Annual Report

of Messer SE & Co. KGaA 2021

Content

The Management and the Supervisory Board of Messer Group GmbH and the Management Board and the Supervisory Board of Messer Management SE and of Messer SE & Co. KGaA

Since Messer Group GmbH was founded in 2004, its management has been monitored by a Supervisory Board that assists it in strategic decisions and constantly demands sustainable action in addition to business success. Since the transformation of Messer Group GmbH into Messer SE & Co. KGaA, this has also been true of the Management Board and the Supervisory Board of Messer Management SE as the general partner of Messer SE & Co. KGaA and its Supervisory Board. The members of our Supervisory Board are considered experts for business operations and always contribute their experience constructively. They are therefore dependable partners to the Messer family and to management.

Dr. Jürgen Heraeus

Dr. Werner Breuers

Dr. Johannes Fritz

Heike Niehues

Sabine Scheunert

Dr. Karl-Gerhard Seifert

Dr. Nathalie von Siemens

The Supervisory Board of Messer SE & Co. KGaA:

Dr. Jürgen Heraeus, Chairman
Dr. Werner Breuers, Deputy Chairman
Dr. Johannes Fritz
Heike Niehues
Sabine Scheunert
Dr. Karl-Gerhard Seifert
Dr. Nathalie von Siemens
Maureen Messer-Casamayou

The Supervisory Board of Messer Management SE:

Dr. Jürgen Heraeus, Chairman
Marcel Messer
Maureen Messer-Casamayou

The Management Board of Messer Management SE:

Stefan Messer, Chief Executive Officer
Bernd Eulitz, Deputy Chief Executive Officer
Ernst Bode, Chief Operating Officer Europe
Helmut Kaschenz, Chief Financial Officer

Report of the Supervisory Board members

The Supervisory Board members performed their duties and advised management in accordance with the statutory regulations and the provisions of the Articles of Association in the reporting period. At its regular meetings on April 20, 2021 and November 9, 2021, the Management Board reported on business developments and the situation of the Company verbally and in writing. The Supervisory Board members were also informed of key transactions and decisions. Transactions requiring their approval were submitted to them for their decision.

The Supervisory Board as a whole of Messer SE & Co. KGaA assured itself that the accounting, the annual financial statements of Messer SE & Co. KGaA, and the consolidated financial statements for the period ended December 31, 2021 and the management report of Messer SE & Co. KGaA and of the national subsidiaries, were audited by KPMG AG Wirtschaftsprüfungsgesellschaft, Essen, and issued with unqualified audit opinions. The audit reports were discussed at the Supervisory Board meeting on April 27, 2022 in consultation with the auditors. The Supervisory Board had no objections and concurred with the auditor’s findings.

The Supervisory Board members would like to thank the management and all employees of Messer for their commitment and successful work in fiscal 2021.

On behalf of the Supervisory Board members
Dr. Jürgen Heraeus, Chairman

Group Management Report of Messer SE & Co. KGaA

General Information on the Group

Overview of the Messer Group

Messer SE & Co. KGaA (the "Company", until July 30, 2021: Messer Group GmbH) is a manufacturer of industrial gases based in Sulzbach (Taunus) near Frankfurt/Main with a business address in Bad Soden am Taunus. It operates as a management holding company and, together with its subsidiaries, associates and joint ventures, forms the Messer Group (the "Group").

Founded in 1898, Messer is today the world's largest family-operated specialist for industrial, medical and specialty gases. Products and services are offered in Europe, Asia and the Americas under the ‚Messer – Gases for Life' brand. Messer SE & Co. KGaA has subsidiaries in Europe and Asia.

From acetylene to xenon, the Messer Group offers a wide-ranging product portfolio – the Company produces and sells industrial gases such as oxygen, nitrogen, argon, carbon dioxide, hydrogen, helium, welding shielding gases, specialty gases, medical gases and many different gas mixtures.

In its own centers of competence, the Messer Group develops application technologies for using gases in almost all industrial sectors, not to mention food technology, medicine, research and science.

Messer bundles its expertise in the field of application technology at individual locations and also operates a center of competence in Krefeld, Germany. This center of competence tests technologies for gas applications in the areas of food, industrial cryogenic applications, welding and cutting, chemicals and the environment. The primary focus is on a forward-looking alignment of our application technologies, based on the needs of our customers. In Gumpoldskirchen, Austria, near Vienna, development work on high-temperature processes is continuously carried out with customers, cooperation partners and research institutions. New technologies, gas mixtures and applications for welding and cutting are being developed in Hungary and China.

In connection with the merger of Linde AG and Praxair Inc., on July 16, 2018, Messer and the financial enterprise CVC Capital Partners had reached an agreement with Linde AG and Praxair Inc. on the acquisition of the majority of Linde’s gas business in the US, Canada, Brazil and Colombia and the takeover of Praxair’s activities in Chile. The US Federal Trade Commission (FTC) approved Messer SE & Co. KGaA as a suitable buyer on December 21, 2018. Messer’s business in Western Europe and the Americas is managed by Yeti GermanCo 1 GmbH, a joint venture of Messer SE & Co. KGaA and CVC Capital Partners. Effective February 28, 2019, Messer SE & Co. KGaA contributed the Western European operating activities in Spain, Portugal, Switzerland, France, Belgium, the Netherlands, Algeria, Denmark and Germany, as well as a right to use the ‚Messer – Gases for Life‘ brand free of charge (for a period of 10 years) with a total fair value of € 772 million to the joint venture.

Changes in Group reporting in fiscal 2021

The consolidated group of Messer SE & Co. KGaA developed as follows:

Initial consolidation

The following companies were founded in the past fiscal year and commenced operations:

- Messer Gas Products (Chengdu) Co., Ltd., China, 100 %
- Messer Specialty Gases (Meishan) Co., Ltd., China, 100 %

Mergers / spin-off

Messer CZ s.r.o., Czechia, was merged with Messer Technogas s.r.o., Czechia, as of January 1, 2021. Moreover, Messer Finance B.V., Netherlands, was merged with Messer SE & Co. KGaA, Germany, retroactively to January 1, 2021. Effective December 31, 2021, Messer Energo Gaz S.R.L., Romania, was merged with Messer Romania Gaz S.R.L., Romania. The mergers have no effect on the consolidated financial statements; the consolidated group was reduced accordingly.

In June 2021, Messer Information Services GmbH, Germany, was hived off retroactively to January 1, 2021. Its assets and liabilities were transferred to Messer SE & Co. KGaA, Germany, and the newly founded company Messer Business & IT Consulting GmbH, Germany. Messer Business & IT Consulting GmbH was founded in the fiscal year as a (wholly owned) subsidiary of Messer SE & Co. KGaA without a long-term holding intention. Following the spin-off, the shares in Messer Information Services GmbH were sold to a related company.

Others

Messer Medica LLC, Kosovo, has been included in the consolidated financial statements as an associated company since January 1, 2021. Messer Vardar Tehnogas d.o.o., North Macedonia, holds 49 % of the shares in the company.

Messer SE & Co. KGaA, Germany, acquired 25 % of the shares in Mahler AGS GmbH, Germany, as of January 26, 2021. The associate is included in the consolidated financial statements using the equity method.

Financial performance indicators

The Messer Group uses control parameters derived from operating performance indicators to manage its business. The most significant performance indicators are revenue, EBITDA, capital expenditure, net debt and ROCE. Further explanations and a breakdown of indicators can be found in the sections on financial performance and financial position.

Non-financial performance indicators*

Safety, health, environmental protection and quality (SHEQ) have been firmly embedded in the familyoperated Messer's guiding principles since its inception in 1898, and continue to be its top priority today – especially in the context of the ongoing COVID-19 pandemic. Messer is aware that well-organized safety and quality guidelines form the basis for handling operational risks safely and for improving operational performance. For this reason, the health and safety of our employees and environmental protection are an integral part of global quality management, which is reflected in various standards of the Messer Group. These have been regularly revised against the backdrop of the COVID-19 pandemic to continue effectively countering it.

The Messer Group has introduced corporate social responsibility management (CSRM) in order to accommodate the growing importance of ensuring a sound environment, social justice and good corporate governance. The CSRM adheres to a long-term approach and contributes towards Messer's sustainable development. To this end, the Messer Group has also continued to refine its SHEQ indicator system.

1,505 (previous year: 1,242) SHEQ inspections were carried out in the Messer Group in the past fiscal year (1,090 of which in Europe), and led to a large number of improvements.

Furthermore, 43 ideas and suggestions for improvements were submitted by our employees in the Messer Group (41 of which in Europe).

Occupational health and safety

Occupational safety is of great importance to the Messer Group. Messer's safety guidelines reflect our position: "All work-related illnesses, injuries and accidents are avoidable."

Messer uses its global management system to identify and control possible operational risks. The principles of this system are documented in a SHEQ manual and cover all relevant safety-related areas, such as risk management, safety training, safety tests, personal protective equipment, communication safety and accident investigation. The SHEQ manual is a part of compliance management at the Messer Group and is updated and improved regularly.

In order to measure the success of the safety measures and initiatives, the following performance indicators are determined annually: work accidents with lost days and frequency of accidents (number of work-related accidents with lost days per million working hours) and accident severity rate (missing days per million working hours).

* The content of this section is voluntary and unaudited, but has been read critically by the auditor.

21 work accidents with lost days were reported in 2021. The accident frequency rate per million hours worked is thus unchanged as against the previous year at 2.2. However, the number of days lost (accident severity) per million hours worked increased slightly from 86.7 in 2020 to 104.2 in 2021.

	2017*	2018*	2019	2020	**2021**
Working accidents with lost days	15	14	16	21	**21**
Accident rate	1.4	1.3	1.7	2.2	**2.2**
Accident severity	45.4	64.0	52.3	86.7	**104.2**

*including Western Europe

Messer is an active member of the European Industrial Gas Association (EIGA), the International Oxygen Manufacturers Association (IOMA) and the Asia Industrial Gases Association (AIGA). Our experts actively share experiences and knowledge in order to learn from incidents in the industrial gas sector.

Transport safety

The transportation of gases and equipment by road and customer deliveries are activities that involve major risks in the gas industry. The Messer Group therefore pays special attention to the area of transport safety.

Most of the driving staff who work for Messer in Europe are employed by external transport companies. These companies are responsible for training the drivers in accordance with the ADR (European Agreement concerning the International Carriage of Dangerous Goods by Road). In China, gases are largely transported using the Company's own fleet. To ensure transport security, drivers and support personnel receive training in accordance with the local laws and regulations at regular intervals.

The number of avoidable accidents when transporting our cylinder gases was six in 2021 (previous year: seven). For every million kilometers driven, this corresponds to a decline in the frequency rate from 0.5 in 2020 to 0.3 in 2021. The number of avoidable accidents while transporting liquefied gases was reduced from 33 (2020) to 11; the frequency rate per million kilometers driven thus declined from 0.64 in 2020 to 0.19 in 2021. Unavoidable accidents are those caused by external factors beyond the driver's control. All other accidents are considered avoidable.

Messer is endeavoring to further reduce the number of accidents with the help of suitable supplier management, information on defensive driving and load safety. Messer has also created its own modular driver training package. The main issues covered by the training are:

- Statutory regulations (European and national regulations for the transport of dangerous goods by road)
- Technical aspects (hazards arising from product, vehicle and tank technology, vehicle checks, safety technology)
- Accident avoidance
- Defensive, economic driving

In addition, all drivers receive a manual specifically for their work (bulk, cylinder or service vehicles). This ensures that the drivers have all the key information about their work to hand at all times.

Digitalization / IT security

The Group Digital Officer (GDO) and the Group IT Security Officer (GSO) define the Messer Group's standards in the areas of digital transformation and IT security in a variety of projects and advise the central functions and national subsidiaries in these areas.

At Messer, the Group IT Security Officer is responsible for coordinating security measures, setting standards and cultivating the corresponding expertise for all the individual companies. IT security supports the sustainability of our digitization and the physical security of our information, in addition to helping to ensure that our key business processes can be carried out by safeguarding the necessary availability of our systems. IT security services are devised by the IT Security team and its international members.
IT Security in China is run centrally from Shanghai, which also monitors compliance with the IT security guidelines. Each national subsidiary also has its own IT department to guarantee a quick response to attacks, vulnerabilities or emerging threats.

In the reporting period, work began to implement the outsourcing agreement for the central IT infrastructure in Europe that was entered into in the previous year. The central applications previously operated in the Messer Information Services GmbH data center were transferred to a cloud data center provided by Kyndryl Deutschland GmbH (formerly: IBM Deutschland GmbH), since when they have been operated in line with the current globally established standards. Work then began to implement a standard SD-WAN administered centrally by a corresponding team of experts to connect the Messer Group's locations to the Kyndryl data center. In conjunction with this, the previously mixed security infrastructure at the locations and their administration will be standardized by a team of the outsourcing partner's experts. Parallel to this, work began on transferring all client PCs and mobile devices to a central administration to ensure standard, state-of-the-art software, such as the latest versions of Microsoft Office 365 and current security updates. The transition is expected to be completed in the first half of 2022.

As part of an IT security campaign, several phishing e-mails were sent to employees in Europe. The phishing campaign enabled us to actively train employees in the dangers of cybercrime using an awareness platform. We are thus reducing potential IT risks and improving the knowledge of our employees. Employees underwent an assessment as a further preventive measure. The is-sues covered included e-mail security, social engineering and password rules. The aim is to raise user awareness of risky or rash behaviors and to establish information security proficiency. Based on the results of their individual assessment, and if a specific error rate was exceeded, each employee was assigned to one of eleven training modules.

Data protection

Messer is committed to compliance with the applicable data protection regulations. Corresponding structures are therefore created to guarantee a high level of data protection at Messer in the long term.

The Messer Group Privacy Officer (GPO), who is refining and optimizing data protection, is responsible for the strategic coordination of the central data protection department at Messer and also oversees the implementation of data protection by the national subsidiaries. The GPO also provides a number of templates and processes to ensure a uniform standard of data protection.

Using a list of questions and an audit report developed by the GPO, a basic audit to establish the fundamental data protection level in the respective company was carried out at three companies in 2021. Similar data protection audits are planned for six more companies in 2022.

Environmental management

Environmental protection to the greatest possible extent is highly important to Messer. To live up to this, Messer uses its global management system for environmental protection. The internal environmental protection policies are documented in the Messer Group's SHEQ Manual. This and the environmental management systems of all subsidiaries are consistent with the international ISO 14001 standard and the recommendations of the European Industrial Gases Association (e.g. EIGA IGC Doc. 107 – Guidelines on Environmental Management Systems). 19 of our subsidiaries had their environmental management systems externally certified in 2021 after 21 in 2020.

The efficient use of energy is in Messer's own interests. Pursuing the main goal of reducing costs and conserving resources, energy management is an ongoing process that also helps to reduce our carbon emissions.

At its production sites, Messer uses atmospheric air and electricity as the main raw materials for producing air gases such as nitrogen, oxygen and argon. Production by air separation units accounts for more than 75 % of total energy consumption. Emphasis is therefore placed on the ongoing enhancement of energy efficiency. Messer has thus engaged a Global Energy Officer (GEO) specifically to improve the energy efficiency of air separation units.

The continuous monitoring of unit performance means that deviations in energy consumption can be detected and potential for improvement identified. In cooperation with local managers, projects to improve energy efficiency are being initiated on an ongoing basis.

The key environmental data for Messer's production activities for the past fiscal year are as follows:

The volume of the gases produced increased by 15.8 % year-on-year. Specific energy consumption, measured as the energy consumption per cubic meter of gas sold, decreased by 1.6 % as against the previous year.

To reduce transport costs for liquefied gas supplies, and thus carbon emissions, we commissioned further on site facilities this year as well. These facilities will enable us to boost on site gas production and at the same time save around 2,000 truck transports and thus 850 tonnes of carbon per year. For local customers, this means flexibility and the security of supply.

Being a member of the European Clean Energy Alliance and the H2BZ-Initiative e.V., Messer can contribute its comprehensive expertise in the field of industrial gases in the interests of the efficient and effective use of green hydrogen with partners throughout Europe.

Customer satisfaction / quality

Taking the opinions and satisfaction of our customers into account is self-evident for us as a responsible company, which is why we measure customer satisfaction in systematic surveys and integrate the results into our management processes. The analysis is repeated every two years at every European national company.

In Europe, customer satisfaction surveys were conducted at six Messer companies in 2021 (Romania, Poland, Bosnia-Herzegovina, North Macedonia, Bulgaria and Slovakia). 11,938 customers were written to in total. On average, 5.8 % of these customers completed the questionnaires in full (previous year: 25.1 % in Hungary and Croatia). Thus, 687 questionnaires were analyzed.

The results are analyzed by region. On a scale from 1 for very dissatisfied to 10 for very satisfied, the Messer Group's overall performance is between 8.5 and 9.7. The results are thus at a high level overall. Potential for improvement was identified in the individual countries and implemented.

Economic Report

General economic conditions

The various industrial gases offered by the Group and the associated services and technologies are used in almost all industrial sectors, not to mention food technology, medicine, research and science. Gross domestic product (GDP), as it applies to all sectors and to the economy at large, is therefore a relevant indicator for the performance of the Messer Group.

According to the International Monetary Fund (IMF)[1], as a result of the easing of COVID-19 restrictions in particular, global GDP grew by 5.9 % in 2021, the highest level of growth in 80 years, after a decline of 3.1 % in 2020. The development of GDP varied considerably from region to region in 2021: While the industrialized nations grew by around 5.0 % in 2021 (previous year: -4.5 %), the emerging and developing countries outpaced them at 6.5 % (previous year: -2.0 %). Within the industrialized nations, growth in the euro area amounted to 5.2 % in 2021 (previous year: -6.3 %), slightly lower than the 5.6 % in the US (previous year: -3.4 %). The relatively strong growth in the emerging and developing countries was largely thanks to China (8.1 %) and India (9.4 %), after China was the only significant economic nation to achieve any growth at all in the previous year (2.3 %). Most countries had thus already surpassed the level of the end of 2019, though this is only partially true for low-income countries with low vaccination rates and high-contact industries.[2]

In Europe, after the slump in the previous year, the economy recovered more quickly than anticipated in 2021. Thus, in the second quarter, private consumer spending began to climb as a result of the gradual easing of COVID-19 restrictions, and the economy gained considerable ground into the fall. In the fourth quarter of 2021, however, the process of recovery was checked by disruptions to supply chains, a fresh increase in COVID-19 cases and the continuing rise of energy and consumer prices. According to the IMF[1], euro area GDP is believed to have risen by 5.2 % in 2021 after crashing by 6.3 % the year before. Accordingly, the Western European economic area expanded much more impressively and rapidly than expected after the severe economic slump in the previous year, with France climbing by 6.7 % (previous year: -8.0 %), Spain by 4.9 % (previous year: -10.8 %) and Italy by 6.2 % (previous year: -8.9 %). After plunging by 4.6 % in the previous year, the increase in German GDP was below the European average in 2021 at 2.7 %.

Economic growth in Eastern Europe was mainly driven by private consumer spending. These countries also experienced a significant economic recovery in 2021. According to the Vienna Institute for International Economic Studies[3], GDP growth in the countries of Eastern European was between 2.3 % and 11.4 % in 2021. Poland, Romania and Hungary even outperformed pre-pandemic GDP levels as early as the second quarter of 2021.[4]

After the coronavirus was largely brought under control in China in 2020 on the basis of strict measures, the country went on to achieve strong economic growth in the first half of 2021. Growth then slowed in the second half of the year, and in the fourth quarter in particular, as a result of regulatory restrictions, the prevailing energy shortages, problems in the real estate sector and new COVID-19 outbreaks. Consequently, China is expected to report GDP growth of 8.1 % for 2021 as a whole (previous year: 2.3 %).[5]

[1] World Economic Outlook, Update January 2022
[2] OECD Economic Outlook – Volume 2021 Issue 2
[3] Vienna Institute for International Economic Studies – Winter Forecast press release, January 2022
[4] Kiel Institute for the World Economy – World Economy Autumn 2021, September 2021
[5] World Economic Outlook, Update January 2022

After a huge economic slump in 2020 due to the COVID-19 pandemic, GDP in the US expanded considerably in 2021, driven by factors including consistently low interest rates, public funding and broad vaccine availability (at the same time as in Europe), despite some supply chain disruption, higher inflation as a result of higher energy and consumer prices and a resurgence of COVID-19 cases towards the end of the year. According to the IMF[6], GDP growth for 2021 as a whole is expected to amount to 5.6 % following a contraction of 3.4 % in 2020.

For Brazil, the IMF[7] is projecting significant GDP growth of 4.7 % after a slump of 3.9 % in 2020. The anticipated growth is mainly thanks to consumer spending as a result of emergency payments to households, though welfare benefits were considerably lower than in the previous year.[8] The investment growth was buoyed by benign lending conditions.

Business performance

Industrial gases business is defined by a pronounced and highly varied diversification across economic sectors, customer segments and national activities. Furthermore, industrial gases business is locally structured, which means that it is not directly dependent on global supply chains. The economic recovery that continued in 2021 thanks to the easing of pandemic restrictions resulted in rising demand for industrial gases on our relevant markets. The Messer Group's fiscal 2021 was again characterized by an unexpected vigor in industrial gases business in China, which was reflected in the almost full utilization of steel production capacity and strong demand for liquefied gases. Business in Europe performed positively as well thanks to the general economic recovery in the industrial sector. There was also higher demand for medical gases at times on account of the pandemic. The positive business trend was partially countermanded by the strong rise in energy prices in Europe in the second half of the year. However, the relatively good economic circumstances in our relevant economic areas helped the Messer Group to outperform the forecast of a slight increase in revenue as against fiscal 2020 in 2021. In the end, significant revenue growth of around 17 % to € 1,362 million was achieved. In line with this revenue development, the Messer Group's EBITDA was significantly better than we had projected for the fiscal year. A moderate decline in EBITDA had been forecast for 2021, though in reality it was increased again as against the previous year (€ 335 million) by more than 14 % to € 382 million. Besides the significant economic recovery in Europe, this development is also as a result of the sustained dynamism of business performance in China.

Investment in property, plant and equipment and intangible assets fell short of our forecasts (strong increase) at around € 224 million. This is due to delays in investment projects in both Europe and Asia, some of which were caused by the pandemic restrictions. Contrary to what we had projected (strong increase), the net debt of the Messer Group was reduced again to € 83 million in 2021 (previous year: € 159 million) as a result of our strong earnings for the fiscal year and lower investment spending. The strength of earnings in the fiscal year and the fact that investment remained lower than anticipated meant that our forecast for ROCE (sharp decline) was handily outperformed at 18.14 %.

[6] World Economic Outlook, Update January 2022
[7] World Economic Outlook, Update January 2022
[8] Global Economic Prospects, June 2021

Overall situation of the Group

Results of operations

In fiscal 2021, the Group generated global revenue of K€ 1,361,721 (previous year: K€ 1,162,723), which breaks down among the individual regions as follows:

Revenue	Jan. 1 – Dec. 31, 2021	Jan. 1 – Dec. 31, 2020	Change in 2021
China	645,151	550,787	17.1 %
Southeast Europe	280,503	237,912	17.9 %
Central Europe	251,627	221,731	13.5 %
ASEAN	106,580	85,051	25.3 %
Western Europe	77,860	67,242	15.8 %
	1,361,721	**1,162,723**	**17.1 %**

Revenue increased by 17.1 % year-on-year in fiscal 2021. Business activities in the various regions developed as follows:

China
Revenue in China increased by 13.4 % year-on-year adjusted for currency effects. Factors contributing to this included the sustained strong demand in all segments of the liquid market while prices remained high and the consistently high unit sales among our customers in the steel industry.

Southeast Europe
Higher revenue at all of Messer’s national subsidiaries allowed revenue in southeast Europe to grow by 17.9 % as against the previous year. The region benefited from the general economic recovery and, in particular, from high demand for medical gases due to the COVID-19 pandemic.

Central Europe
Revenue in the Central Europe region increased by 13.5 % as against the previous year. This positive development was driven by the strong overall demand for medical oxygen and the acquisition of companies in Slovakia and Czechia in May 2020, which contributed revenue for 12 full months for the first time in the past fiscal year.

ASEAN
Stronger demand for our liquefied gases and increased unit sales to our on site customer Hoa Phat, in particular as a result of the opening of a new steel works in 2020, caused revenue in Vietnam to rise by 26.9 % year-on-year after adjustment for currency effects.

Our other activities in the ASEAN region, with companies in Malaysia and Thailand, contributed € 7.0 million to total revenue (previous year: € 4.9 million).

Western Europe

Following the spin-off of the operating companies to form the Yeti GermanCo 1 Group in 2019, this region now comprises merely the industrial gas activities of ASCO Kohlensäure AG and the business activities of the service company Messer GasPack GmbH as well as Messer SE & Co. KGaA. The revenue of these companies increased by 15.8 % compared to the previous year. The main contributor to this business performance was Messer SE & Co. KGaA, which more than doubled its revenue in 2021 thanks to a major hardware sale in particular and various projects by our central Engineering department.

The Group generated global EBITDA of K€ 382,456 in fiscal 2021 (previous year: K€ 335,353).

EBITDA	Jan. 1 – Dec. 31, 2021	Jan. 1 – Dec. 31, 2020
Operating income	248,115	205,245
Depreciation of property, plant and equipment, amortization of intangible assets and impairment	134,341	130,108
EBITDA	**382,456**	**335,353**
Revenue	1,361,721	1,162,723
Margin	**28.1 %**	**28.8 %**

Operating earnings were increased by 20.9 % in the past fiscal year, which clearly reflects the growth in revenue of 17.1 %. An increase in energy costs in Europe, higher IT costs and non-recurring government aid programs in connection with the pandemic in 2020 partially countered the strong overall performance, thereby reducing the EBITDA margin by 0.7 %.

The positive financial result was mainly reduced by negative net interest income of K€ 7,804, though this improved by K€ 5,778 in total as against the previous year, partly on account of lower interest expenses due to the repayment of USPP II. The gross financial liabilities less incidental purchase costs of financing decreased by 6.3 % as against the previous year to K€ 386,862. Please refer to our comments under "Financial position" below.

Net investment income improved by K€ 57,003 compared to the previous year. This essentially includes the pro rata results of the Yeti GermanCo 1 Group, which is accounted for using the equity method, of K€ 79,915 (previous year: K€ 28,176).

In total, consolidated net income including non-controlling interests of K€ 278,077 (previous year: K€ 169,578) was generated in fiscal 2021. K€ 235,651 (previous year: K€ 131,786) of this relates to the shareholders of the parent company.

Financial position

Group Treasury is responsible for overall liquidity, interest rate and currency management. The most important objective for Group Treasury is to ensure that the Group has a minimum level of liquidity to guarantee solvency at all times. High levels of cash funds improve our flexibility, security and independence. We can generate additional liquidity as necessary through various other unutilized credit facilities amounting to € 62.0 million.

Financing

A new term and revolving facilities agreement (RFA II) was agreed with our banks on February 26, 2019. The lenders are still UniCredit Bank AG, Bayerische Landesbank, ING Bank a Branch of ING-DiBa AG and Landesbank Hessen-Thüringen Girozentrale. RFA II originally consisted of a Tranche A of € 40 million (term loan), a Tranche B of € 100 million (revolving credit) and a USPP backstop facility (BSF) of € 380 million. Tranche A was repaid on July 17, 2019 and is therefore no longer available. The purpose of the BSF was to cover any repayment of the financial liabilities financed by the US private placements (USPPs). The BSF was not needed and is therefore also no longer available.

On May 21, 2021, Tranche B was increased by € 100 million to € 200 million. RFA II, now solely consisting of Tranche B in the amount of € 200 million (revolving credit), matures on December 18, 2023. The respective interest rate for RFA II consists of the Interbank Offered Rate (IBOR) in the currency of utilization plus the margin. This is dependent on the ratio of net debt/EBITDA.

The Messer Group is still financed by US private placements that are provided by an insurance company. This is USPP III of June 12, 2012 (USPP II) between Pricoa (€ 46.3 million at 3.68 % p.a.) on the one hand and Messer SE & Co. KGaA (formerly Messer Finance BV) on the other. This portion of USPP III had an original term of 10 years with bullet maturity. Plus another tranche of USPP III of January 29, 2019 (USPP II) between Pricoa (€ 87.8 million at 1.49 % p.a.) on the one hand and Messer SE & Co. KGaA on the other. This portion of USPP III had an original term of five years with bullet maturity.

Furthermore, the Group has financing in the form of various local loans with a volume of € 101 million as of December 31, 2021.

USPP II of June 8, 2011 (USPP II) between Pricoa (€ 80.0 million at 4.55 % p.a.) and MetLife (€ 80.0 million at 4.6975 % p.a.) had a term of 10 years with bullet maturity. It was repaid on June 8, 2021 from cash and the increased revolving credit facility.

The collateral for the full amount of the financing arrangements takes the form of guarantees provided by individual Group companies and the pledging of shares in Messer Griesheim China Holding GmbH. This is the German holding company for our Chinese activities.

Net debt amounted to K€ 82,647 (previous year: K€ 159,280) as of December 31, 2021 and is calculated as follows:

	Dec. 31, 2021	Dec. 31, 2020	Change in 2021
Financial liabilities	386,862	412,966	(6.3 %)
Cash and cash equivalents	(304,215)	(253,686)	19.9 %
Net debt	**82,647**	**159,280**	**(48.1 %)**

The net debt of the Messer Group was reduced by K€ 76,633 year-on-year in 2021. The ratio of existing financial liabilities (K€ 386,862) to total assets (K€ 3,131,836) was 12.4 % in 2021 (previous year: 15.1 %).

The change in gross financial liabilities, less incidental purchase costs of financing, is shown below:

Gross financial liabilities as of Jan. 1, 2021	**412,966**
Cash changes:	
New debt raised	139,437
Payments of principal	(180,928)
Non-cash changes:	
Additions to lease liabilities	7,413
Changes due to currency translation	7,415
Other non-cash changes	559
Gross financial liabilities as of Dec. 31, 2021	**386,862**

Statement of cash flows

The statement of cash flows for continuing and discontinued operations is as follows:

Condensed version in K€	Jan. 1 to Dec. 31, 2021	Jan. 1 to Dec. 31, 2020
Profit before tax	336,535	212,095
Cash flow from operating activities	310,928	311,207
Cash flow from investing activities	(215,953)	(203,899)
Cash flow from financing activities	(80,940)	(67,158)
Changes in cash and cash equivalents	**14,035**	**40,150**
Cash and cash equivalents		
at the beginning of the period	**253,686**	**218,955**
Currency translation effect on cash and cash equivalents	36,494	(5,419)
at the end of the period	**304,215**	**253,686**

The profit before tax, adjusted for the net investment income of the companies accounted for using the equity method, is K€ 67,497 higher than in the previous year. The cash flow from operating activities is nonetheless at the same level as the previous year. Above all, this development is due to higher income tax payments combined with a higher cash outflow from operating assets.

The development in cash flow from investing activities was again defined by the Messer Group's ongoing investment activity. Most of the capital expenditure again related to property, plant and equipment in 2021. The acquisition of an associated company and the capital resources of two other associates round off the Group's investing activities.

The cash used in financing activities is K€ 13,782 higher than in the previous year at K€ -80,940. This is due to the increased repayment of financial liabilities, which were followed by lower interest payments of K€ -10,098 in the fiscal year (previous year: K€ -16,149). In addition, the dividend distributed was € 5 million higher than in the previous year at € 10 million.

The cash funds of the Messer Group amount to K€ 304,215 as of December 31, 2021.

Even though the net debt consolidation of our operating activities outside China is still at the heart of medium-term planning, in fiscal 2022 we require further capital to finance the steady expansion of operating activities, to carry out investments and acquisitions in line with planning, to repay loans and interest as they become due and to distribute dividends. These funds are generated from the cash flow from operating activities, available cash and unutilized credit facilities.

The Group has undertaken to invest in the acquisition, construction and maintenance of various production facilities. Obligations of this kind relate to the future purchase of plant and equipment at market prices. There are also long-term contracts giving rise to obligations. The commitments under orders, investment projects and long-term contracts amounted to K€ 138,973 as of December 31, 2021 (previous year: K€ 91,438).

Capital expenditure

Capital expenditure continues to focus on safeguarding existing business and exploiting profitable growth potential. In line with business principles, we therefore primarily invest in projects that safe-guard our product supply or that offer opportunities for profitable growth. Furthermore, there is regular investment in the modernization of production systems and distribution channels.

The Messer Group invested around € 224 million in intangible assets and property, plant and equipment in 2021. This essentially related to the construction of air separation and other production facilities in China, Vietnam, Serbia and Czechia.

Capital expenditure breaks down by region as follows:

Capital expenditure in K€	Jan. 1 – Dec. 31, 2021	Jan. 1 – Dec. 31, 2020
China	79,868	88,016
Central Europe	44,999	65,950
Southeast Europe	45,448	40,038
ASEAN	43,854	14,432
Western Europe	9,526	7,638
	223,695	**216,074**

In China, the focus is mainly on investment projects that will further enhance our position on the liquid market and thus promote balanced customer diversification within the existing business model. Systematic customer diversification also includes investment in specialty gases in the Sichuan and Anhui provinces, in particular to supply customers in the electronics industry.

Further investment in Vietnam in the ASEAN region will mainly focus on the expansion of production capacity for air gases to support the growth of our existing customer base and the expansion on the liquefied gases market.

Investing activities in Europe continue to center around distribution channels and selective growth projects. The selected growth projects include building a replacement for an old air separation unit for an on site customer, construction to expand liquid market capacity in Czechia and a new air separation unit to increase production capacity for air gases for an on site customer in Serbia.

Net assets

Total assets increased by K€ 395,971 in the reporting year to K€ 3,131,836 as of December 31, 2021. This development is mainly as a result of the increase in property, plant and equipment of K€ 157,428 due to investment and the rise in investments accounted for using the equity method of K€ 143,354.

At 80.4 %, non-current assets again account for the largest share of total assets (previous year: 80.6 %).

As before, the largest item on the assets side is capital assets (property, plant and equipment, right-of-use assets and intangible assets) at 51.1 % (previous year: 52.4 %). This increase of K€ 167,530 as against the previous year is mainly as a result of investment in the current fiscal year.

The equity ratio (including non-controlling interests) increased slightly year-on-year to 74.7 % (previous year: 71.7 %).

Gross financial liabilities declined by K€ 26,663 in the fiscal year and account for 12.4 % of total assets. Please refer to our comments under "Financial position".

Return on capital employed

The return on capital employed (ROCE) amounts to 18.14 % in the past fiscal year and is calculated as follows:

ROCE	Jan. 1 – Dec. 31, 2021	Jan. 1 – Dec. 31, 2020
Operating income	248,115	205,245
+ Goodwill impairment	–	–
Adjusted operating profit	**248,115**	**205,245**
: Average Capital Employed	1,367,495	1,255,614
ROCE in %	**18.14 %**	**16.35 %**
Calculation of capital employed from the statement of financial position:		
Right-of-use assets, other intangible assets and property, plant and equipment	1,324,311	1,167,675
Lease receivables	7,877	9,034
Net working capital	114,648	111,445
Capital employed	**1,446,836**	**1,288,154**

Operating assets

Net working capital breaks down as follows:

Operating assets	Dec. 31, 2021	Dec. 31, 2020
Inventories	66,511	76,099
Trade receivables	188,312	161,258
Trade payables	(128,755)	(101,589)
Prepayments received	(11,420)	(24,323)
	114,648	**111,445**

Operating assets increased by 2.9 % year-on-year. In the previous year, prepayments received and inventories partially related to a major hardware project that has since been completed. The decline in prepayments received exceeded the reduction effect in inventories. The increase in trade receivables is balanced by the increase in trade payables.

As in the previous year, the ratio of inventories (less prepayments received) and trade receivables to trade payables is around 2:1. The ratio of operating assets to revenue is 8.4 % (previous year: 9.6 %).

Overall statement on the economic situation

The revenue of the Messer Group grew by 17.1 % as against the previous year thanks to consistently strong demand. In particular, this was contributed to by the general economic recovery in industrial operations in China, Vietnam and Europe as well as projects by the Engineering department of Messer SE & Co. KGaA.

The EBITDA margin declined slightly to 28.1 % in fiscal 2021 (previous year: 28.8 %), while the Messer Group's EBITDA increased to around € 382 million as against the previous year's approximately € 335 million.

The return on capital employed (ROCE) rose to 18.14 % (previous year: 16.35 %). This development is thanks to the improvement in operating profit, which rose by more than capital employed, which increased as well.

The development in net debt was equally positive in the fiscal year. As a result, net debt was reduced by a further € 77 million as against the previous year to around € 83 million in 2021. Please refer to our comments under "Financing".

Investment amounted to € 224 million in the fiscal year, € 8 million higher than the previous year's level. Expressed as a percentage of total revenue, capital expenditure amounts to 16.4 % (previous year: 18.6 %).

The highly positive overall business performance is confirmation of the Company's business model, which is geared towards stability and sustainability. The Messer Group has an international presence with its two main regions of China and Europe, and it has good regional diversification in a large number of countries and provinces within these two core regions. Weak demand on individual markets or downturns in specific industries can therefore often be compensated.

Forecast Report

The Russian army attacked Ukraine on February 24, 2022. A large number of countries responded with massive sanctions against Russia. It is difficult to assess the full range of further developments and their global economic implications at this time, especially for the energy sector. The forecasts published by leading economic institutes to date do not yet take these recent developments into account. However, Russia's invasion of Ukraine will likely slow global growth, drive inflation and have a sustained geopolitical impact, particularly for Europe. The consequences of the war and the related sanctions imposed on Russia will particularly affect commodities and energy.

Given the unpredictable nature of the future development of the military conflict in Ukraine and its duration, we are unable to reliably estimate the financial impact, including on our business activities, at this time. Accordingly, the following forecasts do not take into account the possible repercussions of the Russian attack on Ukraine.

General economic development

After the global economic recovery that began in 2021, mainly as a result of the easing of COVID-19 restrictions, the outlook for economic growth in 2022 and 2023 is weaker overall than in the previous year. At the beginning of the year, supply chains vulnerable to disruption and further hikes in energy prices are fueling higher inflation. Nevertheless, the economic institutes[9,10] still assume that the economies of the industrialized nations and emerging and developing countries will continue to grow in 2022. For example, the IMF and the World Bank are forecasting global GDP growth for 2022 of between 4.1 % and 4.4 %, following 5.6 % to 5.9 % in 2021. Besides the risks of COVID-19, other economic risks can arise due to inflation expectations driven by high energy and consumer prices, supply shortages, fragile political situations and natural disasters as a result of climate change.

In the euro area and Eastern Europe especially, the Ukraine conflict is predicted to have a further negative impact on the previously forecast GDP growth. China is expected to continue its 2021 growth trajectory at a significantly lower level. This is due to the recurring regional COVID-19 outbreaks and the ongoing consolidation of the real estate market. Major risks are conjectured on the real estate market, driven by high leverage in particular, which could adversely and lastingly impact house prices, consumer spending and financing capability. For 2022, the World Bank[9] and the IMF[8] are forecasting weaker GDP growth of 4.8 % after the 8.1 % achieved in 2021. In the US, besides the consequences of COVID-19 and higher consumer and energy prices, it is anticipated that supply chain disruptions will gradually be worked out and that fiscal support will slowly come to an end. Thus, the economic research institutes[11,12] are forecasting a GDP growth rate of up to 4 % in 2022, following growth in GDP of 5.6 % in the previous year. After weak economic data and poor investor sentiment, Brazil is expected to see very low year-on-year growth of 0.3 %.

[9] World Economic Outlook, Update January 2022
[10] World Economic Prospect, January 2022
[11] World Economic Outlook, Update January 2022
[12] World Economic Prospect, January 2022

Outlook for the Messer Group

The Messer Group again outperformed its forecasts for all key financial performance indicators as of December 31, 2021. The medium-term planning of the Messer Group is still defined by efforts to boost profitability while at the same time achieving a moderate development in net debt. Through suitable investment, we intend to further increase revenue and to stabilize or increase the Messer Group's profitability.

Regarding future economic developments in Europe, we are forecasting a further easing regarding the COVID-19 pandemic after the first quarter of 2022. According to various economic research institutions, the solid growth that began in 2021 in the wake of the economic recovery and government subsidies, especially in the area of industrial gases, will continue in 2022. This environment will be conducive to coping with the sharp rise in energy prices, which is also affecting prices for our customers. Besides maintaining profitability and margins, our business activities in Europe will continue to focus on optimized utilization of the new production capacity created in recent years, selected customer projects and targeted capacity expansion.

In the past fiscal year, the China region again generated virtually half of the Messer Group's revenue and almost 60 % of its EBITDA. Also, the ratio of net debt to EBITDA in the China region is negative. This means that the cash available exceeds the financial liabilities. These figures corroborate the ongoing significance of our Chinese activities for the total revenue, profitability and internal financing of the Messer Group.

Moving forward, we continue to expect strong market growth in China compared to the rest of the world, which we will participate in thanks to our advanced diversification process across the whole of our sales profile. Policy efforts to achieve an increasingly more significant position in the global economy and the infrastructural measures accelerated for this reason should lead to consistently high production levels in heavy industry and, in particular, the steel industry that matters most to us. However, in conjunction with our forecast, we expect to see an ongoing normalization on the selling side of the liquid market in the coming year as well, after the still unusually high market prices of recent years. In addition, public funding and the residual risks of the economic impact of a temporary or regional resurgence of the COVID-19 pandemic will come to an end.

In Europe especially, we anticipate substantial price increases in the area of energy costs, which are highly significant to our industry.

The developments of the most important financial performance indicators of the Messer Group's continuing operations for the following year are planned as follows:

	2022 vs. 2021
Revenue	Slight decrease
EBITDA	Moderate decrease
Capital expenditure	Strong increase
Net debt	Strong increase
ROCE	Strong decrease

In planning, in relation to the ebbing of the COVID-19 pandemic, we have assumed further backlog effects and rising economic momentum for our business in Europe. At the same time, the trends in energy prices are bringing pressure to bear on margins. In China, we are projecting consistently high growth momentum while prices continue to normalize. Based on largely positive expectations, the general global framework still has room for uncertainty regarding the success of efforts to combat the COVID-19 pandemic. Above all, other risks and uncertainties that could affect the global economic situation relevant to the Messer Group lie in global trade conflicts and the rise in nationalist tendencies around the world. In addition, the end result of the economic transformation and socio-economic developments in China is still unknown. This will be accompanied by unforeseeable factors from the classic crisis hotspots, in particular in North Africa and the Middle East.

The Messer Group feels it is economically well positioned but is fundamentally cautious in its short-term expectations. The decline in EBITDA forecast in the planning for 2022 is expected to arise in particular as a result of the assumed normalization of business on the industrial gases market in China following extraordinary momentum over the whole of 2021, and of the rapid increase in energy prices in Europe. The decline in ROCE that is also anticipated will be determined by the drop in EBITDA referred to above and a higher investment level.

Future investment decisions are made in line with an appropriate development in the net debt of the Messer Group. The investment activities appropriate to this objective are carried out to a chosen degree to support the solid, long-term earnings development of the Messer Group. There is currently an elevated level of investment opportunity in China and Vietnam. There are also suitable opportunities for the selective expansion of our production capacity in Eastern Europe.

Forward-looking statements

The forecast contains forward-looking statements based on management's current appraisal of future developments. These statements should not be interpreted as a guarantee that these expectations will actually occur. The future business performance and earnings of the Messer Group are dependent on a number of risks and uncertainties, and can therefore diverge significantly from the forward-looking statements made here.

The anticipated negative effects of Russia's attack on Ukraine have not been taken into account in the planning shown for 2022 as their extent cannot be reliably quantified at this time.

Report on Opportunities

As an international supplier of industrial gases, opportunities arise for the Messer Group from the versatile applications for industrial gases in the manufacture of products needed in all fields of life and every country of the world. Through our investments, we seize the corresponding opportunities to tap new business potential and to maintain and expand our market position. The additional opportunities generally arising from internationalization and backlog effects from the emerging markets will be leveraged by the expansion of our locations in these countries. One of the results of this will be access to selected new markets with long-term growth potential.

Specifically, the following opportunities in particular could be significant to business development and to financial position and financial performance:

General economic opportunities

The overall economic environment generally influences our business activities, our financial position and financial performance and our cash flows. Our forecast for 2022 is based on the expectation that the future economic framework will be consistent with the information presented in the forecast section of this management report. If the global economy as a whole or in regions/countries relevant to our business develop better than shown in this forecast, our revenue and earnings could outperform the forecast.

Market opportunities

In planning, we expect continuing significant market growth in China in particular, though without assuming further market price momentum in the forecast for 2022, which would otherwise have a positive impact on our revenue and results.

We are assuming solid growth momentum in Europe and the US. If the economic performance is more dynamic in individual countries or in general, this could have a positive effect on our revenue and results.

Opportunities through industrial gas applications

Our products are used in a variety of production processes worldwide. In the field of application technology, the Messer Group continuously analyzes various processes to enhance production efficiency for our customers through the use of industrial gases. New applications identified in this way could open up corresponding business potential with a positive impact on revenue and earnings.

Opportunities through our employees

The pandemic has transformed the world of work. The importance of working from home has increased and it has established itself as a suitable form of work. Messer is developing concepts that allow a hybrid work environment and shared workspaces. This way, we wish to enhance employee loyalty to the Company and their job satisfaction while also increasing flexibility. The Messer Group promotes ideas and prospects management throughout the Group, allowing our employees to suggest improvements across all national borders. In addition, the active development and use of our employees' potential is supported by systematic personnel development programs and training. We believe that investing in the development of our employees promotes a good corporate culture throughout the Company and can have a positive effect on revenue and results.

Opportunities through digitalization

Digitalization and networking have to keep progressing in the Company if it is to remain competitive. It is therefore essential to improve employees' understanding of cyber and technology risks to create a strong, digital corporate culture. We have laid the groundwork for this with the reorganization of our IT infrastructure to create a multi-cloud environment with IBM and Microsoft as our technology partners. We attach great importance to globally established standards at all our national subsidiaries for the operation of our central IT systems and applications, as well as protecting the data and information provided by such systems. The tools with which we run our production, bulk and cylinder gases management are subject to continuous improvement and also have a comprehensive impact on the value chain of our company and our customers. With the assistance of new and coordinated digital processes with optimized plant management, electrical energy is saved and tour planning improved. This makes a positive contribution to environmental protection, while at the same time reducing our production and operating costs, which could have a positive effect on our bottom line.

Opportunities through sustainable practices

Sustainability is a complex issue that permeates all areas of our organization, from product development and HR issues to digitalization and climate neutrality. To do justice to the requirements of our stakeholders, it must be reflected in our actions and attitudes. One way that this is expressed is the first production facility for air gases in Texas, USA, which will run on energy from our own solar park. This is the first Messer air separation unit to have its energy requirements covered by a nearby renewable energy source to reduce carbon emissions. A further significant contribution to decarbonization is the use of green hydrogen, which will be a key area for our capital expenditure over the coming years.

Risk Report

As an international supplier of industrial gases, we face risks with that are inextricably linked to entrepreneurial activity. In addition to fluctuating demand for industrial gases and the related products, future earnings development is also dependent on economic trends in individual countries that are beyond the Group's control.

Specifically, the following risks in particular could have a significant negative impact on business development and on financial position and financial performance. The risks have been presented in gross terms, i.e. mitigating factors have not been taken into account.

General economic risks

Industrial gases business is subject to fierce competition, which has been exacerbated by globalization. The highly competitive landscape could reduce future earnings and cash flows. The Messer Group operates in a large number of countries, and it is therefore exposed to local political, social and economic conditions and the resulting risks. Given the political and economic tensions in connection with the Ukraine conflict, we rate general economic risks as medium.

Market risks

We deliver to a broad range of industries and sectors (including steel production and metal processing, the chemicals industry, petrochemicals industry, food and beverage industry, healthcare and glass industry) on the basis of long-term supply agreements running from up to 15 years in Europe, up to 20 years in the Americas and up to 30 years in Asia. A significant reduction in market demand in any one of these key industries or sectors, especially with the steel industry defined by global surplus capacity at this time, could adversely affect future earnings. As business in China accounts for around 50 % of the Messer Group's revenue and a large share of its earnings, our strong positioning in this region means that we cannot fully compensate for the negative effects of economic down phases in China with better performance on other markets. However, this can be partially equalized by our positioning in the different provinces, which are regionally distinct within China. Against the backdrop of the price increases stemming from Russia's invasion of Ukraine, our market risk is rising, particularly in countries whose energy supply is dependent on Russia, that energy-intensive companies could halt or sharply curtail their production. We currently rate market risks as high.

Health risks

We supply a wide range of industries that today run production operations virtually everywhere in the world. These global supply chains can be severely disrupted by epidemics of infectious diseases in major manufacturing countries or a pandemic. The COVID-19 pandemic, which has been ongoing since the spring of 2020, has not only had serious consequences for health, but also for the global economy and public life as a result of strict state restrictions and global curfews. The Messer Group was affected by the pandemic in 2020 and 2021, but managed to deflect serious consequences thanks to its diversified business portfolio and its corresponding ability to compensate for weaker segments with more profitable ones. As vaccines became available in 2021, the global economic recovered as well following assorted restrictions and curfews. However, the spread of new virus variants means further uncertainty for 2022. We currently rate the risk of prolonged economic disruption as medium.

Cost risks

Regulatory or governmental changes or intervention in the energy sector can lead to rising energy prices in individual countries. Rising energy requirements are causing substantial volatility in prices for oil and energy with corresponding implications for the operating materials and precursors required by the Messer Group. As a result of the sharp increase in the price of natural gas, the main fuel used to generate electrical energy in Europe, energy prices continued to climb in 2021. Demand for energy is rising across the globe, in turn driving energy prices on the international stage.

Purchase prices for individual significant products can thus fluctuate considerably. While the Messer Group can pass increases in the price of electricity on to its customers through price escalation clauses, or mitigate them with long-term procurement contracts, price increases for energy and external procurement costs can reduce the profitability of the Messer Group and pose an EBITDA risk in the low tens of millions. In view of the sanctions currently imposed on Russia in particular, we currently rate the cost risk as high.

Product procurement risks

The ability of the Messer Group to serve its customers with a broad range of products and services is dependent not just on its own production, but also on the products and services sourced from its internal and external suppliers. The main objective is to be able to deliver to clients reliably and with appropriate quality at all times. The availability of appropriate quantities of products and services at appropriate prices is the key to achieving this goal. Nevertheless, there is a risk of supply difficulties or breakdowns as a result of product shortages, particularly for helium or raw carbon dioxide, or the loss of individual suppliers. Furthermore, procurement from an alternate source could lead to a cost risk if products and services can only be obtained at higher prices. This can pose an EBITDA risk in the low tens of millions.

The Messer Group counters this risk with a broad supplier network and strict monitoring of product availability. Furthermore, it is always on the lookout for additional alternative suppliers. We currently rate product procurement risks as high, also on account of the anticipated negative impact on various areas of supply chains as a result of Russia’s invasion of Ukraine.

Price risks

In individual countries, the highly competitive environment could lead to disproportionate price trends that reduce our future revenue and earnings. In particular, the market environment in China is characterized by intensive competition, which can affect the selling prices for our products. However, the integration of countries that have more recently joined the EU also entails risks that a number of previously state-owned organizations will have to be privatized and restructured in line with EU and IMF standards. The number and amount of previous government grants could be dramatically reduced, causing a high level of shut-downs and mergers in these countries with a negative impact on our revenue. We currently rate price risks as high.

Operational risks

A business interruption at our production facilities can lead to supply disruption for our customers. We endeavor to avoid this situation by regularly maintaining and monitoring our equipment. In the event of damage, we have emergency and contingency plans in addition to other tools to mitigate the financial consequences of a business interruption for our customers. The Messer Group is working to improve delivery reliability and flexibility to safeguard delivery capability for our customers even in the event of an emergency. The range and quality of our services are dependent on the availability of purchased hardware and the production equipment used (e. g. cylinders and tanks), and on the service quality of suppliers and business partners. We currently rate operational risks as medium.

Acquisition risks

The Messer Group is continuing to evolve strategically. In addition to the expansion and strengthening of our existing business, and the constant optimization of sourcing and logistics processes, we are striving to grow both organically and through acquisitions, to enter into new partnerships in the form of joint ventures, to consolidate existing markets and to divest activities that no longer belong to our core business. However, downstream risks can arise within the Group as a result of the sale of companies or business activities. Provisions are recognized if risks seem probable. Decisions to proceed with acquisitions or to enter into new partnerships are subject to the risk of having incorrectly judged future market potential and the assumptions for project feasibility. The Messer Group therefore has internal bodies that analyze the strategic potential of further development prior to approval and prepare the information needed for the decision-making process. In M&A projects, experienced employees in the relevant departments perform due diligence prior to any acquisition to ensure as much certainty as possible regarding the future development potential of the M&A project. We also reduce the risk with corresponding agreements in purchase contracts. We currently rate acquisition risks as medium.

IT risks

The use of state-of-the-art information technology plays a key part in handling and securing business processes within the Messer Group, but also entails corresponding risks. The technical failure of central systems or entire locations could considerably disrupt processes within the Messer Group and lead to business interruptions. But disruptions caused by successful phishing or cyberattacks could also jeopardize the security of business processes.

The security and compliance of the information systems are set out in the IT strategy objectives. On this basis, we are constantly designing, implementing and reviewing measures to protect data, applications, systems and networks. This process takes both preventive and corrective measures into account. We use preventive vulnerability scans to check the externally accessible IT communication points of our European companies. The vulnerabilities identified are addressed according to their risk category and resolved with corresponding measures. We use a checklist defined by the IT security team to perform self-audits of IT security, thereby mapping the current status, and recommend measures to avoid or reduce risks. The analysis focuses on questions about the IT systems and applications used, and examines infrastructure or network areas. This instrument also serves to raise awareness and avoid potential risks in IT operations. We currently rate IT risks as medium, but consider ourselves to be exposed to ever-greater risk, which will result in us having to take increasingly far-reaching measures to avert danger in the future.

Financial risks

We also require debt capital for our growth and investments. We are dependent on a stable and, in particular, liquid financial sector. The Messer Group relies on cash from current business activities to settle the obligations under its borrowing operations, including compliance with covenants. This depends to a large extent on a positive operating cash flow.

The Group has recognized goodwill. Applying IAS 36, i. e. testing for impairment, can lead to impairment losses on goodwill if the market and business prospects of a subsidiary, associate or a cash-generating unit deteriorate significantly compared to their original measurement date. In the event of impairment becoming necessary, this could have a significant impact on earnings and accounting ratios. In conjunction with planning, the discernible uncertainty has been taken into account by corresponding write-downs on receivables and adjusted business assumptions.

Global economic collapse or downturns are a recurrent threat in conjunction with financial or debt crises. The Messer Group will closely monitor current developments in order to take countermeasures, if necessary, in the form of cost and investment saving programs. The possible deterioration in the credit ratings of our customers entails the risk of bad debts and delays to joint projects.

We must ensure that we maintain the covenants agreed to in conjunction with the USPPs and the RFA. In particular, there is the net debt (gross financial liabilities less cash funds)/EBITDA covenant, which must be upheld both for the Messer Group as a whole and for the Messer Group excluding its subsidiaries in China. Financial risks can also arise in the Messer Group from changes in exchange rates and interest rates. The management of interest rate, currency and liquidity risks is handled by Group Treasury based on the guidelines set out by management. Group Treasury calculates and measures financial risks and hedges against them. The Messer Group currently uses standard currency forwards and interest rate swaps as hedging instruments. The Treasury guidelines contain principles for general risk management and individual regulations for specific areas, such as currency and interest rate risks, the use of derivative financial instruments and the investment of surplus cash. The risks are monitored at all times and the extent of protection is adjusted if necessary. We currently rate the impact of relevant financial risks as low to medium.

Currency risks

Transaction risks that can arise when exporting products are largely hedged when entering into a contract. As far as the operating activities of the Messer Group are concerned, the individual Group companies predominantly conduct their business locally in their functional currency. The overall currency risk from transaction risks is thus considered low overall. However, a number of Group companies are exposed to foreign currency risks in connection with operational transactions not denominated in their own functional currency. This mainly relates to payments for product or service imports and are hedged as far as possible. Like all market participants, we could unexpectedly encounter appreciation in a functional currency that weakens the country's international competitive capability for exports and our local activities. We see currency risks that can arise when translating foreign currency exposures into euro as a standard part of doing business. Ex-change rate losses against the euro can result in a reduction in consolidated equity and consolidated net income through the remeasurement of our asset positions in the respective countries. We rate currency risks as relatively high at this time.

Legal and contractual risks

Time and again, businesses are confronted with allegations that they have infringed industrial rights or legal obligations, delivered defective products of failed to comply with environmental protection laws. Regardless of their chances of success, such claims can result in very high defense costs. The Messer Group relies on the support of both in-house and external experts to handle such matters.

In a large number of countries, our business activities in many countries are subject to specific environmental laws and regulations, for example on air emissions, groundwater pollution, the use and handling of dangerous substances and soil analysis and detoxification. This can give rise to liability risks in conjunction with either past or current operations. Above all, new environmental requirements – and those updated in line with EU directives – necessitate the adjustment of our standards as well. This could result in higher production costs and modifications to the production process. However, the recent past shows that the integration of stricter environmental regulations results in a more efficient production process and higher quality product. We currently rate legal and contractual risks as medium.

Overall conclusion

The opportunities set out above show that there is both internal and external potential. We endeavor to actively develop in-house potential and will leverage external potential whenever the opportunity arises. These are not the only risks to which the Group is exposed. Some risks, which have not yet been identified or which are not considered significant today, could possibly have an adverse effect on the Messer Group if the overall conditions were to change. However, no risks were identified in 2021 that, individually or in aggregate, could significantly influence the Group as a going concern. To its present knowledge, management does not expect these risks to occur in the following fiscal year either. The main operational risks in the reporting period are in the areas of costs and market (price) development. We have put all organizational requirements in place to identify potential risks early on. Our vigilant, active risk management system, as described below, helps us to limit risk.

Risk Management

The principles of the Risk Policy are set out by the Management Board in the Messer Group Guidelines. Risk management is designed to ensure that the Group remains a going concern and to increase its enterprise value; it is therefore a key component of all decision-making and business processes. The management structure and the reporting processes in place ensure that not just the developments that could threaten the Group as a going concern, but also even developments that could pose a threat to short-term corporate targets (such as EBITDA), are reported to the appropriate persons promptly and regularly. This allows management to initiate measures to mitigate any operating or financial risks early on. Risk managers who safeguard the local reporting processes have been appointed at the individual subsidiaries. To ensure a general overview, in cooperation with the local officers, the risk manager of the Messer Group prepares a Group-wide risk report at the start of each year, which is discussed with the Management Board and promptly submitted to the Supervisory Board of Messer SE & Co. KGaA for its acknowledgment. As far as possible, the risks presented in the risk report have been quantified and classified according to probability of occurrence. The current risk situation has increased considerably compared to previous fiscal years, essentially on account of the strong global increase in energy prices.

Messer SE & Co. KGaA's corporate governance uses a large number of standards and procedures to prevent risks from occurring. The primary component of risk management at the Messer Group is a risk assessment. This is performed – and updated each year – by the central offices for the respective department and by each consolidated subsidiary for its own business.
The Messer Group has arranged for adequate insurance for potential losses and liability risks, which ensures that the possible financial consequences of risks that occur are either contained or eliminated entirely. The extent of this insurance cover is continuously optimized based on the specific requirements of the companies in each country.

State-of-the-art technologies are used in IT to minimize risks in this area. Unauthorized access to data and systems, as well as significant data losses, have therefore been ruled out as far as possible. The efficiency, availability and reliability of systems are constantly being monitored and improved. The security concept also comprises detailed contingency planning. All the technologies used are regularly tested to ensure the security of IT-based business processes so as to minimize risks of all kinds.

Tax laws and competition regulations can also give rise to business risks. The Company relies on the advice of both in-house and external experts.

Income and operating cash flow are essentially unaffected by market interest rates, as the Group does not hold any significant interest-bearing assets. Floating-rate loans are partially hedged using interest rate swaps (cash flow hedges for future interest payments). This effectively converts loans with floating interest rates into loans with fixed interest rates. In conjunction with interest swaps, the difference between fixed contractual interest rates and floating interest rates, in relation to an agreed amount, is calculated and settled at set intervals. At the end of the reporting period, there are exclusively derivative financial instruments entered into with international financial institutes with investment grade ratings.

Compliance Management

In the Messer Compliance Management System (Messer CMS), we have implemented an organizational concept that describes Messer's system of values and defines its practical implementation and the related responsibilities. The aim of the organizational concept is to prevent breaches of the Messer Code of Conduct before they even arise. It is a binding operational framework for dealing with conflicts of interest and for compliance with the applicable laws, regulatory standards and the internal and external rules in all Messer business areas. The Messer CMS is supported by a clear commitment from the Management Board, executives and officers, and serves as an instrument for building trust with our customers, partners, employees, competitors, the public and the media.

Messer SE & Co. KGaA has issued binding compliance guidelines for its companies. In particular, these include the Code of Conduct and the Group Guidelines. All managers at the first and second management levels of Messer SE & Co. KGaA and its consolidated subsidiaries have confirmed that they have received these regulations, acknowledged their content and are committed to complying with them. Furthermore, all employees have been informed of the CMS content relevant to them and have confirmed their compliance. Management and employees receive regular information and training on the content of these guidelines, other policies and rules of conduct.

The Management Board of Messer SE & Co. KGaA is responsible for monitoring the Messer CMS. This organizational concept is binding for all Messer executives, managers and employees. In line with the applicable statutory regulations, the executives are responsible for implementing this organizational concept in their own national subsidiaries and ensuring that it is complied with. A Chief Compliance Officer has been appointed to assist the executives, the supervisory bodies and the Management Board of Messer SE & Co. KGaA. In addition, compliance officers are appointed for each country by the regional management in coordination with the respective executives for that country. The group of compliance officers is supported by central compliance officers in the Corporate Office. The Management Board of Messer SE & Co. KGaA has defined the duties, rights and obligations of the compliance officers in a compliance officer policy.

Potential vulnerabilities within Messer have been defined on the basis of a detailed risk analysis incorporating all national subsidiaries and central departments. In addition to classroom training, webinars and e-learning can be held on different areas of the Messer Code of Conduct. The central departments and the local executives and departments determine the content of training and the employees to be trained. They design and carry out training, if necessary with the assistance of external service providers, and ensure the proper documentation. The Management Board of Messer SE & Co. KGaA can issue binding instructions on training, training content and the employees to receive said training.

Internal Audit monitors the implementation of the Compliance Policy, in particular the Group Guidelines, at all the national subsidiaries. These requirements essentially serve the purpose of risk management on the basis of standards of conduct and reporting, approval regulations and the cross-checking principle for legally binding external declarations.

The Messer Integrity Line is Messer's communication platform for the straightforward reporting of perceived misconduct. Employees can contact defined persons to comment on or report suspected compliance violations – simply, legally and confidentially. Reports can also be submitted on an external telephone hotline and online in the local language. Moreover, this can be done anonymously. In order to protect legitimate whistleblowers, and also the subjects of perceived grievances, Messer's Management Board has introduced a policy describing who can report what and to whom. The Integrity Line and this policy are part of the Compliance Code. Compliance breaches are followed up and dealt with appropriately. They are also taken as an opportunity to consider preventive measures to stop the associated risk from occurring again in the future if possible.

Each year, the Chief Compliance Officer prepares a Compliance Report for the Management Board which is also discussed with the Supervisory Board.

Internal Audit

In fiscal 2021, Messer SE & Co. KGaA's Internal Audit and the central organization of Messer China performed 13 status audits in total at companies of the Messer Group (all follow-up audits, six of which in Europe and seven in China); there were also follow-ups on all the audits performed in 2020. All Internal Audit audits include advisory activities with the objective of passing on best-practice information and organizing assistance across national borders; this is done in line with the respective current standards of the companies in the individual countries. If necessary, other central functions are also consulted on an advisory basis (including SHEQ, Corporate Logistics, Central Sales functions). Compliance with Corporate Guidelines is audited and random documentary checks are performed within the various processes to monitor the effectiveness and efficiency of these processes as well as the accuracy and reliability of financial reporting. Findings can be investigated and suggestions can be made on how to improve the transparency of business processes. The Supervisory Board of the Messer Group regularly assesses the quality and appropri-ate intensity of audits.

The Safety, Health, Environment, Quality (SHEQ) department will continue to carry out audits and risk analyses in order to lower the accident rate.

Bad Soden am Taunus, March 31, 2022

Messer SE & Co. KGaA,
represented by: Messer Management SE, general partner

Consolidated Financial Statements of Messer SE & Co. KGaA

Consolidated Income Statement

of Messer SE & Co. KGaA (until July 30, 2021: Messer Group GmbH), Sulzbach (Taunus), for the period from January 1 to December 31, 2021 (in K€)

	Note	Jan. 1 – Dec. 31, 2021	Jan. 1 – Dec. 31, 2020
Revenue	4	1,361,721	1,162,723
Cost of sales	5	(801,054)	(680,278)
Gross profit		**560,667**	**482,445**
Selling and distribution expenses	6	(220,697)	(198,358)
Impairment on trade receivables	32	(3,236)	(9,223)
General and administrative expenses	7	(102,584)	(80,539)
Other operating income	8	28,349	19,564
Other operating expenses	9	(14,384)	(8,644)
Operating income		**248,115**	**205,245**
Income from investments accounted for using the equity method	10,16	89,204	32,261
Other investment result, net	10	11	(49)
Finance income	10	24,794	14,849
Finance costs	10	(25,589)	(36,211)
Financial result, net		**88,420**	**10,850**
Profit from continuing operations before taxes		**336,535**	**216,095**
Income tax expense	11	(58,458)	(42,517)
Profit from continuing operations after taxes		**278,077**	**173,578**
Profit from discontinued operations after taxes	23	**–**	**(4,000)**
Consolidated net profit		**278,077**	**169,578**
Attributable to:			
Shareholders of the parent company		235,651	131,786
Non-controlling interests		42,426	37,792

Consolidated Statement of Comprehensive Income

of Messer SE & Co. KGaA (until July 30, 2021: Messer Group GmbH), Sulzbach (Taunus), for the period from January 1 to December 31, 2021 (in K€)

	Note	Jan. 1 – Dec. 31, 2021	Jan. 1 – Dec. 31, 2020
Consolidated net profit		**278,077**	**169,578**
Items that may be reclassified to profit or loss			
Exchange rate differences			
Exchange differences on translation of foreign subsidiaries	30	82,686	(39,784)
Exchange differences from companies accounted for using the equity method	16, 30	21,467	(83,639)
Result from net investment in a foreign operation from companies accounted for using the equity method	16, 30	417	1,995
Derivative financial instruments			
Share of companies accounted for using the equity method[1]	16, 30	24,151	(2,578)
		128,721	**(124,006)**
Items that will not be reclassified to profit or loss			
FVOCI equity investments	32	7	–
Remeasurement of net defined benefit obligation for pension plans and other employee benefits			
Change in remeasurement of the net defined obligation for pension plans	25	1,751	(1,487)
Changes in Group reporting	3	(9)	–
Deferred taxes	11	(122)	(75)
Share of companies accounted for using the equity method	16, 30	4,525	(1,581)
		6,152	**(3,143)**
Other comprehensive income		**134,873**	**(127,149)**
Total comprehensive income		**412,950**	**42,429**
Attributable to:			
Shareholders of the parent company		349,555	9,057
Non-controlling interests		63,395	33,372

[1] Gains/losses on financial instruments in effective hedges

For further information on equity, please refer to the comments on the consolidated statement of changes in equity below and note 30 "Equity" in the notes to the consolidated financial statements.

Consolidated Statement of Financial Position

of Messer SE & Co. KGaA (until July 30, 2021: Messer Group GmbH), Sulzbach (Taunus), as of December 31, 2021 (in K€)

ASSETS	Note	Dec. 31, 2021	Dec. 31, 2020
Goodwill	14	276,926	266,032
Right-of-use assets	14	56,751	51,719
Other intangible assets	14	75,593	81,417
Property, plant and equipment	15	1,191,967	1,034,539
Investments accounted for using the equity method	16	884,955	741,601
Equity investments and other financial investments	17	2,485	2,536
Deferred tax assets	11	18,215	15,921
Other financial assets	18	8,726	9,587
Non-financial assets	18	854	831
Non-current assets		**2,516,472**	**2,204,183**
Inventories	19	66,511	76,099
Trade receivables	20	188,312	161,258
Current income tax assets		776	319
Other current financial assets	22	23,500	14,311
Non-financial assets	22	32,050	26,009
Cash and cash equivalents	24	304,215	253,686
Current assets		**615,364**	**531,682**
Total assets		**3,131,836**	**2,735,865**

Consolidated Statement of Financial Position

of Messer SE & Co. KGaA (until July 30, 2021: Messer Group GmbH), Sulzbach (Taunus), as of December 31, 2021 (in K€)

EQUITY AND LIABILITIES	Note	Dec. 31, 2021	Dec. 31, 2020
Issued capital	30	100,000	100,000
Capital reserves	30	536,937	536,937
Other reserves	30	(7,430)	(7,430)
Retained earnings	30	1,489,820	1,258,233
Other components of equity	30	(2,129)	(110,097)
Equity attributable to shareholders of the parent company		**2,117,198**	**1,777,643**
Non-controlling interests	30	**223,380**	**185,090**
Equity		**2,340,578**	**1,962,733**
Provisions for employee benefits	25	55,096	55,775
Other provisions	26	5,633	5,407
Non-current financial liabilities	27	158,936	225,442
Non-financial liabilities	28	1,070	927
Deferred tax liabilities	11	16,201	15,433
Non-current liabilities		**236,936**	**302,984**
Other provisions	26	31,504	31,218
Current financial liabilities	27	227,926	187,524
Trade payables	32	128,755	101,589
Current income tax liabilities		24,589	17,291
Other current financial liabilities	29	36,732	31,654
Non-financial liabilities	29	104,816	100,872
Current liabilities		**554,322**	**470,148**
Total equity and liabilities		**3,131,836**	**2,735,865**

Consolidated Statement of Changes in Equity

of Messer SE & Co. KGaA (until July 30, 2021: Messer Group GmbH), Sulzbach (Taunus), for fiscal 2021 (in K€)

		Reserves			Other components of equity					
	Issued capital	Capital reserves	Other reserves	Retained earnings	Currency translation	Hedging reserve	Fair value reserve & result from net investment	Equity attributable to shareholders of the parent company	Non-controlling interests	**Total equity**
As of Jan. 1, 2020	**100,000**	**536,937**	**(5,620)**	**1,134,767**	**12,777**	**(3,586)**	**121**	**1,775,396**	**180,709**	**1,956,105**
Consolidated net profit	–	–	–	131,786	–	–	–	131,786	37,792	169,578
Other comprehensive income	–	–	–	(3,320)	(116,831)	(2,578)	–	(122,729)	(4,420)	(127,149)
Total comprehensive income	**–**	**–**	**–**	**128,466**	**(116,831)**	**(2,578)**	**–**	**9,057**	**33,372**	**42,429**
Others	–	–	–	–	–	–	–	–	–	–
Distributions	–	–	–	(5,000)	–	–	–	(5,000)	(26,968)	(31,968)
Additions/disposals of non-controlling interests	–	–	(1,810)	–	–	–	–	(1,810)	(2,023)	(3,833)
As of Dec. 31, 2020	**100,000**	**536,937**	**(7,430)**	**1,258,233**	**(104,054)**	**(6,164)**	**121**	**1,777,643**	**185,090**	**1,962,733**
As of Jan. 1, 2021	**100,000**	**536,937**	**(7,430)**	**1,258,233**	**(104,054)**	**(6,164)**	**121**	**1,777,643**	**185,090**	**1,962,733**
Consolidated net profit	–	–	–	235,651	–	–	–	235,651	42,426	278,077
Other comprehensive income	–	–	–	5,936	83,393	24,151	424	113,904	20,969	134,873
Total comprehensive income	**–**	**–**	**–**	**241,587**	**83,393**	**24,151**	**424**	**349,555**	**63,395**	**412,950**
Others	–	–	–	–	–	–	–	–	1	1
Reclassifications	–	–	–	–	(4,730)	–	4,730	–	–	–
Dividends	–	–	–	(10,000)	–	–	–	(10,000)	(25,949)	(35,949)
Additions/disposals of non-controlling interests	–	–	–	–	–	–	–	–	843	843
As of Dec. 31, 2021	**100,000**	**536,937**	**(7,430)**	**1,489,820**	**(25,391)**	**17,987**	**5,275**	**2,117,198**	**223,380**	**2,340,578**

For further information on equity, please refer to the comments under note 30 “Equity” in the notes to the consolidated financial statements.

Consolidated Statement of Cash Flows

of Messer SE & Co. KGaA (until July 30, 2021: Messer Group GmbH), Sulzbach (Taunus), for fiscal 2021 (in K€)

	Note	Jan. 1 – Dec. 31, 2021	Jan. 1 – Dec. 31, 2020
Consolidated net profit before taxes		**336,535**	**212,095**
Income taxes paid		(52,782)	(22,418)
Depreciation of property, plant and equipment, amortization of intangible assets and impairment	14; 15	134,341	130,108
Income from changes in group reporting		2,356	–
Losses/(gains) on the disposal of fixed assets		(2,967)	(1,043)
Changes in investments in associates	16	(89,204)	(32,261)
Net interest income	10	7,804	13,582
Other non-cash financial result	10	(460)	19,804
Changes in assets arising from financing activities		1,157	1,917
Changes in inventories		11,561	(16,140)
Changes in receivables and other assets		(34,862)	(24,657)
Changes in provisions		(8,177)	(64)
Changes in trade payables and other liabilities		5,626	30,284
Cash flow from operating activities		**310,928**	**311,207**
Investments in property, plant and equipment and intangible assets		(219,983)	(178,883)
Investments in equity investments and other non-current assets		(7)	–
Payments for the acquisition of subsidiaries and associates		(2,854)	(31,794)
Changes in capital of associated companies		(346)	–
Proceeds from disposals of property, plant and equipment and intangible assets		3,864	2,349
Proceeds from disposals of subsidiaries and loans		306	2,002
Interest received		3,067	2,427
Cash flow from investing activities		**(215,953)**	**(203,899)**
Dividends to the shareholder of Messer SE & Co. KGaA		(10,000)	(5,000)
Proceeds from non-current financial liabilities		28,775	3,801
Proceeds from current financial liabilities		114,802	5,542
Repayments of non-current financial liabilities		(1)	–
Repayments of current financial liabilities		(175,050)	(16,224)
Payments for lease liabilities		(6,268)	(5,605)
Distributions to non-controlling interests		(25,948)	(26,715)
Reduction/(increase) of majority holdings without loss of control and acquisition of non-controlling interests		–	2,036
(Payments to)/receipts from non-controlling interests		843	(4,637)
Interest paid		(10,098)	(16,149)
Other net finance costs		2,005	(4,207)
Cash flow from financing activities		**(80,940)**	**(67,158)**
Changes in cash and cash equivalents		**14,035**	**40,150**
Cash and cash equivalents at the beginning of the period		**253,686**	**218,955**
Currency translation effect on cash and cash equivalents		36,494	(5,419)
Disposals of cash and cash equivalents due to changes in Group reporting		–	–
at the end of the period		**304,215**	**253,686**

Notes to the Consolidated Financial Statements of Messer SE & Co. KGaA

1. General Information

Messer SE & Co. KGaA (the "Company", until July 30, 2021: Messer Group GmbH) is a holding company with the business address Messer-Platz 1, 65812 Bad Soden am Taunus, and is based in Sulzbach (Taunus), Germany, registered with the Frankfurt/Main Local Court under the number HRB 123982 (formerly: 73307). It is the parent company of the Messer Group (the "Group"), which produces and sells industrial gases (in particular oxygen, nitrogen, argon, helium, carbon dioxide, hydrogen and rare and high-purity gases), processes for their use and systems located on the customer's property (on site plants) for gas production. The main customers of the Messer Group include important companies from the manufacturing, chemical, steel-producing and pharmaceutical industries, the food industry and waste management.

As of December 31, 2021, Messer Industrie GmbH (Messer Industrie), in which the Messer family has bundled its industrial gases activities, is the sole shareholder of Messer SE & Co. KGaA through its holding in Messer Holding GmbH. Messer Industrie GmbH is the ultimate parent company in the Group and is required to produce consolidated financial statements. Messer SE & Co. KGaA thus prepares sub-group consolidated financial statements. The requirements of section 315e(3) of the Handelsgesetzbuch (HGB – German Commercial Code) for the preparation of the consolidated financial statements of Messer SE & Co. KGaA in accordance with the International Financial Reporting Standards (IFRS), as adopted in the EU, have been satisfied.

The reporting date for Messer SE & Co. KGaA and all the subsidiaries included in the consolidated financial statements is December 31 of the calendar year.

The consolidated financial statements of the Company for the fiscal year ended December 31, 2021 were approved for publication and submitted to the Supervisory Board of Messer SE & Co. KGaA for review by the general partner, Messer Management SE, on March 31, 2022. It is the responsibility of the Supervisory Board to review the consolidated financial statements. The consolidated financial statements are approved by the Annual General Meeting.

Messer GasPack GmbH and Messer Griesheim China Holding GmbH, both consolidated domestic subsidiaries, will use the exemption provisions in accordance with section 264(3) HGB and will therefore mostly not disclose their annual financial statements for 2021, nor will they prepare (HGB) notes or a management report.

2. Accounting Policies

Basis of preparation

The consolidated financial statements are prepared in euro. Unless stated otherwise, all amounts are rounded to thousands (K€). Differences may arise due to rounding.

Statement of compliance with IFRS

The consolidated financial statements for 2021 have been prepared in accordance with International Financial Reporting Standards (IFRS) and the Interpretations of the IFRS Interpretations Committee (IFRS IC), as applicable in the EU. The accounting policies on which the 2021 consolidated financial statements are based have been applied consistently.

The consolidated financial statements have been prepared on the basis of historical cost, amortized cost and the fair value from market measurement of available-for-sale financial assets and financial liabilities (including derivative financial instruments).

Estimates are required in order to prepare the consolidated financial statements in accordance with IFRS and the Interpretations issued by the IFRS Interpretations Committee, as applicable in the EU. Moreover, the application of uniform Group accounting policies requires judgments on the part of management.

New financial reporting standards and interpretations

The following new or revised standards and interpretations are effective for the first time for these consolidated financial statements on January 1, 2021:

- Amendments to IFRS 9, IAS 39, IFRS 7, IFRS 4 and IFRS 16 – Interest Rate Benchmark Reform – Phase 2
- Amendments to IFRS 4 – Extension of the Temporary Exemption from Applying IFRS 9
- Amendments to IFRS 16 – Covid-19-Related Rent Concessions (effective from June 1, 2020)

Amendments to IFRS 9, IAS 39, IFRS 7, IFRS 4 and IFRS 16 – Interest Rate Benchmark Reform – Phase 2

The amendments of the second phase of the Interest Rate Benchmark Reform project (Amendments to IFRS 9 Financial Instruments, IAS 39 Financial Instruments: Recognition and Measurement, IFRS 7 Financial Instruments: Disclosures, IFRS 4 Insurance Contracts and IFRS 16 Leases) supplement the specifications of the first phase of the project and apply when an interest rate benchmark is replaced by an alternative interest rate benchmark.

The following aspects are affected in particular with regard to accounting for financial instruments:

In the event of changes in contractual cash flows, it may not be necessary to adjust or derecognize the carrying amount of financial instruments on the basis of the adjustments. Rather, under certain circumstances, the option is allowed to adjust the effective interest rate to reflect the change in the alternative interest rate benchmark.

With regard to hedge accounting, it is not necessary under certain circumstances to terminate a hedging relationship designated for hedge accounting purposes due to adjustments triggered by the reform of the interest rate benchmarks.

New risks resulting from the reform, and also how the transition to alternative interest rate benchmarks is being handled, must be disclosed.

In addition to amendments to IFRS 9, IAS 39 and IFRS 7, IASB adopted minor amendments to IFRS 4 and IFRS 16.

The changes have no material impact on these consolidated financial statements of Messer SE & Co. KGaA.

Amendments to IFRS 4 – Extension of the Temporary Exemption from Applying IFRS 9

The amendments to IFRS 4 aim to address the temporary accounting consequences of the different effective dates of IFRS 9 Financial Instruments and the forthcoming IFRS 17 Insurance Contracts. In particular, the amendments extend the expiry date of the temporary exemption from applying IFRS 9 until 2023 in order to align the effective date of IFRS 9 with the new IFRS 17.

This has no material impact on these consolidated financial statements of Messer SE & Co. KGaA.

Amendments to IFRS 16 – COVID-19-Related Rent Concessions

IFRS 16 specifies how lessees should account for changes in lease payments, including concessions. For each lease, the lessee must assess whether the rent concession is a modification of the lease and thus remeasure the lease liability.

The amendment to IFRS 16 grants a practical expedient if applied. This is temporary and subject to meeting certain conditions. Under the practical expedient, lessees may elect not to assess whether certain COVID-19-related rent concessions are lease modifications and account for these rent concessions as if they were not lease modifications. The amendments are effective for reporting periods beginning on or after June 1, 2020.

This has no material impact on these consolidated financial statements of Messer SE & Co. KGaA.

New financial reporting standards not yet effective:

The following new standards and amendments to standards were not yet effective for these consolidated financial statements and were therefore not applied, but had already been endorsed by the EU Commission and will be binding from fiscal years starting on April 1, 2021 or later:

- Amendments to IFRS 16 COVID -19-Related Rent Concessions after June 30, 2021 (effective from April 1, 2021)
- Amendments to IFRS 3 – References to the Conceptual Framework (effective from fiscal 2022)
- Amendments to IAS 16 – Property, Plant and Equipment – Proceeds before Intended Use (effective from fiscal 2022)
- Amendments to IAS 37 – Onerous Contracts – Cost of Fulfilling a Contract (effective from fiscal 2022)
- Annual Improvements to IFRSs 2018-2020 Cycle – Amendments to IFRS 1, IFRS 9, IFRS 16 and IAS 41 (effective from fiscal 2022)
- IFRS 17 (including amendments to IFRS 17) – Insurance Contracts (effective from fiscal 2023)

The following new standards and amendments to standards have already been published, but had not yet been endorsed by the EU Commission and were therefore not applied:

- Amendments to IFRS 10 and IAS 28 – Sale or Contribution of Assets between an Investor and its Associate or Joint Venture (effective date deferred indefinitely)
- Amendments to IAS 1 – Classification of Liabilities as Current or Non-Current (effective from fiscal 2023)
- Amendments to IAS 1 and IFRS Practice Statement 2 – Disclosure of Accounting Policies (effective from fiscal 2023)
- Amendments to IAS 8 – Definition of Accounting Estimates (effective from fiscal 2023)
- Amendments to IAS 12 – Deferred Tax Related to Assets and Liabilities Arising from a Single Transaction (effective from fiscal 2023)
- Amendments to IFRS 17 – Initial Application of IFRS 17 and IFRS 9 – Comparative Information (effective from fiscal 2023)

The Group is not planning early adoption of the new or amended standards and interpretations that become effective in subsequent fiscal years. Unless stated otherwise, the impact on the consolidated financial statements of Messer SE & Co. KGaA is currently being examined.

Consolidation principles

A complete list of the Group's equity investments can be found in the annex to these notes. Material subsidiaries as of December 31, 2021 are:

Name and registered office of subsidiary	Country	Shareholding in % Dec. 31, 2021	Shareholding in % Dec. 31, 2020
Hunan Xianggang Messer Gas Products Co., Ltd., Xiangtan City, Hunan Province	China	55 %	55 %
Messer Haiphong Industrial Gases Co., Ltd., Hai Phong City	Vietnam	100 %	100 %
Messer Polska Sp. z o.o., Chorzów	Polen	99.97 %	99.97 %
Messer Tehnogas AD, Belgrad	Serbia	81.94 %	81.94 %
Messer Hungarogáz Kft., Budapest	Hungary	100 %	100 %
Foshan MS Messer Gas Co., Ltd., Foshan City, Guangdong Province	China	85 %	85 %
Sichuan Pangang Messer Gas Products Co., Ltd., Panzhihua, Sichuan Province	China	60 %	60 %
Messer Technogas s.r.o., Prag	Czechia	100 %	100 %
Xichang Pangang Messer Gas Products Co., Ltd., Xichang City	China	60 %	60 %
Messer Gas Products (Zhangjiagang) Co., Ltd., Zhanjiagang City, Jiangsu Province	China	100 %	100 %
Sichuan Messer Gas Products Co., Ltd., Chengdu	China	100 %	100 %
Messer Tatragas spol.s.r.o., Bratislava	Slovakia	100 %	100 %
Messer Austria GmbH, Gumpoldskirchen	Austria	100 %	100 %
Chongqing Messer Gas Products Co., Ltd., Chongqing, Sichuan Province	China	100 %	100 %
Messer Croatia Plin d.o.o., Zapresic	Croatia	99.96 %	99.96 %
Messer Romania Gaz S.R.L., Bukarest	Romania	100 %	100 %
Messer Slovenija d.o.o., Ruse	Slovenia	74.76 %	74.76 %

The consolidated financial statements comprise the financial statements of Messer SE & Co. KGaA and its subsidiaries as of December 31, 2021. The financial statements of the subsidiaries are prepared using uniform accounting policies and for the same reporting period as the financial statements of the parent company.

In conjunction with the acquisition of the majority of Linde's gas business in the US in 2019, the Linde companies in Canada, Brazil and Colombia and the takeover of Praxair's activities in Chile, the joint venture Yeti GermanCo 1 GmbH was founded by Messer SE & Co. KGaA and CVC Capital Partners for the purpose of assuming the management of Messer's business in Western Europe and the Americas. As of December 31, 2021, Messer SE & Co. KGaA's capital share still amounts to 54.46 %. The Yeti GermanCo 1 Group is jointly managed by Messer SE & Co. KGaA and CVC Capital Partners, and is included in the consolidated financial statements of Messer SE & Co. KGaA as a joint venture using the equity method.

a. Subsidiaries

Messer SE & Co. KGaA and its subsidiaries controlled by Messer SE & Co. KGaA are included in the consolidated financial statements as of December 31, 2021. The Group controls an entity when it has exposure or rights to variable returns from its involvement with the entity and the ability to utilize its control so as to influence the amount of returns from the entity. Subsidiaries are included in the consolidated financial statements from the date on which control is achieved and until the date on which control ends.

All receivables and liabilities, revenue, income and expenses arising from intra-group transactions are eliminated in the consolidated financial statements. Intra-group transactions are performed on the basis of full cost transfer prices.

Subsidiaries are accounted for using the acquisition method. The cost of the acquisition represents the fair value of the assets transferred, the liabilities incurred or assumed and the equity interests issued by the acquirer at the transaction date. It also includes the fair value of any recognized assets or liabilities resulting from a contingent consideration arrangement. Assets, liabilities and contingent liabilities identifiable in conjunction with a business combination are measured at fair value as of the acquisition date on initial consolidation.

Acquisition-related costs are recognized as an expense in the period in which they are incurred.

Goodwill is measured as the excess of the cost of the acquisition, the amount of any non-controlling interest in the acquiree and the fair value of any previously held equity interest at the date of acquisition over the Group's share of the net assets measured at fair value. The option of accounting for goodwill using the full goodwill method is not exercised. If the cost is less than the fair value of the net assets of the subsidiary acquired, the difference is reassessed and then recognized directly in profit or loss. The results of the subsidiaries acquired or sold during the fiscal year are included in the consolidated income statement from the time control is achieved or until control is lost.

b. Transactions with non-controlling interests without loss of control

Transactions with non-controlling interests without a loss of control are treated in the same way as transactions with the Group's equity owners. Any difference arising from the acquisition of a non-controlling interest between the consideration paid and the relevant share in the carrying amount of the net assets of the subsidiary is recognized in equity. Gains and losses arising from the disposal of non-controlling interests are also recognized in equity.

c. Disposal of subsidiaries

If the Group loses control of an entity, the Group's remaining interest is remeasured at fair value and the resulting difference recognized in profit or loss. Furthermore, all amounts reported in other comprehensive income relating to this entity are accounted for as if the parent company had directly disposed of the related assets or liabilities. This means that any profit or loss previously recognized in other comprehensive income is reclassified either to profit and loss or to retained earnings.

d. Associates and joint ventures

Investments in entities over which the Group has significant influence but without control or joint control over financial and operating policy and joint ventures over which the Group has joint control are accounted for using the equity method (equity investments). These are initially measured at cost, including transaction costs. Significant influence is assumed if the Group holds 20 % or more of the voting power but does not control the investee. The Group's share in earnings of equity investments is shown under "Income from investments accounted for using the equity method". The carrying amounts of equity investments are written down if impaired. The Group's interest in associates and joint ventures includes the goodwill arising on acquisition (net of accumulated impairment losses).

If the ownership interest in an associate or joint venture is reduced but the investment continues to be an associate or joint venture, only a proportionate amount of the gain or loss previously recognized in other comprehensive income is reclassified to profit or loss, if this would also occur on the disposal of the individual assets and liabilities.

The Group's share of the profit or loss of associates and joint ventures is recognized in profit or loss from the acquisition date. Accumulated changes after acquisition are offset against the carrying amount of the investment. If the Group's share of the loss in an associate or joint venture is equal to or exceeds the Group's share in this investee, including other unsecured receivables, the Group recognizes no further losses unless it has entered into commitments for the associate or joint venture or has made payments for the associate or joint venture.

As of the end of each reporting period, the Group determines whether there is objective evidence that the investment in the associate or joint venture is impaired. If this is the case, the difference between the carrying amount and the recoverable amount is recognized as an impairment loss and reported in the income statement under the income from the investment in the associate or joint venture.

To the extent that a Group entity performs transactions with an associate or joint venture, any unrealized gains or losses are eliminated on the basis of the Group's interest in this entity.

Currency translation

a. Functional currency and reporting currency

The consolidated financial statements are presented in euro, the Group's reporting currency. The functional currency of individual foreign operations is determined by the economic environment in which they operate. The items included in the financial statements of the respective company are measured using this functional currency.

b. Transactions and balances

Foreign currency transactions are initially translated using the spot exchange rate between the foreign currency and the functional currency at the transaction date. Monetary assets and liabilities denominated in a foreign currency are translated into the functional currency at the closing rate. All exchange differences are recognized in profit or loss. Non-monetary items that are measured in terms of historical cost in a foreign currency are translated using the exchange rate at the date of the transaction. Non-monetary items that are measured at fair value in a foreign currency are translated using the exchange rates at the date when the fair value was determined.

Foreign currency gains and losses from trade receivables and trade payables denominated in foreign currencies are included in “Other operating income” or “Other operating expenses”.

c. Group companies

The functional currency of foreign operations not based within the area of the European Currency Union (ECU) is the respective local currency. As of the end of the reporting period, assets and liabilities of these subsidiaries are translated into the Messer Group’s reporting currency using the closing rate. Income and expenses are translated at average rates for the fiscal year. The resulting exchange differences are recognized through other comprehensive income and included in currency translation reserves within equity. They therefore do not affect profit or loss. When a foreign operation is deconsolidated, the cumulative amount recognized in equity for this foreign operation is reversed to profit or loss.

The following table shows an overview of the exchange rates used for the principal currencies:

		Average rates		Closing rates	
Selected currencies	ISO code	**Jan. 1 – Dec. 31, 2021 € 1**	Jan. 1 – Dec. 31, 2020 € 1	**Dec. 31, 2021 € 1**	Dec. 31, 2020 € 1
Chinese renminbi	CNY	**7.64**	7.89	**7.19**	8.02
Polish zloty	PLN	**4.57**	4.45	**4.60**	4.56
Serbian dinar	RSD	**117.58**	117.57	**117.58**	117.56
Czech koruna	CZK	**25.69**	26.41	**24.86**	26.24
Hungarian forint	HUF	**359.01**	352.24	**369.19**	363.89
US dollar	USD	**1.19**	1.15	**1.13**	1.23
Vietnamese dong	VND	**27,176.08**	26,602.77	**25,872.00**	28,331.00

Reporting

The reporting of prior-year disclosures for individual items was adjusted to match the presentation in the fiscal year.

Intangible assets and goodwill

The differences between the consideration transferred by the Messer Group for acquirees and the fair value of the assets acquired, liabilities assumed and contingent liabilities are recognized in accordance with IFRS 3.32 et seq. The remaining goodwill is tested for impairment in accordance with IAS 36 at least once a year.

The other intangible assets such as brands, patents, licenses, customer bases, software, etc. are initially measured at cost. Patents, licenses, customer bases and software, etc. are amortized on a straight-line basis over their expected useful lives of three to 20 years. The amortization charge on other intangible assets is reported within the related expense item, usually cost of sales or distribution and selling expenses. The brands "Messer" and "ASCO" are established on their markets and will be used in the future as well. For this reason, we assume an indefinite useful life for the brands "Messer" and "ASCO". These brands are tested for impairment in accordance with IAS 36 at least once per year. The amortization period and the amortization method for an intangible asset with a finite useful life are reviewed at least at the end of each fiscal year.

Property, plant and equipment

Property, plant and equipment are recognized at cost and depreciated over their expected useful lives. The cost of acquired property, plant and equipment includes all costs directly attributable to their acquisition. The cost of self-constructed items of property, plant and equipment includes all directly attributable direct costs and an appropriate share of overheads, including depreciation, and are therefore measured taking all costs required to construct the assets into account. In the event of a statutory requirement to restore an item to its original condition, the cost also includes the present value of expected future payments for decommissioning and restoration. When each major inspection is performed, in accordance with IAS 16.14, its cost is recognized in the carrying amount of the item of property, plant and equipment as a replacement if the recognition criteria are satisfied.

Subsequent costs are only recognized as part of the cost of the asset or as a separate asset when it is probable that they will result in future economic benefits to the Group and the costs can be measured reliably.

Expenditure for repairs and maintenance, which does not represent a significant replacement investment, is recognized as an expense in the fiscal year in which it is incurred.

Gains and losses on the disposal of property, plant and equipment are calculated as the difference between proceeds from disposal and the carrying amounts of the assets and recognized in the consolidated income statement.

Depreciation is recognized on a straight-line basis over the following useful lives:

Depreciation	Useful life in years
Buildings	10 - 50
Plant and machinery thereof air separation units	5 - 20 15
Other operating and office equipment	3 - 10

The residual carrying amounts and useful lives are reviewed at the end of each reporting period and adjusted as necessary. If the carrying amount of an item of property, plant and equipment exceeds the estimated recoverable amount, it is written down to that recoverable amount.

Borrowing costs are recognized as an expense in the period in which they are incurred, except when they relate to qualifying assets. Within the Messer Group, these chiefly relate to air separation units. Borrowing costs that are directly attributable to the acquisition, construction or production of a qualifying asset are capitalized as part of the cost of that asset up to the date when substantially all the activities necessary to prepare the qualifying asset for its intended use or sale are complete. A qualifying asset is an asset that necessarily takes a substantial period of time to get ready for its intended use or sale.

Leases

a. Leases in which the Group is the lessee

The Group leases various offices, warehouses, equipment and vehicles. Leases are typically for fixed periods of six months to 10 years for movable assets and for 10 years to indefinite for immovable assets, but may have extension options.

At the inception of a contract, the Group assesses whether the contract is, or contains, a lease. A contract is, or contains, a lease if the contract conveys the right to control the use of an identified asset for a period of time in exchange for consideration. The Group uses the IFRS 16 definition of a lease to assess whether a contract includes the right to control an identifiable asset.

Contracts may contain both lease and non-lease components. The Group allocates the transaction price to these components based on their relative stand-alone prices. However, for leases of real estate for which the Group is a lessee, it has elected not to separate lease and non-lease components and instead accounts for these as a single lease component.

Lease terms are negotiated on an individual basis and contain a wide range of different terms and conditions. Leased assets may not be used as security for borrowing purposes.

Leases are recognized as a right-of-use asset and a corresponding liability at the date at which the leased asset is available for use by the Group. Assets and liabilities arising from a lease are initially measured on a present value basis. Lease liabilities include the net present value of the following lease payments:

- fixed payments (including in-substance fixed payments), less any lease incentives receivable;
- variable lease payment that are based on an index or a rate, initially measured using the index or rate as of the commencement date;
- amounts expected to be payable by the Group under residual value guarantees;
- the exercise price of a purchase option if the Group is reasonably certain to exercise that option; and
- payments of penalties for terminating the lease, if the lease term reflects the Group exercising that option.

Lease payments to be made under reasonably certain extension options are also included in the measurement of the liability. The lease payments are discounted using the interest rate implicit in the lease. Otherwise, and this is typically the case in the Group, the lessee's respective incremental borrowing rate is used.

To determine the incremental borrowing rate, the Group uses recent third-party financing received by the individual lessee as a starting point. Lessees are divided into regions according to geographical segments. The financing is divided into groups based on the remaining terms of the contracts (up to 1 year, up to 2 years, up to 3 years, up to 4 years, up to 5 years and longer than 5 years). The calculated average interest rates for each group and region are used in measuring the right-of-use asset and lease liability.

The Group is exposed to potential future increases in variable lease payments based on an index or rate. These possible changes in lease payments are not taken into account in the lease liability until they take effect. When adjustments to lease payments based on an index or rate take effect, the lease liability is reassessed and adjusted against the right-of-use asset.

Lease payments are allocated between principal and finance cost. The finance cost is charged to profit or loss over the lease period so as to produce a constant periodic rate of interest on the remaining balance of the liability for each period.

Right-of-use assets are measured at cost comprising the following:

- the amount of the initial measurement of the lease liability;
- any lease payments made at or before the commencement date less any lease incentives received;
- any initial direct costs; and
- estimated costs incurred by the lessee in dismantling or removing the underlying asset, restoring the location where it is to be found or restoring the underlying asset to the condition required in the lease agreement.

Right-of-use assets are generally depreciated over the shorter of the asset's useful life and the lease term on a straight-line basis. If the Group is reasonably certain to exercise a purchase option, the right-of-use asset is depreciated over the underlying asset's useful life.

Depreciation is recognized on a straight-line basis over the following useful lives:

Depreciation	Useful life in years
Land	2 - 99
Buildings	1 - 60
Plant and machinery	1 - 23
Other operating and office equipment	1 -12

Payments associated with short-term leases of equipment and vehicles and all leases of low-value assets are recognized as an expense in profit or loss. Short-term leases are leases with a lease term of 12 months or less. These essentially comprise IT equipment and other equipment.

Extension and termination options are included in a number of property and equipment leases across the Group. These are used to maximize operational flexibility in terms of managing the assets used in the Group's operations. These options are taken into account in the measurement of right-of-use assets and lease liabilities when there is reasonable assurance.

The assessments of reasonable certainty are only revised if a significant event or a significant change in circumstances occurs that affects this assessment and that is within the control of the lessee.

b. Leases in which the Group is the lessor

If the Group is the lessor, it classifies each lease as either a finance lease or an operating lease at inception of the lease. At the Messer Group this particularly includes certain gas supply contracts, above all those for the gas generation plants rented on a long-term basis.

Leases in which a significant portion of the risks and rewards of ownership transfers to the lessee are classified as finance leases.

In this case, disposal is assumed at the start of the lease term and revenue is recognized in the amount of the present value of the lease payments attributable to the asset. In return, a claim from the customer that is reduced over the term of the contract is recognized. Interest income earned on finance leases is reported as other financial income.

Leases in which a significant portion of the risks and rewards of ownership remain with the lessor, are classified as operating leases. Payments made in connection with an operating lease are recognized as revenue from other sources in the income statement on a straight-line basis over the term of the lease.

Impairment and reversal of impairment on goodwill, right-of-use assets, other intangible assets and property, plant and equipment

An impairment test for goodwill, right-of-use assets, other intangible assets and property, plant and equipment involves comparing the recoverable amount of the asset against its carrying amount to determine whether it must be written down to recoverable amount. In accordance with IAS 36, goodwill is allocated to the smallest cash-generating unit for which goodwill is monitored by management. The recoverable amount is defined as the higher of the asset's fair value less costs to sell and its value in use. Fair value less costs to sell is defined as the amount obtainable from the sale of an asset or cash-generating unit in an arm's length transaction between knowledgeable, willing parties, less the costs of disposal. Value in use is the present value of future cash flows expected to arise from the continuing use of an asset and from its disposal at the end of its useful life. In the event of impairment, existing goodwill is reduced first. If the impairment loss exceeds the carrying amount of goodwill, the difference is typically distributed among the remaining non-current assets pro rata. With the exception of goodwill, impairment losses are reversed when the reasons for the impairment no longer apply. Impairment losses and required reversals are shown together with depreciation and amortization in the statement of changes in assets under additions to cumulative depreciation and amortization, and are reported and explained separately in the notes.

Inventories

Inventories are measured at the lower of cost or net realizable value at the end of the reporting period using the average cost method. Their production cost includes all directly attributable direct costs, appropriate portions of materials and production overheads and depreciation.

Trade and other receivables

Trade receivables are recognized from the date they arise. Items that do not contain a significant financing component are initially measured at the transaction price. The corresponding impairment loss is measured at an amount equal to lifetime expected credit losses, based on an analysis of historical default data and forecasts of future economic conditions. Expected credit losses are a probability-weighted estimate of credit losses.

Non-current assets and disposal groups held for sale and discontinued operations

In accordance with IFRS 5 "Non-current Assets Held for Sale and Discontinued Operations", the Group classifies non-current assets and disposal groups as held for sale if their carrying amounts will be recovered principally through a sale transaction rather than through continuing use. A sale must be planned and practicable with a high probability within the next 12 months.

Immediately before initial classification, the carrying amounts of the asset are measured in accordance with applicable IFRSs. On reclassification, the asset is reported separately in the statement of financial position and measured at the lower of the carrying amount and fair value less costs to sell. Liabilities in connection with assets held for sale are presented separately in the statement of financial position.

In accordance with IFRS 5, a discontinued operation is recognized as such when it is held for sale or has already been sold.

A discontinued operation is a component of the Group's business comprising operations and cash flows that can be clearly distinguished from the rest of the Group and that:
- represents a separate major line of business or geographical area of operations;
- is part of a single coordinated plan to dispose of a separate major line of business or geographical area of operations; or
- is a subsidiary acquired exclusively with a view to resale.

If an operation is classified as a discontinued operation, the corresponding assets and liabilities are reported in the statement of financial position under "Assets held for sale" or "Liabilities held for sale". The income statement for the comparative year is restated as if the operation had been discontinued from the start of the comparative year.

A separate amount representing the total of the current profit and the gain or loss on remeasurement/disposal after taxes of the discontinued operation is shown in the income statement. This separate amount must be broken down further and presented, with additional disclosures, in the notes.

In line with standard consolidation procedures, intragroup income is eliminated for the selling/performing operation and the associated expenses are eliminated for the receiving operation. The elimination entries are assigned to the continuing operation in line with the future trade relationships of the Company.

Cash and cash equivalents

Cash and cash equivalents include freely available cash on hand and demand deposits. Cash equivalents also include short-term liquid financial assets with a term of up to three months that can be readily converted into cash. This risk of fluctuations in value is immaterial.

Employee benefits

a. Pension obligations

The Group has both defined benefit and defined contribution pension plans. A defined contribution plan is a pension plan under which the Group pays fixed contributions into a separate non-Group entity (a fund). The Group does not have any legal or constructive obligation to pay any additional amounts if the fund does not have sufficient assets to meet the pension entitlements of all employees for the current and past fiscal years.

Typically, defined benefit plans set out an amount of pension benefits that employees will receive on retirement and that is typically dependent on one or more factors (such as age, length of service and salary).

The Group's obligations from defined benefit pension plans are calculated separately for each defined benefit plan and according to actuarial principles. The benefits earned by employees in the current and prior periods – in return for their service – are initially estimated. The present value of the defined benefit obligation, the gross pension obligation, is calculated by actuaries using the projected unit credit method. Plan assets are deducted from the gross pension obligation at fair value. This results in the net liability or the net asset value to be recognized.

The Group determines the respective net interest expense (net interest income) from the net liability (net asset value) by multiplying the net liability (net asset value) at the beginning of the period by the interest rate with which the defined benefit gross pension obligation is discounted at the beginning of the period.

The interest rate is determined by reference to market yields at the end of the reporting period on high quality corporate bonds. The currency and term of the underlying corporate bonds are consistent with the currency and estimated term of the post-employment obligations.

The calculation of the net liability (net asset) is based on an actuarial report prepared by a qualified actuary as of the end of each reporting period.

If the deduction of plan assets from the defined benefit gross pension obligation results in an excess of plan assets, the amount of the net asset value is limited to the present value of the economic benefits associated with the plan asset surplus, e.g. in the form of reimbursements from the plan or reduced future contribution payments if the Group has control over these economic advantages. Control is assumed to exist if the Group can realize the economic benefit within the term of the pension plan or on settlement of plan liabilities.

The calculation of the present value of the economic benefits of the excess of plan assets takes into account any minimum funding requirements.

The amounts arising on remeasurement comprise actuarial gains and losses arising on the measurement of the defined gross pension obligation on the one hand and the difference between the actual return on plan assets and the rate of return assumed at the beginning of the reporting period on the other. In the event that there is an excess of plan assets, the amounts arising on remeasurement also include the change from applying an asset ceiling, to the extent that this has not been considered as part of the net interest component.

The Group recognizes all amounts arising on remeasurement in other comprehensive income (OCI), while other components of the net pension expense (service cost and net interest component) are recognized in profit or loss. The interest portion of the addition to provisions included in pension expense is reported as interest expense within net finance costs. The cumulative re-measurement effects are reported in retained earnings within equity.

If the present value of a defined benefit obligation changes as a result of a plan amendment or curtailment, the Group recognizes the resulting effect as past service cost in profit or loss. The amounts are recognized when the amendment or curtailment occurs.

Defined benefit plans expose the Group to various risks. In addition to general actuarial risks such as longevity risk and interest rate risk, the Group is exposed to currency risk and capital market/investment risk.

b. Obligations from bonus plans
Obligations for bonus payments are recognized as a liability and as an expense. A provision is recognized in the consolidated financial statements in cases in which there is a contractual obligation or a constructive obligation as a result of past business practices.

Other provisions

Other provisions are recognized for present legal and constructive obligations arising from past events that are likely to result in a future outflow of resources embodying economic benefits, provided that a reliable estimate can be made of the amount of the obligations. If the effect of the time value of money is material, provisions are discounted using a current pre-tax rate that reflects, when appropriate, the risks specific to the liability. When discounting is used, the increase in the provision due to the passage of time is recognized as interest expense.

Government grants

Government grants are recognized where there is reasonable assurance that the grant will be received and all attached conditions will be complied with. When the grant relates to an expense item, it is recognized as income on a systematic basis over the periods that the related costs, for which it is intended to compensate, are expensed. If the grant relates to an asset, it is recognized as deferred income and reversed to profit or loss on a straight-line basis over the expected useful life of the asset.

Financial instruments: principles

A financial instrument is any contract that gives rise to a financial asset of one entity and a financial liability or equity instrument of another entity. A distinction is made between derivative and non-derivative financial instruments.

Derivative financial instruments can be embedded in other financial instruments or non-financial instruments. In accordance with IFRS, an embedded derivative must be separated from the host contract and measured separately at its fair value if the economic characteristics of the embedded derivative are not closely related to those of the host contract. The Messer Group had no separable embedded derivatives in the fiscal year. Compound financial instruments issued that contain both an equity and a debt component must be accounted for separately on the basis of the sub-stance of the instruments. The Messer Group was not party to any hybrid or compound financial instruments in the fiscal year. Regular way purchases and sales of financial instruments are typically recognized by the Messer Group as of the settlement date, while derivatives are recognized as of the trade date.

Financial assets and financial liabilities are initially recognized at fair value, including any transaction costs if necessary. The fair value of a financial instrument is the price that would be achieved between market participants on the measurement date for the sale of the financial instrument.

Financial assets are derecognized fully or in part when the contractual rights to receive cash flows have expired or if control over the financial asset and substantially all the risks and rewards of the asset have been transferred to a third party. Financial liabilities are derecognized when the contractual obligations have been settled, canceled or have expired.

The classes to be formed in accordance with IFRS 7 include the measurement categories presented below. Furthermore, receivables and liabilities from leases and hedging derivatives in the context of hedge accounting are included in the classes according to IFRS 7.

Financial assets

Financial assets are classified according to the following IFRS 9 measurement categories:

a. Financial assets at amortized cost (AC)
The Messer Group classifies its financial assets as at amortized cost only if both of the following criteria are met:
- the financial asset is held within a business model whose objective is to hold financial assets in order to collect contractual cash flows; and
- the contractual terms give rise to cash flows that are solely payments of principal and interest.

b. Financial assets at fair value through profit or loss (FVTPL)
The Messer Group classifies the following primary financial assets at fair value through profit or loss:
- debt investments that do not qualify for measurement at either amortized cost or fair value through other comprehensive income;
- equity investments that are held for trading; and
- equity investments for which the entity has not elected to recognize fair value gains and losses through other comprehensive income.

The Group has not designated any primary financial assets at fair value through profit or loss.

c. Financial assets at fair value through other comprehensive income (FVOCI)
Financial assets at fair value through other comprehensive income comprise:
- Equity instruments that are not held for trading, and which the Messer Group has irrevocably elected at initial recognition to recognize in this category. These are strategic investments and the Group considers this classification to be more relevant.
- Debt securities where the contractual cash flows are solely principal and interest and the objective of the Group's business model is achieved both by collecting contractual cash flows and selling financial assets.

The results of measuring such investments in equity instruments are reported in other comprehensive income and remain there even in the event of a sale. On disposal of these debt securities, any related balance within other comprehensive income is reclassified to retained earnings.

Financial liabilities

a. Financial liabilities at amortized cost (AC)
Financial liabilities at amortized cost are non-derivative financial liabilities that are subsequently measured at amortized cost using the effective interest method. Any difference between the amount received and the amount repayable is recognized as income or expense over the term of the instrument. Transaction costs incurred are deducted from the respective financial liabilities and amortized over the term of the underlying liability using the effective interest method. Within the Messer Group, this measurement category includes in particular financial liabilities, trade payables and non-derivative other current and non-current liabilities.

b. Financial liabilities at fair value through profit or loss (FVTPL)
Financial liabilities at fair value are either classified as held for trading or designated upon initial recognition as at fair value through profit or loss. Derivative financial instruments with a negative fair value are also measured at fair value through profit or loss.

These financial liabilities are subsequently measured at fair value, with gains and losses from the financial instruments in this category recognized directly in net finance costs in the income statement.

Derivative financial instruments and hedging

Derivatives are initially recognized at fair value on the date a derivative contract is entered into, and they are subsequently remeasured to their fair value at the end of each reporting period. The accounting for subsequent changes in fair value depends on whether the derivative is designated as a hedging instrument and, if so, the nature of the item being hedged. When entering into a derivative contract, the Messer Group designates it as either:

(1) a hedge of the fair value of recognized assets or liabilities (fair value hedges); or
(2) a hedge of a forecast transaction or firm commitment (cash flow hedge).

The Messer Group exclusively uses derivatives for hedging if this is required by the hedged items. This applies, for example, to risks from exchange rate fluctuations. Hedged items are the obligations contractually entered into to achieve the goals of the Messer Group, receivables and anticipatory transactions. Derivative instruments are thus exclusively used to safeguard the Messer Group's business performance to the extent stipulated in its Articles or Association. Macro hedging, i.e. the consolidation of individual positions in order to merely hedge the net amount, is not practiced.

Most of the transactions for which this type of hedging could be applied are hedged in full in terms of scope or amount, using a variety of financial instruments. The selection of individual instruments is always a management decision, made in line with the risk profile, i.e. the opportunity for return associated with the respective risk.

Certain financial derivatives, which have been entered into in conjunction with the Group's risk management to hedge risks but do not fully satisfy the formal requirements, are therefore not included in hedge accounting, and are instead recognized as stand-alone derivatives in the IFRS 9 "financial assets and liabilities at fair value through profit or loss" category.

When entering into the transaction, the Group documents the relationship between the hedging instrument and the hedged item in addition to the objective of its risk management and its underlying strategy. In addition, at the inception of the hedge and thereafter, the Group documents its assessment of whether the derivatives used in the hedge are highly effective at compensating for the changes in the fair value or cash flow. Hedge accounting is only maintained as long as its effectiveness can be proven. Evidence of this effectiveness is determined by comparing the contract specifics, maturities and volumes (critical terms match) and by means of a regression analysis.

a. Cash flow hedges

Changes in the fair values of derivatives classified as cash flow hedges that are a close match for the hedged item are recognized in equity. If the forecast transaction or firm commitment results in the recognition of a non-financial asset or non-financial liability, the gains and losses previously deferred in equity are removed from equity and included in the measurement of the cost of the asset or liability. In all other cases, the gains or losses previously recognized in equity are transferred to profit or loss in the same period as that in which the hedged forecast transaction or firm commitment is recognized in profit or loss.

Income and operating cash flow are essentially unaffected by market interest rates, as the Group does not hold any significant interest-bearing assets. Variable interest loans are partially hedged using interest rate swaps (cash flow hedge for future interest payments). This effectively converts loans with floating interest rates into loans with fixed interest rates.

When a hedging instrument expires or is sold, or when a hedging instrument no longer meets the criteria for hedge accounting in accordance with IAS 9, any cumulative gains or losses recognized in equity to date remain there and are not removed until the forecast transaction or firm commitment is recognized in profit or loss. However, if the forecast transaction or firm commitment is no longer expected to occur, the cumulative gain or loss that had been recognized directly in equity is recognized in profit or loss.

b. Fair value hedges

The changes in the fair value of derivatives that are designated as a fair value hedge and are a close match for the underlying transaction are recognized in the income statement together with the changes in the fair value of the hedged assets or liabilities attributable to the hedged risk.

The fair values of the various derivative financial instruments are listed under note 32 “Other Financial Instrument Disclosures”.

As of December 31, 2021, none of the derivative financial instruments satisfied the criteria for hedge accounting.

Management of financial risks

In conjunction with its operating activities, the Messer Group is exposed to various financial risks, in particular credit, liquidity, interest and currency risk, which are described in more detail under note “32”. The Group’s risk management system takes into account the fact that financial market developments are not foreseeable and is intended to minimize any potential negative impact on the Group’s financial position. The Group uses derivative financial instruments to hedge against specific risks.

Risk management is handled by Group Treasury in compliance with guidelines approved by management. Group Treasury identifies, assesses and hedges financial risks. The guidelines contain general principles for risk management and detailed rules for specific areas, such as currency and interest rate risks, the use of derivative financial instruments and the investment of surplus cash.

Use of assumptions, estimates and judgments

The preparation of IFRS financial statements requires management to make certain assumptions, estimates and judgments that affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities as of the end of the reporting period and the reported amounts of revenue and expenses for the fiscal year. The estimates and assumptions concern the future. Actual results may therefore differ from these estimates.

Estimates and their underlying assumptions are examined on an ongoing basis. Revisions of estimates are recognized prospectively. If a change in an accounting estimate gives rise to changes in assets and liabilities, or relates to an item of equity, the changes in estimates are recognized by adjusting the carrying amounts of the related assets, liabilities or equity items.

COVID-19 has no material effect on the assessment of the underlying estimates and assumptions in fiscal 2021.

Judgments, assumptions concerning the future and sources of estimation uncertainty that could potentially have the greatest impact on these consolidated financial statements were required in particular for:

a. Assessing whether control, joint control or significant influence applies at companies in which the Messer Group holds fewer than 100% of voting rights (note 3)
Judgments can be used in assessing whether control, joint control or significant influence applies at companies in which Messer holds fewer than 100 % of the voting rights. It must be assessed whether there are other contractual rights or circumstances that can lead to the Group having decision-making power over the potential subsidiary, or whether it has joint control or significant influence. The assessments are revised whenever the contractual arrangements or circumstances change.

b. Income taxes (note 11)
IFRIC 23 clarifies the recognition and measurement requirements of IAS 12 in accounting for uncertainties in income taxes. Estimates and assumptions must be made for recognition and measurement, e.g. whether an assessment is made separately or together with other uncertainties, whether a probable or expected value is used for the uncertainty and whether changes have occurred compared to the previous period. The detection risk is irrelevant for the accounting of uncertain statement of financial position items. The accounting is based on the assumption that the tax authorities are investigating the matter in question and that they have all the relevant information.

c. Goodwill impairment testing (note 14)
Impairment is tested in accordance with IAS 36 on the basis of the expected future cash flows of these cash-generating units or groups of cash-generating units over the detailed planning period of four years and is subject to estimates made by the Group. Judgments are also required to derive capitalization rates. A change in the factors used when testing goodwill and other intangible assets or property, plant and equipment for impairment may lead to higher, lower or no impairment.

d. Determination of useful lives of property, plant and equipment and when assessing which cost components can be capitalized (note 15)
Group-wide uniform useful lives for items of property, plant and equipment are determined on the basis of past experience and regularly reviewed. As part of the process of assessing whether an item is eligible for recognition as an asset and which components of cost should be taken into account, we make assumptions regarding the expected future usability of the asset.

e. Impairment testing of investments accounted for using the equity method (note 16)
Judgments may be required for the parameters used in testing impairment on investments accounted for using the equity method, such as future earnings prospects.

f. Assessment of the need for and measurement of allowances for doubtful debts (notes 18, 20, 32)
When recognizing allowances for doubtful debts, estimates are made regarding the creditworthiness of individual customers and market segments, and general economic forecasts for the different countries and the history of our bad debts.

g. Measurement of pension obligations (note 25)
Obligations from defined benefit pension commitments are calculated on the basis of actuarial assumptions. These are mainly the discount rate, life expectancy and pension and salary trends. The interest rate is determined by reference to market yields at the end of the reporting period on high quality corporate bonds. Sensitivity analyses with respect to the interest rate used are provided in the notes.

h. Recognition and measurement of other provisions (note 26)
Other provisions are recognized and measured on the basis of an assessment of the probability of a future outflow of benefits, using values based on experience and circumstances known as of the end of the reporting period. The actual outflow of economic resources at a later date could be lower or higher than the amount recognized as a provision. The nature of estimates and judgments used differs for the various categories of provisions.

The recognition and measurement of provisions for legal disputes requires a high degree of judgment as to whether a current obligation exists and whether a future outflow of economic resources is probable and can be reliably estimated. We obtain assessments from in-house and external attorneys to assess these matters. Changes in circumstances may result in adjustments to provisions.

Income taxes

The tax expense comprises current and deferred taxes. Current and deferred taxes are recognized in profit or loss, except to the extent that they are associated with a business combination or with an item recognized directly in equity or other comprehensive income.

The Group has determined that interest and penalties on income taxes, including uncertain tax items, do not meet the definition of income taxes and are therefore accounted for in accordance with IAS 37.

a. Current taxes
Current taxes are the expected tax liability or tax receivable on the taxable income or loss for the fiscal year based on tax rates that are enacted or substantively enacted at the end of the reporting period, plus any adjustments to tax liability for prior years. The amount of the expected tax liability or tax receivable reflects the amount that is the best estimate, taking into account tax uncertainty, if any. Current tax liabilities also include all tax liabilities that arise as a result of dividends being determined. Current tax assets and liabilities are only netted under certain conditions.

b. Deferred taxes

Deferred taxes are recognized, in accordance with the asset and liability method, for all temporary differences at the end of the reporting period between the carrying amounts of assets and liabilities in the statement of financial position and their corresponding tax bases, and on the tax loss and for tax loss carryforwards. In accordance with IAS 12.15 in conjunction with IAS 12.21B, temporary differences arising on the initial recognition of goodwill are not included in the calculation of deferred taxes. Deferred taxes are calculated using currently enacted or substantially enacted tax rates that will apply when the temporary differences are expected to reverse. Deferred tax assets are recognized to the extent that it is probable that future taxable profits will be available against which the unused tax loss carryforwards or asset-side differences between the carrying amounts and the corresponding tax bases can be utilized.

Deferred tax assets and liabilities are only offset if they relate to income taxes levied by the same taxation authority and the entity has a legally enforceable right to offset the tax assets and liabilities.

Income taxes relating to items that are recognized directly in other comprehensive income are also recognized in other comprehensive income and not in profit or loss. Deferred taxes are recognized in other comprehensive income if the underlying transaction is also recognized in other comprehensive income.

Revenue recognition

Revenue includes sales of products (essentially industrial gases) and services as well as rental income, less trade discounts and rebates.

a. Revenue from on site plant and pipeline sales

Customers requiring large volumes of industrial gases (typically oxygen, nitrogen and hydrogen) and with a relatively constant demand are typically supplied by plants adjacent to or on their facilities, the capacity of which frequently also covers the liquid gas requirements of the surrounding market. These plants are legally owned and operated by the Messer Group. The product supply contracts typically have terms of ten to 15 years and generally include agreements on minimum purchase volumes or minimum prices and price escalation clauses. Revenue is recognized when the gas is delivered to the customer, which is the date on which control of the industrial gases is transferred. If the customer does not take delivery of the minimum purchase requirements, revenue is generally recognized in the amount of the contractual minimum. The same conditions and accounting policies apply to sales via pipelines, with the sole difference that customers are supplied via a pipeline. Estimates are not required as of the end of the year as a result of regular billing.

Certain gas supply contracts, in particular those for the gas generation plants rented on a long-term basis, must be examined for the existence of a finance lease in accordance with IFRS 16 and, if necessary, classified as such. In the event of a finance lease in accordance with IFRS 16, disposal is assumed at the start of the lease term and revenue is recognized in the amount of the present value of the lease payments attributable to the asset. Interest income earned on finance leases is reported as other financial income.

b. Revenue from liquefied gases

Liquid products are typically stored in the Group's own tanks, which are rented to customers on their premises. The gases are delivered to customers in tankers, tank trailers or rail cars from which the gases are transferred to the leased tanks. The agreements customary in liquefied products business typically have a term of two to three years. Revenue from liquefied products is recognized on delivery to the tank. Income from the rental of tanks is recognized according to the terms of the lease agreements in accordance with IFRS 16.

c. Revenue from cylinder gases

Customers who need small amounts of gas (especially for most special gases) receive the products in cylinders, which are typically owned by the Group and rented to customers. Cylinder gases are generally sold by individual purchase orders or by contracts, with terms ranging between one and two years in Europe. Revenue from gas sales is realized on delivery to the customer. Income from the rental of cylinders is recognized according to the terms of the lease agreements in accordance with IFRS 16.

d. Construction contracts

Depending on the type of contractual arrangement, revenue from long-term construction contracts in the Engineering division is recognized either at a point in time or over a period of time.
In accordance with IFRS 15, revenue from engineering projects is recognized over a period of time if they satisfy the criteria of IFRS 15.35. In the Messer Group, this typically only applies to air separation units for specific customers. For other engineering projects that do not meet the criteria mentioned, revenue is recognized when the project is completed in accordance with IFRS 15.

3. Consolidated Companies

The consolidated group of Messer SE & Co. KGaA developed as follows:

2021	Germany	Other countries	**Total**
Consolidated	4	59	63
Equity method	3	2	5
As of Jan. 1	**7**	**61**	**68**
Additions			
Acquisitions	1	–	1
Companies founded	–	2	2
Reclassifications	–	1	1
Disposals			
Company sales	–	–	–
Mergers/spin-off	(1)	(3)	(4)
As of Dec. 31	**7**	**61**	**68**
Consolidated	3	58	61
Equity method	4	3	7

Initial consolidation

The following companies were founded in the past fiscal year and commenced operations:

- Messer Gas Products (Chengdu) Co., Ltd., China, 100 %
- Messer Specialty Gases (Meishan) Co., Ltd., China, 100 %

Mergers / spin-off

Messer CZ s.r.o., Czechia, was merged with Messer Technogas s.r.o., Czechia, as of January 1, 2021. Moreover, Messer Finance B.V., Netherlands, was merged with Messer SE & Co. KGaA, Germany, retroactively to January 1, 2021. Effective December 31, 2021, Messer Energo Gaz S.R.L., Romania, was merged with Messer Romania Gaz S.R.L., Romania. The mergers have no effect on the consolidated financial statements; the consolidated group was reduced accordingly.

In June 2021, Messer Information Services GmbH, Germany, was hived off retroactively to January 1, 2021. Its assets and liabilities were transferred to Messer SE & Co. KGaA, Germany, and the newly founded company Messer Business & IT Consulting GmbH, Germany. Messer Business & IT Consulting GmbH was founded in the fiscal year as a (wholly owned) subsidiary of Messer SE & Co. KGaA without a long-term holding intention. Following the spin-off, the shares in Messer In-formation Services GmbH were sold to a related company. The hive-off resulted in a loss of K€ 2,356, which is reported under “Other operating expenses”. This is offset by a gain from the disposal of shares in Messer Business & IT Consulting GmbH of K€ 4,051, which is reported under “Other operating income”.

Others

Messer Medica LLC, Kosovo, has been included in the consolidated financial statements as an associated company since January 1, 2021. Messer Vardar Tehnogas d.o.o., North Macedonia, holds 49 % of the shares in the company.

Messer SE & Co. KGaA, Germany, acquired 25 % of the shares in Mahler AGS GmbH, Germany, as of January 26, 2021. The associate is included in the consolidated financial statements using the equity method.

Notes to the Consolidated Income Statement

4. Revenue

	Jan. 1 – Dec. 31, 2021		Jan. 1 – Dec. 31, 2020	
From contracts with customers	1,295,150	95 %	1,102,258	95 %
From other revenue sources	66,571	5 %	60,465	5 %
Total	**1,361,721**	**100 %**	**1,162,723**	**100 %**

Revenue is mainly generated by the sale of liquefied products, cylinder gases and on site and pipeline sales. Revenue breaks down among the individual sales channels as follows:

	Jan. 1 – Dec. 31, 2021		Jan. 1 – Dec. 31, 2020	
Liquefied gases	534,033	39 %	437,166	38 %
Pipeline / on site	455,261	34 %	404,201	35 %
Cylinder gases	222,297	16 %	187,592	16 %
Hardware/other	83,559	6 %	73,299	6 %
From contracts with customers	**1,295,150**	**95 %**	**1,102,258**	**95 %**
From other revenue sources	66,571	5 %	60,465	5 %
Total	**1,361,721**	**100 %**	**1,162,723**	**100 %**

Revenue breaks down among the individual regions as follows:

	Jan. 1 – Dec. 31, 2021		Jan. 1 – Dec. 31, 2020	
China	645,151	47 %	550,787	47 %
Southeast Europe	280,503	21 %	237,912	20 %
Central Europe	251,627	18 %	221,731	19 %
ASEAN	106,580	8 %	85,051	7 %
Western Europe	77,860	6 %	67,242	6 %
Total	**1,361,721**	**100 %**	**1,162,723**	**100 %**

5. Cost of Sales

In addition to directly attributable costs, such as materials purchasing, energy and personnel expenses, the cost of sales also includes overheads attributable to the production process, including depreciation on air separation units.

	Jan. 1 – Dec. 31, 2021	Jan. 1 – Dec. 31, 2020
Goods purchased	115,934	101,234
Production costs		
Energy	416,352	348,157
Depreciation and amortization	84,303	82,607
Personnel expenses	64,627	52,644
Maintenance	22,580	20,573
Taxes and other fees	8,163	6,519
Security and insurance	4,236	3,242
Others		
Hardware	31,506	30,561
Services	11,789	7,533
Raw materials and supplies	26,033	3,875
Other	15,531	23,333
Total	**801,054**	**680,278**

6. Selling and Distribution Expenses

Selling and distribution expenses also include the costs of all sales departments and logistics activities.

	Jan. 1 – Dec. 31, 2021	Jan. 1 – Dec. 31, 2020
Transportation costs	79,865	66,408
Personnel expenses	57,961	54,499
Depreciation and amortization	40,441	38,770
Maintenance	8,350	6,886
Warehousing costs	7,729	6,436
Insurance	1,172	1,158
Advertising	1,155	961
Other	24,024	23,240
Total	**220,697**	**198,358**

7. General and Administrative Expenses

General and administrative expenses include the personnel and non-personnel costs of management and administrative areas to the extent not recharged to other functions as an internal service.

	Jan. 1 – Dec. 31, 2021	Jan. 1 – Dec. 31, 2020
Personnel expenses	46,295	41,055
IT services	10,452	4,731
Depreciation and amortization	9,597	8,731
Insurance and assurance services	3,322	3,190
Rent	1,275	1,397
Other	31,643	21,435
Total	**102,584**	**80,539**

8. Other Operating Income

	Jan. 1 – Dec. 31, 2021	Jan. 1 – Dec. 31, 2020
Income from related parties	4,079	4,526
Gains on the disposal of current assets	4,051	–
Gains on the disposal of non-current assets	3,310	1,493
Other reimbursements	3,063	456
Change in the fair value of derivatives through profit or loss	2,758	–
Exchange rate gains from operating activities	1,564	2,627
Derecognition of liabilities	1,511	710
Insurance claims	1,230	2,782
Other prior-period income	1,173	406
Other	5,610	6,564
Total	**28,349**	**19,564**

9. Other Operating Expenses

	Jan. 1 – Dec. 31, 2021	Jan. 1 – Dec. 31, 2020
Loss due to changes in Group reporting	2,356	–
Exchange rate losses from operating activities	1,872	2,400
Other taxes	782	711
Bank charges	407	272
Losses on the disposal of non-current assets	353	409
Prior-period expenses	38	133
Other	8,576	4,719
Total	**14,384**	**8,644**

10. Financial Result, net

	Jan. 1 – Dec. 31, 2021	Jan. 1 – Dec. 31, 2020
Income from investments accounted for using the equity method	**89,204**	**32,261**
Other investment result, net	**11**	**(49)**
Finance income	**24,794**	**14,849**
Interest income from		
Bank balances	1,980	2,015
Leases	357	–
Others	724	401
Foreign currency gains	15,683	12,411
Gain from the measurement of derivatives	5,790	–
Other finance income	260	22
Finance costs	**(25,589)**	**(36,211)**
Interest expense from		
Liabilities to banks	(10,157)	(13,808)
Leases	(893)	(1,117)
Expenses for the discounting of provisions	(247)	(415)
Capitalized borrowing costs	783	121
Others	(351)	(779)
Foreign currency losses	(12,778)	(15,444)
Loss from the measurement of derivatives	–	(2,936)
Other finance costs	(1,946)	(1,833)
Total	**88,420**	**10,850**

For more information on interest expenses for our bank financing and derivatives, please refer to note 27 "Financial Liabilities" and note 32 "Other Financial Instrument Disclosures".

11. Income Tax Expense

	Jan. 1 – Dec. 31, 2021	Jan. 1 – Dec. 31, 2020
Current income taxes	(59,623)	(47,379)
Deferred income taxes	1,165	4,862
Total	**(58,458)**	**(42,517)**

Deferred income taxes relating to items charged or credited directly to other comprehensive income:

	Dec. 31, 2021	Dec. 31, 2020
Deferred taxes on results of financial assets held for sale	(22)	(22)
Deferred taxes relating to the remeasurement of net defined benefit obligations	653	775
Deferred taxes relating to the initial application of IFRSs	157	157
Deferred tax assets / (liabilities) recognized in other comprehensive income	**788**	**910**

The following reconciliation summarizes the individual calculations of deferred taxes for specific companies using the respective tax rates specific to their countries, taking consolidation adjustments into account. The expected tax expense is reconciled to the effective reported tax expense. To calculate the expected tax expense, the income tax rate for the Group in fiscal 2021, based on the tax rate for the parent company of 30 % (previous year: 30 %), is multiplied by the profit before tax.

	Jan. 1 – Dec. 31, 2021	Jan. 1 – Dec. 31, 2020
Tax rate	30.00 %	30.00 %
Profit from continuing operations before income taxes	**336,535**	**216,095**
Expected income tax expense	(100,961)	(64,829)
Impairment loss/non-recognition of deferred taxes on temporary differences	(1,838)	277
Impairment loss/non-recognition of deferred taxes on current losses	(2,912)	(2,411)
Change in impairment loss/non-recognition of tax loss carryforwards	5,753	(1,513)
Effect of tax credits	1,140	802
Non-deductible interest expenses	(994)	(1,651)
Non-deductible withholding tax/other taxes	(10,078)	(3,339)
Effect of changes in tax rates	–	(64)
Associates accounted for using the equity method	25,557	9,681
Tax expense/(income) for previous years	334	(244)
Non-deductible expenses for tax purposes/tax-free income	(3,512)	(2,748)
Tax rate differences at Group companies	30,304	22,033
Others	(1,251)	1,489
Effective tax expense from operating activities	**(58,458)**	**(42,517)**
Effective tax rate	**17.37 %**	**19.68 %**

As of December 31, 2021, within the Messer Group there were tax loss carryforwards of K€ 162,968 (previous year: K€ 171,041) and credit for offsetting in the form of interest carryforwards of K€ 44,984 (previous year: K€ 41,780).

The Group's loss carryforwards will expire as follows:

Expiring within	Dec. 31, 2021	Dec. 31, 2020
1 year	3,095	10,039
2 years	7,342	8,116
3 years	3,339	8,790
Indefinite	149,192	144,096
Total	**162,968**	**171,041**

For Group companies that had losses in the current or the previous period, a deferred tax asset of K€ 3,317 (previous year: K€ 1,766) was capitalized, the realization of which is dependent on future taxable profits that are higher than the effects of the reversal of existing taxable temporary differences. The recognition of deferred tax assets is justified in that their realization is likely on the basis of planning for tax purposes.

Deferred taxes were not recognized for tax loss and interest carryforwards of K€ 173,428 (previous year: K€ 195,667) or temporary differences of K€ 36,836 (previous year: K€ 36,889), as it is assumed – on the basis of planning for tax purposes – that it will not be possible to utilize the tax loss carryforwards or temporary differences. While the interest carryforwards of K€ 44,984 without deferred tax assets and temporary differences of K€ 36,836 are considered indefinite, the loss carryforwards without deferred tax assets will expire as follows:

Expiring within	Dec. 31, 2021
1 year	2,112
2 years	3,406
3 years	2,788
Indefinite	120,138
Total	**128,444**

In accordance with IAS 12.39, deferred taxes on the difference between the pro rata equity of a subsidiary recognized in the consolidated statement of financial position and the carrying amount of the investment in that subsidiary must be included in the parent company's tax accounts (outside basis differences) if they are expected to be realized. These differences essentially relate to the retained earnings of German and foreign subsidiaries. Deferred taxes are not recognized for these retained earnings as they are re-invested indefinitely or are not subject to corresponding taxation. Distributions by subsidiaries would be subject to dividend taxation. Distributions from abroad could also trigger withholding tax. As of December 31, 2021, deferred tax liabilities for outside basis differences were not taken into account for planned dividend payments as their realization is not planned.

Deferred taxes are attributable to the following statement of financial position items as of December 31, 2021:

	Dec. 31, 2021	Dec. 31, 2020	Recognized in the income statement*	Recognized in other comprehensive income
Deferred tax assets				
Tax loss carryforwards and tax credits	9,293	3,967	5,326	–
Intangible assets and property, plant and equipment	9,201	8,392	809	–
Inventories	1,582	1,378	204	–
Trade receivables	2,697	2,811	(114)	–
Provisions for employee benefits	10,006	10,386	(258)	(122)
Non-current financial liabilities	2,375	4,099	(1,724)	–
Short-term provisions	3,081	2,922	159	–
Miscellaneous	11,189	10,154	1,035	–
Total	**49,424**	**44,109**	**5,437**	**(122)**
Offsetting	**(31,209)**	**(28,188)**		
Deferred tax assets, net	**18,215**	**15,921**		
Deferred tax liabilities				
Intangible assets	(25,118)	(24,539)	(579)	–
Property, plant and equipment	(16,441)	(11,854)	(4,587)	–
Other non-current receivables and assets	(1,953)	(2,365)	412	–
Inventories	(344)	(95)	(249)	–
Other current receivables and other assets	(1,675)	(2,435)	760	–
Non-current and current financial liabilities	–	(10)	10	–
Miscellaneous	(1,879)	(2,323)	443	–
Total	**(47,410)**	**(43,621)**	**(3,789)**	–
Offsetting	**31,209**	**28,188**		
Deferred tax liabilities, net	**(16,201)**	**(15,433)**		
Total deferred taxes, net	**2,014**	**488**	**1,648**	**(122)**

* of which exchange rate changes recognized in other comprehensive income: K€ 483

Deferred tax assets and liabilities, after offsetting at the individual companies, break down as follows:

Deferred taxes	Dec. 31, 2021	Dec. 31, 2020
Deferred tax assets	18,215	15,921
Deferred tax liabilities	(16,201)	(15,433)
Deferred tax assets, net	**2,014**	**488**

Deferred tax assets and liabilities in the statement of financial position and deferred taxes in the income statement are reconciled as follows:

	Dec. 31, 2021	Dec. 31, 2020
Change in deferred tax assets in the statement of financial position	2,294	3,174
Change in deferred tax liabilities in the statement of financial position	(768)	(795)
Difference	1,526	2,379
Of which:		
Through profit and loss	1,165	4,862
Change in Group reporting	–	(2,799)
Offset against other comprehensive income	(122)	(75)
Exchange rate changes	483	391

12. Personnel Expenses

Personnel expenses consist of wages and salaries, social security contributions and other employee benefits (e.g. pensions).

	Jan. 1 – Dec. 31, 2021	Jan. 1 – Dec. 31, 2020
Personnel expenses	166,969	160,139

The above amount includes wages and salaries of K€ 136,533 (previous year: K€ 136,481), expenses for pensions and other benefits of K€ 3,047 (previous year: K€ 3,270), social security contributions of K€ 26,692 (previous year: K€ 19,955) and other staff costs of K€ 697 (previous year: K€ 433). The expenses for defined contribution plans, which essentially relate to statutory pension insurance in Germany, amounted to K€ 1,694 in total for fiscal 2021 (previous year: K€ 2,011).

13. Number of Employees (Annual Average)

The average number of employees breaks down as follows:

By region	Jan. 1 – Dec. 31, 2021	Jan. 1 – Dec. 31, 2020
China	2,306	2,233
Southeast Europe	1,312	1,340
Central Europe	767	791
ASEAN	467	435
Western Europe	279	329
Total number of employees	**5,131**	**5,128**

By function	Jan. 1 – Dec. 31, 2021	Jan. 1 – Dec. 31, 2020
Production and filling	1,942	1,905
Logistics	990	959
Administration	919	984
Engineering	677	659
Sales and marketing	603	621
Total number of employees	**5,131**	**5,128**

Notes to the Consolidated Statement of Financial Position

14. Intangible Assets

2021	Goodwill	Right-of-use assets	Other intangible assets	Total
Cost				
As of Jan. 1, 2021	**352,056**	**66,653**	**187,858**	**606,567**
Additions	–	8,362	1,038	9,400
Change in Group reporting	–	–	–	–
Reclassification	–	–	152	152
Disposals	–	(3,678)	(5,696)	(9,374)
Exchange rate changes	12,348	5,256	2,651	20,255
As of Dec. 31, 2021	**364,404**	**76,593**	**186,003**	**627,000**
Cumulative depreciation and amortization				
As of Jan. 1, 2021	**(86,024)**	**(14,934)**	**(106,441)**	**(207,399)**
Additions	–	(6,420)	(7,310)	(13,730)
Change in Group reporting	–	–	–	–
Reclassification	–	–	–	–
Disposals	–	2,564	5,189	7,753
Exchange rate changes	(1,454)	(1,052)	(1,848)	(4,354)
As of Dec. 31, 2021	**(87,478)**	**(19,842)**	**(110,410)**	**(217,730)**
Net carrying amounts as of Jan. 1, 2021	**266,032**	**51,719**	**81,417**	**399,168**
Net carrying amounts as of Dec. 31, 2021	**276,926**	**56,751**	**75,593**	**409,270**

2020	Goodwill	Right-of-use assets	Other intangible assets	Total
Cost				
As of Jan. 1, 2020	**357,518**	**26,761**	**176,336**	**560,615**
Additions	5,421	18,397	1,988	25,806
Change in Group reporting	–	–	16,141	16,141
Reclassification	–	24,942	246	25,188
Disposals	–	(2,448)	(3,616)	(6,064)
Exchange rate changes	(10,883)	(999)	(3,237)	(15,119)
As of Dec. 31, 2020	**352,056**	**66,653**	**187,858**	**606,567**
Cumulative depreciation and amortization				
As of Jan. 1, 2020	**(86,619)**	**(4,957)**	**(105,336)**	**(196,912)**
Additions	–	(6,662)	(7,545)	(14,207)
Change in Group reporting	–	–	–	–
Reclassification	–	(5,686)	–	(5,686)
Disposals	–	2,154	3,579	5,733
Exchange rate changes	595	217	2,861	3,673
As of Dec. 31, 2020	**(86,024)**	**(14,934)**	**(106,441)**	**(207,399)**
Net carrying amounts as of Jan. 1, 2020	**270,899**	**21,804**	**71,000**	**363,703**
Net carrying amounts as of Dec. 31, 2020	**266,032**	**51,719**	**81,417**	**399,168**

The changes in Group reporting in the previous year include the addition of the assets of Messer CZ s.r.o., Czechia, and of Messer Slovensko s.r.o., Slovakia.

Goodwill

Goodwill is tested for impairment as of December 31 each year. In accordance with IAS 36, goodwill is allocated to the smallest cash-generating unit for which goodwill is monitored and tested for impairment at this level by comparing discounted expected future cash flows against the carrying amount of that cash-generating unit. The smallest identifiable group of assets that generate cash inflows from continued use that are largely independent of the cash inflows of other assets or other groups of assets (cash-generating unit) were identified by the companies of the Messer Group operating in the individual countries. If production and distribution companies within a country complement each other economically, they are combined to form a cash-generating unit. These cash-generating units specifically exist for Poland, Romania, Serbia and its bordering countries, Czechia and the Foshan region and Ningbo in China.

The following table shows the breakdown of goodwill as of December 31, 2021:

	Dec. 31, 2021	Dec. 31, 2020
Hunan Xianggang Messer Gas Products Co., Ltd., China	50,100	44,930
Messer Hungarogáz Kft., Hungary	45,703	46,369
Czechia cash-generating unit	41,168	38,996
Poland cash-generating unit	25,149	25,384
Yunnan Messer Gas Products Co., Ltd., China	24,717	22,166
Messer Tatragas spol.s.r.o., Slovakia	22,516	22,516
Serbia cash-generating unit	19,376	19,380
Foshan, China, cash-generating unit	10,197	9,145
Messer Austria GmbH, Austria	9,782	9,782
Messer Croatia Plin d.o.o., Croatia	9,047	9,004
Wujiang Messer Industrial Gas Co., Ltd., China	6,783	6,083
Romania cash-generating unit	6,578	6,688
Messer Slovnaft s.r.o., Slovakia	3,200	3,200
Ningbo cash-generating unit	2,054	1,842
Messer Mostar Plin d.o.o., Bosnia-Herzegovina	345	345
Universal Industrial Gas. Sdn. Bhd., Malaysia	211	202
	276,926	**266,032**

The recoverable amount for an individual operating company is based on calculations of its respective value in use. The value in use is the present value of the estimated future cash flows expected from the continuing operations of each company. The cash flow forecast is based on the most recent financial plans of the respective cash-generating unit that have been approved by management. Starting with the analysis of past results, values in use were calculated on the basis of detailed forecasts of long-term cash flows through 2025. Cash flows for periods after the detailed planning period were based on the final fiscal year of the detailed planning period (using the terminal value model). Forecast cash flows were discounted to their present value at the measurement date using an appropriate capitalization rate specific to that country. The capitalization rate is calculated using the capital asset pricing model (CAPM) after first being broken down into the components of basic interest rate, risk premium and growth discount. The risk-free basic interest rate was derived from yields on long-term government bonds taking into account the respective country rating (Moody's). The risk premium was obtained by multiplying the market risk premium by the beta factor that reflects the relative risk of a given stock compared to the market as a whole. The market risk premium was calculated for each country using the Damodaran model, taking into account the respective country rating (Moody's). The beta factor was calculated on the basis of an analysis of a peer group of listed companies for the Messer Group.

The capitalization rates for the specific countries are as follows:

	Dec. 31, 2021	Dec. 31, 2020
Bosnia-Herzegovina	11.60 %	14.43 %
Serbia	8.23 %	10.32 %
Croatia	7.74 %	9.47 %
Romania	7.46 %	8.37 %
Hungary	7.21 %	8.41 %
Slovenia	6.50 %	7.51 %
Poland	6.17 %	6.48 %
Slovakia	6.16 %	6.48 %
China	6.02 %	6.26 %
Czechia	5.94 %	6.14 %
Austria	5.73 %	5.84 %

The detailed forecasts up to 2025 used to calculate the values in use of the cash-generating units are based, among other things, on the assumptions for revenue growth, the development of the EBITDA margin and the long-term growth rate after the detailed planning period. These assumptions for the material cash-generating units with a share of goodwill of at least 5 % are as follows:

Cash-generating unit	Carrying amount		Significant planning assumptions		
	Dec. 31, 2021		Revenue growth (CAGR)	Trend in EBITDA margin(1)	Growth rate(2)
Hunan Xianggang Messer Gas Products Co., Ltd., China	50,100	18 %	Moderate increase	Slight increase	1.0 %
Messer Hungarogáz Kft., Hungary	45,703	17 %	Slight increase	Slight increase	1.0 %
Czechia cash-generating unit	41,168	15 %	Moderate increase	Significant increase	1.0 %
Poland cash-generating unit	25,149	9 %	Moderate increase	Significant increase	1.0 %
Yunnan Messer Gas Products Co., Ltd., China	24,717	9 %	Slight increase	Moderate increase	1.0 %
Messer Tatragas spol.s.r.o., Slovakia	22,516	8 %	Moderate increase	Moderate increase	1.0 %
Serbia cash-generating unit	19,376	7 %	Moderate increase	Moderate increase	1.0 %
Miscellaneous companies	48,197	17 %			
Messer Group	**276,926**	**100 %**			

(1) End of the detailed planning period compared to the current fiscal year
(2) Growth after the detailed planning period

The growth rate for extrapolating cash flows beyond the planning period is uniformly 1.0 % (previous year: 1.0 %).

Impairment testing did not identify impairment requirements at any operating companies in 2021.

The following three scenarios were simulated in conjunction with a sensitivity analysis:

(a) Increase in the capitalization rates for each country by 1 percentage point.
(b) The long-term growth rate after the detailed planning period is reduced from 1.0 % to 0.0 %.
(c) Planned EBIT of the cash-generating units consistently falls short of forecasts by 10 % throughout the entire planning period and thereafter from fiscal 2025 onwards.

None of these scenarios would result in any additional goodwill impairment in the cash-generating units with a significant share of goodwill.

Right-of-use assets

Right-of-use assets relate to assets capitalized in conjunction with leases in accordance with IFRS 16. These consist of the following:

2021	Land and buildings	Plant and machinery	Other operating and office equipment	Total
Cost				
As of Jan. 1, 2021	**56,472**	**8,919**	**1,262**	**66,653**
Additions	6,366	1,985	11	8,362
Reclassification	–	–	–	–
Disposals	(1,231)	(1,459)	(988)	(3,678)
Exchange rate changes	4,899	356	1	5,256
As of Dec. 31, 2021	**66,506**	**9,801**	**286**	**76,593**
Cumulative depreciation and amortization				
As of Jan. 1, 2021	**(11,239)**	**(3,242)**	**(453)**	**(14,934)**
Additions	(4,104)	(2,259)	(57)	(6,420)
Reclassification	–	–	–	–
Disposals	1,001	1,203	360	2,564
Exchange rate changes	(941)	(113)	2	(1,052)
As of Dec. 31, 2021	**(15,283)**	**(4,411)**	**(148)**	**(19,842)**
Net carrying amounts as of Jan. 1, 2021	**45,233**	**5,677**	**809**	**51,719**
Net carrying amounts as of Dec. 31, 2021	**51,223**	**5,390**	**138**	**56,751**

2020	Land and buildings	Plant and machinery	Other operating and office equipment	Total
Cost				
As of Jan. 1, 2020	**19,138**	**6,221**	**1,402**	**26,761**
Additions	15,163	3,030	204	18,397
Reclassification	24,473	469	–	24,942
Disposals	(1,493)	(614)	(341)	(2,448)
Exchange rate changes	(809)	(187)	(3)	(999)
As of Dec. 31, 2020	**56,472**	**8,919**	**1,262**	**66,653**
Cumulative depreciation and amortization				
As of Jan. 1, 2020	**(3,064)**	**(1,560)**	**(333)**	**(4,957)**
Additions	(4,150)	(2,082)	(430)	(6,662)
Reclassification	(5,485)	(201)	–	(5,686)
Disposals	1,302	542	310	2,154
Exchange rate changes	158	59	–	217
As of Dec. 31, 2020	**(11,239)**	**(3,242)**	**(453)**	**(14,934)**
Net carrying amounts as of Jan. 1, 2020	**16,074**	**4,661**	**1,069**	**21,804**
Net carrying amounts as of Dec. 31, 2020	**45,233**	**5,677**	**809**	**51,719**

Interest expenses of K€ 893 (previous year: K€ 1,117) were recognized in connection with leases. Furthermore, the following expenses were recognized that were not taken into account in the measurement of right-of-use assets and the corresponding liability:

	2021	2020
Expenses for leases for low-value assets	35	–
Expenses for short-term leases	209	944
Expenses for variable lease payments	210	309
	454	**1.253**

In total, leases resulted in cash outflows of K€ 6,673 (previous year: K€ 7,745) in the year under review. The Messer Group estimates that potential future lease payments, if extension options are exercised, would increase the lease liability by K€ 3,420.

Other intangible assets

Other intangible assets essentially consist of customer bases and licenses, the net carrying amounts of which were € 21,977 (previous year: K€ 25,872) and K€ 48,575 (previous year: K€ 48,619) respectively as of December 31, 2021, and other intangible assets.

The customer bases predominantly result from the purchase price allocations, which were carried out as of May 7, 2004 and in conjunction with the acquisition of the Air Liquide companies in Czechia and Slovakia in 2020. They will be written down on a straight-line basis over the remaining amortization period as of

December 31, 2021 of not more than two or 18 years. The useful life of the customer bases is not more than 20 years and is higher than the original maximum contract term of 15 years as the respective renewal options are highly likely to be exercised by customers. The amortization expense for the fiscal year is recognized in selling and distribution expenses.

The licenses include the rights to the brand ‚Messer – Gases for Life' (K€ 48,333, previous year: K€ 48,333). The carrying amount of the "ASCO" brand was written down in full in previous years.

As these are intangible assets with an indefinite useful life as referred to by IAS 38, they are not amortized but rather tested for impairment at least once per year in accordance with IAS 36. The ‚Messer – Gases for Life' brand is tested for impairment using the relief-from-royalty method applying a specific capitalization rate of 5.34 % (previous year: 5.28 %).

For all companies in the Group, the value in use determined in accordance with the principles described above exceeded the net assets of the cash-generating units. Thus, there were no impairment requirements on other intangible assets in fiscal 2021.

15. Property, Plant and Equipment

2021	Land and buildings	Plant and machinery	Other operating and office equipment	Construction in progress	Total
Cost					
As of Jan. 1, 2021	**252,303**	**1,713,727**	**305,149**	**132,180**	**2,403,359**
Additions	2,671	30,196	11,918	170,367	215,152
Change in Group reporting	–	–	–	–	–
Reclassification	8,027	36,329	1,780	(46,288)	(152)
Disposals	(1,094)	(28,459)	(16,159)	(144)	(45,856)
Exchange rate changes	12,132	96,089	13,580	12,768	134,569
As of Dec. 31, 2021	**274,039**	**1,847,882**	**316,268**	**268,883**	**2,707,072**
Cumulative depreciation and amortization					
As of Jan. 1, 2021	**(116,404)**	**(1,031,778)**	**(220,348)**	**(290)**	**(1,368,820)**
Additions	(8,446)	(93,566)	(16,878)	(1,721)	(120,611)
Change in Group reporting	–	–	–	–	–
Reclassification	–	(7,865)	7,865	–	–
Disposals	961	27,668	14,319	86	43,034
Exchange rate changes	(5,537)	(54,995)	(8,056)	(120)	(68,708)
As of Dec. 31, 2021	**(129,426)**	**(1,160,536)**	**(223,098)**	**(2,045)**	**(1,515,105)**
Net carrying amounts as of Jan. 1, 2021	**135,899**	**681,949**	**84,801**	**131,890**	**1,034,539**
Net carrying amounts as of Dec. 31, 2021	**144,613**	**687,346**	**93,170**	**266,838**	**1,191,967**

2020	Land and buildings	Plant and machinery	Other operating and office equipment	Construction in progress	Total
Cost					
As of Jan. 1, 2020	**265,663**	**1,663,401**	**302,822**	**108,474**	**2,340,360**
Additions	3,141	21,211	9,090	135,171	168,613
Change in Group reporting	905	9,761	2,698	801	14,165
Reclassification	(9,276)	86,561	6,120	(108,593)	(25,188)
Reclassifications	–	(1,255)	1,188	–	(67)
Disposals	(779)	(11,850)	(9,951)	(295)	(22,875)
Exchange rate changes	(7,351)	(54,102)	(6,818)	(3,378)	(71,649)
As of Dec. 31, 2020	**252,303**	**1,713,727**	**305,149**	**132,180**	**2,403,359**
Cumulative depreciation and amortization					
As of Jan. 1, 2020	**(116,543)**	**(983,011)**	**(217,146)**	**(209)**	**(1,316,909)**
Additions	(8,778)	(91,251)	(15,788)	(84)	(115,901)
Change in Group reporting	–	–	–	–	–
Reclassification	5,422	(476)	740	–	5,686
Reclassifications	–	2,364	(2,299)	–	65
Disposals	486	10,869	9,494	–	20,849
Exchange rate changes	3,009	29,727	4,651	3	37,390
As of Dec. 31, 2020	**(116,404)**	**(1,031,778)**	**(220,348)**	**(290)**	**(1,368,820)**
Net carrying amounts as of Jan. 1, 2020	**149,120**	**680,390**	**85,676**	**108,265**	**1,023,451**
Net carrying amounts as of Dec. 31, 2020	**135,899**	**681,949**	**84,801**	**131,890**	**1,034,539**

The changes in Group reporting in the previous year include the addition of the assets of Messer CZ s.r.o., Czechia, and of Messer Slovensko s.r.o., Slovakia.

Borrowing costs of K€ 783 (previous year: K€ 121) were capitalized for qualifying assets in the fiscal year. The average interest rate was 2.0 % (previous year: 3.5 %).

Impairment on property, plant and equipment of K€ 1,721 was recognized at two companies in China in fiscal 2021. This is included in the additions to depreciation charges for the fiscal year on “Construction in progress”. The impairment is reported under “Cost of sales” in the income statement.

In addition, property, plant and equipment includes technical equipment, including tanks and gas cylinders, from operating leases in which the Messer Group acts is the lessor.

The lease payments to be received from customers from such operating leases in the future break down as follows:

	Dec. 31, 2021	Dec. 31, 2020
Due within 1 year	35,998	32,560
Due between 1 and 5 years	101,364	90,696
Due after more than 5 years	64,459	62,883
	201,821	**186,139**

Income of K€ 104 (previous year: K€ 79) from variable lease payments under operating leases was recognized in the reporting period.

16. Investments Accounted for Using the Equity Method

As of December 31, 2021, the following interests in associates and joint ventures were recognized on the basis of the proportionate equity held in the relevant entity:

Name and registered office of the company	Shareholding (%)		Carrying amount	
	Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2021	Dec. 31, 2020
Significant companies				
Yeti GermanCo 1 GmbH, Sulzbach (Taunus), Germany	54.46	54.46	824,110	693,635
Non-significant companies				
Elme Messer Gaas A.S., Tallinn, Estonia	50.00	50.00	46,004	41,256
Yeti Warehouse GmbH, Sulzbach (Taunus), Germany	58.05	58.05	8,183	3,725
Sichuan Meifeng Messer Gas Products Co., Ltd., Mianyang City, China	50.00	50.00	3,125	2,725
Mahler AGS GmbH, Stuttgart, Germany	25.00	–	2,854	–
Messer Medica LLC, Obiliq, Kosovo	49.00	49.00	476	–
Cryogenic Engineering GmbH i.L., Sulzbach (Taunus), Germany	49.00	49.00	203	260
			884,955	**741,601**

In conjunction with the acquisition of the majority of Linde's gas business in the US, the Linde companies in Canada, Brazil and Colombia and the takeover of Praxair's activities in Chile in 2019, the joint venture Yeti GermanCo 1 GmbH was founded by Messer SE & Co. KGaA and CVC Capital Partners for the purpose of assuming the management of Messer's business in Western Europe and the Americas.

In the contribution agreement, Messer assumed various guarantees in connection with the contribution of the Western European business. The liability resulting from these guarantees, depending on the guarantee, is limited to a period of up to five years. They are also limited to certain amounts, the maximum amount being € 772 million. Liability under the guarantees arises when a contractual agreed threshold of € 10 million is exceeded.

The Yeti GermanCo 1 GmbH Employee Participation Program is bundled in the Yeti Warehouse GmbH Group. It is jointly managed by Messer SE & Co. KGaA and CVC Capital Partners.

Elme Messer Gaas A.S. is the parent company of our equity investments in the Baltic states, Russia, Ukraine and Kaliningrad. The group produces and sells industrial gases in these regions and has its own production facilities.

Interests in associates and joint ventures developed as follows:

	2021	2020
Cost		
As of Jan. 1	**745,601**	**809,745**
Additions	4,200	–
Pro rata results	85,203	32,261
Reclassifications	–	–
Disposals	(1,000)	(10,260)
Pro rata changes in statement of comprehensive income	50,564	(85,803)
Exchange rate changes	387	(342)
As of Dec. 31	**884,955**	**745,601**
Cumulative depreciation and amortization		
As of Jan. 1	**(4,000)**	**(10,838)**
Reversals of write-downs	4,000	–
Disposals	–	6,838
As of Dec. 31	**–**	**(4,000)**
Net carrying amount as of Jan. 1	**741,601**	**798,907**
Net carrying amount as of Dec. 31	**884,955**	**741,601**

The reversals of write-downs relate to the shares in Elme Messer Gaas A.S., Estonia.

The disposals in the previous year relate to the sale of shares in Smart-Gas Pte. Ltd., Singapore, and the merger of Balti Messer OÜ, Estonia.

Pro rata gains/(losses) from our equity investments in Ukraine of K€ 452 (previous year: K€ -290) have not been recognized as the pro rata remaining loss exceeds the carrying amount of the equity investments.

The table below shows the combined consolidated financial data in accordance with IFRS, as adopted in the EU, of the significant joint venture Yeti GermanCo 1 GmbH. Yeti GermanCo 1 GmbH is the parent company of our indirect equity investments in Western Europe and North and South America. The group produces and sells industrial gases in these regions and has its own production facilities.

	Yeti GermanCo 1 GmbH	
	2021	2020
Revenue	**2,118,710**	**1,965,492**
Net profit for the year	147,378	52,461
Other comprehensive income	92,912	(158,126)
Total comprehensive income	**240,290**	**(105,665)**
Attributable to:		
Shareholders of the parent company	239,580	(105,815)
Non-controlling interests	710	150
Non-current assets	3,880,828	3,720,144
Current assets	994,810	936,467
Non-current liabilities	2,698,021	2,909,906
Current liabilities	734,322	542,928
Net assets	**1,443,295**	**1,203,777**
Net assets less non-controlling interests	**1,439,709**	**1,200,129**
Attributable to:		
Messer Group's share of net assets	784,069	653,593
Shares of joint venture partners	655,640	546,536

The additional financial data for significant joint ventures are combined in the following table:

	Yeti GermanCo 1 GmbH	
	2021	2020
Cash and cash equivalents	274,917	410,807
Non-current financial liabilities	2,069,561	2,333,741
Current financial liabilities	27,877	23,375
Depreciation and amortization	(351,807)	(343,871)
Interest income	4,239	5,566
Interest expenses	(68,484)	(91,351)
Income (expense) from income taxes	(52,806)	(16,939)

	Yeti GermanCo 1 GmbH	
	2021	2020
Group's share in net assets as of Jan. 1	**653,593**	**711,220**
Pro rata total comprehensive income	130,476	(57,627)
Dividends received	–	–
Pro rata equity contributions/reductions	–	–
Write-down on carrying amount	–	–
Group's share in net assets as of Dec. 31	**784,069**	**653,593**
Others	(1)	–
Share of assets in excess of shareholding	40,042	40,042
Net carrying amount as of Dec. 31	**824,110**	**693,635**

The following table shows the summarized, pro rata financial data of the individually immaterial associates and joint ventures:

	Jan. 1 – Dec. 31, 2021	Jan. 1 – Dec. 31, 2020
Net profit for the year	6,446	3,750
Other comprehensive income	284	(232)
Total comprehensive income	**6,730**	**3,518**

17. Equity Investments and Other Financial Investments

Equity investments and other financial investments developed as follows:

2021	Equity Investments	Non-current loan receivables	Miscellaneous financial investments	**Total**
Cost				
As of Jan. 1, 2021	**2,590**	**75**	**135**	**2,800**
Additions	–	–	7	7
Change in Group reporting	–	5,444	–	5,444
Disposals	(4)	(27)	–	(31)
Exchange rate changes	(28)	–	1	(27)
As of Dec. 31, 2021	**2,558**	**5,492**	**143**	**8,193**
Cumulative depreciation and amortization				
As of Jan. 1, 2021	**(221)**	–	**(43)**	**(264)**
Additions	–	(5,444)	–	(5,444)
Disposals	–	–	–	–
Exchange rate changes	–	–	–	–
As of Dec. 31, 2021	**(221)**	**(5,444)**	**(43)**	**(5,708)**
Net carrying amounts as of Jan. 1, 2021	**2,369**	**75**	**92**	**2,536**
Net carrying amounts as of Dec. 31, 2021	**2,337**	**48**	**100**	**2,485**

"Equity investments" comprises equity investments in various companies that are neither consolidated nor accounted for using the equity method.
Within the cost of non-current loan receivables, "Changes in Group reporting" relate to a loan that Messer Finance B.V., Netherlands, had granted to the non-consolidated Messer Hellas S.A. i.L., Greece. As the loan had been classified as non-recoverable, Messer SE & Co. KGaA had issued a letter of comfort. Until the merger of Messer Finance B.V. with Messer SE & Co. KGaA, the loan had therefore been eliminated as an intragroup balance in the consolidated financial statements. After the merger, the loan receivable was transferred to Messer SE & Co. KGaA and the letter of comfort ceased to exist as a result of the parent and subsidiary forming a single entity. As the loan receivable is still classified as non-recoverable, Messer SE & Co. KGaA wrote it off in full in the fiscal year. Please refer to the comments under note 3 "Consolidated Companies" regarding the merger.

2020	Equity Investments	Non-current loan receivables	Miscellaneous financial investments	**Total**
Cost				
As of Jan. 1, 2020	**2,806**	**1,630**	**133**	**4,569**
Additions	3	–	8	11
Disposals	–	(1,538)	(4)	(1,542)
Exchange rate changes	(219)	(17)	(2)	(238)
As of Dec. 31, 2020	**2,590**	**75**	**135**	**2,800**
Cumulative depreciation and amortization				
As of Jan. 1, 2020	**(221)**	**–**	**(43)**	**(264)**
Additions	–	–	–	–
Disposals	–	–	–	–
Exchange rate changes	–	–	–	–
As of Dec. 31, 2020	**(221)**	**–**	**(43)**	**(264)**
Net carrying amounts as of Jan. 1, 2020	**2,585**	**1,630**	**90**	**4,305**
Net carrying amounts as of Dec. 31, 2020	**2,369**	**75**	**92**	**2,536**

18. Other Non-Current Receivables and Assets

	Dec. 31, 2021	Dec. 31, 2020
Lease receivables	6,436	7,621
Other receivables	1,874	1,802
Trade receivables	406	154
Miscellaneous financial assets	10	10
Financial assets	**8,726**	**9,587**
Miscellaneous non-financial assets	854	831
Non-financial assets	**854**	**831**
Total	**9,580**	**10,418**

The lease receivables relate to the long-term letting of gas generation plants, which are recognized at the present value of the future lease payments. The present value of the lease payments is derived from the lease agreements and is shown in the following table:

	Dec. 31, 2021	Dec. 31, 2020
Gross investment	**8,749**	**10,233**
Due within 1 year	1,736	1,764
Due between 1 and 5 years	6,305	6,398
Due after more than 5 years	708	2,071
Unearned finance income	(872)	(1,199)
Net investment	**7,877**	**9,034**
Due within 1 year	1,441	1,413
Due between 1 and 5 years	5,749	5,619
Due after more than 5 years	687	2,002

19. Inventories

	Dec. 31, 2021	Dec. 31, 2020
Raw materials and supplies	21,566	20,188
Work in progress	11,919	24,006
Finished goods and goods for resale	33,026	31,905
Total	**66,511**	**76,099**

K€ 11,701 (previous year: K€ 11,012) of the inventories recognized on December 31, 2021 were measured at their net realizable value. There are impairment losses of K€ 4,358 (previous year: K€ 3,819) on the net realizable value. The impairment losses were recognized in the cost of sales. The amount of inventories recognized as an expense in the reporting period is K€ 233,493 (previous year: K€ 197,588).

20. Trade Receivables

	Dec. 31, 2021	Dec. 31, 2020
Trade receivables	229,725	199,429
Write-downs on receivables	(41,413)	(38,171)
Total	**188,312**	**161,258**

Please refer to the comments under note 32 “Other Financial Instrument Disclosures” regarding write-downs on receivables.

21. Contract Balances

All work relating to engineering contracts was billed in fiscal 2021 and 2020 and the corresponding amounts were reported in trade receivables.

Performance obligations from contracts with customers

The following table shows the Group’s performance obligations from long-term gas supply contracts with customers:

	Dec. 31, 2021	Dec. 31, 2020
Due in 1st year	80,604	65,221
Due in 2nd year	88,378	79,278
Due in 3rd year	109,456	82,799
Due after more than 3 years	363,879	311,035
Total	**642,317**	**538,333**

The amounts shown above essentially relate to contractually agreed fixed payments, known as take-or-pay installments. Variable obligations were not taken into account. Revenue is recognized on delivery of the gases.

22. Other Current Financial and Non-Financial Assets

	Dec. 31, 2021	Dec. 31, 2020
Receivables from related parties	6,102	2,812
Derivative financial instruments not in hedges	4,192	12
Deposits and guarantees	3,574	3,348
Outstanding deposits	2,780	2,493
Lease receivables	1,441	1,413
Receivables from employees	943	844
Other receivables from operating activities	593	456
Miscellaneous	3,875	2,933
Financial assets	**23,500**	**14,311**
Other tax receivables	14,843	9,781
Prepayments	10,150	4,370
Deferred expenses	4,459	6,076
Receivables from the VAT entity formed with Messer Industrie GmbH	76	10
Miscellaneous	2,522	5,772
Non-financial assets	**32,050**	**26,009**
Total	**55,550**	**40,320**

The item "Deposits and guarantees" essentially comprises deposits of the Chinese companies at local banks for the construction of new air separation and on site plants as well as amounts pledged for future benefits to be paid to employees.

The outstanding deposits are based on a contractual right to payment enforceable as of December 31, 2021 and are due on demand.

Please refer to the comments under note 18 "Other Non-Current Receivables and Assets" regarding lease receivables.

23. Discontinued Operations

On July 16, 2018, Messer and the financial enterprise CVC Capital Partners had reached an agreement with Linde AG and Praxair Inc. on the acquisition of the majority of Linde's gas business in the US, the Linde companies in Canada, Brazil and Colombia and the takeover of Praxair's activities in Chile. In conjunction with the acquisition, the joint venture Yeti GermanCo 1 GmbH was founded by Messer SE & Co. KGaA and CVC Capital Partners with the purpose of assuming the management of Messer's business in Western Europe and the Americas. In this context, Messer SE & Co. KGaA contributed the Western European operating activities in Spain, Portugal, Switzerland, France, Belgium, the Netherlands, Denmark and Germany to the joint venture.

Following its approval by the antitrust authorities, the takeover of the above gas activities of Linde AG and Praxair Inc. was classified as highly probable, hence the Western European business ac-tivities were treated as a discontinued operation in accordance with IFRS 5 until the contribution became effective as of February 28, 2019.

The result of the discontinued operation in the previous year (K€ -4,000 "Other expenses") related to the increase in the provision for legal matters in Spain. Please refer to the comments under note 31 "Contingent Liabilities".

24. Cash and Cash Equivalents

	Dec. 31, 2021	Dec. 31, 2020
Cash, bank balances and checks	304,188	253,657
Cash equivalents	27	29
Cash and cash equivalents	**304,215**	**253,686**

The Group holds cash and cash equivalents of K€ 304,215 as of December 31, 2021 (previous year: K€ 253,686). Where possible, cash and cash equivalents are invested with banks and financial institutions with an investment grade rating or better. The ratings are based on a rating from Standard & Poor's or a comparable rating from another respected rating agency.

Based on the external ratings for the banks and financial institutes, it is assumed that cash and cash equivalents have a low risk of default.

Impairment amounts to K€ 0 as of December 31, 2021 (previous year: K€ 0).

25. Provisions for Employee Benefits

	Dec. 31, 2021	Dec. 31, 2020
Pension provisions	51,915	52,894
Provisions for other employee benefits	3,181	2,881
Provisions for employee benefits	**55,096**	**55,775**

Pension benefits are provided to employees in a number of countries through both defined benefit and defined contribution pension plans. The benefits vary according to legal, fiscal and economic circumstances of each country. Plan benefits are based on years of service and the level of employee compensation. Provisions for other employee benefits mainly relate to company or statutory severance benefits and early retirement benefits. Some of the obligations under defined benefit pension plans are covered by plan assets held in independent trust funds. The net assets of these funds are predominantly invested in real estate, fixed-income securities and negotiable equities.

The amount recognized in the statement of financial position is derived as follows:

	Dec. 31, 2021	Dec. 31, 2020
Present value of pension benefits funded by provisions	49,426	49,853
Present value of funded pension benefits	10,913	11,354
Present value of all pension benefits	**60,339**	**61,207**
Fair value of plan assets of all funds	(8,424)	(8,313)
Net liability recognized	**51,915**	**52,894**

The present value of the pension commitments funded by provisions predominantly to pension plans of Messer SE & Co. KGaA in the amount of K€ 45,999 (previous year: K€ 46,381).

Messer SE & Co. KGaA utilizes defined benefit plans designed to pay beneficiaries an annual pension of 42 % of the total contributions paid in at the end of employment. The defined benefit pension plan consists of a basic pension and an additional pension. The basic pension includes the employee’s regular remuneration up to the income threshold in the statutory pension scheme. The additional pension is granted for the portion of regular remuneration that exceeds the income threshold and is provided by the Company. Both are paid as a retirement pension once the employee retires after reaching the age of 60. The plans are available to all employees who were with Messer SE & Co. KGaA on May 7, 2004 and previously had a valid employment contract with Messer Griesheim GmbH.

The defined benefit plans are managed by a mutual insurance pension fund that is legally independent from the Group. Defined benefit plans expose the Group to various risks. In addition to general actuarial risks such as longevity risk and interest rate risk, the Group is exposed to currency risk and capital market/investment risk. The risk exposures from the respective plans are not materially different.

The following table shows the reconciliation of the funding of defined benefit plans to the amounts recognized in the consolidated financial statements as of December 31, 2021 and 2020:

	2021		2020	
	Pension commitments funded by provisions	Pension commitments funded by funds	Pension commitments funded by provisions	Pension commitments funded by funds
Change in the present value of the defined benefit pension plans				
Present value of all pension benefits as of Jan. 1	**49,853**	**11,354**	**48,166**	**12,464**
Current service cost	956	285	812	382
Past service cost	112	–	65	–
Interest expense on obligations	242	31	413	46
Employee contributions	–	219	–	242
Actuarial losses (gains)	(1,086)	(577)	2,046	(410)
Pension payments	(644)	(731)	(597)	(1,017)
Exchange rate changes	(6)	332	–	53
Others	(1)	–	(1,052)	(406)
Present value of all pension benefits as of Dec. 31	**49,426**	**10,913**	**49,853**	**11,354**
Change in plan assets of all funds				
Fair value of plan assets of all funds as of Jan. 1	**–**	**8,313**	**–**	**8,555**
Interest income/(losses)	–	26	–	38
Income/(losses) (not including interest income/losses)	–	88	–	149
Contributions paid in – employer	–	259	–	334
Contributions paid in – employees	–	219	–	242
Pension payments	–	(708)	–	(991)
Unrecognized excess of plan assets	–	–	–	–
Exchange rate changes	–	227	–	29
Others	–	–	–	(43)
Fair value of plan assets of all funds as of Dec. 31	**–**	**8,424**	**–**	**8,313**

The fair value of plan assets breaks down among the individual asset classes as follows. The amounts shown are weighted averages:

	Dec. 31, 2021 Fair value		Dec. 31, 2020 Fair value	
Bonds	1,608	19 %	1,342	16 %
Equities/funds	1,511	18 %	1,408	17 %
Real estate	1,083	13 %	1,194	15 %
Cash funds	206	2 %	270	3 %
Other assets	4,016	48 %	4,099	49 %
Total	**8,424**	**100 %**	**8,313**	**100 %**

There are quoted prices on an active market for all assets in the categories "Equities/funds", "Bonds" and "Cash funds".

Plan assets are held exclusively to fulfill defined benefit obligations. The funding of these obligations constitutes a reserve for future cash outflows. This is based on statutory regulations in some countries and is voluntary in others. Given the diversity of pension benefits within the Group, the interest rate is not hedged using financial instruments. Following guidelines stipulated by local management, the bodies responsible for the various pension funds decide on the best possible investment strategy commensurate with the age of beneficiaries and the timing of future payments, in accordance with applicable legislation. Most of the plans are not intended to maximize profit, but rather to ensure optimal provision for the companies and employees concerned. Our biggest fund in Switzerland adheres to the principle of sustainability. The capital entrusted to it is invested in accordance with ESG criteria. Funds held to pay future benefits are invested responsibly.

Actuarial losses/(gains) arising on the remeasurement of the present value of pension benefits comprise the following:

	Jan. 1 – Dec. 31, 2021		Jan. 1 – Dec. 31, 2020	
	Pension commitments funded by provisions	Pension commitments funded by funds	Pension commitments funded by provisions	Pension commitments funded by funds
Experience adjustments	666	16	(112)	(331)
Change in financial assumptions	(1,752)	(151)	2,158	(79)
Change in biometric assumptions	–	(442)	–	–
Actuarial losses/(gains) arising on the remeasurement of the present value of pension benefits	**(1,086)**	**(577)**	**2,046**	**(410)**

The following items were recognized in profit or loss in the reporting period:

	Jan. 1 – Dec. 31, 2021	Jan. 1 – Dec. 31, 2020
Current service cost	1,241	1,194
Past service cost	112	65
Interest expense on obligations	273	459
Expected return on plan assets	(26)	(38)
Total amounts recognized in profit and loss	**1,600**	**1,680**

The calculation of obligations and, in certain cases, the related plan assets is based on the following actuarial parameters (reported as a weighted average):

	Dec. 31, 2021 in percent	Dec. 31, 2020 in percent
Discount rate	0.82	0.45
Expected rate of salary increases	2.94	2.57
Expected return on plan assets	0.56	0.32
Expected rate of pension increases	1.77	1.57

The 2018 G Heubeck mortality tables were used to measure the pension obligations for the Ger-man Group companies. The pension obligation in Switzerland was measured using the BVG 2020 GT mortality tables. Mortality tables specific to each company were used to measure the pension obligations for other Group companies.

The present value of the defined benefit obligation relates to the following groups of beneficiaries:

	Dec. 31, 2021		Dec. 31, 2020	
Active beneficiaries	45,732	76 %	48,417	79 %
Beneficiaries who have left the company	4,175	7 %	2,324	4 %
Retired employees	10,432	17 %	10,466	17 %
Total	**60,339**	**100 %**	**61,207**	**100 %**

The weighted average term of the defined benefit obligation as of December 31, 2021 is 16.1 years (previous year: 16.6 years).

An increase or decrease in the discount rate by 50 basis points would have the following effect on the present value of pension obligations as of December 31, 2021:

Change in discount rate in basis points	- 50	-/+ 0	+ 50
Present value of all pension benefits	65,560	60,339	55,733

The sensitivity calculations are based on the average term of the pension obligations calculated as of December 31, 2021. The calculation was made for the discount rate, the actuarial parameter classified as material. As the sensitivity analysis is based on the average duration of the expected pension obligations and therefore the expected payment dates are not taken into account, it only produces approximate information or trend statements.

The Group anticipates contributions to the defined benefit plans of K€ 2,213 in 2022.

26. Other Provisions

	Jan. 1, 2021	Addition	Utilization	Unused amounts reversed	Change in Group reporting	Currency translation	Dec. 31, 2021
Non-current							
Litigation	**2,007**	22	–	–	–	(1)	**2,028**
Personnel	**2,765**	86	(38)	(73)	–	(6)	**2,734**
Miscellaneous	**635**	965	(389)	(352)	–	12	**871**
Total	**5,407**	**1,073**	**(427)**	**(425)**	**–**	**5**	**5,633**
Current							
Personnel	**13,145**	12,464	(10,676)	(1,777)	–	1	**13,157**
Miscellaneous	**18,073**	5,007	(3,854)	(1,183)	–	304	**18,347**
Total	**31,218**	**17,471**	**(14,530)**	**(2,960)**	**–**	**305**	**31,504**

Contracts for which provisions have been recognized essentially have a broad range of remaining terms of between one and 10 years.

The long-term provisions for staff as of December 31, 2021 primarily comprise anniversary obligations. The transfer to provisions includes an amount of K€ 7 for discounting (previous year: K€ 7). The short-term provisions for staff reported as of December 31, 2021 predominantly relate to bonus payments and outstanding vacation.

Short-term "miscellaneous" provisions essentially include the provision for litigation risks in Spain. Please refer to the comments under note 31 "Contingent Liabilities".

Moreover, the "miscellaneous" item includes a short-term provision for the anticipated restoration costs for a pipeline at the Qingbaijiang industrial estate, China, of K€ 3,209. Chengdu Cheng-gang Messer Gas Products Co., Ltd., China, has a pipeline to supply customers on the Qingbaijiang industrial estate, which was laid on the property of its biggest on site customer, which has permanently shut down its steel production. The subsidiary was informed that the pipeline must be removed.

27. Financial Liabilities

The contribution of the Western European companies to Yeti GermanCo 1 GmbH in 2019 created contractually defined grounds for termination for the financing of the Messer Group. A new term and revolving facilities agreement (RFA II) was therefore agreed with our banks on February 26, 2019. The lenders are still UniCredit Bank AG, Bayerische Landesbank, ING Bank a Branch of ING-DiBa AG and Landesbank Hessen-Thüringen Girozentrale. RFA II originally consisted of a Tranche A of € 40 million (term loan), a Tranche B of € 100 million (revolving credit) and a USPP backstop facility (BSF) of € 380 million. Tranche A was repaid on July 17, 2019 and is therefore no longer available. The purpose of the BSF was to cover any repayment of the financial liabilities financed by the US private placements (USPPs). The BSF was not needed to replace the USPPs and is therefore also no longer available.
On May 21, 2021, Tranche B was increased by € 100 million to € 200 million. RFA II, now solely consisting of Tranche B in the amount of € 200 million (revolving credit), matures on December 18, 2023. The respective interest rate for RFA II consists of the Interbank Offered Rate (IBOR) in the currency of utilization plus the margin. This is dependent on the ratio of net debt/EBITDA.

The Messer Group is still financed by US private placements that are or were provided by two insurance companies:

USPP II of June 8, 2011 (USPP II) between Pricoa (€ 80.0 million at 4.55 % p.a.) and MetLife (€ 80.0 million at 4.6975 % p.a.) on the one hand and Messer SE & Co. KGaA and Messer Finance B.V. on the other. USPP II had a term of 10 years with bullet maturity. It was repaid on June 8, 2021 from cash and the increased revolving credit facility.

USPP III of June 12, 2012 (USPP II) between Pricoa (€ 46.3 million at 3.68 % p.a.) on the one hand and Messer SE & Co. KGaA (formerly Messer Finance BV) on the other. This portion of USPP III had an original term of 10 years with bullet maturity.

USPP III of January 29, 2019 (USPP II) between Pricoa (€ 87.8 million at 1.49 % p.a.) on the one hand and Messer SE & Co. KGaA on the other. This portion of USPP III had an original term of five years with bullet maturity.

The collateral for the full amount of the financing arrangements takes the form of guarantees provided by individual Group companies and the pledging of shares in Messer Griesheim China Holding GmbH. This is the German holding company for our Chinese activities.

The unutilized credit facilities amount to € 62.0 million as of December 31, 2021 (previous year: € 70.7 million).

The loan balances and maturities are as follows as of December 31, 2021 and December 31, 2020:

2021	Interest rate p. a.	Credit facility	Utilization	Due date
€ 46.3 million, USPP III	3.680 %	46,296	46,296	August 2, 2022
€ 87.8 million, USPP III	1.490 %	87,758	87,758	January 29, 2024
€ 114.3 million, RFA II	0.500 %	114,287	100,000	flexible until December 18, 2023
€ 10.0 million, RFA II ancillary facility[1]	0.500 %	2,578	2,124	flexible until December 18, 2023
€ 20.0 million, RFA II ancillary facility[2]	3.750 %	20,000	18,056	flexible until December 18, 2023
€ 21.5 million, RFA II ancillary facility	0.500 %	21,500	7,476	flexible until December 18, 2023
€ 14.0 million, RFA III ancillary facility	0.000 %	14,000	–	flexible until December 18, 2023
€ 11.0 million, RFA II ancillary facility[3]	0.750 %	10,389	1,088	flexible until December 18, 2023
€ 8.0 million, RFA II ancillary facility	0.000 %	8,000	–	flexible until December 18, 2023
€ 1.2 million, RFA II ancillary facility[4]	0.000 %	31	–	flexible until December 18, 2023
Other local loans[5]	1.731 %	100,975	100,975	Various
Lease liabilities[5]	3.495 %	n/a	24,072	Various
		425,814	**387,845**	
Transaction costs			(983)	
			386,862	

[1] K€ 7,422 was utilized as a guarantee
[2] Interest rate (PLN) as of December 31, 2021, foreign currencies were translated using the rate as of December 31, 2021
[3] K€ 611 was utilized as a guarantee; weighted interest rate (PLN) as of December 31, 2021, foreign currencies were translated using the rate as of December 31, 2021
[4] K€ 1,182 was utilized as a guarantee; foreign currencies were translated using the rate as of December 31, 2021
[5] Weighted interest rate as of December 31, 2021, foreign currencies were translated using the rate as of December 31, 2021

2020	Interest rate p. a.	Credit facility	Utilization	Due date
€ 80.0 million, USPP II	4.550 %	80,000	80,000	June 14, 2021
€ 80.0 million, USPP II	4.698 %	80,000	80,000	June 14, 2021
€ 46.3 million, USPP III	3.680 %	46,296	46,296	August 2, 2022
€ 87.8 million, USPP III	1.490 %	87,758	87,758	January 29, 2024
€ 14.7 million, RFA II	0.000 %	14,656	–	flexible until December 18, 2023
€ 10.0 million, RFA II ancillary facility[1]	0.000 %	4,852	–	flexible until December 18, 2023
€ 20.0 million, RFA II ancillary facility[2]	1.100 %	20,000	18,203	flexible until December 18, 2023
€ 21.5 million, RFA II ancillary facility	0.500 %	21,500	3,134	flexible until December 18, 2023
€ 14.0 million, RFA III ancillary facility	0.000 %	14,000	–	flexible until December 18, 2023
€ 11.0 million, RFA II ancillary facility[3]	0.762 %	10,376	1,408	flexible until December 18, 2023
€ 8.0 million, RFA II ancillary facility	0.000 %	8,000	–	flexible until December 18, 2023
€ 0.8 million, RFA II ancillary facility[4]	0.000 %	82	–	flexible until December 18, 2023
Other local loans[5]	1.254 %	72,024	72,024	Various
Lease liabilities[5]	3.843 %	n/a	25,685	Various
		459,544	**414,508**	
Transaction costs			(1,542)	
			412,966	

[1] K€ 5,148 was utilized as a guarantee
[2] Interest rate (PLN) as of December 31, 2020, foreign currencies were translated using the rate as of December 31, 2020
[3] K€ 624 was utilized as a guarantee; weighted interest rate (PLN) as of December 31, 2020, foreign currencies were translated using the rate as of December 31, 2020
[4] K€ 762 was utilized as a guarantee; foreign currencies were translated using the rate as of December 31, 2020
[5] Weighted interest rate as of December 31, 2020, foreign currencies were translated using the rate as of December 31, 2020

Transaction costs relate to the arrangement fees paid to the financing banks and various legal and advisory costs directly attributable to the new financing. These costs are recognized as an expense over the terms of the liabilities using the effective interest method in accordance with IFRS 9.

The following table provides an overview of the Group's financial liabilities, measured on the basis of nominal amounts:

	Dec. 31, 2021	Dec. 31, 2020
Non-current		
Liabilities to banks/insurance companies	138,082	204,297
Lease liabilities	19,225	20,567
Miscellaneous	2,116	1,553
Less transaction costs	(487)	(975)
	158,936	**225,442**
Current		
Liabilities to banks/insurance companies	213,585	179,808
Lease liabilities	4,847	5,118
Miscellaneous	9,990	3,165
Less transaction costs	(496)	(567)
	227,926	**187,524**
Total financial liabilities, net	**386,862**	**412,966**
Liabilities with a fixed interest rate	170,403	323,591
Liabilities with variable interest rates (hedged)	51,033	60,305
Liabilities with variable interest rates (not hedged)	166,409	30,612
Total financial liabilities, gross	**387,845**	**414,508**
Weighted average nominal interest rates for liabilities:		
To banks/insurance companies including interest rate hedges	2.32 % p.a.	3.80 % p.a.
Leases	3.50 % p.a.	3.84 % p.a.
Other loans	0.14 % p.a.	0.25 % p.a.

The average interest rate on financial liabilities (including the interest rate swap agreement) was 2.32 % p.a. as of December 31, 2021 (previous year: 3.77 % p.a.).

Financial liabilities (not including transaction costs) are due as follows:

2022	228,422
2023	29,482
2024	100,775
2025	15,186
2026	4,986
Nach 2026	8,994
	387,845

	2021	2020
Non-current financial liabilities as of Jan. 1	**225,442**	**398,776**
Cash changes		
New debt raised	28,775	3,801
Payments of principal	(15)	(3,002)
Non-cash changes		
Net change in lease liabilities	2,617	8.713
Changes in maturities	(103,269)	(176,716)
Currency translation	4,280	(5,185)
Exchange rate changes	618	(1,448)
Transaction costs	488	503
Non-current financial liabilities as of Dec. 31	**158,936**	**225,442**

	2021	2020
Current financial liabilities as of Jan. 1	**187,524**	**25,004**
Cash changes		
New debt raised	110,662	5,542
Payments of principal	(180,913)	(18,827)
Non-cash changes		
Net change in lease liabilities	4,796	557
Changes in maturities	103,269	176,716
Currency translation	2,310	(1,382)
Exchange rate changes	207	(250)
Transaction costs	71	164
Current financial liabilities as of Dec. 31	**227,926**	**187,524**

The Company must comply with various financial covenants in conjunction with USPP II, USPP III and RFA II. Thus, the ratio of net debt to EBITDA must not exceed a defined level.

Furthermore, the ratio of EBITDA to consolidated net interest income must not drop below an agreed level. Minimum equity of € 800 million must be maintained.

28. Other Non-Current Liabilities

	Dec. 31, 2021	Dec. 31, 2020
Government grants	1,070	927
Non-financial liabilities	**1,070**	**927**
Total	**1,070**	**927**

The item is reversed to "Other operating income" in the income statement.

29. Other Current Liabilities

	Dec. 31, 2021	Dec. 31, 2020
Deposits received for hardware	5,450	4,501
Derivative financial instruments without an effective hedge	3,077	4,193
Interest payable	1,975	2,082
Liabilities to related companies	2,772	1,509
Other liabilities to customers	268	213
Miscellaneous liabilities	23,190	19,156
Financial liabilities	**36,732**	**31,654**
Deferred income and other deferred liabilities	44,128	35,103
Payroll liabilities	24,185	20,687
Liabilities to social security providers	18,173	14,281
Advance payments received on orders	8,126	22,670
Other taxes liabilities	6,764	5,927
Prepayments received from related parties	3,294	1,653
Other financial obligations	146	551
Non-financial liabilities	**104,816**	**100,872**
Total	**141,548**	**132,526**

Derivative financial instruments not included in hedge accounting include the negative fair values of currency forwards and the negative fair values of the interest swap.

"Miscellaneous financial liabilities" include K€ 8,844 for outstanding dividends to Chinese joint venture partners.

The item "Deferred income" includes government grants of K€ 423 (previous year: K€ 421).

30. Equity

Issued capital

The issued capital is unchanged year-on-year and is fully paid in.

Capital reserves

The capital reserves contain contributions from the shareholder and amount to K€ 536,937 as of December 31, 2021.

Other reserves

In fiscal 2005, Messer SE & Co. KGaA acquired further shares in Messer Tehnogas AD, Serbia-Montenegro, amounting to around 14 %, from non-controlling shareholders. In conjunction with the consolidation of these additional shares, there was a notional negative difference of K€ 5,905 that was recognized in other reserves.

In fiscal 2011, we increased our majority interest in Messer Haiphong Industrial Gases Co. Ltd., Vietnam, to 100 %. In conjunction with the consolidation of these additional shares, there was a notional positive difference of K€ 1,798 that was offset against the Group's reserves in other comprehensive income.

In fiscal 2013, we increased our majority interest in Messer MOL Gáz Kft., Hungary, to 100 %. In conjunction with the consolidation of these additional shares, there was a notional positive difference of K€ 462 that was offset against the Group's reserves in other comprehensive income.

In fiscal 2014, we reduced our 100 % interest in ASCO Kohlensäure AG, Switzerland, to 70 %. In conjunction with the consolidation of these non-controlling interests, there was a notional positive difference of K€ 1,317 that was offset against the Group's reserves in other comprehensive income.

In fiscal 2015, Messer SE & Co. KGaA acquired the remaining 50 % of shares in Messer Information Services GmbH, Groß-Umstadt, from MEC Holding GmbH, Bad Soden. As both Messer SE & Co. KGaA and MEC Holding GmbH are ultimately controlled by the same party before and after the acquisition, this was not a business combination as referred to by IFRS 3, but rather a transaction under joint control. In conjunction with the consolidation of these additional shares, there was a notional positive difference of K€ 2,400 that was recognized in other reserves.

In fiscal 2016, Messer Griesheim (China) Investment Co. Ltd., China, increased its majority interests in Shaoxing Messer Gas Products Co., Ltd. ("Shaoxing") and Messer Sunshine (Ningbo) Gas Products Co. Ltd., ("Ningbo") to 100 %. In conjunction with the consolidation of these additional shares, there was a notional negative difference of K€ 474 for Shaoxing and a notional positive difference of K€ 357 for Ningbo, which were offset against the Group's reserves in other comprehensive income.

In November 2018, Messer Griesheim (China) Investment Co. Ltd., China, reduced its majority interests in Shaoxing Messer Gas Products Co., Ltd. ("Shaoxing") and Messer Sunshine (Ningbo) Gas Products Co. Ltd., ("Ningbo") by 30 % from 100 % to 70 %. In conjunction with the reduction of majority interests, there was a notional positive difference of K€ 336 for Shaoxing and a notional negative difference of K€ 1,737 for Ningbo, which were offset against the Group's reserves in other comprehensive income.

In January 2019, Messer Griesheim (China) Investment Co. Ltd., China, acquired all shares in Chongqing Pangang Messer Gas Products Co., Ltd. from Sichuan Pangang Messer Gas Products Co., Ltd., in which Messer Griesheim (China) Investment Co. Ltd. holds 60 %. In conjunction with the increase in the majority interest, there was a notional positive difference of K€ 7,066 that was offset against the Group's reserves in other comprehensive income.

In March 2020, Messer increased its majority interests in Universal Industrial Gas Sdn. Bhd. ("UIG"), Malaysia, and Messer (Thailand) Co., Ltd. ("Thailand"), Thailand, to 75 % and 100 % respectively. The consolidation of these additional shares resulted in a notional positive difference of K€ 286 for UIG and a notional positive difference of K€ 197 for Thailand, which were offset against the Group's reserves in other comprehensive income.

In November 2020, Messer Griesheim (China) Investment Co. Ltd., China, increased its majority interests in Shaoxing Messer Gas Products Co., Ltd. ("Shaoxing"), China, and Messer Sunshine (Ningbo) Gas Products Co. Ltd., ("Ningbo"), China, to 100 %. In conjunction with the consolidation of these additional shares, there was a notional positive difference of K€ 150 for Shaoxing and a notional positive difference of K€ 1,158 for Ningbo, which were offset against the Group's reserves in other comprehensive income.

In December 2020, Messer Romania Gaz S.R.L., Romania, acquired the minority interests held by the Romanian joint venture partner Energomontaj in Messer Energo Gaz S.R.L. ("Energo"), Romania, and now holds 100 % of its shares. In conjunction with the consolidation of these additional shares, there is a notional positive difference of K€ 19 for Energo that was also offset against the Group's reserves in other comprehensive income.

Retained earnings

Retained earnings comprise the undistributed past earnings of consolidated companies and the effects of the remeasurement of the net defined benefit pension liability, net of deferred taxes. In accordance with section 150(2) AktG, K€ 7,643 of the net income for the year (HGB) was transferred to the legal reserve. The legal reserve is shown in the consolidated financial statements as a component of retained earnings.

Other components of equity

This item is used to report changes in equity in other comprehensive income, to the extent that such changes do not relate to equity transactions with shareholders (e.g. capital increases or distributions). This includes the difference in currency translation (through other comprehensive income) and the hedging reserve reported in the statement of changes in equity, which relates to the investments accounted for using the equity method.

Non-controlling interests

This item comprises the shares held by other shareholders in the equity of consolidated subsidiaries. Key non-controlling interests are held by other shareholders in China and Serbia.

Besides the distributions of prior-year results, the dividend payments to other shareholders include payments to other shareholders under company law in proportion to their interests.

The following companies have material non-controlling interests:

Name and registered office of subsidiary	Country	Shareholding in percent	
		Dec. 31, 2021	Dec. 31, 2020
Hunan Xianggang Messer Gas Products Co., Ltd., Xiangtan City, Hunan Province – subgroup	China	45 %	45 %
Sichuan Pangang Messer Gas Products Co., Ltd., Panzhihua, Sichuan Province – subgroup	China	40 %	40 %

The following table shows the summarized financial data of the significant subsidiaries with material non-controlling interests:

	Hunan Xianggang Messer Gas Products Co., Ltd. – subgroup		Sichuan Pangang Messer Gas Products Co., Ltd. – subgroup	
	2021	2020	2021	2020
Revenue	**214,349**	**189,907**	**132,919**	**118,541**
Net profit for the year	34,607	36,470	33,736	30,015
thereof attributable to non-controlling interests	15,141	16,239	14,379	12,800
Other comprehensive income	24,531	(5,099)	18,632	(4,187)
Total comprehensive income	**59,138**	**31,371**	**52,368**	**25,828**
thereof attributable to non-controlling interests	24,606	14,298	21,831	11,125
Non-current assets	195,116	171,436	80,377	82,569
Current assets	132,198	103,178	151,854	130,076
Non-current liabilities	2,891	2,657	2,969	2,591
Current liabilities	56,458	45,953	30,383	30,816
Net assets	**267,965**	**226,004**	**198,879**	**179,238**
thereof attributable to non-controlling interests	75,851	60,256	59,622	53,095
Distributions to non-controlling interests	**(5,891)**	**(6,843)**	**(13,091)**	**(12,672)**
Cash flow from operating activities	37,045	37,369	13,294	44,962
Cash flow from investing activities	(20,089)	(25,304)	1,758	557
Cash flow from financing activities	(17,584)	(16,000)	(33,099)	(32,034)
Changes in cash and cash equivalents	**(628)**	**(3,935)**	**(18,047)**	**13,485**

Proposal for the appropriation of profits by the parent company

The Management Board proposes to distribute an amount of K€ 30,000 from net income to the shareholder and to carry the remainder forward to new account.

Capital management

A strong capital base is a key requirement for ensuring the continued existence of Messer SE & Co. KGaA as a going concern. The items reported in the statement of financial position are considered equity. Other items with the legal status of equity or other instruments similar in nature to equity are not used.

The owners, the Management Board and the Supervisory Board ensure that the trust of the lending banks and insurance companies, creditors and the market in general in the Messer Group is maintained by a strong capital base. Under USPP II, USPP III and RFA II, the Group is required to maintain minimum capital of € 800 million. Equity, including non-controlling interests, amounts to K€ 2,340,578 as of December 31, 2021 previous year: K€ 1,962,733). The required minimum capital is therefore comfortably exceeded.

The Management Board and the Supervisory Board regularly review compliance with these and other targets and report on this to the lending banks/insurance companies.

31. Contingent Liabilities

Guarantees

Obligations from issuing guarantees were as follows:

€ million	Dec. 31, 2021		Dec. 31, 2020	
	Maximum potential obligation	Amount reported as a liability	Maximum potential obligation	Amount reported as a liability
Guarantees	19.3	–	8.5	–

Financial guarantees essentially relate to commitments to cover the contractual obligations of the respective principal debtors. Pledges given to secure the liabilities of Group companies were eliminated in consolidation and are thus not included in the above table.

Please refer to the comments under note 16 “Investments Accounted for Using the Equity Method” regarding the guarantees in connection with the contribution of the Western European business.

The Group has undertaken to invest in the acquisition, construction and maintenance of various production facilities. Obligations of this kind relate to the future purchase of plant and equipment at market prices. There are also long-term contracts giving rise to obligations. The commitments under orders, investment projects and long-term contracts amounted to K€ 138,973 as of December 31, 2021 (previous year: K€ 91,438).

Litigation

Messer sold shares to Messer Gases del Perú S.A., Peru, to a company of the Air Products Group by way of agreement dated December 22, 2017. Messer has a full indemnity obligation for the payment claims of Siderperu, an on site customer of Messer Gases del Perú S.A., relating to the period prior to closing (February 1, 2018). For Siderperu’s payment claims after closing, Messer has an indemnity obligation only if an amount of KUSD 700 is exceeded.

KUSD 2,000 in total of the agreed purchase price was paid into an escrow account for possible risks from the sale of shares in Messer Gases del Perú S.A. As the payment claim that could have arisen from the Siderperu proceedings alone exceeds the amount in the escrow account, Messer SE & Co. KGaA also recognized an additional provision of K€ 2,105. All pending proceedings have since been legally finalized bar one. A judgment is expected in the proceedings still pending in 2022. It is assumed that the resulting payment claim will be largely covered by the remainder in the escrow account. The additional provision of K€ 2,105 has been utilized/reversed down to a remainder of K€ 50. The escrow account and the repayment of the remainder will be settled after the pending proceedings are finalized.

Other legal matters

In November 2017, a search was conducted at Messer Ibérica de Gases S.A., Spain, one of the Western European companies that was contributed to the Messer Industries Group later in 2019. In this context, documents were confiscated relating to permits to build and operate our air separation units and a donation for the renovation of a city hall. A decision on whether an action will be filed is still pending.
The Company was searched again in February 2019 in conjunction with a second investigation. The investigations focused on the procurement, consumption and redistribution of electricity to Carburos Metallicos. A third investigation is pending. The investigative records have not yet been disclosed, hence the subject and target of the investigation are still not yet known.

It is currently assumed that the probability of a criminal conviction is low. Fines might be possible in administrative procedures initiated separately at a later date. As a precaution and without acknowledging any duty to pay compensation, Messer SE & Co. KGaA has recognized a provision for fines and legal costs of € 5 million.

After the Spanish regulator issued the Spanish power utility Endesa with a payment order for its grid usage fee, Endesa invoiced Messer Ibérica de Gases S.A. for an additional charge in the same amount of € 35.6 million for allegedly underpaying its grid usage fee in the period 2008 to February 2020. In the opinion of our local Spanish lawyers, both Endesa and Messer Ibérica de Gases S.A. have strong arguments for successfully defending against the claim for payment made by the Spanish regulator in its initial notice in an appeal, and thus also against the claim made by Endesa against Messer Ibérica de Gases S.A.

Even if a claim to payment were assumed, our local lawyers believe there are good arguments for reducing the amount claimed to less than € 10 million on the basis of the statute of limitations and the only partial redistribution of electricity to Carburos Metallicos.

Messer Ibérica de Gases S.A. has recognized a provision of € 5 million for any fines for applications not made in accordance with the proper formal requirements and thus any permits not for-mally in place. In accordance with the contribution agreement between Messer SE & Co. KGaA and Messer Industries GmbH, breaches of warranty only become refundable upwards of an amount of € 10 million with a deductible of € 5 million from Messer Group GmbH.

The proceedings are expected to take four to seven years.

Companies of the Messer Group are party to or involved in court and arbitration proceedings in various countries. Appropriate risk provisions have been recognized for these proceedings, provided that the obligation is reasonably certain.

32. Other Financial Instrument Disclosures

The following table shows the carrying amount and fair values of the individual financial assets and financial liabilities for each class of financial instruments as of December 31, 2021. It does not contain any information on the fair value of financial assets and financial liabilities not measured at fair value when carrying amount is a reasonable approximation of fair value.

	Measurement category as per IFRS 9	Carrying amount as of Dec. 31, 2021	Measurement in accordance with IFRS 9			Measurement in accordance with IFRS 16	Fair value as of Dec. 31, 2021
			Amortized cost	Fair value through OCI	Fair value through profit or loss		
Financial assets							
Non-current loan receivables	**AC**	**48**	48	–	–	–	**48**[1]
Miscellaneous financial investments	**FVOCI**	**100**	–	100	–	–	**100**[1]
Other non-current receivables and assets	**AC**	**2,290**	2,290	–	–	–	**2,429**[1]
Non-current lease receivables	**n/a**	**6,436**	–	–	–	6,436	**9,655**[1]
Trade receivables	**AC**	**188,312**	188,312	–	–	–	
Other current receivables and other assets	**AC**	**17,867**	17,867	–	–	–	
Current lease receivables	**n/a**	**1,441**	–	–	–	1,441	
Derivative financial assets							
Derivatives without an effective hedge	**FVTPL**	**4,192**	–	–	4,192	–	**4,192**[1]
Cash and cash equivalents	**AC**	**304,215**	304,215	–	–	–	
Financial liabilities							
Non-current financial liabilities	**AC**	**139,711**	139,711	–	–	–	**143,632**[1]
Non-current lease liabilities	**n/a**	**19,225**	–	–	–	19,225	
Current financial liabilities	**AC**	**223,079**	223,079	–	–	–	
Current lease liabilities	**n/a**	**4,847**	–	–	–	4,847	
Trade payables	**AC**	**128,755**	128,755	–	–	–	
Other current liabilities	**AC**	**33,655**	33,655	–	–	–	
Derivative financial liabilities							
Derivatives without an effective hedge	**FVTPL**	**3,077**	–	–	3,077	–	**3,077**[1]

[1] Hierarchy level 2

The following table shows the carrying amounts and fair values for each class of financial instrument in accordance with IFRS 9 as of December 31, 2020:

	Measurement category as per IFRS 9	Carrying amount as of Dec. 31, 2020	Measurement in accordance with IFRS 9			Measurement in accordance with IFRS 16	Fair value as of Dec. 31, 2020
			Amortized cost	Fair value through OCI	Fair value through profit or loss		
Financial assets							
Non-current loan receivables	**AC**	**75**	75	–	–	–	**75**[1]
Miscellaneous financial investments	**FVOCI**	**92**	–	92	–	–	**92**[1]
Other non-current receivables and assets	**AC**	**1,966**	1,966	–	–	–	**1,280**[1]
Non-current lease receivables	**n/a**	**7,621**	–	–	–	7,621	**15,056**[1]
Trade receivables	**AC**	**161,258**	161,258	–	–	–	
Other current receivables and other assets	**AC**	**12,886**	12,886	–	–	–	
Current lease receivables	**n/a**	**1,413**	–	–	–	1,413	
Derivative financial assets							
Derivatives without an effective hedge	**FVTPL**	**12**	–	–	12	–	**12**[1]
Cash and cash equivalents	**AC**	**253,686**	253,686	–	–	–	
Financial liabilities							
Non-current financial liabilities	**AC**	**204,875**	204,875	–	–	–	**204,852**[1]
Non-current lease liabilities	**n/a**	**20,567**	–	–	–	20,567	
Current financial liabilities	**AC**	**182,406**	182,406	–	–	–	
Current lease liabilities	**n/a**	**5,118**	–	–	–	5,118	
Trade payables	**AC**	**101,589**	101,589	–	–	–	
Other current liabilities	**AC**	**27,461**	27,461	–	–	–	
Derivative financial liabilities							
Derivatives without an effective hedge	**FVTPL**	**4,193**	–	–	4,193	–	**4,193**[1]

[1] Hierarchy level 2

The Messer Group uses the following hierarchy of inputs to measure fair value:

Level 1: Prices quoted in active markets accessible to the entity for identical assets or liabilities on the measurement date
Level 2: Inputs other than the quoted prices listed in Level 1 that can be observed either directly or indirectly for the asset or liability
Level 3: Unobservable inputs for the asset or liability

Non-current receivables, non-current lease receivables, other non-current assets, non-current financial liabilities and trade payables are discounted to present value. For these purposes, the measurement model is based on interest rate curves and exchange rates for the respective maturities applicable as of the end of the reporting period.

Given their short remaining terms, the carrying amounts of current receivables, trade payables and cash funds are approximately their fair value.

The fair value of forward exchange contracts is determined using quoted forward prices as of the end of the reporting period and calculations of net present value, based on yield curves with high ratings in corresponding currencies. The fair value is the difference between the forward rate as of the end of the reporting period and the rate quoted at the time of purchase.

For interest rate swaps, the fair value is calculated as the present value of the estimated future cash flows. Estimates of the future cash flows from variable interest payments are based on quoted swap rates and interbank interest rates. The estimated cash flows are discounted using a yield curve constructed from a similar source that reflects the relevant benchmark interbank interest rate as used by market participants when pricing interest rate swaps. The estimate of the fair value is adjusted for the credit risk reflecting the credit risk of the Group and the counterparty. This is calculated on the basis of credit spreads derived from the credit default swap of bond prices.

Net gains and losses on financial instruments include the effects on earnings of financial instruments. These essentially include gains or losses on remeasurement from currency translation, adjustments to fair value, impairment losses and their reversals.

The following table shows the effects on earnings of financial instruments by IFRS 9 measurement category:

		Net gains and net losses			
2021	From interest	At fair value	Currency translation	Reversal of impairment / (impairment)	From disposals
Financial assets and financial liabilities at fair value through profit or loss	–	8,548	(3,392)	–	–
Financial liabilities at amortized cost	(10,769)	–	2,561	–	34
Financial assets at amortized cost	1,100	–	3,042	(2,983)	–
Financial assets at fair value through OCI	–	–	17	–	–

The following table shows the effects on earnings of financial instruments by IFRS 9 measurement category in 2020:

2020	From interest	Net gains and net losses			
		At fair value	Currency translation	Reversal of impairment / (impairment)	From disposals
Financial assets and financial liabilities at fair value through profit or loss	–	(2,936)	171	–	–
Financial liabilities at amortized cost	(8,258)	–	(4,419)	–	–
Financial assets at amortized cost	1,071	–	3,734	(9,223)	–
Financial assets at fair value through OCI	–	–	–	–	–

Derivative financial instruments

The Messer Group essentially uses derivative financial instruments to hedge currency and interest exposures in order to reduce currency and interest risks. Foreign currency risks from posted transactions are largely hedged. The Messer Group currently uses standard currency forwards and interest rate swaps as hedging instruments.

The following table shows the nominal volumes and fair values of the derivatives at the end of the reporting period:

	Nominal amount		Fair value	
	Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2021	Dec. 31, 2020
Not hedge accounting	**169,383**	**121,153**	**1,115**	**(4,181)**
Interest hedge (negative fair value)	51,033	60,305	(985)	(2,499)
Currency hedge (positive fair value)	50,901	3,993	3,571	12
Currency hedge (negative fair value)	47,335	56,855	(2,092)	(1,694)
Interest and currency hedge (positive fair value)	20,114	–	621	–
	169,383	**121,153**	**1,115**	**(4,181)**

The nominal volume is the total of all the purchase and sale amounts of derivative financial transactions. The fair values are calculated by measuring the outstanding positions at market price, without taking into account offsetting developments in the value of the hedged items. The transactions are measured in line with the market based on current market data provided by information services.

We are subject to a credit risk for asset OTC derivatives. We minimize the risk by only entering into derivatives with international financial institutes with an investment grade rating.

The remaining terms for the hedges (nominal volume) were as follows as of the end of the reporting period:

	Remaining term up to 1 year	Remaining term more than 1 year	**Total Dec. 31, 2021**	Remaining term up to 1 year	Remaining term more than 1 year	**Total Dec. 31, 2020**
Currency forwards	61,904	36,332	**98,236**	19,816	41,032	**60,848**
Interest rate swaps	51,033	–	**51,033**	–	60,305	**60,305**
Cross-currency interest rate swap	–	20,114	**20,114**	–	–	**–**
	112,937	**56,446**	**169,383**	**19,816**	**101,337**	**121,153**

The Messer Group uses derivatives in accordance with the International Swaps and Derivative Association (ISDA) Agreement. This agreement does not meet the criteria for offsetting in the consolidated statement of financial position, as it only provides for offsetting rights for future events, such as default or insolvency of the Group or counterparty. The following table shows the potential financial impact of offsetting the agreement described, regardless of whether the items are offset in the consolidated statement of financial position in accordance with IAS 32.42.

	Dec. 31, 2021			Dec. 31, 2020		
	Gross amounts of derivatives in the Consolidated Statement of Financial Position	Amounts from netting agreements	**Net amounts**	Gross amounts of derivatives in the Consolidated Statement of Financial Position	Amounts from netting agreements	Net amounts
Derivative assets	4,192	(3,077)	**1,115**	12	(12)	–
Derivative liabilities	(3,077)	3,077	**–**	(4,193)	12	**(4,181)**

Management of financial risks

In conjunction with its operating activities, the Messer Group is exposed to various financial risks, in particular credit, liquidity, interest and currency risk, which are described in more detail below. The Group's risk management system takes into account the fact that financial market developments are not foreseeable and is intended to minimize any potential negative impact on the Group's financial position. The Group uses derivative financial instruments to hedge against specific risks.

Risk management is handled by Group Treasury in compliance with guidelines approved by management. Group Treasury identifies, assesses and hedges financial risks. The guidelines contain general principles for risk management and detailed rules for specific areas, such as currency and interest rate risks, the use of derivative financial instruments and the investment of surplus cash. Further information on risk management can be found in the risk report section of the Group management report.

Credit risk

Credit risk is the risk of financial losses if customers or the counterparty to a financial instrument do not meet their contractual obligations.

There are no impairment losses for other financial assets and financial investments such as bank balances, securities and derivatives that are assets, as the credit risk is classified as remote. Such risks are limited by Group Treasury by selecting counterparties of good credit standing and by limiting the investment amounts. Credit risk in the Messer Group mainly arises from trade receivables.

The corresponding impairment loss is measured at an amount equal to lifetime expected credit losses, based on an analysis of historical default data and forecasts of future economic conditions. Expected credit losses are a probability-weighted estimate of credit losses.

Credit risk in the Messer Group is primarily influenced by customers' individual characteristics.

For risk management purposes, the credit rating of each customer is first analyzed individually before the respective Group company offers its standard delivery and payment terms. Where available, the analysis comprises annual financial statements, information from credit agencies, sector information and, in some cases, credit reports from banks. Specific limits are set individually for each customer. These represent the maximum outstanding amount that can be granted without the approval of the Risk Management Committee. The limits are reviewed at least once a quarter.

Due regard is also given to whether the customer is a natural person or a legal entity. Other factors taken into account are geographical location, market sector, the aging structure of receivables and the occurrence and duration of payment problems.

The expected credit loss over the total term of the respective receivables is taken into account in the measurement of the receivables. The Messer Group uses the simplified impairment model for this.

In order to assess the expected credit risk, receivables are grouped on the basis of the existing credit risk and maturity structure of the receivables concerned. Customers are also divided into groups to monitor the risk of default. The groups of customers with comparable credit risks to be taken into account for the Messer Group result from the business areas and registered office of the respective customers.

If there is objective evidence that the forecast future inflows are impaired, a receivable is classified as impaired. Examples of such evidence include impending insolvency or breach of contract due to default. Default occurs if it is unlikely that a debtor will be able to settle its liabilities in full.

Each company in the Messer Group therefore performs an analysis to determine whether there are objective indications of impairment for customers whose receivables are past due by a certain number of days, indicating an increased credit risk. At the latest, there is an increased credit risk when the amount of the receivable past due is higher than the average turnover. This can vary between 90 and 270 days depending on the company.

The following table provides information on the estimated credit risk and the expected credit losses for trade receivables as of December 31, 2021, calculated according to the default event:

2021	Receivables	Default rate in percent	Expected credit loss
Individually impaired	100,868	37.1 %	37,380
Collectively impaired in accordance with default event			
Days past due:			
Not past due	90,728	0.8 %	749
between 1 and 30 days	24,436	2.3 %	567
between 31 and 60 days	8,023	4.6 %	369
between 61 and 90 days	1,735	17.7 %	307
between 91 and 120 days	526	43.3 %	228
between 121 and 180 days	764	38.7 %	296
between 181 and 270 days	783	39.5 %	309
more than 271 days	2,268	53.3 %	1,208
	230,131		**41,413**

Impairment losses on non-current and current trade receivables developed as follows:

	2021	2020
As of Jan. 1	**38,171**	**30,839**
Net change in impairment recognized in profit or loss	3,236	9,223
Amounts written off as uncollectible in the fiscal year	(404)	(1,774)
Change in Group reporting	—	354
Exchange rate changes	410	(471)
As of Dec. 31	**41,413**	**38,171**

The impairment loss relates to trade receivables and was calculated exclusively on the basis of lifetime expected credit losses.

The following table provides information on the estimated credit risk and the expected credit losses for trade receivables as of December 31, 2020:

2020	Receivables	Default rate in percent	Expected credit loss
Individually impaired	73,747	34.4 %	25,355
Collectively impaired in accordance with default event			
Days past due:			
Not past due	84,168	3.8 %	3,164
between 1 and 30 days	20,286	6.3 %	1,273
between 31 and 60 days	7,032	10.0 %	700
between 61 and 90 days	2,854	14.7 %	419
between 91 and 120 days	698	49.4 %	345
between 121 and 180 days	957	40.2 %	385
between 181 and 270 days	659	49.8 %	328
more than 271 days	9,182	67.5 %	6,202
	199,583		**38,171**

Liquidity risk

Liquidity risk, i. e. the risk that the Messer Group cannot meet its financial obligations, is limited both by creating the necessary financial flexibility and by effective cash management. In addition to cash funds, the Messer Group also has access to long-term, freely available credit facilities to safeguard its liquidity. There are no indications that any of the credit facilities granted are not fully available. Liquidity risks are monitored regularly and reported to management, in particular regarding compliance with the financial covenants described in note 27 "Financial Liabilities".

Trade payables and other current liabilities have remaining terms of less than one year. Information relating to the maturities of financial liabilities can be found in note 27 "Financial Liabilities". Other non-current liabilities have remaining terms of between one and five years.

The following table shows the expected cash flows for financial liabilities:

Description	Carrying amount as of Dec. 31, 2021	Expected cash flow	Cash flows 2022		Cash flows 2023 - 2026		Cash flows from 2027	
			Interest	Payment of principal	Interest	Payment of principal	Interest	Payment of principal
Financial liabilities at amortized cost	**525,200**	**(536,455)**	**(5,445)**	**(385,985)**	**(4,714)**	**(138,392)**	**(113)**	**(1,806)**
Financial liabilities[1]	362,790	(374,045)	(5,445)	(223,575)	(4,714)	(138,392)	(113)	(1,806)
Trade payables	128,755	(128,755)	–	(128,755)	–	–	–	–
Other current liabilities	33,655	(33,655)	–	(33,655)	–	–	–	–
Financial liabilities at fair value through profit or loss	**3,077**	**(3,377)**	**(1,285)**	**(1,772)**	**–**	**(320)**	**–**	**–**
Currency forwards[2]	2,092	(2,092)	–	(1,772)	–	(320)	–	–
Interest rate swaps[2]	985	(1,285)	(1,285)	–	–	–	–	–
Lease liabilities	**24,072**	**(30,227)**	**(753)**	**(4,847)**	**(1,832)**	**(12,037)**	**(3,570)**	**(7,188)**

[1] The transaction costs for financing were already reported as cash outflows and are therefore not a component of future cash flows.
[2] Repayments of principal for financial derivatives are contractual cash flows.

This includes all instruments that were in the portfolio on December 31, 2021 and for which payments were already contractually agreed. Forecast figures for future new liabilities are not included. Foreign currency amounts were translated using the rate as of December 31, 2021. The net interest payments for the interest swap cash flow were calculated using the yield curves provided by the banks.

Description	Carrying amount as of Dec. 31, 2020	Expected cash flow	Cash flows 2021		Cash flows 2022 - 2025		Cash flows from 2026	
			Interest	Payment of principal	Interest	Payment of principal	Interest	Payment of principal
Financial liabilities at amortized cost	**516,331**	**(532,683)**	**(9,020)**	**(312,023)**	**(5,790)**	**(205,850)**	**–**	**–**
Financial liabilities[1]	387,281	(403,633)	(9,020)	(182,973)	(5,790)	(205,850)	–	–
Trade payables	101,589	(101,589)	–	(101,589)	–	–	–	–
Other current liabilities	27,461	(27,461)	–	(27,461)	–	–	–	–
Financial liabilities at fair value through profit or loss	**4,193**	**(4,280)**	**(1,319)**	**(1,434)**	**(1,267)**	**(260)**	**–**	**–**
Currency forwards[2]	1,694	(1,694)	–	(1,434)	–	(260)	–	–
Interest rate swaps[2]	2,499	(2,586)	(1,319)	–	(1,267)	–	–	–
Lease liabilities	**25,685**	**(32,440)**	**(883)**	**(5,118)**	**(2,124)**	**(12,934)**	**(3,748)**	**(7,633)**

[1] The transaction costs for financing were already reported as cash outflows and are therefore not a component of future cash flows.
[2] Repayments of principal for financial derivatives are contractual cash flows.

Interest risk

Interest risk can arise when interest-bearing liabilities are not hedged in terms of maturity or amount by either corresponding assets or derivative instruments. The objective is to optimize the net interest result and minimize interest risks. At 57 %, the Company has hedged a material amount of its total financial liabilities against interest rate changes through fixed interest rate agreements and derivatives.

Variable financial instruments are subject to a cash flow risk with regard to the uncertainty of future interest payments. The cash flow risk is measured using a sensitivity analysis. The sensitivity analysis assumes a shift in the yield curves for all currencies by +/- 100 basis points as of December 31, 2021.

The changes in interest rate derivatives are recognized in profit or loss using the current market interest at the end of the reporting period. If market interest rates had been 100 basis points higher (lower) as of December 31, 2021, consolidated net profit would have been K€ 306 (previous year: K€ 1,252) higher or K€ 88 (previous year: K€ -1,252) lower.

For variable financial liabilities and our financial investments, an interest rate level 100 basis points higher (lower) as of December 31, 2021 would have produced a result higher (lower) by K€ 868 (previous year: K€ 1,616). The exposure to interest rate risk was K€ -86,773 as of December 31, 2021 (previous year: K€ -161,607).

Currency risk

Currency risk for the Messer Group arises from both financing and operating activities in an international environment. Foreign currency risks are hedged to the extent that they have a significant influence on the Group's cash flows.

Foreign currency risks relating to financing activities result from foreign currency financial liabilities and loans for the financing of Group companies. Group Treasury hedges these risks. Currency derivatives are used to convert financial obligations and intragroup loans denominated in foreign currencies into the functional currency of the Group companies.

As far as operating activities are concerned, the individual Group companies predominantly conduct their business in their own functional currency. The Messer Group's currency risk from operating activities is therefore considered remote overall. However, a number of Group companies are exposed to foreign currency risks in connection with operational transactions not denominated in their own functional currency. This mainly relates to payments in conjunction with a long-term supply agreement and payments in conjunction with investments. The Messer Group also uses currency derivatives to hedge these risks.

Currency risks as referred to by IFRS 7 result from financial instruments that are denominated in a currency other than the functional currency and that are monetary in nature; exchange rate differences arising from the translation of financial statements into the Group currency are not taken into account.

Currency risk is measured on the basis of sensitivity analyses. The currency analysis assumes an appreciation (depreciation) of all currencies by 10 % compared to the euro.

If the euro appreciates (depreciates) by 10 % against the major currencies, this would produce a hypothetical result K€ 3,237 lower (higher) (previous year: K€ 2,205). The net currency risk from statement of financial position exposures was as follows:

K€, as of Dec. 31, 2021	CNY	CZK	HUF	PLN	RSD	USD	VND
Foreign currency risk from statement of financial position exposures	2,882	(32,104)	756	(22,731)	20,106	(54,812)	(281)
Foreign currency risk from forecast transactions	77,152	(10,354)	17,000	(43,214)	84,663	(14,585)	558
Transactional foreign currency exposures	**80,034**	**(42,458)**	**17,756**	**(65,945)**	**104,769**	**(69,397)**	**277**
Exposures hedged in economic terms by derivatives	(38,918)	–	–	–	–	46,251	–
Unhedged foreign currency exposures	**41,116**	**(42,458)**	**17,756**	**(65,945)**	**104,769**	**(23,146)**	**277**
Change in foreign currency exposures as a result of a 10 % appreciation of the euro	(4,112)	4,246	(1,776)	6,595	(10,477)	2,315	(28)

33. Related Parties

Transactions with the following entities and individuals are treated as related party transactions.

Related companies

The ultimate controlling company is Messer Industrie GmbH. The ultimate controlling party is the Messer family. Associated companies, joint ventures and non-consolidated subsidiaries classified as related parties are shown in the list of shareholdings.

The following companies are considered related parties:

- Messer Holding GmbH
  Messer Holding GmbH is the parent company of Messer SE & Co. KGaA and has held all shares in Messer SE & Co. KGaA since January 1, 2016.

- Messer Management SE
  Messer Management SE is the general partner (SE) of Messer SE & Co. KGaA.

- MIG Holding GmbH and Messer Eutectic Castolin Group (MEC Group)
  100 % of the shares in MEC Global GmbH are held by MIG Holding GmbH, an affiliate of Messer Industrie GmbH with the same ownership structure.

- Messer Medical Home Care Holding GmbH (Home Care Group)
  The Messer Group has spun off its home care activities into an independent group since 2011. The parent company of this Group, Messer Medical Home Care Holding GmbH, is wholly owned by MEC Holding GmbH, whose interest is held by MIG Holding GmbH Wages.

- Greenbelt Ltd., British Virgin Islands, and Hardtberg Grundstücks GmbH
  Stefan Messer, Managing Director and co-shareholder of Messer Industrie GmbH, is also a Managing Director and co-shareholder or sole shareholder of these companies. Messer SE & Co. KGaA rents its head office in Bad Soden am Taunus from Hardtberg Grundstücks GmbH. The contract satisfies the lease criteria of IFRS 16 and was reported as a right-of-use asset in the consolidated statement of financial position. The corresponding lease liability amounts to K€ 4,161 as of December 31, 2021.

Messer SE & Co. KGaA and MEC Holding GmbH are joint owners in the investment in the facilities at the head office in Bad Soden.

- Yeti GermanCo 1 GmbH Group
  Messer SE & Co. KGaA holds 54.4602 % in the joint venture Yeti GermanCo 1 GmbH, which manages Messer's business in Western Europe and the Americas. All companies included in these consolidated financial statements are related parties from the perspective of Messer SE & Co. KGaA.

- Yeti Warehouse GmbH Group
  Messer Group holds 58.05 % in Yeti Warehouse GmbH. The Yeti GermanCo 1 GmbH Employee Participation Program is bundled in the Yeti Warehouse GmbH Group.

The following transactions were performed with related companies:

	Jan. 1 – Dec. 31, 2021	Jan. 1 – Dec. 31, 2020
Revenue and re-charging		
Ultimate controlling company	3	5
Associates/joint ventures	41,974	34,462
Non-consolidated subsidiaries	363	287
Other related parties	1,163	5,161
	43,503	**39,915**
Purchased goods and services		
Ultimate controlling company	66	23
Parent company	412	2,365
Associates/joint ventures	4,001	4,601
Non-consolidated subsidiaries	80	92
Other related parties	278	151
	4,837	**7,232**

	Dec. 31, 2021	Dec. 31, 2020
Trade receivables		
Ultimate controlling company	3	–
Associates/joint ventures	8,687	4,283
Non-consolidated subsidiaries	1,484	1,640
Other related parties	164	562
	10,338	**6,485**
Other financial and non-financial assets		
Ultimate controlling company	1,157	985
Associates/joint ventures	–	22
Other related parties	220	59
	1,377	**1,066**
Trade payables		
Ultimate controlling company	46	–
Associates/joint ventures	2,072	2,585
Non-consolidated subsidiaries	–	28
Other related parties	384	349
	2,502	**2,962**
Other financial and non-financial liabilities		
Parent company	1,798	1,509
Associates/joint ventures	3,294	1,653
Other related parties	974	–
	6,066	**3,162**

The receivables from related parties result from service agreements and sales transactions with varying maturities. The receivables are not secured by collateral and do not bear interest.

	Dec. 31, 2021	Dec. 31, 2020
Loans granted to		
Other related parties	4,000	–
Non-consolidated subsidiaries	801	1,133
Associates/joint ventures	–	623
	4,801	**1,756**
Loans received from		
Ultimate controlling company (interest 0.01 % p. a.)	4,140	–
Other related parties (interest 0.01 % p. a.)	4,540	3,165
	8,680	**3,165**

Related persons

Members of management in key positions
Management in key positions at Messer SE & Co. KGaA included the following in the fiscal year:

- Stefan Messer, Chief Executive Officer, Bad Soden am Taunus
- Dr. Uwe Bechtolf, Chief Financial Officer, Wiesbaden (until December 31, 2021)
- Ernst Bode, Chief Operating Officer Europe, Belgrade
- Helmut Kaschenz, Chief Strategic Officer, Frankfurt/Main (from April 1, 2021)

The total remuneration of the members of management in key positions amounted to K€ 4,234 in the fiscal year (previous year: K€ 2,991).

Of this figure, fixed remuneration including benefits in kind and other fringe benefits amounted to K€ 1,647 (previous year: K€ 1,228). The total amount of variable remuneration was to K€ 2,122 (previous year: K€ 1,515) and is linked to the achievement of certain performance indicators. An amount of K€ 465 was added to the pension provisions in the fiscal year (previous year: K€ 248).

Supervisory Board
The members of the Supervisory Board of Messer Group GmbH until July 30, 2021 were:

- Dr. Jürgen Heraeus, Chairman, business graduate
- Dr. Bodo Lüttge, Deputy Chairman, business graduate
- Dr. Karl-Gerhard Seifert, chemist, Managing Director of Cassella GmbH
- Dr. Werner Breuers, chemist, Managing Partner of ICB Deutschland GmbH
- Dr. Nathalie von Siemens, philosophy graduate, member of the Supervisory Board of Siemens AG
- Heike Niehues, economics graduate, member of the Management Board of Webasto Thermo & Comfort SE

The following persons have been appointed as members of the Supervisory Board of Messer SE & Co. KGaA since August 1, 2021:

- Dr. Jürgen Heraeus, Chairman, business graduate
- Dr. Werner Breuers, Deputy Chairman, chemist, Managing Partner of ICB Deutschland GmbH
- Dr. Karl-Gerhard Seifert, chemist, Managing Director of Cassella GmbH
- Dr. Nathalie von Siemens, philosophy graduate, member of the Supervisory Board of Siemens AG
- Dr. Johannes Fritz, Chairman of the Audit Committee (from September 1, 2021), independent consultant
- Heike Niehues, economics graduate, member of the Management Board of Webasto Thermo & Comfort SE
- Maureen Messer-Casamayou, teacher
- Sabine Scheunert-Porth, CIO and economics graduate, Vice President of Digital & IT Sales/Marketing Mercedes-Benz AG

The Supervisory Board received total remuneration of K€ 281 for the fiscal year (previous year: K€ 220).

The members of the Supervisory Board of Messer Management SE in the fiscal year were:

- Dr. Jürgen Heraeus, Chairman, business graduate
- Maureen Messer-Casamayou, teacher
- Marcel Messer, Managing Director of MEC Holding GmbH and Yeti Warehouse GmbH

34. Events after the Reporting Period

Bernd Eulitz was appointed to the Management Board of Messer Management SE as its Deputy Chairman as of February 1, 2022.

The Russian army attacked Ukraine on February 24, 2022. A large number of countries responded with massive sanctions against Russia. Given the unpredictable nature of future developments and the considerable uncertainty this entails, we are unable to reliably estimate the financial impact, including on our business activities, at this time. The general economic environment is largely dependent on how the military conflict in Ukraine unfolds and its ramifications (duration, expansion to other territories and further sanctions). If the current developments continue, we anticipate tangible negative implications in various areas in fiscal 2022; the business activities of our customers can also have repercussions on the operations of the Messer Group. However, these cannot yet be adequately quantified at the current time.

35. Prior-Year Financial Statements

The Supervisory Board approved the consolidated financial statements of Messer Group GmbH (today: Messer SE & Co. KGaA) as of December 31, 2020 on April 20, 2021.

36. Auditors' Fees

The fee for the auditor of the German Messer companies broke down as follows (in K€):

	2021	2020
Audits of financial statements	324	314
Other assurance services	2	2
Tax advisory services	21	75
Other services	470	154
	817	**545**

Bad Soden am Taunus, March 31, 2022

Appendix

List of shareholdings as of December 31, 2021

Country	Name	Registered office	Equity (in K€)	Direct / Indirect	Shareholding in %	Net result after tax (in K€)
Affiliated companies included in the consolidated financial statements						
Albania	Messer Albagaz SH.P.K	Korça	3,746	I	81.94	314
Austria	Messer Austria GmbH	Gumpoldskirchen	94,375	D	100.00	6,216
Bosnia and Herzegovina	Messer Mostar Plin d.o.o.	Mostar	5,410	D	100.00	916
	Messer Tehnoplin d.o.o.	Sarajevo	22,912	I	97.90	4,126
	Messer BH Gas d.o.o.	Sarajevo	23,549	I	81.94	1,909
Bulgaria	Messer Bulgaria EOOD	Sofia	8,462	D	100.00	802
China	Kunming Messer Gas Products Co., Ltd.	Kunming, Yunnan Province	(2,553)	I	77.16	(47)
	Sichuan Messer Gas Products Co., Ltd.	Chengdu	54,446	I	100.00	8,459
	Mianyang Messer Gas Products Co., Ltd.	Mianyang	5,851	I	100.00	1,026
	Foshan MS Messer Gas Co., Ltd.	Foshan City, Guangdong Province	94,875	I	85.00	11,306
	Chengdu Chenggang Messer Gas Products Co., Ltd.	Chengdu	(2,802)	I	60.00	1,270
	Hunan Xianggang Messer Gas Products Co., Ltd.	Xiangtan City, Hunan Province	187,369	I	55.00	31,218
	Sichuan Pangang Messer Gas Products Co., Ltd	Panzhihua, Sichuan Province	173,250	I	60.00	33,355
	Wujiang Messer Industrial Gas Co., Ltd.	Wujiang, Jiangsu Province	5,722	I	100.00	2,961
	Messer Sunshine (Ningbo) Gas Products Co., Ltd.	Ningbo, Zhejiang Province	7,987	I	100.00	941
	Messer Gas Products (Zhangjiagang) Co., Ltd.	Zhangjiang City, Jiangsu Province	71,004	I	100.00	8,963
	Foshan Shunde MS Messer Gas Products Co., Ltd	Foshan City, Guangdong Province	50,771	I	60.00	12,151
	Chongqing Messer Gas Products Co., Ltd.	Chongqing, Sichuan Province	25,344	I	100.00	5,732
	Messer Griesheim (Kunming) Gas Products Co.Ltd.	Kunming, Yunnan Province	16,001	I	100.00	2,888
	Shaoxing Messer Gas Products Co. Ltd.	Shaoxing City, Zhejiang Province	11,872	I	100.00	2,902
	Xichang Pangang Messer Gas Products Co. Ltd.	Xichang City	104,834	I	60.00	14,156
	Messer (Wuhu) Gas Products Co., Ltd	Wuhu City, Anhui Province	10,306	I	100.00	–
	Messer Gas Products (Nanjing) Co.,Ltd	Nanjing, Jiangsu Province	5,212	I	100.00	893
	Messer Specialty Gases (Suzhou) Co., Ltd.	Suzhou, Jiangsu Province	16,941	I	100.00	2,565
	Hengyang Xianggang Messer Gas Products Co.Ltd	Suzhou, Jiangsu Province	7,867	I	55.00	604
	Yunnan Yun Tianhua Messer Gas Products Co.,Ltd.	Suzhou, Jiangsu Province	6,165	I	65.00	273
	Foshan Sanshui MS Messer Gas Co., Ltd.	Suzhou, Jiangsu Province	6,586	I	85.00	1,328
	Dongguan Moral Strength Messer Gas Co., Ltd.	Dongguan, Guangdong Province	11,119	I	60.00	–

Country	Name	Registered office	Equity (in K€)	Direct/Indirect	Share-holding in %	Net result after tax (in K€)
Affiliated companies included in the consolidated financial statements						
China	Ningxiang Xianggang Messer Gas Products Co., Ltd.	Ningxiang, Hunan Province	17,906	I	55.00	5,571
	Kunming Anning Messer Gas Products Co.Ltd	Anning, Yunnan Province	8,472	I	100.00	(177)
	Messer Gas Products (Chengdu) Co., Ltd.	Chengdu City, Sichuan Province	17,715	I	100.00	–
	Messer Specialty Gases (Chuzhou) Co., Ltd.	Chuzhou, Anhui Province	11,676	I	100.00	–
	Messer Specialty Gases (Meishan) Co., Ltd.	Mianyang City, Sichuan Province	8,992	I	100.00	–
	Liuyang Xianggang Messer Gas Products Co., Ltd.	Liuyang City, Hunan Province	3,059	I	55.00	–
	Yunnan Messer Gas Products Co., Ltd.	Kunming, Yunnan Province	37,943	I	100.00	4,907
	Messer Griesheim (China) Investment Co., Ltd.	Shanghai	389,578	I	100.00	91,593
	Changsha Xianggang Messer Gas Products Co, Ltd.	Changsha, Hunan Province	2,242	I	55.00	290
	Messer Management Consulting (Shanghai) Co., Ltd.	Shanghai	21,885	I	100.00	234
Croatia	Messer Croatia Plin d.o.o.	Zapresic	26,400	I	99.96	4,874
Czech Republic	Messer Technogas s.r.o.	Prague	30,902	D	100.00	7,420
	MG Odra Gas spol.s.r.o.	Vratimov	22,285	D	70.00	1,267
Germany	Messer Griesheim China Holding GmbH	Sulzbach	178,322	I	100.00	–
	Messer SE & Co. KGaA	Sulzbach	1,282,825	I	100.00	152,863
	Messer GasPack GmbH	Krefeld	57,698	I	100.00	–
Hungary	Messer Hungarogáz Kft.	Budapest	63,217	D	100.00	13,054
Malaysia	Universal Industrial Gas Sdn. Bhd.	Senai	2,221	D	75.00	53
North Macedonia	Messer Vardar Tehnogas d.o.o.	Skopje	7,921	D	100.00	640
Poland	Messer Polska Sp. z o.o.	Chorzów	40,714	D	99.97	2,328
	Eloros Sp. z o.o.	Chorzów	9,893	I	99.97	1,873
	MP Production Sp. z o.o.	Chorzów	4,941	I	99.97	1,132
Romania	Messer Romania Gaz S.R.L.	Bucharest	18,034	I	100.00	2,571
Serbia	Messer Tehnogas AD	Belgrade	187,568	D	81.94	23,262
Slovakia	Messer Tatragas spol.s.r.o.	Bratislava	22,841	D	100.00	4,556
	Messer Slovnaft s.r.o.	Bratislava	3,893	D	51.00	512
Slovenia	Messer Slovenija d.o.o.	Ruse	42,222	I	74.76	1,735
Switzerland	ASCO Kohlensäure AG	Romanshorn	2,813	D	70.00	(1,927)
Thailand	Messer (Thailand) Co., Ltd	Bangkok	3,732	D	100.00	9
USA	ASCO Carbon Dioxide Inc.	Jacksonville	484	I	70.00	106
Vietnam	Messer Haiphong Industrial Gases Co., Ltd.	Hai Phong City	84,043	D	100.00	11,939
	Messer Binh Phuoc Industrial Gases Co., Ltd.	Binh Phuoc Province	3,274	D	100.00	(184)
	Messer Vietnam Industrial Gases Co., Ltd.	Binh Duong	4,967	D	100.00	448

Country	Name	Registered office	Equity (in K€)	Direct / Indirect	Share-holding in %	Net result after tax (in K€)	
Companies accounted for using the equity method							
China	Sichuan Meifeng Messer Gas Products Co., Ltd.	Mianyang City, Sichuan Province	5,161	I	50.00	209	
Estonia	Elme Messer Gaas A.S.	Tallinn	62,614	D	50.00	2,957	
Germany	Cryogenic Engineering GmbH i.L.	Sulzbach	82	D	49.00	(117)	
	Mahler AGS	Stuttgart	4,294	D	25.00	1,544	
	Yeti GermanCo 1 GmbH	Sulzbach	1,345,670	D	54.46	18,045	
	Yeti Warehouse GmbH	Sulzbach	3,110	D	58.05	(5)	
Kosovo	Messer Medica LLC	Obiliq	1,407	I	49.00	–	
Affiliated companies not included in the consolidated financial statements							
Bosnia and Herzegovina	Plin Sarajevo d.d.	Sarajevo	2,734	I	100.00	(301)	1
Gibraltar	Messer Primeco FZE Limited (Gibraltar)	Gibraltar	–	D	51.00	–	1
Greece	Messer Hellas S.A. i.L.	Athens	–	D	100.00	–	1
	Tehnogas-Hellas Ltd.	Athens	–	I	40.97	–	1
Kosovo	Messer GTM LLC	Kosovska Mitrovica	31	I	81.94	239	1
Malaysia	Excel Gas Solutions Sdn. Bhd	Kuala Lumpur	–	I	25.80	–	1

[1] Affiliated companies not included in the consolidated financial statements owing to immateriality for the net assets, financial position and result of operations