aviation, Pratt & Whitney and Rolls-Royce).

The group also provides maintenance services for commercial aircraft engines. In the military sector, it has been the leading industrial partner to the German armed forces for decades.

MTU operates in two segments: the OEM business (Original Equipment Manufacturing) and MRO business (Maintenance, Repair and Overhaul). The OEM segment covers new commercial engines, including spare parts, and the whole of the military sector. The MRO segment comprises the commercial maintenance activities.

Group structure, locations and organization

Through its subsidiaries, joint ventures and equity investments, MTU has a presence in all key markets and regions worldwide. Further information on MTU's shareholdings is provided in the Notes to the consolidated financial statements in *Section I. "Accounting policies and principles."*

[T7] MTU Aero Engines worldwide

MTU Maintenance Canada
MTU Aero Engines North America
Vericor Power Systems
MTU Maintenance Dallas
MTU Maintenance do Brasil

MTU Aero Engines
MTU Maintenance Hannover
MTU Maintenance Berlin-Brandenburg
MTU Maintenance Lease Services
MTU Aero Engines Polska
MTU Maintenance Serbia
EME Aero[1)]
AES Aerospace Embedded Solutions[1)]
Pratt & Whitney Canada Customer Service Centre Europe[1)]
Ceramic Coating Center[1)]

MTU Maintenance Zhuhai[1)]
Airfoil Services[1)]

[1)] Joint ventures.

[T8] MTU's global workforce

			Change against previous year	
Number of employees	Dec. 31, 2020	Dec. 31, 2019	Employees	in %
Locations in Germany	8,700	8,935	–235	–2.6
Locations outside Germany	1,613	1,725	–112	–6.5
Total workforce	**10,313**	**10,660**	**–347**	**–3.3**

Corporate strategy

MTU's corporate strategy is geared to profitable growth and customer satisfaction. The four target areas of MTU's growth strategy are:

A balanced product portfolio – Participation in rapidly growing new programs

MTU focuses on rapidly growing and high-volume military and commercial engines and works with various partners. It optimizes its risk profile as well as growth opportunities through continuous participation in varying thrust classes and fields of application. MTU Aero Engines is currently focusing on ramping up production of Geared Turbofan™ engines for regional and medium-haul jets, which it has developed together with partners, and on developing GE's GE9X engine program for the Boeing 777X widebody aircraft. These programs complement MTU's excellent positioning in the MRO segment, as the company has secured itself a share in the future aftermarket service business through its stakes in these engine programs.

In the military business, the discussions about future procurement programs have become more concrete at both national and European level. In November 2020, a contract was signed for EJ200 engines for a new order for Eurofighter fighter jets. At the same time, the ground was prepared for the development of a 6th generation fighter jet, to be developed by 2040. In 2020, Spain became the third partner country in the FCAS (Future Combat Air System) program, which was originally a bilateral Franco-German partnership. The engine manufacturers MTU Aero Engines, Munich, Safran Aircraft Engines, Gennevilliers, and ITP, Madrid, plan to jointly develop the engine for the FCAS.

Cutting-edge technologies – Maintaining and expanding technological leadership

MTU is currently extending its technological leadership by focusing on the development of new high-temperature materials and modern manufacturing technologies such as additive processes. In combination with optimized cyclic processes, the company is thus able to achieve even greater efficiency in the medium term with its core modules – the low-pressure turbine, high-pressure compressor and turbine center frame – and therefore greater profitability and environmental friendliness, while simultaneously reducing component weight.

The aviation and aerospace industry and the EU Commission have drawn up a joint Strategic Research and Innovation Agenda (SRIA), which sets targets for aircraft engines up to 2050. The goal of limiting global warming to 2 °C set in the Paris Agreement in 2015 is an even greater challenge. In line with its environmental aspiration, MTU has revised the "MTU Technology Roadmap Towards Emission Free Flying" to take account of this target. Alongside CO_2 emissions, which are a significant factor, non-carbon effects play a significant role in the climate impact of aviation. Revolution propulsion technologies with new cyclic processes promise radical reductions in all climate-related emissions. MTU is working on completely emission-free solutions such as the flying fuel cell, an electric propulsion system based on hydrogen-powered fuel cells. The aim is to demonstrate these concepts as part of the national aviation research program and, in a European context, through Clean Aviation.

The digitalization of products, services and value creation processes is also growing in importance. This can be seen, for instance, in the extensive use of simulation techniques in all areas of development through to the virtual engine.

Enhanced competitiveness – Increased productivity accompanied by a reduction in capital tie-up

MTU encourages a culture of continuous improvement in order to secure its competitiveness. The focus here is on optimizing structures, processes and capital tie-up in all areas of the company. Digitalization and automation technologies (Industry 4.0) play a key role here.

The goal is to continue to optimize MTU's supply chain and its production and service network in terms of delivery capability, quality and costs.

MTU regards responsible economic activity as an important criterion of its competitiveness, and acts in harmony with its sustainability strategy.

Innovative corporate culture – Motivated employees in a creative environment

Highly motivated, skilled workers are crucial to the successful development of the MTU Group. MTU's corporate culture places emphasis on personal development and achievement coupled with a strong sense of social responsibility.

The trend toward digitalization is set to change the work environment and tried-and-tested management methods. More scope and greater responsibility for employees as well as short decision paths are key elements of an innovative corporate culture. All employees are encouraged and empowered to contribute their own ideas and translate them into new products and services, innovative business models and improved processes.

The company promotes cultural and individual diversity, flexible working conditions and high-quality basic and further training opportunities for its workforce.

MTU is confident that activities with a long-term focus, targeted investments and continuous development of the corporate culture will enable it to achieve its strategic objectives.

Key performance indicators

MTU is managed on the basis of key performance indicators adopted by the Executive Board. These performance metrics are derived from the operational business plans and provide guidance for management of the company that is geared to sustainable and profitable growth.
A planning and control system and a value-oriented management compensation system are used to facilitate decisions that create a suitable environment for implementing the corporate strategy.

[T9] Performance indicators

			Change against previous year	
in € million	2020	2019	in € million	in %
Revenue	3,977	4,628	–652	–14.1
Adjusted EBIT	416	757	–341	–45.1
Adjusted EBIT margin (in %)	10.5	16.4		
Free cash flow	**105**	**358**	**–254**	**–70.8**

The value-driving key performance indicators of adjusted EBIT, revenue and free cash flow define the range within which MTU operates in terms of profitability, growth and liquidity.

For a definition of adjusted EBIT, which is the most important of these KPIs, please see the *reconciliation to adjusted key performance figures in the "Results of operations" section*. Another indicator monitored by the company is the adjusted EBIT margin, which shows the relationship between adjusted EBIT and revenue.

The purpose of optimizing cash flow is to ensure that the group maintains its financial strength. MTU determines its free cash flow by combining its cash flow from operating activities with its cash flow from investing activities and eliminating components of the latter (non-recurring cash flows) that lie outside the operational management of the core business. For the reconciliation of the free cash flow, non-recurring cash outflows – comprising payments for the acquisition of shares in engine programs, payments in connection with interest-bearing loans and financial assets held for the purpose of liquidity management – are eliminated from the cash flow from investing activities.

[T10] Free cash flow

			Change against previous year	
in € million	2020	2019	in € million	in %
Cash flow from operating activities	386	832	–446	–53.6
Cash flow from investing activities	–245	–472	227	48.0
Non-recurring cash flows	–36	–2	–34	<–100
Free cash flow	**105**	**358**	**–254**	**–70.8**

Research and development

Framework conditions and goals

An increasingly mobile society, limited natural resources and rising environmental awareness all call for innovative solutions – especially when it comes to aircraft engines. MTU has established technological leadership in its core competencies of low-pressure turbines, high-pressure compressors, turbine center frames, and high-tech manufacturing processes and repair techniques. This provides a solid basis for refining existing engines and developing new propulsion concepts.

The main focus of MTU's R&D activities is on improving overall engine efficiency as a means of reducing climate- and health-related emissions. This can be achieved by lowering the fan-compression ratios/increasing the bypass ratios, thereby improving thrust efficiency, increasing temperatures and overall pressure ratios to improve thermal efficiency, and enhancing component efficiency. Furthermore, in aviation, reducing weight also significantly influences fuel consumption. Key components in this respect are MTU's low-pressure turbine and high-pressure compressor, which feature high pressure ratios, low weight and high efficiency ratios, and the heavily loaded turbine center frame. Enhancing these technologies is an ongoing task for MTU.

MTU's medium- to long-term goals for the development of new commercial engines fully comply with the voluntary commitment made by the European aviation industry and research community, which have formulated ambitious targets for air traffic up to 2050 in their Strategic Research and Innovation Agenda (SRIA):

[T11] Long-term targets [1)]

	SRIA 2020	SRIA 2035	SRIA 2050
CO_2 emissions – air traffic	–43%	–60%	–75%
CO_2 emissions – engines	–20%	–30%	–43%[2)]
NOx emissions – mainly engines		–84%	–90%
Noise – mainly engines		–55%	–65%

[1)] Changes per passenger-kilometer compared with the reference base (2000).

[2)] Assuming comparable improvements in aircraft and engines.

However, the target of limiting climate change to less than 2°C (2015 Paris Agreement) requires accelerating all activities. The SRIA targets are not enough to accomplish this and must be overhauled.

MTU has bundled its targets in the technology agenda Claire (Clean Air Engine), which will be accelerated in view of the new conditions and extended to include technologies that enable moving toward emission-free aviation.

The first stage is the Geared Turbofan™ (GTF), which was developed in partnership with Pratt & Whitney and entered series production in early 2016 for the Airbus A320neo. The GTF reduces fuel consumption and hence carbon dioxide emissions by around 16% (*see also "Commercial engine programs"*).

Proof-of-concept studies for the next stage show that further improvements are possible on the basis of the GTF engine configuration. The aim is to achieve an even lower fan compression ratio and further improve thermal efficiency by means of higher temperature and pressure ratios. The goal is to cut fuel consumption by 25% and to halve noise emissions.

The third stage of the Claire program will see the introduction of revolutionary new features. MTU is pursuing two different concepts, for which it conducted studies in 2020:

- Heat engines featuring innovative cyclic processes beyond conventional gas turbines, which promise a significant improvement in thermal efficiency.
- Electric propulsion systems, ranging from electric batteries to hybrid systems (gas turbine and battery) and fuel cells. In particular, fuel cells in combination with sustainably produced hydrogen have the potential to provide sufficient power and reach for commercial aircraft and enable emission-free aviation in the long term.

In both concepts, the main focus is on rapid demonstration and validation of the feasibility of critical technologies. Therefore, in 2020, applications for subsidies were submitted under the German aviation research program LuFo and the Bavarian program to foster technology. The plan is to carry out ground tests on new heat engines with innovative cyclic processes, and to use a Dornier Do228 as a test platform for the electric propulsion systems.

Technologies for key engines of the future

Commercial engine programs

The most significant innovation in the area of aircraft engines in recent decades is the Geared Turbofan™ (GTF) engine developed by MTU in cooperation with Pratt & Whitney. Unlike conventional turbofans, in which the

fan and low-pressure turbine run at the same speed on a single shaft, the GTF links the two components using a reduction gear. This allows the fan with its larger radius to rotate more slowly, while the low-pressure turbine rotates faster. Consequently, lower fan pressure ratios (high bypass ratios) are achieved, thereby improving thrust efficiency, increasing the efficiency of the fan and the low-pressure turbine, while cutting fuel consumption and carbon dioxide emissions by 16% each and reducing the noise level by 20 EPNdB, bringing it well below certification level. What is more, the engine is lighter because the low-pressure turbine and low-pressure compressor require fewer stages. In the GTF project, MTU is responsible for developing and manufacturing the high-speed low-pressure turbine, the front half of the high-pressure compressor and four brush seals. In addition, MTU assembles 30% of serially produced engines for the Airbus A320neo and carries out acceptance tests for these engines. It is also a partner in the MRO network.

The most important milestone in the GTF program in 2020 was the significant increase in operational availability thanks to the successful to replacement of the three-stage low-pressure turbine in the PW1100G-JM engine.

As of January 2021, engines in the GTF™ family had already clocked up 7.2 million flying hours.

When it comes to engines of the highest thrust class for long-haul aircraft, MTU is participating in General Electric's GE9X for the new Boeing 777X by developing and manufacturing the extremely demanding turbine center frame. In the reporting period, the GE9X engine was certified for use. At present, the first deliveries of the 777X are scheduled for 2023.

Military engine programs

The EJ200 engine powers the Eurofighter and is in service with numerous air forces. A long-term evolution (LTE) program to extend the capability of the Eurofighter is currently under consideration. In response to this, the EJ200 engine is to be revised, including introducing state-of-the-art technology to increase its thrust and extend its range. Consequently, an EJ200 LTE study commenced in the reporting period. The aim is to offer the customer three options for a possible engine upgrade from 2020.

Germany, France and Spain are planning to introduce the new Future Combat Air System (FCAS) from 2040. A key component in this system is a new fighter jet, which is scheduled to come into service as from 2040. A central element in this new jet is the Next European Fighter Engine (NEFE), for which MTU and Safran will be the joint lead for development, production and after-sales support. The next Franco-German concept phase involving MTU, Safran, Dassault and Airbus commenced in the reporting period. Alongside conventional engine concepts, this phase will also be examining VCE (variable cycle engine) concepts. A concept of this type would extend the operational range of the engine by actively shifting geometries during flight in order to achieve the required mission flexibility.

New areas of business

New fuel cells powered by green hydrogen have the potential to enable emission-free flying in the long term. Propulsion systems suitable for aircraft are not yet available. At present, all demonstration platforms are based on solutions from the automotive sector. Unlike aircraft applications, weight plays a secondary role in the automotive sector. In the reporting period, MTU took an important step on the route to emission-free flying by setting up a team to develop an electric propulsion system based on fuel cells ("flying fuel cell"). An initial demonstrator should take off in 2026 in cooperation with the German Aerospace Center.

MTU has built up a technological lead in the fields of low-pressure turbines, turbine center frames and high-pressure compressors and aims to build on this. Continuous development of these technologies is thus necessary.

In addition to an improved high-pressure compressor and an improved low-pressure turbine, Pratt & Whitney and MTU are planning a more efficient PW1100G-JM engine with greater thrust for the A320neo. In the reporting period, MTU successfully developed and produced an initial module for an optimized low-pressure turbine, which was delivered to its partner, Pratt & Whitney, for testing.

To achieve optimum efficiency, the temperature in the turbine rises steadily. New, temperature-resistant materials were needed for this. In 2020, preparations were made to test the behavior of such materials at a test station. The tests with industrial partners are scheduled to start at MTU's site in Munich, Germany, in 2021.

Digitalization
The trend toward digitalization and networked supply chains heralds the fourth industrial revolution, after the invention of the steam engine, the automated production line and the computer. People, machines, plants, logistics and products communicate and cooperate with each other, so that, for example, production is largely self-organizing. An interdisciplinary working group is defining MTU's specific demands and requirements. MTU is examining the entire product lifecycle and the entire MTU value chain from development to manufacture and maintenance.

In the reporting period, an interdisciplinary team drew up an high-level digitalization roadmap, which was approved for implementation. To this end, MTU has appointed a digital transformation managers, who will work together to continuously analyze current IT trends across centers and sites in order to put the roadmap into practice.

Many technology projects have been initiated in the area of simulation. Ultimately, they will be elements in the digital simulation of a real engine as a "digital twin." The main focus at present is on material development and manufacturing. End-to-end simulation methods of this type facilitate robust design and thus significant cost savings.

In the reporting period, new design methods were developed, in particular, for revolutionary engine concepts, where conventional design methods can no longer be used. The highly interdisciplinary nature of these concepts requires a far more detailed overview of the interaction between the aircraft and engine because the key to leveraging their potential essentially lies in intelligent integration.

Materials
Test facilities for critical components are essential for the development of new materials, production processes and progressive construction methods. In addition, testing expertise and capacity are a key growth factor in the competition for partnership in new engine programs. MTU has therefore combined all component testing facilities in a new center of competence in which it has invested over €25 million.

Robust, high-temperature-resistant materials and the necessary protective coatings are a key technology that MTU is driving forward continuously. In the reporting period, work concentrated primarily on monocrystalline materials of the 6th generation and ceramic composites. As well as applications in commercial engines, these promise improvements, above all, in the military business, where materials have to meet even higher specifications. This work is being undertaken through a number of technology projects with national and European funding.

Manufacturing and maintenance technologies
Additive manufacturing processes are opening the way to new methods of production. These processes involve using a laser to fuse very thin layers of powder material applied in succession to build up entire components. MTU is one of the first companies to use additive manufacturing in volume production, to make the borescope eyepieces for PW1100G-JM engines. Preparations are under way to introduce this type of process to manufacture complex components such as center frame struts and bearing housings. The longer-term plan is to create new designs that would be either impossible or very costly to implement using traditional technology.

Further industrialization and automation of additive manufacturing is needed to reduce costs and speed up processes. MTU has therefore initiated the IDEA project (industrialization of digital engineering and additive manufacturing) with 14 partners. The focus is on a holistic view of the entire process chain, including coupling hardware and software, using digital twins, and through end-to-end data formats, process simulation and process control systems. The project is supported by the German Federal Ministry of Education and Research. Ultimately, demonstration components will be manufactured on two pilot lines.

In recent years, MTU has carved out a leading position as a manufacturer of blisk rotors for compressors. For the blisks made of nickel-based alloys, which are extremely difficult to process and which are used in the aft stages of high-pressure compressors, MTU has developed a new electrochemical material-removal process (Precise Electrochemical Machining – PECM). By working with an extremely small inter-electrode gap, in the micrometer range, PECM accomplishes much greater reproduction precision, thus enabling manufacture of the required extremely complex blade geometries.

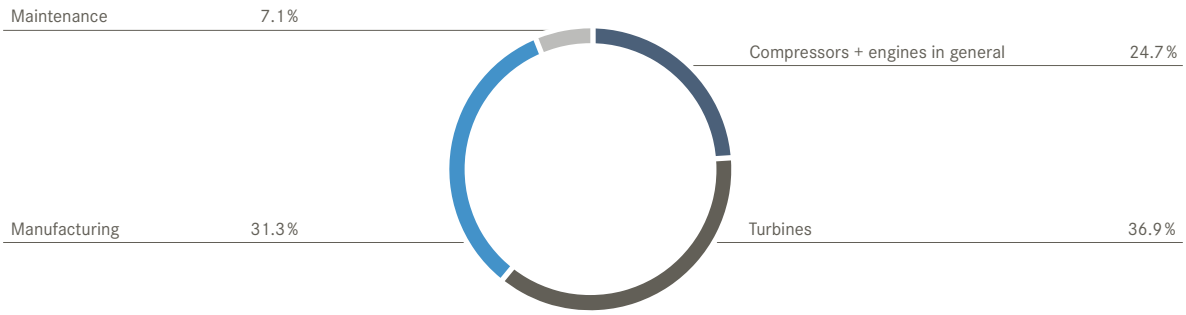
So far, profile grooves for turbine disks have been produced by broaching. Since turbine disks are also made of materials with high heat resistance that are time-consuming to process and cause heavy wear, MTU aims to transfer PECM technology from compressor blisks to turbine disks. The first turbine disks were produced using PECM technology in the reporting period and delivered to Pratt & Whitney for testing in a demonstrator. Series production of GTF disks is scheduled to start in 2023.

Carefully thought-through management of engine fleets to improve engine availability and reduce costs is very important to customers. In the reporting period, the MTU InnoLab therefore developed an AI-based solution, which is already in operational use. This automatically offers customers various scenarios for the use of engines, for example, the phase-out of engines or early replacement of components.

Protecting technology assets (intellectual property)

As of the end of the year, MTU's patent portfolio contained 986 patent families (3,308 individual patents). A patent family is a set of identical patents registered in various countries. As of the reporting date, this portfolio covered the following fields of technology:

[T12] Breakdown of MTU's patent portfolio by field of technology



Cooperation in science and research

For decades, cooperation with universities and research institutes has been a fixed element of the research and development work at MTU. For instance, specimen engines are made available to universities and colleges, and MTU experts give lectures or supervise students writing internship reports, theses and dissertations. Furthermore, students are given support with assignments and final reports. In addition, MTU honors outstanding achievements by awarding the annual Heilmann prize to a young scientist meriting recognition for achievements in engine technology.

Strategic alliances have been established with research partners in order to strengthen ties between universities and industry, and to safeguard MTU's innovative capabilities. Cooperation with leading German universities and research institutes was stepped up during the past years. To optimize collaboration, six competence centers were established for specific areas of research. The new DLR Institute of Test and Simulation for Gas Turbines in Augsburg is currently being ramped up. The "Virtuelles Triebwerk" (virtual engine) digital research and development platform and a unique testing center for validation of new engine solutions are being created here. In 2020, MTU was also involved in the establishment of two DLR institutes in the area of hybrid electric engine systems and future fuels.

Based in Munich, Bauhaus Luftfahrt is a visionary think tank with an international dimension that pursues unconventional, holistic and interdisciplinary research. It brings industry and science together under one roof, focusing primarily on exploring the socioeconomic, political and ecological aspects of aviation, designing visionary aircraft, unearthing promising technologies for the future and carrying out knowledge management.

Investment in research and development

[T13] Research and development expenses

			Change against previous year	
in € million	**2020**	2019	in € million	in %
Commercial engine business (OEM)	159	199	–40	–20.1
Military engine business (OEM)	19	8	11	>100
Commercial maintenance business (MRO)	8	8	0	2.6
Total research and development expenses	**186**	**214**	**–28**	**–13.3**
less: customer-funded expenses	33	31	2	5.8
Company-funded expenses	**153**	**183**	**–30**	**–16.5**
Expenditure meeting recognition criteria for intangible assets				
less: commercial and military engine business (OEM)	56	80	–24	–30.2
less: commercial maintenance business (MRO)	2	2	–1	–28.6
Amortization of capitalized development costs	24	22	2	8.3
Development costs recognized in adjusted EBIT	**119**	**123**	**–4**	**–2.9**
thereof: amounts accounted for as revenue or cost of goods sold	58	57	2	2.8
thereof: amounts accounted for in profit or loss as development costs	61	66	–5	–7.8

Research and development expenses amounted to 4.7% of revenue, somewhat higher than the prior-year level of 4.6%.

Externally funded development expenses principally comprise public grants for research and development for quieter and more fuel-efficient engines.

Company-funded development expenses are funded out of the group's own resources. If the criteria for capitalization are met, the development expenses are recognized as internally generated intangible assets or as other assets if consideration is paid (acquired development work), and amortized over their useful life through revenue or the cost of goods sold. The company-financed expenses are disclosed *in the notes to the consolidated financial statements in „Accounting policies and principles - Acquired development work" and „Note 3. Research and development expenses."*

Investment in intangible assets in the OEM segment (commercial and military engine business) which meets the capitalization criteria relates to the engine programs in the Pratt & Whitney GTF™ family of engines and the PW800.

The amortization of capitalized development costs recognized in the revenue and costs of goods sold relates principally to the Pratt & Whitney GTF™ family of engines.

Economic report

Macroeconomic conditions

The Covid-19 pandemic led to a sharp drop in global economic output in 2020. The slump in growth reached its peak in China in the first quarter and in most other countries in the second quarter, followed by an improvement in the summer when lockdowns were eased and businesses reopened. However, the recovery lost momentum after a few months in the fall, when there was a renewed outbreak of infections in Europe and the USA.

The IMF puts the drop in global GDP in 2020 at 4.4 % while the OECD puts it at 4.2 %. These figures mask enormous differences between different regions. The US economy shrank by 3.7 %, while GDP in the euro zone contracted by 7.5 %. The recession was more pronounced in many developing countries and emerging markets, for example, India and some Latin American countries. Only China posted a positive growth rate in 2020 (1.8 %). Thanks to China's strict and early action to contain Covid-19 and high infrastructure investment, GDP here rose strongly and was back at the pre-pandemic level by the end of the second quarter.

According to the OECD, global GDP would have shrunk even more significantly without the unprecedented economic relief and monetary support in all economies. Many central banks have announced monetary easing as a signal to investors that interest rates will remain low for a long time.

Sector-specific conditions within the aviation industry

Global air traffic dropped in February 2020 as the virus spread in Asia. This trend continued apace in March in Europe, the Middle East and North America. In April and May, air travel was virtually halted worldwide. Essentially, there were only cargo flights, repatriation flights, and domestic flights; only a few international routes were in service. A tentative recovery started in June with the gradual removal of travel restrictions. As a result of a second wave of infections and the related measures to check the spread of the virus, the positive trend was halted in the fall.

According to an estimate by the International Air Transport Association (IATA), global passenger volumes slumped by 66 %. Domestic air travel dropped 49 % and were less affected than international air travel , which fell by 76 %. The picture was similar for passenger aircraft movements, the most significant influence on demand for maintenance and spare parts, although the downturn was slightly lower at 48 %. The number of passenger flights in single-aisle aircraft declined by 48 % in 2020, while twin-aisle aircraft registered a drop of 53 % (Source: Flightradar 24).

Air cargo volume was also lower than in 2019. However, the situation in this segment was far better than in the passenger business. According to IATA, global cargo traffic dropped by 12 %. Since cargo capacity on passenger flights was not available, the number of cargo aircraft movements actually increased by 16 % year-on-year. MTU benefited disproportionately from this positive trend as 22 % of its engine fleet is used in the cargo sector (mainly the CF6-80C and PW2000 engines). Industry-wide, cargo aircraft account for 14 % of the global fleet.

As a result of the crisis, airline revenue shrank by 61 % from U.S.$838 billion to U.S.$328 billion according to IATA. In total, the airlines reported a net loss of U.S.$119 billion. The only mitigating factors here were high cargo revenue and low energy prices. In 2020, the average oil price was U.S.$ 42 per barrel (source: U.S. Energy Information Administration), compared with U.S.$64 in 2019. That represents a significant financial benefit for airlines and also improves the competitiveness of older aircraft.

Airbus and Boeing reduced output in response to the crisis, the distressed state of many airlines, and the postponement of orders.

In 2020, Airbus and Boeing only delivered 687 aircraft, compared with 1,243 in 2019. Airbus has reduced production by around 40 %. It only produced 40 A320 mid-haul jets a month instead of 60. Its competitor Boeing reduced production by a similar amount.

At the end of December 2020, the aircraft manufacturers had 12,500 orders on their books (source: Cirium Fleets Analyzer. For comparison, there were around 13,600 aircraft orders on the books before the outbreak of the coronavirus pandemic.

Overall assessment of the business environment

The Covid-19 pandemic led to a sharp drop in global economic output in 2020. The IMF puts the drop in global GDP in 2020 at 4.4 % while the OECD puts it at 4.2 %.

The aviation industry was particularly badly affected by the global restrictions to contain the virus. Global passenger traffic slumped by 66 % in 2020, while the number of passenger aircraft movements dropped by 48 %. Air cargo was less affected, with a drop of 12 %. In fact, the number of movements by cargo aircraft increased by 16 %.

The crisis roughly halved airline revenue. In total, the airlines reported a net loss of U.S.$119 billion. Airbus and Boeing reduced production in response to the distressed situation at many airlines and the postponement of orders. In 2020, Airbus and Boeing only delivered 687 aircraft, compared with 1,243 in 2019. Despite cancellations, the order backlog remained high at 12,500 aircraft.

Financial situation

The following explanatory comments and analyses are based on the audited MTU consolidated financial statements for the fiscal years ending December 31, 2020 and 2019. The consolidated financial statements were drawn up in accordance with the International Financial Reporting Standards (IFRSs) issued by the International Accounting Standards Board (IASB), to the extent that these have been adopted by the European Union.

In accordance with IFRS requirements, new and revised standards and interpretations were applied for the first time in the financial statements for 2020. Their impact on the net assets, financial position and results of operations of the group are described in detail in the *Notes to the consolidated financial statements under "Accounting standards, interpretations, and amended standards and interpretations applied for the first time in fiscal year 2020."*

The exchange rates used for converting the MTU Group's key foreign currencies into euros are the following official rates set by the European Central Bank:

[T14] Foreign currency exchange rates

Currency	ISO code	Rate at reporting date		Average rate	
		Dec. 31, 2020 € 1 =	Dec. 31, 2019 € 1 =	2020 € 1 =	2019 € 1 =
U.S. dollar	USD	1.2271	1.1234	1.1422	1.1195
Canadian dollar	CAD	1.5633	1.4598	1.5300	1.4855
Chinese renminbi	CNY	8.0225	7.8205	7.8747	7.7355
Polish zloty	PLN	4.5597	4.2568	4.4430	4.2976

Results of operations

Group

To secure the long-term earnings power of MTU, which has been weakened by the coronavirus pandemic, the company initiated extensive cost-saving programs, utilized short-time working and introduced restructuring measures which will reduce personnel capacity by between ten and 15 % by the end of 2021.

[T15] Consolidated income statement

			Change against previous year	
in € million	2020	2019	in € million	in %
Revenue	**3,977**	**4,628**	**–652**	**–14.1**
Cost of goods sold	–3,484	–3,697	213	5.8
Gross profit	**492**	**931**	**–439**	**–47.2**
Function costs	–230	–226	–5	–2.0
Earnings before interest and taxes (EBIT)	**262**	**706**	**–444**	**–62.9**
Net financial income/expense	–67	–39	–28	–71.6
Earnings before income taxes	**195**	**667**	**–472**	**–70.8**
Income taxes	–48	–178	131	73.3
Net income	**147**	**488**	**–341**	**–69.8**
Basic earnings per share (in €)	2.63	9.23	–6.60	–71.5
Diluted earnings per share (in €)	2.59	8.46	–5.87	–69.4

Revenue

The decrease in revenue is largely attributable to the development in the commercial and military engine business (OEM). Revenue in this segment (before consolidation) decreased by €461 million, from €1,996 million in the previous year to €1,535 million. The significant decline in revenue in the OEM segment was due to sharp drops in the spare parts business and commercial series business compared with the previous year. The commercial maintenance business (MRO) also saw a drop of €189 million in revenue (before consolidation), from the previous year's figure of €2,711 million to €2,522 million. The reduction in revenue in the core MRO business was largely offset by the retrofit program for the Geared Turbonfan™. As forecast, the drop in revenue was limited to the mid single-digit percentage range. The GTF retrofit program comprises warranty work for the PW1100G-JM.

Cost of goods sold and gross profit

The cost of goods solid declined as a result of the reduced business volume. However, as a result of restructuring expenses of €33 million and impairment losses on assets totaling €73 million, the decline was below the percentage reduction in revenue. Combined with the decline in revenue, this development reduced the gross profit. Consequently, the gross margin, which is defined as the ratio of revenue less cost of goods sold to revenue, declined from 20.1 % in the previous year to 12.4 % in the reporting period. This development is attributable, in particular, to the pandemic-induced drop in demand, the realized product mix in the OEM and MRO segments, the restructuring expenses and the impairment losses on assets. To compensate for the impact on the gross margin, the company initiated a cost-cutting drive in the reporting period, reduced, above all, the credit balances on employees' time accounts. In addition, short-time working was used. Since billing in U.S. dollars is customary in the aviation sector, the development of the U.S. dollar exchange rate, which averaged U.S.$1.14/€ in 2020 compared with U.S.$1.12/€ in the previous year, adversely affected revenue and, in view of the proportion of the cost of goods sold denominated in currencies other than the U.S. dollar, the Group's gross margin. This was offset by the positive effect of gains on the measurement of net operating liabilities denominated in U.S. dollars, reflecting the change in the exchange rate in the year under review, from U.S.$1.12/€ on January 1, 2020 to U.S.$1.23/€ as of the reporting date.

Reconciliation to adjusted key performance figures
The reconciliation serves to factor special items out of the key earnings figures of the group and its business segments. In this way, the success of managing operating activities is measured. The adjusted earnings figures furthermore support comparability over time, and between MTU and other companies.

MTU utilizes the following adjusted key performance figures in its financial reports: adjusted earnings before interest and taxes (adjusted EBIT), the adjusted EBIT margin, and adjusted net income. The earnings figures do not come under the provisions of the International Financial Reporting Standards (IFRSs); they are to be seen as an addition to the key financial indicators reported pursuant to IFRS.

In the interests of ensuring comparability of the EBIT figure, it is regularly adjusted for the following special items. Firstly, the contributions resulting from the "effects from purchase price allocation" and the "effects from the increase in the stake in IAE-V2500." As of January 1, 2004, MTU passed into the ownership of Kohlberg Kravis Roberts & Co. Ltd. (KKR), following the latter's purchase of 100 % of the MTU shares from the then DaimlerChrysler AG. In the context of the acquisition, assets, liabilities and contingent liabilities were identified in accordance with IFRS 3 and measured at fair value. Since then, the identified intangible assets, in particular, have resulted in substantial scheduled amortization.

The latter are referred to collectively as "effects from purchase price allocation." The contributions from the "effects from an increase in the stake in IAE-V2500" result from the increase in the stake in the V2500 program in 2012, which is capitalized as an acquired program asset and is accounted for as a reduction of revenue over its estimated economic life of 25 years. In addition, adjustments are made for special items resulting from extraordinary effects (special items) resulting from impairment losses (IAS 36) and accrued restructuring expenses (IAS 37).

Similarly, the effect of special items is eliminated from earnings before income taxes. To establish adjusted earnings before income taxes, net interest income/expense and the interest shares in other financial income/expense connected with provisions for pensions and liabilities from pensions and plan assets are added to adjusted EBIT. All other components of financial income/expense that are influenced by the U.S. dollar exchange rate, such as the effects of exchange-rate hedging, are adjusted.

The adjusted amount of earnings before income taxes is used to determine the adjusted amount of net income. The normalized income taxes are calculated on the basis of the expected average tax rate for the group (fiscal year 2020: 29 %; fiscal year 2019: 29 %). The profit/loss of companies accounted for using the equity method does not form part of the tax basis.

[T16] Reconciliation of the consolidated income statement

in € million	2020 As reported	2020 Non-recurring items	2020 After adjustment	2019 As reported	2019 Non-recurring items	2019 After adjustment
Revenue	**3,977**		**3,977**	**4,628**		**4,628**
Cost of goods sold	–3,484		–3,484	–3,697		–3,697
thereof: special item depreciation/amortization effect of purchase price allocation		21	21		21	21
thereof: special item increase in the stake in V2500		27	27		30	30
thereof: special item impairment losses on program assets		73	73			
thereof: special item restructuring expenses		33	33			
Gross profit	**492**	**154**	**646**	**931**	**51**	**983**
Research and development expenses	–61		–61	–66		–66
Selling expenses	–146		–146	–119		–119
General administrative expenses	–79		–79	–85		–85
Other operating income and expenses	–14		–14	–39		–39
Profit/loss of companies accounted for using the equity method	69		69	80		80
Profit/loss of equity investments	1		1	3		3
Earnings before interest and taxes (EBIT)	**262**	**154**	**416**	**706**	**51**	**757**
Net interest income/expense	–20		–20	–17		–17
Other financial income – interest included in the measurement of pensions	–9		–9	–15		–15
Other financial income/expense – miscellaneous (e.g. measurement of foreign currency holdings)	–38	38		–7	7	
Earnings before income taxes	**195**	**192**	**387**	**667**	**58**	**725**
Income taxes	–48		–48	–178		–178
Adjustment based on normalized income taxes		–45	–45		–9	–9
Net income	**147**	**147**	**294**	**488**	**49**	**538**

Earnings before interest and taxes (EBIT)

As a result of the drop in revenue, idling costs in connection with the production restrictions in the reporting period, the restructuring expenses of €33 million and the impairment losses of €73 million on assets, the decline in the cost of goods sold less than the percentage drop in revenue. This had a negative effect on earnings, which was compounded by the decrease in the profit/loss of companies accounted for using the equity method. In particular, this led to a year-on-year deterioration in both earnings before interest and taxes (EBIT) and adjusted earnings before interest and taxes (adjusted EBIT).

Net financial income/expense

Net financial income/expense deteriorated in the reporting period. This was mainly due to foreign currency measurement effects, which were partly offset by lower interest cost on pension provisions.

Earnings before taxes (EBT)

In particular, pressure on the operating performance as a result of the coronavirus crisis and the development of the U.S. dollar exchange rate had a negative impact on earnings before taxes.

Income taxes

Income tax expense amounted to €48 million in the fiscal year 2020 (previous year: €178 million). The effective group tax rate, calculated on the basis of earnings before taxes, was 24.4 % (previous year: 26.7 %). Information on the reconciliation of the expected tax expense to the actual tax expense is provided in *Note 10 "Income taxes" in the Notes to the consolidated financial statements*.

Net income

Net income decreased by €341 million (69.8 %) to €147 million (previous year: €488 million) and, correspondingly, adjusted net income by €244 million (45.2 %) to €294 million (previous year: €538 million).

Consolidated statement of comprehensive income

In the consolidated statement of comprehensive income, net income is reconciled with the total comprehensive income for the period of €163 million (previous year: €422 million).

The income and expense items directly recognized in other comprehensive income in the reporting period, net of deferred taxes, mainly comprised the increase of €106 million in the fair value of hedging instruments (previous year: decline in fair values of €12 million), which was offset by exchange rate losses in the translation of foreign businesses amounting to €60 million (previous year: gain of €14 million) and actuarial losses on pension obligations and plan assets totaling €32 million (previous year: €66 million).

Earnings per share

Basic earnings per share amounted to €2.63 (previous year: €9.23). Taking into account the potential issue of shares resulting from convertible bonds, diluted earnings per share came to €2.59 (previous year: €8.46).

Net profit available for distribution

For an explanation of how the net profit available for distribution is determined, please refer to *Notes to the consolidated financial statements in Section VII. "Determination of the net profit available for distribution on the basis of the annual financial statements."*

Order backlog

MTU's order backlog consists of firm customer orders that commit the group to delivering products or providing services, plus the contractual value of service agreements. As of December 31, 2020, the order backlog (after consolidation) amounted to €18.6 billion (previous year: €19.8 billion). The drop in the order backlog only affected the commercial engines business in the OEM segment and was due to production cuts by major aircraft manufacturers.

OEM segment

Revenue

In the OEM business, revenue (before consolidation) was lower than in the previous year.

Revenue in the commercial engine business fell by €485 million (31.6 %) to €1,052 million. The highest revenue generators in the reporting period were the PW1100G-JM for the A320neo and the V2500 for the classic A320 family.

Revenue in the military engine business was rose by €24 million (5.3 %) year-on-year from €459 million to €483 million. Here, the main source of revenue in the reporting period was the EJ200 engine for the Eurofighter, the RB199 for the Panavia Tornado and the TP400-D6 for the A400M military transporter.

[T17] Revenue and adjusted EBIT (OEM)

			Change against previous year	
in € million	2020	2019	in € million	in %
Revenue	**1,535**	**1,996**	**–461**	**–23.1**
Cost of goods sold	–1,248	–1,380	132	9.6
Gross profit	**286**	**615**	**–329**	**–53.4**
Gross margin (in %)	18.7	30.8		
Adjusted EBIT	**280**	**496**	**–216**	**–43.6**
Adjusted EBIT margin (in %)	18.2	24.8		

Adjusted earnings before interest and taxes (adjusted EBIT)

Adjusted EBIT was adversely affected by lower sales of commercial engines due to production cuts at Airbus and Boeing and the realized production mix. In particular, earnings were reduced by lower series sales of the V2500 program and the drop in demand for spare parts. By contrast, the military engine business made a largely constant contribution to earnings. Moreover, changes in the U.S. dollar exchange rate in the reporting period reduced the earnings impact of translating liabilities denominated in foreign currencies. Overall, adjusted EBIT deteriorated year-on-year. In line with the development of adjusted EBIT, EBIT decreased to €137 million in the reporting period, compared with €447 million in the previous year. EBIT was additionally weighed down by restructuring expenses of €24 million and impairment losses of €73 million recognized on assets. Information on adjusted earnings is provided under *Reconciliation to adjusted key performance figures in the "Results of operations" section*.

Capital expenditure

Capital expenditure on intangible assets came to €42 million (previous year: €78 million) and essentially related to the capitalization of self-generated development work for the Pratt & Whitney GTF™ engines and for the GE9X and PW800 engine programs. Capital expenditure on property, plant and equipment amounted to €160 million (previous year: €209 million) and related principally to other equipment, operational and office equipment, construction in progress to expand production capacities, and land and buildings due to recognition of right-of-use assets in connection with the leasing of office space. Expenditure on program assets and acquired development work at €12 million (previous year: €16 million) related principally to the Pratt & Whitney GTF™ engine family.

Employees

The average number of employees in the OEM segment increased by 83 to 6,581 (previous year: 6,498). In light of the coronavirus crisis, the planned increase in capacity was scaled back.

MRO segment

Revenue

In the commercial maintenance business, revenue (before consolidation) was lower than in the previous year. After adjustment for currency effects, the decline in the MRO segment was around 4 %.

The sharp drop in revenue in the MRO segment's core business that is not tied to OEMs was largely offset by a considerable increase in revenue from orders placed by OEMs, especially relating to the GTF retrofit program and other maintenance work for the PW1100G-JM program. The principal revenue drivers for the core MRO business were the V2500 engine for the A320ceo and the CF6-80 engine program.

[T18] Revenue and adjusted EBIT (MRO)

in € million	2020	2019	Change against previous year in € million	Change against previous year in %
Revenue	**2,522**	**2,711**	**–189**	**–7.0**
Cost of goods sold	–2,317	–2,396	79	3.3
Gross profit	**205**	**315**	**–110**	**–34.8**
Gross margin (in %)	8.1	11.6		
Adjusted EBIT	**136**	**261**	**–125**	**–47.8**
Adjusted EBIT margin (in %)	5.4	9.6		

Adjusted earnings before interest and taxes (adjusted EBIT)

Due to the fact that, driven by residual costs and restructuring expenses, the cost of goods sold did not decline as fast as revenue, the gross margin deteriorated from 11.6 % in the previous year to 8.1 % in the reporting period. As a result, adjusted EBIT and the adjusted EBIT margin were lower than in the previous year. EBIT developed in line with adjusted EBIT, decreasing to €125 million in the reporting period compared with €259 million in the previous year. Information on adjusted earnings is provided under Reconciliation to adjusted key performance figures in the *"Results of operations"* section.

Capital expenditure

Capital expenditure on intangible assets and property, plant and equipment decreased by €67 million to €125 million (previous year: €192 million). This was attributable to lower capital expenditure as a result of the massive global reduction in aircraft movements due to the coronavirus crisis. Nevertheless, MTU invested in the expansion of capacities and the replacement of equipment. This increased land and buildings and technical equipment, plant and machinery. Furthermore, MTU continued its investment in the growing business with short-term engine leasing. Information about capital expenditure on financial assets is provided under *"Financial position."*

Employees

The average number of employees in the MRO segment increased by 136 to 3,965 (previous year: 3,829). In light of the coronavirus crisis, the planned increase in capacity was scaled back.

Financial position

To safeguard financial stability, which had been weakened by the impact of the coronavirus pandemic, capital expenditure was scaled back in the reporting period. MTU increased its liquidity reserves considerably in 2020: it raised an existing credit facility by €100 million to €700 million, took out a €100 million promissory note and successfully placed a corporate bond with a nominal value of €500 million.

Principles and objectives of financial management

The main objectives of financial management are to ensure that the group always has access to adequate liquidity, to avoid financial risks, and to safeguard financial flexibility. The Treasury department issues policies for managing interest rate, currency management and counterparty risks, financing, investing surplus liquidity and selecting suitable banks centrally for the Group.

As a rule, the cash flow from operating activities in the business segments represents the group's main source of liquidity. Liquidity forecasts are based on the Group's operational and strategic planning, flanked by a monthly rolling (short-term) liquidity forecast. Except where there are conflicting regulatory or tax requirements, the Group is financed centrally via MTU Aero Engines AG, which provides the necessary funding for its subsidiaries. Moreover, the subsidiaries invest their surplus liquidity with MTU Aero Engines AG. This reduces the need for external borrowing and thus cash outflows for interest payments.

The limits set for counterparties are based on their long-term credit rating, their historical probability of default derived from this, and the size of the company. The limits set also support risk-based diversification of the credit default risk in connection with the investment of funds and the use of derivatives. The minimum requirement for treasury counterparties is an investment-grade rating. Funds are invested primarily in euro-denominated sight and time deposits, money market funds and commercial paper. Foreign currency investments are only permitted up to the level of the surplus liquidity in the respective currency; speculative investment to improve the interest yield is not permitted. The term of investments is determined by liquidity planning. Apart from unavoidable negative interest rates in certain currencies, the investment policy is geared to preserving value and the liquidity of the investments. The risk of devaluation of the amounts invested is negligible due to the very short nature of such investments.

MTU's financing strategy basically aims to ensure an appropriate financial structure in order to maintain the investment-grade credit rating.

To achieve this target, MTU uses a variety of internal and external financing instruments, including occupational pension plans, bonds, credit facilities and leasing models. For information on the Group's capacity to raise funds through authorized and contingent capital, please refer to *Note 24 "Equity" in the Notes to the consolidated financial statements*.

The *Risk report* and *Note 37 "Financial risk" in the Notes to the consolidated financial statements* provide information on MTU's approach to the financial risks inherent in financing and measurement, the methods used to hedge interest rate and currency risks, and price, default and liquidity risks.

Financing instruments

[T19] Material external financing sources

Type of financing	Maturity date	Currency	Interest rate
Registered bond	June 12, 2028	€	Fixed interest rate
Corporate bond	July 1, 2025	€	Fixed interest rate
Bond	July 1, 2025	€	3-month Euribor + margin
Promissory note	June 1, 2021	€	3-month Euribor + margin
Convertible bond 2016	May 17, 2023	€	Fixed interest rate
Convertible bond 2019	March 18, 2027	€	Fixed interest rate
Note purchase agreement	March 27, 2021	€	6-month Euribor + margin
Revolving credit facility	Oct. 28, 2023	€	Euribor rate + margin
Money market facility	Daily (at call)	€	Fixed interest rate
Lease liabilities	Various	€	Fixed interest rate

The unutilized revolving credit facility is available in full until the due date and gives MTU additional financial headroom.

The factors considered when choosing financing instruments are flexibility, credit terms, the profile of maturity dates, diversification of the investor base and borrowing costs. Material sources of financing include standard market covenants requiring the group to ensure that its performance indicators remain within defined limits. MTU complied with the contractual obligations arising from such covenants as of December 31, 2020, and as of the end of every quarter of the reporting year. Further information on financing instruments is provided in *Note 28 "Financial liabilities" in the Notes to the consolidated financial statements*. Material agreements in relation to a change of control subsequent to a takeover bid are set out in the section titled *"Disclosures under takeover law."*

As in previous years, MTU did not engage in any off-balance-sheet financing transactions in the reporting period, such as the sale of receivables in connection with asset-backed securities or obligations toward special-purpose entities.

Net financial debt

Net financial debt serves as an indicator of the MTU Group's financial situation and is defined as the difference between gross financial debt and current financial assets. Net financial debt was lower than on December 31, 2019.

[T20] Net financial debt

in € million	Dec. 31, 2020	Dec. 31, 2019	Change against previous year in € million	Change against previous year in %
Bonds and notes	603	100	502	>100
Convertible bonds	538	562	–25	–4.4
Promissory note	100		100	
Other financial liabilities to banks	30	40	–10	–25.0
thereof: note purchase agreement	30	30	–0	–0.1
thereof: other liabilities to banks		10	–10	–100.0
Lease liabilities	177	147	30	20.6
Financial liabilities arising from acquisition of stakes in programs	138	300	–162	–54.0
thereof: financial liabilities arising from increase in the stake in IAE-V2500	132	271	–138	–51.0
Gross financial debt	**1,586**	**1,150**	**436**	**37.9**
less:				
Cash and cash equivalents	773	139	633	>100
Loans to third parties	33	50	–17	–34.1
Financial assets	**805**	**189**	**616**	**>100**
Net financial debt	**781**	**961**	**–180**	**–18.7**

Bonds and notes

Registered bond

MTU AG issued a registered bond effective June 12, 2013, for a total nominal amount of €100 million. The registered bond matures on June 12, 2028, and is subject to interest of 3.55 % p.a., payable in arrears on June 12 of each year, for the first time on June 12, 2014. The registered bond, net of transaction costs and including a discount of €3 million, is measured at amortized cost.

Corporate bond

On July 1, 2020, MTU Aero Engines AG issued an unsecured corporate bond with a nominal value of €500 million. The bond matures in five years on July 1, 2025 and is available in units of €1,000. The coupon is 3.0 % p.a., payable annually in arrears. The bond is listed on the regulated market on the Luxembourg Stock Exchange.

Promissory note

On May 6, 2020, MTU Aero Engines AG issued a promissory note with a nominal value of €100 million and a maturity date of June 10, 2021. This has a variable interest rate corresponding to the three-month EURIBOR rate plus 1.7 %, with a minimum interest rate of 1.7 %.

Convertible bonds

In 2016, MTU Aero Engines AG issued a senior unsecured convertible bond for a total nominal amount of €500 million. This bond is convertible into new and/or existing registered non-par-value common shares in MTU. The convertible bond has an original maturity of seven years and is divided into units of €100,000. It bears a nominal interest rate of 0.125 % p.a., payable annually in arrears. Bondholders have been entitled to convert their convertible bonds into common shares of MTU Aero Engines AG at any time since June 27, 2016. The initial conversion price was set at € 124.7701, which represents a premium of 50 % above the reference rate at the bond issue date.

Under the terms of issue of the convertible bond, MTU has the right to recall the issued bond units at their nominal value (plus accrued unpaid interest) at any time on or after June 16, 2020, subject to a period of notice of minimum 30 days and maximum 60 days, either (i) if the quoted price of the common share rises to or above 130 % of the applicable conversion price over a defined period, or (ii) if no more than 20 % of the nominal value of the convertible bond issue is outstanding. In the event of such cancellation by MTU, and within the above-mentioned notice period, the bondholders have the right to request that MTU convert their bonds into shares, rather than repurchase them.

On September 10, 2019, MTU Aero Engines AG bought back from its creditors a nominal amount of €275 million of the convertible bond issued in 2016, which it canceled with value date September 30, 2019. Moreover, in 2020 MTU Aero Engines AG received further conversion notices from creditors of this convertible bond with a nominal amount of €29 million (previous year: €135 million) The nominal amount outstanding was thus €61 million as of December 31, 2020 (previous year: €90 million).

In 2019, MTU Aero Engines AG issued a senior unsecured convertible bond for a total nominal amount of €500 million. This bond is convertible into registered non-par-value shares in MTU. The convertible bond has an original maturity of seven-and-a-half years and is divided into units of €100,000. It bears an interest rate of 0.05 % p.a., payable annually in arrears.

Bondholders will be entitled to convert their certificates into common shares in MTU Aero Engines AG starting on September 18, 2024. The initial conversion price was set at €378.4252, which represents a premium of 55 % on the reference rate.

Under the terms of issue of the convertible bond, MTU has the right to recall the issued bond units at their nominal value (plus accrued unpaid interest) at any time on or after April 8, 2025, subject to a period of notice of minimum 30 days and maximum 60 days, either (i) if the quoted price of the common share rises to or above 130 % of the applicable conversion price over a defined period, or (ii) if no more than 20 % of the nominal value of the convertible bond issue is outstanding. In the event of such cancellation by MTU, and within the above-mentioned notice period, the bondholders have the right to request that MTU convert their bonds into shares, rather than repurchase them.

Other financial liabilities to banks

Note purchase agreement

MTU Aero Engines AG issued a note purchase agreement on March 28, 2014, for a total nominal amount of €30 million and with a maturity date of March 27, 2021. The note purchase agreement has a variable interest rate corresponding to the six-month Euribor rate plus a percentage margin. The initial interest rate was 1.72 %. The interest is calculated and paid twice a year, in March and September.

Revolving credit facility

This credit facility was agreed with five banks and was €600 million in the previous year. On May 11, 2020 it was increased by €100 million to €700 million.

This increase runs for one year and can be extended twice by 6 months in each case at the company's request. The original €600 million revolving credit facility still runs until October 28, 2023. €35 million of this credit facility had been drawn down in the form of guarantees as of December 31, 2020 (previous year: €36 million). The remaining available amount secures the mid-term financial flexibility of the MTU group. The credit utilized is subject to interest at the customary market reference rate plus an additional margin. The unused amount of the revolving credit facility is subject to a loan commitment fee.

Lease liabilities

Lease liabilities relate to liabilities under leases recognized using the effective interest rate method.

For information on their accounting treatment and a summary of the corresponding capitalized lease assets, please refer *Note 38 "Leases" in the Notes to the consolidated financial statements*.

Financial liabilities from the increase in the stake in IAE-V2500

The purchase price agreement signed by MTU in the fiscal year 2012 in order to increase its stake in the V2500 engine program by 5 percentage points to 16 % made it necessary, among other things, to recognize a deferred financial liability contingent upon the number of flight hours performed over the next 15 years by the fleet of V2500 engines in service at the time of the stake increase. This liability declined significantly in the reporting period. This was due to the favorable development of the U.S. dollar and the expected reduction in flight hours by the relevant V2500 fleet because the pandemic-related restrictions on air traffic have increased the rate at which older parts of the fleet are being taken out of service. The liability matures in 2027 and has a nominal amount of U.S.$175 million (previous year: U.S.$335 million), which translates into €143 million (previous year: €298 million) at the exchange rate prevailing at the reporting date. As of December 31, 2020, the carrying amount of the purchase price liability was €132 million (previous year: €271 million) and is included in a hedging relationship for revenue-generating transactions in U.S. dollar.

Financial liabilities arising from new stakes in engine programs

The financial liabilities arising from increased or new stakes in engine programs mainly relate to program lifetime-related payments for the acquisition of shares in commercial engine programs, in particular the Pratt & Whitney GTF™ engine family and the PW800, which are deemed to represent financing agreements in view of their long-term nature. For more information on program liabilities, please refer to *Note 28 "Financial liabilities arising from increased or new stakes in engine programs" in the Notes to the consolidated financial statements*.

Contingent liabilities and other financial obligations

As of the reporting date, contingent liabilities amounted to €139 million (previous year: €142 million) and mainly related to the assumption of guarantees and warranties. As part of its ordinary activities the group furthermore incurred other financial liabilities comprising purchase commitments and future cash outflows for leases. These are additional to the liabilities reported in the consolidated balance sheet at the end of the reporting period. They relate to contractual obligations to acquire intangible assets, property, plant and equipment, and leased items. Please refer to *Note 39 "Contingent liabilities and other financial obligations" in the Notes to the consolidated financial statements* for detailed information on contingent liabilities and other financial obligations.

Capital expenditure

[T21] Capital expenditure by class of asset

in € million	2020	2019	Change against previous year in € million	Change against previous year in %
Intangible assets	44	129	–85	–66.1
Property, plant and equipment	283	350	–67	–19.2
Financial assets	125	144	–19	–13.2
Program assets and acquired development work	12	16	–4	–22.7
Total capital expenditure	**463**	**638**	**–175**	**–27.4**

Capital expenditure on intangible assets

Capital expenditure on intangible assets in 2019 includes an amount of €40 million (previous year: €76 million) relating to self-generated development work on engine programs in which MTU holds a stake. Detailed information on capital expenditure on intangible assets is provided in *Note 14 "Intangible assets" in the Notes to the consolidated financial statements*.

Capital expenditure on property, plant and equipment

Additions in the fiscal year 2020 mainly comprised land and buildings totaling €79 million (previous year: €20 million), other equipment, operational and office equipment totaling €79 million (previous year: €141 million) and advance payments and construction in progress in the reporting period amounting to €90 million (previous year: €150 million). The reasons for the year-on-year decline were a reduction in capital expenditure to compensate for the business development resulting from the massive worldwide drop in aircraft movements due to the coronavirus crisis. Capital expenditure relates to expansion of production capacities, especially at the German sites. Further, additions to right-of-use assets for leased items amounted to €88 million in the reporting period (previous year: €54 million). For further information on capital expenditure on property, plant and equipment and the application of IFRS 16, please refer to *Note 15 "Property, plant and equipment"* or *Note 38 "Leases" in the Notes to the consolidated financial statements*.

Capital expenditure on financial assets

Capital expenditure on financial assets, which totaled €125 million in 2020, includes an amount of €114 million (previous year: €141 million) relating to additions for companies accounted for using the equity method, investment in connection with MTU's stake in the IAE-PW1100G-JM engine leasing business and expansion of EME Aero, the joint venture launched in conjunction with Lufthansa Technik. Furthermore, the additions include the profit shares resulting from the profit retention of equity investments in associates (especially MTU Maintenance Zhuhai) and joint ventures. Additional information on financial assets is included in *Note 16 "Financial assets" in the Notes to the consolidated financial statements*.

Capital expenditure on program assets and acquired development work

Capital expenditure on other assets due to acquired program assets and acquired development work relates mainly to the engine programs of the Pratt & Whitney GTF™ engine family. Additional information on other assets is included in *Note 17 "Acquired program assets, development work and other assets" in the Notes to the consolidated financial statements*.

Liquidity analysis

One of MTU's key performance indicators is free cash flow. MTU determines its free cash flow by combining its cash flow from operating activities with its cash flow from investing activities and eliminating components of the latter (non-recurring cash flows) that lie outside the operational management of the core business.

To arrive at the free cash flow of €105 million (previous year: (€358 million), these non-recurring cash flows were therefore eliminated from the cash flow from investing activities. In the reporting period, these non-recurring cash flows comprised refunds for prepayments made in previous periods and additional payments made to acquire program stakes in a net amount of €–25 million (previous year: acquisition payments of €29 million) and cash flows relating to interest-bearing aircraft and engine financing agreements in the amount of €–11 million (previous year: €–31 million).

[T22] Consolidated cash flow statement (abridged)

			Change against previous year	
in € million	2020	2019	in € million	in %
Cash flow from operating activities	386	832	–446	–53.6
Cash flow from investing activities	–245	–472	227	48.0
+ Non-recurring cash flows	–36	–2	–34	<-100
Free cash flow	**105**	**358**	**–254**	**–70.8**
– Non-recurring cash flows	36	2	34	>100
Cash flow from financing activities	504	–324	827	>100
Translation differences	–11	4	–15	<-100
Change in cash and cash equivalents	**633**	**40**	**593**	**>100**
Cash and cash equivalents at the beginning of the reporting period	139	99		
Cash and cash equivalents at the end of the reporting period	773	139		

Cash flow from operating activities

The cash flow from operating activities in the reporting period was lower than in the previous year. This negative trend was driven by the coronavirus-related drop in business and earnings. This was compounded by the payment of refund liabilities.

Cash flow from investing activities

Capital expenditure on intangible assets recognized in the income statement amounted to €42 million (previous year: €128 million) and mainly comprised capital expenditure on development assets for the Pratt & Whitney GTF™ engine family and the GE9X program. Capital expenditure on property, plant and equipment, excluding the proceeds from asset disposals, amounted to €179 million, compared with €299 million in the previous year. The reason for the year-on-year decline was the reduction in capital expenditure to compensate for the effects of the worldwide massive worldwide drop in aircraft movements due to the coronavirus crisis. The capital expenditure relates to the expansion of MTU's production capacities, especially at its sites in Germany. The net gain/loss on financial assets was mainly due to capital contributions in respect of equity investments and the repayment of loans provided as part of aircraft financing activities. Expenditure on program assets and acquired development work was €19 million (previous year: €22 million) and related primarily to the engine programs of the Pratt & Whitney GTF™ engine family.

Cash flow from financing activities

The cash inflow in the reporting period resulted principally from the issue of a corporate bond and a promissory note, and the effective waiver of the dividend payment for 2019 in light of the pressure on the aviation industry due to the global coronavirus crisis.

Change in cash and cash equivalents

The increase in cash and cash equivalents results from the fact that the year-on-year improvement in the cash flow from financing and investing activities more than offset by the lower cash inflow from operating activities.

Net assets

Changes in balance sheet items

[T23] Consolidated balance sheet of the MTU group

	Dec. 31, 2020		Dec. 31, 2019		Change against previous year	
in € million	in € million	in %	in € million	in %	in € million	in %
Assets						
Non-current assets						
Tangible and intangible assets	2,296	28.3	2,263	29.1	33	1.5
Other assets	1,733	21.4	1,892	24.4	–158	–8.4
Total non-current assets	**4,030**	**49.7**	**4,155**	**53.5**	**–125**	**–3.0**
Current assets						
Inventories	1,278	15.8	1,279	16.5		
Receivables/other assets	2,023	25.0	2,192	28.2	–169	–7.7
Cash and cash equivalents	773	9.5	139	1.8	633	>100
Total current assets	**4,074**	**50.3**	**3,610**	**46.5**	**464**	**12.8**
Total assets	**8,104**	**100.0**	**7,765**	**100.0**	**338**	**4.4**
Equity and liabilities						
Equity	**2,635**	**32.5**	**2,421**	**31.2**	**214**	**8.8**
Non-current liabilities						
Provisions	1,047	12.9	1,002	12.9	45	4.5
Liabilities	1,454	17.9	1,128	14.5	326	28.9
Total non-current liabilities	**2,501**	**30.9**	**2,130**	**27.4**	**371**	**17.4**
Current liabilities						
Provisions/income tax liabilities	165	2.0	195	2.5	–31	–15.7
Liabilities	2,803	34.6	3,019	38.9	–216	–7.1
Total current liabilities	**2,968**	**36.6**	**3,214**	**41.4**	**–246**	**–7.7**
Total equity and liabilities	**8,104**	**100.0**	**7,765**	**100.0**	**338**	**4.4**

Assets

In the fiscal year 2020, intangible assets declined by €28 million (previous year: increased by €90 million). This was principally due to lower prepayments for intangible assets.

Property, plant and equipment rose by €61 million (previous year: €302 million), mainly as a result of capitalization of the use-of-right assets for leased items, especially land and buildings.

The decline in other non-current assets mainly resulted from the reduction in program assets for the V2500 program due to a reassessment of flight hours for the relevant engine fleet, impairment losses on program assets for engine programs where the market launch was postponed in the reporting period, and amortization of program assets relating to the Pratt & Whitney GTF™ engine family and the PW800 and GE programs. For more information on program assets, please refer to *Note 17 "Acquired program assets, development work and other assets" in the Notes to the consolidated financial statements*.

Within inventories, raw materials and supplies remained constant year-on-year at €618 million, and finished goods and work in progress were also unchanged year-on-year at €647 million.

The sales to inventory ratio was 3.1 (previous year: 4.1).

Trade receivables rose to €969 million (previous year: €923 million). Contract assets amounted to €870 million, down €177 million compared with December 31, 2019, especially as a result of the pandemic-related business trend as well as foreign currency measurement effects driven by changes in exchange rates. There were also receivables from tax authorities in respect of tax refunds amounting to €42 million (previous year: €116 million).

Cash and cash equivalents rose from €139 million in the previous year to €773 million. This item accounted for 9.5% (previous year: 1.8%) of total assets at the reporting date. For information on the cash flow statement, please refer to the section entitled *"Financial situation – Liquidity analysis."*

Equity

[T24] Changes in equity

in € million	2020	2019
As of Jan. 1	**2,421**	**2,145**
Other comprehensive income		
Financial instruments designated as cash flow hedges	106	–12
Changes in the fair value of equity investments	2	–2
Actuarial gains/losses on pension obligations and plan assets	–32	–66
Translation differences arising from the financial statements of foreign entities	–60	14
Net income	147	488
Dividend payment to shareholders of MTU Aero Engines AG/dividend payment to non-controlling interests	–7	–147
Convertible bonds	29	–23
Issue of treasury shares under the Restricted Stock Plan	5	5
Sale of treasury shares in connection with the employee stock option program (MAP)	23	19
Investment by non-controlling interests		
Total change in group equity	**214**	**277**
As of Dec. 31	**2,635**	**2,421**

Positive changes in equity

Equity increased in 2020, principally due to the net income of €147 million (previous year: €488 million) and the increase of €106 million in the fair value of hedging instruments (previous year: reduction of €12 million). Other factors were the effects of conversion of the convertible bond 2016 and the sale of treasury shares in connection with the employee stock option program.

Negative changes in equity

Negative changes in equity resulted principally from actuarial losses of €32 million (previous year: €66 million) and translation differences of €60 million (previous year: €14 million) arising from the financial statements of foreign entities. As a result of the uncertainty about the coronavirus pandemic in the reporting period, the dividend payment to shareholders of MTU Aero Engines AG for the fiscal year 2019 was only €2 million (dividend payment for 2018: €147 million).

Liabilities

Within non-current liabilities, non-current pension provisions increased by €30 million from €954 million in the previous year to €984 million due to a lower actuarial discount rate.

Non-current liabilities comprised gross financial debt amounting to €1,372 million (previous year: €1,011 million), other provisions amounting to €64 million (previous year: €48 million) and contract liabilities amounting to €10 million (previous year: €27 million). Non-current liabilities represented 17.9 % of total equity and liabilities as of December 31, 2020, which was higher than in the previous year.

Total equity and liabilities increased by €585 million in 2020 to €5,136 million (previous year: €4,551 million). This means that 127.5 % (previous year: 109.5 %) of the group's non-current assets are financed through available non-current funds.

The provisions recognized under current liabilities are pension provisions amounting to €26 million which is slightly below the previous year's level of €22 million, income tax liabilities, which were constant at €5 million, while other provisions declined by €34 million to €134 million. Current liabilities also include refund liabilities to customers amounting to €1,583 million (previous year: €1,682 million), trade payables of €169 million (previous year: €313 million), contract liabilities totaling €729 million (previous year: €680 million), gross financial debt of €288 million (previous year: €253 million), and a large number of other individual obligations.

The debt to equity ratio increased by 1.3 percentage points to 32.5 % (previous year: 31.2 %).

Financial performance indicators

At MTU's Capital Market Day in November 2019, the group provided an initial outlook on its expected business development in the reporting year. This was confirmed on February 20, 2020 in connection with the announcement of the annual results. In light of the emerging coronavirus crisis, the forecast was issued with a proviso that it might subsequently be reviewed.

Due to the development of the pandemic and its detrimental effect and uncertainties, especially for the aviation sector, the Executive Board of MTU Aero Engines AG withdrew its guidance on March 26, 2020.

New guidance was issued on July 31, 2020, and more precise details were published on October 29, 2020.

[T25] Forecast and actual results

in € million	Actual 2020	Forecast for 2020 as of Oct. 29, 2020	Forecast for 2020 as of July 31, 2020	Actual 2019
Revenue	3,977	between 4,000 and 4,200	between 4,000 and 4,400	4,628
Adjusted EBIT margin (in %)	10.5	approx. 10	between 9 and 10	16.4
Adjusted net income	294	Development in line with adjusted EBIT	Development in line with adjusted EBIT	538
Free cash flow	105	clearly positive	positive	358

Revenue forecast

On July 31, 2020 the Executive Board forecast that, as a result of Covid-19, revenue would drop to a range around €4,000 to €4,400 million (revenue in the previous year: €4,628 million). When the third quarter figures were published on October 29, 2020, a more precise range of €4,000 to €4,200 was forecast. Revenue realized at year-end 2020 was €3,977 million and therefore at the lower end of the anticipated range.

Earnings forecast

On July 31, 2020, MTU forecast a pandemic-related reduction in the ratio of adjusted EBIT to sales (adjusted EBIT margin) to between 9 and 10 %. On October 29, 2020, a more precise forecast of 10 % was issued. At the end of the year, the adjusted EBIT margin stood at 10.5 %, thus exceeding the forecast.

In its forecast as of July 31, 2020, the Executive Board anticipated that adjusted net income in 2020 would grow in line with adjusted EBIT. The forecast was reaffirmed on October 29, 2020. Adjusted EBIT fell by 45.1 % in the reporting period as a consequence of the coronavirus crisis. The 45.2 % drop in adjusted net income to €294 million in the reporting period, compared with €538 million in the previous year, was in line with expectations.

Free cash flow

Against the backdrop of the disruption to air traffic resulting from Covid-19, on July 31,2020, MTU's guidance was that it would end the year with positive free cash flow. When the third quarter results were published on October 29, 2020, MTU stated that it aimed to the year with a clearly positive free cash flow despite the challenging situation. This target was met as of December 31, 2020, with a free cash flow of €105 million.

Overall assessment of business performance in 2020

MTU's business performance was held back strongly by the coronavirus pandemic in 2020. Revenue decreased to €3,977 million, a year-on-year drop of 14.1 % (previous year: €4,628 million). The reduction in revenue came from both segments, with the OEM segment reporting 23.1 % lower revenue prior to intersegment consolidation, while revenue in the MRO segment declined by 7.0 %.

In the reporting period, MTU continued projects currently in the investment phase, but with reduced intensity. These mainly comprised development activities for engines in all commercial thrust classes and the expansion of production capacity at locations in and outside Germany.

In line with the development of revenue, MTU's operating profit declined in both the OEM segment and the MRO segment in 2020: adjusted EBIT was €416 million (previous year: €757 million). The operating margin was 10.5 % (previous year: 16.4 %).

There was a corresponding reduction in the free cash flow. Nevertheless, despite the downward pressure resulting from the pandemic-induced disruption of air traffic, MTU was able to generate a positive free cash flow of €105 million (previous year: €358 million).

Therefore, MTU essentially met the forecasts published in mid-year and the more detailed guidance issued in the course of the year.

MTU AG (disclosures in accordance with the German Commercial Code [HGB])

The management report of MTU AG and the group management report for the fiscal year 2020 have been combined in accordance with Section 315 (5) in conjunction with Section 298 (2) of the German Commercial Code (HGB). The annual financial statements of MTU AG were prepared in accordance with the provisions of the German Commercial Code (HGB) and are published together with the combined management report in the German electronic Federal Gazette ("elektronischer Bundesanzeiger").

The business environment of MTU AG corresponds for the most part with that of the group as described earlier under *"Economic Report."*

Business activities

MTU AG develops and manufactures commercial and military aircraft engines and aero-derivative industrial gas turbines. The company also carries out maintenance of military engines.

MTU has technological expertise in low-pressure turbines, high-pressure compressors and turbine center frames, and in repair techniques and manufacturing processes. It is involved in important national and international technology programs and cooperates with the top names in the industry (GE Aviation, Pratt & Whitney and Rolls-Royce).

Disclosures relating to results of operations

[T26] Income statement of MTU Aero Engines AG

			Change against previous year	
in € million	2020	2019	in € million	in %
Revenue	**3,789**	**4,087**	**–298**	**–7.3**
Cost of goods sold	–3,582	–3,811	229	6.0
Gross profit	**207**	**276**	**–69**	**–25.0**
Selling expenses	–90	–75	–15	–19.8
General administrative expenses	–49	–45	–4	–9.1
Net other operating income/expenses	–30	43	–73	<-100
Net financial income/expense	120	–79	199	>100
Earnings from ordinary operating activities	**158**	**120**	**38**	**32.0**
Tax expense	–26	–39	13	33.2
Net profit for the year	**132**	**80**	**51**	**64.1**
Withdrawal from other retained earnings		100	–100	0
Allocation to other retained earnings	–65		–65	
Net profit available for distribution	**67**	**180**	**–113**	**–62.9**

Revenue

The principal factor affecting the development of revenue was the downward pressure on the global economy as a result of the coronavirus and, especially, the reduction in air traffic. That led to a drop in demand for new aircraft. In response, manufacturers such as Airbus and Boeing cut production, which in turn reduced the volume of engines sold in the series business. Similarly, declining air traffic reduced demand for maintenance and repair services and therefore demand for spare parts. Thus resulted in a drop in deliveries and revenue in the commercial OEM business in the reporting period. Moreover, the change in the euro/U.S. dollar exchange rate from U.$.1.12 per euro to U.S.$1.23 per euro in the reporting period held back revenue in the commercial OEM business as most revenue is billed in U.S. dollars.

Cost of goods sold and gross profit

The principal influences on the cost of goods sold in a year overshadowed by the pandemic were write-downs of assets and the corresponding current asset items reflected an expected permanent reduction in the value of the GE9X and PW1200G engine programs, which are developed exclusively for the Boeing 777X and Mitsubishi SpaceJet, respectively, as their market introduction has been postponed, in part due to the impact of the Covid-19 pandemic. The total impact on the cost of goods sold was €63 million in the reporting period. Pandemic-related produc-tion restrictions had a negative impact on the productive use of working capacity and personnel capacities. To compensate for this, MTU introduced a restructuring program in the reporting period. The aim is to reduce personnel capacity by 10 to 15% by year-end 2021. In this context, the company anticipates additional expenses of around €33 million to implement this program at its German sites. Restructuring provisions have been established for the sites affected. This has a direct impact on the cost of goods sold of the company (€24 million) and profit transfers by its German subsidiaries. To partially compensate for the impact on the gross margin, the company initiated a cost-cutting program in the reporting period, reduced, above all, the credit balances on employees' time accounts. In addition, short-time working was used.

Selling expenses

Credit default risks in the aviation sector have increased as a result of the coronavirus pandemic. Consequently, MTU recognized extensive valuation allowances for trade receivables. This was the main driver of selling expenses in the reporting period.

Balance of other operating income and expenses

In the reporting period, this item mainly comprised net expense of €118 million (previous year: €49 million) for foreign currency translation, valuation of currency holdings and hedging transactions, and an offsetting effect of €74 million (previous year: €92 million) from income from adjustments to accrued expenses.

Net financial income/expense

The change in net financial income/expense reflects, in particular, the non-recurrence of the expense recognized in the previous year (€276 million) in connection with the partial redemption of the convertible bond issued in 2016. Other major factors affecting net financial income/expenses are investment income and dividends received. Net financial income/expense for the reporting period contains investment income of €139 million (previous year: €208 million). €88 million of this amount (previous year: €29 million) comprised dividend payments from subsidiaries and other equity investments, principally €56 million from MTU Aero Engines Polska sp. z o.o., Rzeszów, Poland, and €31 million from MTU Maintenance Zhuhai Co. Ltd., Zhuhai, China. The remainder of the investment income comprises profit transfers from MTU Maintenance Hannover GmbH, Langenhagen, Germany, MTU Maintenance Berlin-Brandenburg GmbH, Ludwigsfelde, Germany, and MTU Versicherungsvermittlungs- und Wirtschaftsdienst GmbH, Munich, Germany.

Tax expense

Income tax expense amounted to €25 million in 2020 (previous year: €38 million). The current tax expense included in this figure amounts to €88 million (previous year: €50 million), including €32 million (previous year: €25 million) relating to prior periods. This is offset by deferred taxes of €34 million (previous year €19 million) relating to prior periods.

Net profit for the year and net profit available for distribution

Subject to the approval of the Supervisory Board, the net profit for the reporting period attributable to the shareholders of MTU Aero Engines AG takes into account the allocation of part of the net profit for the period to retained earnings in accordance with Section 58 (2) of the German Stock Corporation Act (AktG).

In regard to determining the net profit available for distribution, amounts that were excluded from distribution included €220 million (previous year: €205 million) arising from the capitalization of internally generated intangible assets (Section 248 (2) of the German Commercial Code [HGB]) and €44 million (previous year: €40 million) from the measurement of pension obligations (Section 253 (2) of the German Commercial Code [HGB]), as well as the deferred taxes corresponding to each of these amounts. These were matched in full by free reserves pursuant to Section 268 (8) of the German Commercial Code (HGB) and Section 253 (6) of the German Commercial Code (HGB) as of the reporting date.

Subject to the approval of the Supervisory Board, a proposal will be put to the Annual General Meeting that a dividend of €1.25 per share should be paid for the reporting period (previous year: €0.04) and that the remainder of the net profit be allocated to retained earnings. In the light of the global coronavirus pandemic and the resulting risks to the short- and mid-term development of the net assets, financial position and results of operations, in the previous year the majority of the net profit was carried forward.

Subject to approval by the Annual General Meeting, the dividend for 2020 will be paid on April 26, 2021, giving a total dividend payment of €67 million (previous year: €2 million).

Disclosures relating to net assets and financial position

[T27] Balance sheet of MTU Aero Engines AG

	Dec. 31, 2020		Dec. 31, 2019		Change against previous year	
in € million	in € million	in %	in € million	in %	in € million	in %
Assets						
Intangible assets and property, plant and equipment	1,777	26.90	1,815	29.7	–38	–2.1
Financial assets	1,009	15.30	832	13.6	177	21.3
Non-current assets	**2,786**	**42.20**	**2,647**	**43.3**	**139**	**5.3**
Inventories	700	10.6	687	11.2	14	2.0
Receivables and other assets	2,170	32.8	2,559	41.9	–389	–15.2
Cash and cash equivalents	747	11.3	52	0.9	696	>100
Current assets	**3,618**	**54.7**	**3,298**	**54.0**	**320**	**9.7**
Prepaid expenses	**11**	**0.1**	**13**	**0.2**	**–2**	**–16.7**
Deferred tax assets	**199**	**3.0**	**154**	**2.5**	**44**	**28.7**
Total assets	**6,614**	**100.0**	**6,112**	**100.0**	**502**	**8.2**
Capital						
Subscribed capital	53	0.8	53	0.9	0	0.8
Capital reserves	644	9.7	595	9.7	49	8.2
Retained earnings	1,275	19.3	1,023	16.7	251	24.6
Net profit available for distribution	67	1.0	180	2.9	–113	–62.9
Equity	**2,038**	**30.8**	**1,851**	**30.2**	**187**	**10.1**
Pension provisions	702	10.6	686	11.2	17	2.4
Other provisions	1,863	28.2	2,015	33.0	–152	–7.5
Provisions	**2,565**	**38.8**	**2,700**	**44.2**	**–135**	**–5.0**
Liabilities						
Bonds	1,170	17.7	692	11.3	478	69.1
Liabilities to banks	130	2.0	40	0.7	90	>100
Advance payments received	326	4.9	340	5.6	–14	–4.0
Trade payables and other liabilities	206	3.1	292	4.8	–86	–29.6
Liabilities	**1,832**	**27.7**	**1,364**	**22.4**	**468**	**34.3**
Deferred tax liabilities	**178**	**2.7**	**196**	**3.2**	**–19**	**–9.4**
Total equity and liabilities	**6,614**	**100.0**	**6,112**	**100.0**	**502**	**8.2**

In the fiscal year 2020, intangible assets in the amount of €55 million were capitalized (previous year: €81 million). €33 million (previous year: €66 million) was invested in internally generated development assets and €19 million (previous year: €8 million) was invested in acquired development work for the GTF™ engine family and the GE9X and PW800 engine programs. This was partially offset by write-downs of €59 million on capitalized program assets relating to the PW1200G and GE9X engine programs.

Tangible fixed assets increased, principally as a result of new and replacement purchases of machinery and tools/fixtures.

Inventories of raw materials and supplies rose by €28 million to €126 million (previous year: €98 million), and inventories of finished goods and products rose by €25 million to €209 million (previous year: €184 million). By contrast, work in progress fell by €39 million to €352 million (previous year: €391 million).

The development of receivables and other assets was affected by the pandemic-related reduction in business. The reduction in receivables from affiliated companies to €703 million (previous year: €899 million) related to the structuring of the financing of foreign subsidiaries and the business-related development of profit transfers. The reduction in other assets to €49 million (previous year: €165 million) in connection with lower claims to refunds of income and input taxes than in the previous year also has to be taken into account.

Since the commercial OEM activities are billed in U.S. dollars, the development of receivables is attributable to the change of the U.S. dollar exchange rate prevailing on the reporting date from U.S.$1.12/€ to U.S.$1.23/€. The development of cash and cash equivalents mainly reflects the issuance of a corporate bond with a nominal value of €500 million and a €100 million promissory note.

Equity comprises the capital stock less the nominal amount of treasury shares, capital and revenue reserves, and the net profit available for distribution.

The development of provisions for pensions reflects the discount rate, while a counter-effect comes from changes in the calculation parameters, especially salary and pension trends. The main influences on other provisions are the reduction in payroll and social security obligations, especially in connection with the reduction in employees' flextime credits and unutilized vacation entitlements owing to the pandemic-related operating restrictions. Other major factors were the remeasurement and adjustment of provisions for warranty risks, which take into account the pandemic-related restrictions on air traffic.

Liabilities principally reflect the issuance of a corporate bond with a nominal value of €500 million and a promissory note with a nominal value of €100 million. A counter-effect came from the exercise of conversion rights on the convertible bond issued in 2016. The development of trade payables, which totaled €51 million (previous year: €99 million), is dominated by the pandemic-related business trend and the change in the U.S. dollar exchange rate as of the reporting date from U.S.$1.12/€ to U.S.$1.23/€. Other liabilities mainly comprise obligations to employees of €73 million (previous year: €60 million), liabilities in connection with acquired development assets in the amount of €20 million (previous year: €32 million), and liabilities arising from investments in engine programs amounting to €6 million (previous year: €30 million).

Other disclosures

The opportunities, risks and future development of MTU AG essentially correspond to the opportunities, risks and future development of the MTU Group as described below under *Forecast* and *Risk and opportunity report*.

As the group's parent company, MTU AG is integrated in the group-wide risk management system that is described in detail in the *Risk and opportunity report*. The description of the internal control system of MTU AG required under Section 289 (4) of the German Commercial Code (HGB) can be found under *"Internal control and risk management system for the group accounting process."*

For further information on the use of financial instruments, please refer to the Notes to the consolidated financial statements and to the *"Use of financial instruments" section of the Risk and opportunity report*.

Due to its dominant role within the OEM operating segment (commercial and military engine business), and in view of the profit and loss transfer agreements that exist between the parent company and its German maintenance subsidiaries in the MRO operating segment, the outlook for MTU AG is closely aligned with the expected future development of the group as described under *"Future performance of MTU."*

Looking ahead to the annual financial statements for MTU AG in 2021, which are prepared in accordance with the provisions of the German Commercial Code (HGB), the Executive Board anticipates revenue growth compared with the reporting period in the high single-digit to low double-digit percentage range. Assuming that the U.S. dollar exchange rate is stable and taking into account the exceptional factors that affected earnings in 2020, MTU forecasts growth in earnings from ordinary operating activities in the low to mid-double-digit percentage range in 2021.

Forecast

Macroeconomic conditions

Forecasts for 2021 entail considerable uncertainty and depend on assumptions about the spread of Covid-19 and political developments. The IMF warns that the economic recovery in 2021 will be slow, uneven, uncertain and prone to setbacks. Weaker consumer demand, the collapse of tourism and the unforeseeable future course of the pandemic in individual countries make it difficult to predict future trends.

Having dropped 4.2 % in 2020, global GDP should grow by 4.2 % in 2021 according to the OECD. This is likely to be supported by vaccination programs, concerted health policy measures and financial aid from governments. A stronger recovery would be possible if large amounts of vaccines were to become available faster. That would strengthen trust and reduce the uncertainty. The strongest upswing is expected to be in Asia, where the virus has largely been brought under control. However, at the end of 2021, GDP in many countries will still be below the 2019 level.

Sector-specific conditions within the aviation industry

In its forecast of February 3, 2021, IATA expects that passenger traffic will start to pick up in 2021 and forecasts that passenger traffic will increase by 50 %. However, it predicts it will be 2023 before global passenger traffic is back at the 2019 level. The narrowbody market (A320 and 737 families) will be driven by domestic traffic, which IATA expects to recover in 2022. For international passenger traffic, which is the main driving force in the widebody market, a return to the previous level is not expected until 2024. In February, IATA published a worst-case scenario based on the assumption of a deterioration in the pandemic due to coronavirus mutations and the associated restrictions on travel. In this case, air traffic might only recover very slowly, with growth of 13 % in 2021. According to the forecast by IATA, global revenue in the airline sector should recover from U.S.$328 billion in 2020 to U.S.$459 billion in 2021. IATA assumes a lower net annual loss by in the airline sector of around U.S.$39 billion or 8 % of revenue. IATA's forecast is based on a sustained low oil price of U.S.$46 per barrel in 2021. However, the January forecast by the US Energy Information Administration assumes U.S.$53 per barrel in 2021. The latter would represent an additional burden on the airlines in 2021 and put pressure on the IATA forecast.

IATA expects the recovery in air traffic to increase demand for passenger flights by 35%, from around 16 million aircraft movements in 2020 to around 22 million aircraft movements in 2021. The increase should be achieved by reactivating grounded aircraft, an increase in the annual number of movements per aircraft and new deliveries. In view of the forecast rise in kerosene prices in 2021, the fleets with the most modern, energy-saving engines are likely to post the strongest recovery. Although output of most aircraft models at Airbus and Boeing remains low, the lifting of the flight ban on the 737 MAX in 2021 should lead to a recovery in new deliveries throughout the industry. Airbus is planning to increase the production rate for the A320 series slightly in the second half of the year, from 40 aircraft per month to between 43 and 45 per month. In view of the sharp reduction in international long-haul flights. Boeing is planning to reduce monthly deliveries of the 787 from 10 to 5 aircraft. Further, Boeing assumes that the first deliveries of the 777X will be at year-end 2023.

The cargo business is one ray of light in the aviation sector. Here, another strong increase in revenue is anticipated in 2021. According to the IATA forecast, cargo revenue should grow by a further 19% to U.S.$140 million in 2021 Aircraft used exclusively for cargo will be the main beneficiaries of this trend. While only 68% of the passenger fleet was in use as of December 31, 2020, the figure for the cargo fleet was 92% (source: Cirium Fleets Analyzer). Since 22% of MTU's fleet is in the cargo segment, commercial engine programs such as the CF6-80C and the PW2000 will continue to benefit considerably from the strong demand for cargo.

Future performance of MTU

The statements below are based on the knowledge available at the beginning of 2021. In view of the impact of the Covid-19 pandemic and the large number of programs targeting different market segments, there could be delays in development or changes or postponements in series production and maintenance of engines, which could affect the KPIs.

Expenditure on new products and services

The outbreak of the Covid-19 pandemic led to a significant drop in air traffic, resulting in considerable disruption to the aviation sector.

In response to the uncertainty about future market developments, various development activities and capital expenditures were scaled back or postponed in 2020.

Based on updated market expectations, delayed development work and capital expenditures are now being restarted.

Looking ahead to the expected ramp-up of engine production rates and to secure its long-term competitiveness, MTU is investing a substantial amount to expand the highly productive manufacturing and logistics capacity at its headquarters in Munich, Germany.

At the same time, it is continuing to build up additional capacity at its other German locations and, in particular, in Poland, Canada and China. Moreover, the preparations for the establishment of a repair site in Serbia have been stepped up again.

Outlook for 2021

Targets

MTU's targets for the fiscal year 2021 are as follows:

[T28] Outlook for 2021

in € million	Forecast for 2021	Actual 2020
Revenue	Between €4.2 billion and €4.6 billion	3,977
Adjusted EBIT	Margin between 9.5% and 10.5%	416
Adjusted net income	Growth in line with adjusted EBIT	294
Cash conversion rate	In the mid double-digit percentage range	35 %

The company forecasts that revenue and earnings will increase in 2021 and that the free cash flow will be clearly positive. Since there is continued uncertainty about the market development in the fiscal year, the guidance is presented as ranges.

Revenue by operating segment
MTU expects that the series business in the commercial OEM segment will post slight growth in U.S. dollars. The spare parts business should report growth in the low to mid single-digit percentage range in U.S. dollars.

Revenue in the military engine business is also expected to grow slightly in 2021.

On a U.S. dollar basis, MTU forecasts that the MTU commercial maintenance business will grow by between 15 and 25 % in 2021. A high revenue contribution is expected to come from the PW1100G-JM. This comprises retrofit activities from the previous year that have not yet been undertaken and regular operations, some of which have been brought forward from later years.

In view of this, the total revenue of the MTU Group in euros is expected to be between €4.2 and €4.6 billion.

This estimate is based on an average exchange rate of the U.S. dollar to the euro of 1.20.

Operating profit
MTU expects the adjusted EBIT margin in 2021 to be between 9.5 and 10.5 %.

Adjusted net income in 2021 is expected to develop in line with adjusted EBIT.

Free cash flow
2021 will be another year of sustained high investment spending. However, MTU intends to offset these expenses through its operating business and to generate a clearly positive free cash flow. The cash conversion rate (free cash flow/adjusted net income) should be in the mid double-digit percentage range.

Future dividend
It is MTU's policy to pay an attractive dividend. Despite all current and future challenges and based on the overall forecast of future business developments of MTU in 2021, the company aims to increase the dividend payout ratio.

Employees
A slight reduction in personnel capacity is expected in both operating segments in 2021.

Research and development
In 2021, MTU's research and development activities will focus on engine efficiency – concentrating on the ongoing development of its key components: low-pressure turbines, high-pressure compressors and turbine center frames. The aims are to reduce fuel consumption and emissions and extend repair cycles. Detailed information on research and development activities, including the targeted medium- and long-term reductions in fuel consumption and emissions, is provided under *"Research and development."*

Overall forecast of future business performance in 2021

The Executive Board of MTU anticipates that business will develop positively, with a renewed rise in revenue and the EBIT margin remaining attractive. The free cash flow should also be clearly positive in 2021. Stepping up development activities and capital expenditure again in 2021 will provide a sound basis for the sustained long-term growth of MTU's business.

MTU is monitoring the possible effects of the Covid-19 pandemic on its present business and will revise its guidance during the year if necessary.

Risk and opportunity report

Risk report

Risks are an inherent part of any entrepreneurial activity. To enable it to take best advantage of market opportunities and to identify and manage the risks involved, MTU has an integrated opportunity and risk management system. This is linked to the group's value-oriented performance indicators and its organizational structure. The system is based on the internationally recognized COSO II Enterprise Risk Management Framework. To assist in implementing risk management in the MTU Group, the central risk management function provides the risk owners with a variety of information and tools. These include the MTU risk guidelines and risk manual and extensive checklists, which provide guidance and operational support in the risk management process.

The systematic consideration of significant risk factors serves as a fundamental basis for value-oriented management of the MTU Group and ensures lasting business success. MTU identifies risks early on, analyzes their possible consequences and devises appropriate risk mitigation measures. The key areas of risk exposure are:

/ macroeconomic and strategic risks,
/ market and program risks,
/ development and production risks,
/ other risks arising from business operations.

Strategy and risk management system

Control environment

MTU regards a suitable control environment as being essential for a functioning risk management system. The main elements of this are:

/ management style and philosophy,
/ integrity and ethical values,
/ no-blame culture,
/ staff training and development.

The MTU Principles require a constructive approach to mistakes, and the company's leadership values include a commitment to actively driving change, creating an atmosphere of trust, and ensuring continuous improvement. This is supported by lean management in all areas of the company, which also aims to create a culture that ensures a functioning risk management system.

Risk management objectives and risk strategy

The objectives of MTU's risk management system are to create transparency with regard to all risks and opportunities, to ward off risks to MTU's status as a going concern and to safeguard the company's future business success.

The company does not limit itself to ensuring compliance with statutory requirements. Rather, it seeks to integrate its pportunity and risk management system into all processes in the company, from financial planning, control and reporting processes right through to monthly reporting to the Executive Board and the Supervisory Board. Risk management also takes place in other areas of the company; for instance it is a key component of project management.

Identification, analysis and management of risks

MTU regards risk management as a continuous process that ensures responsible behavior when dealing with specific risks to organizational units and general risks affecting several units or the entire group.

The group's risk inventory, which encompasses all organizational units and all risk factors to which MTU is exposed, forms the basis for identifying risks. In accordance with the COSO II Framework, it is divided into governance and compliance, strategy and planning, operations and infrastructure, and reporting. In the interests of a more detailed assessment of risks, MTU has divided this framework into 15 risk categories covering all organizational units. MTU also examines risks inherent in its business activities that may affect third parties.

Operational risk management takes place at the level of the individual, organizationally separate units and in the subsidiaries. These are responsible for identifying, assessing, controlling and monitoring the risks in their specific areas, and documenting them in a central risk management tool. To this end, they use a general risk checklist derived from the risk inventory. Mandatory reports are submitted to the central risk management function for risks exceeding €5 million over the three-year assessment period in the form of risk maps, at dates aligned to the quarterly financial results. The risk maps are also used to document risks below the €5 million threshold. Risks occurring during the year that could threaten the company's status as a going concern are reported immediately to the central risk management function. Risks are assessed using uniform definitions of the probability of loss/damage and as possible deviations in the group performance indicators "adjusted EBIT" and "free cash flow" compared with current operational planning figures. Risk are presented gross, before taking risk mitigation measures into account. In addition to these financial risks, risk management also explicitly includes non-financial risks.

The central risk management function aggregates and consolidates the reported risks. It also provides assistance with the risk management process, prescribes uniform methods and tools, and evaluates the group's overall risk position. Furthermore, it supports the work of the cross-organizational Risk Management Board, which performs central control and monitoring functions for the group. At its quarterly meetings, the Risk Management Board discusses the interactions between individual risks, ensures that all risks have been reported in full, and assesses the risk exposure of the group as a whole.

Risk reporting and risk communication

MTU's Executive Board is informed quarterly of the group's current risk situation. The report is agreed with the Risk Management Board and is structured on the basis of the segments. This report presents the company's Top Risk Map, which covers all risks and opportunities exceeding €20 million over a three-year period. A risk assessment is then performed in this context, taking account of the amount of damage, the probability of occurrence and the identification of compensatory countermeasures.

The Supervisory Board's Audit Committee is also given an update of the MTU group's risk position on a quarterly basis. The most important issues from the previous risk review are also presented in monthly reports to the Executive Board and the Supervisory Board.

Monitoring the risk management process

Monitoring the risk management process is crucial to ensure its proper functioning and ongoing development.

The system used for the early recognition of risks is audited by the auditor. In addition to this, the risk management system is monitored and verified by other functions and group bodies:

- peer-group comparisons and benchmarking,
- process reviews by the Risk Management Board in the form of a self-assessment,
- regular process and effectiveness audits by Internal Audit,
- monitoring by the Audit Committee and/or Supervisory Board.

Strategy risks

Macroeconomic risks

In its commercial business, which is badly affected by the coronavirus pandemic, MTU is exposed to competition in the engine modules and components segment of the aviation and aerospace industry. In non-pandemic times, this business is cyclical because it is influenced by the overall global macroeconomic situation (including exchange rates and raw material prices). Moreover, it is sensitive to demand for air traffic and to the financial position of the commercial aviation industry as a whole or specific market participants, as well as to other economic factors that affect demand for air traffic.

The prevailing European and global economic trends could adversely affect the engine modules and components segment of the aviation and aerospace industry. Lower global growth is having a negative economic impact. In the "OECD Economic Outlook", the Organisation for Economic Co-operation and Development (OECD) forecasts a year-on-year recovery in real global GDP in 2021 despite the economic disruption resulting from the novel coronavirus 2019-nCOV ("Covid-19"). The recovery should be supported, in particular, by vaccination programs. Nevertheless, the economy could be negatively affected by the increased protectionist measures introduced by some economies (including measures in response to Covid-19), high sovereign debt and the monetary policy of the central banks (including European and U.S. interest rate policy). In addition, political crises in some regions and restrictions on air travel imposed as a result of terrorist attacks, natural disasters or major health issues (such as the present global Covid-19 crisis) could impair the global economy and the economic situation of the commercial aviation industry. A stagnating or deteriorating performance by the European or global economy would also be likely to affect the aviation and aerospace sector, including the engine modules and components segment in which MTU operates.

A deterioration in the macroeconomic environment affects demand from passenger airlines for the production of new aircraft, which an important driving force for MTU's commercial engines business. Consequently, demand for MTU's commercial engines is influenced by growth in passenger traffic and thus the forecast sector demand for seats, flights and routes, as well as the ability of airlines to finance the purchase of new aircraft. The commercial engines market may also be adversely affected if commercial airlines get into financial difficulty, especially as a result of the competitive pressure in the aviation market.

Demand for new aircraft also depends on the size and age of the global fleet of commercial aircraft and how many are grounded. A rising number of grounded aircraft will negatively affect demand for MTU's commercial engines and the associated services.

As a result of such factors, along with the development of economic conditions, the cyclicality of the market in which MTU operates varies.

MTU is exposed to risks associated with the outbreak and spread of Covid-19 and the impact of this worldwide pandemic on the global economy, air traffic, commercial aviation and the aircraft and engines industry.

The global economy is being held back considerably by the current outbreak of Covid-19. The exceptional situation in connection with the Covid-19 pandemic and the uncertainty about its continued extent and duration, including the effect of virus mutations, greatly restricts the company's ability to adequately predict and plan its business operations, especially in the short to intermediate term. Although MTU consults with government agencies at national and international level, it is still not able to adequately forecast the impact of the Covid-19 pandemic on its business. Incorrect forecasts have a considerable negative effect on the company's business activity, cash flows, results of operations and financial position.

The specific risks associated with the global spread of Covid-19 include, for example, further or extended travel restrictions, which do not simply reduce the volume of passenger and freight traffic, but also have a negative impact on demand for spare parts and aircraft maintenance services. A significant reduction in demand for air travel and air cargo could also cause MTU customers to take a more cautious stance on new orders for products and services, leading to substantial order rescheduling or even order cancellations.

Covid-19 could have a significantly negative impact on MTU's stakes in some commercial engine programs, i.e., it could result in impairment losses on the value of the related assets or increase (contingent) liabilities from such participations and MTU's obligations as a member of risk and revenue-sharing partnerships (RRSP).

The Covid-19 pandemic also confronts MTU with considerable operational challenges, especially if it has to temporarily shut down production sites and research and development (R&D) locations to protect the health and safety of its employees or there is other disruption at its workplaces. Moreover, during the pandemic MTU's business operations are affected by state restrictions on the movement of people, raw materials and goods to, from and within its locations and those of its suppliers.

MTU is also indirectly affected by the effects of the COVID-19 pandemic on its suppliers. Some suppliers may have to temporarily suspend operations due to state-imposed restrictions, confronting MTU with further short- or mid-term challenges and business disruption. Therefore, MTU could be exposed to risks in respect of costs that are necessary to meet its contractual commitments as well as risks to its product supply schedules.

As a long-term effect of the COVID-19 pandemic, MTU could face more rapid changes in usage patterns or aviation regulations, which could adversely affect its business model. There is already a public debate about the social and economic implications of air travel and air cargo driven by the ongoing global climate debate. This has heightened personal and corporate awareness of travel and consumption behavior. Potential changes in usage patterns and the applicable regulations could be intensified and given new momentum by experience during the Covid-19 pandemic, e.g., online video conferencing as a substitute for business trips. If a reduction in travel and altered consumer spending patterns are regarded as socially desirable by the general public, this could have a significant negative impact on MTU's business model.

Risks arising from corporate strategy

The main forms of strategy risk are misjudgments when taking decisions about investment in engine programs, the establishment of new sites and possible M&A activities. During the decision-making phase of a program, highly qualified specialists perform cost-benefit analyses based on set procedures that include the obligation to carry out a risk analysis on the basis of different scenarios. MTU's business model is based on long-term processes, particularly in the OEM segment. Many years of development, preproduction and volume production may lie between the decision to invest in a new commercial engine and the breakeven point. The risk is that the original economic and technological parameters might change over time, hence the need for frequent reassessments that take into account the most recent economic and technological developments. Decisive factors in this regard are, in particular, the success of the aircraft platforms on which the engines are deployed and any changes made to those platforms. MTU counters such strategy risks through a broad portfolio. This means that the company limits the impact of an individual program or aircraft platform by holding an interest in a wide range of products across all thrust classes.

In the longer term, a further identifiable risk, in addition to that arising from MTU's strategic decisions, is the arrival on the market of new competitors, e.g. from Russia or China. But given the high barriers to market entry, this risk is currently not regarded as critical. Changes in expectations of growth in air traffic and the aircraft industry or a reduction in the number of aircraft sold could lead to considerable negative impacts or further adjustments of the assumptions and estimates underlying the assessment of MTU's assets and liabilities and the presentation of MTU's financial position.

The engine industry is dominated by high investment both as development compensation payments to the engine OEMs and as development work by MTU at the start of a new engine program. The long product lifecycles of

both aircraft and engine programs have to be taken into account when assessing the return on these investments. Empirical observation indicates that the lifecycle of successful engine programs for commercial aircraft is well over 30 years. In view of the long product lifecycle, the estimation requirements outlined above relate to long-term developments. Therefore, updated assumptions (for example, changes in the competitive situation, expectations of growth in air traffic and the aircraft industry, a deterioration in the number of aircraft sold, which could affect the creditworthiness of the group's customers) have a considerable impact on MTU's systematic estimates and thus on its key financial indicators.

Demand for air travel dropped significantly in 2020 in the wake of the Covid-19 pandemic. MTU's commercial business is – at least temporarily – affected by a sharp drop in demand both in the sale of new engines and in the aftermarket business, as well as an acceleration of the trend to using smaller aircraft for medium-haul flights. The commercial MRO business is affected, at least temporarily, by lower demand. The impact of the Covid-19 pandemic on MTU's business makes it for the company to reassess or confirm individual assumptions and estimates that were originally based on conditions and forecasts prior to the Covid-19 pandemic, because the assumptions underlying these estimates and assessments relate to currently available information and macroeconomic factors, microeconomic factors in the aviation sector and, in the case of certain suppliers and customers, expectations of how these may develop. Changes to these assumptions and estimates could have a highly negative impact on MTU's business activities, cash flow, results of operations and financial position.

Substitution risks arising from disruptive technologies

Electric propulsion systems for aircraft are in principle a substitution risk for conventional engine technologies, but they do not yet come anywhere near the performance required to power a large passenger or freight aircraft. Together with its research partners, MTU is conducting studies to examine all the conceivable concepts in order to factually assess the opportunities arising from alternative engine concepts and make use of them as appropriate. Among the key results from these studies are:

- Propulsion systems based on electric batteries are suitable today for applications requiring low performance and short duration of use, such as general aviation and urban mobility. With improvement in the storage capacity of batteries (5 % per year), they could be used in several years on commuter aircraft and in about 30 years on regional aircraft. At the moment, there are no known battery concepts with sufficient capacity for short and medium-haul aircraft, let alone for long-haul aircraft, which together represent an important market for MTU.
- Hybrid propulsion systems combine electric motors, generators, gas turbines and batteries. These open up new possibilities for aircraft and engine design and engine integration and still rely on kerosene, an energy source with high energy density. MTU is involved in a number of studies that are examining the potential of these propulsion concepts. However, as yet they have not shown any major benefits compared with conventional propulsion systems.
- Considerable progress has been made in the development of fuel cells in recent years. However, their present performance potential is not sufficient for commercial aviation. In the long term, however, in conjunction with liquid hydrogen fuel, they have far greater potential for use in aviation than batteries. MTU has therefore begun to examine the potential and feasibility of fuel cells for propulsion systems.

From today's perspective, the fields in which MTU currently operates will not be affected by actual substitution risks in the foreseeable future. Nevertheless, MTU will continue to keep a close eye on developments in the field of electric motors, batteries and, especially, fuel cells, and compile further studies so it can react and, above all, participate in a timely fashion. In parallel, MTU is permanently working to improve the efficiency of conventional engines, thus continuously raising the ecological and economical access barriers for any substitute products.

Market and program risks

MTU operates in a highly competitive sector. The production of engine modules and components for aircraft is a characterized by intensive competition between market participants. MTU is exposed to this competition in all aspects of its two operating segments: commercial and military engine business (OEM) and commercial maintenance business (MRO).

In its OEM segment, MTU participates in programs to develop and build new engines, which its OEM partners offer to manufacturers of commercial and military aircraft, airlines and governments. Some of these programs compete with other engine programs for installation in the same aircraft types. Therefore, MTU's success depends partly on the ability of its OEM partners to secure orders from manufacturers, airlines and governments for the engine programs that MTU is involved in. In addition, through its stakes in engine programs, MTU also competes with other producers of engine modules and components (some of which are highly specialized and may offer directly competing technology) as well as with the OEMs, which may possibly decide to source development work, components and parts internally rather than from MTU.

In addition to competition in the engines business, the aftermarket business within MTU's OEM segment is exposed to competition in the sale of engine parts and components. The aftermarket business is highly significant for MTU because the success of its participation in engine programs depends to a large extent on such sales over the entire lifecycle. MTU's commercial business is cyclical and sensitive to demand for air transport as well as to the financial situation of the commercial aviation industry.

MTU is also exposed to competition in its MRO segment, which comprises commercial maintenance, repairs and overhauls. MTU is an independent provider of MRO services and therefore competes with airlines' internal MRO service-providers, which have links to many of their potential customers. MTU's other major competitors are OEMs' maintenance operations. OEMs can link their service contracts with airlines to the sale of engines, which initially gives them a competitive advantage over MTU in this field. The market share of the OEMs in the commercial maintenance business has increased significantly. They have been particularly successful in negotiating long-term MRO service contracts (generally with a term of about ten years) in connection with the sale of new engines, which ties in customers for products and services in the aftermarket business.

MTU's customers in the military engine business are national and international agencies. Therefore, political changes have an almost immediate effect on MTU. Given the tight national budgets that can be observed at present, especially in Europe, there is always the risk that countries may postpone or cancel orders. Due to the budget situation, it may be necessary to renegotiate the scope of contractually agreed deliveries. In the military engine business, MTU is firmly embedded in international cooperative ventures. This tends to limit risks because the partners work together to protect their common interests. Furthermore, the terms of existing contracts in the military sector are generally defined to cover a prolonged period of time, thus largely ruling out price risks.

Even though the company assumes that defense budgets are likely to rise in the future, MTU's military business is principally dependent on the sustained commitment of the German and other European governments and the U.S. administration to their military procurement programs.

The development of the commercial MRO market could have a negative influence on the performance of the commercial MRO market.

Conditions are tough in some areas of the commercial MRO market in which MTU operates. The market conditions may remain challenging in the future as a result of factors that the company is unable to influence. The following factors could prove detrimental to the success of MTU's MRO business.

- Due to overcapacity at suppliers of MRO services, MTU might not be able to compete effectively on this market. This could have a negative impact on this profit margins in this operating segment;
- Demand for MRO services depends on the capacity utilization of aircraft and could decline significantly if there is a reduction in passenger and air freight traffic;
- The client base in the MRO segment is characterized by a few large individual customers, so losing one of these customers could have a negative impact on revenue from this business;
- Some of the engine programs in the MRO business are at an advanced stage in their lifecycle, so the MRO product portfolio could be too strongly focused on aging products and technologies;
- OEMs strive, and could continue to strive, to negotiate agreements where a large proportion of maintenance work is performed by internal units, especially because some of these units have links to their potential customers. A considerable shift towards such in-house units would reduce the competitive opportunities for third-party suppliers such as MTU;
- MTU is a contracting party in "fly by the hour" and "power by the hour" agreements which obligate it to perform maintenance work on engines at flat-rate, usage-based prices. Furthermore, under these agreements, MTU effectively assumes the risk of higher maintenance and overhaul costs. MTU may incur losses in connection with these agreements because the underlying price models require a complex analysis of the performance conditions (including assumptions on future engine use and shop visit rates) when submitting offers for long-term agreements. If the assumptions made by MTU prove incorrect, its margins could be negatively affected. and

MTU does not currently see any market and program risks that could jeopardize its status as a going concern.

Dependence on cooperation

MTU has long-term cooperation and collaboration agreements with various OEMs and other market participants. These can be terminated at any time or at short notice in certain circumstances, e.g., if there is a change in the company's shareholder structure. All these scenarios are beyond the company's influence. The loss of a major customer could have a severely negative impact on MTU's business activities, financial position or results of operations. For information on customer cluster risks, please refer to the *"Segment report" in the Notes to the consolidated financial statements*.

In its commercial business, MTU is involved in a number of RRSP contracts with OEMs, which relate to the development, production and sale of commercial aircraft engines. The OEMs with which MTU has RRSP contracts include Pratt & Whitney, GE Aviation, IAE LLC and IAE AG. Through RRSP contracts, MTU participates in the development and production of new engine programs. In return, MTU is entitled to a share of the revenues from the sale of engines, components and spare parts.

RRSP contracts are an important business base for MTU. They enable it to build up long-term relationships with OEMs and to participate in the major engine manufacturers' sector-leading engine programs. Furthermore, MTU's RRSP contracts entail considerable risks, including a lack of control over the activities covered and losses arising from pricing of program activities or upfront financing of design and development costs, cost overruns, guarantees, warranties and penalties. The following overview highlights these risks:

- The respective OEM controls the end-customer relationship throughout the entire term of the program, including setting the price of engines and spare parts, granting concessions (including financing of engine and aircraft sales in a manner that could ultimately include recourse to MTU through the RRSP contract), granting guarantees, and defining and amending guarantee and other service guidelines for the aftermarket business.
- The RRSPs give MTU only limited inspection rights. As a result, it is not in a position to fully monitor whether the OEMs fully meet their obligations or exercise their rights fairly;
- OEMs can use repair processes that do not use MTU spare parts or work with second-hand spare parts, which would have a negative effect on MTU's sales of spare parts;
- MTU has to undertake considerable advance work for the design and development of the engine components, for which it has been allocated design and development responsibility. This upfront work has to be performed before a single engine has been sold. Therefore, future revenue from the engine program is not certain.
- Similarly, MTU may be required to make advance payments (so-called "entry fees") to OEMs to enable it to participate in programs, as compensation for develop or other work already undertaken by the OEMs.
- Aircraft manufacturers may require OEMs to make advance payments for participation in new aircraft programs and to cover a percentage of the manufacturer's R&D expenses. The OEMs have started to pass some of the costs for such payments on to their RRSP partners.
- The value of MTU's contribution to RRSPs (in the form of work on the design, development and production of engine modules and components) is generally set on the basis of cost assumptions made when the contract is signed (with limited adjustments for changes in design or extraordinary changes in raw material costs). In the event of cost overruns in the development and production of parts for which MTU is responsible, MTU may therefore not be able to recoup such costs from its share of the program. As a result, its profits from the engine program could be reduced.

In the commercial maintenance business, MTU's interests in the Asian market include a 50:50 joint venture, MTU Maintenance Zhuhai Co. Ltd., Zhuhai, China. MTU is involved in further joint ventures in the fields of engine leasing, maintenance and development. In this way it can respond to the new structures in the aftermarket and offer customers a full range of services. In jointly controlled entities, where decisions have to be made collectively, there is always a risk of differences of opinion. Similarly, participation in international joint ventures often reveals cultural and political differences (for instance payment morale).

From today's standpoint, MTU believes its collaborative business model stands it in good stead to effectively manage market and program risks; in particular in respect of the challenges associated with the development, production and market introduction of new engine programs and architectures. MTU therefore does not expect these market and program risks or its dependency on cooperative agreements to have any significant impact on the group's continued existence as a going concern.

Development and manufacturing risks

Development risks

MTU's success depends on its R&D activities, which are performed principally in the OEM segment. MTU finances its R&D spending from its own funds, state funding and, to a limited extent, through corresponding orders. There is a risk that R&D activities may not meet customers' requirements cost-effectively or on schedule. Therefore, the company cannot give any assurance that the capital used for these R&D activities will lead to opportunities for commercialization or result in productivity improvements commensurate with the resources invested. Furthermore, MTU may develop specific technologies and capabilities aimed at clients who are pursuing new programs focused on improving the overall efficiency of engines in order to reduce fuel consumption and emissions. If one of these programs should be halted or only be continued with a considerable delay, MTU might not recoup the R&D costs and related investment expenditures incurred in the expectation of such programs.

Some of MTU's development activities are performed on a cooperation basis. Each stake in such ventures and an in RRSPs spreads the R&D-related risks beyond the company and therefore reduces its control over them. If one of MTU's cooperation partners has development and production risks, these could have a significant negative economic effect on MTU. In connection with RRSP and similar agreements, MTU's potential inability to deliver the necessary technology or design contribution could result in additional costs in order to fulfill its obligations, or MTU could be forced to make considerable compensation payments under the RRSP agreement instead of the technology or design contribution. In addition, MTU may be required to make penalty payments to its RRSP partners if it fails to meet delivery schedules or certain development targets.

Extensive project management and risk diversification between the development partners reduce the risks, so in this context MTU does not currently see any risks to its status as a going concern.

Manufacturing risks/shop floor risks
Highly sophisticated components and new materials are needed to meet the requirements of the airlines and OEMs with respect to engine weight, fuel consumption and noise emissions. In order to efficiently produce and process such components, MTU develops – and gains official approval for – innovative new manufacturing techniques. This can lead to delays in the start of production, a temporary increase in unit costs or a temporary reduction in delivery volumes compared to the agreed level. A further risk is that customers might impose penalties in the event that deliveries are delayed. It could also happen that the new manufacturing processes are not yet sufficiently mature to fully meet requirements when volume production is due to start. MTU counters this risk in technology projects by providing systematic support for the development and implementation process.

At present, MTU does not see any risks in this context that could jeopardize its status as a going concern.

Procurement and purchasing risks
MTU sources individual parts and components, finished products, specific services and some raw materials from suppliers and third-party vendors. MTU is highly dependent on the availability of such supplies, some of which may only be available from a few sources or a single source. In some cases, cross-border supply chains could be adversely affected by the coronavirus pandemic. Similarly, disruption to flow of goods due to Brexit cannot be ruled out, resulting in procurement risks for MTU.

Furthermore, many of MTU's suppliers have only limited production capacity and require long lead times for the production of goods (especially in the case of articles such as highly complex forgings and castings). This, in turn, requires MTU to accurately forecast its future demand for such items. If MTU's demand exceeds the quantities available from its current suppliers, it may not be able to obtain alternative deliveries at reasonable prices or at all if its current suppliers are the only viable source of the relevant products.

Alongside dependence on the quantitative capability of its suppliers, MTU is dependent on the ability of its suppliers to meet the specifications, quality standards and delivery schedules for the components, finished products, services and raw materials they provide. Although MTU typically has on-site employees at some of its suppliers' locations, there may still be delays at MTU suppliers, especially during the ramp-up of production for new, high-volume programs or in connection with new production processes or the introduction of new workflow systems. Every such delay can have negative consequences for agreed delivery dates. In its production, MTU uses raw materials whose prices may fluctuate for various reasons, e.g., due to changes in availability, major capacity expansions or reductions, or considerable operating problems at the facility. Potential price fluctuations restrict the company's ability to accurately forecast future raw material costs and thus its production costs and profitability. MTU is party to various RRSP agreements, which restrict its ability to pass raw material price rises on to its partners. By contrast, MTU's suppliers can pass on part of the rise in raw material costs to MTU.

If any of MTU's procurement and delivery risks should materialize, this could have a considerable adverse effect on MTU's production schedules and its reputation and profitability. MTU uses supplier risk assessments, established purchasing and procurement processes, and close relationships with its suppliers to minimize its purchasing and procurement risks. At present, MTU does not see any risks in this context that could jeopardize its status as a going concern.

Liability risks

Product liability claims, including defects in products produced by cooperation partners, and insurance costs could adversely affect MTU's financial position.

MTU operates in markets where it may be exposed to liability for personal injury, death or property damage. Liability could arise, in particular, due to failure of an aircraft component designed, developed, manufactured or supplied by MTU or one of its RRSP partners, including failures in connection with aftermarket business.

In the military engine business, MTU is largely exempt from product risk liability. In the commercial business, however, MTU is party to consortia and RRSP contracts. In most of these relationships, liability for third-party claims is borne by the consortium or the partners on the basis of their respective contribution to the consortium or RRSP, irrespective of the fault of the individual partner. Therefore, product liability claims could also include claims due to defects relating to products not manufactured by MTU. In these RRSP programs, the consortium lead generally has the right to settle or resolve third-party claims unilaterally on behalf of all program participants. Consequently, MTU may be exposed to substantive liability for problems unrelated to the performance of its products. Furthermore, MTU may have little or no control over such liability.

Most of MTU's RRSP contracts require it to take out insurance to cover the potential liabilities arising from such agreements and MTU makes participation in these programs contingent on such agreements. This type of insurance is expensive and may not be available to MTU at reasonable cost in the future. Moreover, such insurance does not generally cover all liabilities that could arise in connection with RRSPs, for example, contractual penalties resulting from delays.

At present, MTU does not see any risks in this context that could jeopardize its status as a going concern.

Risks relating to financial instruments

Foreign currency risks

More than 80 % of MTU's revenue is generated in U.S. dollars. A large proportion of expenses is likewise invoiced in U.S. dollars, thus providing a natural hedge. Most other expenses are incurred in euros and, to a lesser extent, in Polish zloty, Chinese renminbi and Canadian dollars. In line with the corporate policy of generating profit solely on the basis of operating activities and not through currency speculation, MTU makes use of hedging instruments exclusively for the purpose of controlling and minimizing the effect of U.S. dollar exchange rate volatility on EBIT.

The forward foreign exchange contracts concluded by MTU cover a large part of its net exposure to currency risk. The hedging horizon is up to four years and uses a model where the authorized hedging ratios decline the further in the future the net currency exposure is. Thus, only a small portion of the net U.S. dollar exposure in the present and following year is exposed to currency risks. The unhedged portion of future cash flows is translated into euros at the exchange rate prevailing on the date of settlement.

As of December 31, 2020, MTU held a hedging portfolio comprising forward foreign exchange contracts totaling U.S.$2,280 million (translated at the rate on the reporting date: €1,858 million), with maturities up to 2024.

Detailed information on the financial instruments used to hedge future cash flows is provided in *Section IV. of the Notes to the consolidated financial statements (Note 36)*.

In view of this long-term hedging strategy, MTU considers its currency risks to be manageable.

For a detailed description of MTU's financial management system, please refer to the *"Principles and objectives of financial management" section under "Financial situation."*

Non-payment risk

Airlines, which have been badly affected by the pandemic, are major direct and indirect customers of MTU. These companies may find themselves facing financial difficulties that affect the receivables of MTU and its partners. The consortium leaders in the commercial OEM business have intensive receivables management systems in place. In view of MTU's long-standing partnerships with OEMs, significant risks are considered to be low. In the MRO business, the responsible account managers monitor and manage credit risks in short cycles and proactively. A risk assessment is carried out before any relevant contract is signed, and systematic compensatory precautions are taken as needed, such as commercial credit insurance or export credit guarantees (Hermes coverage). All in all, MTU continues to consider the risks of non-payment to be manageable, especially in light of the measures taken to control them.

Other risks pertaining to business operations

Compliance risks

Compliance risks arise when managers or employees of the company fail to comply with laws and regulations or fail to observe internal guidelines. These risks can arise in all areas of the company.

MTU has implemented a number of measures with regard to its organizational structures and processes to minimize these risks and to safeguard compliance. In particular, central offices with managerial authority have been set up to monitor and enforce compliance with laws and regulations in the individual divisions (for instance, the Quality division is responsible for compliance with aviation authority regulations, while the Environmental Protection/Occupational Health and Safety division ensures that environmental protection regulations are adhered to).

Above and beyond that, measures have been put in place at the company level to minimize the risks associated with compliance issues:

- Binding rules of conduct valid throughout the group
- Establishment of a central contact for reports of misconduct
- Designation of a Compliance Officer
- Continuous security checks on employees
- Regular training

Criminal intent can never completely be ruled out. All in all, MTU considers the compliance risks to be manageable, especially in light of the measures taken to control them.

Environmental risks

MTU's plants and installations are subject to the environmental protection and occupational safety laws and regulations in the legal jurisdictions in which it operates. Permits or licenses are required for some of its operations to prevent or reduce environmental pollution. These permits may be extended, altered, suspended or canceled by the authorities that issue them. Even though MTU has undertaken investment and other expenditures to comply with these laws and regulations, and will continue to do so, there is a possibility that MTU might not always be in conformance with current and possible future laws and regulations on environmental protection and occupational safety and considerable fines or penalties, including criminal sanctions, could be therefore imposed and some of its permits or licenses could be canceled or not extended in the future.

Under some laws, owners and operators of contaminated sites may be held liable for the costs of investigation and remediation, irrespective whether or not the contamination was caused by them. Some of MTU's sites have a long history of industrial use by MTU or by other companies, and remediation activities may be necessary in connection with contamination that occurred before the site was used by MTU. MTU could incur considerable costs in the future if historical or new contamination is discovered at sites used by MTU or at third-party sites to which its waste is delivered. Moreover, the adoption of new laws or more stringent implementation of existing laws could impose additional expenditures or unexpected liabilities on MTU. Further information on occupational safety and environmental protection can be found in the *"Non-financial statement" section*. All in all, MTU considers the environmental risks to be manageable, especially in light of the measures taken to control them.

IT risks

MTU stores and processes critical customer- and product-related data in its IT systems. Data security is highly significant for MTU customers in the military business. Despite considerable investment in data protection technology, it is not possible to guarantee that MTU will not be affected by the theft or unauthorized manipulation of confidential data as a result of industrial espionage or by the loss of data due to failure of its IT systems.

Every data theft, unauthorized data manipulation or data loss could negatively affect MTU's relationship to present or potential customers, especially customers in the military business who are sensitive to data protection. MTU could also be exposed to liability in such cases. MTU's IT is protected by a large number of security systems (e.g., firewalls, secure data backup). Therefore, it does not currently see any risk in this context that could jeopardize its status as a going concern.

Personnel risks

The quality of MTU's products and services depends to a large extent on the personnel it can recruit and retain, especially engineers and other specialists. MTU seeks to access both young talent and experienced specialists through company training programs, dual-study programs (which combine practical and academic work), attractive working conditions and marketing activities. However, for many key positions within the MTU Group there only a few sources of new staff with the necessary qualifications. The competition for such employees has increased in recent years and could intensify further in the future. In addition, the shortage of skilled workers caused by demographic change is expected to worsen.

In addition to the risk the MTU might not be able to recruit enough skilled workers, there is a risk of losing staff to other companies. The company is of the opinion that some MTU employees have technological know-how that makes them attractive to competitors or other employers. MTU's success depends on its ability, not simply to employ technically skilled specialists, but also to retain them over the long term.

Failure to recruit and retain qualified employees could impair MTU's ability to secure future orders.

At present, MTU does not see any risks in this context that could jeopardize its status as a going concern.

Risks arising from general, customs and tax legislation

Complex and in some cases conflicting international foreign trade and tax regulations, especially with regard to cross-border trade in goods and services in the industrial and defense sectors, mean that MTU is particularly exposed to violation of legal provisions. To compensate for relevant legal risks, processes that reinforce control are monitored and driven forward by central departments with technical and managerial authority. Identifiable risks arising from pending tax audits or ongoing customs audits and legal proceedings are managed by the central departments with the support of independent external consultants. The focus lies in particular on targeting process weaknesses and compensating for them. All in all, MTU considers the risks arising from general, customs and tax legislation to be manageable, especially in light of the measures taken to control them.

Overall assessment of MTU's risk exposure

Risks in each of the key areas of exposure described above are monitored and continuously evaluated through a risk assessment for the coming fiscal year on the basis of their probability of occurrence and quantified as a deviation in adjusted EBIT relative to the currently applicable operational planning figures. In MTU's risk management process, risks are assigned to one of four probability levels. Based on the top individual earnings risks evaluated in the risk management process, for fiscal 2021, MTU derives a risk exposure based on experience of between €50 and €60 million. The OEM segment accounts for around €40 million of this and the MRO segment for the remainder. Both segments' risk exposure principally comprises market and program risks. In the OEM segment, the market and program risks relate to uncertainty about military export business and the structure of risk- and revenue-sharing agreements with partners. Risk drivers in the MRO segment include additional customer credit risks and further demand effects in the context of the present restrictions on air traffic. The estimated impact of the Covid-19 pandemic on business development in 2021 has been taken into consideration in the sector planning.

In addition to the quantified risk exposures relating to the top individual risks, MTU monitors and reports on a range of smaller risk (>€20 million) that are not included in the internal reporting of top risks and opportunities on which this report is based. As well as the earnings-related risks, the risk management process identifies, monitors and manages unplanned factors that could reduce liquidity. For 2021, this identified risk factors that could reduce liquidity by approximately €124 million. These would, however, be covered by available cash and cash equivalents and by credit lines that have not been drawn down. Apart from the risks quantified above, MTU monitors and manages further risks associated with development, production, maintenance and procurement that were not quantifiable as of the reporting date.

Opportunity report

Market and program opportunities

Basic research and ongoing development of engine technologies, followed by their deployment in end products, have made MTU one of the world's leading manufacturers of engine components. MTU's new products lead the field in terms of efficiency because they save fuel and reduce emissions, noise and costs. MTU has achieved market success with the Pratt & Whitney GTF™ engine family, which it develops in partnership with Pratt & Whitney. The A320neo, Airbus A220 and Embraer E190-E2 with GTF engines are already being used in scheduled service. Further GTF applications will be used on scheduled services in the coming years, in particular in the regional jet segment. Since 2018, the PW800 engine family, developed in cooperation with Pratt & Whitney Canada, which is based on the same core engine as the GTF, has powered premium manufacturer Gulfstream's new generation of business jets. In order to balance out its engine portfolio in the long-haul segment, MTU has participated in the development of the GE9X, which will be the sole engine for the Boeing 777X. Thanks to this balanced portfolio, MTU will benefit in the decades ahead from the predicted growth in all market segments – the regional jet, narrowbody and widebody segments. What is more, MTU has an opportunity to raise its share of the medium-haul market because, in addition to its stake in the PW1100G-JM for the A320neo family, it also holds a stake in the V2500 for the classic A320 family. The latter program is now entering the aftermarket phase, offering future potential in the spare parts business.

Among its customers in the military sector, MTU has established a reputation as a highly qualified partner with comprehensive system know-how in product development, manufacturing and maintenance. In particular by driving forward its military-engine maintenance services with the German air force, MTU sees chances to strengthen its ties with Germany's armed forces.

What is more, ongoing export drives – especially for the Eurofighter EJ200 engine and the TP400-D6 for the A400M military transporter – present opportunities to acquire new customers in the military business. Following the signature of a contract to purchase further Eurofighters by the German defense ministry, Spain has also shown an interest in further purchases.

Driven in particular by the T408 engine, the military-program partnership with GE Aviation is doing well and could generate further opportunities to participate in transatlantic programs in the future.

The changed maintenance-related business practices in the aviation industry, in which MRO services are increasingly being offered together with engine sales contracts, open up opportunities for MTU, from the perspective of its position as a consortium partner, to develop customer loyalty in the commercial maintenance segment that will soften the impact of risks associated with the spare parts market. This integrated approach to MRO enables program partners to become members of an MRO network, giving them access to the entire volume of MRO work associated with an engine series, in accordance with their share in the program. Here there is a variety of models for participating. For instance, partners in the MRO network might only perform repairs on their own components, or be allocated a quota of complete shop visits corresponding to their program share. Membership in an MRO network offers more moderate margins than operating as an independent MRO provider.

The independent MRO market for engines such as the GE90 and V2500 continues to offer long-term prospects for MRO providers to participate in this steadily growing market. In particular, the increase in the number of aircraft no longer tied to the OEMs offers independent MRO providers like MTU the opportunity to gain new customers and to assume responsibility for managing the maintenance of large fleets.

Continued investment in automation and building up maintenance capacity, for instance through the establishment of MTU Maintenance Serbia d.o.o. and EME Aero Sp. Z.o.o., will enable MTU to meet the high demand in both the OEM and MRO segments in the long term.

Through MTU Maintenance Lease Services B.V., Amsterdam, Netherlands, and SMBC Aero Engine Lease B.V., Amsterdam, Netherlands, which operate in the field of engine leasing, and the establishment of MS Engine Leasing LLC., Rocky Hill, USA, for engine leasing with the partner companies in the PW1100G-JM MRO network, MTU aims to extend its activities in the lucrative leasing business and increase the scope of services provided in the aftermarket. The positive experience with joint venture partner Sumitomo Corporation could also generate good opportunities to establish further strategic partnerships.

Opportunities associated with product development and manufacturing

The risk report describes the risks associated with development and manufacturing, but MTU's ongoing technology and development activities also open up new business opportunities. For example, ongoing product development could open up the opportunity for MTU to acquire new partnership roles in future engine programs thanks to its new technologies, enabling the company to maintain a balanced product portfolio covering engines at all different stages of their lifecycle.

The risk report also refers to the challenges involved in ramping up new programs; here again these challenges can be transformed into opportunities. Production processes and systems can be optimized, for example through the use of predictive simulation and process data management, and new, cutting-edge manufacturing technologies and processes can be introduced. The risk analyses undertaken to secure the ramp-up of production result in timely identification of potential problems and

the related lasting process improvements. The effects of these improvements are not only felt in new programs; they can also be transposed to existing ones. That leads, for example, to further cost reductions and enhanced delivery reliability. The spread of additive manufacturing techniques (3D printing of components) opens up new possibilities for application-optimized component design and cost benefits in their production.

Through continuous improvements towards operational excellence, methods, processes and leadership behavior are constantly being developed as part of Lean Management@MTU. This results in increased transparency, a focus on value creation, support in achieving ambitious targets, and faster and more sustainable problem-solving and approaches to improvement. Improved preventive approaches, a faster response to deviations from plan and sustainable and structured solutions to problems enable the company to put in place stable processes and optimize resource deployment.

Other opportunities

As a large part of the company's revenue comes from contracts invoiced in U.S. dollars – especially in the commercial engine business and commercial MRO –, a strengthening of the U.S. dollar against the euro would improve MTU's earnings. If energy prices were to stabilize or retreat to a lower level, and if commodity prices were to fall, this would have a positive effect on MTU's cost structure and hence on its business results.

See the *risk report* for information on how the opportunities identified can be exploited and the associated risks avoided.

Overall assessment of opportunities

Owing to the Covid-19 pandemic, as of December 31, 2020, the assessment of opportunities had deteriorated significantly compared with the previous year, analogously to the risk position. Opportunities are considerably more difficult to estimate at present because air traffic is extremely dependent on conditions relating to the pandemic. Therefore, a more favorable business development than anticipated in the forecast for 2021 is possible. MTU has taken all the organizational measures necessary to recognize potential opportunities in good time and respond to them adequately. MTU applies the same methods in its assessment of specific opportunities as it does when evaluating risks. As a conservative approach is taken to the identification of risks and opportunities, the opportunities are necessarily very low compared with the risks.

In the process of identifying opportunities, a number of smaller opportunities (<€20 million) were identified, which do not form part of the internal top risk and opportunity reporting used to prepare this report. Opportunities to extend MTU's range of products and services initially lead to a financial burden. In view of the long cycles involved in the business model, this will only generate positive earnings in subsequent fiscal years. MTU does not currently foresee any fundamental changes in its opportunities.

Management compensation report

The compensation report describes the principles applied in determining the compensation for the Executive Board and Supervisory Board of MTU Aero Engines AG, and states the amount and composition of that compensation. The compensation report follows the provisions of Section 314 (1) no. 6 of the German Commercial Code (HGB), German Accounting Standard (GAS) 17 "Reporting on the remuneration of members of governing bodies," the recommendations of the German Corporate Governance Code (GCGC), and the International Financial Reporting Standards (IFRS).

Principles of the compensation system for members of the Executive Board

At the proposal of the Personnel Committee, which is independent within the meaning of the GCGC, the Supervisory Board decides on a system of compensation for the members of the Executive Board, including the material components of their contracts such as the amount and breakdown into non-performance-related and performance-related components. The Personnel Committee reviews the appropriateness and alignment with the market of the Executive Board compensation at regular intervals.

Developed with the support of independent external compensation experts, the present compensation system for the Executive Board is primarily oriented toward the group's positive and sustainable development. The compensation awarded to members of the Executive Board is therefore composed of non-performance-related and performance-related components, particularly in the form of long-term incentives. This ensures that corporate governance is optimally aligned with the long-term interests of the group and its investors. This means that the compensation system is aligned with market conditions; it was introduced in its current form with effect from the fiscal year 2016.

Structure of total compensation

[T29] Structure of the compensation system (total target direct compensation)

Non-performance-related components	~ 40%	Fixed annual payment	Fixed compensation fringe benefits
Performance-related components	~ 60%	~ 40% of the variable portion of the compensation Short-term incentive (STI)	Key characteristics: Distribution based on goal achievement as regards EBIT adjusted and free cash flow Limitation 0 – 180% (Extraordinary performance bonus/malus (in accordance with the GCGC) of up to 20%)
		Approx. 60% of variable compensation Restricted Stock Plan (RSP) long-term incentive (LTI)	Key characteristics: Distribution based on achievement of 3-year targets for adjusted EBIT and free cash flow in previous years Cap 0-180% Granted as MTU shares (vesting period of 4 years)

Non-performance-related components

Non-performance-related compensation (basic salary), which makes up around 40% of total compensation, is paid on a monthly basis and consists of fixed compensation and fringe benefits. Fringe benefits comprise taxable reimbursements of expenses and the cash equivalent of payments in kind, such as the use of a company car for business and private purposes and insurance premiums, including any taxes on such benefits that have been reimbursed.

Performance-related components

Performance-related compensation makes up around 60% of total compensation; it consists of a short-term incentive (STI) and the Restricted Stock Plan (RSP).

Short-term incentive (STI)

Performance-related compensation is paid in the form of short-term incentive (STI) compensation. This amounts to around 40% of the performance-related Executive Board compensation.

The actual amount depends on the degree of target achievement for two equally weighted key performance indicators at group level – adjusted EBIT and free cash flow.

The targets to be achieved in the respective fiscal year to ensure payment of 100% of the STI are set annually in advance by the Supervisory Board, taking the operational business plan into account. In addition, an entry threshold is set at 70% of the defined target level which, if achieved, corresponds to an STI payment of 50%. There is no STI entitlement below this entry threshold. Similarly, the maximum payment is limited to 180%, which is payable if the maximum degree of target achievement of 115% is reached. Between the entry threshold, the 100% level and maximum target achievement, the payment percentage is interpolated on a straight line. The effective STI payment percentage is calculated by taking the arithmetic mean of the degree of achievement of the two performance targets.

In accordance with the GCGC, the Supervisory Board has the right to take each Executive Board member's individual performance into account by adjusting the STI for the respective fiscal year by up to 20% (bonus/penalty), based on the individual performance determined by the Supervisory Board. In this context, the Supervisory Board resolved in March 2011 generally not to grant any bonus or apply any penalty. Accordingly, the STI was not adjusted by a bonus or penalty in the reporting period or in the previous year.

Restricted Stock Plan (RSP)/long-term incentive (LTI)

Performance-related long-term incentive compensation is awarded under the Restricted Stock Plan (RSP). This compensation component is share-based and represents around 60% of variable compensation. Technically, the RSP is awarded in the form of a cash settlement; its net amount (less income tax) must be reinvested immediately in restricted MTU shares by the respective member of the Executive Board. The shares awarded in this way must be held for a holding period of four years (shareholding requirements).

To strengthen the long-term incentive effect of this compensation component, the grant value of these RSP shares is weighted with a long-term performance factor, which is calculated by taking the arithmetic mean of the STI payment percentages for the three fiscal years preceding the granting of the RSP shares. A maximum of 180% is applied. If a new Executive Board member joins the group, their multi-year performance level for the years prior to their joining the group is determined by assuming an STI payment percentage of 100%.

Adjustment of the compensation system for the Executive Board from the 2021 fiscal year

To take account of the requirements of the second Shareholders' Rights Directive (ARUG II) and the new German Corporate Governance Code (GCGC), in the reporting period the Personnel Committee decided to modify the compensation system for the Executive Board with effect from the 2021 fiscal year. For this purpose, it consulted independent external compensation experts.

As a result of the change, in addition to taking into account the achievement of the financial performance targets (adjusted EBIT and free cash flow), payment of the short-term incentive (STI) now includes the achievement of non-financial performance targets, i.e., environmental, social and governance (ESG) targets.

Achievement of the financial performance targets will still be calculated as the arithmetic mean of achievement of the adjusted EBIT and free cash flow targets. The entry threshold for payment of the STI, which corresponds to payment percentage of 50%, is to be raised from 70% to 80%, and maximum target achievement, corresponding to a payment of 200%, is to be increased from 115% to 120%. Between the entry threshold, 100% and maximum achievement of the financial targets, the payment percentage will be interpolated on a straight line.

The non-financial performance targets of relevance for the STI comprise ESG targets from the areas of environmental management, compliance, growth and resilience, product stewardship & quality, innovation, attractiveness as an employer, employees & diversity, responsible procurement and digital issues. The ESG targets, their level and the target achievement ranges will be defined annually by the Personnel Committee. The corresponding payment percentage will then be derived from the achievement of the ESG targets and will take the form of a scaled increase or reduction of the STI payment up to 20%.

Measurement of target achievement for the long-term incentive (LTI) compensation, which comprises the Restricted Stock Plan (RSP), is being adjusted from 2021. It is now calculated as the arithmetic mean of the average achievement of the adjusted EBIT target used for the STI and the average outperformance of the total shareholder return on MTU shares compared with the STOXX Europe Total Market Aerospace & Defense (TSR) index in the fiscal year in which the LTI is granted and the two preceding years. The target range for the LTI is set at between 80% and 120% and the corresponding payment percentage is 50% to 200%. The entry threshold for the TSR has been set at a relative performance versus the reference index of -10 percentage points. This corresponds to a payment level of 50%. The maximum TSR target achievement is outperformance of the index by +10 percentage points, corresponding to an LTI payment level of 200%. Analogously to the STI, the TSR target achievement level is interpolated on a straight line between the entry threshold, and a relative performance of zero and maximum target achievement. The LTI is awarded as a taxable cash settlement and is contingent upon reinvestment of the full amount in MTU shares with a holding period of four years.

For new appointments, the company pension entitlement has been altered from the previous defined-contribution pension entitlement to an annual contribution to a personal pension plan. Furthermore, the new compensation system for the Executive Board contains penalty and claw-back rules, including retrospective adjustment of compensation in the event of serious breaches of contract (compliance cases) and compensation calculated on the basis of inaccurate consolidated financial statements. Moreover, share ownership guidelines have been adopted. These require Executive Board members to purchase MTU shares, including those acquired under the RSP, corresponding to a percentage of their gross basic salary within a period of four years. The percentage of the basic salary is 300% for the CEO and 200% for the other members of the Executive Board. The shares are subject to a two-year lock-up period when a member leaves the Executive Board.

As from now, termination benefits paid to a member of the Executive Board as a result of early termination of their contract, including in the event of a change of control, will be limited to two years' compensation (cap on termination benefits) or the compensation due for the remaining term of the contract, whichever is lower. Finally, the Personnel Committee agreed to include an

escape clause in the compensation system, especially in the event of an economic or corporate crisis, and scope to grant a sign-on bonus to new members of the Executive Board to cover benefits forfeited from their previous employer.

In accordance with the applicable regulations, MTU will present the modified compensation system agreed for the Executive Board at the Annual General Meeting in 2021 so that the shareholders can adopt a resolution approving the compensation system.

Value of performance-related components

Short-term incentive (STI)

The Supervisory Board set the following performance targets for the performance period: for the short-term incentive (STI), adjusted EBIT of €800 million (actual: €416 million) and free cash flow (FCF) of €405 million (actual: €105 million). Consequently, the entry threshold for target achievement for the STI was not reached in the reporting period and the payment percentage was therefore 0% (previous year: 180%).

Restricted Stock Plan (RSP)/ long-term incentive (LTI)

The grant value of Restricted Stock Plan (RSP) shares was derived in the reporting period from the amount allocated as the percentage of total compensation and the multi-year performance target reached. The latter was calculated for each Executive Board member in the reporting period by taking the arithmetic mean of the short-term incentive (STI) payment percentages for the fiscal years 2017, 2018 and 2019.

The following numbers of MTU shares (each with a holding period of four years) were acquired by Executive Board members under the RSP:

[T30] Purchased RSP shares

Members of the Executive Board	Year	Number of shares	Purchase price per share in €	Vesting period until
Reiner Winkler	**2020**	**6,491**	**119.20**	**April 30, 2024**
	2019	3,512	209.20	April 30, 2023
Peter Kameritsch	**2020**	**3,694**	**119.20**	**April 30, 2024**
	2019	1,999	209.20	April 30, 2023
Michael Schreyögg	**2020**	**3,694**	**119.20**	**April 30, 2024**
	2019	1,999	209.20	April 30, 2023
Lars Wagner	**2020**	**3,694**	**119.20**	**April 30, 2024**
	2019	1,999	209.20	April 30, 2023

The following table shows the basis for determining the multi-year performance target achievement level under the Restricted Stock Plan (RSP):

[T31] Entitlements granted in respect of variable compensation (in %)

	2020	2019	2018	2017	2016
STI	0	180	161	180	154
RSP / LTI	174	165	168	158	139

Compensation of individual members of the Executive Board

Benefits granted (target figures) for the reporting period (GCGC)

In accordance with the recommendations of the GCGC (model table), the following table shows benefits granted for the fiscal years 2020 and 2019 based on 100% target achievement as well as the minimum and maximum amounts achievable for the fiscal year 2020.

The service cost reported and the level of provisions recognized for post-employment benefits arising from the pension commitments to all members of the Executive Board were determined on the basis of the present value, which is calculated pro rata with a diminishing balance.

[T32] Benefits granted

Reiner Winkler
Chief Executive Officer

Individual data in €	2020	2020 (Min.)	2020 (Max.)	2019
Fixed compensation	924,000	924,000	924,000	924,000
Fringe benefits [1]	27,111	27,111	27,111	25,848
Total	**951,111**	**951,111**	**951,111**	**949,848**
STI [2]	665,000		1,436,400	665,000
RSP / LTI [3]	911,000		1,639,800	911,000
Total fixed and variable compensation	**2,527,111**	**951,111**	**4,027,311**	**2,525,848**
Service cost in accordance with IAS 19	255,395	255,395	255,395	76,928
Total compensation (German Corporate Governance Code)	**2,782,506**	**1,206,506**	**4,282,706**	**2,602,776**

Peter Kameritsch
Chief Financial Officer and Chief Information Officer

Individual data in €	2020	2020 (Min.)	2020 (Max.)	2019
Fixed compensation	525,000	525,000	525,000	525,000
Fringe benefits [1]	15,788	15,788	15,788	19,666
Total	**540,788**	**540,788**	**540,788**	**544,666**
STI [2]	325,500		703,080	325,500
RSP / LTI [3]	483,000		869,400	483,000
Total fixed and variable compensation	**1,349,288**	**540,788**	**2,113,268**	**1,353,166**
Service cost in accordance with IAS 19	138,191	138,191	138,191	127,851
Total compensation (German Corporate Governance Code)	**1,487,479**	**678,979**	**2,251,459**	**1,481,017**

[1] Fringe benefits include charges to taxable income covering benefits in kind amounting to €78,246 (previous year: €84,273) and premiums for insurance policies taken out on behalf of members of the Executive Board amounting to €6,997 (previous year: €6,838).

[2] One-year variable compensation.

[3] Multi-year variable compensation.

Michael Schreyögg
Chief Program Officer

Individual data in €	2020	2020 (Min.)	2020 (Max.)	2019
Fixed compensation	525,000	525,000	525,000	525,000
Fringe benefits [1]	31,724	31,724	31,724	33,500
Total	**556,724**	**556,724**	**556,724**	**558,500**
STI [2]	325,500		703,080	325,500
RSP / LTI [3]	483,000		869,400	483,000
Total fixed and variable compensation	**1,365,224**	**556,724**	**2,129,204**	**1,367,000**
Service cost in accordance with IAS 19	124,184	124,184	124,184	116,682
Total compensation (German Corporate Governance Code)	**1,489,408**	**680,908**	**2,253,388**	**1,483,682**

Lars Wagner
Chief Operating Officer

Individual data in €	2020	2020 (Min.)	2020 (Max.)	2019
Fixed compensation	525,000	525,000	525,000	525,000
Fringe benefits [1]	10,621	10,621	10,621	12,097
Total	**535,621**	**535,621**	**535,621**	**537,097**
STI [2]	325,500		703,080	325,500
RSP / LTI [3]	483,000		869,400	483,000
Total fixed and variable compensation	**1,344,121**	**535,621**	**2,108,101**	**1,345,597**
Service cost in accordance with IAS 19	299,930	299,930	299,930	465,979
Total compensation (German Corporate Governance Code)	**1,644,051**	**835,551**	**2,408,031**	**1,811,576**

[1] Fringe benefits include charges to taxable income covering benefits in kind amounting to €78,246 (previous year: €84,273) and premiums for insurance policies taken out on behalf of members of the Executive Board amounting to €6,997 (previous year: €6,838).
[2] One-year variable compensation.
[3] Multi-year variable compensation.

[T33] Prerequisites for achieving the maximum amounts of variable compensation granted in 2020

One-year variable compensation	
STI	Target achievement for adjusted EBIT Target achievement for free cash flow
	Arithmetical mean of both figures 115% (payment percentage of 180%) and exceptional performance bonus/penalty of up to 20% in accordance with the German Corporate Governance Code
Multi-year variable compensation	
RSP / LTI	STI entitlement 180% for each of the 3 years prior to grant date

Compensation for the reporting period (Section 314 (1) no. 6a of the German Commercial Code [HGB]) and benefits granted in the reporting period (GCGC)

The members of the Executive Board received total compensation within the meaning of Section 314 of the German Commercial Code (HGB) amounting to €7 million (previous year: €9 million) for the fiscal year 2020. Of this amount, €3 million (previous year: €3 million) was non-performance-related and €4 million (previous year: €7 million) was performance-related.

In view of the pressure on the aviation sector and on MTU and its employees as a result of the Covid-19 pandemic, in March 2020 the members of the Executive Board decided to waive part of their short-term incentive (STI) for the 2019 fiscal year. The remuneration waived by the CEO was €500,000 and by the other Executive Board members €250,000 each. These amounts were used to set up an emergency relief fund to support MTU employees who were having financial difficulty supporting their families as a result of the pandemic-related operating restrictions and the use of short-time working.

The table below discloses the total compensation for individual Executive Board members pursuant to Section 314 (1) no. 6a of the German Commercial Code (HGB) as well as the actual fixed and variable compensation granted and the service cost in accordance with the GCGC's recommendations (model table) for the fiscal years 2020 and 2019:

[T34] Total compensation (HGB) / allocation (GCGC)

Members of the Executive Board	**Reiner Winkler** Chief Executive Officer		**Peter Kameritsch** Chief Financial Officer and Chief Information Officer		**Michael Schreyögg** Chief Program Officer		**Lars Wagner** Chief Operating Officer	
in €	**2020**	2019	**2020**	2019	**2020**	2019	**2020**	2019
Fixed compensation	924,000	924,000	525,000	525,000	525,000	525,000	525,000	525,000
Fringe benefits [1]	27,111	25,848	15,788	19,666	31,724	33,500	10,621	12,097
Total	**951,111**	**949,848**	**540,788**	**544,666**	**556,724**	**558,500**	**535,621**	**537,097**
STI [2]		1,197,000		585,900		585,900		585,900
RSP / LTI	1,581,496	1,501,966	838,488	796,322	838,488	796,322	838,488	796,322
Total fixed and variable compensation (total compensation in accordance with Section 314 (1) no. 6a of the German Commercial Code)	**2,532,607**	**3,648,814**	**1,379,276**	**1,926,888**	**1,395,212**	**1,940,722**	**1,374,109**	**1,919,319**
Service cost in accordance with IAS 19	255,395	76,928	138,191	127,851	124,184	116,682	299,930	465,979
Total compensation (German Corporate Governance Code)	**2,788,002**	**3,725,742**	**1,517,467**	**2,054,739**	**1,519,396**	**2,057,404**	**1,674,039**	**2,385,298**

1) Fringe benefits include charges to taxable income covering benefits in kind amounting to €78,246 (previous year: €84,273) and premiums for insurance policies taken out on behalf of members of the Executive Board amounting to €6,997 (previous year: €6,838).

2) The amount reported for the one-year variable compensation corresponds to the amount promised for 2020, to be paid out in 2020 after adoption of the annual financial statements. In accordance with decision to waive part of their STI, the STI payments for 2019 were reduced by the following amounts for the benefit of the emergency relief fund: Reiner Winkler €500,000, Peter Kameritsch €250,000, Michael Schreyögg €250,000, Lars Wagner €250,000.

3) Multi-year variable compensation.

Members of the Executive Board did not receive any compensation for board appointments in group companies. The group did not grant any loans to members of the Executive Board in the reporting period or the previous year.

Rules when terminating the contracts of members of the Executive Board

The members of the Executive Board are given defined benefit commitments whose structure corresponds to that of pension commitments for members of governing bodies of peer-group companies.

Retirement and survivors' pensions

The members of the Executive Board earn company pension entitlements in accordance with the "MTU Pension Capital" plan, which governs the post-employment benefits for members of the Executive Board of MTU Aero Engines AG. The benefit target is to provide a pension amounting to 60% of the basic salary after 15 years of service on the Executive Board. When the previous plan was replaced, the benefits earned up until December 31, 2009, were transferred to the new plan as the initial transfer amount. This entitlement represents the benefits payable under the old plan at the age of 60, adjusted by the ratio of actual years of service with the group to the number of years from joining the group until the age of 60. The initial transfer amount corresponds to the pension equivalent converted into a one-time capital amount.

Once the initial transfer amount has been determined, a pension account is opened for each member of the Executive Board, to which further capital units are credited annually. The annual capital units are determined on the basis of the individual Executive Board member's contribution and an age-related factor. The age-related factor represents an interest rate of 6% p.a. until the age of 60. The contribution period is normally limited to 15 years of service on the Executive Board and ends at the age of 60. From the age of 61, the pension account earns interest at 4% p.a. until the pension is drawn (= bonus amount). The total of accrued capital units, plus the initial transfer amount and any bonus amounts credited, make up the pension capital available to finance post-employment benefits. If a member of the Executive Board dies before reaching the age of 60, 50% of the benefits earnable up to the fixed age limit are added to the accrued balance on the pension account, taking into account the promised contribution period.

When an insured event occurs, the pension capital is generally granted as a one-time payment. However, at the request of the Executive Board member and subject to the group's approval, the balance accumulated on the pension account may either be drawn as capital in ten installments (with a 4% increase in the balance accumulated) or as a life annuity with annual increments of 1%. When an insured event occurs, the pension account is topped up to the level of benefit commitment under the previous plan (guaranteed capital). Pension benefits do not become payable until an insured event occurs (i.e., on reaching pensionable age, or in the event of disability or death), even if the insured party leaves the Executive Board. The pension entitlement is vested from inception.

Basic details of the above-mentioned commitments and benefits are shown in the following table:

[T35] Existing post-employment benefit entitlements

Members of the Executive Board in €	Initial transfer amount [1]	Guaranteed capital [2]	Annual contribution	End of contribution period	One-time payment
Reiner Winkler	1,625,140 [3]	2,510,788	400,000	1.8.2021 [4]	8,537,538 [5]
Peter Kameritsch	461,573	461,573	226,027	1.4.2029	4,324,204
Michael Schreyögg	365,627	365,627	215,478	1.8.2026	4,801,945
Lars Wagner	207,344	207,344	211,965	1.1.2033	6,791,104

[1] Credit for past service up to date of changeover to new system. Reiner Winkler: December 31, 2009; Michael Schreyögg: July 1, 2013; Peter Kameritsch and Lars Wagner: January 1, 2018.

[2] Level of benefits to which the insured party would have been entitled under the previous pension plan.

[3] Reiner Winkler had already been promised under the previous pension plan that his years of service with former group companies would count toward his pension. In connection with the transfer of his pension entitlements to the new plan, he was promised a special transfer amount of € 575,065 in 2010.

[4] As part of the contract extension in 2018, the contribution period was extended to the age of 60.

[5] With interest cost of 4% p.a., the one-time payment at the end of the settlement period on September 30, 2024, will amount to € 9,511,228.

The differences in the annual contributions to the pension accounts result from the remaining periods of service until the end of the respective contribution period, the respective age-related factors, and the individual amounts of pensionable compensation.

The following table shows the service cost for the fiscal years 2020 and 2019, and the corresponding levels of provisions, recognized in accordance with IFRS and the German Commercial Code (HGB) for members of the Executive Board:

[T36] Allocations to pension provisions and total amounts recognized

Members of the Executive Board in €	Year	Service cost (IFRS)	Service - cost (German Commercial Code)	Carrying amount of pension provisions as of Dec. 31 (IFRSs)	Carrying amount of pension provisions as of Dec. 31 (German Commercial Code)
Reiner Winkler	**2020**	**255,395**	**234,398**	**8,608,974**	**7,905,351**
	2019	76,928	71,010	8,142,654	7,349,686
Peter Kameritsch	**2020**	**138,191**	**118,398**	**4,051,864**	**3,404,331**
	2019	127,851	110,627	3,738,115	3,086,058
Michael Schreyögg	**2020**	**124,184**	**110,046**	**4,115,516**	**3,649,182**
	2019	116,682	103,850	3,859,434	3,363,355
Lars Wagner	**2020**	**299,930**	**223,804**	**1,938,897**	**1,435,098**
	2019	465,979	356,922	1,518,331	1,107,808
Total	**2020**	**817,700**	**686,646**	**18,715,251**	**16,393,962**
Total	**2019**	**787,440**	**642,409**	**17,258,534**	**14,906,907**

The defined benefit obligations for former members of the Executive Board, measured in accordance with International Financial Reporting Standards (IFRSs), amount to € 19,480,470 (previous year: € 18,372,009).

Disability

Under the rules of January 1, 2010, if a member of the Executive Board becomes disabled before reaching the age of 60, 50 % of the benefits earnable up to the maximum age limit are added to the balance on the pension account from the time of disablement. The amount credited is based on the contribution paid at the time of exit.

Severance payments on premature termination of contracts of service with members of the Executive Board

Members of the Executive Board whose contract of service is terminated prematurely by MTU are entitled to receive a severance payment equivalent to the total of the prorated basic salary, prorated short-term incentive (STI) and prorated compensation under the Restricted Stock Plan (RSP) for the original remaining term of their contract. The severance payment is capped at twice the departing Executive Board member's total annual compensation. If the contract of service is terminated by MTU for cause, no severance package is paid. In such cases, MTU also has the right to demand the repayment of the RSP tranche granted in the fiscal year in which the contract was terminated (clawback). No other clawback regulations are applied because the German Stock Corporation Act (Section 93 of the AktG) already provides for damage claims against members of the Executive Board who breach their duties.

Severance payments on premature termination of contracts of service with members of the Executive Board in the event of a change of control or changes of shareholders of MTU Aero Engines AG

Under the contracts of service for members of the Executive Board in effect since January 1, 2016, a change of control is deemed to have occurred if a shareholder, alone or on the basis of the voting rights attributable to him or her pursuant to Section 22 of the German Securities Trading Act (WpHG), acquires the majority of the voting rights and this results in significant disadvantages for the Executive Board. Material disadvantages are, in particular, if the Executive Board member is removed, if his/her responsibilities and duties are significantly altered, or if the Executive Board member is asked to accept a reduction in employment benefits or to agree to premature termination of his/her contract of service. In such case, each member of the Executive Board shall have a special right of termination, which is to be exercised within a period of six months, with a period of notice of three months to the end of a month. If a member of the Executive Board makes use of his/her special right of termination, or if the Executive Board member's contract of service is terminated by mutual consent within nine months of the change of control, the Executive Board member receives a severance payment corresponding to the benefits still to be awarded up to the end of the contract term originally agreed. For the calculation of the severance payment, 100% target fulfillment is agreed for the variable compensation components. The maximum amount of the severance payment is capped at three times the total annual compensation.

Compensation of the Supervisory Board

The rules governing Supervisory Board compensation are laid down in the articles of association of MTU Aero Engines AG. The compensation is relative to the size of the group and the duties and responsibilities of the Supervisory Board members.

Pursuant to Article 12 of the articles of association of MTU Aero Engines AG, members of the Supervisory Board receive fixed annual compensation of €50,000, payable at the end of the fiscal year. The chair of the Supervisory Board receives three times and the deputy one-and-a-half times the amount of fixed compensation. In addition to this compensation, members serving on one of the Supervisory Board's committees receive an additional €10,000 and a further €20,000 if they chair a committee. Furthermore, members of the Supervisory Board receive an attendance fee of €3,000 per meeting of the Supervisory Board and its committees, limited to €3,000 per day. The attendance fee is halved for meetings convened by the chair or deputy chair if they are conducted by means of telecommunication (telephone or video conference). Expenses incurred in connection with the exercise of their office are reimbursed, as is the value-added tax payable on compensation.

The members of the Supervisory Board do not receive any share-based compensation.

In view of the pressure on the aviation sector and on MTU and its employees due to the Covid-19 pandemic, in May 2020 the members of the Supervisory Board decided to waive their attendance fees for future meetings in the reporting period. These amounts were paid into an emergency relief fund to support MTU employees who were having financial difficulty supporting their families as a result of the pandemic-related operating restrictions and the use of short-time working.

The following compensation was awarded to members of the Supervisory Board of MTU Aero Engines AG for the fiscal years 2020 and 2019:

[T37] Supervisory Board compensation

in €	2020[1]				2019[1]			
Supervisory Board members	Fixed annual payment	Compensation for membership in committee	Attendance fees [6]	**Total compensation**	Fixed annual payment	Compensation for membership in committee	Attendance fees	Total compensation
Klaus Eberhardt (Chairman of the Supervisory Board, Personnel Committee and Nomination Committee)[3]	150,000	70,000	30,000	250,000	150,000	50,000	28,500	228,500
Josef Mailer (Deputy Chairman of the Supervisory Board) [2] [3] [5]	75,000	20,000	27,000	122,000	75,000	20,000	25,500	120,500
Dr. Joachim Rauhut (Chairman of the Audit Committee)	50,000	30,000	19,500	99,500	50,000	30,000	25,500	105,500
Roberto Armellini (since June 13, 2019) [2] [5]	50,000	10,000	15,000	75,000	27,500	5,500	9,000	42,000
Dr. Christine Bortenlänger	50,000		9,000	59,000	50,000		15,000	65,000
Thomas Dautl	50,000		9,000	59,000	50,000		15,000	65,000
Dr.-Ing. Jürgen M. Geißinger [2] [4]	50,000	20,000	16,500	86,500	50,000	20,000	15,000	85,000
Angelo Gross (until April 30, 2020) [5]	16,667		0	16,667	50,000		15,000	65,000
Michael Winkelmann (since May 1, 2020) [5]	33,333		7,500	40,833				
Anita Heimerl [5]	50,000		10,500	60,500	50,000		15,000	65,000
Dr. Martin Kimmich (until May 31, 2019) [2] [5]				0	20,833	4,167	6,000	31,000
Heike Madan [3] [5]	50,000	10,000	19,500	79,500	50,000	10,000	25,500	85,500
Prof. Dr.-Ing. Klaus Steffens (until December 31, 2020)	50,000		9,000	59,000	50,000		15,000	65,000
Prof. Dr. Marion A. Weissenberger-Eibl	50,000		9,000	59,000	50,000		15,000	65,000
Total	**725,000**	**160,000**	**181,500**	**1,066,500**	**723,333**	**139,667**	**225,000**	**1,088,000**

[1] Amounts do not include VAT.
[2] Member of the Personnel Committee.
[3] Member of the Audit Committee.
[4] Member of the Nomination Committee.
[5] These employee representatives have declared that they will donate their Supervisory Board compensation to the Hans-Böckler-Stiftung, in accordance with the guidelines of the Confederation of German Trade Unions.
[6] In view of the pandemic, in May 2020, the Supervisory Board members waived the payment of the attendance fees granted to them.

Internal control and risk management system for the group accounting process

The current recommendations of German Accounting Standard (GAS) 20 have been applied in this section of the combined management report concerning the main features of the accounting-related internal control and risk management system.

Objectives and components

MTU's Executive Board, Supervisory Board and Audit Committee attach the greatest importance to ensuring the regularity, accuracy and reliability of MTU's financial reporting. The accounting-related internal control and risk management system applicable for the MTU Group's financial statements helps ensure systematic compliance with these internal and external accounting requirements. The Executive Board of MTU bears overall responsibility for establishing and refining the required control and monitoring systems. The systems are tailored to the MTU Group's business model and company-specific requirements, and are an important part of the comprehensive approach to corporate governance that defines the basic framework for creating sustainable value for shareholders, customers, employees and the public.

/ The accounting-related risk management system (RMS) is an integral part of the group's company-wide risk management system. It forms the basis for the uniform and appropriate handling of risks and for communicating them within the group. The risks inherent in the group's financial reporting are among the corporate risks to be monitored as a whole.
The design of the accounting-related internal control system (ICS) at MTU meets the requirements of the German Accounting Law Modernization Act (BilMoG), the definition provided by the Institute of Public Auditors in Germany (Institut der Wirtschaftsprüfer e.V. – IDW), the internationally recognized and established framework of the Committee of Sponsoring Organizations of the Treadway Commission (COSO I), and the features specific to MTU. MTU understands an ICS to be the principles, procedures and measures introduced at the company by its management that are aimed at the organizational implementation of management decisions:
   - to safeguard the effectiveness and economic efficiency of business operations – which includes protecting the company's assets,
   - to ensure the regularity and reliability of internal and external accounting, and
   - to comply with statutory regulations relevant to the company.

- The internal auditing system, which is process-independent, plays an important role in checking the effectiveness of, and improving, the accounting-related ICS and RMS. The internal audit function at MTU assesses, and helps to enhance, the controlling and monitoring systems. It is also considered to have an advisory function, contributing to improving business processes and, ultimately, the effectiveness of the internal control system. The rules of procedure of the internal audit function comply with national and international requirements as laid down by the Deutsches Institut für Interne Revision and the Institute of Internal Auditors. The internal audit function is also bound by the code of professional ethics. The administrative standards of the internal audit function are accessible to all employees on MTU's intranet.
- The Audit Committee of the Supervisory Board discusses risk management and the audits by the internal audit function. In accordance with Section 107 (3) of the German Stock Corporation Act (AktG), as amended by the German Accounting Law Modernization Act (BilMoG), the Audit Committee is also responsible for monitoring the effectiveness of the risk management system, the internal control systems, the internal auditing systems, the financial reporting process and the audit of the financial statements.

Main features

- MTU has a clearly defined management and corporate structure. Key functions spanning more than one organizational unit are managed centrally. The subsidiaries nevertheless enjoy an adequate level of autonomy.
- The integrity and responsibility of all employees, also in terms of finance and financial reporting, are ensured by their undertaking to observe the group-wide Code of Conduct.
- An adequate system of guidelines has been drawn up and is updated as required.
- The departments and other organizational units involved in the accounting process are suitably equipped and regularly trained both in quantitative and qualitative terms.
- The IT systems are protected against unauthorized access by appropriate installations in the IT area. As far as possible, standard software is used in the finance systems. As part of the comprehensive IT strategy and architecture, the IT system's application controls are subject to regular internal and external reviews based on a high level of automatic (plausibility) checks. The general IT controls are checked during internal and external IT audits.
- Controls are in place for accounting-relevant processes, including dual control comprising detailed analytical checks and programmed plausibility checks on the accounting and consolidation process.
- The consolidated financial statements and all significant financial data submitted for inclusion by the group companies are audited by an external auditor once a year. The same auditor also reviews the condensed consolidated financial statements and interim group management report in the half-year financial report.
- In addition, accounting-relevant processes are checked by the process-independent internal audit function.
- The subsidiaries submit their annual and monthly financial statements directly to the group accounting department. This information is used to prepare the consolidated financial statements in accordance with IFRSs, which are compiled in consultation with the business administration departments at the group companies.
- The financial data communicated by the group companies for inclusion in the consolidated financial statements are processed and validated on a decentralized basis by the respective business administration departments on the basis of the group-wide reporting guidelines. As a supplementary control measure, (plausibility) checks on the reported data are carried out by the group accounting department during the compilation of its monthly reports and during the consolidation process for the consolidated financial statements.
- The group accounting department is also the central point of contact for financial reporting issues at group level or within individual subsidiaries and joint ventures. If necessary, external consultants are called on for support.
- All subsidiaries and joint ventures are required to report their business figures to the group in a standardized reporting format on a monthly basis, and the reported data are compared with the planning figures to ensure timely identification of discrepancies between the planned and actual figures. This allows timely identification of undesirable developments and risks so countermeasures can be taken if necessary.

Disclosures under takeover law

The following disclosures are made pursuant to Section 315a of the German Commercial Code (HGB) (takeover directive implementation). Items included in Section 315a of the German Commercial Code (HGB) that are not met at MTU Aero Engines AG are not mentioned here.

Composition of subscribed capital

The company's subscribed capital (capital stock) amounts to €53,332,259 and is divided into 53,332,259 registered non-par-value shares.

The shares are registered shares. All shares have equal rights and each share entitles the holder to one vote at the Annual General Meeting.

Restrictions on voting rights and the transfer of share ownership

As of December 31, 2020, MTU held 54,410 treasury shares (previous year: 243,070).

No voting rights are exercised in respect of treasury shares. The articles of association of MTU Aero Engines AG do not contain any restrictions on voting rights or the transfer of share ownership. The Executive Board has no knowledge of any agreement between shareholders that could give rise to any such restrictions.

Rules governing the appointment and dismissal of members of the Executive Board and amendments to the company's articles of association

The rules for the appointment and dismissal of members of the Executive Board are based on Sections 84 and 85 of the German Stock Corporation Act (AktG) and Section 31 of the German Codetermination Act (MitbestG) in conjunction with Article 5 of the company's articles of association.

All amendments to the articles of association require a resolution by the Annual General Meeting with a majority of at least three quarters of the voting stock attending, pursuant to Section 179 of the German Stock Corporation Act (AktG). The right to add amendments of a purely formal nature, for instance changes to the share capital as the result of utilization of the authorized capital, is devolved to the Supervisory Board under the terms of Article 13 of the articles of association.

Authorizations conferred on the Executive Board, especially concerning the issue and purchase of shares

Authorized capital

In accordance with Article 4 (5) of the articles of association, the Executive Board is authorized until April 10, 2024, to increase the company's capital stock by up to €15.6 million, with the prior approval of the Supervisory Board, by issuing, either in a single step or in several steps, new registered non-par-value shares in return for cash contributions (Authorized Capital 2019).

Conditional capital

In accordance with Article 4 (6) of the articles of association, the company's capital stock may be conditionally increased by up to €3,867,741 through the issue of up to 3,867,741 new registered non-par-value shares.

The purpose of this conditional capital increase is to issue shares to owners or creditors of convertible bonds and/or bonds with warrants in accordance with the authorization granted to the company under a resolution passed by the Annual General Meeting on April 15, 2015. Shares are issued at a conversion price or warrant exercise price determined on the basis of this authorization.

Until April 14, 2020, the Executive Board was authorized to issue, with the prior approval of the Supervisory Board, bearer and/or registered convertible bonds and/or bonds with warrants (collectively referred to as "bonds") with a total nominal value of up to €500 million, In 2016, MTU made use of this authorization to increase the company's capital stock by issuing a convertible bond with a nominal value of €500 million.

Further, in accordance with Article 4 (7) of the articles of association, the company's capital stock may be conditionally increased by up to €2,600,000 through the issue of up to 2,600,000 new registered non-par-value shares (Conditional Capital 2019). The purpose of this conditional capital increase is to issue shares to owners or creditors of convertible bonds and/or bonds with warrants in accordance with the authorization granted to the company under a resolution passed by the Annual General Meeting on April 11, 2019. Shares are issued at a conversion price or warrant exercise price determined on the basis of this authorization.

The Executive Board is authorized until April 10, 2024, to issue, in a single step or in several steps and with the prior approval of the Supervisory Board, bearer and/or registered convertible bonds and/or bonds with warrants (collectively referred to as "bonds"), with or without maturity date, with a total nominal value of up to €600 million, and to grant the owners of convertible bonds and/or bonds with warrants the right, obligation or option to convert them into registered non-par-value shares of the company representing a stake in the capital stock of up to €2,600,000 under the conditions established for the issue of convertible bonds or bonds with warrants. The bonds may be issued in return for cash contributions only. They may be issued in euros or – to an equivalent value – in any other legal currency, for instance that of an OECD country. They may also be issued by an affiliated company where MTU exercises control. In such cases, and subject to the prior approval of the Supervisory Board, the Executive Board is authorized to act as guarantor for the bonds and to grant the owners of the bonds the right, obligation or option to convert them into new registered non-par-value shares in MTU.

In 2019, MTU made use of this authorization to increase the company's capital stock by issuing a convertible bond with a nominal value of €500 million.

For more information about this bond issue, please refer to the section of the Combined management report dealing with the financial position, and to *Note 28 to the Consolidated financial statements "Financial liabilities."*

Resolution concerning the authorization to purchase and use treasury shares pursuant to Section 71 (1) no. 8 of the German Stock Corporation Act (AktG) and to exclude subscription rights

Under the resolution adopted at the Annual General Meeting on April 11, 2019, the company received the following authorizations:

a) The company was authorized to purchase treasury shares accounting for a proportion of up to 10% of the company's capital stock, as applicable on the date of the resolution, during the period from April 11, 2019, through April 10, 2024, pursuant to Section 71 (1) no. 8 of the German Stock Corporation Act (AktG).

At no point in time may the value of the acquired shares, together with other treasury shares in the company's possession or which are attributed to it pursuant to Section 71a et seq. of the German Stock Corporation Act (AktG), exceed 10% of the company's capital stock. At the discretion of the Executive Board, the shares may be purchased through the stock exchange or by means of a public offer to buy addressed to all shareholders (or – where permitted by law – through a public call to submit a sell offer).

The shares must be sold in return for proceeds that are not more than 10% above or below the quoted share price, net of any supplementary transaction charges. In the case of a sale through the stock exchange, the reference for the quoted share price as defined above is the average value of share prices in the closing auction of Xetra trading (or a comparable successor system) on the last three trading days prior to the purchase of the shares. In the case of shares purchased by means of a public offer to buy addressed to all shareholders (or a public call to submit a sell offer), the reference for the quoted share price is the average value of share prices in the closing auction of Xetra trading (or a comparable successor system) on the last three trading days prior to publication of the offer. In the event of substantial fluctuations in the share price, the Executive Board is authorized to publish a new public offer to buy or a public call to submit a sell offer based on a recalculated average value of share prices computed as outlined in the previous sentence.

The volume of the offer can be limited in the case of shares purchased by means of a public offer to buy addressed to all shareholders (or a public call to submit a sell offer). If the whole take-up of the offer (or the total number of offers) exceeds this volume, the purchase must be transacted in proportion to the number of shares offered. Preferential treatment may be given to small packages (up to 100 shares) offered for sale. Further conditions may be imposed in the offer or call to submit offers.

b) The Executive Board was authorized to sell the purchased treasury shares in a manner other than through the stock exchange or by means of a public offer addressed to all shareholders on the condition that the shares are sold in return for cash payment at a price that is not significantly below the stock market price of similarly entitled shares of the company at the time of sale. However, this authorization shall apply only on the condition that the shares sold excluding subscription rights pursuant to Section 186 (3) sentence 4 of the German Stock Corporation Act (AktG) do not exceed a total amount of 5% of the company's capital stock when this authorization becomes effective or – if such value is lower – when this authorization is exercised. This limit of 5% of the capital stock shall also include option rights and/or conversion rights on shares of the company which are issued during this authorization, i.e. since April 11, 2019, excluding subscription rights in mutatis mutandis application of Section 186 (3) sentence 4 of the German Stock Corporation Act (AktG), as well as the issue or sale of treasury shares without subscription rights pursuant to Section 186 (3) sentence 4 of the German Stock Corporation Act (AktG).

c) The Executive Board was authorized to use the purchased treasury shares in a manner other than through the stock exchange or by means of an offer addressed to all shareholders if the treasury shares are issued to program participants in conjunction with the company's stock option programs and those participants are, or were, employees or service providers of the company or one of its affiliated companies. If shares are to be used by issuing them to active or former members of the MTU Executive Board under the terms of the company's stock option programs, the Supervisory Board is authorized to transact this issue.

d) Furthermore, the Executive Board was authorized to use the purchased treasury shares as partial or complete payment in conjunction with business combinations or the acquisition, whether direct or indirect, of companies, parts of companies or holdings in companies.

e) The Executive Board was also authorized, with the consent of the Supervisory Board, to use the purchased treasury shares to exercise conversion rights or discharge conversion obligations relating to convertible bonds, bonds with warrants, profit participation certificates or income bonds (or combinations of such instruments) issued by the company or by a dependent affiliated company.

f) The Executive Board was moreover authorized, with the consent of the Supervisory Board and without any requirement for a further resolution to be passed by the Annual General Meeting, to redeem purchased treasury shares in whole or in part. They may be redeemed in a simplified procedure without any capital reduction and by adapting the arithmetic value of the outstanding portion of non-par-value shares to that of the company's stock capital. The redemption may be limited to a defined fraction of the purchased shares. The authorization to redeem shares may be used on one or more occasions. If the simplified procedure is employed, the Executive Board is authorized to amend the number of non-par-value shares stated in the articles of association.

g) The above-stated authorizations may be exercised on one or more occasions, in whole or in part, individually or in combination. They may also be exercised by group companies as defined in Section 17 of the German Stock Corporation Act (AktG).

h) The subscription rights of existing shareholders in respect of these treasury shares are excluded insofar as the shares are utilized in the manner stated above in subsections b) to e).

i) The authorization to purchase treasury shares granted to the company on April 15, 2015, is revoked as of the effective date of this new authorization. The authorization to use the treasury shares purchased under the terms of the above-mentioned earlier resolution dated April 15, 2015, remains in force.

Material agreements relating to change of control subsequent to a takeover bid

MTU Aero Engines AG issued a registered bond in June 2013 and a note purchase agreement in March 2014. These grant the creditor a right of early repayment in the event that a third party assumes control of over 50 % of the company's share capital with voting rights and this has a negative impact on the company's credit rating.

The convertible bond issued by MTU Aero Engines AG in May 2016 contains the following provisions with regard to a change of control: In the event of a change of control, the bond terms grant bondholders the right to exercise their conversion right within a specific period of time at an adjusted conversion rate. In the event of a change of control, bondholders can redeem their bonds prematurely at the terms described in more detail in the bond conditions. A "change of control" shall be deemed to be when control is acquired or a mandatory takeover offer is published pursuant to Section 35 (2) sentence 1, Section 14 (2) sentence 1 of the German Securities Acquisition and Takeover Act (WpÜG) or, in the case of a voluntary takeover offer, if more than 30 % of MTU Aero Engines AG's voting rights are legally or beneficially owned by the bidder or attributed to it pursuant to the bond conditions.

If one or more persons within the meaning of Section 22 (2) of the German Securities Trading Act (WpHG) (old version) acquire(s) 50 % of the voting rights of MTU Aero Engines AG, this shall represent an "acquisition of control."

The convertible bond issued by MTU Aero Engines AG in September 2019 contains the following provisions with regard to a change of control: In the event of a change of control, the bond terms grant bondholders the right to exercise their conversion right within a specific period of time at an adjusted conversion rate. In the event of a change of control, bondholders can redeem their bonds prematurely at the terms described in more detail in the bond conditions. A "change of control" comprises the acquisition of control or a mandatory offer under Section 35 (2) sentence 1 and Section 14 (2) sentence 1 of the German Securities Trading Act (WpHG). If one or more persons within the meaning of Section 29 (2) and Section 30 of the Securities Acquisition and Takeover Act (WpÜG) acquire(s) 50 % of the voting rights of MTU Aero Engines AG, this shall represent an "acquisition of control."

In October 2013, MTU Aero Engines AG agreed a revolving credit facility with a banking syndicate (extended in September 2018), which provides for a right of termination for the lenders in the event that one or more persons assume(s) control of MTU Aero Engines AG or acquire(s) more than 50 % of the company's issued capital.

In 2020, MTU Aero Engines AG took out a promissory note that gives the lender a right of termination if one or more persons assume(s) control of 50 % or more of the company's voting rights.

The bond also issued in 2020 provides that, in the event of acquisition of 50 % or more of the shares (by holding the shares pursuant to Section 33 of the German Securities Trading Act [WpHG] or through attribution pursuant to Section 34 WpHG), MTU Aero Engines AG will fix an optional redemption date when bondholders can redeem all or some of their bonds.

MTU Aero Engines AG has risk and revenue sharing agreements with an engine manufacturer containing clauses that allow the risk and revenue sharing agreement to be converted into a long-term supplier contract in the event that a material competitor of the contracting party acquires control of 25 % or more of the company's voting rights or assets.

In addition, MTU Aero Engines AG has a cooperation agreement with another engine manufacturer. Under this agreement, that manufacturer is entitled to terminate the contract for cause in the event that one of its competitors acquires more than 50 % of the company's voting rights. MTU Aero Engines AG has further cooperation agreements with the same engine manufacturer. Under these agreements, that manufacturer is entitled to terminate the contract for cause in the event that one of its competitors acquires more than 30 % of the company's voting rights.

MTU Aero Engines AG also has equity investments in various joint ventures with other engine manufacturers, the purpose of which is to cooperate in the development and production of aircraft engines. According to the provisions of the corresponding agreements, MTU Aero Engines AG's share in the joint venture may be withdrawn and its participation in the accompanying cooperation agreements terminated if MTU Aero Engines AG is taken over by a competitor of the partners in these consortia.

It is standard market practice to confer contractual rights of this kind. Should an event meeting any of the above definitions of change of control take place, the exercise of rights ensuing from these agreements could have a substantial impact on MTU's net assets, financial position or results of operations.

Other agreements

Agreements on compensation in the event of a takeover bid

Pursuant to the Executive Board contracts in effect since January 1, 2016, a change of control is deemed to have occurred when a shareholder acquires a majority interest in the company and this entails material disadvantages for members of the Executive Board.

Material disadvantages are, in particular, if the Executive Board member is removed, if his/her responsibilities and duties are significantly altered, or if the Executive Board member is asked to accept a reduction in employment benefits or to agree to premature termination of his/her contract of service. In such case, each member of the Executive Board shall have a special right of termination, which is to be exercised within a period of six months, with a period of notice of three months to the end of a month. If a member of the Executive Board makes use of this right, or if the executive employment contract is terminated by mutual consent within nine months after the change of control, the Executive Board member shall receive a severance payment corresponding to the benefits that would otherwise have been awarded up to the date on which the contract would normally have expired. For the calculation of the severance payment, 100 % target fulfillment is agreed for the variable compensation components. The maximum amount of the severance payment is limited to three times the target annual direct compensation.

No comparable agreements have been made with regard to other employees.

Under the revised compensation system for the Executive Board, which was agreed in October 2020, the above rulings will be amended for contracts with Executive Board members concluded after January 1, 2021 to cap the maximum termination benefit at two times the target annual direct compensation. The intention is to replace the present contracts with revised contracts.

Other disclosures

Non-financial statement

This non-financial statement of MTU Aero Engines in accordance with the German CSR Directive Implementation Act (CSR-RUG) provides information on material non-financial topics relating to the fiscal year 2020. This is a condensed non-financial statement in accordance with Sections 289b et seq. and Sections 315b et seq. of the German Commercial Code (HGB). It contains disclosures relating to MTU Aero Engines AG as the parent company, as well as information relating to the MTU Group. The structure of the group is described in the *Combined management report under "The MTU Group."*

In addition, in early summer, the company publishes a separate sustainability report for the previous fiscal year in accordance with the international reporting standards of the Global Reporting Initiative (GRI).

Since the definition of materiality used by CSR-RUG differs from the definition used by the GRI, MTU has not used any standard as the framework for its non-financial statement.

Business model

The MTU Group and its business model are described in the *Combined management report under "The MTU Group."*

Framework

The key topics for the non-financial statement are identified by an interdisciplinary corporate responsibility (CR) team comprising the CR coordination and the CR divisional coordinators in the relevant organizational units, in consultation with the CR Board, which is the central CR decision-making body at MTU, and the Executive Board. The basis for this is MTU's group-wide CR strategy, which sets out the topics considered to be material for the company and its stakeholders. These topics are assessed in an annual materiality analysis based on the social and environmental impacts of MTU's business activities using criteria such as legal regulations, the company's sphere of influence and the requirements of stakeholder groups. The topics are also evaluated in terms of their relevance for MTU's business, for instance their impact on the group's reputation and on its profit and loss situation.

As a result of this process, for 2020, nine topics were defined as relevant for the non-financial statement in accordance with German CSR Directive Implementation Act (CSR-RUG). This legislation requires the provision of relevant non-financial information on the business performance, operating results and position of the group. Information is also required on the impact of its business activities on the following aspects: environmental matters, employee matters, social matters, human rights,

combating corruption and possible additional aspects. As one such additional aspect, the non-financial statement contains information on product quality and flight safety. As part of the environment aspect, MTU provides information on the climate impact of aircraft engines and, as a new material topic identified in the reporting period, CO_2 emissions from production facilities. As a result of the materiality analysis, the non-financial statement no longer includes information on noise emissions from products, which was included in the section on eco-efficient engines in the previous year. This information is included in the sustainability report in the details of the health impact of product use. Responsible international trade, respect for employees' human rights and respect for human rights in the supply chain are allocated to the human rights aspect. The materiality evaluation of the topics was discussed by the Supervisory Board's Audit Committee.

[T38] Contents of the non-financial statement

Aspect in accordance with the German CSR Directive Implementation Act (CSR-RUG)	Topics of relevance for MTU
Additional aspect	Product quality and flight safety
Environmental matters	Climate impact of aircraft engines
	CO_2 emissions at production sites
Combating corruption and bribery	Prevention of corruption and bribery
Employee matters	Occupational safety
	Employee development
Respecting human rights	Respecting the human rights of employees
	Respect for human rights in the supply chain
	Responsible international trade

Once again, no topics of relevance for the CSR-RUG aspect of social matters have been classified as relevant for inclusion in the report.

Risk identification and evaluation for the topics covered by the non-financial statement are based on MTU's established opportunity and risk management. The potential risks to the environment, society and employees resulting from MTU's business activities are compiled and evaluated quarterly by the CR coordinators and the CR Board analogously to the established opportunity and risk process, taking into account, in each case, the probability of occurrence and impact of the risk. MTU has established complementary to the risk management process a compliance system with a separate reporting line. It is organized and managed by the Compliance Officer. The risk analysis did not reveal any reportable risks with a high probability of having a severe negative impact on the identified non-financial topics.

2020 was dominated by the global coronavirus pandemic. This also had a noticeable effect on non-financial topics. Where pandemic-related influences affected developments, measures and results, their impact on the relevant topic is outlined.

Product quality and flight safety

Quality and safety are of paramount importance in aviation and the corresponding framework conditions are strictly regulated. Legal requirements for the safe operation of flights are closely monitored by the aviation authorities. This is reflected in the high importance MTU places on product quality and flight safety. The company has to comply with the legal requirements imposed upon it as a development, manufacturing and maintenance organization in the aviation industry. MTU continuously evaluates the regulatory requirements for its business activities in order to obtain or keep the required licenses, approvals and certifications from the aviation authorities.

Safety has priority at MTU

A group-wide integrated management system (IMS) ensures compliance with regulatory requirements and internal regulations as well as clear assignment of responsibilities within the company. One principle of the IMS policy is that "Safety takes priority in what we do." The basic framework is enshrined in a management manual that is binding for all employees and managers across the group. Corporate Quality is a separate organizational unit directly subordinate to the Chief Operating Officer (COO). It reports quarterly to the Executive Board on quality aspects and flight-related incidents. In accordance with the International Civil Aviation Organization (ICAO) standard, the IMS includes a specific safety management process, which defines how to handle safety-related incidents at MTU's locations and in air traffic. Appropriate organizational structures and responsibilities, such as a Flight Safety Board and a Flight Safety Manager, have also been established. High quality standards, together with product safety and reliability, are important corporate objectives that are enshrined in the MTU Principles.

The strict regulatory quality and safety requirements must be complied with throughout the entire product lifecycle of an engine. MTU has therefore implemented processes designed to meet these requirements. For example, the aviation sector has strict rules governing documentation in order to verify the airworthiness of engines and their components. There must be no gaps in documentation

over the entire product lifecycle. To ensure compliance with quality and safety requirements, MTU has implemented comprehensive testing and monitoring processes throughout the entire value chain. Components undergo according to their criticality thorough tests and are monitored in the production process.

Annual internal audits and audits by customers and authorities on quality issues provide evidence that MTU meets uniformly high standards and is in conformance with regulatory requirements. MTU uses supplier audits to monitor suppliers' compliance with sector-specific requirements. The audits are managed on a site-specific basis. The implementation of MTU's IMS at the individual sites is validated and certified by independent and accredited external auditors. As a consequence of the coronavirus pandemic, some audits were performed in remote mode via online communication in the reporting period and the number of audits had to be reduced due to operating restrictions.

Customer satisfaction as a central corporate objective
MTU continuously monitors quality and, where necessary, initiates appropriate measures to achieve effective improvements. Providing customers and partners with safe and high-quality products and services helps to keep MTU's business competitive. "We increase the satisfaction of our customers" was an overarching corporate objective for 2020. The sub-targets included a measurable increase in the quality of work. Therefore, the operational target for each site was to reduce customer complaints, or at least hold them stable. The targets are implemented through initiatives with a long-term focus, which are realized on a continuous basis.

A defined process is in place to ensure that all customer complaints about sub-standard quality of MTU products are followed up and analyzed, and that appropriate measures are defined and implemented to permanently eliminate the root cause. The success of these measures is closely monitored. Customer complaints are evaluated at site level. At the majority of sites, the number of customer complaints in 2020 was lower or unchanged from the previous year.

Constantly improving quality management
MTU is continuously developing its quality management system and regularly takes up suggestions arising, for example, from its collaboration in the international Aerospace Engine Supplier Quality (AESQ) Strategy Group and regular communication of quality managers at and between sites. Continuous development focuses first and foremost on the set of rules and internal quality reporting and, especially, the digitalization of quality processes. In addition, regular site-specific training on quality aspects is organized for managers and employees. For example, new employees are required to complete a mandatory training module on the IMS. Because of the coronavirus pandemic, MTU switched most of its training courses to online seminars in the reporting period.

Climate impact of aircraft engines
MTU has been working for a long time on solutions to make flying more environmentally friendly. In the past, targets in the aviation sector mainly concentrated on the impact of CO_2 emissions. In the future, the focus will be on the entire climate impact. MTU is aware of this responsibility and is committed to the goals of the Paris Agreement, which aim to limit global warming to well below 2 °C. In addition to reducing fuel consumption and thus CO_2 emissions, MTU will therefore be focusing increasingly on reducing condensation trails and cloud formation. Another major objective in the company's technology roadmap is reducing the health impacts of noise and exhaust emissions. With its development and manufacturing expertise for high-pressure compressors and low-pressure turbines, MTU can directly influence these targets. The MTU Principles stress sustainable product development with fewer negative effects on the climate and health and corresponding principles are set out in the MTU Code of Conduct.

There is a direct correlation between fuel consumption and CO_2 emissions. These are a material factor affecting the climate impact of aviation. Making engines more fuel-efficient therefore has high priority because it saves resources and also reduces the impact on global warming. The target set in the Paris Agreement of limiting global warming shifts attention away from CO_2 emissions on their own to all climate-related emissions. These non-CO_2 effects account for a high proportion of the climate impact of aviation, for example, through condensation trails caused by emissions of water and particulates. MTU is responding to this by research on the evolution of gas turbine technology and on revolutionary new propulsion concepts, including emission-free solutions.

In view of the target set by the Paris Agreement, the pace and scope of all activities need to be increased. MTU summarized its long-term path to emission-free flying in its Technology Roadmap Towards Emission-Free Flying. This sets out the principal new propulsion technologies required, including, in particular, sustainable fuels and hydrogen-driven fuel cells as a long-term concept for propulsion systems as the latter has the potential to facilitate emission-free flying.

An Innovation Board regularly discusses all topics related to technology and innovation and initiates technology

projects and studies. The Technology steering committee, which includes the Chief Operating Officer and Chief Program Officer, approves MTU's technology roadmap and is regularly updated on progress. MTU manages its product development in a multi-level technology and innovation process. In the short term, product development focuses on concrete customer specifications based on present technologies. In the mid term (up to 15 years), advanced product designs will be generated in order to derive technology requirements. In the long term (by 2050), pilot concepts will be drafted with the aid of technology radar and development of the enabling technologies will be initiated.

MTU is committed to the principle of integrated environmental protection, which takes a precautionary approach to how the company's products impact the environment, and integrates insights from this into entrepreneurial decisions. MTU's technology and innovation process incorporates the environmental and societal driving forces of aviation and derives its own targets for product development from them. The company also uses dialogue with stakeholders to identify their expectations and the impact of aviation on the environment and society. In 2020, MTU took part in discussion forums such as the National Aviation Conference and the German Aerodays 2020 to draw the attention of politicians, the general public, research and industry to ways of making flying more environmentally friendly, including emission-free flying.

New roadmap for emission-free concepts
The aviation industry is characterized by long product cycles, with aircraft engines generally spending 30 years in service before they are decommissioned. Goals for the production of more eco-efficient engines therefore have a long-term perspective and are set out in memoranda of understanding with stakeholders (airlines, aviation industry, research and aviation authorities). One example is the SRIA Agenda in Europe. Since the targets set by the Paris Agreement to mitigate climate change are far more ambitious than those defined in the SRIA Agenda, which MTU has taken as its guide in the past, the company is currently revising its Clean Air Engine Agenda (Claire). In this internal roadmap for the development of engine programs, MTU has defined its own eco-efficiency targets through to 2050. The realignment includes both faster development of new propulsion concepts and the implementation of emission-free concepts. It is scheduled for publication in 2021.

Development and approval cycles for aircraft engines and their ongoing development are very time-consuming. Therefore, MTU's long-term approach to improving the aviation industry's environmental performance, centering on continuous research and development, currently includes annual qualitative targets only, but no quantitative targets that would support annual reporting of KPIs.

Climate protection in three stages: Claire Level 1
The PW1100G-JM member of the Pratt & Whitney GTF™ engine family reduces fuel consumption and CO_2 emissions by 16% (according to data and calculations provided by the OEM Pratt & Whitney), thus exceeding the target set for the first Claire level of a 15% reduction by 2015 (reference base 2000). MTU developed the Geared Turbofan™ in cooperation with Pratt & Whitney and takes charge of some of the series production. The Geared Turbofan™ will be used for five aircraft platforms. All applications are scheduled to be transferred stepwise to series production by 2022.

Milestones in the implementation of Claire 1 in 2020:
- Considerable increase in the service life of the PW1100G-JM engine due to successful replacement of the third stage of low-pressure turbine
- 7.2 million flight hours with the GTF™ engine family (as of January 2021)
- Successful certification of the GE9X engine for the Boeing 777X family by the Federal Aviation Administration (FAA) in the USA

25% less fuel consumption by 2030: Claire Level 2
MTU's target as part of its cooperations up to 2030 is to reduce fuel consumption by 25% (per passenger-kilometer, compared with a state-of-the art engine from 2000). An even greater reduction in CO_2 emissions could be achieved by using sustainable fuels. Claire Level 2 will be implemented using the Geared Turbofan™ engine, which, in the next generation, will be refined into an ultra-high-bypass engine with the potential to significantly reduce fuel consumption. MTU is already working on the preliminary design of this engine. MTU is developing the technologies required for this generation as part of the German aviation research program LuFo and European technology programs. Further development of the technologies until they are mature enough to be used in product development is taking place as part of the Clean Sky research program.

The European technology programs LEMCOTEC, E-Break and ENOVAL have resulted in new engine technologies, although these are still at an early stage of development. Depending on application (short-, medium- or long-haul), they are expected to cut fuel consumption by 25 to 32% (per passenger-kilometer) compared with the state of the art in 2000. These results show that the SRIA 2020 and Claire 2 targets of 20% and 25% respectively are achievable. These technologies are currently undergoing further development to make them suitable for serial production.

Milestones in the implementation of Claire 2 in 2020:

- Successful delivery of an improved low-pressure turbine for a more efficient PW1100G-JM to Pratt & Whitney for testing
- Preparation for tests on new high-temperature materials as part of Clean Sky 2

New engine architectures from 2050: Claire Level 3
Furthermore, MTU is already collaborating with universities on the next level of the Clean Air Engine agenda for 2050 (Claire 3). This includes plans to implement new engine architectures to move toward emission-free flying. Here, MTU is pursuing two different concepts:

- Heat engines featuring innovative cyclic processes beyond conventional gas turbines, which promise a significant improvement in thermal efficiency (Water Enhanced Turbofan Engine, WET).
- Electric propulsion systems, ranging from electric batteries to hybrid systems (gas turbine and battery) and fuel cells

Milestones in the implementation of Claire 3 in 2020:

- Initial tests on the condensation of water from exhaust gas streams for MTU's WET concept as a key technology for climate-neutral flying
- Establishment of a flying fuel cell team to research and develop an electric propulsion system based on fuel cells
- Collaboration with DLR on a flying fuel cell demonstrator based on a modified Dornier Do228 propeller plane
- Definition of a technology project with partners to examine future aviation scenarios with a focus on climate-neutral flying

As well as supporting the development of eco-efficient propulsion systems, in 2020 MTU continued to support the introduction of sustainable fuels with a low carbon content, for example, through aireg e.V. (Aviation Initiative for Renewable Energy in Germany). MTU established this initiative jointly with airlines, manufacturers and research institutes in order to consolidate activities and expertise in this area in Germany. MTU acts as an advisor to this initiative.

CO_2 emissions at the production sites

Environmental protection in manufacturing and maintenance is important to MTU. The focus here is on climate protection. The Executive Board bears responsibility for Group-wide environmental protection. Uniformly high standards are implemented through an environmental management system that defines processes, responsibilities and targets at site level. Environmental protection is part of MTU's integrated management system (IMS). The environmental protection criteria apply for all business units and processes and are implemented through process workflows and special company standards. The minimum standard for the operation of machines and facilities such as test stations is set by national legislation and secondary regulations. Official permits for environmentally relevant facilities supplement internal rules. Routine and ad-hoc measuring, testing and inspections are designed to ensure compliant operation of facilities.

Environmental and climate protection are an integral part of the MTU Principles, which apply to all employees. Here, the company sets out its commitment to an integrated approach, with environmental and climate protection included in business decisions. Environmental responsibility is explicitly set out in the MTU Principles in the section "Environment and society."

Environmental management is organized on a decentralized basis. All production sites have environmental departments responsible for local implementation. The site managers bear direct responsibility for environmental protection at their sites. They are advised and supported by the local environmental departments. The environmental departments regularly share information on innovations and best practices. The German sites are certified as complying the international environmental standard ISO 14001 and/or the EU Eco-Audit Regulation (Eco Management and Audit Scheme, EMAS).

MTU strives to continuously develop its operational environmental protection. As part of the certification process, independent external auditors and accredited environmental experts inspect the implementation and observance of the applicable environmental management requirements and make suggestions for improvements. This is supplemented by internal inspections and auditing of operations in order to serve compliance with operational environmental protection requirements. The site managers use regular management reviews to monitor the implementation and effectiveness of environmental management. In this way, they influence its continuous development. In addition, through IMS reporting, the Executive Board receives a quarter report on CO_2 emissions relative to hours of production at the sites in Munich, Hanover, Ludwigsfelde, Rzeszów and Vancouver.

Encouraging environmental awareness in the workforce
Employees are actively included in environmental protection through information campaigns and training, for example, as part of the onboarding of new employees. Raising the environmental awareness of all employees in production and administration is part of the Code of Conduct. The aim of the "Zero" campaign in Munich is to reduce the consumption of resources, cut emissions, and

encourage employees to act in a manner that is environmentally aware.

MTU is also engaged in dialog with external stakeholders on environmental factors. Stakeholders such as authorities and local residents can submit complaints and grievances to the company via the established reporting channels. These are investigated. The environmental officers at the German sites are the first-line contacts for questions and comments. The Munich, Hanover and Ludwigsfelde sites provide information on their environmental impact and measures in annual environmental declarations. In addition, stakeholders can give feedback on sustainability aspects via an online survey.

As a member of the UN Global Compact, MTU has given a commitment to environmental protection through acceptance of the ten principles of this sustainability initiative. The company is also represented on local initiatives such as the Bavarian energy efficiency network Been-i, the climate pact of Munich businesses, which embarked on its second phase in 2019 under the motto "Better cooperation – better climate protection," and the Bavarian climate and environmental pact, which was established in 2020.

Continuously reducing CO_2 emissions
MTU aims to continuously reduce CO_2 emissions in development, production and maintenance activities at its facilities in order to make a contribution to global climate protection.

Targets for reducing CO_2 are set on site-level. At MTU's headquarters in Munich, the "Clean Air Industrial Site" program to reduce CO_2 emissions by 25 % (reference base: 1990) was successfully completed at the end of 2020. A follow-on environmental program has been adopted with targets for further reductions by 2022, based on the requirements set out in the Munich Climate Pact. Other MTU locations also have environmental programs. At the Hanover site measures have been agreed up to 2022, principally to reduce gas and electricity consumption by machinery and in facility management. The targets set by the Ludwigsfelde site include reducing energy consumption by at least 1 % p.a. up to 2022. The site in Rzeszów, Poland, introduced the "Eco Facility 2025" initiative in the reporting period. This aims to foster climate-aware behavior and initiate investment projects for technical solutions to reduce energy consumption and the related CO_2 emissions.

In the reporting period, CO_2eq emission from MTU's production sites totaled 70,500 tonnes. Group-wide, Scope 1 emissions were 34,800 tonnes (AG: 17,000) and Scope 2 emissions were 35,700 tonnes (AG: 19,700). The Scope 1 CO_2eq emissions result from consumption of direct fuels, which MTU reports as consumption of kerosene and natural gas. Scope 2 CO_2eq emissions comprise the consumption of purchased energy. At MTU, they comprise consumption of electricity and district heating. The Scope 2 emissions are calculated using the energy suppliers' emissions factors (market-based method).

Prevention of corruption and bribery
MTU condemns corruption of any kind and all other forms of white-collar crime. Long-term business success is based on compliance with the applicable laws and regulations and the company's own internal guidelines. A group-wide Code of Conduct requires employees and management to act with responsibility and integrity and to comply with the law and in-house regulations. The MTU Principles help MTU to act in a consistent and reliable manner and make compliance with the Code of Conduct and ethical principles mandatory. MTU guidelines also provide clear rules for day-to-day dealings with officials and on gifts. Further internal regulations concerning the prevention of corruption relate to hospitality, customer events, donations and sponsoring and the approval process for sales consultants.

As the highest decision-making authority, the CEO bears the responsibility for the company's business ethics and anti-corruption policy. The central functions responsible for ensuring compliance are a group-wide Compliance Officer and the Compliance Board. The Compliance Officer is responsible, in particular, for ongoing development of MTU's established compliance system to prevent corruption. He works in close consultation with the Compliance Board. The Compliance Board holds both regular and ad hoc meetings at the invitation of the Compliance Officer. The Compliance Officer submits quarterly reports to the Executive Board and the Supervisory Board's Audit Committee, which in turn reports to the plenary meetings of the Supervisory Board. The Supervisory Board's Audit Committee oversees the Executive Board's compliance activities.

The company has established a global whistleblower system that allows employees and external stakeholders to report suspected cases of misconduct confidentially to the Compliance Officer. In addition to seeking personal contact, the electronic, web-based iTrust system can be used to submit reports anonymously. The Compliance Officer examines all allegations received and manages the necessary measures if they prove founded.

MTU's goal is to prevent corruption and bribery throughout the group (principle of zero tolerance). To minimize compliance risks, the Compliance Officer screens, among other areas, all sales-related consultancy contracts for

possible corruption risks before they are concluded or renewed. The Compliance Officer also uses external service providers for this. The Corporate Audit unit examines the legal conformity of business processes and compliance with internal guidelines through regular audits. Due to the pandemic, some audits were performed remotely in 2020. Raising awareness of corruption risk management is done first and foremost by organizing mandatory group-wide anti-corruption training for managers and for employees in specific functions, for example in sales. In the reporting period, most training on preventing corruption took place via the e-learning program on the Code of Conduct. In addition, face-to-face training sessions on antitrust law were held for employees and managers in relevant areas such as sales, procurement and program management.

No cases of corruption were identified in the reporting period.

External standards and memberships
MTU's compliance management system is based on the requirements of assurance standard IDW AsS 980 published by the Institute of Public Auditors in Germany (IDW) and the Good Practice Guidance on Internal Controls, Ethics, and Compliance issued by the Organisation for Economic Co-operation and Development (OECD). It has also signed the standards issued by the Aerospace and Defence Industries Association of Europe (ASD), which aim to prevent bribery and corruption and encourage fair and equal competition. In Germany, this initiative is led by the German Aerospace Industries Association (BDLI). Moreover, these standards are a binding element of contracts with sales consultants. MTU is also a member of the following initiatives whose activities include the prevention of corruption and bribery:

/ UN Global Compact,
/ TRACE International.

Keeping compliance rules up-to-date
MTU strives to continuously develop its compliance system. This includes reviewing internal compliance rules to ensure that the group-wide regulations are always up-to-date. In this context, MTU has updated its group-wide Code of Conduct and given greater importance to human rights, data protection and climate protection. The changes were communicated via internal media. A new e-learning module for employees on the updated Code of Conduct is planned for 2021.

Occupational safety
MTU places a great deal of importance on the safety of its employees. Employee health and safety are included in MTU's Code of Conduct as key principles of corporate social responsibility. Compliance with national laws on occupational safety is embedded in the Code of Conduct as a mandatory minimum standard for all MTU subsidiaries. In addition, MTU has an internal standard that contains generally valid parameters, rules and definitions of performance indicators. Quarterly group-wide reporting to the Executive Board is established. Occupational safety is organized on a decentralized basis at MTU and the sites are responsible for implementing the relevant requirements. At the company's production sites, occupational safety is the responsibility of the site managers and occupational safety officers are appointed at management level. The responsible local departments implement site-specific occupational safety requirements and report regularly to the site management. The company's production sites in Germany, Poland and Canada have local occupational safety committees, which include representatives of the workforce.

Occupational safety is part of MTU's integrated management system (IMS) and is regularly reviewed and driven forward. At the European production sites, workplace regulations that are mandatory for all employees contain important safety rules pertaining to accident prevention, fire protection and what to do in the event of workplace or commuting accidents.

Health and safety was especially important in 2020
MTU strives to minimize health and safety risks to its employees and third parties as far as possible, whilst also seeking to make continuous improvements. In view of the coronavirus pandemic, infection prevention was a central issue in 2020. MTU fulfilled its obligation as an employer and implemented extensive technical and organizational measures at all locations to protect the health of its employees. These covered by workplaces and workflows. Mandatory guidelines for all employees based on the new statutory occupational safety standards in Germany aim to prevent MTU employees catching the virus during their daily work. Employees were informed promptly about the new regulations.

Irrespective of the present, pandemic-related infection protection measures, workplaces are regularly assessed for any risks and hazards they present for employees so that appropriate measures can be implemented where necessary. To prevent accidents and achieve a lasting reduction in the number of accidents, the local occupational safety specialists record all accidents using uniform criteria and analyze them with the employees involved and their managers. Where the analysis reveals significant accident hotspots, the causes are investigated and appropriate steps taken to prevent a recurrence. In addition, near-misses are recorded and evaluated at all production sites. Regular safety training is required for all employees throughout the group and trained first responders have been appointed. In addition, the responsible local departments undertake continuous prevention work through training sessions and information on occupational safety issues. Wherever possible, training sessions were held remotely in the reporting period. Temporary staff are included in occupational safety on the same basis as permanent employees.

The occupational management systems at MTU's German locations are certified externally as conforming to the new standard ISO 45001 Occupational health and safety management systems, which has replaced OHSAS 18001.

Annual tolerance thresholds are set for category 4 reportable workplace accidents at MTU's production locations (accidents, excluding traffic accidents, that entail more than three days of absence). They ranged from one to ten accidents per location in 2020. Four of the five locations were within the tolerance thresholds. The MTU Group recorded a considerable decline, to 22 (MTU AG: 7), in the number of category 4 accidents in the reporting period (2019: Group 47, MTU AG 22). Factors driving this improvement included not only the amount of time spent working on the company's premises, but also the focus of preventive measures focused on occupational safety in manufacturing facilities to further reduce risks and increase awareness of the need to wear personal protective equipment. For example, location-specific occupational safety programs were developed and implemented. In addition, an action plan on monthly occupational safety issues was used in production facilities. As a result, the group-wide accident rate decreased from 4.4 reportable accidents per 1,000 employees (MTU AG: 4.0) to 2.1 (MTU AG: 1.3) in 2020. MTU therefore still has a high level of occupational safety compared with the average for the German metal-working industry, which recorded 33 accidents per 1,000 employees (Wood and Metal Trade Association – BG Holz- und Metall; 2019 data). As in previous years, there were no fatal accidents at MTU. The accident statistics cover the entire workforce, including apprentices, interns, school and university students and temporary employees. Furthermore, in 2020 there were no reportable accidents entailing more than three days of absence and no fatal accidents involving employees from temporary staff.

Proactive measures to improve safety
Occupational safety is implemented on a site-specific basis. Interdepartmental networking supports mutual learning and standardization within MTU. The local occupational safety officers derive proactive measures from regularly updated risk assessments, routine inspections of workplaces and audits of production and administration, which continued unchanged in 2020. All accidents are reported and evaluated. The analyses show that MTU's plant and machinery generally have a very high level of technical and organizational safety, so the cause of many accidents tends to be attributable to behavior rather than to the operation of plant and equipment. Therefore, measures once again focused on promoting safe working practices and enhancing the safety culture. For example, the Munich location introduced an occupational safety campaign with the motto "Safety First – Work safely, go home healthy." Furthermore, in the present pandemic situation, MTU is making increasing use of e-learning and video formats for safety training to raise awareness of risks and in 2020 it stepped up the focus on ergonomics and health management at its locations.

Employee development
Innovative capability and competitiveness are key success factors in the aviation industry. MTU is convinced that continuous and intensive employee development is essential for this and therefore invests in vocational and further training and in the development of talented employees. That has not changed, even during the coronavirus pandemic.

Moreover, in many of the areas in which MTU operates, training requirements are defined by the aviation authorities. One example is mandatory training on human factors (human error). In addition to industry-specific vocational training, for example, of aircraft maintenance engineers, and dual courses of study aimed at building up knowledge over the long term, MTU encourages further training of its employees. This is a key principle of corporate social responsibility defined in the company's Code of Conduct. Promoting further training and individual development perspectives for employees and managers is also enshrined in the MTU Principles and group-wide HR strategy. The head of human resources is responsible for

training and development of employees group-wide. The Executive Board is updated on training indicators once a year through the education and training report, and discusses specific training initiatives.

The enormous importance of vocational and further training is reflected in the extensive range of training and development offers and MTU's spending on staff training. That is based on a group-wide works agreement in Germany, which guarantees all staff access to training and requires managers to discuss development options with their employees (training interview). At MTU's three sites in Germany, the works council is also involved in employee training in accordance with the German Works Constitution Act (Betriebsverfassungsgesetz) and has a say in the training and development program. The international locations also have their own regulations. At MTU Aero Engines North America, for example, each employee receives an annual development plan.

Employee development and lifelong learning help employees hone and develop their skills. Their training requirements are established annually in a standard process either in a training interview or in divisional/company-level interviews. After completion, training courses are evaluated in a personal meeting between the employee and their supervisor, or in some cases via a feedback form. Completed training and development courses are documented in a training history. Training officers can be consulted at any time for advice on needs-focused training. To align training to the future, an analysis of required skills is currently under way. By May 2021, a preliminary study for the new Future Skills project will identify future key competencies for manufacturing and assembly workers, especially in the area of digitalization. A project at the German locations to drive forward knowledge management was completed with an initial prototype in 2020 and is providing key insights for the next steps in shaping new working practices and future-oriented knowledge management at MTU.

An online learning portal offers employees the opportunity to organize training for themselves, in consultation with their supervisor. This comprises multi-lingual content in German, English and Polish and is an important step in the rollout of multi-media learning, which has becoming more important against the backdrop of the coronavirus pandemic. Due to the pandemic, more digital and hybrid learning formats were used in 2020 to provide training for specialists at all levels.

Leadership and commitment

The MTU Leadership Values ("We transform, We empower, We create trust") introduced in 2018 are a common set of values and principles for managers. They provide guidance and define leadership expectations. The Leadership Values are particularly relevant in times of change. That applies above all to "We create trust." In a crisis like the present coronavirus pandemic, where an increasing number of employees are working from home in order to comply with the present infection protection requirements, a high level of trust between managers and their employees is essential. Managers have access to continuous guidance and ideas, for example, through the "Forum Leadership" blog, which is updated fortnightly, and leadership nuggets, a regular series of brief online training sessions. These address current challenges such as remote leadership, virtual teamwork and resilience in times of crisis. Change leadership has become a key leadership skill. Therefore, there are plans to establish the development of managers as "change managers" as an integral part of MTU's understanding of leadership in order to give the company a stronger basis for the future.

In addition, MTU offers development opportunities and programs at all levels to identify and support in the best possible way talented employees, and to support the professional development of those already appointed to management positions. One central tool is the Development Center, which uses exercises and interviews to help individuals with potential in the MTU Group draw up an individual development plan to prepare for leadership functions. The aim of the defined process at the Development Center is to undertake an objective assessment of talented employees and raise their visibility in the company. Around 74 % (MTU AG: 73 %) of the managers newly appointed to leadership functions in 2020 have attended a Development Center. As a consequence of the coronavirus pandemic, the Development Centers could not be held as planned in 2020.

There are also special development programs for recently appointed managers: a Leadership Exploration Program for departmental managers and a First Leadership Program for team leaders. To supplement these, the Leadership Curriculum 2020 comprised virtual training and face-to-face training sessions in small groups.

MTU offers both new and experienced managers opportunities to receive management transition coaching and box stop coaching, with scope for reflection and sparring.

Furthermore, fostering talented women and equality in management are important to the group. In the light of this, MTU has a wide range of measures to support the professional development of women.

Regular employee surveys are an important yardstick for successful teamwork and leadership. In 2020, MTU conducted two surveys in the form of "pulse checks" at its German locations. Employees at the site in Rzeszów in Poland are also regularly asked for feedback.

MTU focuses on continuity in vocational training
Qualified employees with a sound vocational training remains important to MTU. Despite the economic crisis, it continued its vocational training in Germany as normal and enabled around 100 young people to embark on a training course in 2020. For its new location in Eastern Europe, MTU Maintenance Serbia d.o.o, it is continue to prepare a vocational training program based on the German dual training system. To this end, MTU has signed an initial cooperation agreement with the Aviation Academy in Belgrade.

MTU also continued its extensive investment in staff training in 2020 despite the coronavirus pandemic and the associated interruption of business operations. Group-wide, MTU invested a total of €3.0 million in staff training (2019: €5.4 million). At MTU AG, it spent €1.7 million on staff training (2019: €3.4 million) (costs for internal and external training, excluding vocational training). The reduction in training expenditure was due to the cancellation of many face-to-face training sessions and the rapid development and increased use of online training and e-learning formats. In the first half of the year, the available tools had to be made ready for use. In the second half of the year, they almost completely replaced face-to-face training.

Respecting the human rights of employees
MTU respects the internationally proclaimed human rights set out in the United Nations' Universal Declaration of Human Rights and enforces and protects these rights within the company. Human rights are integrated into the corporate culture with the aid of various tools. In particular, MTU strives to prevent employees being exposed to any violation of their human rights (zero-tolerance principle).

MTU is committed to respecting the individuality and dignity of every individual, maintaining equality of opportunity in the workplace and preventing discrimination. The protection of human rights, the right to appropriate remuneration as well as recognition of regulations governing employee and union representation under labor and works constitution law are implemented group-wide through the Code of Conduct. As an employer, MTU aims to create fair working conditions based on legally binding employment contracts and appropriate remuneration. This includes freedom of association and the right to adopt collective agreements. Compliance with the Code of Conduct and ethical principles is also enshrined in the MTU Principles. The commitment to respecting human rights is reinforced by MTU's status as a signatory to the UN Global Compact and by national legislation that upholds human rights. In Germany, for example, MTU is bound by the General Act on Equal Treatment (AGG), which prohibits discrimination against employees and job applicants. In addition, there are internal guidelines on fair and cooperative conduct, which are designed to prevent bullying, sexual harassment and discrimination. These guidelines were adopted in consultation with the representatives of the workforce and include a systematic process for dealing with complaints.

Reporting processes are in place to ensure structured and effective tracking of complaints and reports of breaches of human rights. Reports can be made confidentially within the group to the Compliance Officer or via the web-based reporting system iTrust. In addition, site-specific reporting structures have been set up. In line with the provisions of, for example, the General Act on Equal Treatment (AGG), every site in Germany has a designated contact who is appropriately trained and to whom employees can address any complaints of discrimination. There is also a female contact person that women can turn to in case of sexual harassment. At MTU Maintenance in Canada, employees can make a formal complaint to the head of Human Resources in the event of discrimination. In addition, employees have the right to submit a formal complaint externally to the BC Human Rights Tribunal. At MTU Aero Engines Polska this function is carried out by an elected employee representative. Employees can also report complaints to managers, the works council or the head of human resources. The Executive Board is informed about infringements depending on the severity of their impacts.

When they join the company, new employees are informed about the principles set out in the Code of Conduct and – in Germany – the General Act on Equal Treatment (AGG), and they undertake to comply with these requirements.

In addition, MTU provides regular training on the Code of Conduct at all the company's sites and all hierarchical levels. The Code of Conduct was revised in the reporting period and now places greater emphasis on human rights. Respecting human rights is highlighted as being an essential part of MTU's social responsibility.

In 2020, there were no substantiated complaints under applicable anti-discrimination laws at any sites in the MTU Group.

Respect for human rights in the supply chain

As a member of the UN Global Compact, MTU respects the internationally recognized human rights enshrined in the UN Declaration of Human Rights. It extends this to its supply chain as well. The aim is to ensure the observance of human rights and fair working conditions.

A code of conduct for suppliers is in place to cover the upstream value chain. MTU's suppliers are required to give an undertaking that they will comply with this Code of Conduct for MTU Suppliers, which is based on the ten principles of the UN Global Compact and the core labor standards of the International Labour Organization (ILO). The Code of Conduct requires suppliers to respect and apply human rights, and to make sure that they are not complicit in human rights violations. In particular, it requires observance of labor standards relating to freedom of association, the right to collective bargaining, the ban on forced and child labor, equal pay regardless of gender and the equal treatment of employees. MTU also expects its suppliers to obtain a corresponding undertaking from sub-suppliers and reserves the right to terminate any contract with a supplier without notice if the supplier uses child labor in the production process for its deliveries. In addition, these principles of behavior are contained in the general business conditions and the contractual documents for suppliers.

In the reporting period, MTU revised its concept for a regular risk analysis of suppliers to its sites in Germany, Poland and Canada and to the subsidiary MTU Aero Engines North America to allow for a more differentiated evaluation of product risks. Further plans include integrating this into the established risk process for suppliers and, as an additional step, checking that key suppliers comply with sustainability aspects. Here, MTU is at the concept phase. In addition, at MTU Maintenance, a structured supplier evaluation is performed twice a year for suppliers to the German sites.

A variety of measures are used to achieve the goal of ensuring that human rights are respected in the supply chain. These apply, above all, to the procurement of certain raw materials known as conflict minerals, for example, tantalum, tin, gold and tungsten, which are used in some MTU components. Procurement of these minerals can be problematic because some of them come from Central African mines where the profits may be used specifically to fund armed conflicts that violate human rights. MTU strives to ensure a sustainable and transparent value chain without conflict minerals. The company does not procure minerals directly but they enter production and pre-production via the global, multi-step supply chain. The general conditions of business and the templates for contracts with MTU suppliers require information on the origin of minerals. This information is compiled using the EICC/GeSI Conflict Minerals Reporting Template. In accordance with the provisions of the Dodd-Frank Act, MTU makes it compulsory for relevant suppliers to provide information once a year on the origin of minerals and specifies that minerals may only be procured from certified mines and smelters (compliant smelter list) in order to ensure that the value chain does not contain conflict minerals. Based on its survey in 2020, MTU has no indication that components from its suppliers contain conflict minerals.

Moreover, in the reporting period there were no reported indications that suppliers had violated the human rights provisions of the Code of Conduct for MTU Suppliers. Furthermore, MTU did not terminate its relationship with any suppliers as a result of sustainability shortcomings relating to human rights.

Responsible international trade

Trade compliance plays a vital role for MTU. One important goal here is to avoid violations of human rights. The provisions of international trade legislation apply to all business units and group companies, including their employees. Customs and export control laws govern which products, services and technical data MTU is permitted to sell or pass on to whom, for what purpose and where. Compliance with customs legislation and international trade regulations is explicitly stipulated in MTU's Code of Conduct.

Export control law prohibits doing business with specific countries or individuals, and the supply of sensitive goods, transfer of advanced technologies, and provision of military services without explicit authorization by the respective official bodies. This is intended, in particular, to prevent the proliferation of nuclear, biological and chemical weapons, to prevent the supply of military goods or goods that can be used for military purposes to crisis regions, to prevent support for blacklisted individuals and activities that violate human rights, and to protect sovereign security interests. Under customs regulations, MTU is required to provide a precise description, detailed itemization and accurate declaration of the value of all goods intended for import or export. What is more, anti-boycott laws may prohibit individuals and entities from participating in other countries' economic boycotts and restrict the dissemination of information relating to business activities or individuals.

To ensure international trade regulations are implemented throughout the group, MTU has set up a central international trade department (functional responsibility and supervisory authority for export control, coordination of customs regulations), which draws on the support of external consultants where necessary. To ensure compliance with international trade regulations, harmonized process standards have been introduced group-wide. These verify conformity with export control regulations and required authorizations prior to the dispatch of documents and components. The head of the international trade department reports disciplinarily to the head of purchasing and has a direct duty to report to the Executive Board member responsible for export (Chief Operating Officer [COO]).

In the reporting period MTU launched the "Group Export Control Directive" to ensure uniform trade compliance standards throughout the Group. In addition, compulsory training of all employees affected by the export control directive has started on the basis of a new training concept.

Corporate governance statement

The corporate governance statement forms part of the combined management report of the MTU Group and MTU Aero Engines AG. In accordance with Section 317 (2) Sentence 6 of the German Commercial Code (HGB), auditing of the disclosures in accordance with Sections 289f and 315d of the German Commercial Code (HGB) is limited to determining whether the disclosures have been made.

Declaration of conformity with the German Corporate Governance Code by the Executive Board and Supervisory Board of MTU Aero Engines AG, in accordance with Section 161 of the German Stock Corporation Act (AktG)

The Executive Board and the Supervisory Board of MTU Aero Engines AG declare that the recommendations of the Government Commission on the German Corporate Governance Code, as published in the amended version of Monday, December 16, 2019, by the Federal Ministry of Justice in the official section of the Federal Gazette, have been and are being complied with in their entirety.

Munich, December 2020

On behalf of the Executive Board

Reiner Winkler
CEO

On behalf of the Supervisory Board

Klaus Eberhardt
Chairman

Responsible corporate management

Responsible corporate management is very important to MTU Aero Engines AG. The company therefore complies with all the recommendations of the German Corporate Governance Code (GCGC). The term “corporate governance” stands for the management and oversight of a company in accordance with the principles of responsibility and long-term value creation. MTU sees good corporate governance as a natural responsibility that embraces every area of the company. That comprises mutual trust and efficient collaboration between the Executive Board and the Supervisory Board, respect for the shareholders’ interests and open and transparent communication with all stakeholders. As a company with global operations, MTU acts in compliance with the relevant national and international standards. In Germany, where the company has its headquarters, these standards are laid down principally in the Stock Corporation Act (AktG), the Codetermination Act (MitbestG) and the GCGC.

The Government Commission on the German Corporate Governance Code concluded a new version of the GCGC on December 16, 2019, and submitted it to the Federal Ministry of Justice and Consumer Protection for review and publication. The 2020 GCGC was published in the Federal Gazette in spring 2020 and therefore came into effect.

The Executive Board and Supervisory Board closely examined the new version of the GCCG during the past fiscal year. This report has been compiled in compliance version of the GCGC applicable for 2020. A full description of management practices that extend beyond statutory requirements is also provided in this section of the Annual Report.

Corporate management

Accepting responsibility – not only for its products and processes, employees, customers and partners, but in equal measure for the environment and society as a whole – forms an integral part of MTU’s corporate culture. MTU is committed to sustainable development and its contribution in this area goes beyond the legal requirements. The principal focus areas of its social commitment are environmental protection, human resources policy, and community outreach projects in the neighborhoods of MTU sites. These commitments are publicly documented on the MTU website at *www.mtu.de under Company > Corporate Responsibility*.

The company has a Code of Conduct, which has to be observed by all employees. The Code of Conduct can be downloaded from the company's website at *www.mtu.de under Company > Compliance > Policies*.

MTU attaches great importance to maintaining an open, ongoing dialogue with its target groups. The company communicates with these groups via many channels, including the intranet and internet, brochures, employee and customer magazines, and events. The aim is to generate broad public acceptance.

MTU insists on the finest quality for its products and services. Compliance with quality standards is verified by the relevant authorities and through internal and external audits. The quality standards are published on the MTU website under *Engines > Quality*.

Trust-based cooperation among governing bodies

MTU is a stock corporation organized under German law. Its governing bodies are the Executive Board, the Supervisory Board and the Annual General Meeting. The close cooperation between the Executive Board and the Supervisory Board is based on trust and on intensive, ongoing sharing of information. The Annual General Meeting, in particular, offers shareholders the opportunity to put questions to MTU executives and to exercise their voting rights.

Working procedures of the Executive Board

The goal of the Executive Board in managing MTU is to create, on its own responsibility and in the company's interest, sustainable added value, taking into account the interests of its shareholders, employees and other stakeholders. The Executive Board works as a team, with its members bearing joint responsibility. The members of the Executive Board regularly discuss important actions and events within their respective remits. Their differing qualifications and professional experience are complementary. The company's Executive Board consisted of four members in 2020.

The Supervisory Board is briefed by the Executive Board in a regular, timely and comprehensive manner on the situation of the company, especially in thematically specific meetings of the Supervisory Board and Audit Committee at intervals throughout the fiscal year. The meetings address the company's strategy, the status of planning, the achievement of targets, the company's risk situation and its risk management activities. The Executive Board coordinates decisions of a strategic nature with the Supervisory Board, ensures that such decisions are implemented and discusses the progress made. To ensure the flow of information on the company's results of operations, financial position and net assets, the Executive Board has set up a process in which the Supervisory Board receives a written report on a monthly basis. Any deviations from the planned operational performance are explained in detail to the Supervisory Board. Furthermore, the Chairman of the Supervisory Board is briefed regularly and in person on the company's current situation, significant business transactions and important pending decisions.

The Executive Board also receives regular reports on compliance, i.e., on the measures taken to comply with laws and regulations as well as with company guidelines.

Material decisions by the Executive Board, especially those concerning the budget, require the approval of the Supervisory Board. More information on these matters is provided in this Annual Report in the *Report of the Supervisory Board.* The Executive Board's rules of procedure, along with the list of transactions by MTU Aero Engines AG requiring Supervisory Board approval, can be viewed on the company's website at *www.mtu.de under Investor Relations > Corporate Governance.*

In line with the recommendation of the GCGC, the Supervisory Board has set an age limit for the members of the Executive Board. Appointment or extension of the appointment to the Executive Board is only possible until age 65.

The new German Act Implementing the Second Shareholder Rights' Directive (ARUG II) came into force at the start of 2020. It contains material changes in the requirements for compensation of the Executive Board. The new Corporate Governance Code which has come into effect also contains new recommendations on the remuneration of the Executive Board. The corresponding new remuneration system was adopted on October 27, 2020. All Executive Board members have agreed to it. The new remuneration system will be presented to the Annual General Meeting for approval on April 21, 2021. The remuneration of the Executive Board for the 2020 fiscal year can be found in the section headed *"Management compensation report".*

Working procedures of the Supervisory Board

In line with statutory requirements, the Supervisory Board comprises six shareholder representatives and six employee representatives. The Supervisory Board appoints the Executive Board and monitors and advises it in the management of the company's business. In this respect, in 2010 the Supervisory Board resolved as a matter of principle to appoint new members to the Executive Board for a term of three years. Key corporate

decisions require the approval of the Supervisory Board. All Supervisory Board members are qualified for these tasks and perform their duties properly.

All members of the Supervisory Board make sure that they have sufficient time to perform their tasks. The statutory limits on the number of mandates and the upper limit of two supervisory board mandates for members of the executive board of a publicly listed company and five supervisory board mandates for other members recommended by the GCGC are taken into account.

In compliance with the GCGC, in 2020 only one former member of the Executive Board of MTU Aero Engines AG, namely Prof. Dr.-Ing. Klaus Steffens, had a seat on the Supervisory Board; the GCGC recommends no more than two. The Supervisory Board is responsible for regularly assessing the independence of its own members, especially the shareholder representatives. As a matter of principle, it considers the employee representatives to be independent. It considers that the Supervisory Board is independent if the majority of its members and the majority of the shareholder representatives are considered to be independent. In its present composition, this applies to all members of the Supervisory Board. It also applies to the shareholder representatives Eberhardt Dr. Geißinger and Prof. Dr. Steffens who have been members of the Supervisory Board of MTU for more than 12 years. The period for which members have served on the Supervisory Board is published in their resumes on the company's website. Given the nature of MTU's business model and the 30 to 40-year lifecycle of its engine programs, which entail very high initial capital expenditure, the Executive Board and the Supervisory Board consider long-serving members of the Supervisory Board to be an especially valuable asset to the company and do not take the view that they must necessarily be deemed insufficiently independent after a tenure of 12 to 15 years based on this fact alone. The Supervisory Board has set four terms of office as the maximum for membership of the Supervisory Board and considers this to be appropriate for MTU. Moreover, there are no other indications that the members of the Supervisory Board of MTU lack independence. In this way, independent advice and oversight of the Executive Board is ensured by both the full Supervisory Board and its committees.

The Supervisory Board's rules of procedure provide for the establishment of committees. The Supervisory Board of MTU has four committees: an Audit Committee, a Personnel Committee, a Mediation Committee and a Nomination Committee. The members of the Audit Committee are Dr. Joachim Rauhut (Chairman), Klaus Eberhardt, Heike Madan and Josef Mailer. The members of the Personnel Committee and the Mediation Committee are Klaus Eberhardt (Chairman) and Dr. Jürgen M. Geißinger plus the employee representatives Josef Mailer and Roberto Armellini. The members of the Nomination Committee are Klaus Eberhardt (Chairman) and Dr. Jürgen M. Geißinger. Further details can be found in the section headed "The Supervisory Board." In addition, the resumes of the Supervisory Board are published on the company's website at *www.mtu.de under Company > Supervisory Board.*

According to the GCGC, participation in meetings by telephone or video conference should not be the rule. At MTU, meetings are held in person; participation by telephone or video conference only takes place in exceptional circumstances. In view of the special circumstances during the Covid-19 pandemic, in 2020, several meetings of the Supervisory Board and its committees were held remotely or in a hybrid format (some members attended in person, others took part by video conference).

In consultation with the Executive Board, the Supervisory Board ensures long-term succession planning for appointments to the Executive Board. To this end, the Supervisory Board regularly reviews the present term of all Executive Board contracts, taking into account the age of each member, the competency profile of potential candidates and the defined diversity objective for the Executive Board.

The Supervisory Board's rules of procedure contain binding provisions for dealing with conflicts of interest. Such conflicts must be disclosed and, where appropriate, may result in termination of the member's term of office. In addition, the Supervisory Board must explicitly state such potential conflicts of interest when submitting the nominations to the Annual General Meeting. In 2020, no consulting agreements, contracts for services or similar contractual agreements existed between members of the Supervisory Board and MTU Aero Engines AG or any of its subsidiaries. Neither in this, nor any other area did any conflicts of interest arise that required disclosure.

The Supervisory Board has defined specific objectives for its composition and drawn up a profile of skills and expertise for the entire board, which it judges to be satisfactorily met at the present time. Importance is attached to diversity. The profile of skills and expertise forms the basis for all nominations submitted to the Annual General Meeting. It is published on MTU's website. Nominations submitted by the Supervisory Board to the Annual General Meeting take account of all objectives and also strive to comply with the profile of skills and expertise for the Supervisory Board as a whole.

In the past financial year, directors' and officers' liability insurance was in effect for the members of MTU's Executive Board and Supervisory Board. The compensation of the members of the Executive Board and Supervisory Board is based on clear and transparent criteria, which are described in the section headed *"Management compensation report."*

The Supervisory Board regularly assesses how effectively the Supervisory Board as a whole and its committees perform their tasks. In 2020, the Supervisory Board conducted a self-assessment by evaluating feedback from a questionnaire developed by an external law firm. Focal areas of the self-assessment were the timeliness and scope of information provided to Supervisory Board members, the preparation and conduct of meetings of the Supervisory Board and its committees, and the composition and structure of the Supervisory Board and its committees, including the allocation of tasks between the full Supervisory Board and its committees, and the expediency of the committees that have been established, the appropriateness of the list of business activities requiring approval, the information provided to plenary sessions of the Supervisory Board by the chairpersons of the committees on the work of their committees, monitoring the cost-effectiveness of new projects, even after approval by the Supervisory Board, and examining training requirements.

Diversity

The diversity of its employees plays a key role in MTU's success. Therefore, diversity is very important to MTU.

In the context of the German law on equal participation of women and men in leadership positions, MTU has set itself goals: In accordance with Section 111 (5) of the German Stock Corporation Act (AktG), the supervisory boards of companies that are listed or subject to the German Codetermination Act (MitbestG) are required to set target quotas for women on their supervisory and executive boards. In addition, under Section 76 (4) of the German Stock Corporation Act (AktG) the Executive Board is required to set a target quota for women at the two management levels directly below the Executive Board.

Diversity also plays an important role in the composition of the Supervisory Board. In compliance with both the German Stock Corporation Act (AktG) and the GCGC, the supervisory boards of listed companies subject to the German Codetermination Act (MitbestG) must comprise at least 30 % women and at least 30 % men. The Supervisory Board has four female members: Dr. Christine Bortenlänger, Anita Heimerl, Heike Madan and Prof. Dr. Marion A. Weissenberger-Eibl. Two are employee representatives and two are shareholder representatives. The percentage of women on the Supervisory Board is therefore unchanged at 33.3 %. In addition, the Supervisory Board has set the following goal: International focus is very important for MTU as a global corporation. At least one member of the Supervisory Board should therefore meet the criterion of "internationality." It is already the case that various members of MTU's present Supervisory Board trained or have spent a large part of their professional lives abroad. The members of the Supervisory Board should continue to contribute an international perspective.

The Supervisory Board takes the above-mentioned goals into account when submitting proposals for election by the Annual General Meeting. The same applies to the Nomination Committee, which is responsible for preparing the vote of the Supervisory Board. Since the main criterion for any proposal is still the company's interest, the Supervisory Board proposes the most suitable candidates.

The Supervisory Board's rules of procedure set an age limit for members. Their terms on the Supervisory Board automatically end at the end of the Annual General Meeting following the member's 75th birthday. Moreover, a general limit of four terms of office has been set for serving on the Supervisory Board.

The Supervisory Board also places value on fostering diversity in appointments to the Executive Board. The members of the Executive Board have diverse qualifications and work experience, which contribute to their work. In accordance with the provisions of the German Stock Corporation Act (AktG) and the German Corporate Governance Code (GCGC), in 2017 the Supervisory Board set a target quota of 25 % for female members of the Executive Board, to be achieved by 2022.

Given the structure of the management and supervisory boards of the MTU companies in Germany – namely a sole managing director and a supervisory board consisting of either three or twelve members – a target of 0 % female members was set in 2017. However, the proportion of women on the Supervisory Board of MTU Maintenance Hannover GmbH currently stands at 8.33 %. At management level – which comprises tier 1 (OFK), tier 2 (FK) and tier 3 (EFK) managers – the Executive Board has set a quota of 13 % for women in management positions at the MTU sites in Germany. It aims to achieve this by the end of 2022. As of December 31, 2020, the percentage was 10.7 %.

MTU is continuing to pursue its goal of increasing the number of women on all levels. Every area of the company is called upon to work actively toward achieving this corporate objective. The measures focus on recruiting more female potentials and providing more intensive support for female employees during their careers. To this end, MTU invests extensively in employee development and is involved in mentoring programs and a variety of initiatives. In addition, MTU has an active network for women, with Lars Wagner, Chief Operating Officer, as its advocate, and extensive measures to improve work-life balance, including flexible working hours, support services for families, and scope for teleworking.

A full description of diversity management at MTU Aero Engines AG can be found in the current sustainability report.

Financial reporting

MTU prepares its consolidated financial statements and interim reports in accordance with the International Financial Reporting Standards (IFRSs). The Executive Board is responsible for this. Financial reporting comprises, in particular, the consolidated financial statements and the group management report (including the non-financial statement). The separate financial statements of the parent company are compiled in accordance with the provisions of the German Commercial Code (HGB). An internal control system, coupled with the application of uniform accounting policies, ensures that the results of operations, financial position, net assets and cash flows of all group companies are accurately presented. In addition, MTU has a differentiated system in place to identify and monitor business and financial risks.

Risk management and control system

The Executive Board is responsible for ensuring that an appropriate risk management and control system is in place. This system is described in the section headed "Internal control and risk management system." The Executive Board reports to the Supervisory Board in a regular and timely manner on existing opportunities and risks, and how they are developing. The Audit Committee of the Supervisory Board discusses risk management. In accordance with Section 107 (3) of the German Stock Corporation Act (AktG), the Audit Committee is explicitly responsible for monitoring the effectiveness of the risk management system, the internal control and auditing systems, the financial reporting process and the audit of the financial statements, and, in particular, for assessing the auditors' independence.

Compliance

The corporate culture at MTU is characterized by trust and mutual respect.

The observance of legal and ethical rules and principles plays a central role in this respect. These and other aspects of compliance, such as the responsible handling of insider information, are documented in a Code of Conduct, which was revised, agreed and introduced by jointly by the Executive Board and the Group Works Council in 2020. This Code of Conduct embodies MTU's corporate culture and reflects its resolve to comply strictly with the relevant laws and internal regulations. It is a group-wide guide to ethical business relations.

Nevertheless, the risk can never be entirely ruled out that unauthorized behavior of isolated individuals might lead to contravention of the law. MTU does everything in its power to minimize this risk as far as possible, and is committed to preventing acts of misconduct, such as corruption, in the first place through corresponding rules and regular and targeted training, and to uncovering and pursuing any such acts.

Compliance is an important aspect of all management functions at MTU. For example, all managers must check that every member of their staff has read and understood the Code of Conduct and abides by its rules. Reinforcement is provided by internal training.

The central contact for all compliance-related matters in the company is the Compliance Officer, who is a member of the corporate management and reports directly to the Executive Board. The duties of the Compliance Officer focus, first and foremost, on preventing corruption and failure to comply with cartel and insider regulations. The Compliance Officer advises the Executive Board and the managing directors of the individual sites. He draws up training concepts and guidelines and makes recommendations on compliance checks. In addition, the Compliance Officer leads investigations into cases of suspected non-compliance and coordinates the measures taken.

Furthermore, he acts as ombudsman.

Both employees and third parties such as customers and suppliers can reported suspected non-compliance issues to the Compliance Officer confidentially. As well as contacting him personally, they have access to iTrust, a web-based whistleblower system that also allows anonymous reports.

Reports on the Compliance Officer's activities are presented to the Supervisory Board's Audit Committee. The Audit Committee then informs the plenary meetings of the Supervisory Board via a summary of its own meetings. It supervises the Executive Board's compliance activities, including monitoring the measures and training programs implemented by the Compliance Officer and proposing revisions to the compliance rules.

Extensive information, Annual General Meeting, Directors' Dealings

In keeping with the principles of good corporate governance, MTU continually provides extensive and timely information on the company's activities and any major developments in its business situation for shareholders, shareholder associations, financial analysts, the media and other interested parties. MTU strives to ensure that all stakeholders are kept informed in equal measure. Within reason, the chairman of the Supervisory Board is also prepared to meet with investors to talk about topics specific to the Supervisory Board. The company publishes an extensive range of information on its website at *www.mtu.de.* It publishes quarterly information on its business activities. Any new developments likely to have a significant impact on the MTU share price are disclosed in the form of ad hoc releases in accordance with statutory requirements.

Information is also posted on the MTU website whenever members of the Executive Board or Supervisory Board or related persons have purchased or sold MTU shares, debt instruments or share-based derivatives. Section 19 of the European Market Abuse Regulation stipulates that these persons must disclose such transactions if their value in a single calendar year reaches or exceeds € 20,000. The total number of shares in MTU Aero Engines AG, Munich, held by members of the company's Executive Board and Supervisory Board as of December 31, 2020 was less than 1 % of the company's capital stock.

In the interests of the health of shareholders and employees of MTU, the Executive Board decided, with the consent of the Supervisory Board, to hold the Annual General Meetings in 2020 and 2021 remotely, without physical attendance by shareholders or their proxies, as permitted by the German Act Concerning Measures Under the Law of Companies, Cooperative Societies, Associations, Foundations and Commonhold Property to Combat the Effects of the COVID-19 Pandemic (GesRua-COVBekG) and the legal ordinance issued by the Federal Ministry of Justice and Consumer Protection, which came into force on October 29, 2020. Consequently, the company's shareholders are able to exercise their rights even when contact restrictions are in place and to follow the entire Annual General Meeting, including the general discussion, as a live video and audio stream. In 2020, shareholders were able to email their questions to the company at the latest two days before the Annual General Meeting. The deadline for questions for the 2021 Annual General Meeting has been increased to one day before the Annual General Meeting.

The company supports the exercise of shareholder rights and proxy voting by its shareholders in part by providing voting representatives who exercise voting rights in accordance with instructions received from individual shareholders. Shareholders also have the option of absentee voting. Shareholders can use electronic means to authorize proxies and provide voting instructions to the company's voting representatives up to the beginning of the Annual General Meeting. MTU is not informed by its service provider of the detailed content of the voting instructions until less than 24 hours before the beginning of the Annual General Meeting.

Consolidated financial statements

Consolidated income statement

[T39] Consolidated income statement

in € million	(Note)	2020	2019
Revenue	**(1.)**	**3,977**	**4,628**
Cost of goods sold	(2.)	–3,484	–3,697
Gross profit		**492**	**931**
Research and development expenses	(3.)	–61	–66
Selling expenses	(4.)	–146	–119
General administrative expenses	(5.)	–79	–85
Other operating income	(6.)	48	12
Other operating expenses	(6.)	–62	–51
Profit/loss of companies accounted for using the equity method	(7.)	69	80
Profit/loss of equity investments	(7.)	1	3
Earnings before interest and taxes (EBIT)		**262**	**706**
Net interest income/expense	(8.)	–20	–17
Other financial income/expense	(9.)	–47	–22
Net financial income/expense		**–67**	**–39**
Earnings before income taxes		**195**	**667**
Income taxes	(10.)	–48	–178
Net income		**147**	**488**
thereof:			
Owners of MTU Aero Engines AG		139	478
Non-controlling interests		8	10
Earnings per share (in €)			
Basic (EPS)	(11.)	2.63	9.23
Diluted (DEPS)	(11.)	2.59	8.46

Consolidated statement of comprehensive income

[T40] Consolidated statement of comprehensive income

in € million	(Note)	2020	2019
Net income		**147**	**488**
Translation differences arising from the financial statements of foreign entities		–60	14
Financial instruments designated as cash flow hedges		106	–12
Items that may subsequently be recycled to profit or loss		46	2
Actuarial gains/losses on pension obligations and plan assets		–32	–66
Changes in the fair value of equity investments		2	–2
Items that will not be recycled to profit or loss		–30	–68
Other comprehensive income after taxes	**(24.)**	**16**	**–66**
Total comprehensive income		**163**	**422**
thereof:			
Owners of MTU Aero Engines AG		162	411
Non-controlling interests		1	12

Consolidated balance sheet – assets

[T41] Assets

in € million	(Note)	Dec. 31, 2020	Dec. 31, 2019
Non-current assets			
Intangible assets	(14.)	1,135	1,163
Property, plant and equipment	(15.)	1,161	1,101
Financial assets accounted for using the equity method	(16.)	556	538
Other financial assets	(16.)	137	77
Acquired program assets, development work and other assets	(17.)	973	1,221
Deferred taxes	(34.)	67	56
Total non-current assets		**4,030**	**4,155**
Current assets			
Inventories	(19.)	1,278	1,279
Trade receivables	(20.)	969	923
Contract assets	(21.)	870	1,047
Income tax receivables	(22.)	42	116
Other financial assets	(16.)	101	62
Other assets	(17.)	40	45
Cash and cash equivalents	(23.)	773	139
Total current assets		**4,074**	**3,610**
Total assets		**8,104**	**7,765**

Consolidated balance sheet – equity and liabilities

[T42] Equity and liabilities

in € million	(Note)	Dec. 31, 2020	Dec. 31, 2019
Equity	**(24.)**		
Subscribed capital		53	53
Capital reserves		508	460
Retained earnings		2,298	2,160
Treasury shares		–2	–11
Accumulated other comprehensive income		–304	–327
Owners of MTU Aero Engines AG		**2,553**	**2,336**
Non-controlling interests		82	86
Total equity		**2,635**	**2,421**
Non-current liabilities			
Pension provisions	(25.)	984	954
Other provisions	(27.)	64	48
Refund liabilities	(31.)	9	21
Financial liabilities	(28.)	1,434	1,080
Contract liabilities	(30.)	10	27
Other liabilities	(32.)	0	0
Deferred taxes	(34.)	0	0
Total non-current liabilities		**2,501**	**2,130**
Current liabilities			
Pension provisions	(25.)	26	22
Income tax liabilities	(26.)	5	5
Other provisions	(27.)	134	168
Refund liabilities	(31.)	1,583	1,682
Financial liabilities	(28.)	288	253
Trade payables	(29.)	169	313
Contract liabilities	(30.)	729	680
Other liabilities	(32.)	34	90
Total current liabilities		**2,968**	**3,214**
Total equity and liabilities		**8,104**	**7,765**

Consolidated statement of changes in equity

[T43] Consolidated statement of changes in equity

in € million	Subscribed capital	Capital reserves	Retained earnings	Treasury shares	Accumulated other comprehensive income				Owners of MTU Aero Engines AG	Non-controlling interests	Total equity
					Translation differences arising from the financial statements of foreign entities	Changes in the fair value of equity investments	Actuarial gains/losses[1]	Financial instruments designated as cash flow hedges			
Carrying amount as of Jan. 1, 2019	**52**	**466**	**1,829**	**–17**	**9**	**12**	**–250**	**–32**	**2,071**	**74**	**2,145**
Net income			478						478	10	488
Other comprehensive income					13	–2	–66	–12	–67	1	–66
Total comprehensive income			**478**		**13**	**–2**	**–66**	**–12**	**411**	**12**	**422**
Dividend payment			–147						–147		–147
Convertible bond 2016	1	–55							–54		–54
Convertible bond 2019		32							32		32
Restricted Stock Plan		4		1					5		5
Employee stock option program (MAP)		14		4					19		19
Carrying amount as of Dec. 31, 2019	**53**	**460**	**2,160**	**–11**	**22**	**11**	**–316**	**–44**	**2,335**	**86**	**2,421**
Net income			139						139	8	147
Other comprehensive income					–53	2	–32	106	23	–7	16
Total comprehensive income			**139**		**–53**	**2**	**–32**	**106**	**162**	**1**	**163**
Dividend payment			–2						–2	–5	–7
Convertible bond 2016	0	29							29		29
Restricted Stock Plan		3		2					5		5
Employee stock option program (MAP)		16		7					23		23
Carrying amount as of Dec. 31, 2020	**53**	**508**	**2,298**	**–2**	**–32**	**13**	**–348**	**62**	**2,553**	**82**	**2,635**

[1] Refers to pension obligations and plan assets.

Consolidated cash flow statement

[T44] Consolidated cash flow statement

in € million	(Note)	2020	2019
Operating activities			
Net income		147	488
Non-cash amortization of/impairment losses on acquired program assets and development work		119	53
Amortization, depreciation, write-ups and impairment of other non-current assets		233	207
Profit/loss of companies accounted for using the equity method		–69	–80
Profit/loss of equity investments		–1	–3
Gains/losses on the disposal of assets		1	1
Change in pension provisions	(25.)	–14	
Change in other provisions	(27.)	–18	–9
Change in refund liabilities (not included in working capital)		–80	185
Change in working capital		–25	–142
Other non-cash items		6	49
Net interest income/expense	(8.)	20	17
Interest paid		–14	–14
Interest received		3	6
Dividends received		52	31
Income taxes	(10.)	48	178
Income taxes paid		–21	–136
Cash flow from operating activities		**386**	**832**
Investing activities			
Capital expenditure on:			
Intangible assets	(14.)	–42	–128
Property, plant and equipment	(15.)	–195	–302
Financial assets	(16.)	–44	–56
Acquired program assets and development work		–19	–22
Proceeds from disposal of:			
Intangible assets/property, plant and equipment	(14.) / (15.)	41	3
Financial assets	(16.)	13	32
Cash flow from investing activities		**–245**	**–472**
Financing activities			
Cash inflow from convertible bond 2019[1)]	(28.)		511
Repayment of convertible bond 2016	(28.)		–551
Cash inflow from other bonds and notes	(28.)	594	
Settlement of lease liabilities	(28.)	–41	–42
Settlement of purchase price liabilities for stakes in programs		–56	–63
Repayment of financial liabilities	(28.)	–10	–50
Dividend paid to shareholders of MTU AG / to non-controlling interests		–7	–147
Sale of treasury shares in connection with the employee stock option program (MAP)	(28.)	23	19
Cash flow from financing activities		**504**	**–324**
Net change in cash and cash equivalents during the reporting period		**644**	**36**
Effect of translation differences on cash and cash equivalents		–11	4
Cash and cash equivalents at beginning of period (Jan. 1)		139	99
Cash and cash equivalents as of Dec. 31		**773**	**139**

[1)] Net of transaction costs.

Consolidated segment report

[T45] Consolidated segment report

	Commercial and military engine business (OEM)	
in € million	2020	2019
External revenue	1,497	1,953
Revenue from intersegment sales	38	42
Total revenue	**1,535**	**1,996**
Gross profit	**286**	**615**
Amortization	39	37
Non-cash amortization of capitalized program assets and acquired development work	51	53
Depreciation	102	93
Impairment losses	71	
Amortization/value adjustments/depreciation/impairment losses	**264**	**183**
Earnings before interest and taxes (EBIT)	**137**	**447**
thereof: special item depreciation/amortization effect of purchase price allocation	18	19
thereof: special items from increase in the stake in IAE-V2500	27	30
thereof: special item restructuring expenses	24	
thereof: special item impairment losses on program assets	73	
Adjusted earnings before interest and taxes (adjusted EBIT)	**280**	**496**
Profit/loss of companies accounted for using the equity method	35	30
Carrying amount of companies accounted for using the equity method	323	325
Assets	**6,996**	**6,687**
Liabilities	**4,698**	**4,550**
Material non-cash items	**–11**	**34**
Capital expenditure:		
Intangible assets	42	78
Property, plant and equipment	160	209
Acquired program assets and acquired development work	12	16
Total capital expenditure	**214**	**303**
Key segment data:		
EBIT (in % of revenue)	9.0	22.4
Adjusted EBIT (in % of revenue)	18.2	24.8

The key indicator used by management to measure the operating performance of each segment is adjusted earnings before interest and taxes (adjusted EBIT). The contribution of companies accounted for using the equity method to adjusted EBIT amounted to €69 million in fiscal year 2020 (previous year: €80 million).

Intersegment sales are transacted at arm's length at standard market terms and invoiced in the same way as transactions with external third parties. The material non-cash items in the reporting period included gains arising from foreign currency translation. In the reporting period, three major customers each accounted for more than 10% of total group revenue. Business with the largest customer generated revenue of €933 million (previous year: €371 million), with the second-largest customer €636 million (previous year: €1,091 million) and with the third-largest customer €467 million (previous year: €692 million).

Commercial maintenance business (MRO)		Total reportable segments		Consolidation/reconciliation		MTU group	
2020	2019	**2020**	2019	**2020**	2019	**2020**	2019
2,480	2,675	3,977	4,628			3,977	4,628
42	36	80	79	–80	–79		
2,522	**2,711**	**4,057**	**4,707**	**–80**	**–79**	**3,977**	**4,628**
205	**315**	**492**	**930**	**1**	**1**	**492**	**931**
7	7	46	44			46	44
		51	53			51	53
73	66	176	158			176	158
6	5	78	5			78	5
86	**77**	**350**	**260**			**350**	**260**
125	**259**	**262**	**705**	**–0**	**0**	**262**	**706**
2	2	21	21			21	21
		27	30			27	30
9		33				33	
		73				73	
136	**261**	**416**	**757**	**–0**	**0**	**416**	**757**
34	50	69	80			69	80
233	213	556	538			556	538
2,344	**2,361**	**9,340**	**9,048**	**–1,237**	**–1,282**	**8,104**	**7,765**
1,667	**1,736**	**6,365**	**6,286**	**–896**	**–942**	**5,469**	**5,344**
17	**15**	**6**	**49**		**0**	**6**	**49**
2	51	44	129			44	129
123	141	283	350			283	350
		12	16			12	16
125	**192**	**339**	**495**			**339**	**495**
4.9	9.5	6.5	15.0			6.6	15.2
5.4	9.6	10.2	16.1			10.5	16.4

In each case, the revenue stemmed from both segments.

There was no change in the definition of the segments compared with previous year.

For more information on segment reporting, please see *Section V. "Segment information."*

I. Accounting principles and policies

Principles and methods

The business activities of MTU Aero Engines AG, Munich, Germany, and its consolidated companies (subsequently referred to as the Group, Group companies or MTU) extend over the entire lifecycle of an engine program – from development, structural design, testing and manufacturing of new commercial and military engines and spare parts through to the maintenance, repair and overhaul of commercial and military engines. MTU divides its activities into two operating segments: the commercial and military engine business (OEM) and the commercial maintenance business (MRO).

MTU's commercial and military engine business covers the development and manufacturing of modules, components and spare parts for engine programs, and in some cases final assembly. The military engine business additionally includes the provision of maintenance services. The MRO segment consists of the commercial maintenance business, which covers all activities relating to the maintenance, repair and overhaul of commercial engines as well as associated services.

The parent company, MTU Aero Engines AG, with registered office at Dachauer Strasse 665, 80995 Munich, Germany, is registered under reference HRB 157 206 in the commercial registry of the district court of Munich.

The consolidated financial statements were approved for publication by the Executive Board of MTU Aero Engines AG, Munich, on February 24, 2021.

MTU's consolidated financial statements were prepared in accordance with International Financial Reporting Standards (IFRSs) as applicable in the European Union (EU), and the supplementary requirements of Section 315e (1) of the German Commercial Code (HGB). All IFRSs issued by the International Accounting Standards Board (IASB) that were in effect at the time these consolidated financial statements were prepared and were applied by MTU were endorsed by the European Commission for use in the EU.

The consolidated financial statements have been prepared on a going concern basis. The management assessment is based on positive earnings power in 2020 despite the global crisis in the aviation sector, an order backlog covering several years, and sound financing as a result of a bond issue, a promissory note and the extension of the Group's credit facility.

The consolidated financial statements for the period ended December 31, 2020, and the combined management report for fiscal year 2020 were prepared in accordance with Section 315e (1) of the German Commercial Code (HGB) and published in the Federal Gazette (Bundesanzeiger).

The fiscal year is identical to the calendar year. Comparative figures for the previous year are included in the consolidated financial statements.

In the presentation of the balance sheet, a distinction is made between non-current and current assets and liabilities. A more detailed maturity analysis of certain items is provided in the Notes to the consolidated financial statements. An asset or liability is classified as current if:

- it is held primarily for trading purposes,
- it is expected to be realized or repaid respectively within 12 months of the reporting date,
- it is cash or a cash equivalent, unless the exchange or utilization of the asset for the purpose of fulfilling an obligation is restricted for a period of at least 12 months after the reporting date, or
- it is a net contract asset or liability that will be realized during MTU's normal business cycle, even if the period for realization may exceed 12 months.

The income statement is prepared using the cost-of-sales method in which revenue is balanced against the expenses incurred to generate it, and expenses are classified by function: production, research and development, distribution, and general administration. The consolidated financial statements are denominated in euros. All amounts are stated in millions of euros (€ million), unless otherwise specified. Due to rounding, some of the rounded figures presented in these consolidated financial statements may not correspond exactly to the sum of the individual figures, and it may not be possible to calculate some of the individual percentages from the rounded absolute figures presented. "0" represents amounts of between zero and half a million euros, while "–0" represents amounts between zero and minus half a million euros. Amounts of exactly €0.0 are shown by an empty field in tables.

Accounting standards, interpretations, and amended standards and interpretations applied for the first time in fiscal year 2020

The following new and amended accounting standards and interpretations were applied for the first time in these consolidated financial statements:

[T46] New and amended standards and interpretations

Standard	Title
IFRS 3	Amendments: Definition of a Business
IFRS 7, IFRS 9 and IAS 39	Amendments: Interest Rate Benchmark Reform
IFRS 16	Amendments: Covid-19-related Rent Concessions
IAS 1 and IAS 8	Amendments: Definition of Material

Application of these standards did not result in any significant changes to the MTU Group's financial reporting.

Accounting standards, interpretations, and amended standards and interpretations issued but not yet applied

The following new and amended standards and interpretations have been issued by the IASB but were not yet effective for annual periods beginning on or after January 1, 2020:

[T47] Accounting standards and interpretations not yet applied

Standard	Title
IFRS 3	Änderungen: Verweis auf das Rahmenkonzept [2) 4)]
IFRS 3	Amendments: Reference to the Conceptual Framework [2) 4)]
IFRS 4	Amendments: Extension of the Temporary Exemption from Applying IFRS 9 [1)]
IFRS 9, IAS 39, IFRS 7, IFRS 4 und IFRS 16	Amendments: Interest Rate Benchmark Reform – Phase 2 [1)]
IFRS 17	Insurance Contracts [3) 4)]
IAS 1	Amendments: Classification of Liabilities as Current or Non-Current [3) 4)]
IAS 1	Amendments: Disclosure of Accounting Policies [3) 4)]
IAS 8	Amendments: Definition of Accounting Estimates [3) 4)]
IAS 16	Amendments: Proceeds Before Intended Use [2) 4)]
IAS 37	Amendments: Onerous Contracts – Cost of Fulfilling a Contract [2) 4)]
Annual Improvements to IFRS Standards 2018 – 2020 Cycle	Amendments to IFRS 1, IFRS 9, IFRS 16 and IAS 41 [3) 4)]

1) Effective for annual periods beginning on or after Jan. 1, 2021.
2) Effective for annual periods beginning on or after Jan. 1, 2022.
3) Effective for annual periods beginning on or after Jan. 1, 2023.
4) Still awaiting EU endorsement.

MTU does not apply standards, interpretations and amendments before the effective date.

In view of the MTU Group's current business model, the aforementioned standards are not expected to have a material impact on MTU's financial reporting in future reporting periods.

Application of Section 264 (3) of the German Commercial Code (HGB)

MTU Maintenance Hannover GmbH, Langenhagen, Germany, MTU Maintenance Berlin-Brandenburg GmbH, Ludwigsfelde, Germany, and MTU Maintenance Coating Services GmbH, Ludwigsfelde, Germany, are consolidated affiliated companies of MTU Aero Engines AG, Munich. These companies apply the exemption in Section 264 (3) of the German Commercial Code (HGB).

Consolidated group

As of December 31, 2020, the Group including MTU Aero Engines AG, Munich, comprised 34 companies. These are presented in detail in the list of major shareholdings in *Note 40 "Related party disclosures."*

Changes in the consolidated group

In the reporting period, there was no change in the number of group companies and equity investments in associates and joint ventures included in the consolidated financial statements.

[T48] Consolidated group

	Germany	International	Total
Shareholdings as of Dec. 31, 2018	**10**	**22**	**32**
Additions 2019	2	1	3
Disposals 2019		–1	–1
Shareholdings as of Dec. 31, 2019	**12**	**22**	**34**
Additions 2020			
Disposals 2020			
Shareholdings as of Dec. 31, 2020	**12**	**22**	**34**

Subsidiaries

The consolidated financial statements of MTU Aero Engines AG, Munich, include all material companies in which MTU Aero Engines AG, Munich, has a controlling interest as defined by IFRS 10, in other words entities in which MTU, as the investor, is exposed, or has rights, to variable returns from its involvement with the investee and has the ability to affect those returns through its power over the investee. There were no changes in the classification of these controlling interests during the reporting period.

Associates

Associated companies are companies over which MTU exercises significant influence in accordance with IAS 28 and which are neither subsidiaries nor joint ventures. The equity investments in these entities, over whose financial and operating policies MTU directly or indirectly exercises significant influence, are accounted for using the equity method, or at fair value if the effects of their consolidation under the equity method would be immaterial to the presentation of MTU's net assets, financial position and results of operations. There were no changes in the classification of these equity investments during the reporting period. MTU holds an 18% share in the voting rights of IAE International Aero Engines LLC., East Hartford, USA, and of PW1100G-JM Engine Leasing LLC., East Hartford, USA. The underlying agreements grant MTU significant influence over the management of these investees, as well as information and consultation rights, thus justifying their classification as associates.

Joint ventures

Joint ventures are companies over which MTU exercises joint control together with one or more other entities in accordance with IFRS 11. MTU's joint ventures, namely

- AES Aerospace Embedded Solutions GmbH, Munich, Germany
- Airfoil Services Sdn. Bhd., Kota Damansara, Malaysia;
- Ceramic Coating Center S.A.S., Paris, France;
- Engine Maintenance Europe Aero sp. z.o.o., Jasionka, Poland
- MTU Maintenance Zhuhai Co. Ltd., Zhuhai, China; and
- Pratt & Whitney Canada Customer Service Centre Europe GmbH, Ludwigsfelde, Germany;

are included in the consolidated financial statements using the equity method of accounting based on their materiality for the presentation of the Group's net assets, financial position and results of operations.

Non-material investments

Non-material investments are shares in companies and stakes in engine programs whose overall impact on the group's net assets, financial position and results of operations is currently and foreseeably insignificant. These investments are measured at fair value and recognized in other comprehensive income in the consolidated financial statements in compliance with the requirements of IFRS 9.

Restrictions

In certain cases, MTU or its subsidiaries may be subject to restrictions on their ability to transfer liquid funds or other assets to other group companies. Such restrictions may stem from regulatory requirements or from contractual agreements.

Consolidation principles

All business combinations are accounted for using the acquisition method in accordance with IFRS 3. Under the acquisition method, the acquirer accounts for the business combination by measuring and recognizing the identifiable assets acquired and the liabilities and contingent liabilities assumed. The identifiable assets, liabilities, and contingent liabilities are measured at fair value. Any excess of the purchase price over the net fair value of the acquired assets is recognized as goodwill in accordance with IAS 36 and tested for impairment at least annually, or at shorter intervals if there is an indication that the asset might be impaired. If the group's interest in the net fair value of the acquired identifiable net assets exceeds the cost of the business combination, that excess (negative goodwill) is recognized in the income statement after remeasurement as required by IFRS 3.36.

The effects of intercompany transactions are eliminated. Receivables and liabilities as well as expenses and income between the consolidated companies are offset against each other. Internal sales are transacted on the basis of normal market transfer prices and intercompany profits and losses are eliminated.

Currency translation

Transactions in foreign currencies are translated to the functional currency using the exchange rate prevailing on the date of the transaction. At the reporting date, monetary items are translated using the exchange rate prevailing at that date, whereas non-monetary items are translated using the exchange rate prevailing on the transaction date. Translation differences are generally recognized in the income statement. The assets and liabilities of group companies whose functional currency is

not the euro are translated from the corresponding local currency to the euro using the closing exchange rate at the reporting date. In the income statements of foreign group companies whose functional currency is not the euro, income and expense items are translated each month using the exchange rate applicable at the end of the month; the average exchange rate for the year can be derived from these end-of-month exchange rates. The translation differences arising in this way are recognized in other comprehensive income and do not have any impact on the net profit/loss for the year. Non-monetary items measured at cost of acquisition or production are translated using the exchange rate at the date of initial recognition.

Accounting policies

The consolidated financial statements of MTU Aero Engines AG, Munich, and its subsidiaries are prepared using uniform accounting policies based on the International Financial Reporting Standards (IFRSs).

Revenue

IFRS 15 states that revenue from contracts with customers should be recognized as an amount that reflects the consideration to which the entity expects to be entitled in exchange for the promised goods or services as part of its performance obligation. A five-step model framework is used to identify and measure this revenue:

1. Identify the contract(s) with the customer,
2. Identify each party's performance obligations in the contract,
3. Determine the transaction price,
4. Allocate the transaction price to the performance obligations in the contract,
5. Recognize revenue when (or as) the entity satisfies a performance obligation.

Identification of the contract(s) with the customer

Contracts may be entered into in writing, orally or implicitly in the ordinary course of business. In each case, the contracts must be enforceable and have commercial substance. A contract with a customer will be within the scope of IFRS 15 if these conditions are met and as soon as it is "probable" that MTU will collect the consideration to which it is entitled for the performance of the contractually agreed work and services. When the probability that the consideration will be collected is assessed, the customer's ability and intention to deliver the consideration by the due date are taken into account. MTU considers contracts to be within the scope of IFRS 15 if:

- all parties are in agreement with the terms of the contract,
- each party's rights in relation to the goods or services to be transferred can be identified,
- the payment terms for the goods or services to be transferred can be identified,
- the contract has commercial substance, and
- it is probable that the consideration to which MTU is entitled in exchange for the goods or services will be collected.

If, at the reporting date, a contract with a customer does not yet meet all of the above criteria, the company will continue to re-assess the contract at regular intervals until such time as the criteria are met. From this point onward, IFRS 15 will be applied to the contract.

In the commercial OEM segment, MTU identifies the respective consortium leaders (OEMs), which exercise control over the consortium, as customers within the meaning of IFRS 15 in the case of the existing risk- and revenue-sharing partnerships in the commercial engine business. In the case of risk- and revenue-sharing partnerships with joint consortium leadership, as in the military engine business, by contrast, the customer served by the consortium (e.g., an air force) is identified as the customer within the meaning of IFRS 15. In the commercial maintenance business (MRO segment), MTU identifies customers within the meaning of IFRS 15 on the basis of the regular direct customer (e.g., aircraft operator, leasing company).

Contract modification

Long-term service agreements in particular are often modified to take changes in the terms and conditions into account. The renewal of existing contracts is also regarded as a contract modification. A contract modification in accordance with IFRS 15 exists if the changes either create new rights and obligations or modify existing enforceable rights and obligations, thus altering the scope of the contract and/or the agreed price. Such changes must be accounted for either by modifying the existing contract or by establishing a separate, new contract. In the commercial maintenance business (MRO segment) in particular, maintenance for engine fleets can be arranged by way of long-term service agreements. The renewal of such long-term service agreements is usually accounted for as the termination of the old contract and the simultaneous establishment of a new contract.

Identification of performance obligations

Once a contract has been identified as being within the scope of IFRS 15, its terms and conditions and the company's general terms of business are assessed in order

to identify the promised goods or services (or bundle of goods and services) to be treated as distinct performance obligations and subsequently recognized. A good or service is distinct if the customer can benefit from the good or services on its own or in conjunction with other readily available resources, and if the promise to transfer the good or services to the customer is separately identifiable from other promises in the contract.

MTU's material performance obligations are as follows:

- manufacturing/delivery of aircraft engine components (sometimes including their assembly into modules)
- development/technology provision
- other technical services, in particular, with regard to the development and repair of engines and the maintenance and overhaul of engines and Industrial gas turbines

Determination of the transaction price

The transaction price is the amount of consideration to which a company expects to be entitled in exchange for the transfer of goods or delivery of services to a customer. Where a contract contains elements of variable consideration, the company will estimate the amount of variable consideration to which it is entitled under the terms of the contract.

Variable consideration included in the transaction price is only recognized as revenue to the extent that MTU considers a subsequent revenue reversal highly improbable.

The agreed transaction price is reduced in the case of qualified payments to customers. MTU defines such payments to customers as payments that are not made in exchange for identifiable goods and services that are independent of MTU's performance obligations toward its customer. Such payments to customers, especially in the commercial engine business (OEM segment), are customary in the sector in connection with compensation for engine development and certification, measures to gain market access and retain customers, and joint liability for warranty risks and contractual penalties.

Allocation of transaction price to performance obligations

Where a contract comprises multiple performance obligations, the transaction price is allocated to the performance obligations by reference to their standalone selling prices. Standalone selling prices are based whenever possible on observable data. Certain variable consideration components are allocated in full to a performance obligation by reference to their economic substance. Factors taken into account here are that the performance obligation is substantially satisfied by MTU and the allocation is in line with the contractual objectives for the allocation of the transaction price. If no standalone selling price is directly observable, MTU as a general rule estimates the applicable transaction price on the basis of the expected costs plus an appropriate margin by assessing relevant information that can be obtained without undue effort.

In the case of contracts in the commercial and military engine business (OEM segment) in which MTU's role is effectively that of a supplier or service provider to the consortium leader (OEM), without the responsibility to provide development assets or engine technology, the transaction prices are fixed in the consortium agreement, including variable elements. These transaction prices must be allocated in full to the goods delivered or services provided (e.g., engine assembly).

For commercial consortium agreements in which MTU assumes responsibility for providing development/engine technology to the consortium or consortium leader (OEM) in addition to supplying parts or performing assembly services, MTU initially allocates the contractually agreed, market-driven transaction prices (relative standalone selling prices) to the corresponding delivery and performance obligations. The additional contractually agreed variable consideration (share in the net profits of the engine program) is allocated to the obligation to provide the development/engine technology.

In the commercial maintenance business (MRO segment), transaction prices fixed in the consortium agreement, including variable elements, are allocated with reference to the relative standalone selling prices to the identified components of the serviced maintenance contracts.

Recognition of revenue when performance obligations are satisfied

Revenue is recognized, either over a specific period of time or at a point in time, when control of a good or service is transferred.

Revenue from the delivery of engine modules and components is recognized at a point in time and calculated with respect to the effective transfer of control to the customer and the associated beneficial risks and opportunities. Revenue from customer-specific services – such as development projects and especially engine maintenance – is recognized over time if they meet the necessary criteria.

When such revenue is recognized over time, the amount of completed work is determined as the ratio of contract costs incurred up to the reporting date to total contract costs.

In the reporting period and the previous year, all substantial claims to consideration identified or to be identified in the future in connection with the provision of goods and services for which orders had been placed as of the reporting date are classified as contracts with customers pursuant to IFRS 15.

Contracts with subcontractors

MTU sometimes works with subcontractors to fulfill its performance obligations. When MTU subcontracts the repair of engine components to a third party, MTU remains responsible for the quality of these repairs vis-à-vis the customer. Moreover, MTU is responsible for obtaining certificates of airworthiness for all new parts and components it delivers to customers. The subcontractors invoice MTU for their services in accordance with their contractual agreement with the group. They have no influence over the prices charged by MTU to its customers.

MTU is thus the principal contractor and reports its revenue as a gross amount. In other words, the full amount of sales from the customer is reported as revenue, while the amount invoiced by the subcontractor is recognized under cost of goods sold.

Activity as agent for the sale of non-MTU parts

As a member of certain engine consortia in the military sector, MTU participates in the sale of parts made by other partners, in addition to its development and production activities. The specific tasks performed by MTU consist in particular of organizing the sales process for the non-MTU parts, and contract negotiations. The percentage commission on the sale is not recognized as revenue until no uncertainty exists as to the amount of revenue arising from the sale, which is then recognized at a point in time.

Since MTU is merely the agent in this transaction, it recognizes the net amount of the consideration to which it is entitled for its activity as an agent.

Cost of goods sold

The cost of goods sold comprises the production cost of goods and services sold, including customer-funded development work, and the cost of products purchased for resale. In addition to direct material and production costs, it also comprises allocated production overheads, including amortization of production-related intangible assets and depreciation of production facilities, write-downs on inventories and an appropriate portion of production-related administrative overheads.

Research and development expenses

Research costs are expensed in the period in which they are incurred.

In the case of development costs, a distinction is drawn between customer-funded development work and company-funded development work. Services provided as part of customer-funded development projects (e.g., government-funded technology programs) are reported in cost of goods sold, in light of the fact that the incurred costs are reimbursed by a contracting entity.

Development costs generated in the context of company-funded development projects are capitalized in accordance with the requirements of IAS 38 or recognized as an expense in the period in which they are incurred. The capitalized development costs comprise all costs directly attributable to the development process and are amortized over the asset's respective useful life from the start of marketing of the engine program by MTU. The amortization expense is recognized in cost of goods sold.

Intangible assets

Externally acquired and self-generated intangible assets are recognized in accordance with IAS 38 if it is probable that a future economic benefit is associated with the asset and the cost of the asset can be measured reliably.

Intangible assets with a finite useful life are carried at their purchase or production cost and amortized on a straight-line basis over their useful lives.

Amortization is based on the following generally accepted useful lives:

[T49] Useful lives of assets (in years)

Program assets arising from the purchase price allocation and self-generated development assets	maximum 30
Customer relationships	4 – 26
Other assets	3 – 5

The useful lives and amortization methods pertaining to intangible assets are regularly assessed for appropriateness, and adjustments are made where necessary to the estimates used when the financial statements are being prepared.

Goodwill is tested for impairment regularly or as necessary in accordance with IAS 36. Each of the two operating segments, OEM (commercial and military engine business) and MRO (commercial maintenance business), is tested separately.

Public sector grants and assistance

In accordance with IAS 20, public sector grants and assistance are not recognized until there is reasonable assurance that the conditions attached to them will be complied with and that the grants will be received.

Grants are recognized as other operating income in the periods in which the related expenses arise. This item also includes the reimbursement of personnel expenses under relevant government assistance programs. MTU passes payments made by the Federal Employment Agency for short-time working on to its employees and therefore treats such payments as transitory items. In the case of capital expenditure on property, plant and equipment and on intangible assets, the amount of the public sector grant awarded for this purpose is deducted from the purchase or production costs of the asset. The grants are then recognized in the income statement using reduced depreciation/amortization amounts over the lifetime of the asset.

Property, plant and equipment

Property, plant and equipment are subject to wear and tear and are carried at their purchase or production cost less cumulative depreciation charges and impairment losses. The cost of items of self-constructed plant and equipment comprises all directly attributable costs and an appropriate proportion of production-related overheads. These assets are assigned to an appropriate category once they have been completed or are operational. The revaluation model is not applied. Depreciation on property, plant and equipment is calculated using the straight-line method in accordance with the useful life of the asset.

Depreciation is based on the following generally accepted useful lives:

[T50] Useful lives of assets (in years)

Buildings	25 – 50
Lightweight structures	10 – 14
Property facilities	10 – 20
Technical equipment, plant and machinery	5 – 25
Operational and office equipment	3 – 14

The useful lives of machines used in multi-shift operation are reduced accordingly to take account of additional usage.

Borrowing costs

Borrowing costs directly related to the acquisition, construction or production of qualifying assets are added to the purchase or production costs of those assets in accordance with IAS 23 until such time as the assets have been made ready for sale or for their intended use. Qualifying assets are those that require a substantial period of time to be made ready for sale or for their intended use.

Borrowing costs are capitalized only insofar as they relate to the purchase and preparation of qualifying assets for their intended use or sale, and only include activities that commenced on or after January 1, 2009.

Leases

A contract is accounted for as a lease if it grants the following rights:

- right to control the use of an identified asset in return for compensation
- right to obtain substantially all the economic benefits from that use.

At the start of the lease, a lease liability and a right-of-use asset are recognized. Right-of-use assets are recognized at cost less all cumulative depreciation charges and all cumulative impairment losses. The Group recognizes lease liabilities at the present value of the lease payments to be made over the term of the lease. Lease payments are both fixed and variable.

The Group calculates the present value of lease payments by applying its incremental borrowing rate at the delivery date, because the interest rate underlying the each lease cannot be determined reliably on an individual basis. After the delivery date, interest is added to the lease liabilities, and they are reduced by lease payments made. In addition, the carrying amount of the lease liabilities is remeasured when there is any modification of the lease, lease term, or lease payments (e.g., changes in future lease payments due to a change in the index or interest rate used to determine those payments, or a change in the assessment of an option to buy the underlying.

Lease payments are reported in the cash flow statement, with the amount of the lease liabilities paid recognized in cash flow from financing activities and the interest component paid recognized in cash flow from operating activities.

For accounting purposes, certain future developments are only taken into account if their occurrence is deemed to be sufficiently certain.

Assets and liabilities are not recognized in the case of short-term leases or leases for low-value assets. Payments for short-term lease or low-value asset leases as well as variable lease payments are recognized as an expense in function costs in the income statement in the period in which they occur.

If the group acts as lessor, all leases at the start of their term are classified as either finance leases or operating leases.

Classifying a lease requires the group to make an overall assessment as to whether the lease transfers all significant risks and opportunities associated with ownership of the underlying asset. If this is the case, the lease is classified as a finance lease; if not, it is classified as an operating lease. In making this assessment, the group takes into account certain indicators, such as whether the lease covers most of the useful life of the asset.

On the delivery date of the leased assets, assets held in a finance lease are recognized as a receivable in the amount of the net investment in the lease. The interest rate underlying the lease is used to measure the net investment in the lease.

Acquired program assets and acquired development work

MTU refers to program assets and acquired development as deferred compensation payments to the consortium leader (OEM or customer) in favor of inclusion in or compensation for development services for the respective engine program. Since there is not specific consideration, MTU classifies these as revenue-reducing payments to customers in accordance with IFRS 15. The above payments always refer to the lifetime of the program and are therefore systematically incurred at the start of the respective engine program. Consequently, they are accrued and recognized as non-current assets. They are capitalized at the nominal amount of the payments. These assets are amortized against revenue over the lifetime of the program in question, which generally means a period of up to 30 years.

If the above payments contain significant deferred conditional components, these are accounted for analogously to IFRIC 1. Changes resulting from reassessment of the condition components are recognized outside of profit or loss by adjusting the related assets.

Impairment of intangible assets, property, plant and equipment, acquired program assets and acquired development work

At each reporting date, an analysis is carried out to reveal any indication that the value of intangible assets, or property, plant and equipment, or acquired program or development work might be impaired. If impairment is indicated, the value of the asset in question is assessed on the basis of its recoverable amount.

Assets with an indefinite useful life, intangible assets that are not yet ready for use, and goodwill acquired in connection with a business combination are not subject to amortization, but are instead reviewed for impairment at least once each year, regardless of the circumstances.

The impairment loss on intangible assets, property, plant and equipment and acquired program and development work is determined by comparing the carrying amount with the recoverable amount. The recoverable amount is either the fair value of the asset (or of the cash-generating unit) less costs to sell, or the value in use, whichever is higher. The recoverable amount is usually determined using a discounted cash flow (DCF) method. If it is not possible to attribute separate future cash flows to discrete assets that have been generated

independently of other assets, then an impairment test must be carried out on the basis of the cash-generating unit to which the asset (group) ultimately belongs. For this purpose, the cash flows that can be generated by the asset or cash-generating unit are forecast. The discount rate takes account of the risks associated with the asset or cash-generating unit.

If the reasons for impairment losses recognized in a prior period no longer exist, the impairment loss on these Assets is reversed, except in the case of goodwill.

Non-current financial assets

Investments in joint ventures and associates that have a material impact on the group's net assets, financial position and results of operations are accounted for using the equity method. The group's share in the profit or loss of these entities is therefore allocated on a pro rata basis to profit/loss and to the corresponding carrying amount of the investment. This profit/loss is reported as a separate line item under "profit/loss of companies accounted for using the equity method."

Investments in subsidiaries that are not fully consolidated, and other equity investments and loans, are recognized at fair value. Here, MTU makes use of the option of recognizing such assets in other comprehensive income. Dividend payments received from these equity investments are included in the profit/loss of equity investments.

Inventories

Raw materials and supplies are measured at average purchase cost or net realizable value, whichever is lower. Transaction price reductions such as rebates, bonuses or cash discounts are taken into account when determining acquisition cost. Purchase cost comprises all direct costs of purchase and other costs incurred in bringing the inventories to their present location and condition.

Finished products and work in progress are recognized at purchase/production cost or net realizable value, whichever is lower. The purchase/production cost comprises all purchase costs and production-related expenses based on normal capacity utilization. In addition to direct costs, these include an appropriate and necessary portion of the cost of material and production overheads, including production-related depreciation. Administrative expenses are also included to the extent that they can be attributed to production operations.

Net realizable value is the estimated selling price generated in the ordinary course of business for the finished goods in question, less estimated costs necessary to make the sale (costs to complete and selling expenses). In the commercial engine business, the net realizable value from the marketing of inventories in the series business is regularly below the corresponding purchase/production cost. In the commercial maintenance business, the marketing of engine parts is affected, in particular, by the availability of used parts and by demand resulting from current usage of the engine fleet. Valuation allowances are recognized for the impairment risk of inventories.

The development of the net realizable value and thus the valuation allowances in the reporting period was affected to a large extent by coronavirus pandemic, which affected short- and mid-term business development in the commercial engine business and the commercial maintenance business.

The low capacity utilization resulting from the Covid-19 pandemic was not reflected in the recognized production cost. The costs that were not covered are included directly in earnings in 2020 as a negative accrual.

Contract assets

A contract asset represents the group's right to consideration for goods or services it has transferred to a customer. A contract asset is recognized when the group has satisfied its performance obligations and when its right to consideration is conditional on something other than the passage of time. If the right to consideration is unconditional except for the passage of time, it is recognized as a trade receivable and accounted for in accordance with the accounting principles for financial instruments. The contract assets are presented on the basis of contracts with customers, taking into account any upfront payments.

Financial instruments

A financial instrument is a contract that simultaneously gives rise to a financial asset in one company and to a financial liability or equity instrument in another company.

Financial assets

Financial assets include, in particular, cash and cash equivalents, trade receivables, loans to third parties, other receivables, and derivative financial assets.

At initial recognition, financial assets are measured at their fair value. The measurement of a financial asset subsequent to initial recognition depends on its classification. Financial assets are measured at amortized cost if the purpose is to hold the financial assets in order to collect contractual cash flows and the contractual terms of the financial asset give rise on specified dates to cash flows.

Financial assets are measured at fair value through other comprehensive income if the purpose is to hold the financial assets in order to collect contractual cash flows and the contractual terms of the financial asset give rise on specified dates to cash flows and, additionally, these assets are to be sold at maturity. A distinction is made between debt instruments for which the accumulated gains and losses are reclassified on derecognition and equity instruments for which this is not the case. MTU has elected to use the option offered by IFRS 9 of recognizing equity instruments at fair value through other comprehensive income.

All other financial assets are measured at fair value through profit or loss.

Impairment loss on financial assets

The impairment model in IFRS 9 is based on the premise of providing for expected losses.

In the case of trade receivables and contract assets, expected losses are recognized for the entire remaining duration of the contract (full lifetime loss allowance.) For all other financial instruments, expected credit losses are measured at an amount equal to the 12-month expected credit losses, unless there has been a significant increase in the credit risk. Otherwise, expected losses are also recognized for these financial assets over their remaining term to maturity.

To determine whether there has been a significant increase in the credit risk of a financial asset, the probability of default is assessed at least once a quarter using both external rating information and internal information on the credit quality of the financial asset. In the case of debt instruments, a significant increase in the credit risk is determined principally on the basis of past-due information or probability of default.

When calculating the expected credit losses, an amount is factored in for the possible impairment of groups of financial assets with a comparable credit rating. The loss allowance is based on credit spreads covering good, average and poor credit ratings. The classifications used by international rating agencies are applied when making these measurements.

The credit rating of financial assets is considered to be impaired in the following cases: significant financial difficulties of the debtor or a high probability that the debtor will enter bankruptcy or financial reorganization; the closure of an active market; significant changes in technological, economic, legal or market conditions affecting the issuer; or a significant or persistent decline in the fair value of the financial asset below its amortized cost. Impairment losses are initially entered in a separate valuation allowance account and only recognized as such after it has been established that the value of the asset is unrecoverable.

Financial liabilities

Financial liabilities often oblige the holder to return the instrument to the issuer in return for cash or another financial asset. Financial liabilities include, in particular, bonds and other liabilities evidenced by certificates, trade payables, finance lease liabilities, promissory notes, derivative financial liabilities and other liabilities to banks.

Financial liabilities are measured at their fair value at the time of acquisition, which is normally equivalent to the fair value of the settlement amount. Transaction costs directly attributable to the acquisition are deducted

from the amount of all financial liabilities. If a financial liability is interest-free or bears interest at below the market rate, it is recognized at an amount that is consistently lower than the settlement price or nominal value. The financial liability initially recognized at fair value is amortized subsequent to initial recognition using the effective interest rate method.

Cash and cash equivalents

The salient features of cash and cash equivalents, which include demand deposits and short-term bank deposits, are that they have a maturity of three months or less from the date of acquisition and are measured at their nominal value.

Derivative financial instruments

MTU uses derivative financial instruments as a hedge against currency and price risks arising from its operating activities and financing transactions.

At initial recognition and when measured subsequently, derivative financial instruments are measured at their fair value. This value is determined using quoted market prices in an active market and is represented by the amount that MTU would receive or would have to pay at the reporting date if the financial instrument were terminated. If no quoted market prices in an active market are available, the fair value is calculated using recognized financial mathematical models (DCF method) on the basis of the relevant exchange rates, interest rates and credit standing of the contractual partners at the reporting date.

Hedge accounting (hedging relationships)

MTU satisfies the requirements of IFRS 9 concerning instruments used to hedge future cash flows. When a hedge is undertaken, the relationship between the financial instrument designated as the hedging instrument and the underlying transaction is documented, as are the risk management objective and strategy for undertaking the hedge. This includes assessing the effectiveness of the hedging instrument used. Existing cash flow hedges are checked for effectiveness on a regular basis.

MTU uses cash flow hedges to hedge the exposure of future payment cash flows transacted in U.S. dollars (underlying transactions) to fluctuations in foreign currency exchange rates. At remeasurement subsequent to initial recognition, the effective portion of the hedging instrument is recognized in equity under other comprehensive income, together with attributable deferred taxes, until such time as the underlying hedged transaction is realized.

The amounts recognized in other comprehensive income at remeasurement are recycled to the income statement as soon as the underlying hedged transaction is recognized. The cost of effective hedging instruments used to hedge cash flows from revenue-generating transactions (cash flow hedges) are recognized in other operating income.

Current and deferred taxes

Current and deferred taxes are recognized in the consolidated financial statements in the manner prescribed in the relevant tax jurisdictions. Current and deferred taxes are recognized in equity if they relate to business transactions that directly lead to a decrease or increase in equity.

The MTU Group assesses whether it is probable that a tax authority will accept a specific tax treatment. If MTU concludes that it is probable that the tax authority will accept the tax treatment, it determines the taxable profit, tax bases, unused tax losses, unused tax credits or tax rates consistently with the tax treatment that it uses or plans to use in its income tax filings.

If MTU concludes that it is probable that the tax authority will not accept a tax treatment, it reflects the effect of this uncertainty when determining the related taxable profit, tax bases, unused tax losses, unused tax credits or tax rates through a best estimate (e.g., the amount/expected amount) or the most likely outcome.

If this tax treatment affects both current tax and deferred taxes (for example, if it affects both taxable profit used to determine current tax and tax bases used to determine deferred tax), the MTU Group makes consistent judgments and estimates for both current and deferred taxes.

Interest on back taxes and tax refunds arising from tax audits are recognized in interest expense in the income statement.

Deferred tax assets and liabilities are established for temporary differences between the tax bases of assets and liabilities and their carrying amount in the consolidated balance sheet. Tax assets are established on tax credits available for carry-forward at such time as the conditions attached to the award of the tax credit have been fulfilled. Similarly, deferred tax assets are established on tax losses available for carry-forward. Deferred tax assets are recognized to the extent of the probability that taxable income will be available against which the deductible temporary difference can be applied together with losses as well as tax credits that are permitted to

be carried forward. Deferred tax assets and liabilities are measured using the tax rates applicable on the date when the temporary differences are reversed. Deferred tax assets and liabilities are offset insofar as this meets the requirements of IAS 12.74.

Pension obligations

Provisions for pension obligations are accounted for using the projected unit credit method in accordance with IAS 19. This method takes into account not only pension and other vested benefits known at the reporting date, but also expected increases in pensions and salaries, applying a conservative assessment of the relevant parameters.

In the case of defined contribution plans, the company has no obligations beyond the payment of contributions to the plan. In the case of defined benefit plans, the company has an obligation to fulfill commitments to current and former employees.

In some cases, it is difficult to differentiate between defined contribution and defined benefit plans. In Germany, for example, a minimum level of benefits is guaranteed for defined contribution plans, such that, even when the plan is provided through an external fund or insurance company, the employer remains liable. This "ultimate employer liability" is governed by Section 1 (1) sentence 3 of the German Occupational Pensions Act (BetrAVG). For financial reporting purposes, the term "defined benefit plan" is interpreted on the basis of the underlying economic substance of the arrangement. Insofar as the MTU Group has no material obligations beyond its "ultimate liability" once the contributions have been paid to state and private pension funds, these plans are classified as defined contribution plans. Current contributions are recognized as expenses in the period in which they are paid.

Actuarial gains and losses – from the measurement of the defined benefit obligation (DBO) and the plan assets – may arise either from changes in the actuarial assumptions used or when the actual development diverges from those assumptions. They are recognized in other comprehensive income in the period in which they arise and are recognized separately in the statement of comprehensive income. Past service cost is recognized directly in profit and loss. Where reinsurance claims exist and the criteria given in IAS 19 are met, these claims are treated as plan assets and netted against the pension obligations. The interest expense resulting from the reversal of the discount on the net liability, comprising pension obligations less the corresponding plan assets, is recognized under other financial income/expense. Service cost is recognized in the income statement as personnel expenses allocated to the relevant function costs.

Other provisions

In accordance with IAS 37, other provisions are recognized to cover legal or de facto obligations resulting from past events if settlement is expected to result in an outflow of resources. Such obligations regularly arise in connection with claims on warranties and the risk from pending losses on onerous contracts, the recognition of accrued sales deductions and subsequent costs, unpaid invoices, personnel costs, various taxes (especially consumer taxes), and other costs such as the risk of legal action and lawsuits, for instance in connection with government investigations.

If a planned and controlled restructuring program has been presented by the management, provisions are established for the expenditures arising directly from the restructuring. Restructuring provisions are recognized only if there is constructive restructuring obligation and insofar as the related expenditures both necessarily entailed by the restructuring and not associated with the company's ongoing activities.

Non-current provisions for liabilities with an identifiable due date more than one year beyond the reporting date are measured at the present value of expected future cash flows. The company measures provisions for pending losses on onerous contracts at the lower of the expected costs on settlement of the contract and the expected costs on premature termination of the contract.

Provisions for personnel obligations are recognized in accordance with IAS 19 or IAS 37. Obligations relating to pre-retirement part-time working arrangements and long-service awards are measured on the basis of actuarial reports.

Contingent liabilities

Contingent liabilities are potential obligations arising from past events whose existence depends on the occurrence or non-occurrence of one or more uncertain future events that are not wholly within the control of MTU. Contingent liabilities are not recognized as liabilities in the balance sheet because at the reporting date it is considered that there is unlikely to be an outflow of economic resources, or, as an exception, the amount of the obligation cannot be reliably estimated.

Contract liabilities

When a customer pays the consideration for a performance obligation, or if the company has an enforceable right to receive a specified consideration prior to the transfer of a good or service to the customer, the compa-

ny presents such contracts with customers as contract liabilities, recognizable on the due date or on the date of settlement in accordance with IFRS 15. Recognition of a contract liability signifies that MTU has entered into an agreement with a customer in which it promises to transfer goods or services to that customer in exchange for consideration. In the commercial OEM business, MTU is, in individual cases, a partner in consortia for engine programs and, at the same time, participates directly in the contract liabilities of the associated program companies as a partner in such companies. MTU releases amounts from the balance of such liabilities to revenue taking into account refund liabilities that are established reflect the participation in program profits associated with the program company's contract liabilities. The contract liabilities are presented on the basis of contracts with customers, taking into account any corresponding contract assets realized as of reporting date.

Refund liabilities

In accordance with IFRS 15, a refund liability is recognized if the company receives consideration from a customer and expects to refund some or all of that consideration to the customer. Refund liabilities represent the amount of consideration to which the company does not expect to be entitled at the reporting date. In the commercial OEM business, MTU may participate in program profits through the provision of development work/technology. Such participation regularly involves retrospective price corrections. These are attributable to rebates on invoiced list prices in the programs' series and spare parts business, which are common practice in the sector. MTU takes this invoicing practice into account in revenue recognition, especially with a view to its participation in the program profits, through provisions for refund liabilities, which affect revenue.

Dividend payment and profit distribution

The claims of shareholders to dividend payments and profit distribution relating to a specific reporting period (fiscal year) are recognized as a liability in the period in which the corresponding resolution is passed. Disclosures relating to the Executive Board's or Supervisory Board's proposal to the Annual General Meeting concerning the dividend payment are provided in *Section VII. "Determination of the net profit available for distribution on the basis of the annual financial statements."*

Discretionary scope, measurement uncertainties and sensitivity

Preparation of the consolidated financial statements in accordance with IFRSs requires that assumptions and estimations be made that have an impact not only on the amounts of the assets and liabilities as well as contingent liabilities, but also on how these items are recognized. These assumptions and estimations conform with the circumstances prevailing at the reporting date and, to that extent, also influence the amount of income and expenses recognized in the fiscal years presented. The assumptions and estimations relate primarily to the group's own determination of the useful lives of intangible assets and property, plant and equipment or the basis for measuring acquired program assets and development work, inventories, the calculation of the fair value of financial instruments, the determination of the effective date of planned transactions that form part of a hedging relationship, the measurement and recognition of provisions and other liabilities, especially refund liabilities and contract liabilities, and tax assets, especially in connection with temporary differences, tax losses available for carry-forward and tax credits. Furthermore, assumptions and estimations are the elementary basis for planning calculations at company, segment, program, and customer contract level. Such planning calculations form the material basis for impairment testing in accordance with IAS 36, including in connection with program assets and assets relating to historical purchase price allocations.

In individual cases, the actual values may differ from the assumptions and estimations made, so it may be necessary to adjust the measurement of assets and liabilities recognized in the financial statements. Changes are made to estimations when more reliable information becomes available in accordance with IAS 8 and these may have an impact on the figures in the period in which the changes are made and, where applicable, on subsequent periods.

/ In principle, the measurement of intangible assets, other assets, property, plant and equipment, and financial assets involves the use of estimations. Judgments by management form the basis for determining the fair value of assets and liabilities and the useful life of assets. If the actual results deviate from these estimations, or if these estimations have to be adjusted in a future period, this may have an impact on the presentation of the group's net assets, financial position and results of operations.

- In the process of determining impairment losses, estimations are made concerning such parameters as the source, timing and amount of the impairment loss. Many different factors can give rise to an impairment loss, e.g., changes in the competitive situation, expectations concerning the growth of air travel and the aircraft industry, changes in the cost of capital, changes in the future availability of financing funds, aging and obsolescence of technologies, replacement costs, or purchase prices paid in comparable transactions. If the actual results deviate from these estimations, or if these estimations have to be adjusted in a future period, this may have an impact on the presentation of the group's net assets, financial position and results of operations. Reference is made to *Note 36 "Sensitivity analysis of goodwill"* for a sensitivity analysis of the goodwill of the two operating segments.
- Given the long-term nature of engine programs, changes in the cost of capital as a result of changes in interest rates, risk premiums or beta factors and in forecast cash flows from revenue-generating transactions, especially in connection with forecast volume, price and cost structures, the time period for the provision of the work and services and the corresponding consideration within the program can have a significant impact on the assessment of the value of the program-related assets, which are also material for revenue and the cost of goods sold. The principal components of program-related assets, alongside the acquired program assets, are the capitalized development costs, inventories and contract assets. Furthermore, the recognition and especially the amortization of intangible and other program-related assets is also affected by the estimated materialization and dynamic of the volume, price and cost structures for the respective engine program. If the actual results deviate from these estimations, or if these estimations have to be adjusted in a future period, this may have an impact on the presentation of the group's net assets, financial position and results of operations.
- The interpretation of a sensitivity analysis of the extent of possible consequences of changes to measurement parameters, in particular those relating to claims on warranties, price and quantity structure, the risk from pending transactions, the risk of losses arising from the settlement of accounts, and the measurement of risks arising from legal action and lawsuits, does not allow the consequences of individual events to be assessed, due to the multitude of sensitivity scenarios presenting high degrees of uncertainty.
- In view of the sector's customary spread of expected margins in the series and spare parts business, the assumed "marketing mix" in the commercial OEM programs has a considerable influence on the determination of the fair values of relevant program assets such as inventories and contract assets, and liabilities such as refund and contract liabilities. If the actual results deviate from these estimations, or if these estimations have to be adjusted in a future period, this may have an impact on the presentation of the group's net assets, financial position and results of operations.
- The management recognizes valuation allowances for expected credit losses from receivables and contract assets. Valuation of the expected credit loss and the hedging instruments used to offset this requires the use of estimations based on assumptions. If the actual results deviate from these estimations, or if these estimations have to be adjusted in a future period, this may have an impact on the presentation of the group's net assets, financial position and results of operations.
- In certain cases, financial liabilities may be linked to deferred, conditional purchase price components. Determination of the fair value of such liabilities requires predictions about the future development of the parameters affecting their development. These comprise, on the one hand, publicly available market data (interest rate, U.S. dollar exchange rate) and, on the other, input parameters that are not publicly available – specifically, in this case, the number of flight hours on which payments are based for part of the V2500 engine fleet in the period up to 2027. To predict the future number of flight hours, MTU makes use of an in-house forecasting model that is based on internally as well as externally available information concerning the in-service V2500 fleet. The sensitivity analysis takes into account both the absolute number of flight hours on which payments are based and the time period within which these hours arise. If the actual results deviate from these estimations, or if these estimations have to be adjusted in a future period, this may have an impact on the presentation of the group's net assets, financial position and results of operations. Further information on the financial liability relating to the increase in the stake in the V2500 can be found in *Note 28 "Financial liabilities."*
- When revenue is recognized at a point in time, estimates are necessary because, as a partner in engine consortia, MTU receives a fixed and a variable revenue component. The variable revenue component, which is mainly made up of a net profit share and revenue-reducing effects such as losses arising from the settlement of accounts and rebates, is determined on the basis of empirical data and parameters specified in customer contracts, which necessarily implies management judgments or forecasts. Estimations are required, in particular, with regard to refund liabilities

and, in individual cases, the subsequent measurement of contract assets and liabilities. If the actual results deviate from these estimations, or if these estimations have to be adjusted in a future period, this may have an impact on the presentation of the group's net assets, financial position and results of operations.

- Revenue recognized over time is accounted for according to progress, if it is sufficiently probable that future economic benefits associated with the business will flow to MTU. Because in some cases it may not be possible to reliably estimate the outcome, revenue calculated according to progress is recognized on the basis of the contract costs incurred up to the reporting date, to the extent that it is probable that these costs can be recovered. The measurement uncertainty is consistent with the complexity and long-term nature of the respective customer contract. Management regularly reviews its estimations made in connection with these customer contracts, making adjustments to the accounting where necessary. If the actual results deviate from these estimations, or if these estimations have to be adjusted in a future period, this may have an impact on the group's net assets, financial position and results of operations.
- Income taxes must be determined for each tax jurisdiction in which the group operates. Estimates are required when measuring actual and deferred taxes. The utilization of deferred tax assets depends on the possibility of generating sufficient taxable income in a particular tax category and tax jurisdiction. A variety of factors are used to assess the probability that it will be possible to utilize deferred tax assets, e.g., past operating results, operating business plans and the periods over which losses can be carried forward. If the actual results deviate from these estimations, or if these estimations have to be adjusted in a future period, this may have an impact on the group's net assets, financial position and results of operations.
- The total value of provisions for pensions and similar obligations, and therefore the expenses in connection with employees' retirement benefits, are determined using actuarial methods based on assumptions concerning interest rates, choice of optional payment modalities, wage, salary and pension trends, and life expectancy. If it should become necessary to modify these assumptions, this could have a significant effect on the future amount of pension provisions or the future expenses for pensions and thus on the group's net assets, financial position and results of operations. Further information on pension provisions can be found in *Note "25. Pension provisions."*
- The measurement and recognition of other provisions, accrued liabilities (as defined in IAS 37), refund liabilities and contingent liabilities involve substantial estimations by MTU. These concern contractual penalties, the implications of forward-looking information from program partners and customers, the cost of developing suitable engineering solutions, changes in the requirements imposed by flight safety organizations and aviation authorities, and the cost of meeting warranty obligations. Similarly, when accounting for committed aircraft financing agreements, estimations are required concerning the probability that the loans will be realized, the consistency of the terms with market conditions, and the change in the value of the pledged security. If the actual results deviate from these estimations, or if these estimations have to be adjusted in a future period, this may have an impact on the presentation of the group's net assets, financial position and results of operations.
- In connection with the recognition of leases in accordance with IFRS 16, the assessment whether extension and termination options will be exercised is based on probability. The specific circumstances of each lease are used for this. These circumstances relate, in particular, to the operational need to continue to use the leased asset, the options and limitations of other means of financing and the terms for continued leasing of the asset. If the actual results deviate from these estimations, or if these estimations have to be adjusted in a future period, this may have an impact on the group's net assets, financial position and results of operations.

All assumptions and estimates are based on the prevailing conditions and judgments made at the reporting date. Any subsequent changes occurring before the financial statements are prepared are taken into account in the amounts recognized. Estimations of future business developments also take into account the economic environment of the industry and the regions in which MTU is active, such as are deemed realistic at that time. In order to obtain new information, MTU also relies on the services of external consultants such as actuaries, appraisers, and tax and legal advisors.

In 2020, the Covid-19 pandemic also had a significant impact on the business operations of MTU and the assumptions and estimates used in the preparation of the consolidated financial statements. In the aviation sector, this comprised, in particular, the uncertainty about mid- and long-term business development, which also affect the reliability of corporate planning. In light

of the continuing spread of the virus and its mutations, it is still difficult to predict the scope and duration of the resulting effects on the business performance of MTU, including the implications for the development of the fair values of assets and liabilities, and the company's results of operations and liquidity situation. The assumptions and estimations made in preparing the consolidated financial statements as of December 31, 2020 were based on the best information and knowledge available to the management at that time.

The scenario used for corporate planning is based on the following principal key premises:

For the commercial OEM and MRO business, it is assumed that global passenger traffic will be back at the 2019 level in 2023 (basis: IATA forecast of February 3, 2021). The market for regional and mid-haul aircraft is driven by domestic traffic, which IATA expects to recover in 2022. The negative effects of the crisis had a bigger impact on the market for long-haul aircraft than on the market for regional and mid-haul aircraft so long-haul aircraft are not expected to return to the 2019 level until 2024. In view of the reduction in cargo capacity in passenger aircraft, capacity utilization of cargo aircraft is expected to remain very high. Programs with a high proportion of cargo aircraft such as the CF6-80C and PW2000 will benefit from this. In the MRO segment, MTU expects to benefit from the high proportion of engines for regional and mid-haul aircraft, which are less affected by the crisis. Furthermore, the drop in demand as a consequence of Covid-19 should be offset by the strong cargo business and retrofit orders for the PW1100G-JM engine fleet.

The military business is not affected by the crisis; new programs such as Future Combat Air System (FCAS) and, in this context the Next European Fighter Engine (NEFE) form a solid basis for the future. Further information on revenue from the military engine business can be found in *Note 1 "Revenue."*

Therefore, MTU assumes that the impact of the Covid-19 pandemic on global air traffic and thus on the business development of MTU and its consolidated financial statements will be temporary. In particular, it affects estimations used to derive the fair value of intangible assets, program assets, inventories, contract assets and receivables. Further information on valuation allowances for receivables see *Note 4 "Selling expenses."*

Assumptions and estimated forecasts used to measure liabilities, especially program and refund liabilities, are also affected. The suitability of sensitivity data for an assessment of the above estimation uncertainties in connection with the Covid-19 pandemic is very limited due to the large number of scenarios underlying interpretation of the individual factors. In view of the impairment risks relating to goodwill and acquired program assets, additional sensitivity analyses were undertaken (*Note 17 "Acquired program assets, development work"* and *Note 36 "Sensitivity analysis of goodwill"*). The aspects addressed above are affected, in particular by the assessment of the future business performance of MTU and thus of the Covid-19 pandemic.

II. Notes to the consolidated income statement

1. Revenue

Revenue developed in the reporting period as follows:

[T51] Revenue – prior-year amounts adjusted, see segment reporting

in € million	Revenue recognized at a point in time	Revenue recognized over time	Jan. 1 to Dec. 31, 2020	Revenue recognized at a point in time	Revenue recognized over time	Jan. 1 to Dec. 31, 2019
Commercial engine business	1,052		1,052	1,537		1,537
Military engine business	306	177	483	301	158	459
Commercial and military engine business (OEM)	**1,358**	**177**	**1,535**	**1,838**	**158**	**1,996**
Commercial maintenance business (MRO)	**94**	**2,428**	**2,522**	**100**	**2,611**	**2,711**
Consolidation	–38	–42	–80	–42	–36	–79
Total revenue	**1,415**	**2,562**	**3,977**	**1,896**	**2,733**	**4,628**

Revenue included €583 million (previous year: €535 million) carried as contract liabilities at the beginning of the fiscal year. Furthermore, revenue of €17 million recognized in the reporting period (previous year: €44 million) related to performance obligations satisfied in prior periods.

The group generates its revenue in the following geographical areas:

[T52] Revenue according to customer's country of domicile

in € million	2020	2019
Germany	586	486
Europe (excluding Germany)	281	448
North America	2,744	2,937
Asia	231	400
Other regions	136	358
Total revenue	**3,977**	**4,628**

In the reporting period, approximately 69 % (previous year: 63 %) of MTU's revenue was generated from business with customers in North America, with the US market accounting for a share of 65 % (previous year: 59 %).

Contracted performance obligations which were not yet satisfied as of December 31, 2020, including variable components which could be estimated, amounted to a cumulative transaction price of €18.6 billion (previous year: €19.8 billion). Of this cumulative transaction price, €2.6 billion will be realized in revenue within one year, €8.5 billion will be realized in revenue within two to five years, and €7.5 billion is expected to be realized in revenue after five and within 25 years.

A more detailed presentation of revenue, broken down by external and intersegment revenue and their attribution to major customers, is provided under *"Consolidated segment report."* Additional information can be found in the *disclosures relating to operating results in the Combined management report*.

2. Cost of goods sold

[T53] Cost of goods sold

in € million	2020	2019
Cost of materials	–2,576	–2,912
Personnel expenses	–625	–722
Depreciation and amortization	–285	–202
Other cost of goods sold	–55	58
Cost of goods sold	**–3,541**	**–3,778**
Capitalized development costs	56	80
Total cost of goods sold	**–3,484**	**–3,697**

As a result of the pandemic-related restrictions on air traffic, which resulted in production adjustments by the aircraft manufacturers and engine OEMs of relevance for MTU, resulted in a reduction in the company's business volume and the corresponding cost of goods sold from the second quarter. Downside factors included recognition of provisions of €33 million in connection with a restructuring program to reduce the Group's personnel capacity by 10 to 15 % by year-end 2021 and the need to recognize impairment losses of €73 million for the GE9X and PW1200G programs.

To compensate, in particular, for idling costs resulting from production restrictions in the reporting period, MTU introduced a cost-cutting program and took advantage of government assistance programs – in German in the form of allowances for short-time working. This eased the pressure on function costs, especially personnel expenses.

In addition to the pandemic-related drop in demand, as in previous years, the realized product mix has to be taken into consideration. In the OEM business, the series business declined faster than the spare parts business in the OEM segment. In the MRO segment, maintenance and repair business that is not tied to OEMs was significantly below the lower-margin OEM orders, partly due to the warranty-related retrofit programs for GTF engines.

Since billing in U.S. dollars is customary in the aviation sector, the development of the U.S. dollar exchange rate, which averaged U.S.$/€ 1.14 in 2020 compared with U.S.$/€ 1.12 in the previous year, adversely affected revenue and, in view of the proportion of the cost of goods sold denominated in currencies other than the U.S. dollar, the Group's gross margin. This was offset by the positive effect of gains on the measurement of net operating liabilities denominated in U.S. dollars, reflecting the change in the exchange rate in the year under review, from U.S.$1.12/€ on January 1, 2020 to U.S.$1.23/€ as of the reporting date.

In an overall view, the development of revenue and the cost of sales resulted in a lower but still positive gross profit. As a consequence, the gross margin, which is defined as the ratio of revenue less cost of sales to revenue, declined from 20.1 % in the previous year to 12.4 % in the reporting period.

The development of the other components of the cost of goods sold in the reporting period corresponded to the change inventories and the establishment and amortization of provisions for components such as inventories and contract assets, and provisions, contract liabilities and refund liabilities.

3. Research and development expenses

Company-funded research and development expenses developed as follows:

[T54] Research and development expenses

in € million	2020	2019
Cost of materials	–35	–38
Personnel expenses	–24	–25
Depreciation and amortization	–2	–2
Other development costs	–1	–3
Research and development expenditure	**–62**	**–68**
Capitalized development costs	1	2
Research and development expenses recognized in profit or loss	**–61**	**–66**

More information is given in the *"Research and development" section of the Combined management report*.

4. Selling expenses

[T55] Selling expenses

in € million	2020	2019
Cost of materials	–20	–20
Personnel expenses	–70	–71
Depreciation and amortization	–2	–1
Other selling expenses	–53	–27
Total selling expenses	**–146**	**–119**

Selling expenses comprise expenses for marketing and advertising, media relations expenses, as well as impairment allowances and impairments of receivables from customers and contract assets. In the reporting period, the impairment losses applied to operations in both the OEM segment and the MRO segment. The year-on-year change is related to the impact of the pandemic. In the MRO business, in particular, it was necessary to establish and increase valuation allowances for contract assets and outstanding receivables in view of the pandemic-related increase in credit loss risks and the insolvency of commercial airline customers in the reporting period. Further information on valuation allowances can be found in *Note 20 "Trade receivables" and Note 21 "Contract assets."*

5. General administrative expenses

[T56] General administrative expenses

in € million	2020	2019
Cost of materials	–8	–6
Personnel expenses	–56	–60
Depreciation and amortization	–4	–2
Other administrative expenses	–13	–17
Total general administrative expenses	**–79**	**–85**

General administrative expenses are expenses incurred in connection with administrative activities that cannot be directly allocated to development, production or sales activities.

6. Other operating income and expenses

[T57] Other operating income and expenses

in € million	2020	2019
Income		
Gains from the disposal of intangible assets and property, plant and equipment	0	0
Reimbursement of insurance claims	9	2
Hedge income	7	1
Rental income from		
property owned by MTU	2	2
sublet property owned by third parties	1	1
Income from public sector grants and assistance	20	
Miscellaneous other operating income	10	7
Total other operating income	**48**	**12**
Expenses		
Hedging costs	–52	–44
Losses from the disposal of intangible assets and property, plant and equipment	–1	–1
Expenses associated with insurance claims	–6	–1
Rental payments for sublet property	–1	–1
Sundry other operating expenses	–2	–5
Total other operating expenses	**–62**	**–51**
Net other operating income/ expenses	**–14**	**–39**

The use of short-time working in Germany as a result of the necessary reduction in operations in connection with the pandemic led to claims for the reimbursement of social security contributions totaling €12 million. These are recognized in other operating income.

7. Profit/loss of companies accounted for using the equity method and of equity investments

[T58] Profit/loss of companies accounted for using the equity method and of equity investments

in € million	2020	2019
Profit/loss of companies accounted for using the equity method		
Associates	35	30
Joint ventures	34	50
Total profit/loss of companies accounted for using the equity method	**69**	**80**
Profit/loss of equity investments		
Program management and coordination companies	–1	2
Other related companies	2	1
Total profit/loss of equity investments	**1**	**3**

The principal driver of the profit/loss of companies accounted for using the equity method is the business performance of the joint venture MTU Maintenance Zhuhai Co. Ltd., Zhuhai, China, and the associated company PW1100G-JM Engine Leasing LLC., East Hartford, USA.

Information on companies accounted for using the equity method is provided in *Note 16 "Financial assets."*

8. Net interest income/expense

[T59] Net interest income/expense

in € million	2020	2019
Interest income	**3**	**6**
Interest expense		
Bonds and notes	–12	–4
Convertible bonds	–4	–14
Liabilities to banks	–1	–1
Lease liabilities	–5	–4
Other interest expense	–4	–4
Capitalized borrowing costs for qualifying assets	4	3
Interest expense	**–22**	**–24**
Net interest income/expense	**–20**	**–17**

The year-on-year decrease in interest income is due to a smaller amount of extended loans for aircraft and engine financing activities required by MTU's partnership in commercial engine programs. The rise in interest expense in the reporting period corresponds, in particular, with the issue of the corporate bond and the promissory note. Further information can be found in *Note "28. Financial liabilities."*

The borrowing costs capitalized in the reporting period relate to qualifying assets acquired or constructed mainly in connection with the group's stake in the Pratt & Whitney GTF™ engine family and PW800. The capitalized amount was determined using a cost of debt capital of 2.3 % (previous year: 1.9 %).

9. Other financial income/expense

[T60] Other financial income/expense

in € million	2020	2019
Effects of currency translation: exchange rate gains/losses on		
Currency holdings	–35	1
Financing transactions	–4	0
Lease liabilities	7	–2
Fair value gains/losses on derivatives		
Currency derivatives	6	5
Commodity forwards	1	2
Interest included in measurement of assets and liabilities		
Pension obligations and plan assets	–9	–15
Receivables, other provisions and liabilities	–13	–13
Miscellaneous other financial income/expense	–0	0
Other financial income/expense	**–47**	**–22**

The effects from measurement of foreign currency holdings mainly relate to the change in the U.S. dollar exchange rate prevailing on the reporting date from U.S.$/€ 1.12 to U.S.$/€ 1.23 to the euro in the reporting period. For information on the impact of pensions and plan assets, please refer to *Note 25 "Pension provisions."*

10. Income taxes

Recognized income taxes comprise current income taxes paid or payable in the countries in which the group operates, and deferred tax income or expense.

[T61] Analysis of current and deferred income taxes

in € million	2020	2019
Tax expense incurred in current period	–62	–124
Tax expense (-)/tax income incurred in prior periods	–32	–24
Current income taxes	**–94**	**–148**
Deferred tax expense (-)/tax income resulting from temporary differences	50	–26
Deferred tax expense (-)/tax income resulting from tax credits	–4	2
Deferred tax expense (-)/tax income resulting from tax losses carried forward	0	–6
Deferred income taxes	**46**	**–31**
Income tax expense	**–48**	**–178**

Tax reconciliation

Deferred tax assets and liabilities are generally measured using the applicable tax rate for the period when the asset is realized or the liability is settled, based on current tax legislation in the countries concerned.

In the reporting period, as in the previous year, the deferred taxes of the German group companies were measured using an income tax rate of 32.2%. The income tax rate for the domestic tax group of MTU Aero Engines AG rate is still comprised of the uniform corporation tax rate of 15.0% plus a solidarity surcharge of 5.5% on the calculated corporation tax expense and takes into account an average municipal trade tax rate of 16.4%.

The tax assets and liabilities of companies outside Germany were measured using the relevant tax rates for the countries in question, which range between 19% and 27%.

Information on changes in deferred tax assets and liabilities is provided in *Note 34 "Deferred taxes."*

The following table shows the reconciliation of expected tax expense to recognized tax expense:

[T62] Tax reconciliation

in € million	2020	2019
Earnings before income taxes	195	667
Income tax rate	32.2%	32.2%
Expected tax expense	**–63**	**–215**
Impact of		
Recognition and measurement adjustments and write-downs on deferred tax assets	–5	2
Non-tax-deductible operating expenses and tax-exempt income	–0	–1
Lower tax rates for companies outside Germany	5	15
Investments accounted for using the equity method	14	23
Tax audit and prior periods	2	–5
Tax credits available for carry-forward	2	3
Withholding tax charge and other foreign taxes	–3	–1
Other impacts	–0	1
Income tax expense	**–48**	**–178**
Effective tax rate	**24.4%**	**26.7%**

11. Earnings per share

To determine diluted earnings per share, the number of common shares that could potentially be issued through the granting of equity instruments is added to the weighted average number of outstanding shares.

The net income available for distribution to the shareholders of MTU Aero Engines AG amounted to € 139 million (previous year: €478 million).

In the reporting period, the weighted average number of outstanding shares was 52,985,567 (previous year: 51,813,526 shares). Based on these parameters, basic earnings per share amounted to € 2.63 (previous year: € 9.23).

Diluting effects arose from 2,030,805 shares (previous year: 3,614,481) that could potentially be issued through the convertible bonds issued by MTU, which meant that diluted earnings per share amounted to € 2.59 (previous year: € 8.46).

12. Additional disclosures relating to the income statement

After adjustments to eliminate the depreciation and amortization effect of the purchase price allocation (PPA), the increase in the stake in the IAE-V2500 program, restructuring expenses and the impairment losses recognized for the PW1200G engine program for the Mitsubishi SpaceJet and the GE9X engine program for the Boeing 777X, the following reconciliation gives the performance indicator "Adjusted earnings before interest and tax (adjusted EBIT)":

[T63] Reconciliation of EBIT to adjusted EBIT, depreciation/ amortization expense and non-recurring items

in € million	2020	2019
Earnings before interest and taxes (EBIT)	**262**	**706**
thereof: special item depreciation/ amortization effect of purchase price allocation	21	21
thereof: special item increase in the stake in V2500	27	30
thereof: special item impairment losses on program assets	73	
thereof: special item restructuring expenses	33	
Adjusted earnings before interest and taxes (adjusted EBIT)	**416**	**757**

Costs by function include the following personnel expenses items:

[T64] Personnel expenses

in € million	2020	2019
Wages and salaries	625	731
Social security, pension and other benefit expenses	143	136
Total personnel expenses	**768**	**867**

Personnel expenses include pension benefits of €22 million (previous year: €19 million). Other social security expenses amounted to €122 million (previous year: €117 million). The reduction in personnel expenses is due to the effects of cost-cutting programs, for example, reducing employees time credits and the reduction in variable compensation payments in the reporting period. In addition, the German locations benefit from salary compensation payments in connection with short-time working due to operating restrictions.

The average number of persons employed during the fiscal year breaks down as follows:

[T65] Disclosures on the average number of employees

Number	2020	2019
Industrial staff	4,330	4,082
Administrative staff	4,792	4,571
Temporary employees	941	1,217
Employees in vocational training	297	269
Interns	186	188
Total average number of employees	**10,546**	**10,327**

The fees charged by the group auditor Ernst & Young GmbH Wirtschaftsprüfungsgesellschaft in 2020 in accordance with Section 314 (1) no. 9 of the German Commercial Code (HGB) amounted to a total of €1 million (previous year: €1 million).

[T66] Group auditor compensation

in € million	2020	2019
Financial statement auditing services	1	1
Other assurance services	0	0
Total group auditor compensation	**1**	**1**

The fee for financial statement auditing services primarily related to the audit of the consolidated financial statements and the separate financial statements of MTU Aero Engines AG and its subsidiaries and reviews of the interim financial statements. Other assurance services mainly included the limited assurance engagement on the non-financial statement and the EMIR audit.

III. Notes to the consolidated balance sheet

13. Changes in intangible assets and property, plant and equipment

[T67] Changes in non-financial assets – purchase and production costs 2020

in € million	As of Jan. 1, 2020	Currency translation differences	Additions	Transfers	Disposals	As of Dec. 31, 2020
Program assets arising from the purchase price allocation	670					670
Program-independent technologies	125					125
Customer relationships	57					57
Rights and licenses	153	–2	3	3	–0	158
Goodwill	392	–0				391
Development assets	487	–0	40			527
Prepayments on intangible assets	48	–1			–26	21
Intangible assets	**1,932**	**–4**	**44**	**3**	**–26**	**1,950**
Land, leasehold rights and buildings, including buildings on third-party land	497	–5	79	45	–0	616
Technical equipment, plant and machinery	749	–7	35	54	–11	821
Other equipment, operational and office equipment	843	–3	79	27	–68	878
Advance payments and construction in progress	201	–2	90	–129	–6	154
Property, plant and equipment	**2,291**	**–16**	**283**	**–3**	**–84**	**2,470**
Total	**4,223**	**–20**	**327**		**–110**	**4,419**

[T68] Changes in non-financial assets – depreciation/amortization and carrying amount 2020

in € million	As of Jan. 1, 2020	Currency translation differences	Additions	Transfers	Disposals	As of Dec. 31, 2020	Carrying amount Dec. 31, 2020
Program assets arising from the purchase price allocation	431		18			449	221
Program-independent technologies	125					125	
Customer relationships	48		2			51	6
Rights and licenses	123	–2	10	0	–0	132	26
Goodwill							391
Development assets	43		15			58	469
Prepayments on intangible assets							21
Intangible assets	**770**	**–2**	**46**	**0**	**–0**	**815**	**1,135**
Land, leasehold rights and buildings, including buildings on third-party land	174	–1	21	–0	–0	193	423
Technical equipment, plant and machinery	546	–3	52	–0	–10	585	235
Other equipment, operational and office equipment	471	–2	112	0	–51	530	348
Advance payments and construction in progress							154
Property, plant and equipment	**1,190**	**–6**	**185**	**–0**	**–61**	**1,308**	**1,161**
Total	**1,960**	**–7**	**231**		**–61**	**2,123**	**2,296**

[T69] Changes in non-financial assets – purchase and production costs 2019

in € million	As of Jan. 1, 2019	Currency translation differences	Additions	Transfers	Disposals	As of Dec. 31, 2019
Program assets arising from the purchase price allocation	670					670
Program-independent technologies	125					125
Customer relationships	57					57
Rights and licenses	143	1	5	4		153
Goodwill	392	0				392
Development assets	412		76			487
Prepayments on intangible assets			48			48
Intangible assets	**1,799**	**1**	**129**	**4**		**1,932**
Land, leasehold rights and buildings, including buildings on third-party land	459	1	20	23	–6	497
Technical equipment, plant and machinery	666	2	39	52	–10	749
Other equipment, operational and office equipment	705	1	141	22	–26	843
Advance payments and construction in progress	152	1	150	–101	–1	201
Property, plant and equipment	**1,983**	**5**	**350**	**–4**	**–43**	**2,291**
Total	**3,781**	**6**	**479**		**–43**	**4,223**

[T70] Changes in non-financial assets – depreciation/amortization and carrying amount 2019

in € million	As of Jan. 1, 2019	Currency translation differences	Additions	Transfers	Disposals	As of Dec. 31, 2019	Carrying amount Dec. 31, 2019
Program assets arising from the purchase price allocation	412		18			431	240
Program-independent technologies	125					125	
Customer relationships	46		2			48	8
Rights and licenses	114	0	9	0		123	30
Goodwill							392
Development assets	29		14			43	444
Prepayments on intangible assets							48
Intangible assets	**726**	**0**	**44**	**0**		**770**	**1,163**
Land, leasehold rights and buildings, including buildings on third-party land	159	1	15	1	–1	174	323
Technical equipment, plant and machinery	504	1	48	1	–8	546	203
Other equipment, operational and office equipment	396	1	101	–1	–25	471	373
Advance payments and construction in progress							201
Property, plant and equipment	**1,059**	**2**	**163**	**–0**	**–34**	**1,190**	**1,101**
Total	**1,784**	**3**	**207**	**0**	**–34**	**1,960**	**2,263**

14. Intangible assets

Intangible assets comprise program assets and program-independent technologies which were capitalized as part of the purchase price allocation in connection with the acquisition by Kohlberg Kravis Roberts & Co. Ltd. (KKR) on January 1, 2004, of the shareholding in MTU previously held by DaimlerChrysler AG, and acquired goodwill. This item also includes capitalized, self-created development assets and software (the latter mostly for engineering applications).

In the reporting period, intangible assets totaling €44 million (previous year: €129 million) were recognized, of which €40 million (previous year: €76 million) were internally generated, mainly in connection with the Pratt & Whitney GTF™ engines and the PW800 engine program. €45 million (previous year: €43 million) of the amortization expense for intangible assets was recognized in the cost of goods sold and €1 million (previous year: €1 million) in general administrative expenses.

15. Property, plant and equipment

Through its capital expenditure on property, plant and equipment, MTU aims to expand its production capacity and modernize equipment and machinery to state-of-the-art standards.

In the reporting period, the group's total capital expenditure on property, plant and equipment amounted to €283 million (previous year: €350 million). Additions to this item also include the recognition of right-of-use assets under leases. Further information is provided in *Note 38 "Leases."*

The depreciation expense on property, plant and equipment is included in the presentation of the following line items: cost of sales €179 million (previous year: €159 million), research and development expenses €2 million (previous year: €1 million), selling expenses 1 million (previous year: €1 million), and general administrative expenses €3 million (previous year: €2 million).

Additions to land, leasehold rights and buildings, including buildings on third-party land, amounted to €79 million in the reporting period (previous year: €20 million) and relate mainly to new buildings and building extensions and to right-of-use assets for real estate leases.

Capital expenditure on technical equipment, plant and machinery totaling €35 million (previous year: €39 million) relates mainly to the purchase of plant and machinery for the capacity expansion in connection with the ramp-up of production of the Pratt & Whitney GTF™ engine family and the GE9X and PW800 engine programs.

The capital expenditure on other equipment and operational and office equipment in the amount of €79 million (previous year: €141 million) and additions to advance payments and construction in progress in the reporting period in the amount of €90 million (previous year: €150 million) relates principally to the expansion of production capacities, mainly in Munich, Germany, and the recognition of right-of-use assets for leased office space.

16. Financial assets

Financial assets accounted for using the equity method

Financial assets accounted for using the equity method in the consolidated financial statements amounted to €556 million at the reporting date (previous year: €538 million).

Associates

PW1100G-JM Engine Leasing LLC., East Hartford, USA, leases out spare engines of the PW1100G-JM series and is the only material investment in an associate included in MTU's consolidated financial statements.

MTU holds an 18% interest in the company, which is accounted for using the equity method in the consolidated financial statements.

The table below provides a summary of the financial data of PW1100G-JM Engine Leasing LLC., East Hartford, USA for the reporting period:

[T71] Summary of financial data of PW1100G-JM Engine Leasing LLC.

in € million	2020	2019
Balance sheet as of Dec. 31		
Current assets	259	61
Non-current assets	1,507	1,651
Current liabilities	84	31
Non-current liabilities	28	20
Equity	1,653	1,661
Share of equity	298	299
Reconciliation to carrying amount	–8	–8
Carrying amount of company accounted for using the equity method	290	291
Income statement		
Revenue	445	299
Net income	188	167
Total comprehensive income	**188**	**167**
Group's share in the income	33	28
Dividend received by the company	**19**	

The following table presents the aggregated, unaudited financial information of the associates that are not material when considered separately (further details of shareholdings are presented in *Note 40 "Related party disclosures"*):

[T72] Aggregated financial information on the non-material associates

in € million	2020	2019
Carrying amount of companies accounted for using the equity method	28	29
Net income	11	11
Total comprehensive income	**11**	**11**
Group's share in the income	2	2

Joint ventures

Information on the material joint ventures in which MTU holds an equity investment is provided in the tables below:

[T73] Material joint ventures

Name of joint venture	Registered office	Shareholding
MTU Maintenance Zhuhai Co. Ltd.	Zhuhai, China	50%
EME Aero sp. z o.o.	Jasionka, Poland	50%

All companies listed in the above table are accounted for using the equity method in the consolidated financial statements.

MTU Maintenance Zhuhai Co. Ltd. specializes, in the maintenance, repair and overhaul of engines, especially the V2500 (IAE) and CFM56 (CFMI), and serves the China and Southeast Asia regions.

EME Aero sp. z o.o. focuses on providing maintenance services for the Pratt & Whitney GTF™ engine family, which powers the Airbus A320neo family and other aircraft.

The table below provides a summary of the unaudited financial data of the material joint ventures in the MTU Group for the reporting period and the previous year:

[T74] Income statement, statement of comprehensive income and balance sheet information of the material joint ventures

	2020		2019	
in € million	Engine Maintenance Europe Aero sp. z o.o.	MTU Maintenance Zhuhai Co. Ltd.	Engine Maintenance Europe Aero sp. z o.o.	MTU Maintenance Zhuhai Co. Ltd.
Income statement data disclosures				
Revenue	95	860	0	1,276
Depreciation/amortization and write-downs	–11	–6	–2	–5
Interest income		0		0
Interest expense	–5	–6	–4	–8
Income tax credits	3		3	
Income tax expense		–13		–18
Other income and expenses	–107	–755	–11	–1,143
Net income	**–24**	**82**	**–13**	**102**
Other comprehensive income		10		3
Total comprehensive income	**–24**	**92**	**–13**	**105**
Group's share in the income	–12	41	–6	51
Balance sheet disclosures				
Non-current assets	170	106	154	91
Cash and cash equivalents	4	25	4	4
Other current assets	58	683	15	845
Total assets	**231**	**814**	**172**	**939**
Equity	50	384	35	364
Non-current financial liabilities		73		43
Other non-current liabilities	12		14	
Current financial liabilities	164	242	122	451
Other current liabilities	6	115	2	81
Total equity and liabilities	**231**	**814**	**172**	**939**
Reconciliation to carrying amount				
Share of equity	25	192	17	182
Reconciliation to carrying amount	0		0	
Carrying amount of companies accounted for using the equity method	**25**	**192**	**18**	**182**
Dividend received from joint ventures		**31**		**23**

The following table presents the aggregated, unaudited financial information of the joint ventures that are not material when considered separately (further details of shareholdings are presented in *Note 40 "Related party disclosures"*):

[T75] Aggregated financial information on the non-material joint ventures

in € million	2020	2019
Carrying amount of companies accounted for using the equity method	21	18
Net income	3	11
Other comprehensive income	–1	
Total comprehensive income	**2**	**11**
Group's share in the income	5	5

Other financial assets

The carrying amounts of other financial assets included in the consolidated financial statements are presented below:

[T76] Breakdown of other financial assets

	Total		Non-current		Current	
in € million	Dec. 31, 2020	Dec. 31, 2019	Dec. 31, 2020	Dec. 31, 2019	Dec. 31, 2020	Dec. 31, 2019
Financial assets measured at purchase cost	**101**	**117**	**39**	**57**	**62**	**60**
Loans to third parties[1)]	33	50	33	50		
Receivables from employees	1	1			1	1
Receivables from suppliers	23	19			23	19
Miscellaneous other financial assets	44	48	6	7	38	41
Financial assets at fair value through other comprehensive income	**27**	**16**	**27**	**16**		
Other interests in related companies	27	16	27	16		
Derivatives without hedging relationship	**1**	**1**	**0**	**0**	**1**	**1**
Derivatives with hedging relationship	**109**	**5**	**71**	**4**	**38**	**1**
Total other financial assets	**238**	**139**	**137**	**77**	**101**	**62**

[1)] Included in net financial debt.

The decline in loans to third parties results from the partial repayment of the share in financing granted for aircraft and engines as part of commercial OEM programs.

The receivables from suppliers primarily include short-term credit notes which were received for returned goods, amendments to invoices and trade discounts.

Miscellaneous other financial assets amounting to €44 million (previous year: €48 million) relate to numerous individual non-material items.

Other interests in related companies include the carrying amounts of MTU's investments in companies that are neither fully consolidated nor accounted for using the equity method (for further details of shareholdings see *Note 40 "Related party disclosures"*). These principally comprise the shares in SMBC Aero Engine Lease B.V., Amsterdam, Netherlands. The investment in SMBC is recognized outside of profit and loss in accordance with the option permitted by IFRS 9. In the reporting period, this resulted in an increase of €2 million in the carrying amount of the investment. In addition, further investments totaling €8 million were added.

At the reporting date, derivative financial assets comprised the following instruments:

[T77] Derivative financial instruments

	Total		Non-current		Current	
in € million	Dec. 31, 2020	Dec. 31, 2019	Dec. 31, 2020	Dec. 31, 2019	Dec. 31, 2020	Dec. 31, 2019
Forward foreign exchange contracts/currency options	109	5	71	4	38	1
Nickel forward contracts	1	1	0	0	1	1
Total derivative financial instruments	**110**	**6**	**71**	**4**	**39**	**2**

17. Acquired program assets, development work and other assets

In the reporting period, compensation payments for development work in an amount of €11 million (previous year: €9 million) paid to consortium leaders (OEMs) were capitalized. The total amount of accrued payments for acquired development assets offset against revenue in the reporting period was €8 million (previous year: €8 million). In the reporting period, MTU spent €2 million (previous year: €7 million) on the acquisition of program assets. The total amount of acquired program assets recognized in profit or loss in the reporting period was €42 million (previous year: €45 million). Further, impairment losses of €68 million (previous year: €0 million) were recognized on program assets relating to the GE9X and PW1200G engine programs as a result of impairment testing due to indications of impairment, as prescribed by IAS 36.

The above impairment losses were established for the OEM engine program stakes (cash-generating unit) by comparing the value in use of the relevant engine programs, established by a DCF analysis, with the corresponding net program assets, comprising capitalized development work, program assets, acquired development work and the attributable property, plant and equipment, inventories, contract assets and receivables. Relevant program obligations, especially refund liabilities, were were reflected as reductions in this context.

As a result of the pandemic-related reduction in air traffic, which led to the announcement of delays in the market launch of the Boeing 777X with the GE9X engine and the Mitsubishi SpaceJet with the PW1200G engine, MTU recognized impairment losses totaling €73 million, which affected its profit. €68 million of this amount related to the acquired program assets, development work and other assets item.

The value in use calculated for the program stakes attributable to the OEM segment was €100 million for the GE9X and €0 million for the PW1200G. Determination of the value in use requires forecasts, especially regarding the expected revenue over the entire lifetime of the program. For the GE9X MTU forecasts revenue of €9.8 billion, while no further revenue is expected for the PW1200G program. Furthermore, it is necessary to assess the gross margin from the programs for valuation purposes. For the GE9X the estimated average gross margin over the program lifetime is 21 %. The weighted average cost of capital used to determine value in use is 8.4 % (after taxes).

In view of the estimation uncertainties resulting from Covid-19, sensitivity analyses are presented below. These assume that all other parameters remain unchanged and therefore do not take into account the interdependency of the parameters and, above all, any counter-measures. Accordingly, the values should be regarded as a theoretical gross risk.

If, assuming the other parameters remain unchanged, revenue from the impaired GE9X engine program were reduced by 10 %, the value in use would decrease by €18 million. By contrast, if, assuming the other parameters remain unchanged, the annual gross margin were reduced by 5 %, the value in use would decrease by €21 million. Finally a 10 % increase in WACC (after taxes), without any change in the other assumptions, implies that the value in use would decrease by €31 million.

A further reduction of €106 million in the program assets (previous year: addition of €4 million due to the increase in the stake in the IAE V2500) results from the pandemic-related revaluation of the corresponding deferred conditional purchase price liability. The program asset in question is recognized analogously to IFRIC 1.

More information can be found in *Section I. "Accounting policies and principles" under "Acquired program assets and acquired development work."*

Other assets include claims for tax refunds amounting to €12 million (previous year: €31 million) in respect of transactional taxes and prepaid maintenance charges, insurance premiums and rents.

18. Deferred tax assets

Deferred tax assets increased by €11 million to €67 million (previous year: €56 million) in the reporting period. Further details are provided in *Note 34 "Deferred taxes."*

19. Inventories

The carrying amount of inventories, taking into account valuation allowances, comprises the following components:

[T78] Inventories

in € million	Change in write-downs	Dec. 31, 2020 Gross amount	Dec. 31, 2020 Write-down	Dec. 31, 2020 Carrying amount	Dec. 31, 2019 Gross amount	Dec. 31, 2019 Write-down	Dec. 31, 2019 Carrying amount
Raw materials and supplies	–33	721	–102	618	688	–69	618
Work in progress	16	453	–24	429	495	–40	455
Finished goods	6	289	–71	218	269	–77	192
Advance payments		13		13	13		13
Total inventories	**–11**	**1,476**	**–198**	**1,278**	**1,465**	**–187**	**1,279**

Of the total volume of inventories, an amount of €494 million (previous year: €308 million) was considered to be impaired at the reporting date. The increase in the valuation allowances compared with the previous year relates to the identification of additional impairment risks in connection with inventories of engine parts, especially in the MRO segment, as a result of the pandemic-related restrictions on air travel. Further information can be found in *Section I. "Accounting policies and principles – Inventories and Discretionary scope, measurement uncertainties and sensitivity."*

20. Trade receivables

[T79] Trade receivables

in € million	Dec. 31, 2020	Dec. 31, 2019
Third parties	465	442
Related companies	505	481
Total trade receivables	**969**	**923**

Transactions with related companies are presented in more detail in *Note 40 "Related party disclosures."* The carrying amount of trade receivables includes valuation allowances in the amount of €46 million (previous year: €18 million). This development reflects the increased credit risks of commercial airline customers, especially in the MRO segment, as a result of the pandemic-related restrictions on air travel.

21. Contract assets

The contract assets result from performance obligations that have been satisfied, where receipt of the agreed consideration depends on acceptance of the performance obligation by the customer and the amounts becoming due for payment. Changes in the reporting period were due to to advance payments received in the military OEM business and to the change in the U.S. dollar exchange rate from U.S.$/€ 1.12 in the previous year to U.S.$/€ 1.23 at year-end 2020, and the development of business, which was affected by the coronavirus pandemic.

Valuation allowances on trade receivables and contract assets changed as follows in the fiscal year:

[T80] Valuation allowances

in € million	2020	2019
As of Jan. 1	**20**	**20**
Translation differences		
Transferred		–3
Additions	29	12
Utilized		–3
Reversed	–3	–6
As of Dec. 31	**46**	**20**

Contract assets account for €0 million (previous year: €1 million) of the reported valuation allowances. The additions to this item in the reporting period are consistent with changes in the credit standing of specific customers (non-payment risk) and country risk classifications (market risk) in the commercial engine business, including the impact of the pandemic, and are predominantly recognized on a case-by-case basis. The expenses resulting from the derecognition of trade receivables are offset against the corresponding revenue, resulting in net income of €7 million (previous year: net income of €9 million).

As in prior years, all expense and income amounts arising from valuation allowances and the derecognition of trade receivables are recognized as selling expenses.

In order to minimize the non-payment risk, an active receivables management system is operated both in the OEM segment, supported in particular by the engine consortium leader, and in the MRO segment.

22. Income tax receivables

At the reporting date, income tax receivables amounted to €42 million (previous year: €116 million). €37 million of this amount (previous year: €111 million) comprises income tax receivables in Germany.

23. Cash and cash equivalents

The cash and cash equivalents amounting to €773 million (previous year: €139 million) comprise cash in hand and bank deposits. This item also includes foreign-currency holdings with an equivalent value of €32 million (previous year: €131 million). The development reflects the pandemic-related borrowing activities and the minimum dividend payment for the previous year. For information on the investment policy, please refer to the section headed *"Financial position – Principles and objectives of financial management" in the management report*.

24. Equity

Changes in group equity are presented in the consolidated statement of changes in equity.

Subscribed capital

The company's subscribed capital (capital stock) is €53 million and is divided into 53 million non-par-value registered shares. The increase in the reporting period was due to the exercise of conversion options from the convertible bond issued in 2016.

Authorized capital

In accordance with Article 4 (5) of the articles of association, the Executive Board is authorized until April 10, 2024, to increase the company's capital stock by up to €15.6 million, with the prior approval of the Supervisory Board, by issuing, either in a single step or in several steps, new registered non-par-value shares in return for cash contributions (Authorized Capital 2019).

Conditional capital

In accordance with Article 4 (6) of the articles of association, the company's capital stock may be conditionally increased by up to €3,867,741 through the issue of up to 3,867,741 new registered non-par-value shares. The purpose of this conditional capital increase is to issue shares to owners or creditors of convertible bonds and/or bonds with warrants in accordance with the authorization granted to the company under a resolution passed by the Annual General Meeting on April 15, 2015. Shares are issued at a conversion price or warrant exercise price determined on the basis of this authorization.

Until April 14, 2020, the Executive Board was authorized to issue, with the prior approval of the Supervisory Board, bearer and/or registered convertible bonds and/or bonds with warrants (collectively referred to as "bonds") with a total nominal value of up to €500 million, In 2016, MTU made use of this authorization to increase the company's capital stock by issuing a convertible bond with a nominal value of €500 million.

Further, in accordance with Article 4 (7) of the articles of association, the company's capital stock may be conditionally increased by up to €2,600,000 through the issue of up to 2,600,000 new registered non-par-value shares (Conditional Capital 2019). The purpose of this conditional capital increase is to issue shares to owners or creditors of convertible bonds and/or bonds with warrants in accordance with the authorization granted to the company under a resolution passed by the Annual General Meeting on April 11, 2019. Shares are issued at a conversion price or warrant exercise price determined on the basis of this authorization.

The Executive Board is authorized until April 10, 2024, to issue, in a single step or in several steps and with the prior approval of the Supervisory Board, bearer and/or registered convertible bonds and/or bonds with warrants (collectively referred to as "bonds"), with or without maturity date, with a total nominal value of up to €600 million, and to grant the owners of convertible bonds and/or bonds with warrants the right, obligation or option to convert them into registered non-par-value shares of the company representing a stake in the capital stock of up to €2,600,000 under the conditions established for the issue of convertible bonds or bonds with warrants. The bonds may be issued in return for cash contributions only. They may be issued in euros or – to an equivalent value – in any other legal currency, for instance that of an OECD country. They may also be issued by an affiliated company where MTU exercises control. In such cases, and subject to the prior approval of the Supervisory Board, the Executive Board is authorized to act as guarantor for the bonds and to grant the owners of the bonds the right, obligation or option to convert them into new registered non-par-value shares in MTU.

In 2019, MTU made use of this authorization to increase the company's capital stock by issuing a convertible bond with a nominal value of €500 million. More details are provided in *Note 28 "Financial liabilities."*

Capital reserves

Capital reserves contain premiums from the issue of shares and the equity component (net of proportional transaction costs) of convertible bonds that have been redeemed or a still outstanding.

The issue of new shares as a result of the exercise of options to convert the convertible bond 2016 increased the capital reserves by €29 million in the reporting period.

Capital reserves also include premiums for the issue of own shares in connection with the Restricted Stock Plan or the employee stock option program (MAP) or the Stock Matching Plan (SMP) and, previously, the Matching Stock Plan (MSP).

Retained earnings

Retained earnings mainly comprise the net profit generated in the past by consolidated group companies that has not been distributed.

Treasury shares

Purchase of treasury shares in accordance with the authorization granted by the Annual General Meeting on April 11, 2019

The Executive Board of MTU Aero Engines AG, Munich, Germany, is thus authorized by the resolution of the Annual General Meeting of April 11, 2019 to purchase treasury shares with an aggregate nominal value not exceeding 10 % of the company's issued capital stock, as applicable on the date of the resolution, during the period to April 10, 2024, pursuant to Section 71 (1) no. 8 of the German Stock Corporation Act (AktG). At no point in time may the value of the acquired shares, together with other treasury shares in the company's possession or which are attributed to it pursuant to Section 71a et seq. of the German Stock Corporation Act (AktG), exceed 10 % of the company's capital stock. These shares may be purchased on the stock market or by means of a public offering addressed to all shareholders. The consideration paid for these shares must not be more than 10 % above or below the quoted share price, not taking into account any ancillary transaction costs.

Holdings of treasury shares

The shares purchased by MTU in previous years still serve the purpose of granting shares in connection with the employee stock option program (MAP) and under the Restricted Stock Plan (RSP). As in the prior year, MTU did not purchase any treasury shares in fiscal year 2020. In the reporting period, 17,573 shares (previous year: 9,509 shares) were sold to Executive Board members under the Restricted Stock Plan (RSP) and a further 26,069 shares (previous year: 14,951 shares) were sold to senior managers. A total of 145,018 shares (previous year: 98,243 shares) were sold to group employees in the fiscal year under the employee stock program (MAP), of which 12,645 treasury shares (previous year: 12,236 shares) were sold to eligible senior managers.

Reconciliation of weighted average number of outstanding shares

In fiscal year 2020, the weighted average number of outstanding shares totaled 52,985,567 (previous year: 51,813,526). A total of 53,277,849 shares in MTU Aero Engines AG, Munich, were in circulation as of December 31, 2020 (previous year: 52,850,797 shares). The company held 54,410 treasury shares as of December 31, 2020 (previous year: 243,070 shares).

Accumulated other comprehensive income

Accumulated other comprehensive income increased by €23 million to €–304 million (previous year: €–327 million) in fiscal year 2020. This was principally due to the increase in the fair values of cash flow hedges used in the hedging of foreign currencies, and was offset by the losses arising from the translation of the financial statements of foreign entities and actuarial losses on the measurement of pension provisions.

The table below shows the income and expenses recognized in other comprehensive income, including the associated deferred taxes:

[T81] Items recognized in other comprehensive income

in € million	2020 before	2020 Income taxes	2020 after	2019 before	2019 Income taxes	2019 after
Translation differences arising from the financial statements of foreign entities accounted for using the equity method	–10		–10	2		2
Translation differences arising from the financial statements of other consolidated foreign entities	–51		–51	12		12
Translation differences arising from the financial statements of foreign entities	**–60**		**–60**	**14**		**14**
Actuarial gains/losses on pension obligations and plan assets	–47	15	–32	–97	31	–66
Financial instruments designated as cash flow hedges for companies not accounted for using the equity method	148	–47	101	–20	7	–14
Financial instruments designated as cash flow hedges for companies accounted for using the equity method	5		5	2		2
Changes in the fair value of equity investments	2		2	–2		–2
Income and expense recognized in other comprehensive income	**48**	**–32**	**16**	**–104**	**38**	**–66**

Disclosures relating to capital management

MTU strives to maintain a strong financial profile in the interests of assuring the company's continuation as a going concern and its financial flexibility, as well as ensuring confidence on the part of its shareholders. As part of its capital management, the company observes the statutory requirements on capital maintenance. There are no further statutory capital requirements. In general, the dividend policy is based on distributing between 30 and 40 % of the adjusted annual net income to shareholders if the financial situation permits. In light of the coronavirus pandemic, the dividend payment for 2019 was the statutory minimum of €0.04 per share. The group's capital management activities are focused on optimizing the balance between equity and net financial debt. A description of the financial indicators MTU is obliged to meet in the context of its liabilities to banks can be found in *Note 28 "Financial liabilities."*

25. Pension provisions

Defined benefit plans and defined contribution plans are in place for MTU employees. For group companies in Germany, these benefits are financed primarily by provisions recognized in the financial statements, which are covered only to a small extent by plan assets. In contrast, MTU Maintenance Canada Ltd., Richmond, Canada, has a funded retirement benefit plan.

Defined contribution plans

Since January 1, 2007, no direct pension commitments have been granted to new employees in Germany other than senior managers. Instead, MTU paid contributions in the amount of €3 million in the reporting period (previous year: €3 million) to an external pension fund for employees who joined the company after that date. In addition, MTU provides direct insurance contracts funded by employee contributions.

Employer's contributions to the state pension scheme in fiscal year 2020 totaled €52 million (previous year: €51 million).

Defined benefit plans

The pension obligations of MTU are measured using the projected unit credit method in accordance with IAS 19, taking account of future salary and pension increases and other adjustments expected to be made to benefits and pension plans. The provision for defined benefit plans recognized in the balance sheet corresponds to the present value of the benefits payable for current and past service (the defined benefit obligation) of beneficiaries less the fair value of plan assets at the reporting date. An extensive actuarial analysis is carried out annually for each pension plan by independent actuaries.

Actuarial gains or losses may arise in connection with increases or decreases either in the present value of the

defined benefit obligation or in the fair value of plan assets. Causes of actuarial gains or losses include the effect of changes in measurement parameters, changes in the assessment of risks on pension obligations, and differences between the actual return on plan assets and the proportional share of interest on the net liability.

In order to calculate the funding status and the pension obligation recognized, the present value of unfunded and funded obligations is offset against the fair value of the plan assets. In Germany, there are no legal or regulatory minimum funding requirements.

The present value and funding status of the defined benefit obligation is as follows:

[T82] Present value of defined benefit obligation (DBO)

in € million	Dec. 31, 2020	Dec. 31, 2019
Present value of unfunded pension obligations	1,009	976
Fair value of plan assets	–0	–0
Total Germany	**1,009**	**976**
Present value of funded pension obligations	27	28
Fair value of plan assets	–28	–30
Total other countries (negative value = plan asset surplus)	**–1**	**–2**
Recognized pension obligations (net)	**1,009**	**975**

The following parameters were applied to measure the pension obligations as of December 31 of the respective year and to measure the pension plan expense in the respective reporting period:

[T83] Actuarial assumptions: Germany

in %	Dec. 31, 2020	Dec. 31, 2019
Interest rate for accounting purposes	0.39	0.79
Salary trend	2.50	2.70
Pension trend	1.50	1.75

[T84] Actuarial assumptions: other countries

in %	Dec. 31, 2020	Dec. 31, 2019
Interest rate for accounting purposes	2.50	2.75
Salary trend	3.00	3.00
Pension trend	2.50	2.50

The market yields on high-quality, fixed-interest corporate bonds with similar maturities in Germany decreased further compared with the previous year. In view of the duration of the obligations, which currently stands at 10 years, pension obligations were discounted as of December 31, 2020, applying a discount rate of 0.39 %. The mortality tables issued by Prof. Dr. Heubeck (RT 2018G) were used to measure the pension plan obligations in Germany. For group companies in other countries, up-to-date mortality assumptions for each country were applied. The expected salary trend refers to the expected rate of increase in salaries and other compensation, which is estimated based on inflation, the length of service of employees within the group, as well as other factors. Like the development of the discount rate, the salary and pension trends take account of the expected macroeconomic impact in connection with the Covid-19 pandemic. Employee turnover, mortality rates and disability risk were estimated on the basis of statistical data.

The present value of pension obligations changed as follows in the fiscal year:

[T85] Present value of pension obligations

in € million	2020	2019
Defined benefit obligation as of Jan. 1	**1,004**	**904**
Current service cost	17	16
Past service cost	1	–0
Pension plan subscriber contributions	5	9
Interest expense	8	15
Translation differences	–2	2
Actuarial gains (-)/losses (+)		
Financial assumptions	47	92
Assumptions based on experience	0	7
Plan settlements/transfers	–24	–17
Pension benefit and capital payments	–21	–22
Defined benefit obligation as of Dec. 31	**1,037**	**1,004**

The actuarial losses arising from updated assumptions based on experience relate in particular to the empirical behavior of beneficiaries of the company pension scheme when choosing the mode of payment.

The obligations resulting from plan settlements/transfers are attributable to the conversion of pension benefits into fixed-sum payments and the group's employee turnover rate.

Plan assets changed as follows in the fiscal year:

[T86] Fair value of plan assets

in € million	2020	2019
Fair value as of Jan. 1	**30**	**26**
Interest income on plan assets	1	1
Actuarial gains/losses (-)	1	3
Translation differences/transfers	–2	2
Employer contributions	0	0
Pension benefit payments	–2	–2
Fair value as of Dec. 31	**28**	**30**

[T87] Breakdown of plan assets

in %	2020	2019
Acquired pension benefits	70.2	72.5
Fixed-interest securities	23.9	22.0
Shares	5.9	5.5
Total plan assets	**100.0**	**100.0**

The structure of the plan assets is reviewed annually to optimize the risk and return of the assets invested and adjusted if necessary. The pension fund's statement of principles defines restrictions to be observed when choosing investments; the investment policy was unchanged from previous years.

The expense from defined benefit pension plans and similar obligations recognized in the income statement for the reporting period comprises the following items

[T88] Expense from defined benefit pension plans and similar obligations

in € million	2020	2019
Current service cost	17	16
Past service cost	1	–0
Service cost	**18**	**15**
Interest cost on pension provisions	8	15
Interest income on plan assets	–1	–1
Net interest cost	**7**	**14**
Interest cost on liabilities from pension capital	**2**	**2**
Total expense	**27**	**30**

Current and past service costs are recognized under personnel expenses. The other components of the pension expense recognized in the income statement are included in other financial income/expense. The measurement effects related to actuarial gains and losses are recognized in total comprehensive income as part of other comprehensive income.

Expected future pension benefit payments

In the coming years, the group expects to settle its pension provisions and liabilities through the following series of payments:

[T89] Expected yearly amount of pension benefit payments

in € million	2021	2022	2023	2024
Expected yearly amount of pension benefit payments	27	29	34	38

The disclosures on the expected payment of pension benefits take into account the method of payment agreed as of the reporting date or, alternatively, the standard contractual terms - in the case of Executive Board members this is normally a lump sum and for other employees payment in installments.

The main actuarial assumptions used to calculate the defined benefit obligation (DBO), apart from the mode of payment, are the discount rate, salary and pension trends, and assumed life expectancy. The following sensitivity analysis shows how the DBO would have been influenced by potential changes in the underlying assumptions:

[T90] Sensitivity analysis of the defined benefit obligation

in € million	2020	2019
Discount rate 50 basis points higher	–63	–61
Discount rate 25 basis points lower	33	32
Pension trend 50 basis points higher	11	14
Assumed life expectancy 1 year longer	13	17

There are interdependencies between certain actuarial assumptions, especially between changes in the discount rate and the expected pension and salary trends. The sensitivity analysis does not take these interdependencies into account.

26. Income tax liabilities

The income tax liabilities comprise German corporation and municipal trade tax plus income taxes for group companies outside Germany.

[T91] Income tax liabilities

in € million	2020	2019
As of Jan. 1	**5**	**10**
Utilized	–5	–10
Allocated	5	5
As of December 31	**5**	**5**

Income tax liabilities are due within one year.

27. Other provisions

[T92] Other provisions

	Total		Non-current		Current	
in € million	Dec. 31, 2020	Dec. 31, 2019	Dec. 31, 2020	Dec. 31, 2019	Dec. 31, 2020	Dec. 31, 2019
Warranty obligations and risks from pending losses on onerous contracts	28	34			28	34
Personnel obligations	33	79	14	8	19	71
Obligations relating to restructuring measures	27		5		22	
Unpaid invoices/overdue accounts	103	97	45	40	58	57
Other liabilities	8	6			8	6
Total other provisions	**198**	**216**	**64**	**48**	**134**	**168**

Non-current other provisions developed as follows:

[T93] Non-current other provisions 2020

in € million	As of Jan. 1, 2020	Transferred	Utilized	Reversed	Allocated	Discount reversed	As of Dec. 31, 2020
Personnel obligations	8	–3	–0	–0	9	–0	14
Obligations relating to restructuring measures					5		5
Unpaid invoices/overdue accounts	40				5		45
Total non-current other provisions	**48**	**–3**	**–0**	**–0**	**19**	**–0**	**64**

The following cash outflows are expected from the carrying amounts of non-current other provisions:

[T94] Expected cash outflow from non-current other provisions

in € million	Carrying amount as of Dec. 31, 2020	Expected cash outflow 2022
Personnel obligations	14	5
Obligations relating to restructuring measures	5	5
Unpaid invoices/overdue accounts	45	43
Total expected cash outflow from non-current other provisions	**64**	**53**

[T95] Expected cash outflow from non-current other provisions

in € million	Carrying amount as of Dec. 31, 2019	Expected cash outflow 2021
Personnel obligations	8	3
Unpaid invoices/overdue accounts	40	6
Total expected cash outflow from non-current other provisions	**48**	**9**

MTU expects that the above obligations will become due for payment within the next five years.

Current other provisions developed as follows:

[T96] Current other provisions 2020

in € million	As of Jan. 1, 2020	Transferred	Utilized	Reversed	Allocated	Currency translation differences	As of Dec. 31, 2020
Warranty obligations and risks from pending losses on onerous contracts	34		–11	–10	14	–0	28
Personnel obligations	71	3	–66	–4	15	–0	19
Obligations relating to restructuring measures					22		22
Unpaid invoices/overdue accounts	57		–14	–5	19		58
Other liabilities	6		–4	–0	7	–0	8
Total current other provisions	**168**	**3**	**–95**	**–18**	**77**	**–1**	**134**

The cash outflows relating to current other provisions are expected to be realized in the calendar year following the reporting period.

Warranty obligations and risks from pending losses on onerous contracts

The main component of this item of provisions is an amount of €28 million (previous year: €33 million) for liabilities associated with warranty obligations in connection with the delivery of goods and services.

MTU has furthermore identified a small amount of onerous contracts in its commercial maintenance business (MRO) in which the unavoidable costs of fulfilling contractual obligations are higher than the expected inflow of economic benefits from these contracts. A provision of €3 million (previous year: €1 million) was recognized to cover the difference.

Obligations relating to restructuring measures

Obligations relating to restructuring measures result from the restructuring program initiated in the third quarter, which included reducing the Group's personnel capacity by 10 to 15 % by year-end 2021. The obligations principally comprise benefits granted to employees to realize pre-retirement part-time working and early retirement arrangements and other agreements on the termination of employment contracts.

Personnel obligations

The provisions for personnel expenses include provisions for long-service awards amounting to €4 million (previous year: €4 million) and provisions for pre-retirement part-time working arrangements based on the collective agreement on phased retirement and related works agreements. On the basis of these agreements, obligations amounting to €12 million (previous year: €5 million) were recognized at the end of the reporting period. The obligation takes account of relevant plan assets amounting to €11 million (previous year: €11 million). The item also includes provisions for profit-sharing bonuses, which amounted to €12 million (previous year: €69 million). They relate to short-term incentive (STI) awards to the Executive Board and senior managers as well as to the bonus for staff not covered by the collective wage agreement and the profit-sharing bonus for employees covered by the collective wage agreement.

The Executive Board members and senior managers receive target direct compensation comprising non-performance-related components (fixed compensation and fringe benefits) and performance-related components. The performance-related components are divided into the STI, as a performance-related component with no long-term incentive effect, and the Restricted Stock Plan, as a performance-related component with a long-term incentive effect.

The STI is based on the extent to which the group's KPI targets are met, adjusted EBIT and free cash flow, and a component reflecting the employee's personal performance in the reporting year.

The Restricted Stock Plan entails a cash payment, which must be immediately re-invested in MTU shares. These shares are subject to a specific vesting period, defined according to the beneficiary's rank in the management hierarchy. The target compensation granted for the purchase of shares essentially depends on the proportionate target direct compensation weighted by the average STI payment in the three fiscal years preceding the year in which the RSP was granted.

Detailed explanatory notes on the compensation system for members of the Executive Board are provided in the *Management compensation report in the Combined management report.*

Unpaid invoices/overdue accounts

Unpaid invoices include, in particular, accruals for cost of sales components in the form of unpaid invoices/overdue accounts arising in particular from contracts with suppliers and service providers.

In the case of leases where MTU is obligated to meet specific maintenance conditions before returning the aircraft engine, the performance obligations on the reporting date are recognized as a liability. This is measured at the nominal value of the expected future maintenance costs to satisfy the return conditions set out in the lease. These provisions are by nature long-term.

Other liabilities

This item includes a multitude of accrued liabilities which, considered individually, are judged to be of immaterial importance.

28. Financial liabilities

[T97] Financial liabilities

	Total		Non-current		Current	
in € million	Dec. 31, 2020	Dec. 31, 2019	Dec. 31, 2020	Dec. 31, 2019	Dec. 31, 2020	Dec. 31, 2019
Bonds and notes	603	100	593	98	9	2
Convertible bonds	538	562	538	562	0	0
Promissory note	100				100	
Financial liabilities arising from increase or acquisition of stakes in programs	138	300	109	218	29	82
Financial liabilities to banks						
Note purchase agreement	30	30		30	30	0
Other liabilities to banks		10				10
Financial liabilities to related companies	0				0	
Lease liabilities	177	147	132	103	45	44
Total gross financial debt	**1,586**	**1,150**	**1,372**	**1,011**	**214**	**139**
Derivatives without hedging relationship	0				0	
Derivatives with hedging relationship	0	67		20	0	47
Personnel-related financial liabilities	91	74	62	48	30	26
Repayment of grants toward development costs		7				7
Miscellaneous other financial liabilities	44	35	0	0	44	35
Total other financial liabilities	**135**	**183**	**62**	**69**	**74**	**114**
Total financial liabilities	**1,722**	**1,333**	**1,434**	**1,080**	**288**	**253**

Gross financial debt

Bonds and notes

Registered bond

MTU Aero Engines AG issued a registered bond on June 12, 2013, for a total nominal amount of €100 million. The registered bond is repayable on June 12, 2028, and is subject to interest of 3.55% p.a. Interest is payable in arrears on June 12 of each year, for the first time on June 12, 2014. The registered bond, net of transaction costs and including a discount of €3 million, is measured at amortized cost.

Corporate bond

On July 1, 2020, MTU Aero Engines AG issued an unsecured corporate bond with a nominal value of €500 million. The bond matures in five years on July 1, 2025 and is available in units of €1,000. The coupon is 3.0% p.a. payable annually in arrears. The bond has is rated by Moody's (Baa3) and Fitch (BBB) and is listed on the regulated market on the Luxembourg Stock Exchange.

Promissory note

On May 6, 2020, MTU Aero Engines AG issued a promissory note with a nominal value of €100 million and a maturity date of June 10, 2021. This bears interest at a variable rate corresponding to the three-month Euribor rate plus 1.7%. The minimum interest payment is 1.7%.

Convertible bonds

In 2016, MTU Aero Engines AG issued a senior unsecured convertible bond for a total nominal amount of €500 million. This bond is convertible into registered non-par-value shares in MTU.

The convertible bond has an original maturity of seven years and is divided into units of €100,000. It bears a nominal interest rate of 0.125% p.a., payable annually in arrears.

Bondholders have been entitled to convert their convertible bonds into common shares of MTU Aero Engines AG at any time since June 27, 2016. The initial conversion price was set at €124.7701.

Under the terms of issue of the convertible bond, MTU has the right to recall the issued bond units at their nominal value (plus accrued unpaid interest) at any time on or after June 16, 2020, subject to a period of notice of minimum 30 and maximum 60 days, either (i) if the quoted price of the common share rises to or above 130 % of the applicable conversion price over a defined period, or (ii) if no more than 20 % of the nominal value of the convertible bond issue is outstanding. In the event of such cancellation by MTU, and within the above-mentioned notice period, the bondholders have the right to request that MTU convert their bonds into shares, rather than repurchase them.

On September 10, 2019, MTU Aero Engines AG bought back from its creditors a nominal amount of €275 million of the convertible bond issued in 2016, which it canceled with value date September 30, 2019. Moreover, MTU Aero Engines AG received conversion notices from creditors of the convertible bond with a nominal amount of €29 million (previous year:€135 million). The outstanding nominal amount as of December 31, 2020, thus comes to €61 million.

In 2019, MTU Aero Engines AG issued a senior unsecured convertible bond for a total nominal amount of €500 million at an issue price of 103 %. This bond is convertible into registered non-par-value shares in MTU.

The convertible bond has an original maturity of seven-and-a-half years and is divided into units of €100,000. It bears an interest rate of 0.05 % p.a., payable annually in arrears.

Bondholders have been entitled to convert their bonds into common shares of MTU Aero Engines AG at any time from September 18, 2024 onward. The initial conversion price was set at €378,4252, which represents a premium of 55 % on the reference rate.

Under the terms of issue of the convertible bond, MTU has the right to recall the issued bond units at their nominal value (plus accrued unpaid interest) at any time on or after April 8, 2025, subject to a period of notice of minimum 30 days and maximum 60 days, either (i) if the quoted price of the common share rises to or above 130 % of the applicable conversion price over a defined period, or (ii) if no more than 20 % of the nominal value of the convertible bond issue is outstanding. In the event of such cancellation by MTU, and within the above-mentioned notice period of a minimum of 30 days and a maximum of 60 days, the bondholders have the right to request that MTU convert their bonds into shares, rather than repurchase them.

For information on the effect of transactions with the convertible bonds on the company's subscribed capital and capital reserves, see *Note 24 "Equity."*

Financial liabilities arising from increased or new stakes in engine programs

These items include the deferred payment components arising from the increase in the stake in IAE-V2500 and the acquisition of shares in new engine programs. The latter are referred to in the following as financial liabilities arising from increased or new stakes in engine programs.

Financial liabilities arising from the increase in the stake in IAE-V2500

The agreement signed by MTU in fiscal year 2012 in order to increase its stake in the IAE-V2500 engine program by five percentage points to 16 % included a deferred payment component contingent upon the number of flight hours performed over the next 15 years by the V2500 engine fleet in service at the time of the stake increase. In connection with the impact of the pandemic on current and future use of the fleet, this liability was reassessed in the reporting period (€–106 million). More information can be found in *Section I. "Accounting policies and principles" under "Acquired program assets and acquired development work"* and *Note 17 "Acquired program assets, development work and other assets"*.

Other financial liabilities arising from the acquisition of stakes in programs

The other financial liabilities arising from the acquisition of stakes in programs mainly relate to program lifetime-related payments for the acquisition of shares in commercial engine programs, which are deemed to represent financing transactions in view of their long-term nature.

Financial liabilities to banks

Note purchase agreement

MTU Aero Engines AG issued a note purchase agreement on March 28, 2014, for a total nominal amount of €30 million and with a maturity date of March 27, 2021. The note purchase agreement has a variable interest rate corresponding to the six-month Euribor rate plus a percentage margin. The initial interest rate was 1.72 %. The interest is calculated and paid twice a year, in March and September.

Revolving credit facility

The company has concluded a revolving credit facility with five banks. In the previous year, the credit facility was for €600 million. On May 11, 2020 it was increased by €100 million to €700 million. This increase runs for one year and can be extended twice by 6 months in each case at the company's request. The original €600 million revolving credit facility still runs until October 28, 2023. €35 million of this credit facility had been drawn down in the form of guarantees as of December 31, 2020 (previous year: €36 million). The remaining available amount of €665 million (previous year: €564 million) ensures the group's financial flexibility in the medium term.

MTU has undertaken to ensure that certain financial indicators remain within defined boundaries throughout the term of the revolving credit facility as follows: MTU's debt-equity ratio (consolidated net financial debt in relation to adjusted EBITDA) at the end of each quarter shall not exceed 3.0; the times interest earned ratio (adjusted EBITDA in relation to the consolidated net interest expense) at the end of each quarter shall not fall below 4.0.

Lease liabilities

The lease liabilities, which are recognized using the effective interest method, correspond to the accrual of right-of-use assets for procurement leases. More information can be found in *Note 38 "Leases"* and in *Section I. "Accounting policies and principles" under "IFRS 16 Leases."*

Changes in gross financial debt are shown in the following tables:

[T98] Changes in gross financial debt

			Non-cash items					
in € million	As of Jan. 1, 2020	Deposits and withdrawals	Addition	Interest	Transfers	Currency translation differences	Effect of measurement at fair value	As of Dec. 31, 2020
Bonds and notes	100	494		8				603
Convertible bond 2016	88			1	–29			60
Convertible bond 2019	475			4				478
Promissory note		100						100
Financial liabilities arising from increase or acquisition of stakes in programs	300	–56		9	8	–11	–112	138
Financial liabilities to banks								
Note purchase agreement	30			0				30
Other liabilities to banks	10	–10		–0		–0		
Lease liabilities	147	–41	88		–8	–9		177
Total gross financial debt	**1,150**	**487**	**88**	**22**	**–29**	**–19**	**–112**	**1,586**

[T99] Changes in gross financial debt

			Non-cash items				
in € million	As of Jan. 1, 2019	Deposits and withdrawals	Addition	Interest	Transfers	Currency translation differences	As of Dec. 31, 2019
Bonds and notes	100			0			100
Convertible bond 2016[1)]	483	–551		11	145		88
Convertible bond 2019	0	511		1	–38		475
Financial liabilities arising from increase or acquisition of stakes in programs	350	–63	4	10	–8	7	300
Financial liabilities to banks							
Note purchase agreement	30						30
Revolving credit facility	15	–15					0
Other liabilities to banks	10					0	10
Loans from third parties	35	–36				1	0
Lease liabilities	137	–42	50			3	147
Total gross financial debt	**1,159**	**–195**	**53**	**22**	**99**	**11**	**1,150**

[1)] Reclassification comprises the effect of exercise of conversion option (€–135 million) and the premium on the nominal value relating to the proportionate repurchase (€276 million).

Other financial liabilities

Liabilities from derivatives

The decrease in financial liabilities from derivatives to €0 million (previous year: €67 million) is mainly attributable to an increase in the fair value of forward foreign exchange contracts due to the development of the U.S. dollar exchange rate relative to the agreed hedging rates.

Personnel-related financial liabilities

Personnel-related financial liabilities amounting to €91 million (previous year: €74 million) mainly result from claims on pension capital amounting to €70 million (previous year: €55 million) due to direct commitments within the framework of the company pension scheme.

In addition, obligations under the employee stock option program (MAP) of €11 million (previous year: €9 million), which the Executive Board of MTU Aero Engines AG, Munich, offered again in fiscal year 2020, are also reported here. Under the employee stock option program (MAP), MTU offers all eligible employees within and outside of the collective wage agreement and members of senior management the opportunity to invest in MTU shares. At the end of a two-year vesting period, employees within and outside of the collective wage agreement receive a taxable “matching” payment corresponding to 50 % of the amount invested by the employee in MTU shares at the beginning of the program. Members of senior management receive a taxable “matching” payment at the end of the two-year vesting period corresponding to one-third of the amount individually invested.

The number of shares sold to group employees under the terms of the employee stock option program (MAP) in fiscal years 2020 and 2019 was as follows:

[T100] Employee stock option program (MAP)

Issue date	Number of shares sold	Average purchase cost (in € million)	Total proceeds of sale (in € million)	Selling price per share (in €)
June 2020	145,018	7	23	161.00
June 2019	98,243	4	19	191.75

The total expense for the issue of matching shares in connection with the employee stock option program (MAP) in fiscal year 2020 amounted to €9 million (previous year: €8 million).

The shares transferred to the employees, measured at the average acquisition cost, were removed from the equity item "treasury shares." The difference of €16 million (previous year: €14 million) between the proceeds of the sale and the original acquisition cost was allocated to the capital reserves.

Repayment of grants toward development costs

In the fiscal years from 1976 through 1991, MTU received grants from the German Federal Ministry of Economics and Technology toward the development costs of the PW2000 engine. Once the sales figures for PW2000 production engines for the Boeing 757 and C-17 as set down in the grant notice have been reached, MTU was obliged to reimburse the full sum of the grants received within a period of ten years. In fiscal years 2011 through 2019, a total amount of €61 million was repaid, with a further €7 million repaid in 2020.

Miscellaneous other financial liabilities

This item is used to present numerous liabilities that are immaterial when viewed separately.

29. Trade payables

[T101] Trade payables

in € million	Dec. 31, 2020	Dec. 31, 2019
Accounts payable to:		
Third parties	166	306
Related companies	3	7
Total trade payables	**169**	**313**

Trade payables include open purchase invoices and accruals for purchased goods and services.

The total amount of trade payables is due in less than one year.

30. Contract liabilities

The contract liabilities contain advance payments by customers for the delivery of engine modules and components and for maintenance services. Changes in the reporting period were due to the change in the U.S. dollar exchange rate from U.S.$/€ 1.12 in the previous year to U.S.$/€ 1.23 at year-end 2020, and the development of business, which was affected by the coronavirus pandemic.

31. Refund liabilities

[T102] Refund liabilities

	Total		Non-current		Current	
in € million	Dec. 31, 2020	Dec. 31, 2019	Dec. 31, 2020	Dec. 31, 2019	Dec. 31, 2020	Dec. 31, 2019
Warranty and liability risks	462	521	0		462	521
Invoice corrections	500	539	0		500	539
Subsequent costs	630	642	9	21	621	622
Total refund liabilities	**1,593**	**1,703**	**9**	**21**	**1,583**	**1,682**

The refund liabilities for warranty and liability risks correspond to the share of compensation obligations in connection with MTU's share of compensation obligations as a member of consortia for commercial engine programs (OEM).

The refund liabilities for invoice corrections are retrospective adjustments to the prices in contracts with customers, especially in connection with revenue shares in commercial engine programs (OEM). Settlement of these price corrections was still outstanding as of the reporting date. The decline in the reporting year corresponds with the pandemic-driven year-on-year drop in business volume and the development of the U.S. dollar exchange rate relative to the previous year.

The subsequent costs mainly comprise accruals for the share of marketing expenses for civil engine programs for which a final invoice has not yet been issued by the consortium leader (OEM) but which are already have economic substance.

In line with invoicing practice for commercial engine programs (OEM), retrospective adjustments in the shares of variable program profits allocated by the OEM as of the reporting date are systematically expected; consequently the management is required to make the corresponding estimates. These estimates have to take account of the influence of the Covid-19 pandemic on commercial air traffic and the development of conditions for commercial program investments, especially in respect of the spare parts or aftermarket business. Given the complexity of these parameters, equally reliable and meaningful sensitivity data does not have to be mapped correctly either for individual engine programs or at company level.For more information, see *Section I. "Accounting policies and principles – Refund liabilities" I. Accounting policies and principles – Discretionary scope, measurement uncertainties and sensitivity."*

32. Other liabilities

[T103] Other liabilities

	Total		Non-current		Current	
in € million	Dec. 31, 2020	Dec. 31, 2019	Dec. 31, 2020	Dec. 31, 2019	Dec. 31, 2020	Dec. 31, 2019
Personnel-related liabilities						
Social security	1	1			1	1
Other personnel-related liabilities	17	42			17	42
Other tax liabilities	14	43			14	43
Other liabilities	2	4	0	0	1	3
Total other liabilities	**34**	**90**	**0**	**0**	**34**	**90**

Personnel-related liabilities

Other personnel-related liabilities in particular concern vacation entitlements and flex-time credits. The decline in the reporting period is due to the cost-cutting measures introduced in the second quarter to compensate for operating restrictions in connection with the Covid-19 pandemic.

Other tax liabilities

The other tax liabilities relate to payable wage and church taxes, solidarity surcharges, and transactional taxes.

33. Additional disclosures relating to financial instruments

Carrying amounts, measurement/recognition methods and fair value by measurement category
In the following overview, the carrying amounts of financial instruments are aggregated by measurement category. The information presented also includes separate amounts for each measurement category as a function of the measurement/recognition method applied. Finally, the carrying amounts of the measurement categories are set opposite the fair values for comparison.

[T104] Disclosures relating to financial instruments
Carrying amounts, measurement/recognition methods and fair values as of Dec. 31, 2020

in € million	Carrying amount as of Dec. 31, 2020	Amount carried in balance sheet			Amount carried in balance sheet IFRS 16	Financial instruments not within the scope of IFRS 9 or IFRS 7	Total	Fair value as of Dec. 31, 2020
		Measured at amortized cost	Fair value through other comprehensive income	Fair value through profit or loss				
ASSETS								
Financial assets								
Loans and receivables	101	94				7	101	101
Other interests in related companies	27		27				27	27
Trade receivables	969	969					969	969
Derivative financial assets								
Derivatives without hedging relationship	1			1			1	1
Derivatives with hedging relationship	109		109				109	109
Cash and cash equivalents	773	773					773	773
EQUITY AND LIABILITIES								
Refund liabilities	1,593	1,593					1,593	1,593
Trade payables	169	169					169	169
Financial liabilities								
Bonds and notes	603	603					603	666
Convertible bonds (2016 and 2019)	538	538					538	614
Promissory note	100	100					100	100
Financial liabilities arising from increase or acquisition of stakes in programs	138	138					138	146
Financial liabilities to banks	30	30					30	30
Lease liabilities	177				177		177	177
Derivative financial liabilities								
Derivatives with hedging relationship	0		0				0	0
Other financial liabilities	135	44				91	135	135

The financial instruments presented in the table that are not within the scope of either IFRS 7 or IFRS 9 relate to personnel-related liabilities and the corresponding plan assets accounted for in accordance with IAS 19.

[T105] Disclosures relating to financial instruments
Carrying amounts, measurement/recognition methods and fair values as of Dec. 31, 2019

in € million	Carrying amount as of Dec. 31, 2019	Amount carried in balance sheet			Amount carried in balance sheet IFRS 16	Financial instruments not within the scope of IFRS 9 or IFRS 7	Total	Fair value as of Dec. 31, 2019
		Measured at amortized cost	Fair value through other comprehensive income	Fair value through profit or loss				
ASSETS								
Financial assets								
Loans and receivables	117	109				7	117	117
Other interests in related companies	16		16				16	16
Trade receivables	923	923					923	923
Derivative financial assets								
Derivatives without hedging relationship	1			1			1	1
Derivatives with hedging relationship	5		5				5	5
Cash and cash equivalents	139	139					139	139
EQUITY AND LIABILITIES								
Refund liabilities	1,703	1,703					1,703	1,703
Trade payables	313	313					313	313
Financial liabilities								
Bonds and notes	100	100					100	119
Convertible bonds (2016 and 2019)	562	562					562	727
Financial liabilities arising from increase or acquisition of stakes in programs	300	300					300	304
Financial liabilities to banks	40	40					40	40
Lease liabilities	147				147		147	147
Derivative financial liabilities								
Derivatives with hedging relationship	67		67				67	67
Other financial liabilities	116	42				74	116	116

The financial assets and liabilities carried at amortized cost contain cash and cash equivalents, trade receivables, other receivables, trade payables and other liabilities which are generally due within a relatively short time. The carrying amounts of these assets and liabilities therefore correspond approximately to their fair value at the reporting date.

The fair value of the financial assets and liabilities measured at fair value was derived from stock market prices or, alternatively, using a discounted cash flow method.

Classification of fair value measurements of financial assets and liabilities according to the fair value hierarchy

To take account of the relevance of the estimated parameters used in the measurement of financial assets and liabilities measured at fair value, MTU's financial assets and liabilities are allocated to three levels.

The three levels of the fair value hierarchy are described below, together with their utilization when measuring financial assets and liabilities:

Level 1 Quoted prices in active markets for identical assets or liabilities (unadjusted input);

Level 2 Prices of assets or liabilities that can be observed directly or indirectly (derived);

Level 3 Unobservable inputs used to measure prices of assets or liabilities.

The convertible bonds (2016 and 2019), which are traded on the stock exchange are carried at amortized cost and the corporate bond were assigned to Level 1, the equity investments carried at fair value through other comprehensive income were assigned to Level 3, and all other qualifying financial instruments were assigned to Level 3.

The following tables show the allocation of financial assets and liabilities measured at fair value to the three levels of the fair value hierarchy for 2020 and 2019:

[T106] Classification within the fair-value hierarchy for the 2020 fiscal year

in € million	Level 1	Level 2	Level 3	Total
Financial assets measured at fair value				
Derivative financial instruments		110		110
Other interests in related companies			27	27
Total financial assets		**110**	**27**	**137**
Financial liabilities measured at fair value				
Derivative financial instruments		0		0
Total financial liabilities		**0**		**0**

[T107] Classification within the fair-value hierarchy for the 2019 fiscal year

in € million	Level 1	Level 2	Level 3	Total
Financial assets measured at fair value				
Derivative financial instruments		6		6
Other interests in related companies			16	16
Total financial assets		**6**	**16**	**22**
Financial liabilities measured at fair value				
Derivative financial instruments		67		67
Total financial liabilities		**67**		**67**

The fair value of the derivative financial instruments assigned to Level 2 and the equity investments assigned to Level 3 is measured using a discounted cash flow (DCF) method. In the case of equity investments, internal planning calculations and market data were used to derive the discount rate.

Payment cash flows for financial liabilities

The following tables list the contractually agreed interest and principal payments for the financial liabilities measured at fair value at the reporting date.

[T108] Payment cash flows for financial liabilities 2020

		Cash flow 2021			Cash flow 2022			Cash flow 2023			Cash flow 2024 and subsequent years		
in € million	Carrying amount as of Dec. 31, 2020	Fixed interest	Variable interest	Principal	Fixed interest	Variable interest	Principal	Fixed interest	Variable interest	Principal	Fixed interest	Variable interest	Principal
Refund liabilities	1,593			1,583			10						
Trade payables	169			169									
Bonds and notes	603	19			19			19			48		600
Convertible bonds	538	0			0			0		90	1		500
Promissory note	100	1		100									
Financial liabilities arising from increase or acquisition of stakes in programs	138			29			35			35			39
Financial liabilities to banks	30		0	30									
Lease liabilities	177	1		46	1		54	1		16	5		62
Derivative financial liabilities													
Derivatives with hedging relationship	0												
Other financial liabilities	135			75			15			12			45

[T109] Payment cash flows for financial liabilities 2019

		Cash flow 2020			Cash flow 2021			Cash flow 2022			Cash flow 2023 and subsequent years		
in € million	Carrying amount as of Dec. 31, 2019	Fixed interest	Variable interest	Principal	Fixed interest	Variable interest	Principal	Fixed interest	Variable interest	Principal	Fixed interest	Variable interest	Principal
Refund liabilities	1,703			1,682			11			11			
Trade payables	313			313									
Bonds and notes	100	4			4			4			21		100
Convertible bonds	562	0			0			0			1		590
Financial liabilities arising from increase or acquisition of stakes in programs	300			82			55			53			138
Financial liabilities to banks	40		0	10		0	30						
Loans from third parties													
Lease liabilities	147	4		44	3		32	1		48	2		23
Derivative financial liabilities													
Derivatives without hedging relationship													
Derivatives with hedging relationship	67			47			18			2			
Other financial liabilities	116			68			11			8			37

These include all instruments in the portfolio at the reporting date for which payment terms had been contractually agreed. Amounts denominated in a foreign currency are translated at the exchange rate at the respective reporting date. The variable-rate interest payments on the financial instruments are based on the most recent interest rate fixed prior to the reporting date. Financial liabilities with no fixed repayment date are always assigned to cash flows on the basis of the earliest likely repayment dates.

Within the scope of its partnerships in engine programs, MTU is a party to aircraft financing agreements for the purpose of promoting sales. Such commitments are always made collectively and in favor of the consortium leader (OEM). They are provided in two basic forms: predelivery payments (PDP) and backstop commitments. In both cases, any funds made available to the aircraft purchaser are always transferred directly to the aircraft manufacturer solely by the consortium leader (OEM).

MTU classifies loan commitments granted up to the reporting date totaling a nominal amount, translated into euros, of €733 million (previous year: €840 million) as part of its gross liquidity risk in accordance with the requirements of IFRS 7. However, based on experience, it is considered to be very unlikely that all these nominal loan amounts will actually be utilized to their full extent. This is because the financing terms offered take account of the creditworthiness of the purchaser of the aircraft, based on market practice, through clauses in the credit agreement. The terms for backstop commitments are deliberately prohibitive. In the case of predelivery payments (PDP), the consortium has collateral rights to the aircraft while it is still in production and thus in the possession of the aircraft manufacturer In the case of backstop commitments, the aircraft is collateral under substantive law. It is to be expected that third parties arrange relevant portions of the financing commitments directly with the purchaser of the aircraft, not least due to the financing conditions.

In addition, as of the reporting date, there were unutilized financing commitments for equity investments in the form of capital contributions or shareholder loans totaling €160 million.

With respect to the notional impact on MTU's liquidity of the financing offers, the company ensures that its credit lines *(see Note 28 "Financial liabilities")* provide adequate liquidity reserves, even in the unlikely event of all financing offers being taken up at the same time, and considers the possibility of extending these credit lines to back up future financing offers. In the event that loan commitments are utilized, MTU considers the associated liquidity and credit risks to be manageable.

Explanatory comments relating to net gain/loss on financial instruments by measurement category

The tables below show the gains/losses arising from transactions involving financial instruments, aggregated by measurement category, for the reporting period and the previous year. Interest income and expense in connection with financial assets and liabilities that are measured at fair value through profit or loss are not included:

[T110] Net gain/loss on financial assets and liabilities 2020

in € million	from interest	from investments	from remeasurement	Currency translation	Write-down	Net gain / loss 2020
Financial assets measured at cost	5			–93	–37	–126
Financial assets measured at fair value through other comprehensive income		2				2
Financial assets measured at fair value through profit or loss			13			13
Financial liabilities measured at cost	–19		–11	175		144
Financial liabilities measured at fair value through profit or loss			–7			–7
Financial instruments not within the scope of IFRS 7 or IFRS 9	–5	69		–28		37
Total	**–19**	**71**	**–5**	**54**	**–37**	**64**

[T111] Net gain/loss on financial assets and liabilities 2019

in € million	from interest	from investments	from remeasurement	Currency translation	Write-down	Net gain / loss 2019
Financial assets measured at cost	6			26	–6	25
Financial assets measured at fair value through other comprehensive income		3				3
Financial assets measured at fair value through profit or loss			13			13
Financial liabilities measured at cost	–19		–13	–33		–64
Financial liabilities measured at fair value through profit or loss			–6			–6
Financial instruments not within the scope of IFRS 7 or IFRS 9	–4	80		–1		75
Total	**–17**	**83**	**–6**	**–8**	**–6**	**46**

The gain/loss from remeasurement in connection with valuation allowances for financial assets are recognized in selling expenses. Currency translation effects are recognized in revenue or the costs of goods sold depending on the operational nature of the associated financial assets and liabilities. For further information on the impact on profit/loss can be found in *Section II. "Notes to the consolidated income statement."*

Explanatory comments relating to net interest income/expense

The net interest income/expense on financial assets and liabilities includes interest income from long-term loans and interest expenses arising from the corporate bond, the convertible bonds, loan agreements with banks and lease liabilities. The interest relating to financial instruments that are not within the scope of either IFRS 7 or IFRS 9 is recognized in other financial income/expense.

Explanatory comments on net gain/loss from equity investments

The profit contributions from equity investments comprise profit transfers from MTU Versicherungsvermittlungs- und Wirtschaftsdienst GmbH, Munich, Germany, and the military program companies, and the dividends from SMBC Aero Engine Lease B.V., Amsterdam, Netherlands.

Explanatory comments on net gain/loss from remeasurement

The net gain/loss on financial instruments measured at fair value through profit or loss mainly comprises exchange rate gains and losses on derivatives not designated in a hedging relationship and is recognized in other financial income/expense. The amount stated for "financial liabilities measured at amortized cost" mainly results from reversing the discount on this category of financial instruments and is recognized in other financial income/expense.

Explanatory comments on net gain/loss from currency translation

The amounts recognized for currency translation of financial assets and liabilities, measured at cost, result principally from foreign currency measurement of trade receivables, trade payables, and refund liabilities. The amounts relating to receivables are recognized in revenue while the amounts relating to liabilities are recognized in the cost of goods sold.

Offsetting financial assets and financial liabilities

The following financial assets and financial liabilities subject to offsetting agreements existed at the reporting date:

[T112] Offset amounts of financial assets and financial liabilities as of Dec. 31, 2020

	(a)	(b)	(c)	(d)	(e) = (c) − (d)
in € million	Gross amounts of recognized financial assets / liabilities	Gross amounts of recognized financial assets / liabilities offset in the balance sheet	Net financial assets / liabilities recognized in the balance sheet	Related amounts not offset in the balance sheet	Net amount
Other assets					
Loans and receivables	101	0	101		101
Other interests in related companies	27	0	27		27
Trade receivables	1,488	518	969		969
Derivative financial assets					
Derivatives without hedging relationship	1	0	1		1
Derivatives with hedging relationship	109	0	109		109
Cash and cash equivalents	773	0	773		773
Refund liabilities	1,659	66	1,593		1,593
Trade payables	355	186	169		169
Financial liabilities					
Bonds and notes	603	0	603		603
Convertible bonds	538	0	538		538
Promissory note	100	0	100		
Financial liabilities arising from increase or acquisition of stakes in programs	138	0	138		138
Financial liabilities to banks	**30**	**0**	**30**		**30**
Lease liabilities	177	0	177		177
Derivative financial liabilities					
Derivatives with hedging relationship	0	0	0		0
Other financial liabilities	135	0	135		135

[T113] Offset amounts of financial assets and financial liabilities as of Dec. 31, 2019

	(a)	(b)	(c)	(d)	(e) = (c) − (d)
in € million	Gross amounts of recognized financial assets / liabilities	Gross amounts of recognized financial assets / liabilities offset in the balance sheet	Net financial assets / liabilities recognized in the balance sheet	Related amounts not offset in the balance sheet	Net amount
Other assets					
Loans and receivables	117	0	117		117
Other interests in related companies	16		16		16
Trade receivables	1,786	863	923		923
Derivative financial assets					
Derivatives without hedging relationship	1		1	1	0
Derivatives with hedging relationship	5		5	5	0
Cash and cash equivalents	141	1	139		139
Refund liabilities	1,703		1,703		1,703
Trade payables	1,176	863	313		313
Financial liabilities					
Bonds and notes	100		100		100
Convertible bond	562		562		562
Financial liabilities arising from increase or acquisition of stakes in programs	300		300		300
Financial liabilities to banks	**42**	**1**	**40**		**40**
Finance lease liabilities	147		147		147
Derivative financial liabilities			0		
Derivatives without hedging relationship	0		0		0
Derivatives with hedging relationship	67		67	6	61
Other financial liabilities	116	0	116		116

The related amounts not offset in the balance sheet refer to financial assets and liabilities arising from derivatives that can be offset against debt if the issuer becomes insolvent.

34. Deferred taxes

Deferred tax assets and liabilities arise on temporary differences between the tax bases of assets and liabilities of the individual group companies and the corresponding carrying amounts in the consolidated balance sheet. Deferred tax assets were also recognized for tax credits and losses available for carry-forward.

Deferred tax assets and liabilities were recognized in OCI in connection with the subsequent measurement of pension obligations and the corresponding plan assets and in connection with the fair value measurement of derivative financial instruments which were part of an effective hedging relationship, and in respect of the difference between the fair value and initial carrying amounts of the equity components of the convertible bonds.

[T114] Changes in deferred tax assets and liabilities

	Dec. 31, 2020		Dec. 31, 2019		2020	
	Deferred tax assets	Deferred tax liabilities	Deferred tax assets	Deferred tax liabilities	Tax income / expense (-)	Recognized in equity / OCI
in € million	in equity		in equity		in the income statement	
Assets						
Intangible assets		224		223	–1	0
Property, plant and equipment	9	94	8	79	–13	–0
Financial assets	–0	0	0	1	1	–0
Inventories	60		63		–2	–0
Receivables and other assets	88	50	44	73	63	5
Total assets	**157**	**368**	**115**	**376**	**46**	**4**
Equity						
Gains and losses from the measurement of derivatives with hedging relationship	3	33	18			–47
Equity portion of convertible bond		12		12		
Actuarial gains/losses on pension obligations and plan assets	164		149			15
Total equity	**167**	**45**	**167**	**12**		**–32**
Liabilities						
Pension provisions		12		7	–5	
Other provisions	4	0	5	13	12	–0
Liabilities	150	0	158	0	–2	–5
Total liabilities	**153**	**12**	**163**	**20**	**4**	**–6**
Deferred taxes on assets and liabilities	**478**	**425**	**445**	**409**	**51**	**–34**
Tax credits and tax losses available for carry-forward						
Tax credits available for carry-forward	34		35		1	–2
Tax losses available for carry-forward	4		4		0	–0
Valuation allowances and unrecognized recoverable tax payments						
Valuation allowances on tax credits carried forward	–11		–6		–5	1
Valuation allowances on tax losses carried forward	–2		–2		–0	0
Temporary differences for which no deferred tax assets were recognized	–11		–10		–1	1
Total tax credits and losses carried forward	**14**		**20**		**–5**	**–1**
Deferred tax assets/liabilities before offset	**492**	**425**	**465**	**409**	**46**	**–35**
Offset	–425	–425	–409	–409		
Net deferred tax assets/liabilities	**67**	**0**	**56**	**0**	**46**	**–35**

Please refer to *Note 10 "Income taxes"* for further information relating to current and deferred income tax assets and liabilities resulting from the balance sheet items listed above and to the tax reconciliation between the expected and recognized tax expense.

Tax assets and liabilities are offset against one another only if they relate to the same type of tax levied by the same tax jurisdiction and are due within the same period.

Deferred tax assets were recognized for deferred tax losses/credits available for carry-forward in the case of the following group companies:

[T115] Deferred tax assets recognized for tax losses/credits available for carry-forward as of Dec. 31

in € million	USA 2020	Poland 2020	**Total 2020**	Total 2019
Tax credits available for carry-forward	1	32	34	35
Tax losses available for carry-forward	2	2	4	4
Potential tax impact of tax losses/credits available for carry-forward	**4**	**34**	**37**	**39**
Valuation allowances on tax credits carried forward		–11	–11	–6
Valuation allowances on tax losses carried forward	–2	–0	–2	–2
Deferred tax assets recognized for tax losses/credits available for carry-forward	**1**	**23**	**25**	**30**

USA

MTU Aero Engines North America Inc., Rocky Hill, USA, (AENA) and Vericor Power Systems LLC., Alpharetta, USA, have been a single tax entity since July 1, 2016. Tax losses available for carry-forward as of December 31, 2020 relate exclusively to state tax, which after the application of valuation allowances amounted to the equivalent of €7 million (previous year: €7 million).

Furthermore, recoverable tax credits are recognized by the tax entity for this tax type. These mainly result from development activities. Deferred tax assets were similarly recognized in respect of these recoverable tax credits.

Poland

MTU Aero Engines Polska sp. z o.o. receives government support through Poland's economic development program by virtue of its location in a special economic zone. Because its business investments help to create jobs, the company has been awarded tax credits in respect of the profits it expects to achieve through its production activities, with separate amounts being accorded each year through to 2026. Deferred tax assets amounting to €22 million (previous year: €27 million) were recognized on the basis of the business investments realized up to the reporting date, taking into account the currently expected earnings from the activities for which tax credits were awarded.

In addition to the activities for which tax advantages are granted, the company also provides services that are subject to normal taxation. In fiscal years 2012 through 2016, this area of business resulted in tax losses, while in 2017 through 2019 taxable profit was generated. In 2020, tax losses were incurred again. The use of the tax losses available for carry-forward of €9 million is limited to a period of five years and a ceiling is imposed on the amount carried forward each fiscal year. As a result, it was possible to recognize deferred tax assets amounting to €2 million (previous year: €1 million), in view of the currently expected earnings from the relevant activities. A valuation allowance corresponding to the difference between this amount and the maximum allowable amount of deferred tax assets was therefore recognized in the balance sheet.

At the reporting date, there were temporary differences amounting to €57 million (previous year: €55 million) for which no deferred tax assets were recognized, in view of the relevant income expectations for the next five years. The resulting potential tax impact of €11 million (previous year: €10 million) was therefore not taken into account in the calculation of the income tax expense.

Deferred tax liabilities for taxable differences arising from investments in subsidiaries and joint ventures

In accordance with IAS 12, no deferred tax liabilities were recognized for temporary differences amounting to €308 million (previous year: €413 million) that arose in connection with investments in subsidiaries and joint ventures. If these differences were to lead to the creation of deferred tax liabilities, they would result in a tax liability amounting to €13 million (previous year: €18 million), based on the current tax legislation.

IV. Other disclosures

35. Measurement of recoverable amounts of operating segments to which goodwill has been allocated

The Group tests the goodwill of its group of cash-generating units (CGUs) for impairment at least once a year by determining whether, as a minimum, their carrying amounts are covered by their recoverable amounts. At MTU, the identifiable group of CGUs utilized for the purpose of the goodwill impairment test correspond to its two operating segments – commercial and military engine business (OEM) and commercial maintenance business (MRO).

In view of the pandemic, the value in use of each of the two operating segments as of the reporting date (December 31, 2020) was calculated in order to determine their respective recoverable amounts, based on the operational business plans for the second half of the period under review.

The calculations of the recoverable amounts are based on the following assumptions: The first step involves the use of models to predict future changes in the engine fleet and the corresponding market shares of engines for which MTU holds or expects to hold supply responsibility or that are or will be of significance to its service business, especially in the MRO segment. MTU applies these forecasts systematically as a basis for its revenue and corresponding capacity planning, from which the planned EBIT and cash flows for each of the two operating segments are derived. The outcome of this process is therefore necessarily based on expectations as regards future market shares, growth in the individual markets, the profitability of products as well as macroeconomic developments such as trends in exchange rates, interest rates and commodity prices. The values in use, and the corresponding carrying amounts, are determined without reference to financing activities. More information can be found in *Section I. "Accounting policies and principles."*

In the OEM segment, the calculation of cash flow used to determine the value in use is based on revenue growth in the mid single-digit percentage range in the relevant planning period. In view of the drop in earnings in the reporting period due to the Covid-19, the operating earnings margins were expected to be between 50 and 100 % above the level achieved in the reporting period due to the crisis and the related special items. The discount rate before taxes applied here was 11.0 % (previous year:

9.5 %). To determine the terminal value, revenue in 2025 plus a growth rate of 0.5 % and an annuity factor to take account of the revenue set in the strategic long-term planning was applied.

Since the detailed planning period in the OEM segment depends on the ramp-up of the programs and the effects of the Covid-19 pandemic, the perpetuity is derived from the strategic long-term planning (2026 to 2035) in order to reflect both the low-margin program ramp-up phase and the higher-margin spare parts phase. Consequently, the revenue assumption for the perpetuity is derived from revenue in 2025 plus a compound annual growth rate of 0.5 % and an annuity. The annuity takes into account the extent to which revenue in the strategic long-term planning exceeds the revenue in the final year of the planning period (plus a growth rate of 0.5 %). The operating earnings margin used for the perpetuity is based on a conservative valuation. Moreover, in view of the positive development in the planning period, it is assumed that the margin will only be slightly above the level of the last planning year.

For the MRO segment, revenue growth within the detailed planning horizon is expected to be in the mid single-digit percentage range, while the EBIT margin is anticipated to be moderately higher than the current level, and a discount rate before tax of 11.2 % (previous year: 9.8 %) is expected. The perpetuity for the MRO segment, given its shorter business cycles, was derived from the revenue and EBIT margin of the final year of the detailed planning period (2025) plus a growth rate of 0.5 % as in the previous year.

When applying the discounted cash flow (DCF) method, the weighted average cost of capital (WACC) before tax for each segment is determined iteratively on the basis of a corresponding after-tax discount rate. This is derived from the cost of equity after tax, which is based on a risk-free base interest rate and a risk premium (market risk premium multiplied by the beta coefficient calculated on the basis of a peer group analysis). The cost of debt of the peer group companies is also factored into the calculation. Cost of equity and cost of debt are weighted according to the average capital structure of the peer group companies when determining WACC after tax.

In order to determine the weighted average cost of capital (WACC) in the reporting period, MTU used a risk-free interest rate of –0.2 % (previous year: 0.6 %), a market risk premium of 7.5 % (previous year: 6.5 %), and a beta coefficient of 1.23 (previous year: 1.07). The cost of debt used in this calculation was 3.5 % (previous year: 1.9 %) after tax.

The goodwill recognized for the commercial and military engine business (OEM) was unchanged year-on-year at €304 million. As in the previous year, the engine maintenance business (MRU) recognized goodwill of €87 million. The value in use of the OEM segment is €4,364 million (previous year: €7,710 million), and that of the MRO segment is €2,630 million (previous year: 3,036 million). The corresponding carrying amounts to be recognized for the cash-generating units are €2,821 million (previous year: 2,593 million) for the OEM segment and €1,562 million (previous year: 1,392 million) for the MRO segment. There was no indication that the recognized goodwill was impaired.

36. Sensitivity analysis of goodwill

Sensitivity analyses were carried out to determine the possible impact that a sustained reduction in planned earnings before interest and taxes (EBIT) might have on the goodwill amounts allocated to each of the two operating segments. These analyses included sensitivity factors affecting the weighted average cost of capital to be applied.

Assuming an unchanged weighted average cost of capital (WACC), the sensitivity analyses concluded that there would be no need to recognize an impairment loss on goodwill either in the OEM or MRO operating segment, even in the event of a sustained reduction in EBIT to 30 % below the planning figure forecast by management. Similarly, with EBIT unchanged, no impairment losses would have to be recognized in either segment if the cost of capital before taxes rose to 13 %.

The impact of the Covid-19 pandemic on the aviation sector has increased the estimation uncertainties relating to measurement, especially in the short- and mid-term planning period. MTU takes account of the measurement uncertainty in this context through additional sensitivity data. These data do not take account of the interdependencies of the adjusted, value-driving parameters or any compensatory measures. Accordingly, the values should be regarded as a theoretical gross risk.

In view of the significance for measurement in the OEM segment, complementary scenarios (sensitivities) are used: 1) a reduction of 10 % in sales volumes across all programs would reduce the value in use by €588 million; 2) a reduction of 5 % in the gross margin across all programs would reduce the value in use by €267 million. In both scenarios, all other assumptions are unchanged.

In view of the significance for measurement in the MRO segment, complementary scenarios (sensitivities) are used: 1) a reduction of 10 % in sales volume across the entire spectrum of services provided by the segment would reduce the value in use by €338 million; and 2) a reduction of 5% in the gross margin across the entire spectrum of services provided by the segment would reduce the value in use by €163 million.

37. Financial risk

In the ordinary course of business, MTU is exposed to credit risks, liquidity risks and market risks. The objective of financial risk management is to minimize the risks arising from operating activities and the resulting financing requirements through the use of selected derivative and non-derivative hedging instruments.

Risks in connection with the procurement, financing and sale of MTU's products and services are described in detail in the management report. In order to counter financial risks, MTU has put in place an integrated risk management system, which is monitored by the Supervisory Board. The principles of this system aim at promptly identifying, analyzing, and communicating risks and taking counter-measure. Market risks, particularly the net exposure from commodity price risks, currency risks, and interest rate risks, are analyzed in respect of their potential impact on earnings before interest and taxes (EBIT) and on net interest income/expense, and reduced through the targeted use of derivative financial instruments.

Credit risk

MTU is exposed to credit risks arising from its operating activities in both the OEM and MRO segments. The risk situation deteriorated in the reporting period due to the impact of the pandemic on the aviation industry. MTU has a systematic, structured credit risk management.

In view of the importance of managing credit risks, engine and aircraft financing arrangements to which MTU is a party as a result of its engine program and MRO alliances are managed by the central treasury department. Further details on engine and aircraft financing arrangements are provided in *Note 33 "Additional disclosures relating to financial instruments"* and in the *"Risk and opportunity report," which forms part of the Combined management report*.

Financing transactions in connection with liquidity management, e.g., time deposits or forward foreign exchange contracts, also expose the group to a certain degree of credit risk. MTU's internal guidelines therefore stipulate that such transactions may only be entered into centrally by the central Treasury department, and only with contracting parties with a credit rating of at least investment grade. Counterparty limits are assigned and monitored on the basis of credit rating and company size. For information on the investment policy, please refer to the section entitled *"Financial situation – Principles and objectives of financial management."*

The maximum credit risk is represented by the carrying amounts of the financial assets recognized in the balance sheet, plus the amount of financial guarantees and loan commitments. As of December 31, 2020, financial assets of €974 million (previous year: €1,035 million) were not exposed to any material credit risk because there was corresponding potential for netting with the related refund liabilities from the respective contractual relationship. Another group of financial assets amounting to €433 million (previous year: €452 million) is secured with security interest. Credit insurance had been arranged for receivables amounting to €17 million (previous year: €26 million).

Relevant unsecured portions of financial assets were included in the calculation of the expected credit losses using an impairment matrix. For this purpose, the assets were allocated to groups with credit standings A, B and C, for which the respective credit loss rate was determined using published information and/or credit ratings from international agencies:

[T116] Expected credit losses as of Dec. 31, 2020

in € million	Credit standing A	Credit standing B	Credit standing C	Total
Expected credit loss rate	0.06%	1.26%	3.64%	
Gross amount	1,180	27	51	1,258
Expected credit losses	1	0	2	3

[T117] Expected credit losses as of Dec. 31, 2019

in € million	Credit standing A	Credit standing B	Credit standing C	Total
Expected credit loss rate	0.06%	1.28%	3.65%	
Gross amount	653	45	98	796
Expected credit losses	0	1	4	5

Other than collateralization rights for engine and aircraft financing loans issued, there were no material agreements at the reporting date that could reduce the maximum credit risk. Nonetheless, MTU is exposed to other, proportionate liability risks and therefore potential additional credit risks as a result of its membership in engine consortia. Further details can be found in *Note 39 "Contingent liabilities and other financial obligations."*

Market risk

Currency risk

More than 80 % of MTU's revenue is generated in U.S. dollars. At least half of this currency risk is naturally hedged by costs settled in U.S. dollars. Most other costs are incurred in euros, and to a lesser extent in Canadian dollars and Polish zloty. Translation differences for the unhedged portion of the portfolio have a direct impact on net income and cash flow.

Hedging strategy

MTU uses a defined hedging model to hedge a defined portions of its expected net foreign currency surplus. The purpose is to minimize the impact of the volatility of the U.S. dollar exchange rate on net income and the cash flow. The forward foreign exchange contracts and currency options used for this purpose are designated as financial instruments to hedge cash flows from expected sales realized in U.S. dollars. The hedge ratio decreases the longer the hedging horizon is.

An economic hedging relationship exists between the hedged item and the hedging instrument, since the terms of the forward foreign exchange contracts and currency options correspond to the terms of the highly probable forecast transactions (this is true for the nominal amount and the expected payment date). MTU uses the hypothetical derivative method to measure the effectiveness of the hedge and prospectively compares the changes in fair value of the hedging instrument with the changes in fair value of the hedged items that are attributable to the hedged risk.

Hedge ineffectiveness can arise for a number of reasons:

- when the timing of the cash flows from the hedged item and the hedging instruments differs or the expected amount of cash flows from the hedged item and the hedging instrument changes. MTU considers it unlikely that an effective risk could arise from such an event since only the net foreign currency surplus is hedged and sufficient gross foreign currency payments are available to service the hedging instruments.
- different effects of the counterparty credit risk on the changes in fair value of the hedged item and the hedging instrument. MTU believes that this poses a low effective risk because all banks with which MTU enters into hedging transactions and MTU itself must have an investment grade rating. The priced credit risk between MTU and the commercial banks is therefore very low at present and thus immaterial.

Translation differences arising from the translation of financial statements of international subsidiaries into the Group's functional currency and effects from measurement at the closing rate (translations risks) are not included when deriving the hedging volume.

Forward foreign exchange contracts

As of December 31, 2020, MTU held open forward foreign exchange contracts with maturities up to March 2024 in a nominal amount of U.S.$2,280 million. At the exchange rate prevailing on the reporting date, that translates into €1,858 million. The fair values of the open forward foreign exchange contracts maturing in and after 2021 increased by €124 million in the reporting period (previous year: decreased by €53 million for maturities in and after 2020). As of December 31 of the previous year, MTU had hedged cash flows for fiscal years 2020 through 2023 amounting to U.S.$2,600 million (which translates into €2,314 million at the exchange rate prevailing on December 31, 2019).

Currency option transactions
The options give MTU the right (long options) or obligation (short options) to sell a defined quantity of U.S. dollars for euros at agreed euro exchange rates at a specific time. The risk of financial loss from a long option is limited to the premiums that have already been paid. In the case of short options MTU collects a premium. Losses can be incurred if the exchange rate at maturity, compared with that agreed when the option was sold, falls by more than the amount of premiums received for these options. As of December 31, 2020, MTU held long options amounting to U.S.$20 million (previous year: U.S.$150 million) and short options in an amount of U.S.$20 million (previous year: U.S.$150 million).

The forward foreign exchange contracts and currency options open at the reporting date had the following maturities:

[T118] Cash flow hedges

	Dec. 31, 2020			
in € million	Due in less than 1 year	Due in more than 1 year and less than 2 years	Due in more than 2 years	Total
Forward foreign exchange contracts				
Nominal amounts (in U.S. $ million)	1,040	1,200	40	2,280
Average forward rate (€/U.S. $)	1.18	1.17	1.13	1.17
thereof recognized as				
Financial assets				
Nominal amounts (in U.S. $ million)				2,280
Carrying amounts (in € million)				109
Financial liabilities				
Nominal amounts (in € million)				
Carrying amounts (in € million)				
Currency option transactions				
Nominal amounts (in U.S. $ million)	20			20
Average forward rate (€/U.S. $)	1.19			1.19
thereof recognized as				
Financial assets				
Nominal amounts (in U.S. $ million) [1]				20
Carrying amounts (in € million)				1
Financial liabilities				
Nominal amounts (in U.S. $ million) [1]				20
Carrying amounts (in € million)				0

[1] Combination of call and put options that partially offset each other.

[T119] Cash flow hedges

	Dec. 31, 2019			
in € million	Due in less than 1 year	Due in more than 1 year and less than 2 years	Due in more than 2 years	Total
Forward foreign exchange contracts				
Nominal amounts (in U.S. $ million)	1,160	920	520	2,600
Average forward rate (€/U.S. $)	1.19	1.18	1.19	1.19
thereof recognized as				
Financial assets				
Nominal amounts (in U.S. $ million)				500
Carrying amounts (in € million)				4
Financial liabilities				
Nominal amounts (in € million)				2,100
Carrying amounts (in € million)				64
Currency option transactions				
Nominal amounts (in U.S. $ million)	130	20		150
Average forward rate (€/U.S. $)	1.18	1.19		1.18
thereof recognized as				
Financial assets				
Nominal amounts (in U.S. $ million) [1]				150
Carrying amounts (in € million)				1
Financial liabilities				
Nominal amounts (in U.S. $ million) [1]				150
Carrying amounts (in € million)				3

[1] Combination of call and put options that partially offset each other.

Hedging instruments designated as cash flow hedges

The liability arising from the deferred purchase price component in connection with the increase in MTU's program share in the IAE-V2500 engine program, which has to be serviced in U.S. dollars, serves as an instrument for hedging cash flows arising from revenue generated in U.S. dollars. This liability matures in 2027 and has a nominal amount of U.S.$175 million (previous year: U.S.$335 million), which translates into €143 million (previous year: €298 million) at the exchange rate prevailing at the reporting date. As of December 31, 2020, the carrying amount of the purchase price liability was €132 million (previous year: €271 million) and is recognized under financial liabilities as part of the net debt.

As of the reporting date at the end of fiscal year 2020, the following amounts arising from the fair value measurement of forward foreign exchange contracts and other hedging instruments were recognized in equity:

[T120] Impact of hedging relationships on equity

in € million	Hedge reserves	Hedging costs reserves	Currency translation reserves	Total
Carrying amount as of Jan. 1, 2019	**–1**	**–14**	**–17**	**–32**
Changes in fair value of forward foreign currency sales and options	39	19		58
Amounts recycled to profit or loss	–32	–48	5	–75
Impacts from currency translation			–2	–2
Deferred taxes	–2	9	–0	7
Carrying amount as of Jan. 1, 2020	**4**	**–33**	**–14**	**–44**
Changes in fair value of forward foreign currency sales and options	161	24		185
Amounts recycled to profit or loss	17	–57	5	–35
Impacts from currency translation			3	3
Deferred taxes	–57	11	–1	–47
Carrying amount as of Dec. 31, 2020	**125**	**–56**	**–6**	**62**

No transactions were hedged in prior periods that are no longer expected to occur.

As a further element of its hedging strategy, MTU employs derivative financial instruments to which hedge accounting under IFRS 9 is not applied:

Currency swaps
In the course of the reporting period, U.S. dollars were sold at the daily rate and repurchased after a short time using a swap. As the selling and buying rates differ marginally, these swaps are immaterial in terms of risk. The purpose of these transactions was to optimize liquidity in U.S. dollars. As of December 31, 2020, currency swaps expiring in the period up to January 4, 2021, with a notional value of U.S.$93 million were concluded (previous year: U.S.$93 million).

Exchange rate sensitivity analysis
The sensitivity analysis showing the effects of hypothetical changes in exchange rates on net income and equity relates to the foreign currency positions included in the respective balance sheet items at the reporting date. In this context, it is assumed that the volume at the reporting date is representative of the full year.

A significant proportion of trade receivables and payables, refund liabilities and finance lease liabilities is invoiced in U.S. dollars and is thus exposed to exchange rate fluctuations. All other non-derivative financial instruments to which hedge accounting is not applied are already denominated in the Group's functional currency (the euro), and are therefore not included in the exchange rate sensitivity analysis. The equity instruments held by the group are not of a monetary nature and therefore do not present a currency risk as defined by IFRS 7.

If the exchange rate of the euro to the U.S. dollar at December 31, 2020, or at the prior-year reporting date had been 10% higher or lower, this would have produced the following hypothetical effects on net income and equity:

[T121] Exchange rate sensitivity analysis

	2020		2019	
in € million	-10%	+10%	-10%	+10%
Exchange rate sensitivity (€/U.S. $)				
Closing exchange rate Dec. 31, 2020: 1.2271 (Dec. 31, 2019: 1.1234)	1.10	1.35	1.01	1.24
Net income	**–80**	**65**	**–78**	**63**
Equity [1]	**–136**	**113**	**–180**	**149**

[1] After tax.

Interest rate risk

MTU is exposed to interest rate risk principally in the eurozone, and to a lesser extent in Canada, China, Poland and the USA. MTU's interest rate risks are mainly related to pension obligations and financial liabilities.

Interest rate sensitivity analysis

Interest rate risk is presented in accordance with IFRS 7 using sensitivity analysis, which shows the effects of changes in market interest rates on interest payments, interest income and expense, other income statement items, net income and equity. The interest rate sensitivity analysis is based on the following assumptions: Changes in the market interest rate of non-derivative financial instruments bearing fixed market interest rates have an effect on net income and equity only if these financial instruments are measured at fair value through profit or loss or were classified as such at initial recognition. Consequently, all fixed-interest financial instruments measured at amortized cost have no interest-rate-induced effects on net income and equity that must be accounted for, apart from future amounts to be charged to net interest income/expense.

In fiscal year 2020, floating-rate financial instruments and financial instruments measured at fair value held at the reporting date were not exposed to any significant interest rate risks.

Price risk

There is a general risk of price increases for commodities. This risk is mitigated mainly by procuring goods with appropriate price agreements and only to a small extent by entering into derivative financial instruments for nickel forward contracts.

As of December 31, 2020, MTU had entered into nickel forward contracts with credit institutions for a volume of 400 metric tons of nickel (previous year: 950 metric tons) for the years 2021 through 2022 and contracted fixed prices for nickel of between U.S.$12.5 thousand and U.S.$16.2 thousand per metric ton (previous year: between U.S.$12.2 thousand and U.S.$13.7 thousand per metric ton).

If the market price for nickel on the respective maturity date exceeds the agreed fixed price, MTU will receive a payment for the difference from the bank. In the opposite case, MTU is obligated to make a payment to the bank. No hedge accounting was applied to these transactions within the meaning of IFRS 9. The fair value loss of €1 million (previous year: €2 million) arising from these forward commodity purchases is recognized in other financial income/expense *(see Note 9)*.

If the market prices in nickel forward contracts had been 10% higher or lower, net income would have been €0 million higher or lower (previous year: €1 million).

Liquidity risk

MTU's liquidity risk relates to its inability to meet payment obligations due because of insufficient cash or cash equivalents being available. In order to ensure the solvency and financial flexibility of MTU at all times, long-term credit lines and liquid funds are held available based on multi-year financial planning and rolling monthly liquidity planning.

MTU has entered into long-term syndicated loans and bilateral credit agreements with a number of banks. In view of the Covid-19 pandemic and its detrimental effects on the entire international economy and especially the aviation sector, MTU safeguarded the short- and mid-term financing of the Group and its liquidity in the reporting period by extending its credit facilities in the short term, including taking out a loan, and issuing a corporate bond. The credit facilities available as of the reporting date are considered adequate to meet potential obligations, including those arising from loan commitments, especially in connection with sales financing arrangements in future years. For further information, see the *Notes 28 "Financial liabilities"* and *33 "Additional disclosures relating to financial instruments."*

38. Leases

Group as lessee

The Group has entered into leases for land and buildings, technical equipment and machinery, and operational and office equipment. The terms of leases for land and buildings range from two to 33 years. Lease terms for technical equipment, plant and machinery and for motor vehicles and operational and office equipment are typically between two and five years. A number of leases have renewal and termination options as well as variable lease payments, which are explained in detail below.

The group primarily acts as lessee in the following cases:

- Real estate leases are for production, logistics and office capacities (land and buildings). Some of the underlying contracts include price escalation clauses linked to the consumer price index. The lease terms are between two and 17 years; some leases have renewal options.
- Leasing of vehicles and industrial trucks (operational and office equipment). The underlying leases regularly take into account variable (usage-based) components of the lease rates. The lease terms are between two and five years; some leases have renewal options.
- Engine leasing (operational and office equipment): The underlying leases regularly take into account variable (usage-based) components of the lease rates. The lease terms are between one and ten years; some leases have renewal options. Engines are provided to MRO customers on the basis of sub-leases.

The table below shows the changes in carrying amounts and depreciation expenses of the right-of-use assets recognized in the balance sheet:

[T122] Right-of-use assets

in € million	As of Jan. 1, 2020	Currency translation differences	Additions	Transfers	Disposals	As of Dec. 31, 2020
Purchase cost						
Land, leasehold rights and buildings, including buildings on third-party land	22	–1	72	1		94
Technical equipment, plant and machinery	2					2
Other equipment, operational and office equipment	150	–0	15		–21	145
Total purchase cost	**175**	**–1**	**87**	**1**	**–21**	**241**
Depreciation						
Land, leasehold rights and buildings, including buildings on third-party land	–4	0	–8			–11
Technical equipment, plant and machinery	–2		–0			–2
Other equipment, operational and office equipment	–30	0	–39		13	–56
Total depreciation	**–36**	**0**	**–47**		**13**	**–70**
Carrying amount	**139**	**–1**	**41**	**1**	**–8**	**172**

In the reporting period, further office space was rented in Canada and the USA and at the Munich location in Germany, and new production buildings were leased in Hanover. The maturity analysis for lease liabilities is presented in *Note 33 "Additional disclosures relating to financial instruments."*

The following amounts for leases were recognized in profit or loss:

[T123] Amounts recognized in profit or loss for leases

in € million	2020	2019
Income		
Income from subleasing right-of-use-assets	30	56
Gains arising from sale and leaseback transactions	0	2
Lease income	**30**	**57**
Expenses		
Depreciation/amortization of right-of-use assets	42	37
Impairment losses on right-of-use assets	5	
Interest expense for lease liabilities	5	4
Short-term lease expense	4	4
Low-value asset lease expense	1	2
Variable lease payment expense not included in the measurement of lease liabilities	5	16
Lease expense	**62**	**63**

In the reporting period, the Group's cash outflows for leases amounted to €57 million (previous year: €68 million). Future cash outflows for leases not recognized on the balance sheet are presented below in *Note 39 "Contingent liabilities and other financial liabilities."*

Group as lessor

MTU leases out engines that are owned by the group as well as engines that are in turn leased by MTU. The leases generally have terms of between one and three years. In this context, tailored engine leases are offered by the Group to its customers, especially airlines and companies that offer engine maintenance services. The engines are primarily leased out under operating leases. Renewal and premature termination options are granted on a case-by-case basis.

The maturity analyses of lease receivables are as follows:

[T124] Maturity analysis of finance lease receivables

in € million	Dec. 31, 2020	Dec. 31, 2019
Finance lease receivables		
Less than 1 year	1	3
1 to 2 years	0	2
2 to 3 years		0
3 to 4 years		
4 to 5 years		
More than 5 years		
Undiscounted finance lease receivables	**1**	**4**
Unearned finance income	–0	–0
Unguaranteed residual value		0
Net investment in finance leases	**1**	**5**

[T125] Maturity analysis of operating lease payments

in € million	Dec. 31, 2020	Dec. 31, 2019
Operating lease receivables		
Less than 1 year	6	17
1 to 2 years	2	4
2 to 3 years	1	2
3 to 4 years	1	0
4 to 5 years		
More than 5 years		
Total	**9**	**23**

Lease revenue of €57 million was earned from operating leases in the reporting period (previous year: €87 million). Divestment gains of €0 million (previous year: €3 million) were recorded in connection with finance leases in 2020.

39. Contingent liabilities and other financial obligations

Contingent liabilities

The following table contains an overview of the contingent liabilities of the MTU Group on the reporting date for 2020 and the previous year.

[T126] Contingent liabilities

in € million	Dec. 31, 2020	Dec. 31, 2019
Contingent liabilities arising from risk- and revenue-sharing agreements	8	19
thereof IAE International Aero Engines AG	4	11
Bank guarantees	56	59
Guarantees and other contingent liabilities	102	64
Total contingent liabilities	**165**	**142**

The contingent liabilities from risk- and revenue-sharing agreements result from MTU's membership in the consortium formed to manage the V2500 engine program, which is structured as a risk- and revenue-sharing partnership, and hence also include liabilities arising from MTU's indirect interest in this program via Pratt & Whitney Aero Engines International GmbH, Lucerne, Switzerland (PWAEI).

Analogously to previous years, bank guarantees and guarantees and other contingent liabilities principally comprise contract fulfillment and customs bonds of a customary amount and guarantees assumed for credit facilities and investment subsidies.

MTU also receives a small amount of public sector grants and assistance to subsidize new production buildings and research and development expenses. The risk of repayment obligations exists until such time as the relevant project has been completed and all the conditions associated with it have been met. At the reporting date, the probability that risks of this kind could materialize was deemed to be very low.

In addition, until the reporting period, proceedings were pending before the tax courts contesting land transfer tax assessments in connection with mergers. In view of these proceedings, the collection of the land transfer tax in connection with the merger of MTU Aero Engines GmbH into MTU Aero Engines Holding AG has been suspended by the tax authorities. These proceedings were decided in the reporting period and the legal position was adjusted. The suspension of land transfer tax that was decided/rescinded in favor of MTU.

In addition, as of the reporting date, there were unutilized financing commitments for equity investments in the form of capital contributions or shareholder loans totaling €160 million and further commitments to OEM customers relating to shares in sales financing commitments in respect of commercial engine programs. As of the reporting date, the unutilized nominal amount of such financing commitments was €733 million (previous year: €840 million). MTU treats these commitments as a component of its gross liquidity risk within the meaning of IFRS 7. Further details can be found in *Note 33 "Additional disclosures relating to financial instruments."*

Other financial obligations

Obligations arising from leases

The breakdown by maturity of future cash outflows for leases for which lease liabilities have not yet been recognized is as follows:

[T127] Future cash outflows from leases

in € million	Dec. 31, 2020	Dec. 31, 2019
Variable lease payments		
Due in less than 1 year		0
Due in more than 1 year and less than 5 years		0
Due in more than 5 years		
Extension and termination options		
Due in less than 1 year	1	1
Due in more than 1 year and less than 5 years	0	
Due in more than 5 years		
Leases that have not yet commenced		
Due in less than 1 year	1	2
Due in more than 1 year and less than 5 years	15	25
Due in more than 5 years	35	62
Total future cash outflows from leases	**52**	**91**

Purchase commitments for financial obligations

As of December 31, 2020, purchase commitments amounted to €10 million (previous year: €8 million) for the purchase of intangible assets and to €75 million (previous year: €91 million) for the purchase of property, plant and equipment and were therefore in the normal range for the business.

40. Related party disclosures

Related companies

Transactions between group companies and joint ventures or associates were, without exception, entered into in the normal course of business and on an arm's length basis.

Transactions between consolidated companies were eliminated in the consolidated financial statements and are therefore not disclosed separately in this Note.

Business with related companies

In the reporting period, intragroup transactions involving the supply of goods and services were conducted by group companies as part of their normal operating activities (e.g., development, repairs, assembly, IT support). In the reporting period and the previous year, the following transactions resulting in current receivables and liabilities were entered into with related companies that are not fully consolidated:

[T128] Trade receivables from and trade payables to related companies

	Trade receivables		Trade payables	
in € million	Dec. 31, 2020	Dec. 31, 2019	Dec. 31, 2020	Dec. 31, 2019
Associates	402	411		
Joint ventures	98	66	2	7
Subsidiaries accounted for at fair value	1	1	1	0
Other related companies	4	4		
Total	**505**	**481**	**3**	**7**

[T129] Income/expense from trade receivables from related companies

	Income		Expenses	
in € million	Dec. 31, 2020	Dec. 31, 2019	Dec. 31, 2020	Dec. 31, 2019
Associated	1,390	1,226	–937	–1,030
Joint ventures	420	416	–68	–69
Subsidiaries accounted for at fair value	3	1	–23	–19
Other related companies	5	4	–5	–19
Total	**1,818**	**1,647**	**–1,033**	**–1,136**

In connection with MTU's membership in the consortium for the V2500 engine program, which is structured as a risk- and revenue-sharing partnership, there are contingent liabilities of €3 million to the related party IAE International Aero Engines AG. Furthermore, there is a guarantee of €102 million for credit lines of EME Aero Sp.z.o.o., which is recognized as a contingent liability (guarantees and other contingent liabilities).

In addition, there are unutilized financing commitments for equity investments in the form of capital contributions or shareholder loans totaling €160 million.

Major shareholdings

The list of major shareholdings shows the equity investments of MTU Aero Engines AG, Munich, and the equity of each company as of December 31, 2020, and its net income in the reporting period:

[T130] Major shareholdings

Name and registered office of entity	Consolidation method [2]	Shareholding (in %) Dec. 31, 2020
I. Investments in subsidiaries		
MTU Maintenance Hannover GmbH, Langenhagen, Germany	Full	100.00
MTU Maintenance Berlin-Brandenburg GmbH, Ludwigsfelde, Germany	Full	100.00
MTU Aero Engines North America Inc., Rocky Hill, USA	Full	100.00
MS Engine Leasing LLC., Rocky Hill, USA [1]	Full	75.23
MTU Maintenance Canada Ltd., Richmond, Canada	Full	100.00
Vericor Power Systems LLC., Alpharetta, USA [1]	Full	100.00
MTU Aero Engines Polska sp. z o.o., Rzeszów, Poland	Full	100.00
MTU Maintenance Lease Services B.V., Amsterdam, Netherlands	Full	80.00
MTU Maintenance Coating Services GmbH, Ludwigsfelde, Germany	Full	100.00
MTU Versicherungsvermittlungs- und Wirtschaftsdienst GmbH, Munich, Germany	Fair value	100.00
MTU Maintenance Service Centre Ayutthaya Ltd., Ayutthaya, Thailand	Fair value	100.00
MTU Maintenance Dallas Inc., Grapevine, USA	Fair value	100.00
MTU Maintenance IGT Service do Brasil Ltda., São Paulo, Brazil	Fair value	100.00
MTU Maintenance Serbia d.o.o., Belgrad, Serbia	Fair value	100.00
MTU Aero Engines Finance Netherlands B.V., Amsterdam, Netherlands	Fair value	100.00
MTU Maintenance Service Centre Australia Pty. Ltd., Perth, Australia	Fair value	100.00
MTU Aero Engines Shanghai Ltd., Shanghai, China	Fair value	100.00
II. Investments in associates		
IAE International Aero Engines AG, Zurich, Switzerland	At equity	25.25
IAE International Aero Engines LLC., East Hartford, USA	At equity	18.00
PW 1100G-JM Engine Leasing LLC., East Hartford, USA	At equity	18.00
III. Equity investments in joint ventures		
MTU Maintenance Zhuhai Co. Ltd., Zhuhai, China	At equity	50.00
MTU Maintenance Hong Kong Ltd., Hong Kong, China [1]	Fair value	50.00
Pratt & Whitney Canada Customer Service Centre Europe GmbH, Ludwigsfelde, Germany [1]	At equity	50.00
Ceramic Coating Center S.A.S., Paris, France	At equity	50.00
Airfoil Services Sdn. Bhd., Kota Damansara, Malaysia	At equity	50.00
AES Aerospace Embedded Solutions GmbH, Munich, Germany	At equity	50.00
EME Aero sp. z.o.o., Jasionka, Poland	At equity	50.00
Turbo Union GmbH, Hallbergmoos, Germany	Fair value	39.98
EUROJET Turbo GmbH, Hallbergmoos, Germany	Fair value	33.00
EPI Europrop International GmbH, Munich, Germany	Fair value	28.00
MTU Turbomeca Rolls-Royce GmbH, Hallbergmoos, Germany	Fair value	33.33
MTU Turbomeca Rolls-Royce ITP GmbH, Hallbergmoos, Germany	Fair value	25.00
IV. Other equity investments		
SMBC Aero Engine Lease B.V., Amsterdam, Netherlands	Fair value	10.00

[1] Indirect shareholding.

[2] - Full = fully consolidated.
- Fair value = measured at fair value.
- At equity = carrying amount of investment increased or decreased in proportion to group's interest in equity.

Related persons

Other than the transactions specified in *"Other related party transactions,"* no group companies entered into any transactions subject to disclosure requirements with members of the group's Executive Board or Supervisory Board or with any other individuals in key management positions, or with companies of whose governing or supervisory bodies these individuals are members. The same applies to close members of the families of those individuals.

Members of the Executive Board

As of December 31, 2020, the Executive Board of MTU Aero Engines AG, Munich, had the following members:

[T131] Members of the Executive Board

Reiner Winkler Chief Executive Officer
Peter Kameritsch Chief Financial Officer and Chief Information Officer
Lars Wagner Chief Operating Officer
Michael Schreyögg Chief Program Officer

Executive Board compensation

Detailed information on the compensation system for MTU's Executive Board, including their company pension entitlements, is provided in the *Management compensation report in the Combined management report*.

The members of the Executive Board received total compensation amounting to €8 million (previous year: €10 million) for their work as board members in fiscal year 2020. Total compensation breaks down into the following components:

[T132] Compensation of the Executive Board

	2020		2019	
	in € million	in %	in € million 1)	in %
Short-term employee benefits				
Non-performance-related components	3		3	
Performance-related components without long-term incentive effect[1)]			3	
Performance-related components with long-term incentive effect	4		4	
Total	**7**	**88**	**10**	**92**
Post-employment benefits				
Service cost/ past service cost	1		1	
Total	**1**	**13**	**1**	**8**
Total compensation	**8**	**100**	**10**	**100**

[1)] Performance-related portion of short-term incentive (STI) for the reporting period, which will be paid in the following year.

Members of the Executive Board did not receive any compensation for board appointments in group companies.

In the reporting period, as in the previous year, no loans or advances were granted to members of the Executive Board. Similarly, as in the previous year, no contingent liabilities were assumed by the company in favor of members of the Executive Board.

Provisions for pensions and entitlements of former Executive Board members were €19 million as of December 31, 2020 (previous year: €18 million).

Details of the compensation awarded to individual members of the Executive Board, and other related information, are presented in the *Management compensation report in the Combined management report.*

Compensation of the Supervisory Board members

Detailed information on the compensation system for MTU's Supervisory Board members is provided in the *Management compensation report in the Combined management report.*

As in the previous year, members of the Supervisory Board did not receive any additional compensation for board appointments over and above that received for their appointment to the Supervisory Board of MTU Aero Engines AG, Munich. The compensation amounted to €1 million (previous year: €1 million).

In fiscal year 2020, MTU employees appointed as employee representatives to the Supervisory Board of MTU Aero Engines AG received salaries under their normal employment contracts (excluding Supervisory Board compensation) totaling €1 million (previous year: €1 million). The total amount represents the sum of their respective gross salaries.

In the reporting period, as in the previous year, no loans or advances were granted to members of the Supervisory Board. Similarly, as in the previous year, no contingent liabilities were assumed by the company in favor of members of the Supervisory Board.

Details of the compensation awarded to individual members of the Supervisory Board, and other related information, are presented in the *Management compensation report in the Combined management report.*

Other related party transactions

MTU shares and options bought or sold by members of the Executive Board and the Supervisory Board in fiscal year 2020 were bought or sold on an arm's length basis. The transactions were published in the register of companies and on *MTU's website at www.mtu.de > Investor Relations > Corporate Governance > Directors' Dealings.*

Shareholders

Pursuant to Section 160 (1) no. 8 of the German Stock Corporation Act (AktG), disclosure is required of shareholdings of which the company has been notified pursuant to Section 21 (1) or (1a) of the German Securities Trading Act (WpHG). Detailed information can be found under *"The MTU share."*

V. Segment information

41. Segment reporting

MTU reports on two operating segments: the OEM segment (commercial and military engine business) and the MRO segment (commercial maintenance business). Segmentation is based on the internal organizational structure and reporting system, which takes into account the different risks and return structures for both segments. A detailed description of the operating segments is provided in the Consolidated segment report.

Commercial and military engine business (OEM)
In the commercial and military engine business, the group develops, manufactures, assembles and delivers commercial and military engines and components. The maintenance, repair and overhaul of military engines is also included in this segment.

Commercial maintenance business (MRO)
In the commercial maintenance business, the group maintains, repairs and overhauls aircraft engines and industrial gas turbines. In addition to complete engine maintenance, the services provided include engine module and parts repairs as well as related services.

Profit/loss of companies accounted for using the equity method
The carrying amount and the share in profit/loss of consolidated group companies accounted for using the equity method are included in the consolidated financial statements if these companies can be directly allocated to an operating segment.

Segment assets and segment liabilities
Segment assets comprise all assets that can be directly allocated to specific operating activities and whose positive or negative operating results have an impact on earnings before interest and tax (EBIT/adjusted EBIT). Assets and liabilities are allocated to the operating segment in which they are used to generate business. The consolidation/reconciliation amount in the segment assets line relates to the consolidation of the carrying amount of subsidiaries and of accounts receivable from intersegment sales of €1,237 million (previous year: €1,282 million) and to segment liabilities of €896 million (previous year: €942 million).

The cash and cash equivalents of the German group companies are managed centrally by the parent company in a cash pooling system. The parent company's operating activities are allocated to the OEM segment, which is why the associated interest income and expense arise mainly in that segment.

Segment capital expenditures

Segment capital expenditures relate to additions to tangible and intangible fixed assets, acquired program assets and acquired development assets.

[T133] Capital expenditure on intangible assets, property, plant and equipment, acquired program assets and acquired development work

in € million	2020	2019
Germany	264	356
Europe (excluding Germany)	26	127
North America	49	12
Total capital expenditure	**339**	**495**

Approximately 78 % (previous year: approximately 72 %) of capital expenditure on intangible assets, property, plant and equipment, acquired program assets and acquired development work relates to Group companies in Germany.

Consolidation/reconciliation column

The amounts in the "consolidation/reconciliation" column for earnings before interest and tax (EBIT/adjusted EBIT) are used to eliminate the effect of intersegment sales.

Segment information by region

External revenue, capital expenditure on intangible assets, property, plant and equipment, and non-current assets are divided according to the following regions: Germany, Europe (excluding Germany), North America, Asia and other regions. Revenue from business with third parties is allocated according to the country where the customer is domiciled. Further details relating to the breakdown of revenue by region are presented in *Note 1 "Revenue."*

The regional allocation of capital expenditure and non-current assets is based on the location of the respective asset or where it is mainly used.

[T134] Non-current assets

in € million	2020	2019
Germany	3,003	2,932
Europe (excluding Germany)	635	865
North America	391	358
Total non-current assets	**4,030**	**4,155**

VI. Events after the reporting date

After the reporting date, the aircraft manufacturer Boeing announced that, in view of the pandemic-related change in demand for long-haul aircraft, market launch of the Boeing 777X with the exclusive GE9X engine would be postponed to 2023. In view of this development, in the present financial statements MTU has recognized impairment losses on the stake in this engine program.

Moreover, while the financial statements were being prepared, damage in connection with engine failure in a Boeing 777 with a PW4000 was reported. The incident is still under investigation. MTU is a partner in the PW4000 consortium and would bear pro rata liability in the event of justified claims for compensation against the engine consortium. The Group has relevant insurance cover for the corresponding risks and recognizes any provisions required in the balance sheet.

MTU is not aware of any other events of material importance that occurred after the reporting date that could have a significant impact on the net assets, financial position and results of operations of the MTU Group as presented in this report.

VII. Determination of the net profit available for distribution on the basis of the annual financial statements

Unlike the consolidated financial statements, which are based on the IFRSs issued by the IASB and endorsed by the EU, the annual financial statements of MTU Aero Engines AG, Munich, are prepared in accordance with the requirements of the German Commercial Code (HGB) and German Stock Corporation Act (AktG).

[T135] Income statement of MTU Aero Engines AG

			Change against previous year	
in € million	2020	2019	in € million	in %
Revenue	**3,789**	**4,087**	**–298**	**–7.3**
Cost of goods sold	–3,582	–3,811	229	6.0
Gross profit	**207**	**276**	**–69**	**–25.0**
Selling expenses	–90	–75	–15	–19.8
General administrative expenses	–49	–45	–4	–9.1
Net other operating income/expenses	–30	43	–73	<-100
Net financial income/expense	120	–79	199	>100
Earnings from ordinary operating activities	**158**	**120**	**38**	**32.0**
Tax expense	–26	–39	13	33.2
Net profit for the year	**132**	**80**	**51**	**64.1**
Withdrawal from other retained earnings		100	–100	0
Allocation to other retained earnings	–65		–65	
Net profit available for distribution	**67**	**180**	**–113**	**–62.9**

Proposed profit distribution

Subject to the approval of the Supervisory Board, a proposal will be put to the Annual General Meeting that a dividend of €1.25 per share should be paid for the reporting period (previous year: €0.04) and that the remainder of the net profit be allocated to retained earnings. In the light of the global coronavirus pandemic and the resulting risks to the short- and mid-term development of the net assets, financial position and results of operations, in the previous year the majority of the net profit was carried forward.

Federal Gazette (Bundesanzeiger)

The annual financial statements, consolidated financial statements and combined management report of MTU Aero Engines AG, Munich, are published in the Electronic Federal Gazette (elektronischer Bundesanzeiger). Print copies can be obtained on request from MTU Aero Engines AG, 80995 Munich, Germany.

Declaration of conformity with the German Corporate Governance Code

The declaration of conformity by the Executive Board and Supervisory Board of MTU Aero Engines AG, Munich, pursuant to Section 161 of the German Stock Corporation Act (AktG) is published in the MTU Annual Report 2020 and also permanently available to shareholders on the MTU website at www.mtu.de.

Munich, February 24, 2021

signed
Reiner Winkler
Chief Executive Officer

signed
Peter Kameritsch
Chief Financial Officer and Chief Information Officer

signed
Michael Schreyögg
Chief Program Officer

signed
Lars Wagner
Chief Operating Officer

Responsibility statement and independent auditor's report

Responsibility statement

We hereby affirm that, to the best of our knowledge, the consolidated financial statements of the MTU Group and the separate annual financial statements of MTU Aero Engines AG present a true and fair view of their respective net assets, financial position and results of operations in accordance with the applicable financial reporting standards, and that the combined management report provides a faithful and accurate review of the business performance of the MTU Group and of MTU Aero Engines AG, including business performance and position, and outlines the significant opportunities and risks of the MTU Group's and MTU Aero Engines AG's likely future development.

Munich, February 24, 2021

signed
Reiner Winkler
Chief Executive Officer

signed
Peter Kameritsch
Chief Financial Officer and Chief Information Officer

signed
Michael Schreyögg
Chief Program Officer

signed
Lars Wagner
Chief Operating Officer

The following copy of the auditor's report also includes a "Report on the assurance in accordance with Sec. 317 (3b) HGB on the electronic reproduction of the financial statements and the management report prepared for publication purposes" ("separate report on ESEF compliance"). The subject matter underlying the separate report on ESEF compliance (ESEF documents subject to assurance) is not attached. The ESEF documents that have been subject to assurance can be viewed in and obtained from the Bundesanzeiger [German Federal Gazette].

Independent auditor's report

To MTU Aero Engines AG

Report on the audit of the consolidated financial statements and of the combined management report

Opinions

We have audited the consolidated financial statements of MTU Aero Engines AG, Munich, and its subsidiaries (the "Group"), which comprise the consolidated income statement and consolidated statement of comprehensive income for the fiscal year from 1 January 2020 to 31 December 2020, the consolidated statement of financial position as of 31 December 2020, the consolidated statement of changes in equity and the consolidated cash flow statement for the fiscal year from 1 January 2020 to 31 December 2020, and the notes to the consolidated financial statements, including the recognition and measurement principles presented therein. In addition, we have audited the group management report, which is combined with the management report of MTU Aero Engines AG, Munich ("combined management report"), for the fiscal year from 1 January 2020 to 31 December 2020. In accordance with the German legal requirements, we have not audited the content of the non-financial statement and the corporate governance statement contained in the "Other disclosures" section of the combined management report.

In our opinion, on the basis of the knowledge obtained in the audit,

- the accompanying consolidated financial statements comply, in all material respects, with the International Financial Reporting Standards (IFRSs) as adopted by the EU and the supplementary provisions of German law pursuant to Sec. 315e (1) HGB ["Handelsgesetzbuch": German Commercial Code] and give a true and fair view of the assets, liabilities and financial position of the Group as of 31 December 2020 and of its financial performance for the fiscal year from 1 January 2020 to 31 December 2020 in accordance with German legally required accounting principles, and
- the accompanying combined management report as a whole provides an appropriate view of the Group's position. In all material respects, this combined management report is consistent with the consolidated financial statements, complies with German legal requirements and appropriately presents the opportunities and risks of future development. Our opinion on the combined management report does not cover the content of the non-financial statement and the corporate governance statement referred to above.

Pursuant to Sec. 322 (3) Sentence 1 HGB, we declare that our audit has not led to any reservations relating to the legal compliance of the consolidated financial statements and of the combined management report.

Basis for the opinions

We conducted our audit of the consolidated financial statements and the combined management report in accordance with Sec. 317 HGB and the EU Audit Regulation (No 537/2014, referred to subsequently as "EU Audit Regulation") and in compliance with German Generally Accepted Standards for Financial Statement Audits promulgated by the Institut der Wirtschaftsprüfer [Institute of Public Auditors in Germany] (IDW). Our responsibilities under those requirements and principles are further described in the "Auditor's responsibilities for the audit of the consolidated financial statements and of the combined management report" section of our auditor's report. We are independent of the group entities in accordance with the requirements of European law and German commercial and professional law, and we have fulfilled our other German professional responsibilities in accordance with these requirements.

In addition, in accordance with Art. 10 (2) f) of the EU Audit Regulation, we declare that we have not provided non-audit services prohibited under Art. 5 (1) of the EU Audit Regulation. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinions on the consolidated financial statements and on the combined management report.

Key audit matters in the audit of the consolidated financial statements

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the consolidated financial statements for the fiscal year from 1 January 2020 to 31 December 2020. These matters were addressed in the context of our audit of the consolidated financial statements as a whole, and in forming our opinion thereon; we do not provide a separate opinion on these matters.

Below, we describe what we consider to be the key audit matters:

1. Recognition of revenue from risk- and revenue-sharing partnerships

Reasons why the matter was determined to be a key audit matter

The MTU Group primarily generates its revenue in the commercial and military engine business (OEM segment (Original Equipment Manufacturing)) from risk- and revenue-sharing partnerships with other engine manufacturers. In the civilian OEM segment, the respective syndicate leaders (OEM) are identified as customers; in the military engine business these are the syndicate's end customers. The significant performance obligations are manufacturing and delivering engine parts along with developing and providing technology.

Revenue from delivering engine modules and parts is recognized when MTU fulfills the performance obligation identified in the contract by delivering the goods. Revenue is therefore recognized when the customer has gained control of the asset pursuant to IFRS 15.31. For engine programs in which the syndicate leader is provided with the right to use the engine modules and parts for marketing by having them delivered to their warehouse, this is the time at which delivery is made to the syndicate leader. The basis for the amount of revenue is the expected contractually agreed purchase price for the assets. Reports on risk- and revenue-sharing partnerships, the volumes sold and the final purchase prices are only available at a later point in time, generally after the engine modules and parts have been delivered by the OEM to the end customers.

Furthermore, risk- and revenue-sharing partnerships mean that MTU is obliged to provide other partners with licenses to its technology. MTU receives variable remuneration for these licenses. Pursuant to IFRS 15.58, this variable remuneration is recorded based on reports from the risk- and revenue-sharing partnerships, because this is when there is no longer any uncertainty surrounding the amount. If this reporting is delayed, revenue from the provision of this license is allocated as of the reporting date based on qualified estimates that take the contractual arrangements into account.

Revenue, which has not been recognized based on reports on risk- and revenue-sharing partnerships, is recognized in the statement of financial position under contract assets. Billing risks are recorded as refund liabilities.

There is a risk of error when recognizing revenue and a risk of fraud on account of incentives to achieve certain performance targets and forecasts if the recognition is not based on a partner report. The materiality of revenue for the consolidated financial statements, the discretionary scope involved in the required estimates and the fact that revenue and adjusted EBIT are financial performance indicators for the Group in terms of corporate management and forecasts meant that revenue at the time of delivery to the warehouse of the syndicate leader and the revenue from the provision of the license as of the reporting date constituted a key audit matter.

Auditor's response

We used a substantive audit approach to assess the appropriateness of revenue recognition from risk- and revenue-sharing partnerships. We evaluated the structure of the underlying corporate processes. Considering the requirements of IFRS 15, we assessed the accounting effects of the performance obligations identified from the risk- and revenue-sharing partnerships.

For intraperiod transactions, we performed data analyses on any existing anomalies. In this context, our procedures included correlation analyses and time series analyses. We verified the development of contract assets resulting from the recognition of revenue upon delivery to the warehouse of the syndicate leader on a sample basis by inspecting the delivery notes (upon delivery) or the reports on risk- and revenue-sharing partnerships (upon removal). In addition, we compared the contractually agreed purchase prices with the price lists on a sample basis. In respect of the estimation of billing risks, we assessed the underlying valuation methods and key valuation parameters, and verified the computational accuracy of the calculation.

To assess the amount of variable revenue from license fees estimated for the month of December 2020, we reconciled the estimated values with the reporting of the risk- and revenue-sharing partnerships from January 2021 on a sample basis.

In addition, we also reconciled recorded revenue against payments received and analyzed credits granted in January in respect of their allocation to the correct period. We reconciled non-standard transactions, journal entries and closing entries to the underlying documents on a sample basis. Our audit procedures did not lead to any reservations relating to the recognition of revenue from risk- and revenue-sharing partnerships.

Reference to related disclosures
The disclosures in the notes to the consolidated financial statements on the principles of recognizing revenue are contained in Section I. "Accounting policies and principles" in the subsections on "Revenue", "Contract Assets", "Contract Liabilities", "Refund Liabilities" as well as "Discretionary scope, measurement uncertainties and sensitivity". The significance of revenue in connection with corporate management as well as with regard to the business development and forecast is also presented in the "Key performance indicators" and "Financial performance indicators" sections of the combined management report.

2. Measurement of liabilities from warranty obligations as well as risks from pending transactions
Reasons why the matter was determined to be a key audit matter
In the consolidated financial statements of MTU Aero Engines AG, liabilities from warranty obligations and risks from pending transactions are reported as "Refund liabilities" and "Other provisions" under non-current and current liabilities in the statement of financial position. They relate to statutory and agreement-specific obligations and comprise estimates made on both a case-by-case and general basis. During the audit, we determined the measurement of liabilities from warranty obligations as well as risks from pending transactions relating to specific individual matters and subject to high levels of estimation uncertainty a key audit matter because the measurement of these items, the amounts of which are significant, is based to a large extent on the executive directors' estimates and assumptions, in particular with regard to the technical risks as well as the amount of the anticipated costs.

Auditor's response
To assess the measurement of liabilities from warranty obligations as well as risks from pending transactions, we examined the process of preparing the separate and consolidated financial statements, interviewed representatives of MTU Aero Engines AG and inspected agreements, correspondence and other documentation. In particular, we assessed the underlying measurement methods and key valuation parameters and checked the calculations for arithmetical accuracy. We also obtained and evaluated confirmations from lawyers and interviewed representatives from the legal department to assess the measurement.

Our audit procedures did not lead to any reservations relating to the measurement of liabilities from warranty obligations as well as risks from pending transactions.

Reference to related disclosures
The disclosures in the notes to the consolidated financial statements on refund obligations as well as other provisions are contained in Section I. "Accounting policies and principles" in the subsections on "Other provisions", "Refund liabilities" as well as "Discretionary scope, measurement uncertainties and sensitivity" and in Section III. "Notes to the consolidated balance sheet" in the subsections "27. Other provisions" and "31. Refund liabilities".

3. Recoverability of payments to customers based on the program term and capitalized development costs from risk- and revenue-sharing partnerships
Reasons why the matter was determined to be a key audit matter
The MTU Group participates in risk- and revenue-sharing partnerships with other engine manufacturers. Payments are made and proportionate costs are assumed in order to enter into these partnerships in the civilian OEM segment. These payments to customers based on the program term are recognized as "Acquired program values, development and other assets" under non-current assets in the consolidated financial statements. Furthermore, internally-funded development services are rendered, which are capitalized as development costs. The Management Board of MTU Aero Engines AG analyzes these assets for impairment at each reporting date, in fiscal year 2020 taking into account the effects of the COVID-19 pandemic in particular. The basis for this is the planning of the individual engine programs over the remaining program term. An asset's or overarching cash-generating unit's discounted cash surpluses are compared to the corresponding carrying amount. The Company determines the discount rate (WACC) using external valuation experts. The assessment of whether the assets are impaired is based to a large extent on estimates by the Company's executive directors. The resulting discretionary scope gives rise to a generally higher risk for accounting misstatements. Against this background, in particular given the increased risk in the aviation industry due to the COVID-19 pandemic, the assessment of whether the payments to customers based on the program term and capitalized development costs from risk- and revenue-sharing partnerships were impaired was a key audit matter.

Auditor's response
We examined the planning process of MTU Aero Engines AG in order to assess the impairment of payments to customers based on the program term and capitalized development costs. We also requested evidence to show to what extent external sources are included in the planning process. Building on this, we used variance analyses to compare the program planning with the prior-year planning and assessed the planning assumptions based on interviews with the responsible program officers. In doing so, we took into account the possible impact of the COVID-19 pandemic on the aircraft industry when assessing the planning assumptions used. We assessed the competence, capabilities and objectivity of the expert engaged by the Company to derive the WACC, gained an understanding of the expert's work and assessed the suitability of that work as audit evidence for the relevant assertion. In addition, we assessed the derivation of the WACC by consulting internal valuation specialists, in particular by comparing the peer group with comparable companies from an external database, reconciled market data and checked for arithmetical accuracy. We checked the completeness of the net assets' carrying amount. We examined the underlying valuation models to test impairment both in terms of clerical accuracy and the methods used. We checked the results of the impairment testing performed by the executive directors using sensitivity analyses for plausibility and compared these with the sensitivities determined by the Company on a sample basis.

Our audit procedures did not lead to any reservations relating to whether the payments to customers based on the program term and capitalized development costs from risk- and revenue-sharing partnerships were impaired.

Reference to related disclosures
The disclosures in the notes to the consolidated financial statements on program values and capitalized development costs are contained in Section I. "Accounting policies and principles" in the subsections on "Research and development expenses", "Intangible assets", "Acquired program assets and acquired development work", "Impairment of intangible assets, property, plant and equipment, acquired program assets and acquired development work" as well as "Discretionary scope, measurement uncertainties and sensitivity". There are also disclosures in the notes to the consolidated financial statements in Section II. "Notes to the consolidated income statement" in the subsection on "3. Research and development expenses" as well as in Section III. "Notes to the consolidated balance sheet" in the subsections on "13. Changes in intangible assets and property, plant and equipment", "14. Intangible assets" and "17. Acquired program assets, development work and other assets". Further disclosures on capitalized research and development costs are presented in the "The MTU Group / Research and development" as well as "Economic report / Financial situation" sections of the combined management report.

Other information
The Supervisory Board is responsible for the Report of the Supervisory Board in the section "To our shareholders" of the 2020 annual report. In all other respects, the executive directors are responsible for the other information. The other information, of which we received a version prior to issuing this auditor's report, includes:

- The non-financial statement and the corporate governance statement in the "Other disclosures" section of the combined management report
- The sections "Key facts and figures with year-on-year comparison", "Responsibility statement", "To our shareholders" and "Additional information" in the 2020 annual report

Our opinions on the consolidated financial statements and combined management report do not cover the other information, and we therefore do not provide an opinion or any other form of audit conclusion on these matters.

In connection with our audit, our responsibility is to read the other information and to assess whether the other information

- is inconsistent in any material respect with the consolidated financial statements, the combined management report or our knowledge obtained in the audit, or
- otherwise appears to be materially misstated.

If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.

Responsibilities of the executive directors and the Supervisory Board for the consolidated financial statements and the combined management report
The executive directors are responsible for the preparation of the consolidated financial statements that comply, in all material respects, with IFRSs as adopted by the EU and the additional requirements of German commercial law pursuant to Sec. 315e (1) HGB, and that the consolidated financial statements, in compliance with these requirements, give a true and fair view of the assets, liabilities, financial position and financial performance of the Group. In addition, the executive directors are responsible for such internal control as they have determined necessary

to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, the executive directors are responsible for assessing the Group's ability to continue as a going concern. They also have the responsibility for disclosing, as applicable, matters related to going concern. In addition, they are responsible for financial reporting based on the going concern basis of accounting unless there is an intention to liquidate the Group or to cease operations, or there is no realistic alternative but to do so.

Furthermore, the executive directors are responsible for the preparation of the combined management report that, as a whole, provides an appropriate view of the Group's position and is, in all material respects, consistent with the consolidated financial statements, complies with German legal requirements and appropriately presents the opportunities and risks of future development. In addition, the executive directors are responsible for such arrangements and measures (systems) as they have considered necessary to enable the preparation of a combined management report that is in accordance with the applicable German legal requirements, and to be able to provide sufficient appropriate evidence for the assertions in the combined management report.

The Supervisory Board is responsible for overseeing the Group's financial reporting process for the preparation of the consolidated financial statements and of the combined management report.

Auditor's responsibilities for the audit of the consolidated financial statements and of the combined management report

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and whether the combined management report as a whole provides an appropriate view of the Group's position and, in all material respects, is consistent with the consolidated financial statements and the knowledge obtained in the audit, complies with the German legal requirements and appropriately presents the opportunities and risks of future development, as well as to issue an auditor's report that includes our opinions on the consolidated financial statements and on the combined management report.

Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Sec. 317 HGB and the EU Audit Regulation and in compliance with German Generally Accepted Standards for Financial Statement Audits promulgated by the Institut der Wirtschaftsprüfer (IDW) will always detect a material misstatement. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements and this combined management report.

We exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the consolidated financial statements and of the combined management report, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinions. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit of the consolidated financial statements and of arrangements and measures (systems) relevant to the audit of the combined management report in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of these systems.
- Evaluate the appropriateness of accounting policies used by the executive directors and the reasonableness of estimates made by the executive directors and related disclosures.
- Conclude on the appropriateness of the executive directors' use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in the auditor's report to the related disclosures in the consolidated financial statements and in the combined management report or, if such disclosures are inadequate, to modify our respective opinions. Our conclusions are based on the

audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Group to cease to be able to continue as a going concern.

- Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements present the underlying transactions and events in a manner that the consolidated financial statements that comply with IFRSs as adopted in the EU and the additional requirements of German commercial law pursuant to Sec. 315e (1) HGB give a true and fair view of the assets, liabilities, financial position and financial performance of the Group.
- Obtain sufficient appropriate audit evidence regarding the financial information of the businesses or business activities within the Group to express opinions on the consolidated financial statements and on the combined management report. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinions.
- Evaluate the consistency of the combined management report with the consolidated financial statements, its conformity with [German] law and the view of the Group's position it provides.
- Perform audit procedures for the forward-looking disclosures made by the executive directors in the combined management report. On the basis of sufficient appropriate audit evidence we evaluate, in particular, the significant assumptions used by the executive directors as a basis for the prospective information, and evaluate the proper derivation of the prospective information from these assumptions. We do not express a separate opinion on the prospective information and on the assumptions used as a basis. There is a substantial unavoidable risk that future events will differ materially from the prospective information.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

We also provide those charged with governance with a statement that we have complied with the relevant independence requirements, and communicate with them all relationships and other matters that may reasonably be thought to bear on our independence and where applicable, related safeguards.

From the matters communicated with those charged with governance, we determine those matters that were of most significance in the audit of the consolidated financial statements of the current period and are therefore the key audit matters. We describe these matters in our auditor's report unless law or regulation precludes public disclosure about the matter.

Other legal and regulatory requirements
Report on the assurance in accordance with Sec. 317 (3b) HGB on the electronic reproduction of the consolidated financial statements and the combined management report prepared for publication purposes

Opinion

We have performed assurance work in accordance with Sec. 317 (3b) HGB to obtain reasonable assurance about whether the reproduction of the consolidated financial statements and the combined management report (hereinafter the "ESEF documents") contained in the attached electronic file MTU_KA+KLB_ESEF_2020-12-31.zip and prepared for publication purposes complies in all material respects with the requirements of Sec. 328 (1) HGB for the electronic reporting format ("ESEF format"). In accordance with German legal requirements, this assurance only extends to the conversion of the information contained in the consolidated financial statements and the combined management report into the ESEF format and therefore relates neither to the information contained in this reproduction nor to any other information contained in the abovementioned electronic file.

In our opinion, the reproduction of the consolidated financial statements and the combined management report contained in the abovementioned attached electronic file and prepared for publication purposes complies in all material respects with the requirements of Sec. 328 (1) HGB for the electronic reporting format. Other than this opinion and the opinions in the preceding "Report on the audit of the consolidated financial statements and of the combined management report" on the attached consolidated financial statements and attached combined

management report for the fiscal year from 1 January 2020 to 31 December 2020, we do not express an opinion on the information included in these versions as well as the information in the other file mentioned above.

Basis for the opinion

We conducted our assurance work on the reproduction of the consolidated financial statements and the combined management report contained in the abovementioned attached electronic file in accordance with Sec. 317 (3b) HGB and Exposure Draft of IDW Assurance Standard: Assurance in Accordance with Sec. 317 (3b) HGB on the Electronic Reproduction of Financial Statements and Management Reports Prepared for Publication Purposes (ED IDW AsS 410). Our responsibilities under that standard are further described in the "Auditor's responsibilities for the assurance work on the ESEF documents" section. Our audit firm applied the standards for the quality assurance system set forth in IDW Quality Control Standard: "Anforderungen an die Qualitätssicherung in der Wirtschaftsprüferpraxis" [Requirements for Quality Control in the Practice of Public Auditors] (IDW QS 1).

Responsibilities of the executive directors and the Supervisory Board for the ESEF documents

The executive directors of the Company are responsible for the preparation of the ESEF documents including the electronic reproduction of the consolidated financial statements and the combined management report in accordance with Sec. 328 (1) Sentence 4 No. 1 HGB and for the tagging of the consolidated financial statements in accordance with § 328 Abs. 1 Satz 4 Nr. 2 HGB.

In addition, the executive directors of the Company are responsible for such internal control as they have considered necessary to enable the preparation of ESEF documents that are free from material non-compliance with the requirements of Sec. 328 Abs. 1 HGB for the electronic reporting format, whether due to fraud or error.

The executive directors of the Company are also responsible for the submission of the ESEF documents together with the auditor's report and the attached audited consolidated financial statements and the audited combined management report as well as other documents to be published to the operator of the Bundesanzeiger [German Federal Gazette].

The Supervisory Board is responsible for overseeing the preparation of the ESEF documents as part of the financial reporting process.

Auditor's responsibilities for the assurance work on the ESEF documents

Our objective is to obtain reasonable assurance about whether the ESEF documents are free from material non-compliance with the requirements of Sec. 328 (1) HGB, whether due to fraud or error. We exercise professional judgment and maintain professional skepticism throughout the engagement. We also:

- Identify and assess the risks of material non-compliance with the requirements of Sec. 328 (1) HGB, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain assurance evidence that is sufficient and appropriate to provide a basis for our assurance opinion.
- Obtain an understanding of internal control relevant to the assurance on the ESEF documents in order to design assurance procedures that are appropriate in the circumstances, but not for the purpose of expressing an assurance opinion on the effectiveness of these controls.
- Evaluate the technical validity of the ESEF documents, i.e., whether the electronic file containing the ESEF documents meets the requirements of Delegated Regulation (EU) 2019/815, in the version valid as of the reporting date, on the technical specification for this electronic file.
- Evaluate whether the ESEF documents enable an XHTML reproduction with content equivalent to the audited consolidated financial statements and to the audited combined management report.
- Evaluate whether the tagging of the ESEF documents with Inline XBRL technology (iXBRL) enables an appropriate and complete machine-readable XBRL copy of the XHTML reproduction.

Further information pursuant to Art. 10 of the EU Audit Regulation

We were elected as auditor of the consolidated financial statements by the Annual Shareholders' Meeting on 5 August 2020. We were engaged by the Supervisory Board on 21 October 2020. We have been the auditor of MTU

Aero Engines AG for an uninterrupted period since the audit of the consolidated financial statements for fiscal year 2014.

We declare that the opinions expressed in this auditor's report are consistent with the additional report to the audit committee pursuant to Art. 11 of the EU Audit Regulation (long-form audit report).

In addition to the financial statement audit, we have provided to the Company or entities controlled by it the following services that are not disclosed in the consolidated financial statements or in the combined management report:

In addition to the statutory audit of the annual financial statements and consolidated financial statements of MTU Aero Engines AG, we also performed audits of the financial statements of subsidiaries and carried out reviews, which were integrated into the audit, of interim financial statements and compliance certificates for loan agreements.

Audit-related services largely included assurance services in respect of the non-financial statement and the issuing of letters of comfort.

Other services were performed for the intraperiod inspection of documents that are not directly related to the current financial statement audit.

German Public Auditor responsible for the engagement
The German Public Auditor responsible for the engagement is Siegfried Keller.

Munich, March 9, 2021

Ernst & Young GmbH
Wirtschaftsprüfungsgesellschaft

sgd.	sgn.
Keller	Stummer-Jovanovic
Wirtschaftsprüfer	Wirtschaftsprüfer
[German Public Auditor]	[German Public Auditor]

The assurance engagement performed by Ernst & Young (EY) relates exclusively to the German version of the non-financial statement 2020 of MTU Aero Engines AG. The following text is a translation of the original German Independent Assurance Report.

Independent auditor's limited assurance report

To MTU Aero Engines AG, Munich

We have performed a limited assurance engagement on the non-financial statement of MTU Aero Engines AG according to § 289b HGB ("Handelsgesetzbuch": German Commercial Code), which is combined with the non-financial statement of the group according to § 315b HGB, consisting of the chapter "Non-financial statement" in the group management report as well as the section "The enterprise MTU" in the group management report being incorporated by reference, for the reporting period from 1 January 2020 to 31 December 2020 (hereafter non-financial statement).

Management's responsibility

The legal representatives of the Company are responsible for the preparation of the non-financial statement in accordance with §§ 315c in conjunction with 289c to 289e HGB.

This responsibility includes the selection and application of appropriate methods to prepare the non-financial statement as well as making assumptions and estimates related to individual disclosures, which are reasonable in the circumstances. Furthermore, the legal representatives are responsible for such internal controls that they have considered necessary to enable the preparation of a non-financial statement that is free from material misstatement, whether due to fraud or error.

Auditor's declaration relating to independence and quality control

We are independent from the Company in accordance with the provisions under German commercial law and professional requirements, and we have fulfilled our other professional responsibilities in accordance with these requirements.

Our audit firm applies the national statutory regulations and professional pronouncements for quality control, in particular the by-laws regulating the rights and duties of Wirtschaftsprüfer and vereidigte Buchprüfer in the exercise of their profession [Berufssatzung für Wirtschaftsprüfer und vereidigte Buchprüfer] as well as the IDW Standard on Quality Control 1: Requirements for Quality Control in audit firms [IDW Qualitätssicherungsstandard 1: Anforderungen an die Qualitätssicherung in der Wirtschaftsprüferpraxis (IDW QS 1)].

Auditor's responsibility

Our responsibility is to express a limited assurance conclusion on the non-financial statement based on the assurance engagement we have performed.

We conducted our assurance engagement in accordance with the International Standard on Assurance Engagements (ISAE) 3000 (Revised): Assurance Engagements other than Audits or Reviews of Historical Financial Information, issued by the International Auditing and Assurance Standards Board (IAASB). This Standard requires that we plan and perform the assurance engagement to obtain limited assurance about whether the non-financial statement of the Company has been prepared, in all material respects, in accordance with §§ 315c in conjunction with 289c to 289e HGB. In a limited assurance engagement the assurance procedures are less in extent than for a reasonable assurance engagement and therefore a substantially lower level of assurance is obtained. The assurance procedures selected depend on the auditor's professional judgment.

Within the scope of our assurance engagement, which has been conducted between November 2020 and March 2021, we performed amongst others the following assurance and other procedures:

- Inquiries of employees regarding the selection of topics for the non-financial statement, the risk assessment and the concepts of MTU for the topics that have been identified as material,
- Inquiries of employees responsible for data capture and consolidation as well as the preparation of the non-financial statement, to evaluate the reporting processes, the data capture and compilation methods as well as internal controls to the extent relevant for the assurance of the non-financial statement,
- Identification of likely risks of material misstatement in the non-financial statement,
- Inspection of relevant documentation of the systems and processes for compiling, aggregating and validating data in the relevant areas, e.g. compliance and employees in the reporting period and testing such documentation on a sample basis,
- Analytical evaluation of disclosures in the non-financial statement,
- Inquiries and inspection of documents on a sample basis relating to the collection and reporting of selected data,
- Evaluation of the presentation of disclosures in the non-financial statement.

Assurance conclusion
Based on our assurance procedures performed and assurance evidence obtained, nothing has come to our attention that causes us to believe that the non-financial statement of MTU Aero Engines AG for the period from 1 January 2020 to 31 December 2020 has not been prepared, in all material respects, in accordance with §§ 315c in conjunction with 289c to 289e HGB.

Intended use of the assurance report
We issue this report on the basis of the engagement agreed with MTU Aero Engines AG. The assurance engagement has been performed for the purposes of the Company and the report is solely intended to inform the Company as to the results of the assurance engagement and must not be used for purposes other than those intended. The report is not intended to provide third parties with support in making (financial) decisions.

Engagement terms and liability
The "General Engagement Terms for Wirtschaftsprüfer and Wirtschaftsprüfungsgesellschaften [German Public Auditors and Public Audit Firms]" dated 1 January 2017 are applicable to this engagement and also govern our relations with third parties in the context of this engagement (www.de.ey.com/general-engagement-terms). In addition, please refer to the liability provisions contained there in no. 9 and to the exclusion of liability towards third parties. We assume no responsibility, liability or other obligations towards third parties unless we have concluded a written agreement to the contrary with the respective third party or liability cannot effectively be precluded.

We make express reference to the fact that we do not update the assurance report to reflect events or circumstances arising after it was issued unless required to do so by law. It is the sole responsibility of anyone taking note of the result of our assurance engagement summarized in this assurance report to decide whether and in what way this result is useful or suitable for their purposes and to supplement, verify or update it by means of their own review procedures.

Munich, 9 March 2021

Ernst & Young GmbH
Wirtschaftsprüfungsgesellschaft

gez.	gez.
Nicole Richter	ppa. Dr. Patrick Albrecht
Wirtschaftsprüferin	
[German Public Auditor]	

Additional information

Glossary of engine terms

Compressor
The task of the compressor is to ingest air and compress it before it is fed into the combustor. Compressors consist of bladed disks (rotors) that rotate at very high speed between stationary guide vanes (stators). In order to achieve a compression ratio of over 40:1, which is standard in all modern two-shaft engines, it is necessary to use multi-stage low-pressure and high-pressure compressors rotating at different speeds on dual concentric shafts. These are driven by the corresponding turbines.

Fan
The first rotor of the low-pressure compressor is called the fan. It accelerates the bypass stream flowing aftward and provides the engine's main thrust. It is driven by the low-pressure turbine via the low-pressure shaft.

Geared Turbofan™
What sets the Geared Turbofan™ propulsion system apart is that it features a reduction gearbox between the fan and low-pressure shaft on which the low-pressure compressor and low-pressure turbine that drives the fan are seated. The gearbox allows the fan with its large diameter to rotate more slowly and, at the same time, the low-pressure compressor and turbine to rotate much faster. This enables lower fan pressure ratios and therefore higher bypass ratios to be achieved so the individual components can operate at their respective optimum speeds. As a result, the efficiency of the Geared Turbofan™ is greatly boosted. Therefore, fuel consumption as well as carbon dioxide and noise emissions are significantly reduced. The propulsion system is moreover lighter than a conventional engine owing to the reduced compressor and turbine stage count. In addition, the maintenance costs are lower.

Industrial gas turbines
The operating principle of an industrial gas turbine is essentially the same as that of an aero engine. However, instead of the customary low-pressure turbine used in aircraft, industrial gas turbines have a power turbine. This turbine delivers the power, either directly or via a gear unit, to an additional attached power unit such as a pump or generator. Nearly all industrial gas turbines of the lower and intermediate power classes are aero-engine derivatives.

MRO business
MRO stands for maintenance, repair and overhaul. At MTU, the term "MRO business" is also used more specifically to designate one of the company's operating segments, where it refers to maintenance services for commercial engines, or commercial MRO.

OEM business
OEM stands for original equipment manufacturer. At MTU, the term "OEM business" is used to designate one of the company's operating segments, where it refers to the development, manufacture and assembly of (new) commercial and military engines. Spare parts for (in-service) commercial and military engines and maintenance services for military engines are also included in this operating segment.

Risk- and revenue-sharing partnership
In a risk- and revenue-sharing partnership, each partner contributes a certain share of the resources needed for a specific engine program (work capacity and funding), thus bearing part of the risk. In return, each partner is entitled to a corresponding percentage of the overall sales revenue from that program.

Subsystem
A complete aircraft engine is made up of a number of subsystems. These include the high-pressure and low-pressure compressors, the combustor, the high-pressure and low-pressure turbines and the engine control system.

Thrust class
Jet engines are generally grouped into three thrust classes: engines with a thrust of between 2,500 and around 20,000 pounds (roughly 10 to 90 kN), mainly used to power business and regional jets; engines with a thrust of between 20,000 and approximately 50,000 pounds (roughly 90 to 225 kN), used to power medium-haul aircraft; and engines with a thrust ranging from 50,000 to over 100,000 pounds (roughly 225 to 450 kN), used to power long-haul aircraft.

Turbine
In a turbine, the energy contained in the gases emerging from the combustor is converted into mechanical energy. Like the compressor, the turbine is subdivided into a high-pressure and a low-pressure section, each of which is directly connected to the corresponding compressor via the respective shaft. The turbine has to withstand much higher stresses than the compressor, as it has to deal not only with the high gas temperatures but also with extreme centrifugal forces of several tons acting on the outer rim of its disks.

Turbine center frame
The turbine center frame connects the high-pressure to the low-pressure turbine. It has to be able to withstand high mechanical and thermal loads. The center frame includes struts, clad with an aerodynamic fairing, to support the shaft bearings and the air and oil supply lines.

Turbofan engine
The turbofan is an advancement of the turbojet principle, the main difference being its enlarged first compressor stage, the fan. While in turbojet engines all of the ingested air flows consecutively through the compressor, the combustor and the turbine, turbofans separate the air stream behind the fan. Part of the air flows through further compressor stages to the combustor and then the turbine, flowing through the core engine. The rest, however – which constitutes a much larger fraction – is channeled around the inner components, providing the engine's main thrust. The ratio between these two airflows is known as the bypass ratio. The greater the bypass ratio, the more economical, environmentally compatible and silent the engine.

Turboprop engine
The most noticeable external feature of a turboprop is its propeller. Inside, however, the engine differs only slightly from the turbojet and the turbofan. The turbine is larger and drives not only the compressor but also the propeller, the latter via a gear unit. Consequently, more energy has to be drawn from the exhaust gas stream in the turbine of a turboprop than in other engine types. Over 90% of the energy is required for the compressor and the propeller. Turboprop airplanes can achieve flight speeds of up to 800 km/h. They are thus slower than turbojet or turbofan airplanes, but they do have the advantage of consuming far less fuel. This predestines them for use in roles where speed is less important, such as on short-haul routes or for air freight.

Turboshaft engine
Turboshaft engines are used in helicopters and are similar to turboprops.

Overview of engines

Commercial engines	
Long-haul aircraft	
CF6	Airbus A300, A310, A330, Boeing 747, 767, DC-10, MD-11, KC-10
GE90-110B/-115B*	Boeing 777-200LR, 777-200F, 777-300ER
GE9X	Boeing 777X
GEnx	Boeing 787, 747-8
GP7000	Airbus A380
PW4000Growth	Boeing 777
Short- and medium-haul aircraft	
CF34*	Business and regional jets
CFM56*	Boeing 737, Airbus A318–A321
JT8D-200	Boeing MD-80
GTF engines	Airbus A320neo, A220, Mitsubishi SpaceJet, Embraer E-Jets Gen 2, Irkut MC-21
PW2000	Boeing 757, C-17
PW6000	Airbus A318
V2500	Airbus A319, A320, A321, Boeing MD-90, Embraer KC-390, C-390 Millennium
Business jets	
PT6A*	Business and utility aircraft
PW100/150A**	ATR42, 72, Fokker 50, Bombardier Q400
JT15D**	Cessna Citation I/II/V/Ultra, Beechjet 400
PW300	Medium-weight business and regional jets
PW500	Light and medium-weight business jets
PW600**	Cessna Mustang, Eclipse 500, Embraer Phenom 100
PW800	Gulfstream G500, G600, Dassault Falcon 6X
Helicopters	
PT6B/-C/-T**	AgustaWestland 119, 139, Airbus Helicopters H175
PW200/PW210*	Light- to medium-weight helicopters

* *MRO only.*
** *MRO only; via Pratt & Whitney Canada Customer Service Centre Europe GmbH.*

Military engines	
Fighter jets	
EJ200	Eurofighter
F110	Lockheed Martin F-16, Boeing F-15
F414	Boeing F/A-18E/F Super Hornet, Boeing EA-18G Growler, Saab Gripen Next Generation
Larzac 04	Dornier-Dassault Alpha Jet
RB199	Panavia Tornado
Helicopters	
T408	Sikorsky CH-53K
MTR390/MTR390 Enhanced	Airbus Helicopters Tiger
T64	Sikorsky CH-53G, GS, GA, GE
Transporters	
TP400-D6	Airbus A400M
Tyne	Transall C-160, Breguet Atlantic

Industrial gas turbines	
ASE8/40/50, TF40/50, ETF40	Power generators, power systems for ships, mechanical power systems, generator sets
LM2500/LM2500+	Power generators, mechanical power systems, oil and gas industry, power systems for ships
LM5000	Power generators, mechanical power systems, oil and gas industry
LM6000/LM6000-PF+	Power generators

Index

List of charts and tables

Financial calendar

April 21, 2021	Annual General Meeting
April 30, 2021	Quarterly Statement as of March 31, 2021
	Conference calls with journalists, analysts and investors
July 30, 2021	Interim Report as of June 30, 2021
	Conference calls with journalists, analysts and investors
October 29, 2021	Quarterly Statement as of September 30, 2021
	Conference calls with journalists, analysts and investors
November 25, 2021	MTU Investor and Analyst Day

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Translation.
The German version takes precedence.

This annual report of MTU Aero Engines AG is also available in German. It can also be found as a PDF in German and English on the MTU website.

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