ACCELERATING THE ENERGY TRANSITION

AMG ADVANCED METALLURGICAL GROUP N.V.

ANNUAL REPORT 2021

AB210N RH
rotork Gears
THE NETHERLANDS

GLOBAL TRENDS

CO_2 emission reduction, circular economy, population growth, increasing affluence, and energy efficiency

SUPPLY

AMG sources, processes and supplies the critical materials that the market demands

DEMAND

Innovative new products that are lighter, stronger, and resistant to higher temperatures

CRITICAL MATERIALS COMPANY

AT A GLANCE

AMG is a global critical materials company at the forefront of CO_2 reduction trends. AMG produces highly engineered specialty metals and mineral products and provides vacuum furnace systems and services to the transportation, infrastructure, energy and specialty metals & chemicals end markets.

TRANSPORTATION

Innovation is driving demand for critical materials in the transportation industry. Highly engineered metallurgical solutions are needed to increase operating efficiency, lower aircraft weight and improve economics. AMG's titanium aluminide is a lightweight aerospace alloy which enables aircraft engines to operate at higher temperatures, reducing carbon emissions and improving fuel consumption.

ENERGY

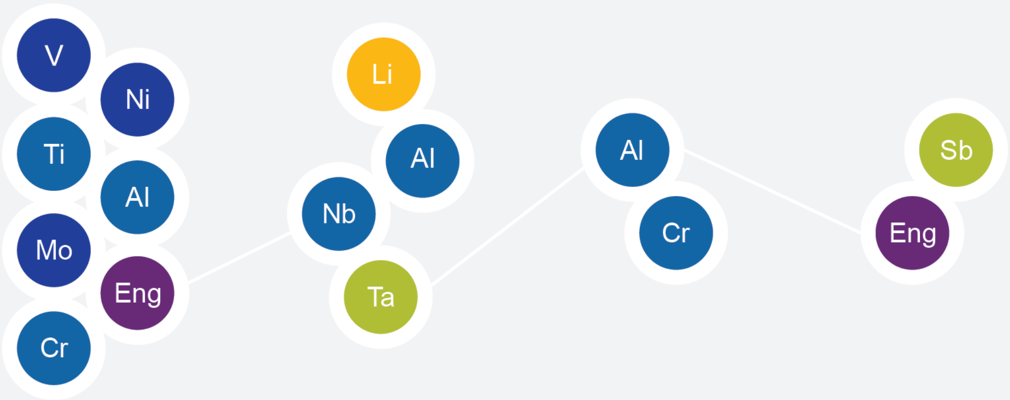
Global energy demand growth is driven by two opposing factors—increased energy usage and improvements in energy efficiency. AMG provides metallurgical technologies to improve energy efficiency and increase energy supply, such as silicon metal used for the production of polysilicon by the solar energy industry, and graphite used as an insulation material.

INFRASTRUCTURE

Improvements in infrastructure are essential to growing global GDP and reducing carbon emissions. AMG provides critical materials such as ferrovanadium for high-strength steels. These technologies are deployed in infrastructure projects that are critical to addressing global urbanization trends.

SPECIALTY METALS & CHEMICALS

Specialty metals and chemicals are used to create products that improve global living standards. AMG produces customized metallurgical solutions that meet the market's exacting demands, including tantalum, a material used as a capacitor in electronics, and vanadium-based chemicals which improve the insulating and infrared absorbent properties of structural glass and chemical compounds.



USA
Aluminum Master Alloys
Titanium Alloys
Chrome Metal
Nickel
Ferrovanadium
Molybdenum
Engineering

Brazil
Tantalum
Aluminum Master Alloys
Niobium
Lithium

United Kingdom
Aluminum Master Alloys
Aluminum Powders
Chrome Metal

France
Antimony
Engineering

Germany
Titanium Alloys
Natural Graphite
Silicon Metal
Engineering

China
Aluminum Master Alloys
Natural Graphite
Engineering

Sri Lanka
Natural Graphite

Mozambique
Natural Graphite

Mexico
Engineering

REPORT OF THE

MANAGEMENT BOARD

DR. HEINZ SCHIMMELBUSCH

CHAIRMAN & CHIEF EXECUTIVE OFFICER

ERIC JACKSON

CHIEF OPERATING OFFICER

JACKSON DUNCKEL

CHIEF FINANCIAL OFFICER

BORN 1944

Dr. Schimmelbusch was appointed Chief Executive Officer and Chairman of the Management Board on November 21, 2006, and he was reappointed for a term of two years starting May 6, 2021. He has served in a similar capacity for businesses comprising AMG since 1998.

Dr. Schimmelbusch served as Chairman of the Management Board of Metallgesellschaft AG from 1989 to 1993. His directorships have included Allianz Versicherung AG, Mobil Oil AG, Teck Corporation, Methanex Corporation, Metall Mining Corporation and MMC Norilsk Nickel.

Dr. Schimmelbusch served as a member of the Presidency of the Federation of German Industries (BDI) and the Presidency of the International Chamber of Commerce (ICC). Dr. Schimmelbusch received his graduate degree (with distinction) and his doctorate (magna cum laude) from the University of Tübingen, Germany.

BORN 1952

Mr. Jackson was appointed a member of the AMG Management Board on April 1, 2007. He was appointed to the newly created position of Chief Operating Officer on November 9, 2011, and reappointed to the AMG Management Board for a term of four years on May 6, 2021. Mr. Jackson has served in various senior management positions for businesses now owned by AMG since 1996, most recently as President and Chief Operating Officer of Metallurg, Inc.

Mr. Jackson previously held senior management positions at Phibro, a division of Salomon Inc., Louis Dreyfus Corporation and Cargill Incorporated in Canada and the United States. Mr. Jackson received a Bachelor of Science degree in Economics and an MBA, both from the University of Saskatchewan.

BORN 1964

Mr. Dunckel was appointed Chief Financial Officer of AMG on February 1, 2016. He was appointed a member of the AMG Management Board on May 4, 2016 and reappointed for a term of four years on May 6, 2020.

Mr. Dunckel joined AMG from the Macquarie Group Limited where he served as Managing Director and US Head of Chemicals from 2010 to 2015. Prior to this, Mr. Dunckel held various senior level positions at JP Morgan Chase since 1995, including Executive Director, Investment Banking Coverage. Mr. Dunckel graduated, cum laude, with a bachelor’s degree in European History from the University of California, Berkeley, and completed his MBA in International Finance at the Leonard Stern School of Business in 1995.

FINANCIAL & OPERATIONAL

HIGHLIGHTS

1,204.7 REVENUE $M	208.2 GROSS PROFIT $M	136.7 EBITDA $M
90.8 CASH FROM OPERATING ACTIVITIES $M	(3) WORKING CAPITAL DAYS	284.5 NET DEBT $M
0.39 LOST TIME INCIDENT RATE	1.08 TOTAL INCIDENT RATE	0.44 DILUTED EARNINGS PER SHARE $

34%
Transportation

25%
Specialty Metals & Chemicals

23%
Infrastructure

18%
Energy

Operational Highlights

AMG was promoted from the AScX® (small cap) to the AMX® (mid cap) index in March 2021.

In April 2021, AMG issued 3.1 million new shares, generating $119 million of net proceeds and increasing liquidity to approximately $500 million.

In November 2021, AMG entered into a new $350 million 7-year senior secured term loan B facility and a $200 million 5-year senior secured revolving credit facility, which together replaced AMG's prior credit facility and extended the term loan maturity from 2025 to 2028 and revolver maturity from 2023 to 2026. Further strengthening AMG's commitment to Environmental, Social and Governance (ESG) principles, annual CO_2 intensity reduction targets were built into the Revolving Credit Facility, making it a Sustainability Linked Loan.

Shell & AMG Recycling B.V. (SARBV) continues to pursue circular refinery residue opportunities globally.

In March 2021, AMG Vanadium signed a new long-term, multi-year agreement to process and recycle spent catalysts from a major oil refinery operator in North America.

The construction of AMG Vanadium's second spent catalyst recycling facility in Zanesville, Ohio, a $325 million investment and AMG's largest capital project to date, is proceeding as planned. Commissioning has begun and the plant is forecast to achieve full run rate capacity in the fourth quarter of 2022.

AMG's first LIVA (lithium vanadium) battery for industrial power management applications, announced in August 2021, is proceeding as planned.

AMG Brazil will increase its spodumene production by 40,000 tons, bringing its production capacity to 130,000 tons per annum. The project is currently in detailed engineering, with construction planned to commence at the beginning of the second half of 2022, and mechanical completion at the end of the first quarter of 2023.

In January 2021, AMG Brazil entered into an Exclusive Cooperation Agreement ("ECA") with one of its major customers for lithium concentrates. The ECA provides for AMG Brazil to supply 200,000 tons over a 5-year supply term, which will be obtained from the expansion of AMG Brazil's existing lithium concentrate plant.

In October 2021, AMG's Supervisory Board approved the construction of the first module of a battery-grade lithium hydroxide upgrader in Bitterfeld, Germany. Site preparation and building site facilities have started in Bitterfeld, Germany and commissioning for the first module of the battery-grade lithium hydroxide upgrader will commence in the third quarter of 2023.

In December 2021, AMG announced that it will bring its lithium value chain under one new corporate entity to further increase the long-term value of AMG's lithium activities. AMG Lithium activities are comprised of AMG's Brazilian mining and processing plants as well as the German hydroxide project and include the Lithium solid-state battery research and development activities in Frankfurt.

In December 2021, AMG Brazil's mine site reached over 1,000 days without a Lost Time Incident.

AMG GROUP	AMG CLEAN ENERGY MATERIALS	AMG CRITICAL MINERALS	AMG CRITICAL MATERIALS TECHNOLOGIES
1,204.7 REVENUE $M	381.5 REVENUE $M	308.5 REVENUE $M	514.7 REVENUE $M
136.7 EBITDA $M	66.6 EBITDA $M	31.2 EBITDA $M	38.9 EBITDA $M

LETTER TO SHAREHOLDERS

The EBITDA in 2021 of $137 million exceeded our guidance of $120 million published on May 5, 2021 and we see it as a bridge to the EBITDA target for 2022, currently guided to be $225 million or more.

We believe that the EBITDA in 2023 will – other things being equal – exceed 2022 since the large expansion of the vanadium recycling activities in Zanesville, Ohio, will be in operation, as well as the expanded spodumene production in Brazil (for the latter part of 2023). The production from both plants is sold under long-term contracts with index prices. Other things will not be equal, of course, and we expect the aerospace products of AMG will have returned to full capacity.

In 2021 we brought the first European lithium hydroxide refinery to the launching pad in Bitterfeld, Sachsen-Anhalt, Germany. Site preparation has begun and we expect to celebrate a groundbreaking ceremony in May 2022. We explained our lithium **strategy at AMG's Capital Markets Day on January 11** and the presentations as well as the Q&A are on our website. We expect to announce not later than our Annual General Meeting on May 5 which of the three alternative strategic routes we will choose for our lithium business: "Continued 100% ownership," "Sale of a Minority Stake to a Complementary Strategic Partner," or an "Initial Public Offering."

FINANCIALS

In 2021, as AMG transitioned into a growth company, we took several steps to improve the balance sheet and position AMG for ongoing multi-year investment into our AMG Clean Energy Materials segment. We continued our focus on cost-cutting and reduction of working capital which we work on continuously, resulting in a reduction of total working capital from $33 million to $7 million in 2021, or negative 3 days on hand, and our operations were able to generate $91 million of operating cash flow in 2021, more than fourfold the total in 2020.

In addition, our long-term focus on a conservative balance sheet strategy led us to the issuance of 3.1 million shares in April 2021, raising $119 million. It is worth noting that at the close of that transaction, we had $330 million of unrestricted cash on the balance sheet, and by December 31, 2021, our unrestricted cash had increased to $338 million. During this period, excluding our investments in Zanesville, Ohio, which are funded via our municipal bond, we invested $35.4 million in our plant and equipment. In other words, we financed our capital expenditures post the share issuance via operating cash flow, and we are now in a stronger financial position than we were in April.

At the end of 2021, we also decided to fully refinance the $550 million of senior secured debt facilities. AMG was successful in extending the maturity of its $350 million Term Loan B to 2028 and the maturity of its $200 million revolving credit facility to 2026. Moody's and S&P supported this refinancing by reaffirming their ratings and improving their outlook on AMG, a recognition of the significant recovery AMG experienced in 2021 and the conservative financial policy AMG pursued in extending the maturity of its debt facilities well in advance of their due date. Importantly, we structured our Revolving Credit Facility as a Sustainability Linked Loan and made five-year commitments to both increase the CO_2 efficiency of our operations as well as increase the amount of CO_2 we enable our customers to reduce in utilizing our products.

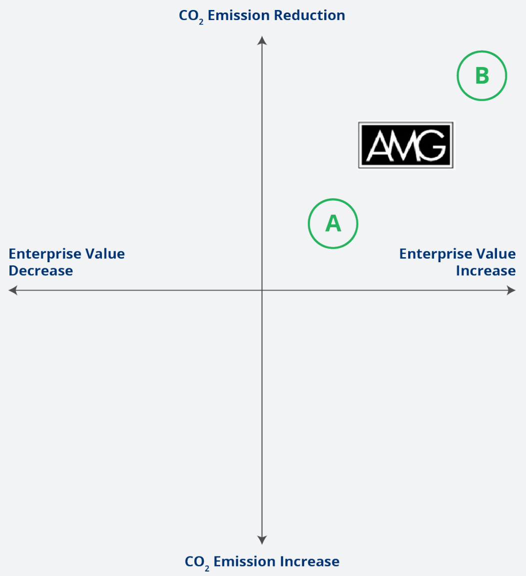
As a result of these operational and financial market achievements, AMG's total net debt including our $300 million municipal bond fell to $284 million in 2021, or 2.1x our 2021 EBITDA, from $288 million at the end of 2020. This decrease in net debt occurred despite the $178 million we invested in total capital expenditure, the majority of which was for our new vanadium plant in Zanesville, Ohio, but also included the initial investment into our battery-grade hydroxide facility in Bitterfeld, Germany. While we were reducing net debt, our total liquidity increased from $377 million in 2020 to over $500 million at the end of 2021.

As we sit here today, we have the cash on hand and are generating the cash from operations to be able to fund our announced expansion projects. AMG has better balance sheet strength and flexibility than at any other time in the last five years.

CAPITAL ALLOCATION AT AMG

From day one AMG was designed as a "critical materials" company. AMG's main strategic objective to create long-term value for its stakeholders is being pursued by its business model to use its leading position in critical materials technology to (1) offer competitive quality and price specifications to our customers; (2) "enable" these customers to reduce CO_2 when using the product; and (3) to achieve attractive margins in doing so. This leads us to a special version of the "Double Materiality Matrix" (DMM) which extends accounting concepts of measurement to other stakeholder areas of interest, in particular ESG matters. In AMG, we use the DMM instrument for decision-making. Each strategic investment proposition must pass several "gates" to be approved. The first is whether there is a significant market share potential in one of the major sustainable growth trends. When presented to the AMG Management Board, there are two key gates; namely, what is the impact on AMG's Enterprise value, and what is its net CO_2 reduction? Propositions in the upper right quadrant of the DMM have a chance and are the focus of AMG's capital allocation policy. We do not approve investment propositions with a net carbon positive footprint, a proposition which would come to reside in the lower right quadrant of AMG's DMM version shown below.

AMG DOUBLE MATERIALITY MATRIX (DMM)

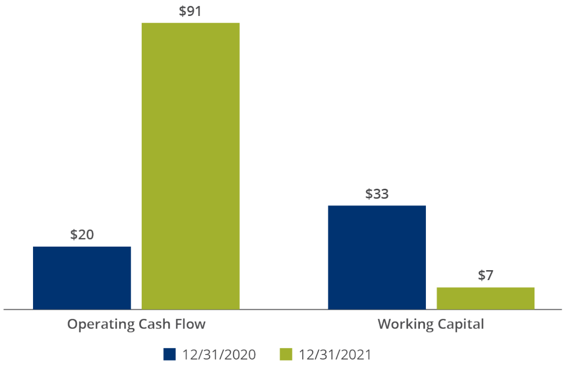


For illustration purposes, I show the comparative position in that matrix of two of our ECO_2RP products. "A" represents innovative graphite doped **energy saving** materials for buildings, and "B" stands in for "coaters," equipment for increasing the heat-resistance aerospace turbine blades. Both products result in material net CO_2 savings (enabled CO_2 savings when used, adjusted for CO_2 emissions when produced) and both projects created significant economic value for AMG.

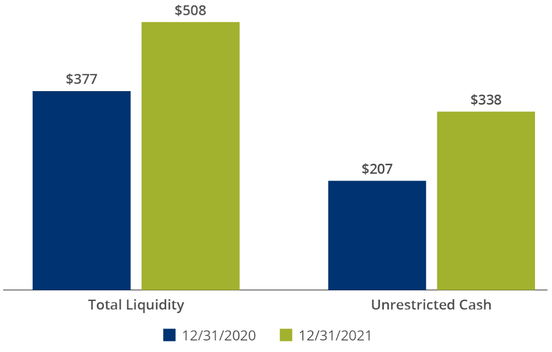
ESG

Regarding the **S** in ESG, let me first point to our **safety record** which is consistent with the industry leaders. AMG benchmarks itself against the industry average for Primary Metal Manufacturing (NAICS 331). The most recent data provided by the United States Bureau of Labor Statistics is for 2020. It reports that the Primary Metal Manufacturing industry's total recordable case rate was 3.9 and the lost time rate was 1.3. AMG is proud that its safety performance is significantly better than the Primary Metal Manufacturing industry average, with a 2021 total recordable case rate of 1.08 (72 percent less than the industry average) and a lost time rate of 0.39 (70 percent below the industry average). In 2021,

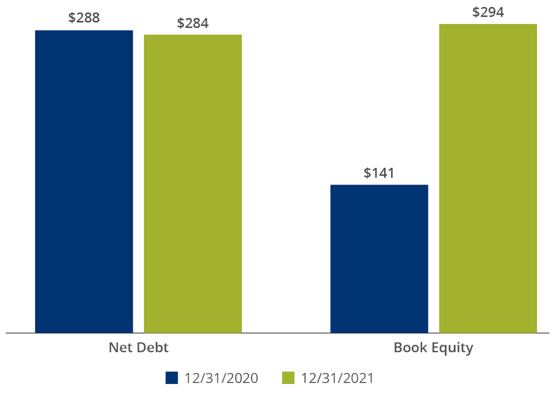
AMG 2021 VS. 2020 OPERATING CASH FLOW & WORKING CAPITAL (USD MILLIONS)



AMG 2021 VS. 2020 TOTAL LIQUIDITY & UNRESTRICTED CASH (USD MILLIONS)



AMG 2021 VS. 2020 NET DEBT & BOOK EQUITY (USD MILLIONS)



AMG LOST TIME INCIDENT RATE

internal safety performance in lost time incident rate improved year-over-year by 37 percent.

Since its inception, AMG has always focused on improving the safety culture throughout the corporate organization. To have a 1000-day operation without one lost day incident, which we recently celebrated in Brazil, is a unique event in the global mining industry. This is only one example of the importance of our culture and Values (Safety, Value Creation, Respect for People, and Integrity) that form the basis of how we conduct our operations and deal with our employees, business partners, and stakeholders.

Regarding our impact on the **communities** around our operations, we can point to outstanding examples in Brazil, Mozambique, and Sri Lanka (see the Sustainability section of our website). For our latest initiative to advance **diversity,** we formed a **Corporate Diversity Council (CDC)** that reports directly to me. And we are very pleased that Ms. Dagmar Bottenbruch, a member of our Supervisory Board, will contribute by providing feedback and advice on our diversity policy. The Diversity Council comprises members of AMG's senior management and staff on the level just below the Management Board. This Council renders ongoing advice to the Management Board and the unit leaders on how to monitor, enhance, and increase diversity on a variety of levels within the AMG Group. The objective is to increase diversity over time wherever appropriate.

The G represents a standard in Corporate Governance. One way to assess the quality of corporate governance is to look at the **risk management principles**. There is a particularly important distinction between operational risks and strategic risks, such as losing the competitive edge. AMG is built on innovations.

The word **lithium** was not even mentioned in the IPO prospectus of AMG in 2007. Today our lithium value chain is about to become an integral part of the European movement to E-mobility.

Our **Audit & Risk Management Committee** sessions are an exercise in reviewing whether accounting principles and operational and strategic risk assessments are in harmony; and, of course, how we are doing as regard to the position in the Double Materiality Matrix. The continuous assessment of our unique CO_2 reducing concept is now an additional area of scrutiny for the committee.

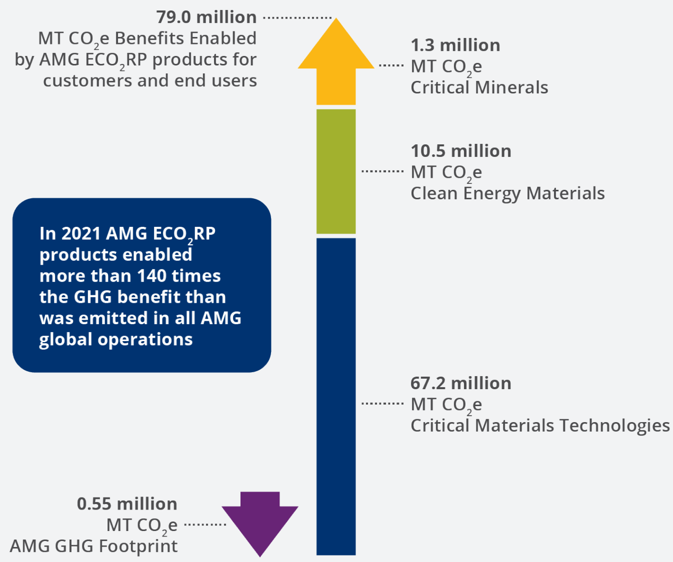
ECO_2RP

For several years, AMG has conducted **Life Cycle Assessments** (LCAs) for selected AMG products with the assistance of ERM, the global environmental advisory firm. The LCAs measure the direct CO_2 emissions caused by the production of a product and its supply lines, and it measures the CO_2 impact the product causes when used by the customer.

Let me pause here to clarify that we define "customer" as the end-user or main direct beneficiary of our products when we discuss our enabling concept and measure the CO_2 impact of our products. Given AMG's position as a critical supplier within a multiple stage production chain, we believe that this customer concept is the appropriate method to explain and highlight the CO_2 impact caused by our products.

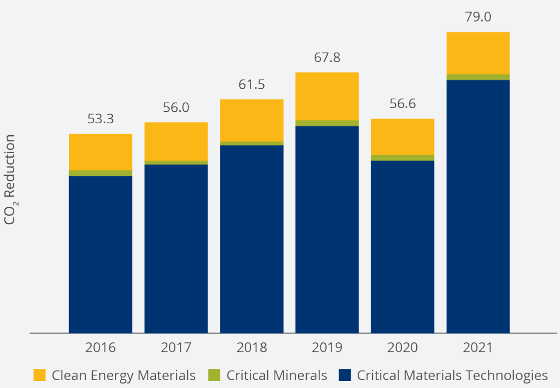
We **measure direct Scope 1 CO_2 emissions; and we measure Scope 2 emissions**, reaching backwards through the supply chain regarding energy use. So why shouldn't we measure the impact of our products when used by the customer?

AMG'S 2021 ENABLED AND DIRECT CO_2 EMISSIONS



As we are a "**Critical Materials**" company, and as materials became critical primarily by the dominating **energy transition** (renewables, energy savings), it is not surprising that our products enable customers to reduce CO_2 emissions far more than the direct CO_2 emissions resulting from our production process.

AMG CO_2 REDUCTION BY SEGMENT (MILLIONS MT)



We were pleased when the **EU Taxonomy** regulation (published in 2020) ruled that substantive contributions to CO_2 reduction be comprised of, first, activities which directly cause substantive reductions in CO_2 emissions, and second, those activities which "**enable**" other activities to cause substantive CO_2 reductions. We view the EU Taxonomy project as an important first step in defining environmentally sustainable activities and are looking forward to the accelerated adoption and implementation of further complementing regulations that have been announced (CSRD and SFRD).

To illustrate, AMG **enables** aerospace engines – by **ceramic** coating technology – to function at substantially higher operating temperatures, significantly reducing the CO_2 emissions of those engines. As another illustration, AMG **enables** producers of insulation materials for buildings to introduce a massive energy-saving effect by doping these materials with a **natural graphite** recipe.

CIRCULAR ECONOMY

Within the ECO_2RP concept the portfolio of CIRCULAR ECONOMY solutions has a special priority. In metals, recycling reduces the role of primary mining and therefore reduces CO_2 emissions. We provide technologies for a wide variety of secondaries, including steel, titanium scrap and reverts. We are the world's largest recycler of vanadium residues with plants in Ohio and Germany. We produce ferrovanadium (for use in high performance steel) and vanadium oxide (a battery material).

Shell & AMG Recycling B.V., Amsterdam, is an equally owned platform for the offering of closed-loop solutions for spent catalysts and other vanadium-containing refinery wastes worldwide. We close the loop between the delivery of "fresh" catalysts and the resulting "spent" catalysts, extracting nickel and molybdenum in addition to vanadium.

Our lithium production in Brazil is partially supplied by residues from previous tantalum mining and partly from primary mining with a substantive reduction of the CO_2 "load" of a ton of lithium concentrate. AMG is the supplier of the critical furnace technology for the world's largest project to turn plutonium, a necessary residue from nuclear power plants, into reusable nuclear fuel. We have, as for all other ECO_2RP constituents, completed Life Cycle Assessments for these activities to verify the substantive CO_2 reduction impact.

In summary, to organize this large-scale effort throughout the AMG organization, we created the Enabling CO_2 Reduction Portfolio, or ECO_2RP, to virtually consolidate these efforts into a CO_2 Reduction Statement of AMG. **In 2021, ECO_2RP shows a CO_2 reduction result of 79.0 million tons, compared to 56.6 million tons in 2020 (COVID-19 year).**

2030 COMMITMENT

Our substantive contribution to enable customers to significantly reduce atmospheric CO_2 levels is much larger than the direct CO_2 reduction caused by our own operations.

The majority of our critical material products are enabling customers to reduce CO_2 at a multiple of their direct CO_2 emissions due to these products. The LCAs have provided ample proof of that concept. **If AMG had not existed, the global CO_2 emissions in 2021 would have been higher by 78.4 million tons (79.0 million tons enabled CO_2 reduction adjusted for 0.55 million of direct CO_2 emissions).**

AMG's leading CO_2 emitters are the silicon metal operations in Bavaria (Germany) and the vanadium recycling operations in Ohio (United States). Silicon metal is critical for the solar industry and in future for **anode materials for lithium batteries**. As the silicon metal plant is a state-of-the-art facility, the only way to reduce CO_2 emissions would be a shutdown. Because of its criticality, a closure would be irresponsible. The vanadium operation in Ohio is a **shining example for the circular economy. We are in the process of doubling the capacity** with significant government support.

Our long-term direct Scope 1 and Scope 2 CO_2 reduction targets are twofold:

One: AMG commits to reduce its direct CO_2 emissions by 20% by 2030 from a baseline of 2019 (i.e., pre COVID-19) adjusted for the startup of our Zanesville facility. This is a total reduction of 125,000 tons of CO_2.

Two: AMG commits to increase its enabled CO_2 reduction by 10% per year from 2021 levels through 2030. Substantive contributions will come from what we refer to as "Circular Economy" projects.

DR. HEINZ SCHIMMELBUSCH

CHIEF EXECUTIVE OFFICER

AMG CLEAN ENERGY MATERIALS

AMG Clean Energy Materials spans the vanadium, lithium, and tantalum value chains, combining our recycling and mining operations producing materials for infrastructure and energy storage solutions while reducing the CO_2 footprint of both suppliers and customers.

AMG Clean Energy Materials' gross profit before non-recurring items in 2021 increased by $59.0 million, from $21.3 million to $80.3 million, driven largely by the improved price environment compared to 2020. EBITDA grew $56.0 million over 2020, from $10.6 million to $66.6 million in 2021.

The segment advanced several key strategic programs in 2021. The construction of AMG Vanadium's second spent catalyst recycling facility in Zanesville, Ohio, a $325 million investment and AMG's largest capital project to date, is proceeding as planned. Commissioning has begun and the plant is forecast to achieve full run rate capacity in the fourth quarter of 2022.

Shell & AMG Recycling B.V. (SARBV) continues to pursue circular refinery residue opportunities globally; this project advances the goals of a circular economy. To close the loop between "fresh" and "spent" catalysts is another building block for achieving the societal benefits of reducing global CO_2 emissions compared to the mining of vanadium.

AMG Brazil will increase its spodumene production by 40,000 tons, from 90,000 tons per year to 130,000 tons. It is currently in detailed engineering, with construction planned to commence at the beginning of the second half of 2022, and mechanical completion at the end of the first quarter of 2023.

In January 2021, AMG Brazil entered into an Exclusive Cooperation Agreement ("ECA") with one of its major customers for lithium concentrates. The ECA provides for AMG Brazil to supply 200,000 tons over a 5-year supply term, which will be obtained from the expansion (targeting 40,000 tons per annum) of AMG Brazil's existing lithium concentrate plant. The ECA includes an advanced payment for lithium concentrate which will fund AMG Brazil's investment in the expansion.

In October 2021, AMG's Supervisory Board approved the construction of the first module of a battery-grade lithium hydroxide upgrader in Bitterfeld, Germany. Site preparation and building site facilities have started in Bitterfeld, Germany and commissioning for the first module of the battery-grade lithium hydroxide upgrader will commence in the third quarter of 2023.

AMG is building its first LIVA (lithium vanadium) battery for industrial power management applications. To manage its entrance into this market, AMG acquired Phyr7 GmbH, Heidelberg, a specialist for artificial intelligence-based power management solutions. The first AMG industrial battery has a power of 0.6 Megawatts and will flatten the electricity demand curve of our graphite processing operations. A second LIVA battery is planned for Ohio with four times the power. These innovative LIVA batteries will be turned into a product line to compete with diesel engine power units for industrial applications.

In December 2021, AMG Brazil's mine site reached over 1,000 days without a Lost Time Incident. This momentous milestone was only possible because of AMG Brazil's certified HSE management system rigorously identifying and mitigating risks and hazards, as well as each employee's disciplined attitude and proactive responsibility for creating a safe working environment.

AMG CRITICAL MINERALS

AMG Critical Minerals was formed at the beginning of 2021 by combining AMG's mineral processing operations, AMG Antimony, AMG Graphite and AMG Silicon into one division.

AMG Critical Minerals' revenue during 2021 was 45% higher than 2020 due to improving metal prices as well as increased volumes, thereby propelling gross profit before non-recurring items for the year from $36.8 million to $48.7 million.

EBITDA in 2021 increased 21%, from $25.9 million in 2020 to $31.2 million, due to higher profitability mainly caused by rising metal prices.

AMG Critical Minerals benefited from increasing metal prices compared to the prior year. This was partially offset, however, due to higher energy and shipping costs in the second half of 2021, which were only partially passed on to customers. However, AMG's hedging programs, contract terms, and end market price increases are, to a very large extent, covering these additional costs.

AMG CRITICAL MATERIALS TECHNOLOGIES

AMG Critical Materials Technologies combines our leading vacuum furnace technology line with high-purity materials serving global leaders in the aerospace sector.

AMG Critical Materials Technologies' revenue during 2021 increased by 8% due to higher profitability related to sales price increases for the titanium alloys and chrome businesses compared to 2020. Consequently, gross profit before non-recurring items for the year increased by $13.9 million to $84.3 million.

EBITDA in 2021 increased 28%, from $30.3 million in 2020 to $38.9 million, largely as a result of the improved metal prices as well as higher sales volumes of chrome metal.

Order intake in the Engineering business unit in 2021 remained strong at $227.5 million, representing a balanced 1.00x book to bill ratio. Order backlog was $188.2 million at the end of 2021, compared to $198.1 million at the end of 2020. The Company is experiencing higher volumes of smaller orders due to diversifying outside of the aerospace market, which reduces the period ending order backlog but does not indicate lower profitability levels.

The impact of the coronavirus is most significantly felt in AMG within the Critical Materials Technologies segment. However, the aerospace market continues to show signs of improvement, and our customers are forecasting increases in requirements by mid-2022.

AMG'S

RISK MANAGEMENT & INTERNAL CONTROLS

AMG employs a risk management approach that identifies and mitigates risk at all levels of the organization.

The Audit & Risk Management Committee is comprised of Donatella Ceccarelli (Chair), Willem van Hassel and Warmolt Prins, and meets on a quarterly basis. In addition to its Audit Committee duties, this committee is responsible for monitoring and advising the Supervisory Board on the risk environment as well as the risk management process of AMG.

RISK MANAGEMENT APPROACH

AMG employs a risk management approach that identifies and mitigates risk at all levels of the organization. The Company analyzes risks in formal settings such as scheduled Management Board and Supervisory Board meetings as well as everyday operational situations faced by its global employee base. AMG utilizes a comprehensive risk management program centered on the Company's Risk Assessment Package (RAP). The RAP includes a "top-down" and "bottom-up" analysis and assessment of the Company's risks. The RAP is a detailed document requiring each business unit to:

(i) identify potential risks and quantify the impact of such risks;

(ii) prioritize the risks using a ranking system to estimate the financial impact, probability, and mitigation delay of these risks;

(iii) describe the risk mitigation or transfer procedures in place;

(iv) document the periodic monitoring of the risks;

(v) assign the individuals responsible for monitoring the risks;

(vi) review the trends of the risks identified by the business units; and

(vii) periodically audit previous RAP submissions to evaluate the risk management process.

Each business unit undertakes a full review of its RAP on a quarterly basis. The RAPs are then reviewed and discussed in detail by the Management Board of AMG.

AMG's risk management functions in coordination with the senior management of each business unit. Direct follow-up calls take place by AMG's Chief Financial Officer and his team with the Presidents of the business units. The corporate Legal, Finance and HSE (Health, Safety and Environment) functions also contribute to the quarterly submission of risks identified. Key risks from all business units and functions are then summarized and presented to the Management Board, which reviews them. Any new material risk assessment observed by a business unit or function is reported instantly to the Management Board, while individual risks of special note are regularly discussed at the Management Board's bi-weekly meetings. The Chair of the Audit & Risk Management Committee of the Supervisory Board is informed immediately of any new material risk assessments which have been reported to the Management Board. The Audit & Risk Management Committee of the Supervisory Board formally reviews the consolidated risk package provided by AMG's Management Board during its quarterly meetings. In addition, the Audit & Risk Management Committee of the Supervisory Board supervises, monitors, and reports on the Company's internal control and risk management programs.

During 2021, special attention was given to:

- continuation of the COVID-19 global pandemic;
- liquidity and cash flow;
- supply chain disruptions;
- rising inflation;
- raw material inputs including energy costs;
- managing price and volume risk associated with the volatility of commodities;
- information technology and cybersecurity;
- improving contractual terms to lessen inventory price risk;
- evaluating the risk of climate change both on AMG's operations as well as potential supply and demand issues associated with an increasing emphasis on CO_2 reduction;
- understanding global political risks; and
- evaluating risks associated with long-term contracts.

Appropriate and diverse lines of property and liability insurance coverage are also an integral part of AMG's risk management program.

RISKS

Risks faced by AMG can be broadly categorized as:

Strategic: includes risks related to marketing and sales strategy, product innovation, technology innovation, raw material sourcing, capacity utilization, and acquisitions or divestitures

Operational: includes risks related to executing the strategic direction, production, maintenance of production equipment, distribution of products, labor relations, human resources, IT infrastructure and cybersecurity, and health, safety and environmental issues

Market and External: includes risks related to global and regional economic conditions, market supply/demand characteristics, competition, metal prices, product substitution, customer and supplier performance and community relations

Financial: includes risks related to compliance with credit facility covenants, currency fluctuations, liquidity, refinancing, budgeting, metal price and currency hedging, treasury and tax functions, accuracy and timeliness of financial reporting, compliance with IFRS-EU accounting standards, compliance with the Netherlands Authority for the Financial Markets (AFM) and Euronext Amsterdam requirements

Climate Change: includes risks related to the impact of weather-related events, more volatile weather patterns, water scarcity, flooding, wildfires, as well as changing supply and demand dynamics associated with customers and suppliers focusing on reducing CO_2

Legal and Regulatory: includes risks related to the political, environmental, legislative, and corporate governance environment

AMG is subject to a broad array of risks which are inherent to the markets in which it operates. While all risks are important to consider, the following are the principal risks that could have a material impact on results.

COVID-19 PANDEMIC

The continuing public health crisis caused by the COVID-19 pandemic and the unprecedented containment and mitigation measures taken by governments and businesses to limit COVID-19's spread have had, and may continue to have, certain negative impacts on the broader global economy and our business including, but not limited to: decrease or postponement in customer demand, especially in our aerospace exposed businesses; supply chain disruptions; travel restrictions that impact project timing; and ongoing health risks to our employee population.

Throughout the pandemic, AMG has maintained operations sufficient to meet our customer demand. The Company's ongoing focus remains the health and safety of our employees.

AMG continues to monitor the global COVID-19 pandemic and although the potential future magnitude and duration of the business and economic impacts of the COVID-19 pandemic are uncertain, currently we do not believe the COVID-19 pandemic will impact the Company's ability to meet any of its financial obligations. The Company has not experienced and does not anticipate material negative impacts to its access to the capital markets, as evidenced by our November 2021 refinancing, or any material disruption to the Company's supply chain.

METAL PRICE VOLATILITY RISK

AMG is exposed to metal price volatility. AMG is primarily a processor of metals, so risk can arise from short-term changes in price between purchase, process, and sale of the metals or from end-user price risk for metals when raw materials are purchased under fixed-price contracts. The Company hedges exchange-traded metals when possible.

In its aluminum business, AMG also sells conversion services with no metal-price risk. However, most metals, alloys and chemicals that AMG processes and sells, such as vanadium, chrome metal, tantalum, graphite, niobium, and antimony trioxide, cannot be hedged on an exchange. Prices stabilized in 2021 versus 2020, and in most cases increased significantly over the year. For the most part, AMG was able to mitigate this risk of higher prices, and in some cases profit from the increase.

To mitigate price risk across its portfolio, AMG takes the following actions:

- Seeks to enter into complementary raw material supply agreements and sales agreements whereby the price is determined by the same index;
- Aligns its raw material purchases with sales orders from customers;
- Establishes low-cost long positions in key raw materials through, for example, ownership positions in mining activities or structured long-term supply contracts;
- Maintains limits on acceptable metals positions, as approved by the Management Board; and
- Enters into long-term fixed-price sales contracts at prices which are expected to be sustainably above the cost of production.

Success of the mitigation plan is dependent on the severity of metal price volatility and on the stability of counterparties performing under their contracts. Due to the diverse mix of metals that AMG processes and the fact that metal processing has more pass-through risk than long-position risk, this risk is difficult to quantify.

MINING RISK

At its lithium and tantalum mine in Brazil and three graphite mines in Germany, Sri Lanka and Mozambique, AMG is exposed to certain safety, regulatory, geopolitical, environmental, operational, and economic risks that are inherent to a mining operation. The profitability and sustainability of the Company's operations in various jurisdictions could be negatively impacted by environmental legislation or political developments, including changes to safety standards and permitting processes. The mining businesses have certain operational risks related to the ability to extract materials, including weather conditions, the performance of key machinery and the ability to maintain appropriate tailings dams. These risks are all mitigated by continuous monitoring and maintenance of all mining activities. AMG has always recognized the need to carefully manage the risk associated with tailings dams within its operations and takes its commitment to ensuring the safety of its workforce and the surrounding communities very seriously. AMG leadership commissioned a study that was conducted by a third-party to ensure that its three tailings dams in Brazil are legally compliant and technically sound. The outcome of the legal study indicated we are compliant with applicable regulation as they relate to our three tailings facilities.

In accordance with the Church of England Investor Mining and Tailings Safety Initiative, AMG posted a comprehensive disclosure, which was signed by our CEO, on our company website.

Mining is also subject to geological risk relating to the uncertainty of mine resources, and economic risk relating to the uncertainty of future market prices of particular minerals. Geological risk is managed by continuously updating mine maps and plans; however, the profitability of the Company's mining operations is somewhat dependent upon the market price of mineral commodities. Mineral prices fluctuate widely and are affected by numerous factors beyond the control of the Company. The level of interest rates, the rate of inflation, world supply of mineral commodities, consumption patterns, speculative activities and stability of exchange rates can all cause significant fluctuations in prices. The prices of mineral commodities have fluctuated widely in recent years. Continued future price volatility could cause commercial production to be impracticable. Mitigation strategies include managing price risk by entering into long-term fixed-price contracts with customers, and via vertical integration strategies.

Other cost-related strategies include continuously reducing cost of production for current products or expanding product lines to enable profitable mine production even in low price environments.

CUSTOMER RISK

Customer concentrations in certain business units amplify the importance of monitoring customer risk. In addition, turbulent economic conditions for commodity producers increase customer risk. Since AMG has a low appetite for customer credit risk, the Company attempts to mitigate this exposure by insuring and monitoring receivables, maintaining a diversified product and contract portfolio, and retaining adequate liquidity. AMG has insured its accounts receivable where economically feasible and has set credit limits on its customers, which are closely tracked. In addition to constant monitoring from business unit leaders, AMG's Management Board reviews accounts receivable balances monthly. Given that the Company has thousands of customers, this risk is difficult to quantify. However, no single customer accounts for more than 10% of AMG's revenues, and therefore, while the impact of a customer failure is manageable, it may have an adverse impact on results. In particular, AMG Engineering can mitigate a portion of customer payment and performance risk due to the collection of prepayments from many of its customers. In addition to risks associated with collectability of receivables, AMG has long-term contracts with numerous customers that have enabled the Company to solidify relationships and deepen its knowledge of its customer base. If a customer does not perform according to a long-term contract and a replacement customer cannot be immediately found, it could have an adverse impact on results.

SUPPLY RISK

All three of AMG's segments are dependent on supplies of metals and metal-containing raw materials to produce their products. Despite a normally low appetite for risk in most categories, supply risk is more difficult to manage given the limited number of suppliers for certain materials. Some of these raw materials are available from only a few sources or a few countries, including countries that have some amount of political risk. AMG Engineering is dependent on a limited number of suppliers for many of the components of its vacuum furnace systems because of its stringent quality requirements. If the availability of AMG's raw materials or engineering components is limited, the Company could suffer from reduced capacity utilization. This could result in lower economies of scale and higher per-unit costs. If AMG is not able to pass on its increased costs, financial results could be negatively impacted. To mitigate the risk of raw materials and supplies becoming difficult to source, AMG enters into longer-term contracts with its suppliers when practical and has been diversifying its supplier base when alternative suppliers are available. The Company also mitigates the risk by monitoring supplier performance, maintaining a diversified product portfolio and retaining adequate liquidity.

LEGAL AND REGULATORY RISK

AMG must comply with evolving regulatory environments in the countries and regions where it conducts business. Adjustments to environmental policy, as well as governmental restrictions on the flexibility to operate in certain locations, could affect the Company. AMG is required to comply with various international trade laws, including import, export, export control and economic sanctions laws. Failure to comply with any of these regulations could have an adverse effect on the Company's financial results, and AMG's appetite for regulatory compliance risk is very low. Additionally, changes to these laws could limit AMG's ability to conduct certain business. A change in regulatory bodies that have jurisdiction over AMG products and facilities could also result in new restrictions, including those relating to the storage or disposal of legacy material at AMG-owned properties. This may result in significantly higher costs to AMG. See note 33 to the consolidated financial statements for more details on the currently known environmental sites. More stringent regulations may be enacted for air emissions, wastewater discharge or solid waste, which may negatively impact AMG's operations. In addition, international and governmental policies and regulations may restrict AMG's access to key materials or scarce natural resources in certain regions or countries or may limit its ability to operate with respect to certain countries. As regulations change, the Company proactively works to implement any required changes in advance of the deadlines. The REACH Directive is in effect in the European Union, and AMG's business units pre-registered all required materials and made complete registrations for those products. AMG has continuing obligations to comply with international and national regulations and practices concerning corporate organization, business conduct, and corporate governance. For example, in addressing possible conflicts of interest affecting its Management or Supervisory Board members, AMG follows strict rules which are described in the Company's Articles of Association and the Rules of Procedure of the Management Board and Supervisory Board, respectively. Compliance with both legal and regulatory matters is monitored and augmented by the Company's Chief Compliance Officer and the Company's General Counsel who make use of the services of several prominent local and global law firms. The AMG Code of Business Conduct and AMG's Values have been distributed to all employees and are available in all workplace locations in local languages and are monitored by a global network of compliance officers and representatives who are stationed at all sites of the AMG Group. Fraud risks are continuously monitored by the Management Board and the Internal Audit function together with the key finance managers of the units, reviewing the proper operation of controls framework, with regular reporting to the Audit & Risk Management Committee. Continuous mandatory training programs, and updates thereof, are provided by the Company to its management and employees to ensure appropriate business conduct. An estimate of potential impact related to regulatory risk is not possible.

AMG's global Speak Up & Reporting Policy is widely available and provides guidance to every employee, contractor or third party, including suppliers, customers, local communities and stakeholders, about how to voice concerns relating to AMG's business or people in confidence and without fear of retaliation. Third parties, including stakeholders and local communities, are encouraged to first report concerns to the relevant managers or supervisors at their local AMG office or industrial site since they are usually best equipped to resolve concerns quickly and effectively. If concerns remain unresolved or one feels uncomfortable using these local channels for other reasons, one can contact AMG about any concerns through the channels that are published on the Corporate Governance section of AMG's website.

CLIMATE CHANGE RISK

AMG's global production footprint exposes it to a variety of climate change risks, including severe weather, flooding, extreme heat, wildfire, and water scarcity. AMG has performed a survey of each of its locations and incorporated property and casualty insurance reviews into the analysis at key locations. Going forward, AMG will incorporate third party reviews of the climate change risk at our locations. At each of AMG's operations, emergency response and disaster recovery systems are in place to ensure the safety of our employees and safeguard our ability to quickly re-open operations after an incident has occurred. These risks are reported from the business units to the Management Board and summarized in reports to the Audit and Risk Committee and the Supervisory Board. Based on our analysis, AMG has not identified any material short-term or long-term climate change risks to our operations, and no risks have been identified which would have a material effect on amounts and disclosures included in the financial statements as of December 31, 2021.

In addition, AMG is very aware of the economic effect of a global industrial focus on reducing CO_2 emissions. As discussed in the CEO letter, we believe we will largely benefit from this trend, but we are also aware that supply and demand patterns will change. AMG's strategy since its inception is to actively position ourselves with suppliers and customers that are anticipating the challenges of reducing CO_2 emissions, but there is a longer-term risk that CO_2 emission reductions will cause supply and demand fluctuations in our businesses. AMG monitors these changes actively, tries to profit from them, and reports both long-term trends and short-term interruptions to the Management Board and the Supervisory Board. Based on our ongoing risk analysis, AMG has not identified any supply or demand changes driven by CO_2 emission reduction efforts which would have a material impact on the amounts and disclosures included in the financial statements as of December 31, 2021.

In addition, it should be noted that AMG has published a CO_2 reduction target in the 2021 CEO letter, and will reduce CO_2 emissions by 20% by 2030. This CO_2 reduction commitment for AMG's direct CO_2 emissions is expected to substantially contribute to AMG's total CO_2 reduction commitment as embodied in its two-pronged CO_2 reduction approach that combines AMG's growing Enabling CO_2 Reduction Portfolio (ECO_2RP) (as discussed in the 2021 Letter to Shareholders) with its target to reduce its direct CO_2 emissions.

CURRENCY RISK

AMG's global production and sales footprint exposes the Company to potential adverse changes in currency exchange rates, resulting in transaction, translation, and economic foreign exchange risk. These risks arise from operations, investments and financing transactions related to AMG's international business profile. While AMG transacts business in numerous currencies other than its functional currency, the US dollar, the Company's primary areas of exposure are the euro, Brazilian real, and British pound. Given the location of our operations, it is not possible to mitigate translation risk in a cost-effective manner. AMG has developed a uniform foreign exchange policy that governs the activities of its subsidiaries and corporate headquarters. AMG enters into non-speculative spot and forward hedge transactions to mitigate its transaction risk exposure and employs hedges to limit certain balance sheet translation risks. The Company will also at times hold cash in foreign currencies to naturally hedge certain translation risks. AMG's overall economic foreign exchange risk is somewhat mitigated by the natural hedge provided by its global operations and diversified portfolio of products: namely, a majority of AMG's products are sold in the country in which they are produced. While AMG will continue to manage foreign exchange risk and hedge exposures where appropriate, fundamental changes in exchange rates could have an adverse impact on the Company's financial results. Starting January 2021, the Company is no longer hedging European cash pool intergroup balance sheet exposures which will result in higher volatility in our financial results from foreign exchange which we believe is not representative of our operating performance.

COMPETITION

AMG's markets are highly competitive. The Company competes domestically and internationally with multinational, regional and local providers. AMG competes primarily on product technology, quality, availability, distribution, price, and service. Competition may also arise from alternative materials and the development of new products. Increased competition could lead to higher supply or lower overall pricing. AMG is a leader in many of its key niche markets. The Company strives to be at the forefront of technology and product development. Despite this, there can be no assurance that the Company will not be materially impacted by increased competition.

PRODUCT QUALITY, SAFETY AND LIABILITY

AMG's products are used in various applications including mission critical components. Failure to maintain strict quality control could result in material liabilities and reputational damage. The Company maintains a stringent quality control program to ensure its products meet or exceed customer requirements and regulatory standards. AMG further mitigates this risk via liability insurance.

FINANCING RISK

A prolonged restriction on AMG's ability to access the capital markets and additional financing may negatively affect the Company's ability to fund future innovations and capital projects. AMG's financing risk was mitigated in November 2021 with the Company's refinancing. In November 2021, the Company entered into a new $350 million 7-year senior secured term loan B facility ("term loan") and a $200 million 5-year senior secured revolving credit facility ("revolver"). The total facility amount of $550 million replaces AMG's existing credit facility and extends our term loan maturity from 2025 to 2028 and revolver maturity from 2023 to 2026. Our financing risk is further mitigated by the year-end 2021 liquidity of $508 million. AMG's future liquidity is dependent on the Company's continued compliance with the terms and conditions of its credit facility and its ability to refinance. As of December 31, 2021, the Company was in compliance with all financial covenants.

BUSINESS INTERRUPTION

A significant interruption of a key business operation could have a material impact on results. AMG's operations could be impacted by many factors including a natural disaster, serious incident, or labor strike. Key suppliers and customers could also experience business interruption whereby the Company is indirectly impacted. AMG's broadly diversified business model mitigates some of the risk associated with business interruption. The Company's insurance policies also include business interruption coverage subject to certain terms. AMG attempts to further mitigate this risk by actively monitoring the supply chain and maintaining rigorous training programs on operational and safety procedures.

INFORMATION TECHNOLOGY

The Company utilizes both internal and external information technology (IT) systems to achieve our overall business objectives. Our IT systems are used for, but not limited to, the processing and storing of financial information, business planning, order processing, and intellectual property.

We believe AMG is exposed to IT threats given the Company's global footprint and our use of technology. An information security incident, including a cybersecurity breach, could have a negative impact on the Company's business, financial condition, and reputation. AMG experienced one instance of ransomware in 2021, but due to the backup and security systems in place, this resulted in no monetary loss and no business interruption.

The Company believes its preventative measures in place adequately mitigate our risk of a significant company-wide information technology incident. Such measures include:

- Diversity and physical separation of systems across our businesses — each unit maintains their own IT platform disconnected from other units
- Separation of business IT networks, operational technology, and production networks
- Proactively monitoring activities on the networks and/or endpoints
- Disaster recovery planning
- Information security training and compliance programs
- IT measures at all businesses include firewalls, encryption, physical access controls, virus and malware software and on-site and off-site backups

AMG's Management Board has overall responsibility for the

Company's information technology. The Company's CFO is responsible for oversight and compliance and provides updates to the Management Board on a regular basis and reports to the Supervisory Board on IT matters at least annually. In 2021, the Company engaged a third-party cyber security provider to assess our information technology risks and improve our information technology systems across all AMG units. This process is ongoing, and updates are provided to the Supervisory Board quarterly.

RISK MONITORING AND PROCEDURES

AMG has a strategic risk function that actively monitors and establishes internal controls to mitigate business and financial risks. AMG's strategic risk function is complemented by its Internal Audit function. Through the risk reporting system, the AMG Corporate Risk Committee works with business unit managers to develop risk mitigation strategies, where applicable. The purpose of the risk reporting and monitoring system is to manage, rather than eliminate, the risk of failure to achieve business objectives, and provide only reasonable, not absolute, assurance against material misstatement or loss.

STATEMENT ON INTERNAL CONTROL PURSUANT TO THE DUTCH CORPORATE GOVERNANCE CODE

Risks related to financial reporting include timeliness, accuracy, and implementation of appropriate internal controls to avoid material misstatements. During 2021, the Management Board conducted an evaluation of the structure and operation of the internal risk management and control systems. The Management Board discussed the outcome of such assessment with the Supervisory Board in accordance with the 2016 Dutch Corporate Governance Code. AMG's Management Board believes the internal risk management and control systems in place provide a reasonable level of assurance that AMG's financial reporting does not include material misstatements. In relation to AMG's financial reporting, these systems operated effectively during 2021.

STATEMENT OF RESPONSIBILITIES

The Management Board regularly assesses the effectiveness of the design and operation of the internal control and risk management systems.

Based on this report and in accordance with best practice 1.4.3 of the Dutch corporate governance code as adopted on December 8, 2016 and effective as of January 1, 2017 ("the 2016 Code"), and article 5:25c of the Financial Supervision Act, the aforementioned assessment, the current state of affairs, the Management Board confirms that, to the best of its knowledge:

- the internal risk management and control systems of the Company provide reasonable assurance that financial reporting does not contain any material inaccuracies;
- there have been no material failings in the effectiveness of the internal risk management and control systems of the Company;
- there are no material risks or uncertainties that could reasonably be expected to have a material adverse effect on the continuity of the Company's operations in the coming twelve months; and
- it is appropriate that the financial reporting is prepared on a going concern basis.

It should be noted that the above does not imply that these systems and procedures provide absolute assurance as to the realization of operational and strategic business objectives, or that they can prevent all misstatements, inaccuracies, errors, fraud and noncompliance with legislation, rules and regulations. Nor can they provide certainty that we will achieve our objectives.

Source: Honeywell

In view of all the above, the Management Board confirms that, to the best of its knowledge:

- the financial statements give a true and fair view of the assets, liabilities, financial position and profit or loss of the Company and of companies included in the consolidation;
- the management report provides a fair review of the position at the balance sheet date, the development and performance of the business during the financial year of the Company and its affiliated companies whose information is included in the annual accounts; and
- the management report describes the principal risks and uncertainties that the Company faces.

DR. HEINZ SCHIMMELBUSCH

ERIC JACKSON

JACKSON DUNCKEL

Management Board

AMG Advanced Metallurgical Group N.V.

March 11, 2022

REPORT OF THE

SUPERVISORY BOARD

STEVE HANKE

CHAIRMAN

Nationality: American

Born: 1942

Date of initial appointment: May 3, 2013

Date of end of term: 2023

Current positions: Professor of Applied Economics and Founder & Co-Director of the Institute for Applied Economics, Global Health and the Study of Business Enterprise at The Johns Hopkins University in Baltimore, Maryland, USA, Senior Fellow at the Cato Institute in Washington, D.C., USA, and Chairman Emeritus, the Friedberg Mercantile Group, Inc. (Toronto, Canada)

Former positions: Professor, Colorado School of Mines, Professor, the University of California, Berkeley, and senior economist, President's Council of Economic Advisers (Ronald Reagan)

WILLEM VAN HASSEL

VICE CHAIRMAN

Nationality: Dutch

Born: 1946

Date of initial appointment: May 4, 2017

Date of end of term: 2025

Current board position: Investigator/director a.i. by appointment of Enterprise Chamber (Court of Appeals Amsterdam)

Former positions: Attorney-at-law with Trenite van Doorne law firm (Chairman), Dean of the Dutch Bar Association, Supervisory Board Eurocommercial Properties NV, Brack Capital Properties NV, Afvalverwerking Rijnmond NV

HERB DEPP

Nationality: American

Born: 1944

Date of initial appointment: November 8, 2013

Date of end of term: 2023

Current board positions: Teller Wildlife Refuge (Chairman), University of Montana Athletics

Former positions: VP GE Boeing Commercial Aircraft Programs, VP GE Aviation Operations, VP Marketing and Sales GE Aircraft Engines, President General Electric Capital Aviation Services (GECAS)

DONATELLA CECCARELLI

Nationality: Italian

Born: 1959

Date of initial appointment: May 8, 2014

Date of end of term: 2022

Current board positions: Executive Board of the Flick Foundation (Chairwoman), Organization for International Economic Relations, Vienna (OiER)

Former positions: Global Wealth Management Director at Merrill Lynch International Bank Ltd. (Milan, Italy), Executive Director at Lehman Brothers International Europe (Frankfurt, Germany)

DAGMAR BOTTENBRUCH

Nationality: German and American

Born: 1960

Date of initial appointment: May 1, 2019

Date of end of term: 2023

Current board positions: Berentzen Gruppe AG, Pepper Media International AG, CFA Society (Germany), Segenia Capital Management GmbH

Former positions: Managing Director of Rabobank International (Germany), Director Investment Banking at Credit Suisse (London and Frankfurt)

WARMOLT PRINS

Nationality: Dutch

Born: 1957

Date of initial appointment: May 6, 2021

Date of end of term: 2025

Current board positions: Micro Turbine Technology BV (Chairman), JHC de Rooy Holding BV, SRG International BV (Advisory Council)

Former positions: Audit Partner at EY (the Netherlands), member of the EY EMEIA Assurance leadership team (Europe, Middle East, India and Africa), regional Managing Partner in the Netherlands, member of the Curatorium of Tilburg University

The Supervisory Board advises the Management Board and monitors the implementation of AMG's long-term value-creation strategy, ensuring that all stakeholder interests are appropriately considered.

2021: THE SECOND YEAR OF THE PANDEMIC

While 2020 was an extraordinarily difficult year for AMG and its employees due to the onset of the COVID-19 (coronavirus) pandemic, 2021 saw a steady improvement as vaccinations became widely available in the industrial world and the world economy proved to be resilient despite a general shortage of goods and components, disrupted supply chains and continuing travel restrictions on a global scale. During 2021, AMG's operations returned to normal levels and its expansion programs continued unabated.

The AMG Management Board and the heads of its units continued to prioritize the health and safety of AMG's employees. AMG fortunately had a relatively limited number of employees globally who were diagnosed with the COVID-19 virus in 2021 and, despite these infections, was able to keep all its facilities operating during the year. AMG's business units continued to deploy rigorous work and travel schemes to mitigate the impact of the pandemic for its global workforce. Across the Company during 2021, all individuals who had the capacity to work remotely had been instructed to do so while at the same time alternatives for physical office presence were created and maintained at most of AMG's facilities. It is important to note that all of AMG's main production facilities globally were operational in 2020 and continued to be so in 2021.

As 2021 is now behind us, the Supervisory Board can report that the Management Board and the management of its units and staff did an excellent job in transitioning the Company out of the difficult year 2020 into 2021 and preparing the Company for a world which is now expected to live with the virus for the foreseeable future. Despite the continuing impact of COVID-19, and the geopolitical turbulence caused by ongoing US-China tensions and the unpredictable economic environment, the Supervisory Board is very pleased to report that the Management Board kept full control of and focus on its strategic agenda and preserved a strong liquidity position during the year.

TASKS AND RESPONSIBILITY

The Supervisory Board supervises the actions taken by the Management Board in deciding the implementation of the long-term strategy and the general affairs of AMG. In doing so, the Supervisory Board focuses on the effectiveness of AMG's internal risk management and control system and the integrity and quality of the financial system. The Supervisory Board also monitors compliance in a broader sense and is kept up to do about compliance incidents concerning AMG's Code of Business Conduct, including incidents pertaining to business integrity (fraud, bribery, conflicts of interest), HR issues (discrimination, harassment), EHS matters, and misuse of corporate assets (theft). The Supervisory Board is also responsible for determining the remuneration of the individual members of the Management Board within the context of the Remuneration Policy as adopted by the General Meeting of Shareholders.

While retaining overall responsibility, it has assigned certain of its preparatory tasks to three committees: the Audit & Risk Management Committee, the Selection & Appointment Committee, and the Remuneration Committee, each of which reports on a regular basis to the Supervisory Board. The separate reports of each of these committees are included on the following pages.

ESG

The introduction in Europe in 2020 of the EU Taxonomy Regulation signaled an important step for AMG as this regulation officially recognizes that enabling of CO_2 reduction can be classified as an economic activity that significantly contributes to environmental objectives. The Supervisory Board has witnessed over the years the development and growth of AMG's ECO_2RP portfolio (as explained in the 2021 Letter to Shareholders) as one of the cornerstones of AMG's ESG Strategy. The Supervisory Board fully supports the Management Board's approach to actively contribute to CO_2 reduction on two levels, first by reducing its (Scope 1 & 2) CO_2 emissions through a variety of measures and target-setting (as explained in the Sustainability Report) and second, by enabling its customers (i.e., end-users of its products and technologies) to reduce CO_2 emissions by using AMG's products through its ECO_2RP portfolio. AMG believes that this two-pronged approach benefits all stakeholders, and the Supervisory Board is confident that AMG will be at the forefront of ESG developments as a result.

All of these developments came to fruition alongside the Supervisory Board's review of the climate change risks AMG is facing which are further discussed in the Risk Report (pages 18-23). In its climate change risk assessment, AMG's business operations and financial performance as pursued via AMG's three segments, Clean Energy Materials, Critical Minerals and Critical

Materials Technologies, are reviewed based on the notion that climate change has the potential to affect companies in two ways. First: physical risk, i.e., climate change – rising sea levels, extreme weather, water shortages – may directly (physically) threaten valuable company assets. Second: transitory risk, i.e., global efforts to reduce CO_2 emissions or otherwise mitigate the effects of climate change could affect the value of company assets in a major way. The Supervisory Board is discussing and actively monitoring how the reduction of CO_2 emissions coupled with the increased deployment of clean and energy efficient technologies and their rapidly declining costs could impact AMG's business operations and financial performance.

COMPOSITION OF THE SUPERVISORY BOARD

The Supervisory Board was first established on June 6, 2007, and currently consists of six members, as follows: Professor Steve Hanke (Chairman), Willem van Hassel (Vice Chairman), Herb Depp, Donatella Ceccarelli, Dagmar Bottenbruch, and Warmolt Prins (the personal details of each member are included on pages 26 and 27). During the 2021 financial year, the Supervisory Board said farewell to Frank Löhner who had to step down due to other pressing priorities. The Supervisory Board is grateful for the services and valuable contributions rendered by Mr. Löhner and wishes him the very best in his future endeavors. At the same time the Supervisory Board was very pleased to welcome Mr. Löhner's successor, Warmolt Prins, who will bring with him his accounting, risk management, and financial skills.

Since AMG is active in the supply of critical materials (including specialty metals and alloys), mining and capital goods, and operates in a difficult and unpredictable economic environment, the Supervisory Board believes that diversity in skills and experience is a key prerequisite for the performance of the Supervisory Board going forward. The Supervisory Board believes it has the right set of skills in place to take on the challenges facing AMG now and in the future. The Supervisory Board aims for an appropriate level of experience in technological, manufacturing, economic, operational, strategic, social, and financial aspects of international business, public administration, and corporate governance. The composition of the Supervisory Board must be such that the combined experience, expertise, and independence of its members enable it to carry out its duties. During 2021, all Supervisory Board members qualified as independent, as defined in the Dutch Corporate Governance Code. All current members of the Supervisory Board completed and signed a questionnaire to verify compliance in 2021 with the applicable corporate governance rules, including the Rules of Procedure of the Supervisory Board.

THE RESIGNATION SCHEDULE OF THE MEMBERS OF THE SUPERVISORY BOARD IS AS FOLLOWS:

Steve Hanke	2023
Willem van Hassel	2025
Herb Depp	2023
Donatella Ceccarelli	2022
Dagmar Bottenbruch	2023
Warmolt Prins	2025

At the Annual General Meeting ("AGM") in May 2022, Dr. Donatella Ceccarelli, Chair of the Audit & Risk Management Committee, will have served eight years on the Supervisory Board when her current term ends. The Board is very pleased that Dr. Ceccarelli has agreed to continue to serve on the Supervisory Board. The Supervisory Board will nominate Dr. Ceccarelli for reappointment by the General Meeting Shareholders on May 5 of this year as an independent member of the Supervisory Board for a term of two years.

DIVERSITY

The Supervisory Board is fully supportive of the initiatives of the Management Board that have been reflected in the Diversity Policy of the Company to promote diversity among its global employee population including among the staff and senior management of AMG's Group companies. Diversity among AMG's employees and staff, not only in gender but also in, amongst others, nationality, and country of origin, is a key objective for the Management Board and is fully supported by the Supervisory Board. The Supervisory Board is considering including specific diversity targets for the Management Board in its short-term incentive remuneration package going forward.

In line with the Diversity Policy of the Company, which was adopted in 2017, AMG pursues a policy of having at least one-third of the seats on the Supervisory Board and the Management Board be held by each gender. The Company will continue to take its key diversity objectives, including maintaining a proper balance of nationalities to reflect the transatlantic structure of AMG, and the gender allocation of seats as outlined above, into account in connection with recruitment, retention of employees and succession planning for both the Management Board and the Supervisory Board. In 2021, the Management Board deployed measures to attract and maintain a diverse workforce at its units, including linking incentive payments for unit managers to meaningful progress toward diversity targets. Since the Annual General Meeting in May 2019, AMG has met its diversity objectives in terms of gender as outlined above with respect to the Supervisory Board. The Supervisory Board will continue to look for suitable female candidates for both the Management Board and the Supervisory Board in order to meet all of its diversity objectives as outlined in its Diversity Policy as soon as reasonably possible. In addition, in view of new legislation in the Netherlands concerning gender diversity in the composition of supervisory boards and management boards that became effective on January 1, 2022, the Management Board has initiated the creation of a robust plan supporting diversity with appropriate targets within the AMG Group going forward. One of the measures adopted in 2021 was the creation of a (corporate) Diversity Council that reports directly to the CEO, who has invited Ms. Dagmar Bottenbruch of the Supervisory Board to provide feedback and advice on diversity policy. The Diversity Council comprises a diverse group of AMG's female senior management and staff. This Council renders ongoing advice to the Management Board and the management of the units on how to monitor, enhance, and increase diversity on a variety of levels within the AMG Group.

SUPERVISORY BOARD MEETINGS

The Supervisory Board held seventeen meetings over the course of 2021, all taking place by telephone or video conference due to the ongoing COVID-19 travel restrictions. Twelve of these meetings were held in the presence of the Management Board. All meetings were attended by all members, with the exception of Dr. Ceccarelli and Ms. Bottenbruch, who each missed one meeting.

As of January 1, 2021, AMG was structured into three reporting segments: AMG Clean Energy Materials (CEM), AMG Critical Minerals (CMI) and AMG Critical Materials Technologies (CMT). Each of these segments addresses similar markets, applies similar business models, and has its own set of peers. In addition, each segment has products which enable CO_2 reduction and contribute to AMG's core ESG concept that is embodied by ECO_2RP (Enabling CO_2 Reduction Portfolio). AMG's strategic investments that drive earnings growth over the next decade are primarily focused on enabling CO_2 reduction through both its products as well as its technologies.

This new structure and the performance of these three segments were important topics for review by the Supervisory Board together with the Company's ESG agenda and regular updates about the COVID-19 pandemic and its impact on the Company and its employees. In addition, recurring subjects, such as AMG's financial position, objectives and results, the operating cash flow (OCF) development as well as the net debt situation of the Company; potential acquisitions and divestments; capital expenditure programs; succession planning and remuneration; legal and compliance review; operations review as well as regular review of the strategic objectives and initiatives of the Company; and the Company's ongoing actions in the field of ESG, were part of the agenda of the Supervisory Board in 2021.

Financial metrics presented to the Supervisory Board to measure the performance of AMG included net income, earnings per share, EBITDA, financial leverage (net debt to EBITDA), working capital, liquidity, OCF and return on capital employed (ROCE). The Supervisory Board further discussed the top risks and risk profile of AMG's business and operations and the assessment by the Management Board of the structure of the internal risk management and control systems, and any significant changes thereto, as well as the functioning of the internal audit function and of the external auditor, KPMG Accountants NV ("KPMG"). Besides the scheduled meetings, the Chairman had regular contact with the Chief Executive Officer and the other members of the Management Board as well as senior executives of the Company throughout the year.

Throughout 2021, the Supervisory Board regularly reviewed and was regularly updated by the Management Board about the implementation of the long-term strategy of AMG, which was fundamentally renewed and approved by the Supervisory Board in July 2016 and subsequently fine-tuned and updated during the following years. This strategy review took place on a continuing basis by way of strategy updates during the regular Board meetings in 2021, headed by the Chairman of the Management Board, in order to keep the Supervisory Board fully informed on the progress and financing of the strategy, as well as the principal risks related to the strategy.

AMG's core strategy continues to be based on a growth-driven long-term value creation approach that is supported by the introduction of the three new reporting segments mentioned earlier, and focused on three principles: A) process innovation and product development, aimed at improving the market position of AMG's businesses; B) industry consolidation, achieved by pursuing opportunities for horizontal and vertical industry consolidation across AMG's critical materials portfolio; and C) expansion of high-growth businesses within AMG's existing product portfolio.

During 2021, the Management Board continued its strong focus on driving the key strategic projects of the Company, which include: i) the construction of a new production facility in Zanesville, Ohio, USA that essentially doubles capacity of the existing AMG Vanadium recycling facility in Cambridge, Ohio, USA, with construction on schedule and on budget, and scheduled to begin operations in the second quarter of 2022; ii) the first full year of operation for Shell & AMG Recycling B.V. (SARBV), which continues to pursue circular refinery residue opportunities outside the United States, advancing the goals of the circular economy; and iii) the start of the construction of a battery-grade lithium hydroxide plant in Bitterfeld, Germany together with the establishment of a research center and pilot plant for solid-state lithium batteries in Frankfurt, Germany. Also, on the financial front, the Management Board was very active and decisive in solidifying AMG's financial base by securing a successful equity raise in April 2021 through which 10% new shares were issued to qualified investors through an accelerated book-building process, yielding proceeds of $119 million. In addition, the Management Board, under the leadership of its CFO, secured a full refinancing of AMG's existing $200 million revolving credit facility and $350 million term loan B, under favorable terms, extending revolver maturity from 2023 to 2026 and term loan maturity from 2025 to 2028.

Please refer to the Chairman of the Management Board's Letter to Shareholders for an update and overview of AMG's strategy and its implementation thereof going forward (pages 8-11).

As a result, despite the ongoing severe COVID-19 impact and unpredictable economic environment, EBITDA more than doubled in 2021 over the prior year and AMG was able to pursue its strategic objectives and projects without delay.

In 2021 the annual self-evaluation process took place informally, as in 2019 this process had taken place with the assistance of and under the guidance of an external facilitator, in line with the Board's policy to use the services of external facilitators for this process once every three years. Accordingly, the Supervisory Board in 2021 completed a comprehensive self-evaluation questionnaire which concerned, among other things, the Board members' mutual interaction and contribution during meetings; their interaction with the Management Board; the functioning of the Supervisory Board Committees; and the desired profile and competencies of the Supervisory Board. During the executive session of the Supervisory Board meeting on October 27, 2021, the Chairman shared and discussed the results with the Board members, and the Supervisory Board concluded, after ample discussion, that the Board, its committees, and individual members have been functioning very well with a high level of trust and cohesion. Items for improvement that were noted concern possible changes in the meeting schedule in order to have more frequent (perhaps monthly) meetings sharing key financial metrics, and the broadly felt desire to have physical meetings (that had to be shelved in the wake of the pandemic), that are seen to be critical for in-depth discussions.

On October 27, 2021, the Supervisory Board (without the presence of the Management Board) met and reviewed the performance of the Management Board and its members over the past twelve months. During this meeting, the Supervisory Board discussed and unanimously adopted the recommendation of the Selection & Appointment Committee, which had based its findings on the results of the Company and feedback from senior management within the AMG Group. The Committee concluded that the performance of the Management Board and its individual members, during this year of recovery following a very challenging 2020, was outstanding.

The Committee witnessed the Management Board, led by its Chairman and CEO, act throughout the year with unrelenting focus and agility in adjusting the strategy where necessary and driving the unit CEOs to take the necessary actions. As COVID-19 gave a severe blow to the aerospace business and ambitions of AMG Technologies, the Management Board reorganized the segment, dissolving the AMG Technologies structure that had run its course and instructed management to redirect resources toward developing a center of excellence for project management, that would be of further use to the AMG Group. Further, the importance of ESG accelerated throughout 2021 as climate change and CO_2 reduction moved center-stage for investors, customers and governments on a global scale, which led AMG to deepen its ESG strategy centered around its ECO_2RP portfolio that has been further developed, and to launch AMG's lithium-vanadium redox battery concept for industrial power management applications. The Committee also recommended that no changes in the Management Board's composition were merited. In particular, the Supervisory Board was impressed by the persistent focus on operational performance and costs, and on the implementation and monitoring by the Management Board members of the strategic objectives, during very unsettling economic circumstances, which form the basis of AMG's long-term value-creation strategy.

SHARES HELD BY MEMBERS OF THE SUPERVISORY BOARD

As of December 31, 2021, the members of the Supervisory Board held 125,546 shares in the Company. Out of that number, 77,693 shares were awarded to them as part of their annual remuneration.

COMMITTEE REPORTS

The Supervisory Board has three standing committees: the Audit & Risk Management Committee, the Selection & Appointment Committee and the Remuneration Committee.

REPORT OF THE AUDIT & RISK MANAGEMENT COMMITTEE

COMPOSITION: DR. DONATELLA CECCARELLI (CHAIR), MR. WILLEM VAN HASSEL, AND MR. WARMOLT PRINS

The Audit & Risk Management Committee is responsible for, among other things, the review of matters relating to financial controls and reporting, internal and external audits, the scope and results of audits and the independence and objectivity of auditors as well as the Company's process for monitoring compliance with laws and regulations and its Code of Business Conduct.

It monitors and reviews the Company's internal audit function and, with the involvement of the independent external auditor, focuses on compliance with applicable legal and regulatory requirements and accounting standards.

The Audit & Risk Management Committee met by video conference six times during 2021, including its meetings to review and approve annual and interim financial reports and statements of the Company, and reported its findings periodically to the plenary meetings of the Supervisory Board. All members of the Audit & Risk Management Committee attended all meetings.

The structure, process and effectiveness of the Company's internal risk management and control systems and the accompanying risk reports from the Management Board were regular topics of discussion at the Audit & Risk Management Committee meetings. Others included the Internal Audit plan prepared by the Internal Auditor of AMG and the External Audit plan prepared by KPMG (see the chapter on Corporate Governance). Additional topics discussed were internal audit reports of the various units within the group and the identified risks per entity, summarized in the top risks of the Company; quarterly financial results; liquidity and cash situation; credit facility and arrangement with the Company's major banks; insurance; environmental risk; status of the IT and Cyber Security controls within AMG; compliance and Code of Business Conduct review program; foreign currency exposure and hedging policies; tax structuring and spending approval matrices; risk management reports; and litigation reports. AMG's Internal Auditor maintained regular contact with the Audit & Risk Management Committee and the external auditors of the Company. The Audit & Risk Management Committee did meet with the external auditors without any member of the Company's Management Board or financial and accounting staff present in early 2021. During this meeting the former global lead partner, as well as his successor at KPMG, were present.

At all regular Audit & Risk Management Committee meetings, an important agenda item concerned the review of the Quarterly Risk Report that was prepared by the Management Board as further explained in the Risk Report section of the Annual Report. During that agenda item, all Management Board members joined the Committee meeting to explain the Risk Report, and to update the Committee members about any changes in the risk profile of the Company.

The Audit & Risk Management Committee discussed with KPMG the findings from the 2020/2021 audit of the 2020 Financial Statements and reviewed the contents and key audit matters of the 2021 Independent Auditor's Report of KPMG and reported on this matter to the plenary meeting of the Supervisory Board. In 2021, external audit fees were $2.195 million for the group financial statements. Present at all non-executive session meetings of the Audit & Risk Management Committee were the Chief Financial Officer, Chief Controller, and the Internal Auditor. KPMG was present at all these meetings, while at certain meetings, the Chief Compliance Officer was also present.

Given the importance of IT and cyber security risks for AMG and the operation of its business units, the Management Board initiated in 2021 a global review of AMG's IT and cyber security controls by an external cyber security consultant company. The results, including a comprehensive action plan, were presented to the Management Board, Audit and & Risk Management Committee (including the external auditors), and finally the Supervisory Board, and were subsequently shared with the units for implementation without delay.

The Internal Auditor at AMG reports to the Audit & Risk Management Committee and to the Management Board and operates on the basis of an Internal Audit plan approved by the Audit & Risk Management Committee, the Management Board, and the Supervisory Board. The Internal Audit plan is risk-based and comprises units and subsidiaries of the AMG Group with a focus on operational, financial, compliance, and cyber security risks.

The Internal Audit function closely cooperates with the external auditors of the Company and was present at all meetings of the Audit & Risk Management Committee of the Supervisory Board.

SELECTION & APPOINTMENT COMMITTEE

COMPOSITION: PROF. STEVE HANKE (CHAIR) AND DR. DONATELLA CECCARELLI

The Selection & Appointment Committee is responsible for: (i) preparing the selection criteria, appointment procedures, and leading searches for Management Board and Supervisory Board candidates; (ii) periodically evaluating the scope and composition of the Management Board and the Supervisory Board; (iii) periodically evaluating the functioning of individual members of the Management Board and the Supervisory Board; and (iv) supervising the policy of the Supervisory Board in relation to the selection and appointment criteria for senior management of the Company. The Selection & Appointment Committee held two regular meetings during 2021, in addition to various informal meetings between the committee members who also had contacts with the Chairman of the Management Board and other members of the Supervisory Board and reported its findings to the Supervisory Board. In these meetings, all committee members were present. In its succession planning for the Management Board and Supervisory Board, the Committee takes into account the profile set for new members as well as the diversity policy of the Company as explained on pages 29 and 30, bearing in mind the need to have in place at all times the right set of skills and experience on the Board. During 2021, the committee continued its succession planning process to identify adequate candidates for the Supervisory Board, based on the profile which was approved in 2016.

The year 2021 began with completion of the succession review of the Management Board that had been initiated back in 2020 given that the terms of both the CEO and COO (Dr. Heinz Schimmelbusch and Mr. Eric Jackson, respectively) were set to end in May 2021. As extensively explained at earlier occasions, the Supervisory Board highly values the leadership of Dr. Heinz Schimmelbusch as CEO and Chairman of the Management Board, and the Supervisory Board was extremely pleased that both Dr. Schimmelbusch and Mr. Jackson were reappointed by the General Meeting of Shareholders on May 6, 2021, for periods of two and four years, respectively, in order to continue to drive the strategic agenda of the Company and prepare the Company in the best possible way for the post-pandemic economy.

The Supervisory Board itself was faced with three vacancies in May 2021. Pursuant to the Rotation Schedule, Mr. Herb Depp (Chair of the Remuneration Committee) had served eight years as a Board member, and Mr. Willem van Hassel (Vice Chairman) had served four years on the Supervisory Board. The Supervisory Board was very pleased that both Mr. van Hassel and Mr. Depp had agreed to continue to serve on the Supervisory Board and that each was reappointed by the General Meeting of Shareholders on May 6, 2021, as members of the Supervisory Board for a term of four years and two years, respectively.

Given the retirement of Mr. Frank Löhner as a Supervisory Board member in May 2021 due to other pressing engagements, the Supervisory Board was very pleased that Mr. Warmolt Prins was appointed as a member of the Supervisory Board by the General Meeting of Shareholders on May 6, 2021 for a term of four years. Mr. Prins, who has Dutch nationality, was a partner of EY Accountants and practiced as a Certified Public Accountant (CPA) until 2018 and served, amongst other things, as external auditor of AMG (on behalf of EY) from 2010 to 2015. Mr. Prins replaced Mr. Löhner as a member of the Audit & Risk Management Committee as of May 6, 2021.

REMUNERATION COMMITTEE

COMPOSITION: MR. HERB DEPP (CHAIR) AND MS. DAGMAR BOTTENBRUCH

The Remuneration Committee is responsible for establishing and reviewing material aspects of the Company's policy on compensation of members of the Management Board and the Supervisory Board and preparing decisions for the Supervisory Board in relation thereto. This responsibility includes, but is not limited to, the preparation and ongoing review of: (i) the remuneration policy as adopted by the General Meeting of Shareholders; and (ii) proposals concerning the individual remuneration of the members of the Management Board to be determined by the Supervisory Board.

The Remuneration Committee met four times in 2021, in addition to various informal discussions among its members, the other members of the Supervisory Board, the Chairman of the Management Board and the Chief Financial Officer, and the executive compensation consultant (Mercer) hired by the Supervisory Board. In these meetings, all committee members were present.

The Annual General Meeting in May 2021 represented an important milestone as the General Meeting of Shareholders approved the revised Remuneration Policy for the Management Board (after this was rejected in 2020) and also approved the Remuneration Report of the Board for 2020, both with substantive majorities which easily passed the majority of 75% of the shares present at the Meeting per the EU Shareholder Rights Directive ("the SRD"), which became effective in the Netherlands in 2019.

As a result, 2021 was the first year dealing with the new Remuneration Policy that contained a 70-30 percentage split between financial and non-financial targets for the short-term incentive (bonus) component of the compensation. Financial targets are set based on scenario analysis and are comprised of 35% EBITDA and 35% Operating Cash Flow. Non-financial targets saw a split between ESG related targets (20%) and personal objectives (10%). The ESG related targets concerned CO_2 enabling, lost time incident rate and CO_2 credits created. Both ESG related targets, as well as the personal objectives and results, are discussed in the Remuneration Report for 2021 (pages 35-48).

Other topics of discussion at the Committee meetings included the regular items such as the review of the base salary and short-term incentives for members of the Management Board as well as the senior executive teams of AMG's units. Also during the year, the Committee reviewed the performance-related compensation of the Management Board members, in particular the progress of the ESG related targets and the personal objectives set for each Management Board member. Further, the Chair of the Remuneration Committee met with the Chairman of the Management Board during the first half of 2021, to learn about the views of the Management Board members regarding the amount and structure of the Management Board's own compensation – as renewed under the revised Remuneration Policy – in view of best practice provision 3.1.2. of the Dutch Corporate Governance Code.

2021 REMUNERATION REPORT

See the following chapter on remuneration for further detail.

APPRECIATION FOR THE MANAGEMENT BOARD AND THE EMPLOYEES OF AMG

The Supervisory Board would like to thank the Management Board for its dedication and outstanding efforts in 2021 in leading the Company, which came to see a turnaround from the extraordinarily difficult 2020. The Management Board continued to focus not only on its operational and financial performance during the year, but also on long-term value creation amid the challenges presented by the volatile global economic and geopolitical environment, highlighted by supply chain disruptions, shortages of materials and components, and ongoing travel restrictions. The Supervisory Board would also like to thank all the employees of AMG for their continued commitment to the Company's success and well-being.

ANNUAL REPORT 2021

The Annual Report and the 2021 financial statements, audited by KPMG, have been presented to the Supervisory Board. The 2021 financial statements and the Independent Auditor's Report with respect to the audit of the financial statements were discussed with the Audit & Risk Management Committee in the presence of the Management Board and the external auditor. The Supervisory Board endorses the Annual Report and recommends that the General Meeting of Shareholders adopt the 2021 financial statements.

SUPERVISORY BOARD

AMG ADVANCED METALLURGICAL GROUP N.V.

PROFESSOR STEVE HANKE, CHAIRMAN

WILLEM VAN HASSEL, VICE CHAIRMAN

HERB DEPP

DONATELLA CECCARELLI

DAGMAR BOTTENBRUCH

WARMOLT PRINS

March 11, 2022

AMG'S

REMUNERATION REPORT FOR THE YEAR 2021

Dear Shareholder, as Chairman of the Remuneration Committee of the Supervisory Board, I am pleased to share with you the 2021 Remuneration Report of AMG Advanced Metallurgical Group N.V. ("the Company," "AMG NV" or "AMG").

AMG's shareholders voted last year to accept our proposed changes to the Remuneration Policy. The policy was significantly changed as a response to shareholder concerns and in conjunction with significant engagement with proxy advisors, corporate governance experts, and direct meetings with shareholders. AMG and its Supervisory Board remain committed to shareholder engagement and will continue to engage with shareholders as remuneration disclosure requirements continue to change.

The key changes to our Annual Bonus structure include:

- Reducing the maximum Annual Bonus opportunity from 300% of target to 200% in line with best practice. The target as a percentage of salary remains unchanged. The stretch target of 200% will continue to be paid out only upon the highest levels of attainment against all performance measures, and we will maintain a 0% payout should the threshold targets not be met.
- Introducing quantifiable, verifiable, and strategically aligned ESG targets to our Annual Bonus award at a weighting of 20% for the 2021 reporting year.
- Reducing the Personal Target weighting from 20% to 10% and the Financial Targets from 80% to 70%.

We also simplified the Long Term Incentive Plan and aligned it to best practice, taking into account investor feedback, as follows:

- Share options will no longer be awarded. All awards will be in the form of performance share units ("PSUs"), and the Long-Term Incentive Plan will be known as the Performance Share Unit Plan going forward.
- PSUs will feature a 3-year performance period and an additional 2-year holding period in line with the Dutch Corporate Governance Code.
- For 2021, payouts will be based 100% on relative Total Shareholder Return versus the global sector peers we utilize to benchmark Management Board pay. Due to the cyclical nature of some of AMG's products, the Supervisory Board believes that a relative measure versus AMG's industry peers is the best way to incentivize the Management Board to outperform its industry over time.
- For awards granted as of 2021, there will no longer be any vesting of the PSUs for performance below the 50th percentile, in line with best market practice.

All of these changes were made with direct input from shareholders, proxy advisors, and corporate governance experts, and represent a significant reduction in achievable remuneration for AMG's Management Board. In addition, we have enhanced our disclosure such that shareholders and stakeholders can more easily find relevant information, and we expect to continue to refine our disclosure to reflect the needs of our shareholders.

2021 PERFORMANCE

AMG performed exceptionally well in all categories in 2021. Target EBITDA and Operating Cash Flow were set at 45% and 108% higher than what was achieved in 2020 respectively. Maximum targets were set at more than double and triple the previous year's EBITDA and Operating Cash Flow respectively. AMG's 2021 performance approached and exceeded those maximum targets because of a combination of factors, including price increases across its portfolio and an early recovery in the aerospace industry. The Management Board continued to drive significant growth projects in AMG's lithium and vanadium businesses, and the Company excelled in safety, achieving its lowest Lost Time Incident Rate in its history, and a record 1,000 days with zero incident at its mine in Brazil. AMG's broader workforce increased its pay by 13%, and despite COVID infections, AMG's focus on workplace safety enabled all of our facilities to remain fully operational. At the same time, the Company made strides in reducing CO_2, increasing its CO_2 enabled reduction to 79.0 million tons and establishing an aggressive goal of reducing its own CO_2 emissions by 20% by 2030.

2021 REALIZED COMPENSATION

Because the financial results substantially outperformed an aggressive financial plan as detailed above, and also due to the excellent safety record and increase in tons of enabled CO_2 reduction, the Management Board will be receiving a cash bonus at 178% of target. This is in contrast to the zero bonus they received last year, and reflects the work they did during the pandemic to position the Company for growth in 2021.

As of December 31, 2021, no payout is expected for the 2019 PSU's based on current TSR.

Overall, the increased cash bonus was partially offset by the lower PSU valuation and the realized pay rose 3% for the CEO, 37% for the COO, and 27% for the CFO.

PAY FOR PERFORMANCE

AMG fundamentally believes that total executive remuneration should be highly correlated to performance. AMG's performance on a share price and financial basis was severely interrupted by the COVID pandemic in 2020. For this reason, the Management Board received no Annual Bonus in 2020, despite performing Significantly Above in personal performance as they successfully managed the Company's reaction to the pandemic by cutting costs and maintaining liquidity, while simultaneously pursuing long term strategic projects. The financial performance in 2021 was enhanced by the work the Management Board did in 2020, and this strong performance in 2021 results in a high Annual Bonus. In addition, it is worth noting that AMG's share price increased 29% from December 31, 2019 to December 31, 2021, despite the massive effect COVID had on AMG's financial and share price performance in 2020.

2022 ANNUAL GENERAL MEETING

At the 2022 Annual General Meeting, shareholders will be asked to endorse this Remuneration Report in an Advisory Vote. Shareholder engagement is a fundamental element in our decision-making process on remuneration, and we will continue to actively seek shareholder feedback on an ongoing basis.

I invite you to send any comments regarding this report to Michele Fischer, Vice President of Investor Relations, at: mfischer@amg-nv.com.

On behalf of AMG, the Supervisory Board and its Remuneration Committee, I would like to thank you for your continued support and feedback.

Sincerely,

Herb Depp,

Remuneration Committee Chairman

INTRODUCTION

This Remuneration Report for 2021 should be read in conjunction with the 2021 Remuneration Policy for the Management Board that was accepted by the shareholders at the 2021 Annual General Meeting. It reflects those disclosure changes that were mandated by the European Shareholder Rights Directive ("SRD") in 2019. Regarding the Supervisory Board, its Remuneration Policy was approved by the shareholders at the 2020 Annual General Meeting, so this Report also contains the Remuneration Report for the Supervisory Board for the year 2021.

This Remuneration Report details 2021 realized pay in line with the 2021 Remuneration Policy for the Management Board and our intentions for 2022 remuneration.

MANAGEMENT BOARD COMPENSATION PHILOSOPHY, PRINCIPLES, AND SUMMARY OF 2013 REMUNERATION POLICY

AMG COMPENSATION PHILOSOPHY

The AMG Values (Safety, Value Creation, Respect for People, and Integrity) are the foundation of AMG's ambition to be a leader in the field of critical materials and engineering services. These values underpin the assessment of overall performance for Annual Incentive Payments across the Company.

AMG's strategy is to be at the forefront of critical material technologies which target clean energy and energy efficiency and ultimately reduce CO_2 production.

The Remuneration Policy and the performance measures included within it endeavor to align AMG's performance targets with AMG's long-term strategic objectives and AMG's Values, and in so doing, support the generation of long-term stakeholder value.

To this end, AMG focuses on pay for performance: AMG's variable compensation is tied directly to the achievement of strategic targets. The performance measures focus management on the delivery of a combination of robust key performance indicators relating to the annual performance of the Company, and on long-term share price appreciation. AMG has concluded that this combination of annual key performance indicators and long-term share price appreciation align well with shareholder value creation.

AMG believes that shareholder value creation is an important pillar to creating long-term, sustainable stakeholder value. AMG's Remuneration Policy incentivizes the Management Board to focus on the other key pillars of stakeholder value creation: employees must be motivated to work in an environment that puts safety first, and the Company must consider the best interests of the surrounding community, customers, suppliers, service providers, financial institutions, and government agencies. AMG's non-financial performance measures focus management on delivering leadership in strategic projects and in long-term sustainability by targeting a specific set of goals including CO_2 abatement, safety, environmental stewardship, diversity, human resource development, and risk management.

AMG targets a Remuneration Policy that is balanced between financial metrics, strategic objectives, and protecting stakeholder values. In addition, AMG targets a total compensation package that is sufficient to attract and retain key management team members.

COMPETITIVE ENVIRONMENT AND PEER GROUP

From the inception of AMG in 2007, the Supervisory Board has adopted a US-centric approach towards executive remuneration, but with due regard to the Dutch corporate governance environment. This US focus is due to the location of AMG's operational headquarters in the US and the fact that all of its Management Board members have been and continue to be US residents. AMG is mindful of the views of society about the level and structure of remuneration for its senior leadership and AMG continues to inform itself about those views in the major countries in which it is operating like the United States, Germany, Brazil, and the United Kingdom. Although AMG has no operational activities in the Netherlands, it continues to take into account the Dutch perspective since its head office is located and its shares are listed in Amsterdam.

The AMG group of companies competes throughout the world for business and for talent. Given its size and the diversity of its business, it must compete for superior talent with corporations of considerable scale. Therefore, AMG must provide top talent with roles that are challenging and motivating in a fast-paced environment and offer very competitive reward opportunities for superior performance.

In establishing the 2021 remuneration, the Supervisory Board considered multiple scenarios of how the remuneration components would be affected given different sets of circumstances, including one in which incentive plan thresholds were not achieved.

Every year, the Remuneration Committee of the Supervisory Board reviews, confirms and uses an executive compensation peer group for benchmarking purposes. During 2021, the Supervisory Board utilized a peer group that was established with the assistance of our independent adviser Mercer Limited ("Mercer"). This peer group features 12 of 17 peers which are listed and domiciled in Europe and has been used for the basis of reviewing our Remuneration Policy and how we will implement it in 2021.

The peer group used in 2021 consists of the following companies:

1. Allegheny Technologies Inc*
2. AMAG
3. Aperam
4. Bodycote
5. Carpenter Technologies*
6. Commercial Metals*
7. Constellium*
8. Elementis
9. Eramet
10. Ferrexpo
11. Hill & Smith
12. Materion*
13. OCI N.V.
14. Outokumpu
15. Salzgitter
16. SGL Carbon
17. Vallourec

*Denotes a US Listed Peer

This peer group is an important yardstick for the Supervisory Board in determining performance by the Company and setting compensation for the Company's Management Board.

SUMMARY: 2021 REMUNERATION POLICY

FIXED PAY SUMMARY

2021 FIXED PAY AND BENEFITS		
	ANNUAL BASE SALARY	PENSION AND OTHER BENEFITS
Purpose	Reflects responsibilities, experience, and skill sets	Provides retirement and risk insurances tailored to local market practices and regulations
Form of Payment	Cash	Country and Individual specific and aligned with other senior managers
Performance Measures	—	—
Total By Management Board Member [1]	Heinz Schimmelbusch: $750,000 + €250,000 Eric Jackson: $723,000 + €100,000 Jackson Dunckel: $523,000 + €100,000	Set at 50% of the average salary for the final 3 years of employment. Please see below for further details.

1. The AMG Management Board resides in the US, but since AMG is headquartered in Amsterdam, each member has a portion of their salary paid in the Netherlands in Euros.

ANNUAL BONUS

The CEO's target bonus will be 85% of base salary and the COO's and CFO's will be 65% of salary. As per the new and improved policy, the maximum opportunity is 200% of target in line with best practice.

Financial Measure	Weighting
Operating Cash Flow	35%
EBITDA	35%
Non-financial Measures	
ESG Measures • Lost Time Incident Rate • Enabling CO_2 Reduction • CO_2 Credits Created	6.7% each, totaling: 20%
Management Board Personal Targets	10%

The new 2021 remuneration policy replaced ROCE with EBITDA as a financial measure because of the very heavy capex schedule the Company is engaged in. The rationale for the change was that setting low ROCE targets due to the increase in capital employed would not provide a challenging enough target for Management, and did not represent the strategy the Management Board has presented to shareholders to finalize the growth targets as expeditiously as possible.

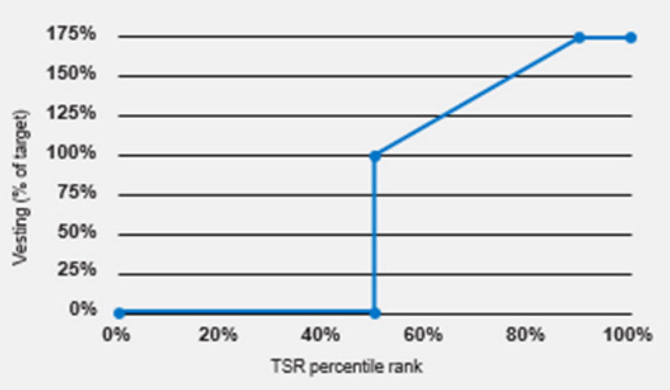
PERFORMANCE SHARE UNITS

In line with the new 2021 Remuneration Policy, the Long-Term Incentive Plan will now be called the Performance Share Unit Plan. PSUs will be granted based on a fixed Euro face value amount unchanged from 2020, with target percentages of base salary not exceeding 200% of base salary. Maximum opportunity will continue at 175% of target.

Performance will continue to be measured over a three-year period. In addition, a two-year holding period of the number of post-tax shares awarded under the PSU plan will be implemented for all PSUs.

Performance will be measured solely based on relative TSR versus the peer group utilized to benchmark Management Board compensation. The vesting schedule for awards after 2021 is shown below—the maximum opportunity is only available with outperformance at the 90th percentile, and unlike the old policy, there will no longer be any vesting for below-median performance.

RELATIVE TSR— VESTING SCHEDULE



Similar to the 2021 issuance under the new policy, for 2022, the share price utilized for the grant value will be based on the average share price over the 5 trading days after the publication of the 2021 annual results. The vesting value for the 2022 grant will be based on the TSR performance over three years and will utilize the average share price over the 30 trading days prior to year-end 2021 versus the average share price over the 30 trading days prior to year-end 2024.

The new 2021 policy removed the ROCE hurdle for the PSUs in line with the change in financial measures for the annual bonus discussed above. However, the Supervisory Board may apply judgement where necessary to ensure approved vesting levels are representative of actual, overall Company performance including (but not limited to) the level of profit achieved and aim to manage risk in line with integrating business ethics and compliance.

VARIABLE AWARD OPPORTUNITIES PER 2021 REMUNERATION POLICY

EXECUTIVE	SALARY[1]	ANNUAL BONUS TARGET (% of salary)	PERFORMANCE SHARE UNIT PLAN (% of salary)
Heinz Schimmelbusch, CEO	\$750,000 + €250,000	85%	194% PSU Face Value: €1,700,000[2]
Eric Jackson, COO	\$723,000 + €100,000	65%	93% PSU Face Value: €650,000[2]
Jackson Dunckel, CFO	\$523,000 + €100,000	65%	93% PSU Face Value €500,000[2]

1. The AMG Management Board resides in the US, but since AMG is headquartered in Amsterdam, each member has a portion of their salary paid in the Netherlands in Euros.
2. PSU Face Value is fixed as a Euro figure. It is the same as last year and the total will not change in 2022. Percentage of salary is shown for comparability utilizing a 1.20 Euro / dollar exchange rate and it is within the policy ranges (up to 200%).

COMPENSATION GOVERNANCE SUMMARY

DECISION ON	DECISION MAKING AUTHORITY
Compensation of Supervisory Board	Supervisory Board
Compensation of Management Board	Supervisory Board
Compensation of Senior Executives	Management Board/Remuneration Committee

MANAGEMENT BOARD COMPENSATION RISK MANAGEMENT PRINCIPLES		
• Rigorous performance management process • Balanced mix of short-term and long-term variable compensation elements • Performance evaluation on an individual basis • Long-term incentive plan focused on share price performance with three and four-year vesting	• Annual incentive compensation capped at 200% and PSU performance capped at 175% • Post contractual non-compete of 24 months • Severance payment is base salary plus in some cases target annual incentive payment	• Good and bad leaver provisions apply to annual bonus and unvested share plans • Clawback and malus principles apply to all elements of variable compensation • Share ownership requirememts • No loans to executives permitted

2021 MANAGEMENT BOARD COMPENSATION

2021 AND 2020 REALIZED PAY FOR THE MANAGEMENT BOARD

USD 000's		BASE SALARY	ANNUAL BONUS	PSUs[1]	**OPTIONS[1]**	PENSION	OTHER	TOTAL	FIXED (% OF TOTAL)	VARIABLE (% OF TOTAL)
Heinz Schimmelbusch, CEO	2021	1,046	1,582	—	169	181	175	3,153	44%	56%
	2020	1,035	—	1,091	338	229	333	3,026	53%	47%
Eric Jackson, COO	2021	841	973	—	50	103	42	2,009	49%	51%
	2020	837	—	321	99	133	40	1,430	71%	29%
Jackson Dunckel, CFO	2021	641	742	—	50	417	41	1,891	58%	42%
	2020	637	—	321	99	357	26	1,440	71%	29%

1. Assuming a share price of €28.18 as of December 31, 2021, the 2019—2021 PSUs were expected to pay out 0%. Option value detail is described on the following pages.

BASE SALARY

None of the Management Board received an increase to base salary in 2021. In addition, the CEO has not received a base salary increase since 2008, and the CFO has not received an increase since joining the Company in January 2016. The COO received two salary increases in 2019, his first since 2008.

PENSIONS AND RETIREMENT BENEFITS

The members of the Management Board are members of a defined contribution plan maintained in the United States. They receive additional retirement benefits from Metallurg's Supplemental Executive Retirement Plan (SERP). With respect to Heinz Schimmelbusch, the supplemental benefits are payable for life commencing at the end of his employment with AMG.

The benefit to be paid under the AMG retirement plan will be reduced by the amounts received under the normal retirement benefit under the Pension Plan of Metallurg Inc. Pursuant to Eric Jackson's and Jackson Dunckel's SERP, it is provided that if they are employed by AMG or remain in AMG's employment until the age of 65, they are entitled, whether or not they have terminated their employment, to receive AMG retirement benefits (reduced by amounts received under Metallurg's other pension plans). As Eric Jackson has reached age 65 and remains in AMG's employment, he has begun receiving AMG retirement benefits. Jackson Dunckel's benefits will be reduced if his employment with AMG ends prior to reaching age 65.

2021 ANNUAL BONUS

Target opportunity was 85% of salary for the CEO and 65% for the COO and CFO. Maximum performance was 200% of target subject to the attainment of exceptional performance.

MEASURE	TARGET	ACTUAL	ACTUAL % VS TARGET	ACHIEVEMENT VS TARGET	2020	TARGET % VS 2020
Financial Measures—70% of total, comprising:						
Operating Cash Flow (35%)	$40.8M	$90.8M	223%	200%	$19.6M	208%
EBITDA (35%)	$96.6M	$136.5M	141%	181%	$66.8M	145%
Non-financial Measures - 30% of total, comprising:						
ESG Measures (20%)						
• Lost Time Incident Rate (6.7%)	1.17	0.39	(67%)	200%		
• Enabling CO_2 Reduction (6.7%)	57.0	79.0	139%	200%		
• CO_2 Credits Created (6.7%)	Y	N	0%	0%		
Management Board Strategic Targets (10%)	Qualitative	Sig. Above	Sig. Above	175%		
Total Annual Incentive Award				178%		

Target EBITDA and Operating Cash flow were set at 45% and 108% higher than what was achieved in 2020 respectively. Maximum targets were set at double and triple the previous year's EBITDA and Operating Cash Flow respectively. AMG's 2021 performance approached and exceeded those max targets because of a combination of factors, including price increases across its portfolio and an early recovery in the aerospace industry.

ESG MEASURES PERFORMANCE – WEIGHTING 20%

Metric	Weight	Result	Payout	2021 Actual	TARGET
Lost Time Incident Rate	6.7%	Significantly Above	200%	0.39	1.17[1]
Enabling CO_2 Reduction	6.7%	Significantly Above	200%	79.0 MM tons	57 MM tons[2]
CO_2 Credits Created	6.7%	Not Met	0%	nil	nil
Total Payout for ESG Measures:			133%		

1. Set at 10% less than the BLS Benchmark NAICS Code: 331 "Primary Metals and Mining" for 2020, which was 1.30.
2. Set at the 2020 value. Target exceeded due to an unanticipated robust recovery in aerospace.

MANAGEMENT BOARD PERSONAL TARGET SCORE CARD AND DISCUSSION – 10% WEIGHTING

Management Board Strategic Targets	Key Achievements	Result
Drive Continuous improvement in EHS Performance	• Establishment of Diversity Council • Establishment of CO_2 reduction commitment	Significantly Above
Drive Clean Energy Materials Growth	• Acceleration of Brazil Mine Expansion • Funding of German Lithium Project	Significantly Above
Deepen AMG's CO_2 Enabling Strategy	• Increased number of Products Included in ECO_2RP • Established ECO_2RP growth commitment	Significantly Above
Advance Cambridge 2 Execution	• Finalized all expenditures under budget • Completed Roaster and Raw Material Storage	Above
Advance German Lithium Hydroxide Project	• Finalized Engineering and approved project • Established offtake agreements	Above
Advance Shell Joint Venture Projects	• Signed agreement with local Saudi partner (UCI) • Bid to supply Part 1 of the Supercenter	Above
Overall Assessment		Significantly Above
Total Annual Incentive Award		175%

Dr. Schimmelbusch was instrumental in exploring multiple avenues for growth, in our AMG Clean Energy Materials Business during 2021. He initiated our LIVA strategy and the acquisition that bolstered that strategy. He progressed the joint venture with Shell plc, which is pursuing circular refinery residue opportunities outside the United States, thereby advancing the goals of the circular economy. He continued to drive AMG's units to find ways to reduce CO_2 emissions and established a reduction target for 2030, and in 2021 the Company achieved an all-time best safety result.

Mr. Jackson was engaged throughout 2021 on continuing the operating efficiency focus AMG initiated in 2020 as a result of the pandemic. The Zanesville facility to double the Company's ferrovanadium output (a.k.a. Cambridge 2) advanced significantly on target and on budget and is expected to start up in 2022. The German Lithium Hydroxide facility is expected to break ground in February 2022, and the Spodumene 1+ project in Brazil has been accelerated, such that it should be complete by the end of 2022. In addition, Mr. Jackson was responsible for initiating a spent catalyst to vanadium oxide (V_2O_5) project in Nuremberg in order to further the Company's industrial battery ambitions.

Mr. Dunckel was responsible for all aspects of capital structure management in 2021. In April, the Company issued 3.1 million shares, raising $119 million for funding the Company's growth initiatives like Lithium Hydroxide plant in Germany. In December 2021, AMG completed a refinancing, extending the maturity of its debt and establishing AMG's first sustainability linked loan. Mr. Dunckel re-vamped the enterprise risk reporting system, aligning it better with the new corporate structure, and he continued to establish and maximize bank relationships, amongst others, for the purposes of financing a planned Brazilian lithium hydroxide plant and investments related to the Shell Joint Venture.

Given the success each of the Management Board members have had with their personal targets, during a difficult year in a highly unpredictable economic environment, the Supervisory Board has found their performance at the Substantially Above level and recommended that they be awarded their personal targets at a bonus percentage of 175%.

LEGACY 2019 LONG-TERM INCENTIVES (VESTING 2021)

For the legacy 2019 PSU award, the three-year vesting period was completed in 2021 and the average minimum ROCE over the performance period (2019-2021) was 9.7% versus the target of 7.0% set by the Supervisory Board. However, as disclosed in the Realized Pay table of page 39, based on the share price performance to December 31, 2021, AMG estimates that the relative TSR for the Company will not meet threshold performance and, as such, the PSU award will lapse. Per the legacy 2013 Remuneration Policy, the final value of the PSU awards will be based on the average share price 10 days after the announcement of the 2021 annual results.

50% of the 2017 Stock Options and 50% of the 2018 options vested in 2021, and based on the closing share price on the vesting date resulted in the following net vesting value to the Management Board:

(in thousands except shares)	NUMBER OF SHARES	VALUE[1]
Heinz Schimmelbusch, CEO	4,478	€141
Eric Jackson, COO	1,318	€41
Jackson Dunckel, CFO	1,318	€41

1. Calculated based on the share prices of €31.40 and €31.92 on the Vesting Dates of May 4, 2021 and May 2, 2021.

During 2021, Heinz Schimmelbusch exercised 64,886 options for gross proceeds of $1,777, Eric Jackson exercised 19,084 options for gross proceeds of $523, and Jackson Dunckel exercised 38,168 options for gross proceeds of $1,045.

LEGACY 2018 LONG-TERM INCENTIVES (VESTED 2020)

For the legacy 2018 PSU award, the three-year vesting period was completed in 2020 and the average minimum ROCE over the performance period (2018-2020) was 17.5% versus the target set by the Supervisory Board of 11%. Based on the average share price of €31.82 for the 10 days after the publication of the 2020 annual results, AMG ranked in the 40th percentile of performance versus the Bloomberg World Metal Fabricate Index. As such, Relative TSR for the Company resulted in a multiplier of 75% which, accordingly, allowed 75% of the PSUs to vest. These PSUs were valued at zero as of December 31, 2020.

The Supervisory Board resolved on November 2, 2016, pursuant to the authority granted under the Remuneration Policy, that all PSU awards granted thereafter would be settled in AMG shares rather than cash, subject to vesting of the awards. As a result, in 2021 the following shares were issued to the following Management Board members as settlement of the 2018 PSU awards:

(in thousands except shares)	NUMBER OF SHARES	VALUE[1]
Heinz Schimmelbusch, CEO	28,433	$1,091
Eric Jackson, COO	8,363	$321
Jackson Dunckel, CFO	8,363	$321

1. Calculated based on the share price of €32.29 on the Vesting Date March 10, 2021.

50% of the 2016 Stock Options and 50% of the 2017 options vested in 2020 and, based on the closing share price on the vesting date, resulted in the following vesting value (net of exercise price) to the Management Board:

(in thousands except shares)	NUMBER OF SHARES	VALUE[1]
Heinz Schimmelbusch, CEO	21,302	$338
Eric Jackson, COO	6,265	$99
Jackson Dunckel, CFO	6,265	$99

1. Calculated based on the share price of €14.56 on the Vesting Date of May 4, 2020.

During 2020, the Management Board exercised zero options.

2021 LONG-TERM INCENTIVES

In 2021, the Supervisory Board awarded Performance Share Units to the Management Board pursuant to the 2021 Remuneration Policy.

The face value of the Long-Term Incentive Plan for 2021 is as follows:

(in thousands except shares)	PSUs
Heinz Schimmelbusch, CEO	€1,700
Eric Jackson, COO	€650
Jackson Dunckel, CFO	€500

Per the 2021 Remuneration Policy, the number of PSUs awarded in 2021 is calculated as the face value divided by the average share price of the 5 trading days after the publication of the annual results 2020. These PSU awards will vest after three years, subject to:

- a 3-year performance period and an additional 2-year holding period in line with the Dutch Corporate Governance Code.
- payouts will be based 100% on relative Total Shareholder Return versus the global sector peers we utilize to benchmark Management Board pay. Due to the cyclical nature of some of AMG's products, the Supervisory Board believes that a relative measure versus AMG's industry peers is the best way to incentivize the Management Board to outperform its industry over time.
- there will no longer be any vesting of the PSUs for performance below the 50th percentile, in line with best market practice.

As per the 2021 Remuneration Policy, no share options were granted to to Management Board members as this incentive scheme was terminated in 2021. All share options granted to the Management Board members prior to 2021 remain in full force and effect in accordance with governing share option plan.

OUTSTANDING OPTIONS HELD BY THE MANAGEMENT BOARD

The summary of all options outstanding, both vested and non-vested, is presented in the table below:

AMG OPTION PLAN		NON-VESTED OPTIONS UNDER THE PLAN				VESTED OPTIONS UNDER THE PLAN		
FOR THE YEAR ENDED DECEMBER 31, 2021	YEAR	DATE OF GRANT	NUMBER OF OPTIONS	PRESENT VALUE AT DATE OF GRANT (€)	VESTING SCHEME	EXERCISE PRICE (€)	NUMBER OF OPTIONS	MARKET VALUE AT 12/31/21 (€000)
Dr. Heinz Schimmelbusch	2017	5-4-17	—	340,000	50% vested after 3 years, 50% vested after 4 years	25.50	47,667	128
	2018	5-2-18	8,543	340,000	50% vested after 3 years, 50% vested after 4 years	44.24	8,543	—
	2019	5-13-19	35,602	340,000	50% vested after 3 years, 50% vested after 4 years	31.43	—	N/A
	2020	3-11-20	85,859	340,000	50% vested after 3 years, 50% vested after 4 years	19.31	—	N/A
Eric Jackson	2017	5-4-17	—	100,000	50% vested after 3 years, 50% vested after 4 years	25.50	14,020	38
	2018	5-2-18	2,513	100,000	50% vested after 3 years, 50% vested after 4 years	44.24	2,513	—
	2019	5-13-19	12,042	115,000	50% vested after 3 years, 50% vested after 4 years	31.43	—	N/A
	2020	3-11-20	33,333	132,000	50% vested after 3 years, 50% vested after 4 years	19.31	—	N/A
Jackson Dunckel	2017	5-4-17	—	100,000	50% vested after 3 years, 50% vested after 4 years	25.50	14,020	38
	2018	5-2-18	2,513	100,000	50% vested after 3 years, 50% vested after 4 years	44.24	2,513	—
	2019	5-13-19	10,471	100,000	50% vested after 3 years, 50% vested after 4 years	31.43	—	N/A
	2020	3-11-20	25,253	100,000	50% vested after 3 years, 50% vested after 4 years	19.31	—	N/A

SHARE OWNERSHIP GUIDELINES

Management Board Members are required to hold a minimum level of shares in relation to their base salary. The CEO's guideline is 4x base salary whilst the COO and CFO's guidelines are 2x base salary. Per the table below, the CEO currently holds 33x his base salary, the COO holds 13x his base salary, and the CFO holds 4x his base salary, so all Management Board member have met the policy.

The table below outlines the number of shares held by Management Board Members on an unvested and vested basis.

	SHARES OWNED	MULTIPLE OF SALARY[1]	UNVESTED PSUs AT TARGET AWARD (100%)	PSU AWARD PRICE	NET UNDERLYING SHARES UNVESTED OPTIONS[1]	NET UNDERLYING SHARES VESTED OPTIONS[1]	TOTAL SHARES
Dr. Heinz Schimmelbusch	1,069,823	33x			27,025	4,533	
2019–2021[2]			—	€31.43			
2020–2022			70,430	€19.31			
2021–2023[2]			—	€31.61			
TOTAL SHARES	1,069,823		70,430		27,025	4,533	1,171,811
Eric Jackson	348,026	13x			10,492	1,333	
2019–2021[2]			—	€31.43			
2020–2022			27,343	€19.31			
2021–2023[2]			—	€31.61			
TOTAL SHARES	348,026		27,343		10,492	1,333	387,194
Jackson Dunckel	56,993	3x			7,949	1,333	
2019–2021[2]			—	€31.43			
2020–2022			20,715	€19.31			
2021–2023[2]			—	€31.61			
TOTAL SHARES	56,993		20,715		7,949	1,333	86,990
TOTAL SHARES OWNED BY MANAGEMENT BOARD	1,474,842		118,488		45,466	7,199	1,645,995

1. Based on December 31, 2021 share price of €28.18
2. The 2021 and 2019 awards had a 0% multiplier as of December 31, 2021

PAY RATIO AND AMG GROUP WORKFORCE COMPENSATION

Since the introduction of the pay ratio in 2017, the Supervisory Board, upon recommendation of the Remuneration Committee, has established that the most informative ratio would be one which compares the average Management Board actual compensation with that of the average total employee benefit cost per employee (global workforce). The average Management Board compensation (rather than only CEO compensation) is deemed to be the appropriate parameter, given the collective management responsibility of the Management Board members under the Dutch corporate governance system.

It should be noted that pay-ratios are specific to a company's industry, geographic footprint, and organizational structure. For example, a large part of AMG's workforce is located in emerging and developing countries, whereas AMG's Management Board members are based in the United States. Compensation packages are designed to be locally competitive. Pay ratios are also susceptible to volatility over time, as they can vary with incentive outturns, stock market movements (impacting the LTI part of the Management Board compensation), changes in incumbents, exchange rate movements and actual financial performance by the Company.

	2017	2018	2019	2020	2021
Management Board Pay Ratio	72	62	40	25	61
CEO Pay Ratio	120	96	61	35	92

This pay ratio is based on compensation expense (shown in a table below), not realized pay. Compensation expense for the Management Board in 2021 was significantly increased by the recognition of the 2019 PSUs which were accounted for at zero in 2020 because they were below the ROCE hurdle. Removing this accounting expense effect in 2020 and 2021 gives the following ratios, which the Remuneration Committee believes are more indicative of actual pay:

	2020	2021
Management Board Pay Ratio	37	50
CEO Pay Ratio	56	72

The average remuneration on a full-time equivalent basis of workforce of the AMG Group moved up from $64K per year to $73K per year in 2021 due to higher variable compensation.

The development of this pay ratio will be monitored and disclosed going forward. The Remuneration Committee has taken into account these pay ratios in establishing the Management Board compensation for 2021 and believes that these ratios are fair and adequate for this purpose.

FIVE-YEAR CHANGE IN REALIZED COMPENSATION VERSUS KEY PERFORMANCE INDICATORS

The table below shows the change in total realized remuneration for each Management Board member over the past five-year period, compared to (i) financial performance by the Company and (ii) average remuneration of the AMG Group workforce, during the same period.

YEAR ON YEAR % CHANGE (EXCEPT ROCE)	2017	2018	2019	2020	2021
Heinz Schimmelbusch	45%	-10%	-72%	-34%	4%
Eric Jackson	41%	-9%	-63%	-33%	40%
Jackson Dunckel	-9%	153%	-54%	-45%	31%
Cash Flow from Operations	40%	24%	-52%	-58%	363%
Share Price Change	187%	-32%	-21%	15%	16%
Actual ROCE	21.2%	35.4%	13.7%	3.5%	11.9%
EBITDA (USD in millions)	$125.5	$217.1	$121.4	$66.8	$136.7
Average Remuneration AMG Group Workforce	4%	4%	-4%	-8%	13%

COMPENSATION EXPENSE OF THE MANAGEMENT BOARD IN 2021

Total compensation expense recorded by AMG in its financial reports with respect to the pension and retirement benefits of the Management Board are provided in the table below, which sets forth total expenses incurred in 2021 for Management Board remuneration.

All Management Board members receive benefits that are in line with industry and individual country practice. No loans, advances, or guarantees are granted to any Management Board members. Total costs to the Company with respect to other remuneration of the Management Board are provided in the table below, which sets forth total costs incurred in 2021 for Management Board remuneration.

(in thousands) FOR THE YEAR ENDED DECEMBER 31, 2021	BASE SALARY	ANNUAL BONUS	OPTION COMPENSATION	PERFORMANCE SHARE UNITS[1]	RETIREMENT BENEFITS & PENSIONS	OTHER REMUNERATION[2]	TOTAL
Heinz Schimmelbusch	$1,046	$1,582	$559	$2,980	$181	$175	$6,523
Eric Jackson	$841	$973	$191	$1,061	$103	$42	$3,211
Jackson Dunckel	$641	$742	$164	$877	$417	$41	$2,882

Note: These amounts represent the expense recorded by AMG for each component.

1. The PSU expense increased due to the reinstatement of the 2019 PSUs, which were valued at zero in 2020 because they did not meet the ROCE hurdle. This reinstatement increased the compensation expense for the CEO by $1.2 million; the COO by $0.4 million, and the CFO by $0.4 million.
2. “Other Remuneration” includes car expenses and additional insurance paid for by the Company.

2022 CHANGES TO MANAGEMENT BOARD REMUNERATION

- The Supervisory Board has determined that the Management Board will receive no increase in salary for 2022.
- For 2022, the Supervisory Board has agreed to adopt a new ESG metric within the overall ESG award in the Annual Bonus to replace the CO_2 credits created metric. What this new metric is will be analyzed over the coming months and disclosed at the Annual General Meeting in May. Specific targets for all financial measures for the 2022 Annual Bonus will be disclosed in next year's remuneration report per best market practice.
- The Remuneration Committee will also analyze whether to include additional financial measures for the 2023 PSU award, in line with best global practice for long-term incentive plans, and aligned with our peer companies and shareholder demands.

SUPERVISORY BOARD REMUNERATION REPORT 2021

BACKGROUND AND STRATEGIC FRAMEWORK

Reference is made to the Remuneration Policy for the Management Board of the Company with respect to a description of the relevance of the Company's values, identity, and mission and of the background, strategic framework and ambitions and guiding principles that apply to the Company's remuneration philosophy, all of which equally apply in the context of explaining and reporting about the remuneration of the Company's Supervisory Board members.

As explained in the 2020 Remuneration Policy for the Supervisory Board, which was adopted during the Annual General Meeting in May 2020, Supervisory Board members have a different role than Management Board members and are compensated differently. Accordingly, Supervisory Board members are not entitled to variable compensation or long-term incentives. No financial or non-financial performance indicators apply to the annual compensation of Supervisory Board members.

The Supervisory Board believes that the benchmarks it uses to attract and retain members for the Management Board should equally apply to the composition and membership of the Supervisory Board. Hence, and given the fast-paced and competitive international environment surrounding AMG's operations, competitive reward opportunities are necessary to attract highly qualified Supervisory Board members.

The Supervisory Board therefore has selected and uses an appropriate compensation peer group for benchmarking purposes that is the same as the peer group used for benchmarking the remuneration of the Management Board.

REMUNERATION COMPONENTS – SUPERVISORY BOARD

Fees paid to Supervisory Board members are not linked to the financial results of the Company. Supervisory Board members receive fixed compensation on an annual basis that is partly payable in AMG shares as explained below. Supervisory Board members do not accrue pension rights and are compensated for travel and lodging expenses incurred as a result of discharging their Supervisory Board duties. They are not entitled to any benefits upon the termination of their appointment.
The individual Supervisory Board members are paid annually:

1. a fixed retainer fee in cash (USD)

2. a fixed Share Award (EUR)

taking into account the level of responsibility of each Supervisory Board member within the Board.

In 2021, the following amounts were paid to the Supervisory Board members:

(in thousands except shares)	CASH	SHARES[1]	SHARE VALUE[2]	TOTAL
Steve Hanke	$110	1,886	$71	$181
Willem van Hassel	$75	1,257	$47	$122
Herb Depp	$80	1,100	$41	$121
Donatella Ceccarelli	$80	1,100	$41	$121
Frank Löhner	$22	380	$14	$36
Dagmar Bottenbruch	$65	1,100	$41	$106
Warmolt Prins	$43	720	$27	$70

1. Share quantity calculated based on the share price on the award date.
2. Share value is fixed in Euros, but changes each year due to exchange rate movements.

The amounts above comprise the total remuneration received on an annual basis by Supervisory Board members for their services rendered.

The share award that is given as compensation to Supervisory Board members comprises a number of AMG shares that is equal to the award amount divided by the average share price of the 10 trading days immediately following the publication of the annual results of AMG of the previous year. Shares awarded to and received by Supervisory Board members as compensation are held for long-term investment purposes and shall be held for a period of at least three years from the date of receipt, and for at least one year after the date a Supervisory Board member has retired.

The Supervisory Board acknowledges that by awarding shares to its members as compensation, AMG deviates from best practice provision 3.3.2. of the Dutch Corporate Governance Code (2016). As explained by the Supervisory Board during and as early as the 2009 and 2013 Annual General Meetings, and again during the 2020 Annual General Meeting, it considers it important to be able to recruit future members from the global marketplace given the size and complexity of the markets AMG is operating in. This merits that part of the remuneration be paid in company shares, in line with US practice (and the general US centric approach for executive compensation as chosen by the Supervisory Board and explained in the Remuneration Policy of the Management Board), where the Company has its operational headquarters. Shares granted as compensation to Supervisory Board members are held as long-term investments and restricted from trading for a period of at least three years from the date of granting. As a result, the Company departs from best practice provision 3.3.2. for reasons explained above. The Supervisory Board expects that this departure will continue to apply indefinitely as it has been in place since 2007 and has contributed to the quality of the Supervisory Board and success of AMG. Further, the Supervisory Board holds the view that this departure does not in any way negatively affect good corporate governance at the Company.

The decision by the Supervisory Board to continue its practice to partly compensate its members in AMG shares fully aligns with the long-term share-based incentives granted to the Management Board members under the Management Board Remuneration Policy as a tool to drive and reward sound business decisions and judgment to support AMG's long-term health that is necessary for achieving its strategic objectives and to align the interests of its Board members with those of AMG's shareholders.

FIVE-YEAR CHANGE IN SUPERVISORY BOARD COMPENSATION EXPENSE VERSUS KEY PERFORMANCE INDICATORS

YEAR ON YEAR % CHANGE (EXCEPT ROCE)	2017	2018	2019	2020	2021
Steve Hanke	-2%	20%	33%	11%	1%
Willem van Hassel	N/A	N/A	5%	-2%	1%
Herb Depp	1%	12%	3%	1%	1%
Donatella Ceccarelli	1%	2%	10%	3%	1%
Frank Löhner	N/A	N/A	N/A	1%	N/A
Dagmar Bottenbruch	N/A	N/A	N/A	N/A	1%
Warmolt Prins	N/A	N/A	N/A	N/A	N/A
Cash Flow from Operations	40%	24%	-52%	-58%	363%
Total Shareholder Return	187%	-32%	-21%	15%	16%
Actual ROCE	21.2%	35.4%	13.7%	3.5%	11.9%
EBITDA (USD in millions)	$125.5	$217.1	$121.4	$66.8	$136.7
Average Remuneration AMG Group Workforce	4%	3%	-4%	-8%	13%

AMG'S

SUSTAINABLE DEVELOPMENT

This section provides our fourteenth annual sustainability report, which evaluates AMG's social and environmental performance.

Locations of Operations

SITE NAME[1]	LOCATION	COUNTRY	DIVISION
AMG Headquarters[2]	Amsterdam	Netherlands	AMG Corporate
AMG USA Headquarters[2]	Pennsylvania	USA	AMG Corporate
AMG Aluminum	Jiaxing	China	AMG Clean Energy Materials
AMG Aluminum	Kentucky	USA	AMG Clean Energy Materials
AMG Aluminum	Washington	USA	AMG Clean Energy Materials
AMG Aluminum	Mexico City	Mexico	AMG Clean Energy Materials
AMG Brazil S.A.	Nazareno	Brazil	AMG Clean Energy Materials
AMG Brazil S.A.	São João del Rei	Brazil	AMG Clean Energy Materials
AMG Lithium	Frankfurt	Germany	AMG Clean Energy Materials
AMG Vanadium	Ohio	USA	AMG Clean Energy Materials
AMG Antimony	Chauny	France	AMG Critical Minerals
AMG Antimony	Lucette	France	AMG Critical Minerals
AMG Graphite	Hauzenberg	Germany	AMG Critical Minerals
AMG Graphite	Cabo Delgado Province	Mozambique	AMG Critical Minerals
AMG Graphite	Qingdao	China	AMG Critical Minerals
Bogala Graphite Lanka	Colombo	Sri Lanka	AMG Critical Minerals
AMG Silicon	Pocking	Germany	AMG Critical Minerals
ALD C&K	Suzho	China	AMG Critical Materials Technologies
ALD Dynatech	Mumbai	India	AMG Critical Materials Technologies
ALD France	Grenoble	France	AMG Critical Materials Technologies
ALD Japan[2]	Tokyo	Japan	AMG Critical Materials Technologies
ALD TT USA	Michigan	USA	AMG Critical Materials Technologies
ALD TT Mexico	Ramos Arizpe	Mexico	AMG Critical Materials Technologies
ALD Russia[2]	Moscow	Russia	AMG Critical Materials Technologies
ALD Thailand	Bangkok	Thailand	AMG Critical Materials Technologies
ALD USA[2]	Connecticut	USA	AMG Critical Materials Technologies
ALD Vacuum Technologies	Hanau	Germany	AMG Critical Materials Technologies
ALD Vacuheat	Limbach	Germany	AMG Critical Materials Technologies
AMG Alpoco	Anglesey	UK	AMG Critical Materials Technologies
AMG Superalloys	Pennsylvania	USA	AMG Critical Materials Technologies
AMG Superalloys and AMG Aluminum	Rotherham	UK	AMG Critical Materials Technologies
AMG Titanium Alloys and Coatings	Brand Erbisdorf	Germany	AMG Critical Materials Technologies
AMG Titanium Alloys and Coatings	Nürnberg	Germany	AMG Critical Materials Technologies
AMG Titanium Alloys and Coatings	Pennsylvania	USA	AMG Critical Materials Technologies

1 The chart indicates which facilities were included in the scope of the sustainable development data. Only data from these facilities are included in this section, which may therefore show inconsistency with other sections of this annual report covering all facilities. Please revert to Trade Register filing dated March 10, 2022 for a full list of group companies of the AMG Group.
2 Sales, administrative, and smaller engineering sites with estimated data.

REPORT BOUNDARIES

The reporting boundaries have changed since 2020 to include AMG Lithium located in Frankfurt, Germany. The thirty-four locations reporting in 2021 (in which AMG has a 51% or greater stockholding) are detailed in the Locations of Operations table at the beginning of this chapter. AMG uses actual data for all facilities within the reporting boundary except for sales and administrative offices and some smaller engineering sites (typically with less than 10 employees or with environmental impacts <1% in all aspects) which have been determined to be non-material to the report, and therefore estimated data has been used for these locations in 2021. Facilities that were in the ramp-up phase of commissioning during the reporting period are excluded from the reporting boundaries until such time that name plate production capacity is achieved. Those sites utilizing estimated data are indicated in the Locations of Operations table at the beginning of this chapter.

AMG reporting locations include mining, manufacturing, sales, and administrative offices in fourteen countries across five continents. This report covers AMG's three operating segments: AMG Clean Energy Materials, AMG Critical Minerals, and AMG Critical Materials Technologies, which report their full year performance at the end of the fourth quarter, with, in some cases, estimated data provided for the final month of the year. Due to reorganization and reporting structure changes, we are reporting consolidated data at the AMG Group level only. This aligns with the reporting format of financial results contained in this report.

ABOUT AMG & OUR SUSTAINABLE DEVELOPMENT REPORT

At AMG, we produce highly engineered specialty metal products as well as market-leading vacuum furnaces for specialized alloying applications and heat treatment services to the transportation, infrastructure, energy, and specialty metals and chemicals markets. Our headquarters is located in Amsterdam, Netherlands, and we are listed on the Amsterdam stock exchange.

We operate three segments: AMG Clean Energy Materials, AMG Critical Minerals, and AMG Critical Materials Technologies, with more than 3,000 employees and 34 sites. Of the 34 sites, 25 are production facilities.

This is our fourteenth Annual Sustainability Report, and it covers the 2021 calendar year. This report is written in accordance with the Global Reporting Initiative Standards at the core level. We also report on corporate responsibility practices in our annual UN Global Compact Communication on Progress. AMG does not include minority-held entities in the boundaries of this report. AMG continues to face the challenges related to COVID-19 recovery and therefore some year-over-year variance in key performance indicators was observed and is reflective of COVID-19 production levels.

SUSTAINABILITY STRATEGY & GOVERNANCE

AMG endorses and supports the definition of corporate social responsibility as set by the World Business Council for Sustainable Development: "...the continuing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as of the local community and society at large." For AMG and its affiliated companies, this definition translates into four main sustainable development objectives that the Company has formulated in line with its financial objectives, technological capabilities, and its leading position in the global metallurgical industry. These objectives are to:

- Provide safe working conditions for our employees and be responsible stewards of the environment.
- Meet or exceed regulatory standards by engaging in ethical business practices.
- Be a valued member of the local economy, community, and society by contributing to solutions to address some of the fundamental environmental and social challenges facing society today.
- Target industrial activities which either contribute to the reduction of greenhouse gas levels through the circular economy or by arriving at technologies which enable our business partners to reduce greenhouse gas levels and quantify the success of these endeavors.

AMG's Supervisory Board and Management Board are guided by these objectives when defining and implementing the Company's strategic objectives.

The Management Board members are collectively responsible for building a culture within AMG focused on long-term value creation. Each Management Board member has the responsibility to serve the best interests of the Company and its stakeholders.

The Supervisory Board oversees the Management Board's implementation of the long-term value-creation strategy of AMG. The Supervisory Board regularly discusses the strategy, implementation of the strategy, and principal risks associated with the strategy.

The Vice President of Sustainability, Environment, Health, and Safety is responsible for the overall sustainability strategy for the organization and reports results to the Management Board on a regular basis.

STAKEHOLDER ENGAGEMENT & MATERIALITY

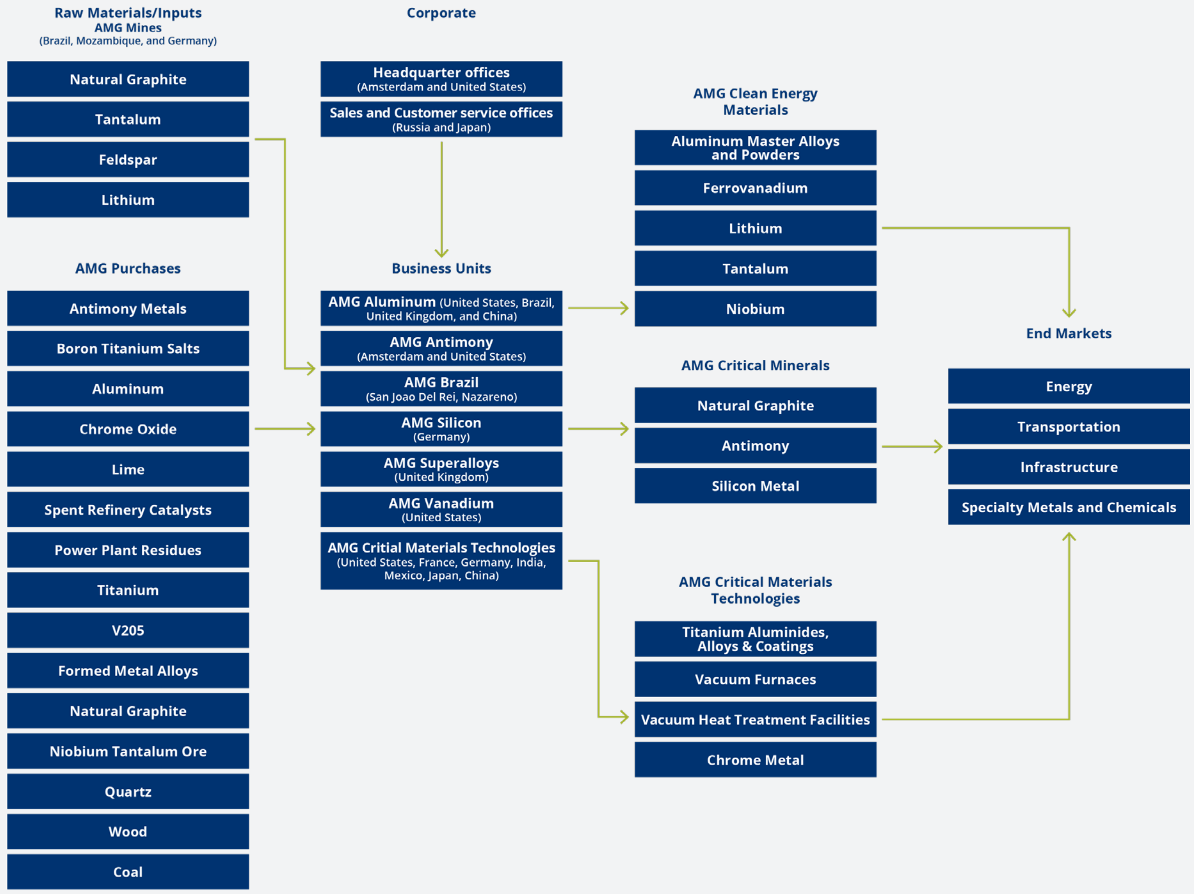
AMG conducts materiality assessments to advance its sustainability program by identifying environmental, social, governance, and product-related impacts, risks, and opportunities that are most critical to AMG's business and stakeholders. The results of these materiality assessments informed the content of this report, including specific topics and metrics to track and disclose. ESG Materiality assessments by nature are not static and related disclosures may change over time. AMG's list of material issues was developed primarily through two exercises: desktop research including peer benchmarking and stakeholder interviews.

- **Desktop Research:** A third-party consulting partner reviewed publicly available information, such as relevant Global Reporting Initiative and Sustainability Accounting Standards Board standards and conducted benchmarking of several peer companies using publicly available sustainability reports and websites. This information was used to develop a list of relevant sustainability topics to guide stakeholder interviews.
- **Stakeholder Interviews:** The third-party consulting partner also interviewed AMG executives, including AMG's Chief Executive Officer, Chief Operations Officer, Chief Financial Officer, Vice President of Corporate Development, Vice President of Investor Relations, and Vice President of Sustainability, Environment, Health, and Safety. Insights were gathered on sustainability impacts, risks, and opportunities across AMG's value chain. These internal stakeholders vetted the list of sustainability topics developed from the desktop research for relevance and significance given their understanding of corporate risk formed through the ongoing company-wide risk assessment process. Additionally, information gathered through routine engagements and dialogue with customers, investors, regulatory agencies, and community groups was considered and informed their feedback on material sustainable topics. The list of sustainability topics was narrowed down to a priority list of material sustainability topics for AMG.

In 2021, AMG reviewed the Materiality Assessment taking into consideration stakeholder engagements and determined that previously identified material topics for AMG were still applicable and no additions were required.

Material topics were considered across AMG's supply and value chain:

AMG's Supply and Value Chain



Throughout this report, we report on the ESG topics that have been identified as most significant in accordance with GRI methodology, detailing our management approach and key metrics for measuring performance across such topics.

The priority list of material sustainability topics for AMG are provided in the table below:

MATERIAL TOPIC	DEFINITION
ENVIRONMENT	
Air Emissions	Generation and management of air emissions (e.g., GHG, particulates, SO_2, NO_x, etc.) from company operations and their potential impacts on ecosystems and human health; this includes compliance with applicable regulations.
Energy	Management of the Company's energy consumption and associated costs through the design of operational processes, procurement practices, etc.
Resource Efficiency	Use of efficient production techniques and creation of resource-efficient products. Responsible use of raw materials and inputs. Recycling input materials and recycling of by-products when possible.
Waste	Anything the Company is required to discard.
Water	Management of water withdrawals and consumption from company operations in the context of competing demands for water resources.
Wastewater	Management of wastewater generated from company operations and impacts on local water resources, including compliance with all applicable regulations.
SOCIAL	
Health & Safety	Protection of employees, contractors, and visitors from occupational injuries and illnesses through design of safe operations and work practices, employee well-being initiatives, training programs, robust safety management systems, and culture, including compliance with health and safety regulations.
Diversity, Equity & Inclusion	A diverse, equitable, and inclusive workplace, accepting of and providing equal opportunity to all employees regardless of race, ethnicity, gender, age, education, ability/disability, sexual orientation, religious affiliation, veteran and disabled veteran status, experience, and thought.
Community Engagement	Hiring of employees from the local region and providing fair wages and competitive benefits, and influencing other local businesses to do the same. Providing community support through pro bono services or volunteering; cooperating with public and private institutions to promote social programs.
GOVERNANCE	
Business Ethics	Prevention of unethical or illegal behavior involving a company employee or agent, in particular with respect to how the Company works with suppliers, customers, and other business partners in developing and marketing products and driving business growth and profitability (e.g., no bribery, collusion, anti-trust, monopoly practices, etc.).
Compliance	Operating in accordance with regulations across a full range of functional areas.
Risk Management	Proactive consideration of risk factors and opportunities, including resilience and sustainability, in business decisions; taking effective steps to mitigate risks and to capitalize on opportunities to protect and enhance the business and its assets.
PRODUCTS	
Customer Environmental Impacts	Designing and marketing sustainable products that minimize environmental impacts during the product-use phase and that meet evolving customer needs.
Product Innovation	Development of innovative new products and services to improve customer experience and performance, supporting AMG's top-line growth and differentiation.
Product Quality & Safety	Management of product design and production to ensure products meet specifications and customer expectations. Creations of products that are safe for their intended and likely uses.

EXTERNAL INITIATIVES

Extractive Industries Transparency Initiative

AMG continues its support of the Extractive Industries Transparency Initiative (EITI), a global initiative to improve governance in resource-rich countries through the verification and full publication of Company payments and government revenues from oil, gas, and mining. EITI works to build multi-stakeholder partnerships in developing countries to increase the accountability of governments. Over 30 countries have now committed to the EITI principles and criteria. As of today, AMG has two extractive operations in EITI-implementing countries: Germany and Mozambique.

United Nations Global Compact

AMG is an active participant in the United Nations Global Compact. The Global Compact is a strategic policy initiative for businesses that, like AMG, are dedicated to aligning their operations and strategies with 10 universally accepted principles in the areas of human rights, labor, the environment, and anti-corruption. Since 2009, the AMG Management Board has expressed its commitment to the Global Compact and its intent to support the 10 principles. AMG reaffirms its support and submits its Communication on Progress annually.

Memberships

AMG is a participating member of the International Antimony Association, International Lithium Association, and Vanitec, with employees serving on the governance body for each organization. The International Antimony Association or i2a is the Brussels-based organization representing the producers, importers and users of multiple antimony substances. i2a's aim is the sustainable and responsible production, use and recycling of antimony. ILiA is the global trade association for the lithium industry and represents the entire lithium value chain. The Association was established in 2021 as an international not-for-profit industry association run by and for its members. ILiA, supports the lithium industry's efforts to supply high quality lithium sustainably and responsibly, and proactively promote a better understanding of ILiA members' ESG credentials. Vanitec brings together representatives of companies and organizations involved in the mining, processing, manufacture, research and safe use of vanadium and vanadium-containing products.

ESG Rating Agencies

AMG is actively engaged with ESG Rating Agencies which through publicly available sustainability information and direct engagement, provide AMG with scores based upon its environmental, social, and governance performance. AMG is committed to improving its scoring with these rating agencies through policy improvement, increased engagement, and identification of risks, opportunities, and mitigation within AMG. The rating agencies AMG is fully engaged with are ISS Corporate Solutions, Inc., Sustainalytics, Carbon Disclosure Project (CDP), and EcoVadis.

EU TAXONOMY

The EU Taxonomy Regulation requires companies, such as AMG, to report on the share of the Revenue, Capital Expenditure and Operational Expenditure that are aligned with environmental objectives laid out in the Taxonomy directive.

We apply the following regulations and definitions internally relating to the Taxonomy:

- Taxonomy Regulation – Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment and amending Regulation (EU) 2019/2088.
- Climate Delegated Act – Commission Delegated Regulation (EU) 2021/2139 of 4 June 2021 supplementing Regulation (EU) 2020/852 of the European Parliament and of the Council by establishing the technical screening criteria for determining the conditions under which an economic activity qualifies as contributing substantially to climate change mitigation or climate change adaptation and for determining whether that economic activity causes no significant harm to any of the other environmental objectives.
- Taxonomy-eligible – Economic activities that can make a substantial contribution to one or more environmental objectives under the Taxonomy Regulation, and consequently have received technical screening criteria.
- Taxonomy Non-Eligible – means any economic activity that is not described in the delegated acts supplementing the Taxonomy Regulation.
- Taxonomy-aligned – An economic activity is environmentally sustainable and aligned where that activity:
  - makes a substantial contribution to one or more environmental objectives.
  - does not significantly harm any of the environmental objectives.
  - is carried out in compliance with the minimum social safeguards, and
  - complies with the established technical screening criteria.
- Transitional activities – These are activities for which there are no technologically and economically feasible low-carbon alternatives, but that support the transition to a climate-neutral economy in a manner that is consistent with a pathway to limit the temperature increase to 1.5 degrees Celsius above pre-industrial levels, for example by phasing out greenhouse gas emissions.
- Enabling Activities – These are activities that enable other activities to make a substantial contribution to one or more of the environmental objectives, and where that activity:

- Does not lead to lock-in assets that undermine long-term environmental goals considering the economic lifetime of those assets; and
- Has a substantial positive environmental impact based on lifecycle considerations.

For 2021 the reporting requirements are limited to eligibility. Activities identified as eligible during this reporting period does not necessarily mean that these activities will be disclosed as taxonomy-aligned in subsequent reports. Future reports will include KPIs on taxonomy-alignment when the full Taxonomy Regulation is promulgated.

The regulation is complex and still under development. As an example, on February 2, 2022, the European Commission approved, in principle, the Complementary Climate Delegated Act to include specific nuclear and gas energy activities in the list of economic activities covered by the Taxonomy. AMG will assess the impact of these and other changes as they are presented. This disclosure was prepared based on our current interpretation of the Taxonomy Regulation, Climate Delegation Act, and the availability data.

Taxonomy Approach

The Taxonomy Regulation requires the adoption of a “bottom-up” approach. The approach AMG has taken follows 5 steps:

1. Identified AMG’s economic activities over financial year 2021.
2. Performed an assessment of economic activities to determine if they could be linked to the activities as published in the EU Taxonomy Climate Delegated Act and be identified as Taxonomy-eligible economic activities.
3. Technically screened each economic activity to determine if the activity substantially contributes to climate change mitigation and/or adaption.
4. Further screened economic activities that are determined to substantially contribute to climate change mitigation and/or adaption, to confirm they do no significant harm to any of the other environmental objectives; and
5. Confirmed that the economic activity complies with minimum social safeguards.

Core business activities and external turnover

Our assessment of Taxonomy-eligible activities is focused on economic activities defined as the offering of goods or services in a market, thus (potentially) generating revenues (at the present time or in the future). AMG is a producer of highly engineered specialty metals and mineral products and provide related vacuum furnace systems and services to the transportation, infrastructure, energy, and specialty metals and chemicals end markets. In this context, we assess our business by our contribution to provide climate neutral, low carbon, and other low carbon technologies. Therefore, the eligible activities (described below) represent our core business activities which we evaluate against the Taxonomy Regulation.

Taxonomy-eligible economic activities:

We have examined the relevant Taxonomy-eligible economic activities based on our activities and assigned them to the following economic activities in accordance with Annex I and II of the Climate Delegated Act. The table below indicates for which environmental objective the activities qualify as eligible:

Eligible economic activity (number, name)	Description	NACE-Code	Climate change mitigation	Climate change adaptation
3.4. Manufacture of batteries	Manufacturing of Graphite and Silicon materials for electric storage batteries.	27.2	Yes	
3.5. Manufacture of energy efficiency equipment for buildings	Manufacturing of Graphite for Gray Insulation and coating products for Low-E Glass for buildings.	NA	Yes	
3.9. Manufacture of iron and steel	Manufacturing of ferrovanadium, ferroniobium and nickel niobium alloys.	24.1	Yes	

Allocation of Turnover, CapEx and OpEx to One Environmental Objective

It was determined that all of our activities should be allocated to climate change mitigation as the contribution to climate change adaptation and the Taxonomy does not allow double counting.

Our KPIs and Accounting Policies

The key performance indicators ("KPIs") include the turnover KPI, the Capex KPI and the Opex KPI. For the reporting period 2021, the KPIs must be disclosed in relation to our Taxonomy-eligible and Taxonomy-non-eligible economic activities (Art. 10 (2) of the Art. 8 Delegated Act).

The specification of the KPIs is determined in accordance with Annex I of the Art. 8 Delegated Act. We determine the Taxonomy-eligible KPIs in accordance with the legal requirements and describe our accounting policy in this regard as follows:

Turnover KPI

The proportion of Taxonomy-eligible economic activities in our total turnover has been calculated as the part of net turnover derived from products and services associated with Taxonomy-eligible economic activities (numerator) divided by the net turnover (denominator), in each case for the financial year from 1.1.2021 to 31.12.2021.

The denominator of the turnover KPI is based on our consolidated net turnover in accordance with IAS 1.82(a). For further details on our accounting policies, refer to note 3(c) and note 5 within the notes to the consolidated financial statements.

The numerator of the turnover KPI is defined as the net turnover derived from the following products and services associated with Taxonomy-eligible economic activities:

Activity 3.4. Manufacture of batteries – generates net turnover from the sale of Graphite, Lithium and Silicon materials for electric vehicle batteries.

Activity 3.5. Manufacture of energy efficiency equipment for buildings – generates net turnover from the sale of Graphite for Gray Insulation and coating products for Low-E Glass for buildings. AMG's high-purity natural graphite is primarily used in the infrastructure industry as thermal insulation for the building materials. AMG also produces a variety of low-e coating materials used in the windows manufacturing industry. Low-e coatings in insulated glass units (IGUs) are key to lowering energy expenditures in the built environment, achieved by reducing heating (passive low-e glasses) or cooling (solar control low-e glasses) requirements.

Activity 3.9. Manufacture of iron and steel generates net turnover from the sale of ferrovanadium, ferroniobium, and nickel niobium alloys. AMG Vanadium produces a low-aluminum ferrovanadium known as FEROVAN®. This engineered product is used in a broad range of applications such as structural steel, HSLA steel, flat rolled products, reinforcing bar, line pipe, and rail steel. FEROVAN® offers advantages to steelmakers over other vanadium alloys including a low melting point, low aluminum content, low carbon content, maximum recoveries in less time, improved cast product quality, application versatility and custom packaging. When added to carbon steel, ferrovanadium creates a high performance HSLA steel with extremely high tensile strength.

AMG Vanadium's ferronickel-molybdenum alloy co-product called FeNiMoly® is produced from the continuous production of ferrovanadium and provides a cost savings to customers through its replacement of primary nickel products, ferromolybdenum and molybdenum oxide, and scrap. FeNiMoly® is available in ingots which are used to produce stainless steel, special bar quality steel, and low alloy steels such as 4300 and 8600.

CapEx KPI

Our CapEx KPI represents the proportion of a non-financial undertaking's capital expenditure that is either already associated with environmentally sustainable economic activities or is part of a credible plan to extend such activities or for activities which are not yet taxonomy-aligned. During 2021, AMG had three major projects to extend or create environmentally sustainable economic activities. These activities included the construction of our spent catalyst recycling project in Zanesville, Ohio, development of our first module of the battery-grade lithium hydroxide upgrader, and development of our lithium vanadium battery ("LIVA") for industrial power management applications. CapEx for each project was considered 100% eligible.

Our consolidated CapEx amount for 2021 was $182,647. The consolidated CapEx amount includes assets pertaining to lease arrangements accounted for under IFRS 16 and capitalized borrowing costs.

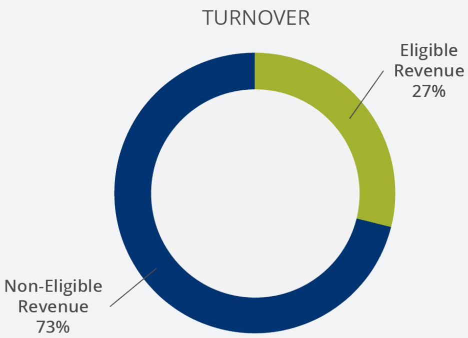
OpEx KPI

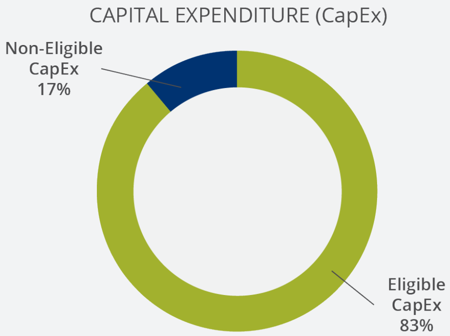
Our OpEx KPI, in the amount of $25,723, represents the proportion of operating expenditure associated with environmentally sustainable economic activities or the above-mentioned CapEx plan. The operating expenditure covers essentially non-capitalized costs relating to the maintenance and servicing of company assets (plant, equipment) that are necessary to ensure the continued and effective use of such assets associated with taxonomy-alignment.

Our Activities:

The following provides AMG's disclosure on the proportion of Taxonomy-eligible and non-eligible KPI's for Revenue, Capital Expenditure (CAPEX) and Operational Expenditure (OPEX).

Art. 8 (2) Taxonomy Regulation in conjunction with Art. 10 (2) of the Art. 8 Delegated Act





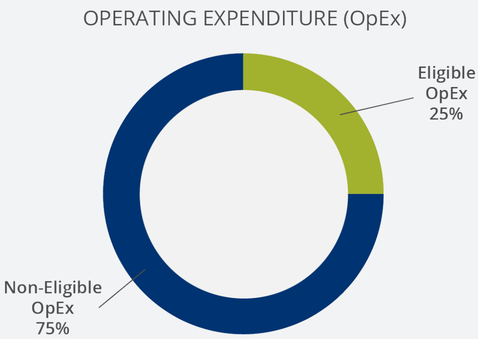


Table 1 - Proportion of Taxonomy-eligible and Taxonomy-non-eligible economic activities in total Revenue, CapEx, and OpEx

	Total (mUSD)	Proportion of Taxonomy-eligible Economic Activities (%)	Proportion of Taxonomy-non-eligible Economic Activities (%)
Turnover	1,204,666	27%	73%
Capital expenditure (CapEx)	182,647	83%	17%
Operating expenditure (OpEx)	25,723	25%	75%

GRI CONTENT INDEX

General Disclosures

GRI STANDARD	DISCLOSURE	LOCATION / DIRECT ANSWER
GRI 102: General Disclosures	**ORGANIZATIONAL PROFILE**	
	102-1 Name of the organization	AMG ADVANCED METALLURGICAL GROUP N.V.
	102-2 Activities, brands, products and services	About AMG & Our Sustainable Development Report (page 50), AMG's Supply and Value Chain (page 51)
	102-3 Location of headquarters	Amsterdam, Netherlands; Pennsylvania, United States
	102-4 Location of operations	Locations of Operations (page 49)
	102-5 Ownership and legal form	AMG is a publicly traded company under the Euronext: AMG
	102-6 Markets served	About AMG & Our Sustainable Development Report (page 50), AMG Market Focus (amg-nv.com/market-focus)
	102-7 Scale of the organization	About AMG & Our Sustainable Development Report (page 50), AMG 2021 Annual Report (pages 12-17)
	102-8 Information on employees and other workers	About AMG & Our Sustainable Development Report (page 50), Diversity, Equity & Inclusion (pages 64-65), Employees by Region table is included below.

AMG REGIONAL WORKFORCE DATA	AMG GROUP	
REGION	2020	2021
Asia	330	424
Europe	1,680	1,683
North America	417	482
South America	522	604
Africa	115	116
Total	3,064	3,309

GRI STANDARD	DISCLOSURE	LOCATION / DIRECT ANSWER
	102-9 Supply chain	AMG's Supply and Value Chain Table (page 51)
	102-10 Significant changes to the organization and its supply chain	There were no significant changes to the organization or supply chain. The Supply and Value Chain Figure was updated to further align with AMG's end markets
	102-11 Precautionary principle or approach	Risk Management (pages 67-68) (AMG's approach to risk management follows the precautionary principle)
	102-12 External initiatives	External Initiatives (page 53)
	102-13 Memberships and Associations	External Initiatives (page 53)
	STRATEGY	
	102-14 Statement from senior decision-maker	CEO Letter to Shareholders (pages 8-11)
	ETHICS & INTEGRITY	
	102-16 Values, principles, standards and norms of behavior	CEO Letter to Shareholders (pages 8-11), Business Ethics (page 66), Risk Management (pages 67-68)
	102-17 Mechanisms for advice and concerns about ethics	Business Ethics (page 66), Compliance (pages 66-67)
	GOVERNANCE	
	102-18 Governance structure	Sustainability Strategy & Governance (page 50), Corporate Governance (pages 73-79)
	102-38 Annual total compensation ratio	Pay Ratio and AMG Group Workforce Compensation (page 45)

GRI STANDARD	DISCLOSURE	LOCATION / DIRECT ANSWER
GRI 102: General Disclosures	**STAKEHOLDER ENGAGEMENT**	
	102-40 List of stakeholder groups	Stakeholder Engagement & Materiality (pages 51-52)
	102-41 Percent of employees covered by collective bargaining agreements	Percent of AMG employees covered by collective bargaining agreements: AMG Group: 55%
	102-42 Basis for identifying and selecting stakeholders	Stakeholder Engagement & Materiality (pages 51-52)
	102-43 Approach to stakeholder engagement	Stakeholder Engagement & Materiality (pages 51-52)
	102-44 Key topics and concerns raised	Stakeholder Engagement & Materiality (pages 51-52)
	REPORTING PRACTICES	
	102-45 Entities included in the consolidated financial statements	AMG 2021 Annual Report, page 49; Report Boundaries (page 50)
	102-46 Process for defining report content and topic Boundaries	Stakeholder Engagement & Materiality (pages 51-52)
	102-47 List of material topics	Stakeholder Engagement & Materiality (pages 51-52)
	102-48 Effects of restatements of information	Our 2020 and 2021 data include full calendar year results from all applicable sites, except as noted. KPI reporting on AMG group level instead of on a segment level as in the 2020 report.
	102-49 Changes in reporting	Added 302-1 total energy consumption to further align with GRI Standards.
	102-50 Reporting period	Calendar year 2021
	102-51 Date of most recent report	AMG's Sustainable Development Report published July 28, 2021
	102-52 Reporting cycle	Annual
	102-53 Contact point for questions regarding the report	George Parthmer, Vice President of Sustainability, Environment, Health, and Safety, global. sustainability@amg-nv.com
	102-54 Core or comprehensive claim	This report is prepared in accordance with the GRI Standards at the core level.
	102-55 GRI content index	GRI Content Index, General Disclosures (pages 57-58)
	102-56 Policy/practice for external assurance	AMG did not seek external assurance on the 2021 sustainability report.

Specific Disclosures

GRI STANDARD	DISCLOSURE	LOCATION / DIRECT ANSWER
ECONOMIC		
ANTI-CORRUPTION		
GRI 103: Management Approach	103-1 Explanation of the material topic and its boundary	Stakeholder Engagement & Materiality (pages 51-52)
	103-2 The management approach and its components	Business Ethics (pages 66)
	103-3 Evaluation of the management approach	Business Ethics (pages 66)
GRI 205: Anti-Corruption	205-2 Communication and training about anti-corruption policies and procedures	Business Ethics (pages 66), Environment, Social, Governance, Products Dashboard (pages 71-72)
ENVIRONMENTAL		
GRI 103: Management Approach	103-1 Explanation of the material topic and its boundary	Stakeholder Engagement & Materiality (pages 51-52)
	103-2 The management approach and its components	Environment (pages 61-63)
	103-3 Evaluation of the management approach	Environment (pages 61-63)
RESOURCE EFFICIENCY		
AMG Indicator	Avoided CO_2 emissions attributed to ECO_2RP portfolio	Customer Environmental Impacts (page 68)
ENERGY		
GRI 302: Energy	302-1 Energy consumption within the organization	Energy (pages 61-62), Environment, Social. Governance, Products Dashboard (pages 71-72)
WATER		
GRI 303: Water and effluent	303-4 Water discharge	Water (page 63), Environment, Social, Governance, Products Dashboard (pages 71-72), Wastewater (page 63)
	303-5 Water consumption	Water (page 63), Environment, Social, Governance, Products Dashboard (pages 71-72)
EMISSIONS		
GRI 305: Emissions	305-1 Scope 1 CO_2 equivalent emissions 305-2 Scope 2 (market and location based) CO_2 equivalent	Air Emissions (page 61), Environment, Social, Governance, Products Dashboard (pages 71-72)
	305-4 GHG emissions intensity	Sustainability Linked Loan (page 70)
	305-5 Reduction of GHG emissions	Sustainability Linked Loan (page 70)
	305-7 Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions	Air Emissions (page 61), Environment, Social, Governance, Products Dashboard (pages 71-72)
WASTE		
GRI 306: Waste	306-3 Waste generated	Waste (page 62), Environment, Social, Governance, Products Dashboard (pages 71-72)
	306-4 Waste diverted from disposal	Waste (page 62), Environment, Social, Governance, Products Dashboard (pages 71-72)
	306-5 Waste directed to disposal	Waste (page 62), Environment, Social, Governance, Products Dashboard (pages 71-72)
ENVIRONMENTAL COMPLIANCE		
GRI 307: Environmental Compliance	307-1 Non-compliance with environmental laws and regulations	Compliance (pages 66-67), Environment, Social, Governance, Products Dashboard (pages 71-72)
SOCIAL		
HEALTH & SAFETY		
GRI 103: Management Approach	103-1 Explanation of the material topic and its boundary	Stakeholder Engagement & Materiality (pages 51-52)
	103-2 The management approach and its components	Health & Safety (pages 63-64)
	103-3 Evaluation of the management approach	Health & Safety (pages 63-64)

GRI STANDARD	DISCLOSURE	LOCATION / DIRECT ANSWER
GRI 403: Occupational Health & Safety	403-5 Worker training on occupational health and safety	Health & Safety (pages 63-64)
	403-9 Work-related injuries	Environment, Social, Governance, Products Dashboard (pages 71-72)
	403-10 Work-related ill health	Environment, Social, Governance, Products Dashboard (pages 71-72)
AMG Indicator	Number of OHSAS 18001 & ISO 45001 Certified Facilities	Environment, Social, Governance, Products Dashboard (pages 71-72)
DIVERSITY & EQUAL OPPORTUNITY		
GRI 103: Management Approach	103-1 Explanation of the material topic and its boundary	Stakeholder Engagement & Materiality (pages 51-52)
	103-2 The management approach and its components	Diversity, Equity & Inclusion (pages 64-65)
	103-3 Evaluation of the management approach	Diversity, Equity & Inclusion (pages 64-65)
GRI 405: Diversity and Equal Opportunity	405-1 Diversity of governance bodies and employees	Diversity, Equity & Inclusion (pages 64-65), Environment, Social, Governance, Products Dashboard (pages 71-72)
LOCAL COMMUNITIES		
GRI 103: Management Approach	103-1 Explanation of the material topic and its boundary	Stakeholder Engagement & Materiality (pages 51-52)
	103-2 The management approach and its components	Community Engagement (page 65)
	103-3 Evaluation of the management approach	Community Engagement (page 65)
GRI 413: Local Communities	413-2 Operations with significant actual and potential negative impacts on local communities	Wastewater (page 63)
RISK MANAGEMENT (INCLUDING SUPPLY CHAIN RISK)		
GRI 103: Management Approach	103-1 Explanation of the material topic and its boundary	Stakeholder Engagement & Materiality (pages 51-52)
	103-2 The management approach and its components	Risk Management (pages 67-68)
	103-3 Evaluation of the management approach	Risk Management (pages 67-68)
GRI 414: Supplier Social Assessment	414-1 New suppliers that were screened using social criteria	AMG Supplier Conduct Charter (www.amg-nv.com/about-amg/corporate-governance/)
AMG Indicator	Hours invested in risk management meetings	Risk Management (pages 67-68), Environment, Social, Governance, Products Dashboard (pages 71-72)
CUSTOMER ENVIRONMENTAL IMPACTS		
GRI 103: Management Approach	103-1 Explanation of the material topic and its boundary	Stakeholder Engagement & Materiality (pages 51-52)
	103-2 The management approach and its components	Customer Environmental Impacts (page 68)
	103-3 Evaluation of the management approach	Customer Environmental Impacts (page 68)
AMG Indicator	CO_2 emissions avoided	Customer Environmental Impacts (page 68), Environment, Social, Governance, Products Dashboard (pages 71-72)
PRODUCT INNOVATION		
GRI 103: Management Approach	103-1 Explanation of the material topic and its boundary	Stakeholder Engagement & Materiality (pages 51-52)
	103-2 The management approach and its components	Product Innovation (pages 68-69)
	103-3 Evaluation of the management approach	Product Innovation (pages 68-69)
AMG Indicator	Avoided CO_2 emissions attributed to ECO_2RP portfolio	Customer Environmental Impacts (page 68)
PRODUCT QUALITY & SAFETY		
GRI 103: Management Approach	103-1 Explanation of the material topic and its boundary	Stakeholder Engagement & Materiality (pages 51-52)
	103-2 The management approach and its components	Product Quality & Safety (page 69)
	103-3 Evaluation of the management approach	Product Quality & Safety (page 69)
AMG Indicator	Number of ISO 9001 certified facilities	Product Quality & Safety (page 69), Environment, Social, Governance, Products Dashboard (pages 71-72)

ENVIRONMENT

AMG is committed to achieving the highest standards of safety and environmental conduct at all its manufacturing facilities, as well as producing materials that help its customers minimize adverse environmental impact. Protecting the environment is directly linked to our focus on sustainable development and support of the UN Global Compact.

AMG's management approach aims to protect the environment in two specific ways. The first involves serving the green economy by acting as a key link in the supply chain of the advanced materials, recycling, and nuclear industries. Each of these sectors plays a vital role in addressing the ongoing challenges of climate change and waste and pollution reduction. The second involves AMG's commitment to measuring and minimizing the environmental footprint associated with its own manufacturing operations. Managing our impact on the environment is of the utmost importance to AMG. As a company with low risk tolerance, we manage environmental impacts closely so that they do not develop into significant environmental risks.

AMG has a global footprint and, therefore, our facilities are subject to a variety of compliance obligations. AMG has a Corporate Environmental Committee, which comprises the Vice President of Legal, Vice President of Sustainability, Environment, Health, and Safety, Director of Environmental Projects, and the Director of Risk Engineering. This committee focuses on associated legal liabilities and discrete remediation projects in addition to addressing environmental risks from our business units. Each of our facilities and business units manage their environmental impacts through dedicated Environmental, Health, and Safety teams. Of the 34 facilities, 12 have International Organization for Standardization (ISO) 14001-certified environmental management systems. If an environmental aspect at an AMG site develops into a significant business risk, the business unit notifies the Corporate Environmental Committee for additional support.

Currently, AMG collects and internally audits environmental data from all locations once per year and uses the information gathered to inform potential opportunities for improvement and key performance indicators.

AIR EMISSIONS

We consider our most important responsibility to our stakeholders to be our responsibility to the global community. We feel the best way to measure this is in terms of our contribution to global CO_2e reduction. Developing innovative products that enable the reduction of CO_2e across the diverse industries we serve is fundamental to AMG's business strategy. As we carry out this critical work, we closely monitor the emissions that result from our activities and strive for year-over-year reduction in emissions. AMG reports on our facilities' emissions of both Scope 1 and Scope 2 greenhouse gases (GHGs) and other permitted air emissions, including SOx, NOx, and particulate matter.

By 2030, AMG commits to reduce its direct CO_2 emissions by 20% from a baseline of 2019 (i.e., pre COVID-19) adjusted for the startup of our Zanesville facility. This is a total reduction of 125,000 tons of CO_2.

Scope 1 GHG emissions result primarily from the combustion of carbon-containing materials as part of the metallurgical process, such as using coke as a reductant. They also result from the generation of heat, such as burning natural gas in a furnace. GHGs from processes other than combustion are minimal. Our innovative production practices for metallurgical processing require significant heat generation from the use of electricity, which is the largest source of AMG's Scope 2 GHG emissions. In 2021, AMG total CO_2e emissions were calculated using Scope 1 GHG and Scope 2 Market Based GHG emissions to reflect renewable energy power purchase agreements. Scope 1 and 2 GHG emissions have been calculated based on an operational control approach in accordance with the Greenhouse Gas Protocol Corporate Accounting and Reporting Standard.

Emissions of ozone-depleting substances are generally immaterial for AMG. However, in 2021, AMG Critical Materials Technologies reported air emissions from refrigerants to be 108 metric tons of CO_2e. Other pollutant air emissions that result from minor sources, such as heating and hot water boilers, remain immaterial. High-intensity production practices are common in our industry, making it a challenge to reduce emissions substantially. AMG is proud of our management of air emissions and will continue to seek year-over-year reduction in all areas.

Air emissions data from our Environment, Social, Governance, Products Dashboard is shown below.

METRIC	UNITS	AMG GROUP	
		2020	2021
Total CO_2e emissions	mt	460,481	464,442
CO_2e emissions (Scope 1)	mt	207,656	217,002
CO_2e emissions (Scope 2: Location-Based)	mt	252,825	—
CO_2e emissions (Scope 2: Market-Based)	mt	—	247,440
SOx	mt	407	305
NOx	mt	370	153
Particulate Matter	mt	78	53

ENERGY

Improving energy efficiency is an operational priority at AMG that results in environmental and economic benefit. At AMG, electricity and natural gas are the two most significant sources of energy. Seven of AMG's facilities with the most energy-intensive activities are currently certified to the ISO 50001 standard for energy management systems. Energy management systems provide a formal structure for managing energy use. By promoting energy efficiency, energy management systems help AMG conserve resources, address climate change, and save money.

Energy consumption within the organization, using data from our Environment, Social, Governance, Products Dashboard, is shown below.

METRIC	AMG GROUP	
	2020	2021
Total Energy Consumption[1] (TJ)	3,394	3,484
AMG Owned Renewable energy generated and consumed (TJ)	37	40
Renewable energy consumed (TJ)	37	170
Percentage of energy consumed that is derived from renewable sources (%)	1.1	4.9
Non-renewable energy consumed (TJ)	3,357	3,314
Percentage of energy consumed that is derived from non-renewable sources (%)	98.9	95.1
Electricity consumed from the grid (TJ)	2,449	2,505
Percentage of consumed electricity from the grid (%)	93.8	93.7

1. Calculated in accordance with GRI 302-1,2

RESOURCE EFFICIENCY

At AMG, we look for ways to eliminate waste and use recycled materials as product inputs to enable the growth of a circular economy. In particular, we innovate processes that allow us to take what was once waste, such as spent refinery catalyst, and extract the critical materials necessary to make our products.

AMG also proactively reviews our manufacturing processes to identify non-sellable product streams for opportunities to innovate these materials into products our customers need. We understand that resource efficiency not only creates good outcomes for our customers but is also far better for our environment. Identifying opportunities for innovation and efficiency is a strategic focus at AMG. We strive to improve and optimize our processes to achieve year-over-year resource efficiency improvements.

WASTE

AMG believes in the responsible and sustainable management of hazardous and non-hazardous waste streams generated by our segments. Our manufacturing sites reuse and recycle waste to conserve natural resources and reduce pollution, but also to create cost-saving opportunities for our business. Waste that is unable to be recycled is disposed in accordance with regulatory requirements at facilities licensed or approved to handle final disposal (e.g., landfill, destruction, etc.) of the specific waste material.

As noted above, AMG processes spent catalyst that was once waste by transforming it into valuable goods which largely eliminates long-term environmental liability for refineries and, so long as it is done appropriately, can eliminate human health, financial, and reputational risks as well. AMG has designed its processes to achieve over 99% conversion of oil refinery wastes to saleable finished goods, while generating no process wastewater. This is likely to eliminate more of the environmental risks associated with land disposal. For spent catalysts in particular, this permanent disposition is much safer than landfill solutions.

Waste within the organization, using data from our Environment, Social, Governance, Products Dashboard, is shown below.

METRIC	Units	AMG GROUP	
		2020	2021
Total Waste	mt	32,839	43,007
Total Recycled Waste	mt	16,836	18,635
Percent Waste Recycled	%	51.3	43.3
Hazardous Waste (Including Recycled)	mt	3,599	3,588
Recycled Hazardous Waste	mt	2,278	2,164
Percent Hazardous Waste Recycled	%	63.3	60.3
Non-Hazardous Waste (Including Recycled)	mt	29,240	39,419
Recycled Non-Hazardous Waste	mt	14,566	16,471
Percent Recycled Non-Hazardous Waste	%	49.8	41.8
Waste Directed to Disposal	mt	16,003	24,372

WATER

AMG views water consumption and water scarcity as global trends that are important to monitor, though AMG's activities are not significantly water intensive. Using WRI Aqueduct, AMG performed a water risk review of our facilities in 2021 and determined that our site locations are in areas unaffected by significant water scarcity concerns. We plan to revisit this assessment as potential risks emerge to determine if further analysis is required for our facilities in more arid climates.

AMG uses water throughout the mining process as part of mineral extraction and processing activities. After mining activities, most of AMG's water is used for non-contact cooling purposes and therefore produces clean water discharges.

AMG will continue to look for opportunities to reduce our water consumption year-over-year. Overall, we view the conservation of water in the same way we view all resource reduction: take only what we need. Additionally, minimizing waste is both economically and environmentally beneficial for our Company and our stakeholders. Water usage within the organization, using data from our Environmental, Social & Governance Performance Dashboard, is shown below.

METRIC	AMG GROUP	
	2020	2021
Total Water Withdrawn (thousand cubic meters)	10,669	12,655
Total Water Consumed (thousand cubic meters)	7,711	9,327
Total Water Recycled/Reused (thousand cubic meters)	6,486	7,473
Percentage of Water Recycled/Reused (%)	61	59
Total Water Discharged (thousand cubic meters)	2,958	3,328

WASTEWATER

AMG closely monitors wastewater discharges from its mining operations in order to manage quality and volume. AMG facilities record the volumes of aqueous effluents to local water sources, including process water and non-sanitary sewer discharges. AMG uses chemical analysis of the effluent to determine the primary constituents of the water discharges.

AMG makes an effort to comply with all regulatory requirements and implements industry best practices to manage our wastewater and avoid negative impacts on local communities. As with our other environmental compliance obligations, wastewater activities are managed at the site level by compliance specialists who remain up to date on local regulations. AMG has 12 facilities with permitted wastewater activities and our risks are managed through our effective permitted wastewater controls. In 2021, there were no wastewater impacts on local communities or significant spills (defined as a spill that would affect the Company's financial statements because of the ensuing liability) at any AMG site.

Most of AMG's water discharge results from global mining operations in AMG Critical Minerals and AMG Clean Energy Materials. The balance of AMG's water is used for cooling purposes and therefore produces clean (non-hazardous) water discharges that are released in accordance with local regulations. Some processes generate aqueous waste streams, including cooling water used by the silicon metal furnaces and mine water from dewatering pumps. In several locations, mine water is utilized for process water before final discharge.

SOCIAL

AMG stakeholders and the communities where we operate remain central to our business. Within our company, our human rights principles are sustained through the provision of safe and healthy working conditions in a non-discriminatory environment. We continuously support these principles by living our values in our interactions with local and national governments and the communities in which we operate. AMG is invested in the communities where we operate and committed to hiring employees from the community, investing in building diverse talent pools, and providing training to improve skill levels. Wherever possible, we endeavor to extend our values and principles to our suppliers and contractors.

Diversity and inclusion, human rights, and safety are the primary focuses of AMG's approach to maintaining a sustainable business for our people. We invest in our people to develop their skills and provide training in critical areas like technical and professional development, quality, anti-corruption, human rights, and health and safety. AMG respects the rights and freedoms for individual employees to freely make choices about their career as described in Article 23 of the Universal Declaration of Human Rights. Encompassing these efforts is AMG's commitment to achieving the highest standards of safety and environmental conduct at all its manufacturing facilities and producing materials that help its customers to minimize negative environmental impact.

HEALTH AND SAFETY

Nothing is more important to AMG than the safety, health, and well-being of our workers and their families. All injuries and occupational illnesses are preventable, and we firmly believe that there is no job worth doing in an unsafe manner. Safety is understood across our business units as our number one priority.

AMG fosters a culture of safety communication and encourages our people to actively listen to safety and health concerns to fully understand each issue, while supporting each other to work in a safe manner. Our employees understand that part of what keeps us safe is compliance with all applicable legal requirements and site-specific safety programs and procedures. Our leadership team acts with a sense of urgency to eliminate or effectively control safety, health, and environmental hazards and risks.

AMG Safety Commitment

- Continuously identify and implement safe and healthy ways to do the job;
- Hold each other accountable for superior health and safety practices;
- Keep protection of safety, health, and the environment as a value that drives overall performance;
- Remember that no task is so important that it puts the safety and health of employees at risk;
- Provide the leadership and resources needed to achieve our vision;
- Encourage each other to be champions of safety and health, both at work and at home; and
- Maintain a high degree of emergency preparedness.

AMG safety programs are unique to each of our sites and their management systems are tailored to their local regulatory environment. Formal safety management systems continue to play an important role in achieving zero harm to employees. Our sites review and maintain their safety management systems through internal audits and participate in external audits when seeking certification.

Our individual sites manage safety training for all employees and contractors. The nature and rigor of our safety trainings are tailored to the type of work completed at each site. For example, a higher-hazard facility requires a full week of training before an employee may begin work, whereas a low-risk office building will require a lower training commitment. Contractor safety training is a formal requirement at our facilities with current ISO 45001 and previous OHSAS 18001 certification.

At AMG's corporate level, our leadership remains engaged with the health and safety and performance of our sites. Each site produces a monthly safety report, which is consolidated into a management report for AMG's Management Board. In addition to this monthly reporting, AMG instituted Safety Alerts for safety issues, such as a lost-time incident, that require immediate attention. When a site initiates a Safety Alert, their concern goes immediately to AMG's Vice President of Sustainability, Environment, Health and Safety and receives appropriate attention. AMG develops lessons learned from any safety incident that we share across our Company as a method of education and prevention.

AMG also participates with the Church of England Mining Tailings Safety Initiative to provide disclosures regarding the management of tailings storage facilities.

Safety performance data regarding the number of workplace injuries, illnesses and fatalities are a key performance indicator used to identify initiatives that strengthen safety culture and ensure a safe workplace. AMG utilizes the United States Occupational Safety and Health Administration (OSHA) standard for Reporting and Recording Occupational Injuries and Illnesses as the basis for the definition of workplace injuries and illnesses. Total Incident Rate and Lost Time Incident Rate are calculated as follows:

- Total incident Rate: (# of recordable injuries, illnesses, and fatalities) x (200,000) / (Total Hours Worked)
- Lost Time Incident Rate: (excluding fatalities) calculated as follows: (# of lost time injuries and illnesses) x (200,000) / (Total Hours Worked)

Each year, AMG aims to achieve a zero-incident status. This is, of course, a very challenging objective. AMG benchmarks itself to the industry average for Primary Metal Manufacturing (NAICS 331). The most recent data provided by the United States Bureau of Labor Statistics is for 2020. It reports that the Primary Metal Manufacturing industry's total recordable case rate was 3.9 and the lost time rate was 1.3. AMG is proud that its safety performance is significantly better than the Primary Metal Manufacturing industry average, with a 2021 total recordable case rate of 1.08 (72 percent less than the industry average) and a lost time rate of 0.39, (70 percent less than the industry average). In 2021, internal safety performance in lost time incident rate improved year-over-year by 37 percent. Refer to the table below, extracted from our Environment, Social, Governance, Products Dashboard.

METRIC	AMG GROUP	
	2020	2021
Number of ISO 14001 Certified Facilities	12	12
Number of ISO 45001 Certified Facilities	12	15
Number of ISO 50001 Certified Facilities	7	7
Safety Training Hours	47,317	52,875
Lost Time Incident Rate	0.62	0.39
Total Incident Rate	1.05	1.08

DIVERSITY, EQUITY, AND INCLUSION

At AMG, we understand the importance and the benefits of diversity in the workforce. As a global company with facilities in more than a dozen counties, AMG is home to an inherently culturally diverse workforce. We place significant attention on the diversity of our workforce and our Board structure because AMG believes that diversity is important to the success of our Company. A diverse workforce, built from the communities in which we operate, allows us to work effectively and efficiently. As a global company, we consider it crucial that our employees are in touch with local cultural customs and have an understanding of the business practices that are most appropriate for their work environment. Our leadership works effectively across cultural boundaries by providing guidance and support to our business units.

AMG assesses the diversity of its workforce in terms of gender and age. The multinational, and therefore multicultural, nature of AMG's business means that ethnic diversity is significant, but it is not possible to define minority employees in every environment. Demographics within the organization, using data from our Environment, Social, Governance, Products Dashboard is shown below.

AMG DEMOGRAPHIC DATA		AMG GROUP	
DIVERSITY TYPE	UNITS	2020	2021
Gender Diversity	% Male	81	84
	% Female	19	16
Age Diversity	% Under 30	18	17
	% 30 to 50	53	54
	% Over 50	29	29
Women on Management Board	%	0	0
Women on Supervisory Board	%	33	33
Women in Management	%	21	19

Our leadership recognizes the importance of a diverse composition of the Supervisory Board and the Management Board as a general principle, particularly in terms of gender. AMG adopted our Diversity Policy in 2017, in which we outline our objective of having at least one-third of the seats on the Supervisory Board and the Management Board be held by each gender. The Supervisory Board will continue to look for suitable female candidates for the Management Board in order to meet all the diversity objectives as outlined in its Diversity Policy, as soon as reasonably possible.

AMG continuously shows consideration for our diversity objectives by maintaining a proper balance of nationalities to reflect the organization's transatlantic structure. Additionally, we connect diversity commitments with our recruitment, retention, and succession planning strategies for both the Supervisory and Management Boards. In 2017, the Management Board deployed measures to attract and maintain a diverse workforce within our business units, including linking incentive payments for unit managers to make meaningful progress toward diversity targets.

In addition, in view of new legislation in the Netherlands concerning gender diversity in the composition of supervisory boards and management boards that became effective on January 1, 2022, the Management Board has initiated the creation of a robust plan supporting diversity with appropriate targets within the AMG Group going forward with the objective to increase diversity over time wherever appropriate. One of the measures adopted in 2021 was the creation of a Diversity Council that reports directly to the CEO, who has invited Ms. Dagmar Bottenbruch of the Supervisory Board to provide feedback and advice on diversity policy. The Diversity Council comprises primarily female members of AMG's senior management and staff. This Council renders ongoing advice to the Management Board and the management of the units on how to monitor, enhance, and increase diversity on a variety of levels within the AMG Group.

COMMUNITY ENGAGEMENT

AMG believes that maintaining enduring and healthy relationships with the communities where we work is important to our success around the world. Some of AMG's businesses have operated for more than a century, have employed generations of families, and are a significant component of their communities and local economies. At AMG, we feel a responsibility to our local communities as well as the global community to work toward a sustainable future.

One of the ways we contribute to sustainable communities is by providing consistent and competitive employment opportunities. We offer fair wages and the opportunity to work for a company that treats its employees equitably and ethically. Our Company performs activities in parts of the world where human rights abuses have been known to occur, but as discussed in the Business Ethics section, AMG makes every effort to ensure there are no human rights abuses at our facilities and we monitor our supply chain for human rights risks, including human trafficking. In terms of supporting human rights, we embrace and promote a diverse and inclusive work culture. By offering gainful career opportunities and compensation that can exceed average local wages, AMG helps enable our communities to thrive.

In addition to contributing to the local economies and communities where we operate, AMG invests in our employees by providing training and opportunities for career advancement. Through these investments, AMG maintains an effective workforce that has been trained in the health, safety, and technical skills required to do its critical work. This training provides our employees with life skills that can be used beyond AMG and can contribute to the betterment of our communities. We also encourage our employees to volunteer within the communities where they live and work. Although limited by the impacts of COVID-19, in 2021 AMG employees contributed 596 volunteered hours to supporting their communities. In addition, $52,000 in community outreach was spent on various causes in the communities where we operate.

AMG takes steps at all facilities to limit and mitigate our environmental impacts in our communities. For example, by focusing on our Brazilian tailings dams, we are investing in the environmental health and safety of our communities while reducing our overall business risk. In the United Kingdom, AMG recently switched to a renewable power grid for our operations, helping to decrease the local air emissions associated with traditional energy production. On a local and global scale, our enabling technologies contribute to significant CO_2 emissions reduction. AMG will continue to foster long-lasting, productive relationships with our employees and communities.

GOVERNANCE

At AMG, we understand the importance of maintaining proper business ethics, regulatory compliance, and risk management. The Company endorses good corporate governance, with a focus on independence, accountability, and transparency. AMG aims to be as open and transparent as possible about its structure, financial reporting, internal controls, tax reporting, and procedures. Headquartered in the Netherlands, AMG also governs in accordance with best practices outlined in the Dutch Corporate Governance Code. Our robust approach to ethics, compliance, and risk management across our various business units serves as a strong foundation for a sustainable business.

BUSINESS ETHICS

At AMG, our leaders ensure that proper business ethics permeate the Company. AMG introduced the first official company-wide Code of Business Conduct in 2009, though our Management Board had complied with their specific Code of Business Conduct since 2007 when our Company went public. Our Code of Business Conduct is one of a few policies standardized across our business units that otherwise have a significant amount of operational independence. The AMG Code of Business Conduct and the Speak Up and Reporting policy, which both reference the AMG values, are now available in 15 languages, and are prominently displayed in the local language at each facility where AMG companies carry out their operations and where staff are employed. AMG joined the Amsterdam stock exchange in 2007 and has complied with the Dutch Corporate Governance Code since its adoption on December 8, 2016. More detail on AMG's Corporate Governance policies can be found on the Corporate Governance page of our website (www.amg-nv.com/about-amg/corporate-governance/).

AMG's leadership provides oversight on business ethics through frequent discussions with our business units, reiterating the importance of this topic. AMG's Internal Risk Committee develops a quarterly report to review performance against our Code of Business Conduct and employee awareness of the Code, as well as any prospective changes to present to the Supervisory Board on a regular basis.

A network of compliance officers located at all major sites oversees deployment of AMG's ethics training programs and distribution of information concerning AMG's Values and Code of Business Conduct and serves as a first point of contact for employees, suppliers, customers, and other third parties who wish to file a report, complaint, or have an inquiry about AMG's business practices. In February 2022, AMG's Chief Compliance Officer reported to the Management Board and the Supervisory Board about applicable compliance and incident trends at AMG during 2021. The number of reports received under AMG's Speak Up and Reporting policy in 2021 was well below the available benchmark as published by NAVEX Global (2020 Ethics & Compliance Hotline & Incident Management Benchmark report). No incidents or complaints have been reported to AMG or any public authorities in 2021 to date which would implicate AMG or any of its staff in any bribery scheme involving public officials or agencies.

Employees are made aware of our business ethics expectations through various communications and annual trainings. AMG employees complete an online training focused on our Code of Business Conduct when they join and receive their own copy of this Code in an introductory meeting with Human Resources. The online training is required every 3 years as a refresher. AMG also provides on a regular basis anti-trust and anti-bribery training for staff members as appropriate. Refer to the table below, extracted from our Environment, Social, Governance, Products Dashboard.

METRIC	AMG GROUP	
	2020	2021
Anti-Corruption Training Hours	1,255	1,806
Human Rights Training Hours	609	936

AMG is highly aware of and fully committed to the protection of internationally decreed human rights. We assess each AMG facility during visits by our internal auditors to identify any possibility that freedom of association or collective bargaining is at risk due to political or business factors. In 2021, no AMG sites were at risk, except for China where the formation of unions remains restricted. Similarly, the Company reviews sites to assess risk for employing child labor or exposing young workers to hazards. No sites have identified risks at this time.

AMG also aims to ensure rights are protected in our supply chain through our Supplier Conduct Charter. AMG actively mitigates supply chain risk by making ethical choices that benefit our employees and our customers, such as investing in and leveraging existing mining infrastructure to maintain our position as the largest conflict-free supplier of tantalum. Our Policy on Human Rights, the AMG Code of Business Conduct, the AMG Supplier Conduct Charter, and other AMG policies are available on the AMG website (www.amg-nv.com/about-amg/corporate-governance/).

COMPLIANCE

AMG has a robust culture of compliance, mirroring AMG's emphasis on business ethics as a way to manage and mitigate our risks and secure a sustainable future. We work systematically to build compliance processes that enable the success of our business units and reinforce the message from top leadership that adherence to ethics and compliance standards is expected. Additional details about AMG's compliance commitments in our Code of Business Conduct and related policies can be found on the Corporate Governance page of our website.

As with many critical aspects of our Company, AMG's first line of defense is our local compliance teams. Many of our facilities have existed for over a century, allowing for a robust understanding of local compliance issues. A network of compliance officers located at all of AMG's major sites oversees compliance. In addition to managing the facilities' legal compliance with local and federal regulations, compliance officers manage AMG's ethics training programs and distribution of information concerning AMG's values and Code of Business Conduct.

AMG employs a Chief Compliance Officer who works with our local compliance officers to manage their compliance needs and communicate material compliance risks to our Management Board and senior management as appropriate. AMG's Chief Compliance Officer also looks for trends relating to incidents, new regulations, or compliance challenges to identify opportunities for improvement.

While our legal and compliance functions regularly visit our local business units to provide compliance support, AMG also relies on a network of external legal and other subject matter experts who advise us on material changes to local and global regulations. With the support of our internal and external compliance advisors, AMG engages with a number of voluntary compliance standards that align with our Company's mission. AMG is an active participant of the United Nations Global Compact, a strategic initiative for businesses that, like AMG, are committed to aligning their operations and strategies with 10 universally accepted principles in the areas of human rights, labor, the environment, and anti-corruption.

AMG also supports the Extractive Industries Transparency Initiative (EITI), a global initiative to improve governance in resource-rich countries through the verification and full publication of Company payments and government revenues from oil, gas, and mining. AMG's operations in Mozambique are currently the only AMG activities relevant to the EITI objectives.

We maintain compliance with international anti-corruption and anti-bribery standards, and no incidents or complaints have been reported to AMG or any public authorities to date that would implicate AMG or any of its staff in any bribery scheme involving public officials or agencies. In addition to general business conduct concerns, AMG's Speak Up and Reporting policy ensures that our employees, customers, or other third parties can raise concerns or file reports in confidence and/or anonymously regarding compliance matters. In 2021, AMG incurred two non-material fines in Rotherham, UK and Henderson, KY related to environment and non-environmental issues, respectively.

RISK MANAGEMENT

The Company's diverse portfolio, unique business units, and global footprint make a comprehensive and continual understanding of business risk a critical matter. Through a formal and thorough risk management program, AMG creates value for its customers and investors while maintaining safe and innovative places of work. The risk management program applies the Precautionary Principle to determine when threats of serious or irreversible damage, exist due to our current or future operations, and without delay, requires the implementation of cost-effective measures to prevent environmental degradation.

A formal Internal Risk Committee, comprising AMG's Treasurer, Chief Financial Officer, and Vice President of Sustainability, Environment, Health, and Safety, supports our Risk Management program. The addition of AMG's Vice President of Sustainability, Environment, Health, and Safety to the committee in 2018 broadened our risk focus to consider environmental and safety risks more fully.

Through frequent engagement with our facilities, the Internal Risk Committee produces a quarterly risk report, which is presented to AMG's Management and Supervisory Boards to inform decision-making at the highest levels of our Company. The quarterly risk report contains information from our business units, including a summary of key risks, the associated potential monetary impacts, a projected 1-year risk outlook, probability, and prospect of mitigation. Our facilities and Internal Risk Committee consider each of these factors and assign a risk rating to each risk, which we track each quarter.

At our facilities, we rely on our business unit level management to identify and understand their unique risks and to work with AMG's Internal Risk Committee to manage them. By embedding risk management into every level of our operations, we decrease the likelihood of unknowns. We believe that our risk management program is most successful because of our top-down and bottom-up approaches. We trust our business units to have an intimate understanding of their safety, environmental, climate, operational, and financial risks. Additionally, many of our business units have decades-long relationships with their suppliers, providing them with deep insight into supply chain risks.

To mitigate the risk of raw materials and supplies becoming difficult to source, AMG enters into longer-term contracts with its suppliers when practical and diversifies its supplier base when alternative suppliers are available. The Company also mitigates risk by monitoring supplier performance and holding our suppliers accountable to comply with AMG's Supplier Conduct Charter. AMG engages with all new suppliers and audits our suppliers throughout our relationship to ensure compliance.

In 2021, AMG spent more than 361 hours evaluating our business risks through quarterly risk management meetings. We are confident in our risk assessment process because the risks that ultimately impact our business consistently appear in the risk report and are proactively addressed through mitigating actions. Due to COVID-19, risk assessments increased significantly in 2021. Impacts to our Company's performance may have increased if we had not proactively identified risks during our reporting mitigation plans.

METRIC	AMG GROUP	
	2020	2021
Hours Invested in Risk Management Meetings	328	361

Throughout the organization, AMG has implemented critical planning processes such as emergency preparedness (i.e., flood and earthquake response plans where applicable), crisis management, business continuity to help ensure resilience, and the ability to recover quickly from unexpected events. These detailed and comprehensive plans involve the identification of the risks, tools, and resources to mitigate impact and the responsible personnel to successfully implement the response. Using internal and external resources, employees are trained on their responsibilities and participate in exercises to ensure readiness. The practice improves our production rates and helps avoid long downtimes.

A proactive approach to identifying and mitigating risks allows us to focus on developing innovative, sustainable solutions for our customers. At AMG, we will continue to maintain an effective risk management process, including quarterly risk reporting and day-to-day communication regarding risk. Our executive leadership will maintain our reporting process and open, active dialogue with business unit leadership. We all work to anticipate known and unknown risks.

PRODUCTS

AMG is a global critical materials company at the forefront of CO_2 reduction trends. AMG produces highly engineered specialty metals and mineral products and provides vacuum furnace systems and services to the transportation, infrastructure, energy, and specialty metals and chemicals end markets. AMG continues to meet the growing global demand for innovative new products that are lighter, stronger, and resistant to higher temperatures. We develop innovative, high-quality products to help our customers meet their performance and CO_2 reduction goals.

CUSTOMER ENVIRONMENTAL IMPACTS

Creating products that enable our customers to reduce their environmental impacts is the very tenet upon which AMG was built. In our formation documents, AMG defines critical materials as materials that are critical or have become critical primarily as a result of the search for material-science-based solutions to reduce CO_2 emissions. Throughout its history, AMG's predecessor companies have advanced metallurgical-based technologies to provide innovative solutions for industrial challenges. AMG continues that proud tradition today, developing solutions that reduce carbon emissions and minimize the negative environmental effects of energy production and use.

AMG evaluates the performance of our products in this area primarily through Life Cycle Assessment (LCA). LCA is a technique for evaluating the environmental impacts associated with a product or service. LCA is a standardized method, allowing the tracing of resources consumed as well as all the emissions to air, water, and land at each stage in the manufacture, use, and disposal of products across the value chain.

We have commissioned Environmental Resources Management (ERM), a leading sustainability consulting firm, to sharpen our in-house methodology for the measurement of "enabling" CO_2 reductions using our energy-saving materials and technologies. AMG's ECO_2RP concept that has been developed and operational since 2018 does not necessarily align with the EU Taxonomy framework that was first introduced in 2020. AMG began working with ERM to conduct streamlined LCAs in 2018 to understand and quantify the impact of their lightweighting and enabling properties on CO_2 emissions avoided by their use. At the end of 2021, we have completed LCAs for 11 of AMG's products, further quantifying the CO_2 emissions reduction enabling benefits of our portfolio.

The LCAs performed for AMG are 'streamlined' LCAs in that the scope is limited to account for the impact of GHG emissions only. These can also be referred to as carbon footprints and are consistent with the international standards on LCA (ISO 14040:2006 and ISO 14044:2006) and the Greenhouse Gas Protocol Product Life Cycle and Accounting Standard.

ECO_2RP is a portfolio of 11 AMG products that enable CO_2 reduction and verified by third-party LCAs. In 2021, these products enabled our customers to avoid 79.0 million metric tons of CO_2 emissions. AMG currently has three additional LCA candidates in the pipeline to be added to the ECO_2RP portfolio that will enable even more emission reductions in the future.

AMG also relies upon an internal methodology to measure how certain AMG product offerings enable CO_2 reduction when used by our customers. For example, the enabling of higher operating temperatures in jet engines through titanium aluminides and through ceramic coatings of turbine blades for jet engines increases fuel efficiency and therefore reduces CO_2 emissions versus the next-best solution. As another example, adding natural graphite to insulation enables energy saving in buildings, leading to the reduction of energy use and associated CO_2 emissions. These and other AMG material science solutions provide lighter, stronger, and more heat-resistant products and deliver environmental benefits compared to alternatives. Using our CO_2 enabled reduction methodology, we enabled our customers to save a cumulative 79.0 million metric tons of CO_2 in 2021.

Beginning in 2022, AMG commits to increase its enabled CO_2 reduction by 10% per year from 2021 levels through 2030.

PRODUCT INNOVATION

Specialty metals are essential to the world's infrastructure. We work with the world's builders to ensure we provide them with exactly what they need to create and innovate. True innovation in the metals industry is rare, given that fundamental metallurgical principles do not often change. However, AMG demonstrates leadership in taking those fundamentals and creating artisanal products for our clients. We invest in innovation in every one of our business units to develop technologies that are more efficient, more effective, and better for our environment.

AMG cultivates innovation throughout our Company by hiring experts in metallurgical engineering and providing them with the tools to create technology aligning with our carbon abatement strategy and our clients' needs. As ideas for new technologies emerge, we evaluate the capital and overall investments required to pursue the technology at the highest levels of our Company. We manage this process through conservative capital control. Investments of $100,000 or more require senior levels of approval to ensure our investments are creating the best possible returns and that the results are in line with AMG's mission. Our Engineering Group holds numerous patents and continues to patent additional technologies each year with sustainability at their core.

AMG enables our customers to drive sustainable development. Through our intimate understanding of our customers' needs, investment in research and development, and continuous creation of innovative materials and solutions, our customers bring greater efficiency to transportation, building, and other industries.

PRODUCT QUALITY AND SAFETY

Product quality and safety are core to our business. The quality of our products and our culture of innovation, driven by our customers' needs, differentiates AMG from its competitors. Providing consistent products of the highest purity and quality enables our customers to build products that perform better and more efficiently.

Product quality and safety is a focus throughout all levels of AMG's business. AMG's products are used in various applications including mission critical components. Our customers trust AMG and our products because of the rigorous systems and inspections that we have in place. Each of our 25 production facilities has at least one Quality Manager whose responsibility is to ensure the safety of our processes and to ensure our production activities are primed for precision and consistency. Our research and development teams prevent any deviation and correct any issue before it affects our product quality.

AMG's Management Board and CEO send a clear message to each of our business units that product quality is of critical importance to our business. Any fluctuations or risks that could influence product quality are quickly brought to the attention of AMG's leadership. Product quality and safety is also a significant component of our quarterly risk review.

We recognize that the experts at our different sites know their processes and materials best, which is why we require production facilities to maintain a site-specific quality management system and encourage them to become ISO 9001 certified. We have 23 ISO 9001 certified sites.

To help ensure the safety of AMG products, AMG complies with REACH and GHS requirements and monitors the industry landscape for safety trends and innovations. REACH obligations guide proper labeling and evaluation processes. AMG developed a REACH application, coordinating with our regulatory agents and other supplier trade groups. In addition to keeping product safety data sheets updated, we maintain strong customer relationships and communicate any product safety implications, such as exposure risks, clearly and often.

To assess our product quality and safety performance, AMG considers several metrics, including customer satisfaction, on-time shipments, returned products, and our quality management systems. AMG also measures our product quality and safety performance though customer feedback. We frequently engage with our customers to foster an active dialogue, providing us with feedback to support their needs. Our customers trust us to supply increasing percentages of their business needs. AMG supplies leading companies with the materials they need to produce their critical end-products, and we proudly continue creating value for them in this way.

SUSTAINABILITY LINKED LOAN

Sustainability linked loans are any type of loan instrument which incentivizes borrower's achievement of ambitious, predetermined sustainability performance objectives. In November 2021, further strengthening our commitment to ESG, AMG entered into a new $200 million, 5-year senior secured sustainability linked revolving credit facility ("RCF").

AMG developed a key performance indicator ("KPI") framework aligned with internationally recognized Sustainability Linked Loan Principles, the Company's overall sustainability strategy and issues that are important to our business. The interest rate reduces if two KPIs are achieved and increases if both KPIs are not met.

KPI 1: Carbon Intensity. AMG aims to reduce its CO_2 emissions through investments in renewable energy and further reducing intensity by increasing production of products with a lower carbon footprint. This metric is measured as the sum of Scope 1 and Scope 2 CO_2 equivalent emissions (as calculated in a manner reasonably consistent with the Greenhouse Gas Protocol) divided by AMG production (in metric tons) for Lithium Hydroxide, Spodumene, Ferrovanadium, Titanium Alloys, Graphite, and Silicon.

KPI 2: Emissions Avoided. AMG seeks to increase energy savings enabled by the products included in our ECO_2RP portfolio. This metric is measured as the total CO_2 equivalent reduction (in metric tons) enabled by AMG's sustainable product (ECO_2RP portfolio). The enabled CO_2 reduction effect has been established by a "life cycle assessment" performed by ERM.

These metrics and the progress toward the applicable KPIs are highlighted in the tables below:

KPI 1: Carbon Intensity	UNITS	AMG GROUP			
		2020 Baseline	2021 KPI Target	2021 Actual	2021 Status
Production of critical materials[1]	mt	153,664	-	193,700	-
Scope 1 and Scope 2 CO_2 equivalent emissions	mt	663,590	-	554,442	-
Carbon Intensity Metric		4.32	4.25	2.86	KPI Target Achieved

1. Represents production of critical materials associated with relatively high emissions, with limited reduction potential. Includes Lithium Hydroxide, Spodumene, Ferrovanadium, Titanium Alloys, Graphite, and Silicon.

KPI 2: Emissions avoided	UNITS	AMG GROUP			
		2020 Baseline	2021 KPI Target	2021 Actual	2021 Status
Emissions Avoided Metric	mt	57	65	79	KPI Target Achieved

AMG has achieved both KPI targets for 2021 and, as such, an interest rate reduction will be applied to its RCF.

ENVIRONMENT, SOCIAL, GOVERNANCE, PRODUCTS DASHBOARD

ENVIRONMENT

GRI INDICATOR	DESCRIPTION	UNITS	AMG GROUP	
			2020	2021
301-2	Percent of Recycled Materials Used to Manufacture Products	%	48	50
302-1	Total Energy Consumption	TJ	3,394	3,484
302-1	Total Electricity/Heat Use	TJ	2,611	2,675
302-1	Total Non-renewable Fuel Consumed	TJ	783	809
302-1	Purchased Third Party Electricity/Heat	TJ	2,574	2,635
302-1	AMG Owned Renewable Energy Generated	TJ	74	69
302-1	AMG Owned Renewable Energy Consumed	TJ	37	40
302-1	Electricity Consumed from the Grid	TJ	2,449	2,505
303-3	Total Water Withdrawal	Thousand Cubic Meters	10,669	12,655
303-3	Surface Water Withdrawal	Thousand Cubic Meters	1,699	2,678
303-3	Groundwater Withdrawal	Thousand Cubic Meters	2,107	2,174
303-3	Rainwater Withdrawal	Thousand Cubic Meters	157	119
303-3	Municipal Water Withdrawal	Thousand Cubic Meters	220	211
303-3	Total Water Recycled/Reused	Thousand Cubic Meters	6,486	7,473
303-4	Water Discharge	Thousand Cubic Meters	2,958	3,328
303-4	Wastewater Discharge	Thousand Cubic Meters	2,358	2,779
303-4	Metals Discharged	mt	0.7	1.3
303-5	Water Consumption	Thousand Cubic Meters	7,711	9,327
305-1	Scope 1 CO_2 Equivalent Emissions	mt	207,656	217,002
305-2	Scope 2 (Location-Based) CO_2 Equivalent Emissions	mt	252,825	255,962
305-2	Scope 2 (Market-Based) CO_2 Equivalent Emissions	mt	244,938	247,440
305-7	Particulates Discharged to Air	mt	78	53
305-7	SOx Emissions	mt	407	305
305-7	NOx Emissions	mt	370	153
306-3	Hazardous Waste Generated (Including Recycled)	mt	3,599	3,588
306-3	Non-Hazardous Waste Generated (Including Recycled)	mt	29,240	39,419
306-4	Percent of Waste Recycled	%	51.3	43.3
306-5	Waste Directed to Disposal	mt	16,003	24,372
AMG Metric	Number of ISO 14001 Certified Facilities	Total	12	12
AMG Metric	Number of ISO 50001 Certified Facilities	Total	7	7

GOVERNANCE

GRI INDICATOR	DESCRIPTION	UNITS	AMG GROUP	
			2020	2021
205-2	Hours of Anti-Corruption Training	Hours	1,255	1,806
307-1	Environmental - Total Monetary Value of Significant Fines	Thousand USD	47	0
307-1	Environmental - Total Number of Non-Monetary Sanctions	#	0	0
412-2	Hours of Human Rights Training	Hours	609	936
419-1	Non-Environmental - Total Monetary Value of Significant Fines	Thousand USD	12	5
419-1	Non-Environmental - Total Number of Non-Monetary Sanctions	#	0	0
AMG Metric	Hours Invested in Risk Management Meetings	Hours	328	361

PRODUCTS

GRI INDICATOR	DESCRIPTION	UNITS	AMG GROUP	
			2020	2021
AMG Metric	Number of ISO 9001 Certified Facilities	Total	25	23
AMG Metric	CO_2 Emissions Avoided	million mt	56.6	79.0
AMG Metric	Proportion of Taxonomy-eligible Activities Turnover[1]	%	-	27
AMG Metric	Proportion of Taxonomy-eligible Activities CAPEX[1]	%	-	83
AMG Metric	Proportion of Taxonomy-eligible Activities OPEX[1]	%	-	25

SOCIAL

GRI INDICATOR	DESCRIPTION	UNITS	AMG GROUP	
			2020	2021
102-8	Workforce	Total	3,064	3,309
403-9, 403-10	Total Incident Rates	Rate	1.05	1.08
403-9, 403-10	Lost Time Incident Rates	Rate	0.62	0.39
405-1	Gender Diversity	% Male	81	84
405-1	Gender Diversity	% Female	19	16
405-1	Age Diversity	% Under 30	18	17
405-1	Age Diversity	% 30 to 50	53	54
405-1	Age Diversity	% Over 50	29	29
405-1	Women in Management	%	21	19
AMG Metric	Number of OHSAS 18001[2] Certified Facilities	Total	4	2
AMG Metric	Number of ISO 45001 Certified Facilities	Total	12	15
AMG Metric	Volunteer Hours	Hours	1,173	596

1. Disclosure required by EU regulation beginning in 2021.
2. Deadline for conversion of OHSAS 18001:2007 to ISO 45001:2018, 11 September 2021.

AMG'S

CORPORATE GOVERNANCE

AMG Advanced Metallurgical Group N.V. is a Dutch company located in the Netherlands which was established in 2006 as the holding company for the AMG group companies. Its shares were first listed on Euronext Amsterdam in July 2007.

In this report, the Company, as a Dutch listed company, sets forth its overall corporate governance structure and the extent to which it applies the provisions of the Dutch Corporate Governance Code, as published on December 8, 2016 and in effect since January 1, 2017 (the "2016 Code"). The 2016 Code can be downloaded at www.mccg.nl. Further in this report, the Company will report on the compliance by the Company with the 2016 Code, as further elaborated in this chapter on Corporate Governance and in the corresponding chapter on the Company's website (amg-nv.com).

The Supervisory Board and the Management Board, which are responsible for the corporate governance structure of the Company, hold the view that the vast majority of principles and best practice provisions set forth in the 2016 Code, as applicable during 2021, are being applied, while deviations are discussed and explained hereunder. A full and detailed description of AMG's Corporate Governance structure and AMG's compliance with the 2016 Code can further be found on AMG's website (amg-nv.com).

AMG Advanced Metallurgical Group N.V., located in the Netherlands, is a company organized under Dutch law that has various subsidiaries in multiple jurisdictions to enable efficient business operations.

The Management Board is responsible for maintaining a culture that is conducive to achieving its strategic objectives with a focus on long-term value creation, as further explained in this chapter as well as other sections of the report of the Management Board.

2021 FINANCIAL STATEMENTS AND DIVIDENDS

The Management Board and the Supervisory Board have approved AMG's audited financial statements for 2021. KPMG audited these financial statements, which will be submitted for adoption to the General Meeting of Shareholders in May 2022.

The Management Board is authorized, subject to approval by the Supervisory Board, to reserve profits wholly or partly. The General Meeting is authorized to distribute and/or reserve any remaining part of the profits. The General Meeting may decide on the disposition of reserves only after a proposal by the Management Board, which must have been approved by the Supervisory Board.

AMG's dividend policy was first revised by the Management Board back in 2015 when AMG started paying dividends to its shareholders. In 2018, the Management Board, upon approval of the Supervisory Board, decided to implement a further change in dividend policy which targets an annual dividend payout of between 20-40% of net income attributable to shareholders. In 2021, given the prevailing circumstances and the intrinsic volatility AMG had experienced in some of its markets, the Management Board – with the approval of the Supervisory Board – decided to further amend this policy going forward. Given that AMG has cyclical elements in its product mix and that it desires to have a relatively consistent dividend payout, this revised policy will allow for stable dividend payouts, and target gradual increases to the historic dividend levels, provided that such payouts and possible increases are supported by AMG's liquidity and cash flow generation. This revised policy is intended to reflect AMG's desire to pay a consistent year-over-year dividend. This policy is in line with Dutch corporate governance best practices, the revised dividend policy was discussed during the Annual General Meeting in 2021 and endorsed by the shareholders.

The Company intends to propose a full year dividend for 2021 of €0.40 to the General Meeting of Shareholders for approval as part of the adoption of the 2021 Annual Accounts. The interim dividend of €0.10 per ordinary AMG share, paid on August 13, 2021, will be deducted from this amount. The proposed final dividend per ordinary share therefore amounts to €0.30. This dividend payment is in line with the revised dividend policy as explained above. Future dividend payments to shareholders will be at the discretion of the Management Board subject to the approval of the Supervisory Board and after taking into account various factors, including business prospects, cash requirements, financial performance, expansion plans, the terms of the Company's financing facilities, and the compliance with applicable statutory and regulatory requirements.

Additionally, any payment of dividends (whether interim or after adoption of the annual accounts) or other distributions to shareholders may be made only if the Company's shareholders' equity exceeds the sum of the issued share capital plus the reserves required to be maintained by law.

SHARES AND SHAREHOLDERS' RIGHTS

As of December 31, 2021, the total issued share capital of AMG amounted to €650,083.28 consisting of 32,504,164 ordinary shares of €0.02 each. Each ordinary share carries one vote. The ordinary shares are listed on Euronext Amsterdam and are freely transferable. During 2021 the issued capital increased with

3,136,742 ordinary shares in April due to a successful equity raise among qualified investors and subsequently decreased in August due to the cancellation of two million ordinary shares as approved by the General Meeting of Shareholders in May 2020.

Pursuant to the Financial Markets Supervision Act (Wet op het financieel toezicht) and the Decree on Disclosure of Major Holdings and Capital Interests in Securities-Issuing Institutions (Besluit melding zeggenschap en kapitaalbelang in uitgevende instellingen), the Netherlands Authority for the Financial Markets (Stichting Autoriteit Financiële Markten) ("AFM") substantial holdings (>3%) in ordinary shares of AMG have to be registered by investors. The Company refers to the applicable substantial holdings register at the AFM website for the most recent registrations by AMG investors. As the Company is not involved in any AFM registrations of substantial holdings by its investors, the positions registered and visible in the AFM register may not necessarily reflect the actual holdings of an investor in AMG.

SHAREHOLDING	2021	2020
Number of ordinary shares	32,504,164	31,367,422
Average daily turnover	278,161	359,369
Highest Closing Price	€34.94	€25.00
Lowest Closing Price	€23.98	€12.74

PREFERENCE SHARES

The General Meeting of Shareholders approved in its meetings of May 12, 2010 and July 6, 2010 that the Articles of Association of the Company would be changed in order to introduce a new class of preference shares, which may be issued and used as a response device in order to safeguard the interests of the Company and its stakeholders in all those situations where the Company's interests and those of its stakeholders are at stake, including but not limited to situations in which non-solicited public offers are made.

The preference shares carry equal voting rights as ordinary shares and are entitled, if distribution to shareholders is permitted, to a fixed dividend equal to the Euro Interbank Offered Rate for deposit loans of one year, increased with a maximum of 400 basis points as determined by the Management Board of the Company and subject to approval by the Supervisory Board. The Articles of Association of the Company were amended on July 6, 2010, to provide for an authorized share capital of 65.0 million ordinary shares and 65.0 million preference shares. Contrary to ordinary shares, preference shares may be issued against partial payment thereon, provided that at least one quarter of the nominal amount is paid-up in full upon subscription. The preference shares are not freely transferable; any transfer thereof is subject to the approval of the Supervisory Board.

STICHTING CONTINUÏTEIT AMG

In line with Dutch law and corporate practice, on July 6, 2010, Stichting Continuïteit AMG (the "Foundation") was established in Amsterdam, having as its main objective to safeguard the interests of the Company and its stakeholders.

The Board of the Foundation is independent from the Company and currently consists of Mr. H. de Munnik, Chairman, and Mr. H. Borggreve and Mr. H. Reumkens as members. The main objective of the Foundation is to represent the interests of the Company and of the enterprises maintained by the Company and the companies affiliated with the Company in a group, in such a way that the interests of the Company and of those enterprises and of all parties involved in this are safeguarded in the best possible way, and that influences which could affect the independence and/or continuity and/or identity of the Company and those enterprises in breach of those interests are deterred to the best of the Foundation's ability.

Under the terms of an option agreement dated December 22, 2010, between the Company and the Foundation, the Foundation has been granted an option pursuant to which it may purchase a number of preference shares up to a maximum of the total number of ordinary shares outstanding at any given time in the event of a threat to the continuity or strategy of AMG.

VOTING RIGHTS

There are no restrictions on voting rights of ordinary and preference shares. Shareholders who hold shares on April 7, 2022 (mandated as the 28th day prior to the day of the General Meeting of Shareholders on May 5, 2022) are entitled to attend and vote at the General Meeting of Shareholders regardless of a sale of shares after such date.

MANAGEMENT BOARD

The executive management of AMG, and its representation towards third parties, is entrusted to its Management Board, which is chaired by the Chief Executive Officer. The Articles of Association provide that the number of members of the Management Board shall be determined by the Supervisory Board. The members of the Management Board are appointed by the General Meeting of Shareholders for a maximum term of four years and may be reappointed for additional terms not to exceed four years.

The Management Board members are collectively responsible for creating a culture within the AMG Group that is focused on long-term value creation. Each Management Board member shall serve the best interests of the Company with a view to creating long-term value, while carrying out his responsibilities and will take into account the interests of all the Company's stakeholders.

The Management Board has drawn up a code of business conduct, monitors its effectiveness and has established a procedure for reporting actual or suspected irregularities within the Company or its group companies. The Management Board has further adopted values for the Company and the AMG Group ("AMG Values") and is responsible for maintenance of the AMG Values within the Company and its group companies by encouraging behavior that is in keeping with the AMG Values and by leading by example. In this regard, specific attention shall be given to the strategy and the business model, the environment in which the Company and the AMG Group operate, and the existing culture within the Company and the AMG Group.

See the Sustainable Development section for a further review of the application of the AMG Values within the AMG Group and compliance with the AMG Code of Business Conduct during 2021.

The Management Board is responsible for the internal audit function of the AMG Group and the Management Board appoints and dismisses the senior internal auditor upon approval of the Supervisory Board, along with the recommendation of the Audit & Risk Management Committee.

The Supervisory Board is authorized to make a non-binding or binding nomination regarding the appointment of members of the Management Board. A binding nomination means that the General Meeting of Shareholders may appoint the nominated persons, unless the General Meeting of Shareholders rejects the nomination by an absolute majority (more than 50% of the votes cast) representing at least one-third of the issued share capital. In case the absolute majority is reached, however, not representing one-third of issued share capital, a second meeting will be convened in which the resolution may be adopted without a quorum applying. If the Supervisory Board has not made a nomination, the appointment of the members of the Management Board is at the full discretion of the General Meeting of Shareholders. The General Meeting of Shareholders and the Supervisory Board may suspend a member of the Management Board at any time.

A resolution of the General Meeting of Shareholders to suspend or dismiss a member of the Management Board requires an absolute majority (more than 50% of the votes cast), representing at least one-third of the issued share capital, unless the Supervisory Board has proposed the suspension or dismissal to the General Meeting of Shareholders, in which case an absolute majority is required but without any quorum requirement. The Management Board follows its own rules of procedure concerning meetings, resolutions, and similar matters. These rules of procedure are published on the Company's website. The Company has rules to avoid and deal with conflicts of interest between the Company and members of the Management Board.

The Articles of Association state that in the event of a direct or indirect personal conflict of interest between the Company and any of the members of the Management Board, the relevant member of the Management Board shall not participate in the deliberations and decision-making process concerned. If all members of the Management Board are conflicted, and, as a result, no Management Board resolution can be adopted, the Supervisory Board shall adopt the resolution. In addition, it is provided in the rules of procedure of the Management Board that the respective member of the Management Board shall not take part in any decision-making that involves a subject or transaction to which he or she has a conflict of interest with the Company. Such transaction must be concluded on market practice terms and approved by the Supervisory Board. The rules of procedure of the Management Board establish further rules on the reporting of (potential) conflicts of interest.

SUPERVISORY BOARD

The Supervisory Board supervises the general course of business of the Company and the way the Management Board implements the long-term value-creation strategy of the Company. The Supervisory Board regularly discusses the strategy, the implementation of the strategy and the principal risks associated with it. The Supervisory Board assists the Management Board by providing advice. In fulfilling their duties, the Supervisory Directors shall act in the interest of the Company and its affiliated enterprises, and the Supervisory Board shall take into account the stakeholder interests that are relevant in this context. The Supervisory Board is responsible for the quality of its own performance and evaluates its own performance and that of the Management Board once per year.

Under the two-tier corporate structure pursuant to Dutch law, the Supervisory Board is a separate body that is independent of the Management Board. Members of the Supervisory Board can be neither members of the Management Board nor employees of the Company.

The Supervisory Board discusses and approves major management decisions as well as the strategy that is developed and implemented by the Management Board. The Supervisory Board has adopted its own rules of procedure concerning its own governance, committees, conflicts of interest, etc. The rules of procedure are published on the Company's website and include the charters of the committees to which the Supervisory Board has assigned certain preparatory tasks, while retaining overall responsibility.

These committees are the Remuneration Committee, the Selection & Appointment Committee, and the Audit & Risk Management Committee. The Supervisory Board is assisted by the Corporate Secretary of the Company, who is appointed by the Management Board after approval of the Supervisory Board has been obtained. The number of members of the Supervisory Board will be determined by the General Meeting of Shareholders with a minimum of three members.

A Supervisory Director is appointed for a maximum period of four years and may then be reappointed once for another maximum four-year period. The Supervisory Director may then subsequently be reappointed again for a period of two years, after which point the appointment may be extended by at most two years. In the event of a reappointment after an eight-year period, reasons shall be given in the (annual) report of the Supervisory Board. For any appointment or reappointment, the profile for Supervisory Board candidates, which was drawn up by the Supervisory Board, will be observed.

The Supervisory Board prepares a rotation schedule, which is made generally available and is posted on the Company's website.

The Supervisory Board is authorized to make a binding or non-binding nomination regarding the appointment of the members of the Supervisory Board. In the event of a binding nomination, the General Meeting of Shareholders appoints the members of the Supervisory Board from a nomination made by the Supervisory Board.

A binding nomination means that the General Meeting of Shareholders may appoint the nominated person, unless the General Meeting of Shareholders rejects the nomination by an absolute majority (more than 50% of the votes cast) representing at least one-third of the issued share capital.

In case the absolute majority is reached, however, not representing one-third of issued share capital, a second meeting of record will be convened in which the resolution may be adopted with normal majority, without a quorum applying.

If the Supervisory Board has not made a nomination, the appointment of the members of the Supervisory Board is at the full discretion of the General Meeting of Shareholders. The General Meeting of Shareholders may, at any time, suspend or remove members of the Supervisory Board. A resolution of the General Meeting of Shareholders to suspend or remove members of the Supervisory Board requires an absolute majority (more than 50% of the votes cast) representing at least one-third of the issued share capital, unless the Supervisory Board has proposed the suspension or dismissal, in which case an absolute majority is required, without any quorum requirement.

As required under the Code and Dutch law, the Company has formalized strict rules to avoid and deal with conflicts of interest between the Company and the members of the Supervisory Board, as further described in the rules of procedure of the Supervisory Board. Further information on the Supervisory Board and its activities is included in the Report of the Supervisory Board (pages 26-34).

Each of the current members of the Supervisory Board is obliged not to transfer or otherwise dispose of any shares awarded as part of their annual remuneration until the earlier of the third anniversary of the date of the award or the first anniversary of the date on which he or she ceases to be a member of the Supervisory Board. Shares in the Company held by the Supervisory Directors shall be held only as long-term investments.

GENERAL MEETING OF SHAREHOLDERS

A General Meeting of Shareholders is held at least once per year. During the Annual General Meeting, the Annual Report, including the Report of the Management Board, the annual (consolidated) financial statements, the implementation of the remuneration policy for the Management Board, and the Report of the Supervisory Board are discussed, as well as other matters pursuant to Dutch law or the Company's Articles of Association.

As a separate item on the agenda, the General Meeting of Shareholders is entrusted with the discharge of the members of the Management Board and the Supervisory Board from responsibility for the performance of their duties during the preceding financial year. The General Meeting of Shareholders is held in Amsterdam or Haarlemmermeer (Schiphol Airport) and takes place within six months following the end of the preceding financial year.

Meetings are convened by public notice on the website of the Company and by letter, or by use of electronic means of communication, to registered shareholders. Notice is given at least 42 days prior to the date of the General Meeting of Shareholders. The main powers of the General Meeting of Shareholders are set forth in the Company's Articles of Association, which are published on the Company's website, and the applicable provisions of Dutch law.

On May 6, 2021, the General Meeting of Shareholders resolved to authorize the Management Board for a period of 18 months from that date (until November 5, 2022) as the corporate body, which, subject to approval by the Supervisory Board, is authorized to issue shares, including any grant of rights to subscribe to shares up to a maximum of 10% of the Company's issued share capital as per December 31, 2020, for general corporate purposes and/or for the purpose of mergers and acquisitions, and/or for strategic alliances and/or financial support arrangements. This authorization also includes the power to restrict or exclude preemptive rights.

On May 6, 2021, the General Meeting of Shareholders resolved to authorize the Management Board for a period of 18 months from that date (until November 5, 2022) as the corporate body which, subject to approval by the Supervisory Board, is authorized to effect acquisitions of its own shares by AMG. The number of shares to be acquired is limited to 10% of the Company's issued share capital as of December 31, 2020, taking into account the shares previously acquired and disposed of at the time of any new acquisition. Shares may be acquired through the stock exchange or otherwise, at a price between par value and 110% of the average stock exchange price for a five-day period prior to the date of acquisition. The stock exchange price referred to in the previous sentence is the average closing price of the shares at Euronext Amsterdam on the five consecutive trading days immediately preceding the day of purchase by, or for, the account of the Company.

ARTICLES OF ASSOCIATION

The Company's Articles of Association can be amended by a resolution of the General Meeting of Shareholders on a proposal from the Management Board that has been approved by the Supervisory Board. A resolution of the General Meeting of Shareholders to amend the Articles of Association that has not been taken on the proposal from the Management Board and the approval of the Supervisory Board, should be adopted by a majority of at least two-thirds of the votes cast in a meeting in which at least 50% of the issued share capital is represented. The Articles of Association have last been amended on June 24, 2015, following approval by the General Meeting of Shareholders in its Extraordinary General Meeting held on June 18, 2015, and are published on the Company's website (amg-nv.com).

CORPORATE SOCIAL RESPONSIBILITY AND ESG

AMG's Values (safety, value creation, respect for people, and integrity) form the core foundation of AMG's ambition to be a leader in the fields of critical materials and engineering services and to achieve excellence in all that it does. They apply to how AMG and its group companies conduct their operations and how they deal with their employees, business partners and stakeholders.

In being a responsible corporate citizen, AMG endorses and supports the definition of corporate social responsibility as set by the World Business Council for Sustainable Development: "…the continuing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as of the local community and society at large." For AMG and its affiliated companies, this statement, which forms the basis of AMG's ESG strategy as explained on pages 9 through 11 in this Annual Report, and includes a report of the matters required pursuant to the EU Taxonomy regulation that was issued in 2020, translates into three main sustainable development objectives that the Company has formulated in connection with its financial objectives, technological capabilities and its leading position at the heart of the global metallurgical industry: 1) to provide safe working conditions for our employees and to be responsible stewards of the environment; 2) to meet or exceed regulatory standards by engaging in ethical business practices; and 3) to be a valued member of the local economy, community and society at large by contributing to solutions for addressing some of the fundamental environmental and social challenges facing society today. The Supervisory Board and the Management Board of the Company take continued guidance from these objectives when defining and implementing the Company's strategic objectives.

The Sustainable Development section in this Annual Report (pages 49-72) further elaborates on the application of AMG's Code of Business Conduct and its Speak Up and Reporting Policy.

DECREE ON ARTICLE 10 OF THE TAKEOVER DIRECTIVE

The information required by the Decree on Article 10 of the Takeover Directive (published on April 5, 2006) is included in this Corporate Governance section and the Report of the Supervisory Board, whose information is incorporated by reference in this Corporate Governance report.

Below is an overview of the significant agreements to which the Company is a party, which are affected, changed, or terminated subject to the condition of a change of control, or which contain new restrictions on voting rights attached to shares.

The Company is a party to the following arrangements that may be terminated or amended under the condition of a change of control over the Company as a result of a public takeover offer:

a. The Company has entered into a credit facility for its general financing needs and purposes, dated November 30, 2021, consisting of a $350 million Term Loan B and a $200 million Revolving Credit facility ("Credit Agreement"), which includes a provision that triggers the Company to repay the entire outstanding amount under the Credit Agreement upon a change of control, as defined therein.

b. Under terms of the $307 million municipal bond issued to refinance the construction of a new spent resid catalyst recycling facility in Zanesville, Ohio, in the senior unsecured 30-year US tax-exempt bond market in July 2019 by AMG Vanadium LLC that is a wholly owned affiliate of the Company, the holders of the bonds have the right to tender their bonds for purchase by the Company (that acts as Guarantor) upon a change in control of the Company at a purchase price of 101% of the principal amount of the bonds plus accrued interest;

c. The members of the Management Board of the Company all have an employment agreement with a wholly owned US subsidiary of the Company that will trigger termination rights for the Management Board members upon a change of control of the Company pursuant to a public offer. These employment agreements are entered into for an indefinite period of time and are explained in more detail on the Company's website.

d. The members of the Management Board participate in the AMG Option Plan that was terminated in 2021 as a result of the new 2021 Remuneration Policy for the Management Board) and, together with a group of senior staff and executives of the AMG Group, in the AMG Performance Share Unit Plan. Both Plans are administered by the Company and create rights and obligations for each participant of the respective Plans towards the Company. Both plans have provisions that permit the Supervisory Board to cancel or modify the options granted or performance share units awarded to its participants, upon a change of control of the Company.

a. The Company is party to an option agreement concluded on December 10, 2010, with Stichting Continuïteit AMG, which triggers option rights for Stichting Continuïteit AMG upon a change of control of the Company, as further detailed on page 74 of this Annual Report.

b. The Company is party to a joint venture agreement signed on October 7, 2019 with Shell Overseas Investments B.V. ("Shell") in order to jointly identify and pursue opportunities to offer customers outside North America an environmentally sustainable solution for their spent catalyst and gasification ash ("the JV Agreement"). The terms of the JV Agreement trigger termination rights for the Company and Shell in the case that the other party suffers a change of control by a Major Competitor or Sanctioned Person, as these terms are defined in the JV Agreement.

RISK MANAGEMENT AND INTERNAL CONTROLS

AMG employs a risk management approach that identifies and mitigates risk at all levels of the organization. The Company analyzes risks in formal settings such as scheduled Management Board and Supervisory Board meetings as well as everyday operational situations faced by its global employee base. AMG has implemented a comprehensive risk management program centered on the Company's Risk Assessment Package (RAP), as further explained in detail on page 18 of the chapter on Risk Management and Internal Controls.

As stated above, the Management Board is responsible for the internal audit function of the Company. The Internal Auditor at AMG reports to the Audit & Risk Management Committee and to the Management Board and operates on the basis of an Internal Audit plan approved annually by the Supervisory Board and the Management Board. The Internal Audit plan is risk-based and comprises all units and subsidiaries of the AMG Group with a focus on financial control, IT risks and compliance.

The Internal Audit function closely cooperates with the external auditors of the Company and attends all meetings of the Audit & Risk Management Committee of the Supervisory Board.

INVESTOR RELATIONS

The Company highly values good relations with its shareholders and is compliant with applicable rules and regulations on non-selective and timely disclosure and equal treatment of shareholders. Apart from communication at the Annual General Meeting of Shareholders, the Company explains its financial results during public quarterly conference calls and capital markets days. Further, the Company publishes annual, semi-annual and quarterly reports and press releases and makes information available through its public website (**amg-nv.com**).

The Company also engages in bilateral communications with investors and, in doing so, adheres to its policy on bilateral contacts, which is published on the Company's website. During these communications, the Company is in general represented by its Investor Relations Officer, occasionally accompanied by a member of the Management Board.

COMPLIANCE WITH THE DUTCH CORPORATE GOVERNANCE CODE 2016

As stated above, AMG is subject to the 2016 Code for the 2021 financial year. Reference is made to the Company's website (amg-nv.com) under the heading Corporate Governance, where the Company has published an extensive discussion on its compliance during 2021 with the principles and provisions set forth in the 2016 Code.

As a general statement, the Company fully endorses the 2016 Code's principles and believes that all best practice provisions as included in the 2016 Code are complied with, with the exception of the two matters set out hereafter.

On the following two matters involving the remuneration policy of the Company, the Company does not comply with the best practice provisions of the 2016 Code, and it believes that it has sound reasons for doing so:

a. In deviation from best practice provision 3.2.3 of the 2016 Code concerning severance payments, two members of the Management Board are entitled to severance pay that equals two times their base salary plus one time target annual bonus amount, and one member of the Management is entitled to severance pay that equals two times his base salary.

b. In deviation from best practice provision 3.3.2 of the 2016 Code concerning remuneration of the Supervisory Board members, the Company pays part of the fixed remuneration for its Supervisory Board members in the form of ordinary shares.

The reasons for deviating from these two best practice provisions of the 2016 Code are also explained on the Company's website as referred to above.

CONFLICTS OF INTEREST

No conflicts of interest that were of material significance to the Company and/or members of the Management Board and Supervisory Board were reported in the period starting January 1, 2021, up to and including March 11, 2022.

During the period starting January 1, 2021 up to and including March 11, 2022, the Company did not enter into any material transaction with a shareholder holding an interest of 10% or more in the Company's share capital.

Accordingly, the Company has complied with best practice provisions 2.7.3, 2.7.4, and 2.7.5 of the 2016 Code.

CORPORATE GOVERNANCE STATEMENT

The Decree of December 23, 2004, adopting further rules regarding the contents of the annual report, most recently amended and extended as of January 1, 2018 (the "Decree"), requires a statement to be published annually by the Company on its compliance with Corporate Governance regulations in the Netherlands.

The Company hereby submits that it has fully complied with this requirement by way of publication of this Annual Report and the specific references therein, notably the Report of the Management Board, the Report of the Supervisory Board, the Remuneration Report for 2021, and the chapters on Risk Management and Internal Controls, Sustainable Development and Corporate Governance, all of which are deemed to be incorporated by reference into the Company's statement on corporate governance as required by the Decree.

FINANCIALS

FINANCIAL REVIEW

Amounts in tables in thousands of US dollars

For the year ended December 31	2021	2020
Revenue and expenses		
AMG Clean Energy Materials revenue	381,475	245,664
AMG Critical Minerals revenue	308,523	213,318
AMG Critical Materials Technologies revenue	514,668	478,134
Total revenue	1,204,666	937,116
Cost of sales	(996,423)	(824,463)
Gross profit	208,243	112,653
Selling, general and administrative expenses	(139,576)	(117,780)
Environmental expense	(11,941)	(4,342)
Other income, net	415	234
Operating profit (loss)	57,141	(9,235)

COVID-19 IMPACT

We continue to apply all safety measures at our disposal with the highest degree of attention in order to ensure our employees are working in the lowest risk environment possible. AMG has not experienced a facility closure or operational interruption.

AMG Clean Energy Materials and AMG Critical Minerals segments' financial results were not significantly impacted by the pandemic in 2021. The impact of the coronavirus was most significantly felt on AMG Critical Materials Technologies and the market for our aerospace-related businesses. AMG Engineering experienced higher volumes of smaller orders due to diversifying outside of the aerospace market, which reduced the period ending order backlog but does not indicate lower profitability levels. The aerospace market continues to improve slowly, and we see this in our customers forecasting substantial increases in requirements by mid-2022.

REVENUE

Full year 2021 revenue increased 29% to $1,204.7 million, from $937.1 million in 2020. AMG Clean Energy Materials 2021 revenue increased by $135.8 million, or 55%, from $245.7 million in 2020, to $381.5 million. The increase in Clean Energy Materials' revenue is driven mainly by ongoing price increases and strong volumes. AMG Critical Minerals' revenue increased by $95.2 million, or 45%, to $308.5 million from $213.3 million in 2020, driven by higher sales volumes of antimony and improved sales prices across all three businesses. AMG Critical Materials Technologies' 2021 revenue increased by $36.5 million to $514.7 million from $478.1 million, or 8% compared to the same period in 2020. This increase was due to higher sales volumes of titanium alloys and higher prices of titanium alloys and chrome metal as the aerospace market continued its recovery from the pandemic impacts throughout the year. On a full year basis, the Company signed $227.5 million in new orders, representing a balanced 1.00x book to bill ratio.

GROSS PROFIT

AMG's gross profit improved by $95.6 million to $208.2 million in the year ended December 31, 2021, an 85% increase. As a percentage of revenue, gross margin increased from 12% to 17%.

AMG Clean Energy Materials' gross margin was 20% for the year ending December 31, 2021, up from 5% in 2020. The increase in gross profit was primarily driven by higher prices in vanadium, tantalum, and lithium concentrate. AMG Critical Minerals' gross profit increased by $13.1 million, or 37%, to $48.7 million, driven by improved sales prices across all three businesses. The 2021 gross margin for AMG Critical Materials Technologies was 16%, up from 14% in 2020 due to higher sales prices of titanium alloys and chrome metal as the aerospace market continued its recovery from the pandemic impacts throughout the year.

SELLING, GENERAL AND ADMINISTRATIVE EXPENSES

Selling, general and administrative (SG&A) costs were $139.6 million in the year ended December 31, 2021, as compared to $117.8 million in the year ended December 31, 2020.

Personnel expenses increased to $89.9 million in the year ended December 31, 2021, from $67.4 million in the year ended December 31, 2020. The most significant driver of this increase was salary and bonus costs which increased to $61.5 million in 2021 from $49.9 million in 2020 as a result of variable compensation expense. Additionally, share-based compensation increased $8.5 million in the current year due to higher than anticipated financial results resulting in the unexpected vesting of the 2019 share-based awards. The Company incurs professional fees from global service providers for services including audit, tax planning and compliance and legal consultation. Professional fees were $1.3 million lower than the prior year at $18.7 million due to lower legal fees. Research and development expense decreased to $4.1 million in the year ended December 31, 2021, as compared to $5.0 million in the year ended December 31, 2020. Other SG&A expenses, such as travel and entertainment, insurance, occupancy, communication and bank fees were $26.9 million in the year ended December 31, 2021, versus $25.4 million in the year ended December 31, 2020.

NET PROFIT (LOSS) TO EBITDA RECONCILIATION

For the year ended December 31	2021	2020
Profit (loss) for the year	13,779	(42,460)
Income tax expense	8,707	11,184
Net finance cost *	33,602	23,524
Equity-settled share-based payment transactions **	10,206	3,792
Restructuring expense	522	5,700
Inventory cost adjustment	1,164	6,219
Asset impairment (reversal) expense	(711)	664
Environmental provision	11,941	4,342
Strategic project expense	12,157	7,085
Non-recurring legal expense	44	1,353
Share of loss of associates	1,053	947
Others	527	756
EBIT	92,991	23,106
Depreciation and amortization	43,685	43,661
EBITDA	136,676	66,767

*Excluded foreign exchange gain in 2020.

**Amount includes variable compensation expense which was settled in shares in 2021.

Equity-settled share-based compensation expense increased in the current year due to higher than anticipated financial performance resulting in the unexpected vesting of the 2019 share-based awards.

The current year restructuring expense was largely driven by restructuring expenses in our production facilities and severance payments on two of our European operations and one facility in the United States resulting in a headcount reduction of 57.

AMG had exceptional non-cash expense during 2021 and 2020 as a result of inventory cost adjustments, mainly in our Brazilian operations.

The 2020 asset impairment was associated with the write-off of property, plant and equipment mainly driven by one of our German subsidiaries and the 2021 reversal was due to the sale of these assets for more than anticipated in the prior period.

Exceptional legal expense in 2021 and 2020 was primarily related to litigation for breach of contract with a former customer.

The Company recorded an environmental expense of $11,941 (2020: $4,342) which is largely driven by the removal of low-level radioactive materials, primarily including slag, from the former storage yard of the Newfield site.

The Company is in the ramp-up phase for several strategic expansion projects, including AMG Vanadium's expansion project, the joint venture with Shell, Hybrid Lithium Vanadium Redox Flow Battery System, and the lithium expansion in Germany, which incurred project expenses during the year but are not yet operational. AMG is adjusting EBITDA for these exceptional charges.

OPERATING PROFIT (LOSS)

AMG's operating profit of $57.1 million for the year ended December 31, 2021, was an increase of $66.4 million from the operating loss of $9.2 million reported for the year ended December 31, 2020. The increase in operating profit was driven by the improved sales prices across the segments and the gradual aerospace recovery during the year.

NET FINANCE COST

The table below sets forth AMG's net finance costs for the years ended December 31, 2021 and 2020. Net finance cost increased in 2021 due to unfavorable foreign currency exchange rate movements in the current period as well as the write-off of debt issuance costs from the prior credit facility due to the refinancing in 2021.

For the year ended December 31	2021	2020
Finance income	1,938	4,757
Finance cost	(35,540)	(25,851)
Net finance cost	(33,602)	(21,094)

INCOME TAXES

The Company recorded an income tax expense of $8.7 million for the year ended December 31, 2021, compared to $11.2 million for the year ended December 31, 2020. Income taxes in the current year are driven by improved financial performance offset by movements in the Brazilian real versus the US dollar.

The effects of the Brazilian real caused a $3.5 million non-cash deferred tax benefit in 2021. Movements in the Brazilian real exchange rate impact the valuation of the Company's net deferred tax positions related to our operations in Brazil.

The effective tax rate for 2021 was 39% based on a profit before income tax, as compared to the 36% effective tax rate for 2020 based on a loss before income tax.

NET PROFIT (LOSS)

The Company recorded a net profit attributable to shareholders of $13.8 million in the year ended December 31, 2021, as compared to net loss attributable to shareholders of $41.7 million in the year ended December 31, 2020. This variance was driven by the higher operating profit in the current period offset partially by higher selling, general and administrative costs and increased finance costs.

EQUITY ATTRIBUTABLE TO SHAREHOLDERS

The Company's equity attributable to shareholders increased 132% during the year from $115.5 million as of December 31, 2020 to $268.4 million as of December 31, 2021. This increase was mainly driven by issuance of shares during the year.

WORKING CAPITAL

The Company's working capital decreased during the year driven by increased accounts payable offset partially by higher inventory and accounts receivable.

LIQUIDITY AND CAPITAL RESOURCES

SOURCES OF LIQUIDITY

The Company's sources of liquidity include cash and cash equivalents, cash from operations and amounts available under credit facilities. At December 31, 2021, the Company had $337.9 million in cash and cash equivalents and $170.0 million available on its revolving credit facility. Changes in liquidity were primarily due to the issuance of shares during the year and cash from operations during the year offset partially by capital investments and the dividend paid to shareholders.

The table below summarizes the Company's net debt for the years ended December 31, 2021 and 2020.

For the year ended December 31	2021	2020
Senior secured debt	371,897	364,640
Cash & cash equivalents	337,877	207,366
Senior secured net debt	34,020	157,274
Other debt	24,398	19,876
Net debt excluding municipal bond	58,418	177,150
Municipal bond debt	319,476	319,699
Restricted cash	93,434	208,919
Net debt	284,460	287,930

The Company was subject to one maintenance debt covenant in its current revolving credit facility. Violating this covenant would limit the Company's access to liquidity. The Company was fully in compliance with this debt covenant as of December 31, 2021. See note 21 of the financial statements for additional information.

The table below summarizes the Company's net cash provided by or used in its operating activities, investing activities and financing activities for the years ended December 31, 2021 and 2020.

For the year ended December 31	2021	2020
Net cash from operating activities	90,788	19,619
Net cash used in investing activities	(62,953)	(37,916)
Net cash from (used in) financing activities	111,066	(9,174)

Cash from operating activities was $90.8 million for the year ended December 31, 2021, compared to cash from operating activities of $19.6 million in 2020. The increase is primarily attributable to higher profitability in 2021 relative to the prior year.

Cash used in investing activities was $63.0 million for the year ended December 31, 2021. This balance is mainly driven by capital expenditures offset by changes in restricted cash mainly associated with the Company's municipal bond. The Company had $178.0 million of capital expenditures mainly related to the vanadium expansion project.

Cash used in financing activities was $111.1 million for the year ended December 31, 2021, mainly driven by the issuance of shares during the year.

OUTLOOK

Previously, AMG increased its EBITDA guidance for full year 2022 to $225 million or higher based on significantly improved market conditions in lithium and we reaffirm this guidance.

AMG anticipates the Company will increase overall staffing from 3,300 at the end of 2021 by 5 to 10% due to the hiring associated with the ramp-up of the vanadium expansion in Ohio and the lithium expansion in Germany.

Capital expenditures for 2022 are expected to be between $175 million and $200 million mainly driven by the finalization of construction for the vanadium expansion in Ohio and expenditures related to the construction of the lithium hydroxide plant in Germany.

With regard to financing in 2022, AMG has recently finalized its debt refinancing and although we look to consistently optimize our financial structure, our current liquidity can fully fund all of the approved capital expansion projects mentioned above.

In addition, AMG is pleased to announce a two-pronged commitment to reduce our CO_2 emissions and increase our enabled CO_2 savings through 2030:

i. AMG commits to reduce its direct CO_2 emissions by 20% by 2030 from a baseline of 2019 (i.e., pre COVID) adjusted for the startup of our Zanesville facility. This is a total reduction of 125,000 tons of CO_2.

ii. AMG commits to increase its enabled CO_2 reduction by 10% per annum from 2021 levels of 79.0 million through 2030.

CONSOLIDATED INCOME STATEMENT

For the year ended December 31	Note	2021	2020
In thousands of US dollars			
Continuing operations			
Revenue	5	1,204,666	937,116
Cost of sales	7	(996,423)	(824,463)
Gross profit		208,243	112,653
Selling, general and administrative expenses	7	(139,576)	(117,780)
Environmental expense	6, 25	(11,941)	(4,342)
Other expenses	6	—	(11)
Other income	6	415	245
Net other operating expense	6	(11,526)	(4,108)
Operating profit (loss)		57,141	(9,235)
Finance income	8	1,938	4,757
Finance cost	8, 21	(35,540)	(25,851)
Net finance cost	8	(33,602)	(21,094)
Share of loss of associates and joint ventures	12	(1,053)	(947)
Profit (loss) before income tax		22,486	(31,276)
Income tax expense	9	(8,707)	(11,184)
Profit (loss) for the year		13,779	(42,460)
Profit (loss) attributable to:			
Shareholders of the Company		13,771	(41,692)
Non-controlling interests		8	(768)
Profit (loss) for the year		13,779	(42,460)
Earnings (loss) per share			
Basic earnings (loss) per share	19	0.44	(1.47)
Diluted earnings (loss) per share	19	0.44	(1.47)

The notes are an integral part of these consolidated financial statements.

CONSOLIDATED STATEMENT OF OTHER COMPREHENSIVE INCOME

For the year ended December 31	Note	2021	2020
In thousands of US dollars			
Profit (loss) for the year		13,779	(42,460)
Other comprehensive income			
Items of other comprehensive income (loss) that may be reclassified to profit or loss in subsequent periods:			
Exchange differences on translation of foreign operations	18	(2,220)	2,996
Cash flow hedges, effective portion of changes in fair value	18	546	(10,550)
Cash flow hedges reclassified to profit or loss	18	1,034	12,633
Cost of hedging reserve, changes in fair value	18	(239)	(1,331)
Income tax (expense) benefit on cash flow hedges	9	(2,713)	2,273
Net (decrease) increase on cash flow hedges		(1,372)	3,025
Net other comprehensive (loss) income that may be reclassified to profit or loss in subsequent periods		(3,592)	6,021
Items of other comprehensive income (loss) not to be reclassified to profit or loss in subsequent periods:			
Exchange differences on translation of foreign operations - non-controlling interest		(1,361)	1,780
Actuarial gains (losses) on defined benefit plans	23	19,623	(8,004)
Income tax (expense) benefit on actuarial gains (losses)	9	(4,297)	3,192
Net gain (loss) on defined benefit plans		15,326	(4,812)
Change in fair value of equity investments classified as fair value through other comprehensive income	12, 18	2,609	4,161
Net other comprehensive income not being reclassified to profit or loss in subsequent periods		16,574	1,129
Other comprehensive income for the year, net of tax		12,982	7,150
Total comprehensive income (loss) for the year, net of tax		26,761	(35,310)
Total comprehensive income (loss) attributable to:			
Shareholders of the Company		28,321	(36,012)
Non-controlling interest		(1,560)	702
Total comprehensive income (loss) for the year, net of tax		26,761	(35,310)

The notes are an integral part of these consolidated financial statements.

CONSOLIDATED STATEMENT OF FINANCIAL POSITION

As at December 31	Note	2021	2020
In thousands of US dollars			
Assets			
Property, plant and equipment	10	693,624	551,926
Goodwill and other intangible assets	11	44,684	43,207
Derivative financial instruments	29	95	1,894
Other investments	12, 29	29,830	27,527
Deferred tax assets	9	52,937	58,081
Restricted cash	16, 29	85,023	208,919
Other assets	15	8,471	8,496
Total non-current assets		914,664	900,050
Inventories	13	218,320	152,306
Derivative financial instruments	29	4,056	5,961
Trade and other receivables	5, 14	145,435	122,369
Other assets	15	65,066	44,821
Current tax assets	9	5,888	5,108
Restricted cash	16, 29	8,411	—
Cash and cash equivalents	17	337,877	207,366
Assets held for sale		—	1,005
Total current assets		785,053	538,936
Total assets		1,699,717	1,438,986
Equity			
Issued capital	18	853	831
Share premium	18	553,715	489,546
Treasury shares	18	(16,596)	(80,165)
Other reserves	18	(96,421)	(110,593)
Retained earnings (deficit)		(173,117)	(184,139)
Equity attributable to shareholders of the Company		268,434	115,480
Non-controlling interests	20	25,718	25,790
Total equity		294,152	141,270
Liabilities			
Loans and borrowings	21	675,384	673,262
Lease liabilities	31	45,692	47,092
Employee benefits	23	162,628	197,158
Provisions	25	14,298	15,322
Deferred revenue	5	22,341	4,361
Other liabilities	26	11,098	8,237
Derivative financial instruments	29	2,064	4,389
Deferred tax liabilities	9	5,617	5,398
Total non-current liabilities		939,122	955,219
Loans and borrowings	21	27,341	23,392
Lease liabilities	31	4,857	4,789
Short-term bank debt	22	13,046	7,561
Deferred revenue	5	18,478	1,623
Other liabilities	26	80,672	66,182
Trade and other payables	27	252,765	164,999
Derivative financial instruments	29	6,010	10,264
Advance payments from customers	5	35,091	29,885
Current tax liability	9	10,586	7,480
Provisions	25	17,597	26,322
Total current liabilities		466,443	342,497
Total liabilities		1,405,565	1,297,716
Total equity and liabilities		1,699,717	1,438,986

The notes are an integral part of these consolidated financial statements.

CONSOLIDATED STATEMENT OF CHANGES IN EQUITY

	Equity attributable to shareholders of the Company							
In thousands of US dollars	Issued capital	Share premium	Treasury shares	Other reserves	Retained deficit	Total	Non-controlling interests	Total equity
	(note 18)		(note 18)	(note 18)			(note 20)	
Balance at January 1, 2020	831	489,546	(83,880)	(116,358)	(129,626)	160,513	23,893	184,406
Foreign currency translation	—	—	—	2,996	—	2,996	1,780	4,776
Change in fair value of equity investments classified as fair value through other comprehensive income	—	—	—	4,161	—	4,161	—	4,161
Gain on cash flow hedges, net of tax	—	—	—	3,024	—	3,024	1	3,025
Actuarial loss, net of tax	—	—	—	(4,501)	—	(4,501)	(311)	(4,812)
Net gain recognized through other comprehensive income	—	—	—	5,680	—	5,680	1,470	7,150
Loss for the year	—	—	—	—	(41,692)	(41,692)	(768)	(42,460)
Total comprehensive gain (loss) for the year	—	—	—	5,680	(41,692)	(36,012)	702	(35,310)
Purchase of common shares	—	—	(684)	—	—	(684)	—	(684)
Equity-settled share-based payments	—	—	—	—	1,429	1,429	—	1,429
Settlement of share-based payment awards	—	—	4,399	—	(4,052)	347	—	347
Transfer to retained deficit	—	—	—	85	(85)	—	—	—
Change in non-controlling interests	—	—	—	—	(600)	(600)	1,195	595
Dividend	—	—	—	—	(9,513)	(9,513)	—	(9,513)
Balance at December 31, 2020	831	489,546	(80,165)	(110,593)	(184,139)	115,480	25,790	141,270
Balance at January 1, 2021	831	489,546	(80,165)	(110,593)	(184,139)	115,480	25,790	141,270
Foreign currency translation	—	—	—	(2,220)	—	(2,220)	(1,361)	(3,581)
Change in fair value of equity investments classified as fair value through other comprehensive income	—	—	—	2,609	—	2,609	—	2,609
Loss on cash flow hedges, net of tax	—	—	—	(1,361)	—	(1,361)	(11)	(1,372)
Actuarial gain (loss), net of tax	—	—	—	15,522	—	15,522	(196)	15,326
Net gain (loss) recognized through other comprehensive income	—	—	—	14,550	—	14,550	(1,568)	12,982
Profit for the year	—	—	—	—	13,771	13,771	8	13,779
Total comprehensive gain (loss) for the year	—	—	—	14,550	13,771	28,321	(1,560)	26,761
Issuance of common shares	74	118,648	—	—	—	118,722	—	118,722
Purchase of common shares	—	—	(1,210)	—	—	(1,210)	—	(1,210)
Re-issuance of treasury shares	—	—	1,010	—	135	1,145	—	1,145
Cancellation of treasury shares	(52)	(54,479)	54,531	—	—	—	—	—
Equity-settled share-based payments	—	—	—	—	10,028	10,028	—	10,028
Settlement of share-based payment awards	—	—	9,238	—	(4,934)	4,304	—	4,304
Transfer to retained deficit	—	—	—	(378)	378	—	—	—
Change in non-controlling interests	—	—	—	—	(758)	(758)	1,488	730
Dividend	—	—	—	—	(7,598)	(7,598)	—	(7,598)
Balance at December 31, 2021	853	553,715	(16,596)	(96,421)	(173,117)	268,434	25,718	294,152

The notes are an integral part of these consolidated financial statements.

CONSOLIDATED STATEMENT OF CASH FLOWS

For the year ended December 31	Note	2021	2020
In thousands of US dollars			
Cash from operating activities			
Profit (loss) for the year		13,779	(42,460)
Adjustments to reconcile net profit (loss) to net cash flows:			
Non-cash:			
Income tax expense	9	8,707	11,184
Depreciation and amortization	10, 11	43,685	43,661
Asset impairment (reversal) expense	10, 15	(711)	664
Net finance cost	8	33,602	21,094
Share of loss of associates and joint ventures	12	1,053	947
(Gain) loss on sale or disposal of property, plant and equipment	10	(65)	358
Equity-settled share-based payment transactions	24	10,028	1,429
Movement in provisions, pensions and government grants	23, 25	(10,184)	(121)
Working capital and deferred revenue adjustments			
Change in inventories		(82,388)	59,961
Change in trade and other receivables		(23,644)	405
Change in prepayments		(9,150)	(11,776)
Change in trade payables and other liabilities		102,889	(38,653)
Change in deferred revenue		34,835	5,019
Other		205	(4,127)
Cash generated from operating activities		122,641	47,585
Finance cost paid	8	(22,685)	(20,653)
Finance income received	8	735	1,243
Income tax paid	9	(9,903)	(8,556)
Net cash from operating activities		90,788	19,619
Cash used in investing activities			
Proceeds from sale of property, plant and equipment	10	1,029	71
Acquisition of property, plant and equipment and intangibles	10, 11	(162,240)	(123,695)
Acquisition of subsidiaries	30	(458)	—
Investments in associates and joint ventures	12	(1,000)	(1,000)
Change in restricted cash	16	115,485	100,662
Interest received on restricted cash	10	39	1,120
Capitalized borrowing cost	10	(15,838)	(15,150)
Other		30	76
Net cash used in investing activities		(62,953)	(37,916)
Cash from (used in) financing activities			
Proceeds from issuance of debt	21, 22	352,152	9,190
Payment of transaction costs related to the issuance of debt	21	(7,630)	—
Repayment of borrowings	21	(342,781)	(4,072)
Proceeds from issuance of common shares	18	123,627	—
Net repurchase of common shares	18	(2,058)	(638)
Dividends paid	18	(7,598)	(9,513)
Payment of lease liabilities	31	(5,313)	(4,738)
Contributions by non-controlling interests		667	597
Net cash from (used in) financing activities		111,066	(9,174)
Net increase (decrease) in cash and cash equivalents		138,901	(27,471)
Cash and cash equivalents at Cash and cash equivalents at January 1		207,366	226,218
Effect of exchange rate fluctuations on cash held		(8,390)	8,619
Cash and cash equivalents at Cash and cash equivalents at December 31	17	337,877	207,366

The notes are an integral part of these consolidated financial statements.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

1. REPORTING ENTITY

The consolidated financial statements of AMG Advanced Metallurgical Group N.V. (herein referred to as "the Company", "AMG NV" or "AMG") for the year ended December 31, 2021, were authorized for issuance in accordance with a resolution of the Supervisory Board on March 11, 2022.

AMG is domiciled in the Netherlands. The address of the Company's registered office is WTC Amsterdam, Toren C, Strawinskylaan 1343, 1077 XX Amsterdam. The consolidated financial statements of the Company as of and for the year ended December 31, 2021, comprise the Company and the companies that comprise its subsidiaries (together referred to as the "Group") and the Company's interest in associates and jointly controlled entities.

AMG was incorporated in the Netherlands as a public limited liability company and its outstanding shares are listed on Euronext, Amsterdam, the Netherlands.

No entities in which the Company has less than a 50% interest are consolidated in the Company's financial statements.

The following table includes all material operating entities in which AMG has an ownership interest. The Company has filed on March 10, 2022 a complete list of entities in which AMG has an ownership interest with the Amsterdam Chamber of Commerce. Additionally, this list can be found on AMG's website.

		Percentage held (directly or indirectly) by the Company	
Name	**Country of incorporation**	**December 31, 2021**	**December 31, 2020**
ALD Thermal Treatment, Inc.	United States	100	100
ALD Tratamientos Termicos S.A.	Mexico	100	100
ALD Vacuum Technologies GmbH	Germany	100	100
AMG Aluminum UK Limited	United Kingdom	100	100
AMG Brazil S.A.	Brazil	100	100
AMG Vanadium LLC	United States	100	100
GfE Gesellschaft für Elektrometallurgie GmbH	Germany	100	100
GfE Metalle und Materialien GmbH	Germany	100	100
Graphit Kropfmühl GmbH	Germany	60	60
AMG Aluminum North America, LLC	United States	100	100
AMG Superalloys UK Limited	United Kingdom	100	100
RW Silicium GmbH	Germany	100	100
Société Industrielle et Chimique de l'Aisne S.A.S.	France	100	100
VACUHEAT GmbH	Germany	100	100

Graphit Kropfmühl GmbH, GK Bergbau GmbH, RW Silicium GmbH, AMG Mining GmbH, ALD Vacuum Technologies GmbH and VACUHEAT GmbH intent to exercise the exemption of Sec. 264 (3) HGB "Handelsgesetzbuch".

As of December 31, 2021, there were 3,309 employees at the Company (2020: 3,064). There were 3 employees located in the Netherlands as of December 31, 2021 (2020: 3). All other employees are located outside the Netherlands.

2. BASIS OF PREPARATION

(A) STATEMENT OF COMPLIANCE

EU law (IAS Regulation EC 1606/2002) requires that the annual consolidated financial statements of the Company for the year ending December 31, 2021, be prepared in accordance with accounting standards adopted and endorsed by the European Union ("EU") further to the IAS Regulation (EC 1606/2002) (further referred to as "IFRS, as endorsed by the EU").

The consolidated financial statements of AMG NV and its subsidiaries have been prepared in accordance with International Financial Reporting Standards ("IFRS") as of December 31, 2021, as endorsed by the EU and article 2.362.9 of the Netherlands Civil Code.

(B) BASIS OF MEASUREMENT

The consolidated financial statements have been prepared on the historical cost basis except for the following items, which are measured on an alternative basis on each reporting date. The methods used to measure fair values are discussed further in note 3.

Derivative financial instruments	Fair value
Non-derivative financial instruments at fair value through profit or loss	Fair value
Non-derivative financial instruments, including restricted cash, at fair value through other comprehensive income	Fair value
Net defined benefit (asset) liability	Fair value of plan assets less the present value of the defined benefit obligation, limited as explained in note 3

(C) MEASUREMENT OF FAIR VALUES

A number of the Company's accounting policies and disclosures require the measurement of fair values, for both financial and non-financial assets and liabilities. The Company has an established control framework with respect to the measurement of fair values. This includes overseeing all significant fair value measurements, including Level 3 fair values.

The Company regularly reviews significant unobservable inputs and valuation adjustments. If third party information, such as broker quotes or pricing services, is used to measure fair values, then the Company assesses the evidence obtained from the third parties to support the conclusion that these valuations meet the requirements of IFRS, including the level in the fair value hierarchy in which the valuations should be classified.

Significant valuation issues are reported to the Company's audit committee.

When measuring the fair value of an asset or a liability, the Company uses observable market data as far as possible.

Fair values are categorized into different levels in a fair value hierarchy based on the inputs used in the valuation techniques as follows:

Level 1: quoted prices (unadjusted) in active markets for identical assets or liabilities;

Level 2: inputs other than quoted prices included in Level 1 that are observable for the asset or liability, either directly (i.e. as prices) or indirectly (i.e. derived from prices); and

Level 3: inputs for the asset or liability that are not based on observable market data (unobservable inputs).

If the inputs used to measure the fair value of an asset or a liability fall into different levels of the fair value hierarchy, then the fair value measurement is categorized in its entirety in the same level of the fair value hierarchy as the lowest level input that is significant to the entire measurement.

The Company recognizes transfers between levels of the fair value hierarchy at the end of the reporting period during which the change has occurred.

Further information about the assumptions made in measuring fair values is included in the following notes:

- note 12 – measurement of other investments
- note 24 – share-based payments
- note 29 – measurement of financial instruments
- note 30 – business combination

(D) USE OF ESTIMATES AND JUDGMENTS

The preparation of financial statements requires management to make judgments, estimates and assumptions that affect the application of accounting policies and the reported amounts of assets, liabilities, income and expenses. Actual results may differ from these estimates.

Estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognized in the period in which the estimate is revised and in any future periods affected.

Key uses of judgments

Information related to critical judgments made in applying accounting policies that have the most significant effects on the amounts recognized in the Company's consolidated financial statements are included in the following notes:

- notes 3 and 5 – Revenue from contracts with customers: determination of revenue recognition from furnace construction contracts
- notes 3 and 12 - other investments: whether the Company has significant influence over an equity-accounted investee
- notes 3 and 31 – Leases: determination of the lease term for some lease contracts which include renewal options

Assumptions and estimation uncertainty

Information about assumptions and estimation uncertainties that may have a significant risk of resulting in a material adjustment to the carrying amounts of assets and liabilities within the next financial year are included in the following notes:

- note 9 – Income tax: recognition of income taxes and deferred tax assets
- note 10 – Property, plant and equipment: determination of useful lives of mining-related assets
- note 11 – Goodwill and other intangible assets: measurement of the recoverable amounts of assets and cash-generating units for purposes of impairment testing
- note 12 – Other investments; the assumptions and model used to determine fair value
- note 23 – Employee benefits: measurement of plan obligations and actuarial assumptions
- note 24 – Share-based payments: the assumptions and model used to determine fair value
- note 25 – Provisions: determination of amounts recorded based on expected payments and any regulatory framework
- note 29 – Financial instruments: fair value determination based on present value of future cash flows
- note 30 – Acquisition of subsidiary: fair value of the assets acquired and liabilities assumed
- note 33 - Contingencies: recognition and measurement of contingencies and judgments about the likelihood and magnitude of potential resource outflows

3. SIGNIFICANT ACCOUNTING POLICIES

These consolidated financial statements as of December 31, 2021, present the consolidated financial position, results of operations and cash flows of the Company and its subsidiaries. The Company has consistently applied the following accounting policies to all periods presented in these consolidated financial statements.

(A) BASIS OF CONSOLIDATION

(i) Business combinations

The Company accounts for business combinations using the acquisition method once control is gained by the Company. Consideration transferred and separately identifiable net assets acquired in the acquisition are measured at fair value. Consideration transferred does not include amounts related to the settlement of pre-existing relationships, which are recognized in profit or loss. Any goodwill that arises is tested annually for impairment. In the event of a bargain purchase, any gain is recognized in the income statement immediately. Transaction costs are expensed as incurred, unless related to the issuance of debt or equity securities.

Contingent consideration is measured at fair value at the date of acquisition. If an obligation to pay contingent consideration meets the definition of a financial instrument classified as equity, then it is not remeasured, and settlement is accounted for within equity. Other contingent consideration is remeasured at fair value at each reporting date, with subsequent changes in the fair value of the contingency being recognized through profit or loss.

(ii) Subsidiaries

Subsidiaries are entities controlled by the Company. The Company controls an entity when it is exposed to, or has rights to, variable returns from its involvement with the entity and has the ability to affect those returns through its power over the entity. The financial statements of subsidiaries are included in the consolidated financial statements from the date on which control commences until the date on which control ceases.

(iii) Non-controlling interests

Non-controlling interests are measured at their proportionate share of the acquiree's identifiable net assets at the date of acquisition.

Changes in the Company's interest in a subsidiary that do not result in a loss of control are accounted for as equity transactions.

(iv) Loss of control

When the Company loses control over a subsidiary, it derecognizes the assets and liabilities of the subsidiary, and any related non-controlling interest and other components of equity. Any resulting gain or loss is recognized in profit or loss. Any interest retained in the former subsidiary is measured at fair value when control is lost.

(v) Interests in equity-accounted investees

The Company's interests in equity-accounted investees comprise interests in associates and joint ventures.

Associates are those entities in which the Company has significant influence, but not control or joint control, over the financial and operating policies. A joint venture is an arrangement in which the Company has joint control, whereby the Company has rights to the net assets of the arrangement, rather than rights to its assets and obligations for its liabilities.

Interests in associates and joint ventures are accounted for using the equity method. They are initially recognized at cost, including transaction costs. Subsequent to initial recognition, the consolidated financial statements include the Company's share of the profit or loss and OCI of equity-accounted investees in accordance with the Company's accounting policies, until the date on which significant influence or joint control ceases.

(vi) Transactions eliminated on consolidation

Intergroup balances and transactions, and any unrealized income and expenses arising from intergroup transactions, are eliminated. Unrealized gains arising from transactions with equity-accounted investees are eliminated against the investment to the extent of the Company's interest in the investee. Unrealized losses are eliminated similarly, to the extent there is no evidence of impairment.

(B) FOREIGN CURRENCY

(i) Functional and presentation currency

These consolidated financial statements are presented in US dollars ($), which is the Company's functional and presentation currency.

All financial information is presented in US dollars and has been rounded to the nearest thousand, unless otherwise stated.

The local currency is the functional currency for the Company's significant operations outside the United States (US), except operations in the UK and Brazil, where the US dollar is used as the functional currency. The determination of functional currency is based on appropriate economic and management indicators.

(ii) Foreign currency transactions

Transactions in foreign currencies are translated to the respective functional currencies of the Company's entities at exchange rates at the dates of the transactions. Monetary assets and liabilities denominated in foreign currencies are retranslated at the functional currency rate of exchange at the reporting date. Non-monetary assets and liabilities that are measured at fair value in a foreign currency are translated into the functional currency at the exchange rate when the fair value was determined. Non-monetary items that are measured based on historical cost in a foreign currency are translated at the exchange rate at the date of the transaction. Foreign currency differences arising from the translation of monetary assets and liabilities denominated in a foreign currency are recognized in profit or loss.

Foreign currency differences arising from the translation of the following items are recognized in other comprehensive income:

- Equity investments classified as fair value through other comprehensive income (except on impairment, in which case foreign currency differences that have been recognized in other comprehensive income are reclassified to profit or loss);
- A financial liability designated as a hedge of the net investment in a foreign operation to the extent that the hedge is effective; and
- Qualifying cash flow hedges to the extent that the hedges are effective.

(iii) Foreign operations

The assets and liabilities of foreign operations, including goodwill and fair value adjustments arising on acquisition, are translated to US dollars at exchange rates at the reporting date. The income and expenses of foreign operations are translated to US dollars at the average exchange rates calculated at the reporting date.

Foreign currency differences arising from the translation of foreign operations are recognized in other comprehensive income and accumulated in the foreign currency translation reserve, except to the extent that the translation difference is allocated to non-controlling interest. When a foreign operation is disposed of, in its entirety or partially such that control, significant influence, or joint control is lost, the cumulative amount in the translation reserve related to that foreign operation is reclassified to profit or loss as part of the gain or loss on disposal. If the Company disposes of part of its interest in a subsidiary but retains control, then the relevant proportion of the cumulative amount is reattributed to non- controlling interest. When the Company disposes of only part of an associate or joint venture while retaining significant influence or joint control, the relevant proportion of the cumulative amount is reclassified to profit or loss.

(C) REVENUE FROM CONTRACTS WITH CUSTOMERS

(i) Goods sold

The Company's contracts for goods sold typically contain a single performance obligation. The timing of when a customer obtains control over goods sold varies depending on the individual terms of the sales agreement. In satisfying the Company's performance obligation to its customers, transfer of control typically occurs when title and risk of loss pass to the customer. In the case of export sales, control of the goods sold may pass when the product reaches a foreign port. Invoices are generally issued according to contractual terms and are usually payable within 30-90 days. The transaction price of goods sold is typically based on contractual terms or market pricing and is not subject to variable consideration.

(ii) Furnace construction contracts

Furnace construction contract revenue results from the design, engineering and construction of advanced vacuum furnace systems in the AMG Technologies segment. These furnaces are constructed based on specifically negotiated contracts with customers. Contract revenues includes the initial amount agreed in the contract plus any variations in contract work, claims and incentive payments, to the extent that it is probable that they will result in revenue and can be measured reliably. Invoices are generally issued according to contractual terms and are usually payable within 30-90 days.

The performance obligations in the Company's furnace construction contracts are mainly recognized over time. The Company's furnace construction contracts require the Company to develop highly specialized assets that meet the customer's specific needs. The assets do not have an alternative use to the Company, and the Company has a legal right to payment for its services rendered to date for all furnace construction arrangements. The Company recognizes contract revenue over time in proportion to the stage of completion of the contract. The stage of completion is assessed with reference to costs incurred to date and estimated total cost. Otherwise, contract revenue is recognized only to the extent of contract costs incurred that are likely to be recoverable.

Contract expenses are recognized as incurred unless they create an asset related to future contract activity. An expected loss on a contract is recognized immediately in profit or loss.

Amounts expected to be collected from customers for contract work performed is measured at costs incurred plus profits recognized to date, less progress billings and recognized losses.

In the statement of financial position, construction contracts in progress for which costs incurred plus recognized profits exceed progress billings and recognized losses are presented as trade and other receivables. Contracts for which progress billings and recognized losses exceed costs incurred plus recognized profits are presented as deferred revenues and included with advanced payments.

(iii) Heat treatment services

The Company offers heat treatment services on a tolling basis using its internally developed furnace and process technology that is owned and operated by the AMG Technologies segment. The Company's performance obligations under these tolling contracts require the Company to apply this technology to the customer's materials at a contractually agreed upon cost per unit. The Company recognizes revenues for heat treatment services completed to date that the Company has a contractual right to invoice its customers for the related services.

(iv) Processing services

Within the AMG Clean Energy Materials segment, the Company performs services to convert spent refinery catalyst and other vanadium-bearing residues into ferrovanadium and a ferronickel-molybdenum alloy. These metals are reclaimed from spent catalyst using the Company's proprietary roasting and pyrometallurgical processes. The reclaimed metals are then sold to the carbon and stainless-steel industries. The Company's performance obligations under these contracts require the Company to process the materials and reclaim the metals at a contractually agreed upon cost per unit. The Company recognizes revenues at a point in time for processing services completed to date to the extent that the Company has a contractual right to invoice its customers for the related services. Processing fees can be subject to adjustments based on the market prices of the reclaimed metals for a period up to to three months after roasting. To account for this potential volatility in the processing fee revenue, the Company defers a portion of its processing fee revenue until the uncertainty related to the metal prices is resolved in accordance with the variable consideration policy noted below. The deferral is determined taking into account the historical volatility of the metal prices relative to the market price at the reporting date.

(v) Commissions

If the Company acts in the capacity of an agent rather than as the principal in a transaction, then the revenue recognized is the net amount of commission made by the Company.

(vi) Warranty obligations

The Company typically provides warranties for general repairs of defects that existed at the time of sale, as required by law. These assurance-type warranties are not considered to be separate performance obligations and are accounted for under IAS 37 Provisions, Contingent Liabilities and Contingent Assets as described in our accounting policy for provisions.

(vii) Variable consideration

If the consideration in a contract includes a variable amount, the Company estimates the amount of consideration to which it will be entitled in exchange for providing services or for transferring the goods to the customer. The variable consideration is estimated at contract inception and constrained until it is highly probable that a significant revenue reversal in the amount of cumulative revenue recognized will not occur when the associated uncertainty with the variable consideration is subsequently resolved.

(D) FINANCE INCOME AND COST

Finance income comprises interest income on funds invested, changes in the discount on provisions, foreign currency gains and gains on derivatives and hedging instruments. Interest income is recognized as it is earned, using the effective interest method.

Finance cost comprises interest expense on borrowings and interest rate caps and swaps, amendment fees on borrowings, amortization of loan issuance costs, interest expense on lease liabilities, commitment fees on borrowings, changes in the discount on provisions, interest on tax liabilities, foreign currency losses, losses on derivatives and hedging instruments, fees for letters of credit/guarantees, interest for accounts receivable factoring and any loss recorded on debt extinguishment. All transaction costs are recognized in profit or loss using the effective interest method when the costs are related to actual borrowings on the facility or using the straight-line method when they are related to the revolving credit facility.

(E) INCOME TAX EXPENSE

Income tax expense comprises current and deferred tax.

It is recognized in profit or loss except to the extent that it relates to a business combination, or items recognized directly in equity or in other comprehensive income.

Interest and penalties related to income taxes, including uncertain tax treatments, are accounted for under IAS 37 Provisions, Contingent Liabilities and Contingent Assets.

(i) Current tax

Current tax comprises the expected tax payable or receivable on the taxable income or loss for the year and any adjustment to the tax payable or receivable in respect of previous years. The amount of current tax payable or receivable is the best estimate of the tax amount expected to be paid or received that reflects uncertainty related to income taxes, if any. It is measured using tax rates enacted or substantively enacted at the reporting date. Current tax also includes any tax arising from dividends.

Current tax assets and liabilities are offset only if allowable in the related tax jurisdiction.

(ii) Deferred tax

Deferred tax is recognized in respect of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for taxation purposes. Deferred tax is not recognized for:

- temporary differences on the initial recognition of assets or liabilities in a transaction that is not a business combination and that affects neither accounting nor taxable profit or loss;
- temporary differences related to investments in subsidiaries, associates and joint ventures to the extent that the Company is able to control the timing of the reversal of the temporary differences and it is probable that they will not reverse in the foreseeable future; and
- taxable temporary differences arising on the initial recognition of goodwill.

Deferred tax assets are recognized for unused tax losses, unused tax credits and deductible temporary differences to the extent that it is probable that future taxable profits will be available against which they can be used. Future taxable profits are determined based on business plans for individual subsidiaries in the Company and the reversal of temporary differences. If the amount of taxable temporary differences is insufficient to recognize a deferred tax asset in full, then future taxable profits, adjusted for reversals of existing temporary differences, are considered, based on the business plans for individual subsidiaries in the Company. Deferred tax assets are reviewed at each reporting date and are reduced to the extent that it is no longer probable that the related tax benefit will be realized; such reductions are reversed when the probability of future taxable profits improves.

Unrecognized deferred tax assets are reassessed at each reporting date and recognized to the extent that it has become probable that future taxable profits will be available against which they can be used.

Deferred tax is measured at the tax rates that are expected to be applied to temporary differences when they reverse, using tax rates enacted or substantively enacted at the reporting date.

The measurement of deferred tax reflects the tax consequences that would follow from the manner in which the Company expects, at the reporting date, to recover or settle the carrying amount of its assets and liabilities.

Deferred tax assets and liabilities are offset generally when they arise in the same tax jurisdiction.

(iii) Sales and other taxes

Revenues, expenses and assets are recognized net of the amount of sales tax except:

- where the sales tax incurred on a purchase of assets or services is not recoverable from the taxation authority, in which case the sales tax is recognized as part of the cost of acquisition of the asset or as part of the expense item as applicable; and
- receivables and payables that are stated with the amount of sales tax included.

The net amount of sales tax recoverable from, or payable to, the taxation authority is included as part of receivables or payables in the statement of financial position.

Additional income taxes that arise from the distribution of dividends are recognized at the same time as the liability to pay the related dividend is recognized.

(F) FINANCIAL INSTRUMENTS

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.

(i) Financial assets

Initial recognition and measurement

Financial assets are classified, at initial recognition, as subsequently measured at amortized cost, fair value through other comprehensive income (OCI), or fair value through profit or loss.

The classification of financial assets at initial recognition depends on the financial asset's contractual cash flow characteristics and the Company's business model for managing them. The Company initially measures a financial asset at its fair value plus, in the case of a financial asset not at fair value through profit or loss, transaction costs. Trade receivables that do not contain a significant financing component or for which the Company has applied the practical expedient are measured at the transaction price as disclosed in section (c) Revenue from contracts with customers.

In order for a financial asset to be classified and measured at amortized cost or fair value through OCI, it needs to give rise to cash flows that are 'solely payments of principal and interest (SPPI)' on the principal amount outstanding. This assessment is referred to as the SPPI test and is performed at an instrument level. Financial assets with cash flows that are not SPPI are classified and measured at fair value through profit or loss, irrespective of the business model.

The Company's business model for managing financial assets refers to how it manages its financial assets in order to generate cash flows. The business model determines whether cash flows will result from collecting contractual cash flows, selling the financial assets, or both. Financial assets classified and measured at amortized cost are held within a business model with the objective to hold financial assets in order to collect contractual cash flows while financial assets classified and measured at fair value through OCI are held within a business model with the objective of both holding to collect contractual cash flows and selling.

Purchases or sales of financial assets that require delivery of assets within a time frame established by regulation or convention in the marketplace (regular way trades) are recognized on the trade date, i.e., the date that the Company commits to purchase or sell the asset.

Subsequent measurement

For purposes of subsequent measurement, financial assets are classified in four categories:

- Financial assets at amortized cost (debt instruments)
- Financial assets at fair value through OCI with recycling of cumulative gains and losses (debt instruments)

- Financial assets designated at fair value through OCI with no recycling of cumulative gains and losses upon derecognition (equity instruments)
- Financial assets at fair value through profit or loss

Financial assets at amortized cost (debt instruments)

Financial assets at amortized cost are subsequently measured using the effective interest method and are subject to impairment. Gains and losses are recognized in profit or loss when the asset is derecognized, modified or impaired.

The Company's financial assets at amortized cost includes trade receivables.

Financial assets designated at fair value through OCI (equity instruments)

Upon initial recognition, the Company can elect to classify irrevocably its equity investments as equity instruments designated at fair value through OCI when they meet the definition of equity under IAS 32 Financial Instruments: Presentation and are not held for trading. The classification is determined on an instrument-by-instrument basis.

Gains and losses on these financial assets are never recycled to profit or loss. Dividends are recognized as other income in profit or loss when the right of payment has been established, except when the Company benefits from such proceeds as a recovery of part of the cost of the financial asset, in which case, such gains are recorded in OCI. Equity instruments designated at fair value through OCI are not subject to impairment assessment.

The Company elected to classify its other investments (note 12) under this category.

Financial assets at fair value through profit or loss

Financial assets at fair value through profit or loss are carried in the statement of financial position at fair value with net changes in fair value recognized in profit or loss.

This category includes the Company's derivative instruments that have not been designated for hedge accounting.

A derivative embedded in a hybrid contract, with a financial liability or non-financial host, is separated from the host and accounted for as a separate derivative if: the economic characteristics and risks are not closely related to the host; a separate instrument with the same terms as the embedded derivative would meet the definition of a derivative; and the hybrid contract is not measured at fair value through profit or loss. Embedded derivatives are measured at fair value with changes in fair value recognized in profit or loss. Reassessment only occurs if there is either a change in the terms of the contract that significantly modifies the cash flows that would otherwise be required or a reclassification of a financial asset out of the fair value through profit or loss category. The Company does not currently have any embedded derivatives that are accounted for separately from the host.

Derecognition

A financial asset (or, where applicable, a part of a financial asset or part of a group of similar financial assets) is primarily derecognized (i.e., removed from the Company's consolidated statement of financial position) when the rights to receive cash flows from the asset have expired or when the Company has transferred its rights to receive cash flows from the asset or has assumed an obligation to pay the received cash flows in full without material delay to a third party under a 'pass-through' arrangement. In order for a pass-through arrangement to qualify for derecognition, the Company must have transferred substantially all the risks and rewards of the asset, or the Company has neither transferred nor retained substantially all the risks and rewards of the asset, but has transferred control of the asset.

When the Company has transferred its rights to receive cash flows from an asset or has entered into a pass-through arrangement, it evaluates if, and to what extent, it has retained the risks and rewards of ownership. When it has neither transferred nor retained substantially all of the risks and rewards of the asset, nor transferred control of the asset, the Company continues to recognize the transferred asset to the extent of its continuing involvement. In that case, the Company also recognizes an associated liability. The transferred asset and the associated liability are measured on a basis that reflects the rights and obligations that the Company has retained.

Continuing involvement that takes the form of a guarantee over the transferred asset is measured at the lower of the original carrying amount of the asset and the maximum amount of consideration that the Company could be required to repay.

Impairment

The Company recognizes an allowance for expected credit losses ("ECL's") for all debt instruments not held at fair value through profit or loss. ECL's are based on the difference between the contractual cash flows due in accordance with the contract and all the cash flows that the Company expects to receive, discounted at an approximation of the original effective interest rate. The expected cash flows will include cash flows from the sale of collateral held or other credit enhancements that are integral to the contractual terms.

ECL's are recognized in two stages. For credit exposures for which there has not been a significant increase in credit risk since initial recognition, ECL's are provided for credit losses that result from default events that are possible within the next 12 months (a 12-month ECL). For those credit exposures for which there has been a significant increase in credit risk since initial recognition, a loss allowance is required for credit losses expected over the remaining life of the exposure, irrespective of the timing of the default (a lifetime ECL).

For trade receivables and contract assets, the Company applies a simplified approach in calculating ECL's. Therefore, the Company does not track changes in credit risk, but instead recognizes a loss allowance based on lifetime ECL's at each reporting date. The Company has established an allowance matrix that is based on its historical credit loss experience, adjusted for forward-looking factors specific to the debtors and the economic environment.

The Company considers a financial asset to be in default when internal or external information indicates that the Company is unlikely to receive the outstanding contractual amounts in full before considering any credit enhancements held by the Company. A financial asset is written-off when there is no reasonable expectation of recovering the contractual cash flows.

(ii) Financial liabilities

Initial recognition and measurement

Financial liabilities are classified, at initial recognition, as financial liabilities at fair value through profit or loss, loans and borrowings, payables, or as derivatives designated as hedging instruments in an effective hedge, as appropriate.

All financial liabilities are recognized initially at fair value and, in the case of loans and borrowings and payables, net of directly attributable transaction costs.

The Company's financial liabilities include trade and other payables, loans and borrowings, short-term bank debt and derivative financial instruments.

Subsequent measurement

For purposes of subsequent measurement, financial liabilities are classified in two categories:

- Financial liabilities at fair value through profit or loss
- Financial liabilities at amortized cost (loans and borrowings)

Financial liabilities at fair value through profit or loss

Financial liabilities at fair value through profit or loss include financial liabilities held for trading and financial liabilities designated upon initial recognition as at fair value through profit or loss.

Financial liabilities are classified as held for trading if they are incurred for the purpose of repurchasing in the near term. This category also includes derivative financial instruments entered into by the Company that are not designated as hedging instruments in hedge relationships as defined by IFRS 9. Separated embedded derivatives are also classified as held for trading unless they are designated as effective hedging instruments.

Gains or losses on liabilities held for trading are recognized in profit or loss.

Financial liabilities designated upon initial recognition at fair value through profit or loss are designated at the initial date of recognition, and only if the criteria in IFRS 9 are satisfied. The Company has not designated any financial liability as at fair value through profit or loss.

Financial liabilities at amortized cost (loans and borrowings)

This is the category most relevant to the Company. After initial recognition, interest-bearing loans and borrowings are subsequently measured at amortized cost using the effective interest rate method. Gains and losses are recognized in profit or loss when the liabilities are derecognized as well as through the effective interest rate amortization process.

Amortized cost is calculated by taking into account any discount or premium on acquisition and fees or costs that are an integral part of the effective interest rate. The effective interest rate amortization is included as finance costs in the income statement.

This category generally applies to interest-bearing loans and borrowings (note 21) and short-term bank debt (note 22).

Derecognition

A financial liability is derecognized when the obligation under the liability is discharged or cancelled or expires. When an existing financial liability is replaced by another from the same lender on substantially different terms, or the terms of an existing liability are substantially modified, such an exchange or modification is treated as the derecognition of the original liability and the recognition of a new liability. The difference in the respective carrying amounts is recognized in profit or loss.

(iii) Offsetting of financial instruments

Financial assets and financial liabilities are offset and the net amount is reported in the consolidated statement of financial position if there is a currently enforceable legal right to offset the recognized amounts and there is an intention to settle on a net basis, to realize the assets and settle the liabilities simultaneously.

(iv) Derivative financial instruments and hedge accounting

The Company uses derivative financial instruments, such as forward currency contracts, interest rate caps and swaps and forward commodity contracts, to hedge its foreign currency risks, interest rate risks and commodity price risks, respectively. Such derivative financial instruments are initially recognized at fair value on the date on which a derivative contract is entered into and are subsequently remeasured at fair value. Derivatives are carried as financial assets when the fair value is positive and as financial liabilities when the fair value is negative.

The Company designates derivatives as hedging instruments to hedge the variability in cash flows associated with highly probable forecast transactions arising from changes in foreign exchange rates, commodity prices and interest rates.

At inception of designated hedging relationships, the Company documents the risk management objective and strategy for undertaking the hedge. The Company also documents the economic relationship between the hedged item and the hedging instrument, including whether the changes in cash flows of the hedged item and hedging instrument are expected to offset each other.

Cash flow hedges

When a derivative is designated as a cash flow hedging instrument, the effective portion of changes in the fair value of the derivative is recognized in other comprehensive income and accumulated in the hedging reserve. The effective portion of changes in fair value of the derivative that is recognized in other comprehensive income is limited to the cumulative change in fair value of the hedged item, determined on a present value basis, from inception of the hedge. Any ineffective portion of changes in the fair value of the derivative is recognized immediately in profit or loss.

The Company designates only the change in fair value of the spot element of forward exchange contracts as the hedging instrument in cash flow hedging relationships. The change in fair value of the forward element of forward exchange contracts is separately accounted for as a cost of hedging and recognized in a cost of hedging reserve within equity.

When the hedged forecast transaction subsequently results in the recognition of a non-financial item such as inventory, the amount accumulated in the hedging reserve and the cost of hedging reserve is included directly in the initial cost of the non-financial item when it is recognized.

For all other hedged forecast transactions, the amount accumulated in the hedging reserve and the cost of hedging reserve is reclassified to profit or loss in the same period or periods during which the hedged expected future cash flows affect profit or loss.

If the hedge no longer meets the criteria for hedge accounting or the hedging instrument is sold, expires, is terminated or is exercised, then hedge accounting is discontinued prospectively. When hedge accounting for cash flow hedges is discontinued, the amount that has been accumulated in the hedging reserve remains in equity until, for a hedge of a transaction resulting in the recognition of a non-financial item, it is included in the non-financial item's cost on its initial recognition or, for other cash flow hedges, it is reclassified to profit or loss in the same period or periods as the hedged expected future cash flows affect profit or loss.

If the hedged future cash flows are no longer expected to occur, then the amounts that have been accumulated in the hedging reserve and the cost of hedging reserve are immediately reclassified to profit or loss.

(G) EMPLOYEE BENEFITS

(i) Short-term benefits

Short-term employee benefits are expensed as the related service is provided. A liability is recognized for the amount expected to be paid if the Company has a present legal or constructive obligation to pay this amount as a result of past service provided by the employee and the obligation can be estimated reliably.

(ii) Share-based payment transactions

The grant date fair value of equity-settled share-based payment arrangements granted to employees is generally recognized as an expense, with a corresponding increase in equity, over the vesting period of the awards. The amount recognized as an expense is adjusted to reflect the number of awards for which the related service and non-market performance conditions are expected to be met, such that the amount ultimately recognized is based on the number of awards that meet the related service and non-market performance conditions at the vesting date. For share-based payment awards with market and non-vesting conditions, the grant date fair value of the share-based payment is measured to reflect such conditions and there is no true-up for differences between expected and actual outcomes.

(iii) Defined contribution plans

Obligations for contributions to defined contribution plans are expensed as the related service is provided. Prepaid contributions are recognized as an asset to the extent that a cash refund or a reduction in future payments is available.

(iv) Defined benefit plans

The Company's net obligation in respect of defined benefit plans is calculated separately for each plan by estimating the amount of future benefit that employees have earned in the current and prior periods, discounting that amount and deducting the fair value of any plan assets.

The calculation of defined benefit obligations is performed annually by a qualified actuary using the projected unit credit method. When the calculation results in a potential asset for the Company, the recognized asset is limited to the present value of economic benefits available in the form of any future refunds from the plan or reductions in future contributions to the plan. To calculate the present value of economic benefits, consideration is given to any applicable minimum funding requirements.

Remeasurements of the net defined benefit liability, which comprise actuarial gains and losses, the return on plan assets (excluding interest) and the effect of the asset ceiling (if any, excluding interest), are recognized immediately in other comprehensive income. The Company determines the net interest expense (income) on the net defined benefit liability (asset) for the period by applying the discount rate used to measure the defined benefit obligation at the beginning of the annual period to the then net defined benefit liability (asset), taking into account any changes in the net defined benefit liability (asset) during the period as a result of contributions and benefit payments. Net interest expense and other expenses related to defined benefit plans are recognized in profit or loss.

When the benefits of a plan are changed or when a plan is curtailed, the resulting change in benefit that relates to past service or the gain or loss on curtailment is recognized immediately in profit or loss. The Company recognizes gains and losses on the settlement of a defined benefit plan when the settlement occurs.

(v) Other long-term employee benefits

The Company's net obligation in respect of long-term employee benefits is the amount of future benefit that employees have earned in return for their service in the current and prior periods. That benefit is discounted to determine its present value. Remeasurements are recognized in profit or loss in the period in which they arise.

(vi) Termination benefits

Termination benefits are expensed at the earlier of when the Company can no longer withdraw the offer of those benefits and when the Company recognizes costs for a restructuring. If benefits are not expected to be settled wholly within 12 months of the reporting date, then they are discounted.

(H) PROPERTY, PLANT AND EQUIPMENT

(i) Recognition and measurement

Items of property, plant and equipment are measured at cost, which includes capitalized borrowing costs, less accumulated depreciation and any accumulated impairment losses.

Costs associated with developing mine reserves are recognized in property, plant and equipment when they are established as commercially viable. These costs can include amounts that were previously recognized as intangible assets during the evaluation phase of the mine development.

Borrowing costs directly attributable to the acquisition, construction or production of an asset that necessarily takes a substantial period of time to get ready for its intended use or sale are capitalized as part of the cost of the respective assets. All other borrowing costs are expensed in the period they occur. Borrowing costs consist of interest and other costs that an entity incurs in connection with the borrowing of funds.

If significant parts of an item of property, plant and equipment have different useful lives, then they are accounted for as separate items (major components) of property, plant and equipment.

Any gain or loss on disposal of an item of property, plant and equipment is recognized in profit or loss.

(ii) Subsequent expenditures

Subsequent expenditure is capitalized only if it is probable that the future economic benefits associated with the expenditure will flow to the Company.

(iii) Depreciation

Depreciation is calculated to write-off the cost of items of property, plant and equipment less their estimated residual values using the straight-line method over their estimated useful lives and is generally recognized in the income statement. Land is not depreciated.

The estimated useful lives of property, plant and equipment for current and comparative periods are as follows:

- mining costs 4-20 years
- buildings and improvements 2-50 years
- machinery and equipment 2-20 years
- furniture and fixtures 2-15 years

Depreciation methods, useful lives and residual values are reviewed at each reporting date and adjusted if appropriate.

The depreciation of mining costs is linked to production levels. Therefore, these assets are amortized using a units of production basis. The Company's mine in Brazil is currently the only mine asset being depreciated using this basis and approximates a 19-year remaining life of the mine based on updated geology studies. Other mining assets are depreciated on a straight-line basis ranging from 4-20 years, depending on useful life.

(I) GOODWILL AND OTHER INTANGIBLE ASSETS

(i) Goodwill

Goodwill arising on the acquisition of subsidiaries is measured at cost less accumulated impairment losses.

(ii) Research and development

Expenditure on research activities is recognized in profit or loss when incurred.

Development expenditures are capitalized if and only if the following criteria are met:

- the expenditure can be measured reliably;
- the product or process is technically and commercially feasible;
- future economic benefits are probable; and
- the Company intends to and has sufficient resources to complete development and to use or sell the asset.

Research and development costs that do not qualify as assets are shown within selling, general and administrative expenses in the income statement. Subsequent to initial recognition, development expenditure is measured at cost less accumulated amortization and any accumulated impairment losses.

(iii) Mining assets

Mining assets which are included in intangible assets include exploration, evaluation and development expenditures. See significant accounting policies section (k) for additional information on the accounting for mining assets.

(iv) Other intangible assets

Other intangible assets, including customer relationships, patents and trademarks that are acquired by the Company and have finite useful lives are measured at cost less accumulated amortization and any accumulated impairment losses.

(v) Subsequent expenditure

Subsequent expenditure is capitalized only when it increases the future economic benefits embodied in the specific asset to which it relates. All other expenditure, including expenditure on internally generated goodwill, is recognized in the income statement as incurred.

(vi) Amortization

Amortization is calculated to write-off the cost of intangible assets less their estimated residual values using the straight- line method over their estimated useful lives, and is generally recognized in profit or loss. Goodwill is not amortized. Amortization methods, useful lives and residual values are reviewed at each reporting date and adjusted if appropriate.

The estimated useful lives for current and comparative periods are based on expected futures sales for the related asset and are as follows:

• customer relationships	4-15 years
• development costs	8-15 years
• mining assets	3-12 years
• other intangibles	2-20 years

(J) INVENTORIES

Inventories are measured at the lower of cost and net realizable value. The cost of inventories is determined based on the average cost and specific identification methods, and includes expenditures incurred in acquiring the inventories and bringing them to their existing location and condition. In the case of finished goods inventory and work in process, cost includes materials and labor as well as an appropriate share of production overhead based on normal operating capacity.

(K) MINING ASSETS

(i) Exploration, evaluation and development expenditures

Exploration and evaluation expenditures relate to costs incurred on the exploration and evaluation of potential mineral resources. These costs are recorded as intangible assets while exploration is in progress. When commercially recoverable reserves are determined, and such development receives the appropriate approvals, capitalized exploration and evaluation expenditures are transferred to construction in progress. Upon completion of development and commencement of production, capitalized development costs as well as exploration and evaluation expenditures are transferred to mining assets in property, plant and equipment and depreciated over their estimated useful life.

(ii) Deferred stripping costs

The Company is following IFRIC 20 for all surface mine accounting. The Interpretation only applies to stripping costs incurred during the production phase of a surface mine (production stripping costs). Costs incurred in undertaking stripping activities are considered to create two possible benefits: a) the production of inventory in the current period and/or b) improved access to ore to be mined in a future period. Where the benefits are realized in the form of inventory produced, the production stripping costs are to be accounted for in accordance with IAS 2. Where the benefit is improved access to ore that will be mined in the future, these costs are to be recognized as a non-current asset.

Production stripping costs are capitalized as part of an asset when the Company can demonstrate: a) it is probable that future economic benefit associated with the stripping activity will flow to the entity; b) the entity can identify the component of an ore body for which access has been improved; and c) the costs can be reliably measured. These costs are amortized over the life of the component ore body identified.

(L) LEASES

At inception of a contract, the Company assesses whether a 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.

(i) As a lessee

At commencement or on modification of a contract that contains a lease component, the Company allocates the consideration in the contract to each lease component on the basis of its relative stand-alone prices.

The Company recognizes a right-of-use asset and a lease liability at the lease commencement date. The right-of-use asset is initially measured at cost, which comprises the initial amount of the lease liability adjusted for any lease payments made at or before the commencement date, plus any initial direct costs incurred and an estimate of costs to dismantle and remove the underlying asset or to restore the underlying asset or the site on which it is located, less any lease incentives received.

The right-of-use asset is subsequently depreciated using the straight-line method from the commencement date to the end of the lease term, unless the lease transfers ownership of the underlying asset to the Company by the end of the lease term or the cost of the right-of-use asset reflects that the Company will exercise a purchase option. In that case the right-of-use asset will be depreciated over the useful life of the underlying asset, which is determined on the same basis as those of property and equipment. In addition, the right-of-use asset is periodically reduced by impairment losses, if any, and adjusted for remeasurements of the lease liability.

The lease liability is initially measured at the present value of the lease payments that are not paid at the commencement date, discounted using the interest rate implicit in the lease or, if that rate cannot be readily determined, the Company's incremental borrowing rate. Generally, the Company uses its incremental borrowing rate as the discount rate.

The Company determines its incremental borrowing rate by obtaining interest rates from various external financing sources and makes adjustments to reflect the terms of the lease and type of the asset leased.

Lease payments included in the measurement of the lease liability comprise the following:

- fixed payments, including in-substance fixed payments;

- variable lease payments that depend on an index or a rate, initially measured using the index or rate as at the commencement date;
- amounts expected to be payable under a residual value guarantee; and
- the exercise price under a purchase option that the Company is reasonably certain to exercise, lease payments in an optional renewal period if the Company is reasonably certain to exercise an extension option, and penalties for early termination of a lease unless the Company is reasonably certain not to terminate early.

The lease liability is measured at amortized cost using the effective interest method. It is remeasured when there is a change in future lease payments arising from a change in an index or rate, if there is a change in the Company's estimate of the amount expected to be payable under a residual value guarantee, if the Company changes its assessment of whether it will exercise a purchase, extension or termination option or if there is a revised in-substance fixed lease payment.

When the lease liability is remeasured in this way, a corresponding adjustment is made to the carrying amount of the right-of-use asset or is recorded in profit or loss if the carrying amount of the right-of-use asset has been reduced to zero.

The Company presents right-of-use assets that do not meet the definition of investment property in property, plant and equipment and lease liabilities are presented as a separate line item in the statement of financial position.

Short-term leases and leases of low-value assets

The Company has elected not to recognize right-of-use assets and lease liabilities for leases of low-value assets and short- term leases. The Company recognizes the lease payments

associated with these leases as an expense on a straight-line basis over the lease term.

(M) ASSETS HELD FOR SALE

Non-current assets, or disposal groups comprising assets and liabilities, are classified as held for sale if it is highly probable that they will be recovered primarily through sale rather than through continuing use.

Such assets, or disposal groups, are generally measured at the lower of their carrying amount and fair value less costs to sell. Any impairment loss on a disposal group is allocated first to goodwill, and then to the remaining assets and liabilities on a pro rata basis, except that no loss is allocated to inventories, financial assets, deferred tax assets, employee benefit assets, investment property or biological assets, which continue to be measured in accordance with the Company's other accounting policies. Impairment losses on initial classification as held for sale or held for distribution and subsequent gains and losses on remeasurement are recognized in the income statement.

Once classified as held for sale, intangible assets and property, plant and equipment are no longer amortized or depreciated, and any equity-accounted investee is no longer equity accounted.

(N) IMPAIRMENT OF NON-FINANCIAL ASSETS

At each reporting date, the Company reviews the carrying amounts of its non-financial assets (other than inventories, contract assets and deferred tax assets) to determine whether there is any indication of impairment. If any such indication exists, then the asset's recoverable amount is estimated. Goodwill is tested annually for impairment.

For impairment testing, assets are grouped together into the smallest group of assets that generates cash inflows from continuing use that are largely independent of the cash inflows of other assets or cash generating units. Goodwill arising from a business combination is allocated to cash generating units or groups of cash generating units that are expected to benefit from the synergies of the combination.

The recoverable amount of an asset or cash generating unit is the greater of its value in use and its fair value less costs to sell. Value in use is based on the estimated future cash flows, discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset or cash generating unit.

An impairment loss is recognized if the carrying amount of an asset or cash generating unit exceeds its recoverable amount.

Impairment losses are recognized in the income statement. They are allocated first to reduce the carrying amount of any goodwill allocated to the cash generating unit, and then to reduce the carrying amounts of the other assets in the cash generating unit on a pro rata basis.

An impairment loss in respect of goodwill is not reversed. For other assets, an impairment loss is reversed only to the extent that the asset's carrying amount does not exceed the carrying amount that would have been determined, net of depreciation or amortization, if no impairment loss had been recognized.

(O) PROVISIONS

Provisions are recognized when:

- the Company has a present obligation (legal or constructive) as a result of a past event;
- it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation; and
- a reliable estimate can be made for the amount of the obligation.

If the effect of the time value of money is material, provisions are discounted using a current pre-tax rate that reflects current market assessments of the time value of money and the risks specific to the liability. The unwinding of the discount is recognized as finance cost.

(i) Environmental remediation costs and recoveries

Several subsidiaries of the Company are faced with a number of issues relating to environmental clean-up requirements, largely resulting from historical solid and hazardous waste handling and disposal practices at their facilities. In accordance with the Company's environmental policy and applicable legal requirements, provisions associated with environmental remediation obligations are accrued when such losses are deemed probable and reasonably estimable. Such accruals generally are recognized no later than the completion of the remedial feasibility study and are adjusted as further information develops or circumstances change.

A provision is made for shutdown, restoration and environmental rehabilitation costs in the financial period when the related environmental disturbance occurs, based on the estimated future costs using information available at the reporting date. The provision is discounted using a current market-based pre-tax discount rate and any change in the discount is included in finance cost. The provision is reviewed on an annual basis for changes to obligations, legislation or discount rates that may lead to changes in cost estimates or the expected timeline for payments.

Where the Company expects some or all of an environmental provision to be reimbursed, for example using a trust account, the reimbursement is recognized as a separate asset but only when the reimbursement is virtually certain. The expense relating to any provision is presented in the income statement net of any reimbursement. The subsidiaries of the Company have been required, in several instances, to create trust funds for the environmental rehabilitation. Once established, the subsidiaries have a 100% interest in these funds. Rehabilitation and restoration trust funds holding monies committed for use in satisfying environmental obligations are included on a discounted basis within other non-current assets on the statement of financial position, only to the extent that a liability exists for these obligations.

Environmental expense recoveries are generally recognized in profit or loss upon final settlement with the Company's insurance carriers.

Additional environmental remediation costs and provisions may be required if the Company were to decide to close its sites. Several of the Company's restructuring programs have involved closure of sites. Remediation liabilities are recognized when the site closure has been announced. In the opinion of the Company, it is not possible to estimate reliably the costs that would be incurred on the eventual closure of its continuing sites, where there is no present obligation to remediate, because it is neither possible to determine a time limit beyond which the sites will no longer be operated, nor what remediation costs may be required on their eventual closure.

(ii) Restructuring

A provision for restructuring is recognized when the Company has approved a detailed and formal restructuring plan, and the restructuring either has commenced or has been announced publicly. Provisions are not made for future operating costs. The timing of recording of portions of the restructuring provision is dependent on receiving social plan approval generally in European jurisdictions which require external approval. Changes in the estimate of costs related to restructuring plans are included in profit or loss in the period when the change is identified.

(iii) Warranty

A provision for warranty is recognized when the Company has determined that it has a basis for recording a warranty provision based on historical returns for warranty work. The estimate of warranty-related costs is updated and revised at each reporting date.

(iv) Partial retirement

The collective agreements for retirement indemnities on our French subsidiary and the corresponding commitments are updated and revised at each reporting date.

(v) Cost estimates

As part of its process to provide reliable estimations of profitability for long-term contracts, the Company makes provisions for cost estimates for completed contracts. These provisions are developed on a contract by contract basis and are based on contractor estimates and are utilized or derecognized depending on actual performance of the contracts. The cost estimates are updated and revised at each reporting date.

(vi) Restoration, rehabilitation and decommissioning costs

Restoration, rehabilitation and decommissioning costs arising from the installation of plant and other site preparation work, discounted to their net present value, are provided for and capitalized at the time such an obligation arises. The costs are charged to the income statement over the life of the operation through depreciation of the asset and the unwinding of the discount on the provision.

Mine rehabilitation costs will be incurred by the Company at the end of the operating life of some of the Company's facilities and mine properties. The Company assesses its mine rehabilitation provision at each reporting date. The ultimate rehabilitation costs are uncertain, and cost estimates can vary in response to many factors, including estimates of the extent and costs of rehabilitation activities, technological changes, regulatory changes, cost increases as compared to the inflation rates, and changes in discount rates. The provision recorded at each reporting date represents management's best estimate of the present value of the future rehabilitation costs required.

Costs for restoration of subsequent site disturbance, which is created on an ongoing basis during production, are provided for at their net present values and charged to the income statement as extraction progresses.

(P) NEW AND AMENDED STANDARDS AND INTERPRETATIONS

The following new standards became effective for annual periods beginning after January 1, 2021; however, these amended standards and interpretations did not have a significant impact on the Company's consolidated financial statements.

- Interest Rate Benchmark Reform - Phase 2 (Amendments to IFRS 9, IAS 39, IFRS 7, IFRS 4 and IFRS 16).
- COVID-19-Related Rent Concession (Amendment to IFRS 16).

(Q) STANDARDS ISSUED BUT NOT YET EFFECTIVE

A number of new standards are effective for annual periods beginning after January 1, 2021 and earlier application is permitted; however, the Company has not early adopted the new or amended standards in preparing these consolidated financial statements. The following amended standards and interpretations are not expected to have a significant impact on the Company's consolidated financial statements.

- Onerous contracts - Cost of Fulfilling a Contract (Amendments to IAS 37).
- Deferred Tax related to Assets and Liabilities arising from a Single Transaction (Amendments to IAS 12).
- COVID-19 Related Rent Concessions beyond June 30, 2021 (Amendment to IFRS 16).
- Annual Improvements to IFRS Standards 2018-2020.
- Property, Plant and Equipment: Proceeds before Intended Use (Amendments to IAS 16).
- Reference to Conceptual Framework (Amendments to IFRS 3).
- Classification of Liabilities as Current or Non-current (Amendments to IAS 1).
- IFRS 17 Insurance Contracts and amendments to IFRS 17 Insurance Contracts.
- Disclosure of Accounting Policies (Amendments to IAS 1 and IFRS Practice Statement 2).
- Definition of Accounting Estimates (Amendments to IAS 8).

4. SEGMENT REPORTING

As of January 1, 2021, the Company changed its organizational structure and segmental realignment. This change resulted in three operating segments: AMG Clean Energy Materials, AMG Critical Minerals and AMG Critical Materials Technologies. AMG Clean Energy Materials is comprised of the Vanadium, Lithium and Tantalum business units. AMG Critical Minerals is comprised of the Graphite, Silicon and Antimony business units. AMG Critical Materials Technologies is comprised of the Engineering, Titanium Alloys and Chrome Metal business units. Accordingly, the Company has restated the previously reported segment information for the year ended December 31, 2020.

The Management Board of the Company is the Chief Operating Decision Maker and monitors the operating results of its segments separately for the purpose of making decisions about resource allocation and performance assessment. Segment performance is evaluated based on operating profit or loss and is measured consistently with operating profit or loss in the consolidated financial statements. The Company's headquarters costs, financing (including finance cost and finance income) and assets are managed on a group basis and are allocated to operating segments. Transfer prices between operating segments are on an arm's length basis in a manner similar to transactions with third parties.

AMG Clean Energy Materials

AMG Clean Energy Materials combines our recycling and mining operations, producing materials for infrastructure and energy storage solutions while reducing the CO_2 footprint of both suppliers and customers. Clean Energy Materials spans the vanadium, lithium, and tantalum value chains. AMG Clean Energy Materials has major production facilities in the US and Brazil.

AMG Critical Minerals

AMG Critical Minerals consists of our mineral processing operations in graphite, silicon metal and antimony. AMG Critical Minerals produces materials for the chemical, automotive, aluminum, and building material industries. AMG Critical Minerals has major production facilities in Germany and France.

AMG Critical Materials Technologies

AMG Critical Materials Technologies combines our leading vacuum furnace technology line with high-purity materials serving global leaders in the aerospace sector. This segment produces titanium aluminides, titanium alloys, and chrome metal for the aerospace market; designs, engineers, and produces advanced vacuum furnace systems; and operates vacuum heat treatment facilities, primarily for the transportation and energy industries (including solar and nuclear industries). AMG Critical Materials Technologies also provides vacuum case-hardening heat treatment services on a tolling basis. AMG Critical Materials Technologies has production facilities located in Germany, UK, France, Mexico, India, China and the US.

AMG Corporate headquarters costs and assets are allocated thirty percent to AMG Clean Energy Materials, twenty percent to AMG Critical Minerals, and fifty percent to AMG Critical Materials Technologies in 2021 and 2020 based on an estimation of services provided to the operating segments.

Year ended December 31, 2021	AMG Clean Energy Materials	AMG Critical Minerals	AMG Critical Materials Technologies	Eliminations(a)	Total
Revenue					
Revenue from external customers	381,475	308,523	514,668	—	1,204,666
Intersegment revenue	28,179	35	16,383	(44,597)	—
Total revenue	409,654	308,558	531,051	(44,597)	1,204,666
Segment results					
Depreciation and amortization	16,106	8,440	19,139	—	43,685
Restructuring	93	666	(237)	—	522
Asset impairment reversal	—	(711)	—	—	(711)
Inventory adjustments	1,031	(302)	1,200	—	1,929
Environmental expense	11,651	60	230	—	11,941
Operating profit	22,476	20,181	14,484	—	57,141
Statement of financial position					
Segment assets	861,622	237,465	570,800	—	1,669,887
Other investments	29,830	—	—	—	29,830
Total assets	891,452	237,465	570,800	—	1,699,717
Segment liabilities	719,060	129,122	362,860	—	1,211,042
Employee benefits	19,435	36,724	106,469	—	162,628
Provisions	7,508	7,900	16,487	—	31,895
Total liabilities	746,003	173,746	485,816	—	1,405,565
Other information					
Capital expenditures for expansion – tangible assets	153,115	1,177	8,284	—	162,576
Capital expenditures for maintenance – tangible assets	4,922	3,842	5,436	—	14,200
Capital expenditures – intangible assets	27	361	875	—	1,263

Year ended December 31, 2020	AMG Clean Energy Materials	AMG Critical Minerals	AMG Critical Materials Technologies	Eliminations (a)	Total
Revenue					
Revenue from external customers	245,664	213,318	478,134	—	937,116
Intersegment revenue	12,847	5	11,367	(24,219)	—
Total revenue	258,511	213,323	489,501	(24,219)	937,116
Segment results					
Depreciation and amortization	14,999	9,052	19,610	—	43,661
Restructuring	398	1,176	4,126	—	5,700
Asset impairment	98	—	566	—	664
Inventory adjustments	5,964	2,027	2,027	—	7,991
Environmental expense	3,965	57	320	—	4,342
Operating (loss) profit	(24,522)	14,167	1,120	—	(9,235)
Statement of financial position					
Segment assets	707,145	185,870	518,444	—	1,411,459
Other investments	27,489	11	27	—	27,527
Total assets	734,634	185,881	518,471	—	1,438,986
Segment liabilities	632,929	95,635	330,350	—	1,058,914
Employee benefits	21,394	40,908	134,856	—	197,158
Provisions	11,340	8,319	21,985	—	41,644
Total liabilities	665,663	144,862	487,191	—	1,297,716
Other information					
Capital expenditures for expansion – tangible assets	108,112	894	11,096	—	120,102
Capital expenditures for maintenance – tangible assets	5,495	3,191	7,937	—	16,623
Capital expenditures – intangible assets	19	461	519	—	1,000

[a] Eliminations column includes intersegment trade eliminations. The intersegment revenue eliminates against the intersegment cost of sales.

GEOGRAPHICAL INFORMATION

Geographical information for the Company is provided below. Revenues are based on the shipping location of the customer while non-current assets are based on the physical location of the assets.

	Year ended December 31, 2021		Year ended December 31, 2020	
	Revenues	Non-current assets	Revenues	Non-current assets
United States	280,097	354,453	273,719	219,701
China	216,142	17,033	118,192	8,296
Germany	190,478	201,268	161,118	187,713
Italy	52,587	—	44,100	—
Brazil	50,109	123,215	33,143	129,979
United Kingdom	47,647	20,868	34,541	18,586
France	43,851	15,522	37,214	19,989
Canada	34,486	—	8,357	—
Japan	33,390	3	33,153	48
Austria	28,829	—	24,988	—
India	20,186	49	8,320	302
South Korea	20,128	—	21,055	—
Belgium	16,882	58	10,020	80
Mexico	16,293	3,000	14,162	5,610
Thailand	14,545	27	2,759	39
Spain	11,768	115	6,189	166
Turkey	9,956	—	6,567	—
Taiwan	9,252	—	4,750	—
Poland	8,900	—	6,604	—
Czech Republic	8,294	—	6,819	—
Sweden	8,089	—	7,738	—
Switzerland	6,875	—	3,692	—
Netherlands	6,734	—	5,953	—
Australia	6,485	—	3,364	—
Russia	3,913	3	8,838	22
Singapore	3,718	—	2,058	—
Argentina	2,909	—	1,769	—
Kazakhstan	1,579	—	2,631	—
Mozambique	1	8,059	13	9,622
Other	50,543	3,106	45,290	3,476
Total	1,204,666	746,779	937,116	603,629

Non-current assets for this purpose consist of property, plant and equipment; goodwill and other intangible assets; and other assets.

5. REVENUE

Revenue from sales of goods, furnace construction contracts, heat treatment services and processing services during the year ended December 31, 2021 was $1,204,666 (2020: $937,116). For revenue by segment and by geographical basis, see note 4.

The following tables show the Company's total revenues disaggregated based on the timing of revenue recognition:

Year ended December 31, 2021	AMG Clean Energy Materials	AMG Critical Minerals	AMG Critical Materials Technologies	Total
Products transferred at a point in time	381,475	308,523	349,913	1,039,911
Products and services transferred over time	—	—	164,755	164,755
Total revenue	381,475	308,523	514,668	1,204,666

Year ended December 31, 2020	AMG Clean Energy Materials	AMG Critical Minerals	AMG Critical Materials Technologies	Total
Products transferred at a point in time	245,664	213,318	287,059	746,041
Products and services transferred over time	—	—	191,075	191,075
Total revenue	245,664	213,318	478,134	937,116

Contract balances

The following table provides information about receivables, contract assets, and contract liabilities from contracts with customers:

	2021	2020
Trade receivables, net of allowance for doubtful accounts	145,435	122,369
Gross amount due from customers for contract work (note 14)	37,627	37,704
Trade payables – contract work (note 27)	17,551	25,348
Advanced payments from customers	35,091	29,885
Deferred revenue	40,819	5,984

The contract assets primarily relate to the Company's rights to consideration for work completed but not billed at the reporting date for furnace construction contracts. The contract assets are transferred to receivables when the rights become unconditional. This usually occurs when the Company issues an invoice to the customer. The contract liabilities primarily relate to the advance consideration received from customers. The advanced payments balance above pertains to consideration received for furnace construction contracts. The remaining contract liabilities pertain to prepayments received from customers for spodumene sale contracts, spent catalyst processing fee contracts, and titanium aluminide contracts and are included in the deferred revenue balance.

The Company recognized revenues of $50,510 (2020: $39,797) that were included in the balance of contract liabilities as of December 31, 2021. The amount of revenues recognized during the year that pertained to performance obligations that were satisfied in a previous year is $4,010 (2020: $663).

The transaction price allocated to the remaining performance obligations (unsatisfied or partially satisfied) as of December 31, 2021 and 2020 are as follows:

	2021	2020
Within one year	111,093	124,866
Within two years	6,052	24,683
Within three years	—	1,275

6. OTHER INCOME AND EXPENSE

	2021	2020
Grant income	304	87
Other miscellaneous income	59	110
Income from sale of asset	52	48
Other income	415	245
Other expense	—	(11)
Environmental expenses	(11,941)	(4,342)
Net other operating expense	(11,526)	(4,108)

See note 25 for additional information on environmental expenses.

7. EXPENSES BY NATURE

	Note	2021	2020
Raw materials and consumables		601,338	456,597
Employee benefits		240,240	199,080
Changes in inventories of finished goods and work in progress		178,129	175,344
Depreciation and amortization	10, 11	43,685	43,661
Maintenance		25,723	22,576
Consultancy		24,492	23,342
Other		22,392	21,643
Total cost of sales and selling, general and administrative expenses		1,135,999	942,243

Included within the balance of employee benefits is $178,401 (2020: $155,329) of wages and salaries and $40,061 (2020: $31,471) pertaining to social security contributions.

During the year ended December 31, 2021, the Company received $2,963 (2020: $2,855) of governmental support, primarily in its German business units, to subsidize a portion of personnel costs for employees who were furloughed or placed on short-time work arrangements as a result of the pandemic. $2,843 (2020: $2,751) of this governmental support was recorded as a reduction to the Company's cost of sales and $120 (2020: $104) was recorded as a reduction to selling, general and administrative expenses.

8. FINANCE INCOME AND COST

	2021	2020
Interest income on tax refunds	779	40
Interest income on bank deposits	680	1,031
Discounting on long-term assets and provisions	382	870
Interest income on escrow deposits	16	5
Other	81	381
Foreign exchange gain	—	2,430
Finance income	1,938	4,757
Interest expense on loans, borrowings and related derivative instruments	(13,976)	(16,194)
Amortization of loan issuance costs	(5,967)	(1,979)
Interest expense related to lease liabilities	(1,807)	(1,726)
Interest paid to suppliers	(1,460)	(525)
Interest expense on taxes	(1,359)	(358)
Guarantees	(880)	(388)
Commitment/unutilized fees	(781)	(853)
Interest expense on accounts receivable factoring	(719)	(591)
Discount on long-term assets, provisions and retirement obligations	(671)	(2,633)
Other	(569)	(604)
Foreign exchange loss	(7,351)	—
Finance cost	(35,540)	(25,851)
Net finance cost	(33,602)	(21,094)

See note 10 for additional information on capitalized borrowing costs. See note 21 for additional information on loans and borrowings as well as related fees. See notes 28 and 29 for additional information on financial instruments. See note 31 for additional information on leases. See note 33 for additional information on bank charges for guarantees.

9. INCOME TAX

Significant components of income tax expense for the years ended:

CONSOLIDATED INCOME STATEMENT

	2021	2020
Current tax expense (benefit):		
Current year	13,383	275
Adjustment for prior year	(504)	(418)
Total current tax expense (benefit) for the year	12,879	(143)
Deferred tax expense (benefit)		
Origination and reversal of temporary differences	926	(7,416)
Changes in previously unrecognized tax losses, tax credits and unrecognized temporary differences	(2,918)	(732)
Changes in previously recognized tax losses, tax credits and recognized temporary differences for changes in enacted tax rates and currency effects	(1,637)	17,306
Derecognition of previously recognized tax losses, tax credits and temporary differences	343	1,989
Adjustment for prior year	(886)	180
Total deferred tax (benefit) expense	(4,172)	11,327
Total income tax expense reported in consolidated income statement	8,707	11,184
Consolidated statement of other comprehensive income		
Income tax related to items recognized in OCI in the year:		
Cash flow hedges, effective portion of changes in fair value	(2,713)	2,273
Income tax (expense) benefit on actuarial gains (losses)	(4,297)	3,192
Income tax (expense) benefit charged to OCI	(7,010)	5,465

RECONCILIATION OF EFFECTIVE TAX RATE

A reconciliation of income tax expense applicable to accounting profit before income tax at the weighted average statutory income tax rate of 21.50% (2020: 21.22%) to the Company's effective income tax rate for the years ended is as follows:

	2021	2020
Profit (loss) before income tax from continuing operations	22,486	(31,276)
Income tax using the Company's weighted average tax rate	4,834	(6,637)
Non-deductible expenses	6,145	2,284
Tax exempt income	(4,039)	(182)
Current year losses for which no deferred tax asset was recognized and changes in unrecognized temporary differences	6,135	2,983
Recognition of previously unrecognized tax losses, tax credits and temporary differences of a prior year	(2,918)	(732)
Derecognition of previously recognized tax losses, tax credits and temporary differences	343	1,989
Changes in previously recognized tax losses, tax credits and recognized temporary differences for changes in enacted tax rates	1,887	432
Changes in previously recognized tax losses, tax credits and recognized temporary differences for changes in currency effects	(3,524)	11,068
Over provided in prior periods	(886)	(238)
State and local taxes	1,070	1
Other	(340)	216
Income tax expense reported in consolidated income statement	8,707	11,184

The weighted average statutory income tax rate is the average of the statutory income tax rates applicable in the countries in which the Company operates, weighted by the profit (loss) before income tax of the subsidiaries in the respective countries as included in the consolidated accounts. Several entities have losses for which no deferred tax assets have been recognized.

During the years ended December 31, 2021 and 2020, the income tax benefits related to the current year losses of certain entities located primarily in France, Germany, the Netherlands, and Africa, were not recognized. In total, $6,135 and $2,983 were not recognized in 2021 and 2020, respectively, as it is not probable that these amounts will be realized.

During the years ended December 31, 2021 and 2020, certain income tax benefits related to previously unrecognized tax losses and temporary differences related to Mexico, India, China and German entities were recognized. In total, $2,918 and $732 were recognized in 2021 and 2020, respectively, through an increase to the net deferred tax asset.

The main factors considered in assessing the realizability of deferred tax benefits were improved profitability, higher forecasted taxable profitability and carryforward period of the tax losses. After assessing these factors, the Company determined that it is probable that the deferred tax benefit of the tax losses and temporary differences will be realized in the foreseeable future.

Also, during the year ended December 31, 2021, the net recognized deferred tax assets (liabilities) were adjusted for changes in the enacted tax rates in France, Germany, UK, and in several local jurisdictions in the US. The net impact of the tax rate changes was an increase to income tax expense of $1,887 (2020: $432). The net recognized deferred tax assets (liabilities) were also adjusted to reflect changes in currency rates in Brazil. The impact of the tax rate changes, and currency rates was a (decrease) increase to income tax expense of ($3,524) (2020: $11,068).

During the year 2021, an income tax (benefit) expense of ($340) (2020: $216) was recorded to Other in the effective tax rate reconciliation.

There were no income tax consequences associated with the payment of dividends in either 2021 or 2020 by AMG to its shareholders.

DEFERRED TAX ASSETS AND LIABILITIES

Deferred income taxes reflect the net tax effect of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes. In addition, Deferred Income Tax Assets (Liabilities) include amounts related to net operating loss carryforwards, tax credits and interest limitation carryforwards.

Deferred tax assets are recognized to the extent it is probable that the temporary differences, unused tax losses, unused tax credits, and limitations on interest deductions will be realized. The realization of deferred tax assets is reviewed each reporting period and includes the consideration of historical operating results, projected future taxable income exclusive of reversing temporary differences and carryforwards, the scheduled reversal of deferred tax liabilities and tax planning strategies.

RECOGNIZED DEFERRED TAX ASSETS AND LIABILITIES

Deferred tax assets and liabilities have been recognized in respect of the following roll forward:

		2021 Activity			December 31, 2021		
	December 31, 2020 Net tax asset and liability	**Deferred benefit (expense)**	**Other comprehensive income**	**Currency translation adjustment/ other**	**Net tax asset and liability**	**Assets**	**Liabilities**
Inventories	1,763	(1,470)	—	(10)	283	697	414
Long-term contracts	(17,506)	(183)	—	1,324	(16,365)	—	16,365
Prepaids and other current assets	3	(3)	—	(1)	(1)	2	3
Property, plant, and equipment	(18,854)	1,393	—	993	(16,468)	325	16,793
Deferred charges and non-current assets	(23,741)	11,099	(2,713)	(1,206)	(16,561)	3,548	20,109
Accruals and reserves	17,108	203	—	(1,013)	16,298	16,552	254
Environmental liabilities	5,459	(1,107)	—	(62)	4,290	4,543	253
Retirement benefits	41,709	(2,828)	(4,297)	(2,240)	32,344	32,413	69
Tax loss and tax credit carryforwards	46,742	(2,932)	—	(310)	43,500	43,500	—
Total	52,683	4,172	(7,010)	(2,525)	47,320	101,580	54,260
Set off of tax						(48,643)	(48,643)
Net tax assets and liabilities						52,937	5,617

During the year ended December 31, 2021, the Company recorded deferred income tax (expense) benefit of ($2,713) (2020: $2,337) related to cash flow hedges and ($4,297) (2020: $3,192) related to actuarial losses on defined benefit plans to other comprehensive income.

UNRECOGNIZED DEFERRED TAX ASSETS

The net deferred tax assets are fully recognized for each of the jurisdictions in which we operate with the exception of the following: (1) a German entity did not recognize the specific deferred tax asset recorded for the impact of assets impaired for book purposes; (2) a US entity did not recognize a portion of their state tax loss carryforwards; (3) Dutch holding companies and operating companies in Germany, France, Africa India and other do not recognize deferred tax assets for their loss carryforward positions and other carryforwards because management has determined that there will not be sufficient and foreseeable taxable profits in these locations to realize the benefits of these carryforward positions.

Deferred tax assets for these entities have not been recognized in respect of tax loss carryforwards, tax attributes and temporary differences as they may not be used to offset taxable profits elsewhere in the Company and they have arisen in subsidiaries that have a history of losses or limited profitability.

Deferred tax assets and liabilities have not been recognized in respect of the following items:

	Assets	
	2021	**2020**
Deferred charges and non-current assets	8,798	9,779
Tax loss and tax credit carryforwards	36,866	26,146
Net tax assets – unrecognized	45,664	35,925

At December 31, 2021, pre-tax net operating losses and tax credit carryforwards for which no deferred tax assets have been recognized on the balance sheet, expire as follows:

2022	1,418
2023	1,584
2024	1,747
2025	1,973
2026-2029	2,799
Unlimited	133,469
Total	142,990

10. PROPERTY, PLANT AND EQUIPMENT

COST	Mining costs	Land, buildings and improvements	Machinery and equipment	Furniture and fixtures	Construction in progress	Total
Balance at January 1, 2020	42,160	247,976	451,251	34,046	61,929	837,362
Additions	293	6,408	13,795	3,137	112,965	136,598
Capitalized borrowings	—	102	—	—	14,143	14,245
Retirements and transfers	3,581	10,499	8,286	341	(31,625)	(8,918)
Impairments	—	—	(564)	(2)	(98)	(664)
Effect of movements in exchange rates	1,123	11,528	14,919	2,585	1,473	31,628
Balance at December 31, 2020	47,157	276,513	487,687	40,107	158,787	1,010,251
Balance at January 1, 2021	47,157	276,513	487,687	40,107	158,787	1,010,251
Additions	286	11,851	9,163	2,706	158,641	182,647
Capitalized borrowings	—	—	6	—	15,571	15,577
Retirements and transfers	206	672	(3,916)	(1,276)	(6,704)	(11,018)
Impairments	—	—	691	—	—	691
Effect of movements in exchange rates	(1,071)	(10,538)	(14,338)	(2,383)	(1,765)	(30,095)
Balance at December 31, 2021	46,578	278,498	479,293	39,154	324,530	1,168,053
DEPRECIATION						
Balance at January 1, 2020	(17,625)	(70,351)	(300,425)	(18,968)	—	(407,369)
Depreciation for the year	(1,389)	(10,994)	(24,089)	(4,910)	—	(41,382)
Retirements and transfers	426	1,335	2,482	1,110	—	5,353
Effect of movements in exchange rates	(556)	(3,104)	(9,918)	(1,349)	—	(14,927)
Balance at December 31, 2020	(19,144)	(83,114)	(331,950)	(24,117)	—	(458,325)
Balance at January 1, 2021	(19,144)	(83,114)	(331,950)	(24,117)	—	(458,325)
Depreciation for the year	(1,844)	(11,743)	(23,037)	(4,532)	—	(41,156)
Retirements and transfers	63	689	7,531	1,823	—	10,106
Effect of movements in exchange rates	587	3,101	9,905	1,353	—	14,946
Balance at December 31, 2021	(20,338)	(91,067)	(337,551)	(25,473)	—	(474,429)
Carrying amounts						
At January 1, 2020	24,535	177,625	150,826	15,078	61,929	429,993
At December 31, 2020	28,013	193,399	155,737	15,990	158,787	551,926
At January 1, 2021	28,013	193,399	155,737	15,990	158,787	551,926
At December 31, 2021	26,240	187,431	141,742	13,681	324,530	693,624

PROPERTY, PLANT AND EQUIPMENT UNDER CONSTRUCTION

During the years ended December 31, 2021 and 2020, the Company embarked on several different expansion projects as well as several required maintenance projects. The largest of these expansion projects is the construction of a catalyst recycling facility in Ohio. Costs incurred up to December 31, 2021, which are included in construction in progress, totaled $324,530 (2020: $158,787).

BORROWING COSTS

The Company capitalized borrowing costs of $15,577 (2020: $14,245) during 2021 which included all of the $15,138 (2020: $15,150) of interest related to the municipal bond as it is directly attributable to the construction of AMG Vanadium's catalyst recycling facility in Ohio, net of $39 (2020: $1,120) of cash interest received from the restricted cash generated from AMG Vanadium's municipal bond and $478 of capitalized interest for other AMG facilities (2020: $215).

PROPERTY, PLANT AND EQUIPMENT ADDITIONS

At December 31, 2021, the Company had $182,647 in additions, including $36,915 in accounts payable, lease additions of $7,294 and a non-cash transfer of $250 from the provision for restoration costs related to asset retirement obligations. At December 31, 2020, the Company had $136,598 in additions, including $22,789 in accounts payable and lease additions of $3,287.

DEPRECIATION OF PROPERTY, PLANT AND EQUIPMENT

Depreciation expense for the year ended December 31, 2021 was $41,156 (2020: $41,382). Depreciation expense is recorded in the following line items in the income statement:

	2021	2020
Cost of sales	36,071	36,787
Selling, general and administrative expenses	5,085	4,595
Total	41,156	41,382

SALE OF PROPERTY, PLANT AND EQUIPMENT

Items of building and equipment were sold in the years ended December 31, 2021 and 2020. In those years, the Company received proceeds of $1,029 and $71, respectively. In 2021, the proceeds were more than the book value of the assets and a gain of $65 was recognized during the year. In 2020, the proceeds were less than the book value of the assets and a loss of $358 was recognized during the year.

IMPAIRMENT TESTING

IAS 36 requires that assets be carried at a value no greater than their recoverable amount. To meet this standard, the Company is required to test tangible and intangible assets for impairment when indicators of impairment exist, or at least annually, for goodwill and intangible assets with indefinite useful lives. During the year ended December 31, 2021, the Company recorded a reversal of $691 in asset impairments on property, plant and equipment by one of our German subsidiaries related to a prior year impairment. During the year ended December 31, 2020, the Company recorded $664 in asset impairments on property, plant and equipment mainly driven by one of our German subsidiaries.

SECURITY

At December 31, 2021, properties with a carrying amount of $141,996 (2020: $254,485) are pledged as collateral to secure bank loans.

11. GOODWILL AND OTHER INTANGIBLE ASSETS

COST	Goodwill	Customer relationships	Capitalized development costs	Mining assets	Other intangible assets	Total goodwill and intangible assets
Balance at January 1, 2020	37,478	11,031	4,698	6,322	30,308	89,837
Additions	—	—	—	299	962	1,261
Disposals, reversals and transfers	—	—	—	116	(194)	(78)
Effect of movements in exchange rates	1,684	830	439	626	2,280	5,859
Balance at December 31, 2020	39,162	11,861	5,137	7,363	33,356	96,879
Balance at January 1, 2021	39,162	11,861	5,137	7,363	33,356	96,879
Acquired through business combinations	580	—	—	—	3,774	4,354
Additions	—	—	—	156	1,107	1,263
Effect of movements in exchange rates	(762)	(730)	(386)	(505)	(2,183)	(4,566)
Balance at December 31, 2021	38,980	11,131	4,751	7,014	36,054	97,930
AMORTIZATION AND IMPAIRMENT						
Balance at January 1, 2020	(9,548)	(8,883)	(3,259)	(2,651)	(23,573)	(47,914)
Amortization	—	(371)	(150)	(281)	(1,477)	(2,279)
Effect of movements in exchange rates	—	(658)	(317)	(382)	(2,122)	(3,479)
Balance at December 31, 2020	(9,548)	(9,912)	(3,726)	(3,314)	(27,172)	(53,672)
Balance at January 1, 2021	(9,548)	(9,912)	(3,726)	(3,314)	(27,172)	(53,672)
Amortization	—	(396)	(166)	(310)	(1,657)	(2,529)
Disposals, reversals and transfers	—	—	—	(54)	—	(54)
Effect of movements in exchange rates	—	600	287	263	1,859	3,009
Balance at December 31, 2021	(9,548)	(9,708)	(3,605)	(3,415)	(26,970)	(53,246)
Carrying amounts						
At January 1, 2020	27,930	2,148	1,439	3,671	6,735	41,923
At December 31, 2020	29,614	1,949	1,411	4,049	6,184	43,207
At January 1, 2021	29,614	1,949	1,411	4,049	6,184	43,207
At December 31, 2021	29,432	1,423	1,146	3,599	9,084	44,684

ADDITIONS FOR INTANGIBLE ASSETS

At December 31, 2021, the Company had $1,263 in additions, related to capital expenditures. At December 31, 2020, the Company had $1,261 in additions, including $1,000 in capital expenditures and $261 related to a non-cash transfer in our Brazilian operations.

AMORTIZATION OF INTANGIBLE ASSETS

Amortization expense for the year ended December 31, 2021 was $2,529 (2020: $2,279). Amortization expense is recorded in the following line items in the income statement:

	2021	2020
Cost of sales	880	870
Selling, general and administrative expenses	1,649	1,409
Total	2,529	2,279

RESEARCH COSTS

Research and development expenses are included in selling, general and administrative expenses and were $4,202 and $4,996 in the years ended December 31, 2021 and 2020, respectively.

IMPAIRMENT TESTING FOR INTANGIBLE ASSETS

(i) Goodwill

No re-allocation of goodwill was required following the change in segmentation as disclosed in note 4. For the purposes of impairment testing, goodwill has been allocated to the Company's cash-generating units as follows:

	Segment	2021	2020
AMG Antimony cash-generating unit	Critical Minerals	9,702	9,702
AMG Superalloys UK cash-generating unit	Critical Materials Technologies	1,510	1,510
AMG Engineering cash-generating unit	Critical Materials Technologies	13,537	14,282
AMG Titanium Alloys cash-generating unit	Critical Materials Technologies	4,127	4,120
AMG LiVa cash-generating unit	Critical Materials Technologies	556	—
Goodwill at cash-generating units		29,432	29,614

Key assumptions

The calculations of value in use are most sensitive to the following assumptions:

- Global metals pricing - Estimates are obtained from published indices. The estimates are evaluated and are generally used as a guideline for future pricing.
- Discount rate - Discount rates reflect the current market assessment of the time value of money and the risks specific to the asset, based on a comparable peer group.
- Expected future cash flows - Expected future cash flows are based on management's best estimates of future business conditions but cannot be guaranteed as the Company does not have fixed revenues or costs.
- Growth rate - Growth rates are based on management's interpretation of published industry research in order to extrapolate cash flows beyond the business plan period. As most businesses follow economic trends, an inflationary factor of 1% was utilized.

It is possible that the key assumptions used in the business plan will differ from actual results. However, management does not believe that any reasonably possible changes to any of such key assumptions will cause the carrying amount to exceed the recoverable amount. The values assigned to the key assumptions represent management's assessment of future trends in the metallurgical industry and are based on both external sources and internal sources (historical data).

For the impairment tests for AMG Antimony, AMG Superalloys UK, AMG Engineering and AMG Titanium Alloys' cash-generating units, the recoverable amounts are the value in use. The value in use was determined using the discounted cash flow method. In 2021 and 2020, the carrying amounts of the AMG Antimony, AMG Superalloys, AMG Engineering and AMG Titanium Alloys' cash-generating units were determined to be lower than their recoverable amounts and no impairment losses were recognized.

[1] AMG Antimony's value in use was determined by discounting the future cash flows generated from the continuing use of the unit and was based on the following key assumptions:

- Cash flows were projected based on actual operating results and the 5-year business plan, which covers the next five calendar years following the impairment test date. Metal prices used in the projections are generally at current market prices at the time the plan is prepared.
- The growth rate of 1% was used to extrapolate cash flow projections beyond the period covered by the most recent
- business plans. Management believes that this growth rate does not exceed the long-term average growth rate for the metallurgical industry in Europe.
- Revenue projections were based on an internal 5-year business plan.
- Pre-tax discount rates of 10.97% and 11.41% were applied in determining the recoverable amount of the unit for the years ended December 31, 2021 and 2020, respectively. The discount rates were derived from a group of comparable companies (peer group).

Sensitivities related to the value in use calculation for AMG Antimony would imply that a 1% increase in the discount rate or using a 0% growth rate would not have created an impairment.

[1] AMG Superalloys UK's value in use was determined by discounting the future cash flows generated from the continuing use of the unit and was based on the following key assumptions:

- Cash flows were projected based on actual operating results and the 5-year business plan, which covers the next five calendar years following the impairment test date. Metal prices used in the projections are generally at current market prices at the time the plan is prepared.
- The growth rate of 1% was used to extrapolate cash flow projections beyond the period covered by the most recent business plans. Management believes that this growth rate does not exceed the long-term average growth rate for the metallurgical industry in Europe.
- Revenue projections were based on an internal 5-year business plan.
- Pre-tax discount rates of 9.65% and 9.84% were applied in determining the recoverable amount of the unit for the years ended December 31, 2021 and 2020, respectively. The discount rates were derived from a group of comparable companies (peer group).

Sensitivities related to the value in use calculation for AMG Superalloys UK would imply that a 1% increase in the discount rate or using a 0% growth rate would not have created an impairment.

[2] AMG Engineering's value in use was determined by discounting the future cash flows generated from the continuing use of the unit and was based on the following key assumptions:

- Cash flows were projected based on actual operating results and the 5-year business plan, which covers the next five calendar years following the impairment test date.
- The growth rate of 1% was used to extrapolate cash flow projections beyond the period covered by the most recent business plans. Management believes that this growth rate does not exceed the long-term average growth rate for the capital equipment sector of the metallurgical industry.
- Revenue projections were based on an internal 5-year business plan.
- Pre-tax discount rates of 10.81% and 10.81% were applied in determining the recoverable amount of the unit for the years ended December 31, 2021 and 2020, respectively. The discount rates were derived from a group of comparable companies (peer group).

Sensitivities related to the value in use calculation for AMG Engineering would imply that a 1% increase in the discount rate or using a 0% growth rate would not have created an impairment.

[3] AMG Titanium Alloys' value in use was determined by discounting the future cash flows generated from the continuing use of the unit and was based on the following key assumptions:

- Cash flows were projected based on actual operating results and the 5-year business plan, which covers the next five calendar years following the impairment test date.
- The growth rate of 1% was used to extrapolate cash flow projections beyond the period covered by the most recent business plans. Management believes that this growth rate does not exceed the long-term average growth rate for the capital equipment sector of the metallurgical industry.
- Revenue projections were based on an internal 5-year business plan.
- A pre-tax discount rates of 11.47% and 11.91% was applied in determining the recoverable amount of the unit for the year ended December 31, 2021 and 2020. The discount rate was derived from a group of comparable companies (peer group).

Sensitivities related to the value in use calculation for AMG Titanium Alloys would imply that a 1% increase in the discount rate or using a 0% growth rate would not have created an impairment.

(ii) Intangibles with finite lives

The determination of whether long-lived assets are impaired requires an estimate of the recoverable amount of the cash-generating unit or group of cash-generating units to which the long-lived assets have been allocated. The recoverable amount is defined as the higher of a cash-generating unit's fair value less costs of disposal and its value in use. For each of the cash-generating units which tested long-lived assets for recoverability, the recoverable amount was determined as the value in use or fair value less costs to sell as appropriate. The value in use requires the entity to estimate the future cash flows expected to arise from the cash-generating units or group of cash-generating units and to discount these cash flows with a risk adjusted discount rate. Expected future cash flows are based on management's best estimates of future business conditions but cannot be guaranteed as the Company does not have fixed revenues or costs. The risk adjusted discount rate is estimated using a comparison of peers but can vary based on changes in the debt or equity markets or risk premiums assigned to countries or industries.

12. OTHER INVESTMENTS

As of December 31, 2021, the Company owned 11.3% (2020: 11.3%) ownership interest in a former customer, Global Advanced Metals Pty LTD. The investment is being designated as a financial instrument measured at fair value through other comprehensive income because the Company has not gained significant influence.

The investment had a value of $12,300 at December 31, 2021 (2020: $11,292). The fair value of this investment is estimated by management with reference to the relevant available information. The Company relied on the current financial results of the investment including the current financial statements and current year revenue estimates to determine a fair value for the investment. The Company did not have the relevant data to complete a discounted cash flow model. There was a lack of marketability discount applied of 17.5%. Changes in the valuation methodologies or assumptions could lead to different measurements of fair value. The Company recorded investment gains of $1,008 and $3,438 related to the investment during the years ended December 31, 2021 and 2020, respectively, which is included in other comprehensive income.

Also included in other investments are assets of $17,530 (2020: $16,182) which are designated to fund the non-qualified pension liability. These assets consist of debt securities, equity securities, and insurance contracts which are held at fair value. These assets have been designated as Level 1 and partially Level 3 financial instruments on the fair value hierarchy. The Level 3 investments consist of insurance contracts valued at $6,451 (2020: $5,438). These insurance contracts have been valued using unobservable inputs based on the best available information in the circumstances. The investments are held in a Rabbi Trust and are restricted for use in pension funding. The Company recorded an investment gain of $1,601 (2020: $723) related to the investments during the year ended December 31, 2021, which is included in other comprehensive income. See notes 23 and 29 for additional information.

Included within the balance of other investments is the Company's equity interest in its joint venture, Shell & AMG Recycling B.V. The Company maintains a 50% interest and joint control of the entity. The joint venture was incorporated in the Netherlands and will provide a long-term sustainable solution for catalyst reclamation and recycling. The Company's interest is measured using the equity method as prescribed by IFRS 11 and IAS 28. The Company made capital contributions of $1,000 (2020: $1,000) during the current period. For the year ended December 31, 2021, the Company's share of the joint venture's losses was ($1,233) (2020: ($947)). Since the cumulative losses of the joint venture exceeded the Company's interest, only ($1,053) of the total losses were recognized in the the Company's profit and loss for the year ended December 31, 2021. The Company will offset the unrecognized losses of $180 against future contributions or income of the joint venture. As a result, the carrying value of the Company's equity method investment was nil (2020: $53) as of December 31, 2021.

13. INVENTORIES

	2021	2020
Raw materials	78,536	40,926
Work in process	28,708	27,229
Finished goods	99,861	74,884
Other	11,215	9,267
Total	218,320	152,306

Other inventory primarily includes spare parts that are maintained for operations.

In the year ended December 31, 2021, the net adjustment to net realizable value amounted to a write-down of $1,929 (2020: $7,991) and was included in cost of sales. The net realizable value write-downs were primarily related to inventory costing adjustments due to variability in metals pricing.

Inventory in the amount of $97,089 (2020: $57,510) is pledged as collateral to secure the bank loans of certain subsidiaries (see note 21).

14. TRADE AND OTHER RECEIVABLES

	2021	2020
Trade receivables, net of allowance for doubtful accounts	107,682	84,619
Due from investment in affiliate	126	46
Gross amount due from customers for contract work	269,651	307,635
Less: progress payments received	(232,024)	(269,931)
Net receivable from contract work (note 5)	37,627	37,704
Total	145,435	122,369

At December 31, 2021 and 2020, trade receivables include receivables from customers who have received direct shipments or services from the Company and receivables from customers who have utilized inventory on consignment. Amounts billed to furnace construction contracts customers are also included in the trade and other receivables line item in the statement of financial position. The carrying amount of trade receivables approximates their fair value due to their short-term nature. Trade receivables are generally non-interest bearing and are generally on 30-90 day terms.

At December 31, 2021, receivables in the amount of $69,577 (2020: $37,786) are pledged as collateral to secure the term loan credit facility of the Company (see note 21).

As of December 31, the analysis of trade receivables that were past due but not impaired is as follows:

	Total	Neither past due nor impaired	Past due but not impaired				
			<30 days	30-60 days	60-90 days	90-120 days	>120 days
2021	145,435	134,519	7,515	1,621	665	110	1,005
2020	122,369	111,675	6,803	1,186	253	342	2,110

At December 31, 2021, trade receivables are shown net of expected credit losses of $1,268 (2020: $1,637) arising from customer unwillingness or inability to pay. Bad debt charges in the amount of $435 and $759 were recorded in the years ended December 31, 2021 and December 31, 2020, respectively. These charges are recorded in selling, general and administrative expenses in the consolidated income statement. Refer to note 3(f) for additional details on the Company's policy for the calculation of expected credit losses.

Movements in the provision for impairment of receivables were as follows:

	2021	2020
At January 1	1,637	2,025
Charge for the year	435	759
Amounts written-off	(538)	(638)
Amounts recovered/collected	(155)	(532)
Foreign currency adjustments	(111)	23
At December 31	1,268	1,637

FACTORING OF RECEIVABLES

As of December 31, 2021 and 2020, the Company had total receivables factored and outstanding of $64,440 and $40,628, respectively. The Company maintains accounts receivable facilities with banks and credit insurance companies in Germany, France and the US. The Company sold receivables in the amount of $325,246 throughout the year which includes security deposits of $1,603 and cash proceeds of $274,539. During 2021, the Company incurred costs of $974 in conjunction with the sale of these receivables of which $719 were included in finance cost, $191 were recorded to selling, general and administrative expenses, and $64 were recorded to sales on the income statement. This activity is included in cash from operating activities during the year ended December 31, 2021.

In 2020, the Company sold receivables in the amount of $192,452 which includes security deposits of $1,072 and cash proceeds of $181,491. During 2020, the Company incurred costs of $764 in conjunction with the sale of these receivables of which $591 were included in finance cost, $120 were recorded to selling, general and administrative expenses, and $53 were recorded to sales on the income statement. This activity is included in cash from operating activities during the year ended December 31, 2020.

15. OTHER ASSETS

Other assets are comprised of the following:

	2021	2020
Prepaid inventory	33,242	21,124
Prepaid taxes (indirect)	20,290	13,501
Insurance	6,154	5,545
Environmental trusts	3,200	3,599
Deposits	2,640	1,144
Debt issuance cost	2,484	564
Maintenance and subscriptions	930	805
Pension prepayment	434	1,196
Prepaid short-time work	321	1,136
Other miscellaneous assets	3,842	4,703
Total	73,537	53,317
Thereof:		
Current	65,066	44,821
Non-current	8,471	8,496

Prepaid inventory includes prepayments on inventories as well as advanced payments to suppliers for specific furnace construction contracts.

In the year ended December 31, 2021, $1,603 (2020: $1,072) was included in deposits related to factoring agreements as discussed in note 14.

The Company's US subsidiaries have established trust funds for future environmental remediation payments. The recognized values of the trust funds at December 31, 2021 were $3,200 (2020: $3,599). See note 25 for additional details.

During the year ended December 31, 2021, one of our German subsidiaries wrote-off deposits for licenses by the amount of $20.

16. RESTRICTED CASH

	2021	2020
Non-current	85,023	208,919
Current	8,411	—
Total	93,434	208,919

Restricted cash at December 31, 2021, was $93,434 (2020: $208,919). The restricted cash primarily relates to proceeds from the Company's municipal bond offering issued by AMG Vanadium LLC, which are restricted for use in the construction of a new catalyst recycling facility in Ohio. Refer to note 21 for details regarding these proceeds. Additionally, several balances are also held by financial institutions to provide security to those institutions for the issuance of letters of credit or other forms of credit on behalf of the Company. These letters of credit serve two primary purposes: to provide financial backing for advance payments made by our customers of the AMG Technologies segment and to provide financial assurance to banks, vendors and regulatory agencies to whom the Company is obligated.

17. CASH AND CASH EQUIVALENTS

	2021	2020
Bank balances	298,388	207,366
Money market funds	31,697	—
Time deposits	7,792	—
Total cash	337,877	207,366

At December 31, 2021, the Company had $31,697 of highly liquid money market funds.

Bank balances earn interest at floating rates based on daily bank deposit rates. In 2021, one of our German subsidiaries utilized time deposits with a maturity of one month for the immediate cash needs of the Company.

At December 31, 2021, the Company had $170,000 available liquidity (2020: $169,851) on undrawn committed borrowing facilities.

18. CAPITAL AND RESERVES

SHARE CAPITAL

At December 31, 2021, the Company's authorized share capital was comprised of 65,000,000 ordinary shares (2020: 65,000,000) with a nominal share value of €0.02 (2020: €0.02) and 65,000,000 preference shares (2020: 65,000,000) with a nominal share value of €0.02 (2020: €0.02).

At December 31, 2021, the issued and outstanding share capital was comprised of 31,878,334 ordinary shares (2020: 28,457,498), with a nominal value of €0.02 (2020: €0.02) which were fully paid. In April 2021, the Company issued 3,136,742 ordinary shares for total proceeds of $118,722 (2020: nil), net of issuance costs. The Company also re-issued 32,557 of treasury shares in connection with the settlement of share-based compensation for total proceeds of $4,905. No preference shares were outstanding at December 31, 2021 (2020: nil). The nominal value of the outstanding shares as of December 31, 2021, was $723 (2020: $698) as compared to the value using historical exchange rates which was $853 (2020: $831).

The preference shares carry equal voting rights as ordinary shares and are entitled, if distribution to shareholders is permitted, to a fixed dividend equal to EURIBOR for deposit loans of one year increased with maximum of 400 basis points as determined by the Management Board of the Company and subject to approval by the Supervisory Board. AMG's dividend policy is to evaluate liquidity needs for alternative uses including funding growth opportunities and funding dividend payments to shareholders. Payment of future dividends to shareholders will be at the discretion of the Management Board subject to the approval of the Supervisory Board after taking into account various factors and is subject to limitations based on the Company's revolving credit facility. Additionally, payment of future dividends or other distributions to shareholders may be made only if the Company's shareholders' equity exceeds the sum of the issued share capital plus the reserves required to be maintained by law.

A roll forward of the total shares outstanding is noted below:

Balance at January 1, 2020	28,373,857
Shares repurchased	(46,132)
Treasury shares delivered for share-based compensation	117,432
Treasury shares delivered to Supervisory Board	12,341
Balance at December 31, 2020	28,457,498
Share issuance	3,136,742
Shares repurchased	(32,557)
Re-issuance of treasury shares	32,557
Treasury shares delivered for share-based compensation	276,551
Treasury shares delivered to Supervisory Board	7,543
Balance at December 31, 2021	31,878,334

SHARES ISSUED OR DELIVERED FOR SHARE-BASED COMPENSATION

During the year ended December 31, 2021, 276,551 (2020: 117,432) shares were issued or delivered related to share- based compensation to management. Refer to note 24 for details regarding these plans.

TREASURY SHARES

The Company repurchased shares which are held in treasury for the delivery upon exercise of options and performance share programs and are accounted for as a reduction of shareholders' equity. Treasury shares are recorded at cost, representing the market price on the acquisition date. When issued, shares are removed from treasury shares on a first-in, first-out (FIFO) basis. When treasury shares are re-issued under the Company's option plans, the difference between the cost and the cash received is recorded in retained earnings. When treasury shares are re-issued under the Company's share plans, the difference between the market price of the shares issued and the cost is recorded in retained earnings. On August 11, 2021, the Company retired 2,000,000 treasury shares in accordance with the terms of the share repurchase program.

A roll forward of the treasury share balance is noted below:

Balance at January 1, 2020	2,993,565
Shares repurchased	46,132
Treasury shares delivered for share-based compensation	(117,432)
Treasury shares delivered to Supervisory Board	(12,341)
Balance at December 31, 2020	2,909,924
Shares repurchased	32,557
Re-issuance of treasury shares	(32,557)
Treasury shares retired	(2,000,000)
Treasury shares delivered for share-based compensation	(276,551)
Treasury shares delivered to Supervisory Board	(7,543)
Balance at December 31, 2021	625,830

SUPERVISORY BOARD REMUNERATION

During the years ended December 31, 2021 and 2020, 7,543 and 12,341 shares were delivered, respectively, as compensation to its Supervisory Board members for services provided in 2021 and 2020. These shares were awarded as part of the remuneration policy approved by the Annual General Meeting.

OTHER RESERVES

	Foreign currency translation reserve	Hedging reserve	Cost of hedging reserve	Capitalized development expenditures reserve	Defined benefit obligation reserve	Fair value reserve	Total
Balance at January 1, 2020	(29,770)	(4,274)	2,032	1,439	(81,023)	(4,762)	(116,358)
Currency translation differences	8,126	—	—	—	(5,130)	—	2,996
Gain on FVOCI investments	—	—	—	—	—	4,161	4,161
Movement on cash flow hedges	—	2,082	(1,331)	—	—	—	751
Tax effect on net movement on cash flow hedges	—	2,439	(166)	—	—	—	2,273
Actuarial losses on defined benefit plans	—	—	—	—	(7,693)	—	(7,693)
Tax effect on net movement on defined benefit plans	—	—	—	—	3,192	—	3,192
Transfer to retained deficit	—	—	—	85	—	—	85
Balance at December 31, 2020	(21,644)	247	535	1,524	(90,654)	(601)	(110,593)
Balance at January 1, 2021	(21,644)	247	535	1,524	(90,654)	(601)	(110,593)
Currency translation differences	(6,218)	—	—	—	3,998		(2,220)
Gain on FVOCI investments	—	—	—	—	—	2,609	2,609
Movement on cash flow hedges	—	1,591	(239)	—	—	—	1,352
Tax effect on net movement on cash flow hedges	—	(2,800)	87	—	—	—	(2,713)
Actuarial gains on defined benefit plans	—	—	—	—	19,819	—	19,819
Tax effect on net movement on defined benefit plans	—	—	—	—	(4,297)	—	(4,297)
Transfer to retained deficit	—	—	—	(378)	—	—	(378)
Balance at December 31, 2021	(27,862)	(962)	383	1,146	(71,134)	2,008	(96,421)

RESTRICTIONS ON DISTRIBUTIONS

Certain restrictions apply on equity of the Company due to Dutch legal requirements. Please see note 12 in the parent company financial statements for additional details.

DIVIDENDS

During AMG's 2021 Annual General Meeting, the Company amended the dividend policy. Given that AMG has cyclical elements in its product mix and that it desires to have a relatively consistent dividend pay-out, the Company revised its policy to allow for stable dividend pay-outs that will target gradual increases to historic dividend levels, provided that such pay-outs and possible increases are supported by AMG's liquidity and cash flow generation, and subject to prevailing statutory requirements.

The Company intends to propose a full year dividend for 2021 of €0.40 (2020: €0.20) to the General Meeting of Shareholders for approval as part of the adoption of the 2021 Annual Accounts.

The interim dividend of €0.10 (2020: €0.10) per ordinary AMG share, paid on August 13, 2021, will be deducted from this amount. The proposed final dividend per ordinary share therefore amounts to €0.30 (2020: €0.10). This dividend payment restores AMG's dividend to the level in 2019, prior to the pandemic, and was determined appropriate by the Management and Supervisory Boards based on current liquidity and long-term prospects.

Dividend payments to shareholders will be at the discretion of the Management Board subject to the approval of the Supervisory Board after taking into account various factors, including business prospects, cash requirements, financial performance, expansion plans, the terms of the Company's financing facilities and the compliance with applicable statutory and regulatory requirements. Additionally, any payment of dividends (whether interim or after adoption of the annual accounts) or other distributions to shareholders may be made only if the Company's shareholders' equity exceeds the sum of the issued share capital plus the reserves required to be maintained by law.

Dividends of $7,598, or €0.20 per share, were paid during the year ended December 31, 2021. Dividends of $9,513, or €0.30 per share, were paid during the year ended December 31, 2020.

19. EARNINGS PER SHARE

BASIC EARNINGS PER SHARE

Basic earnings per share amounts are calculated by dividing net profits for the year attributable to ordinary equity holders of the parent by the weighted average of ordinary shares outstanding during the year. As of December 31, 2021 and 2020, the calculation of basic earnings per share is performed using the weighted average shares outstanding for 2021 and 2020, respectively.

DILUTED EARNINGS PER SHARE

Diluted earnings per share are calculated by dividing the net profit attributable to the ordinary equity holders of the parent by the weighted average number of ordinary shares outstanding during the year plus the weighted average number of ordinary shares that would be issued on the conversion of all the dilutive potential ordinary shares into ordinary shares. The only category of potentially dilutive shares at December 31, 2021 and 2020 are AMG's share options and AMG's restricted share unit and performance share unit plans. The diluted earnings per share calculation includes the number of shares that could have been acquired at fair value given the exercise price attached to the outstanding options. The calculated number of shares is then compared with the number of shares that would have been issued assuming the exercise of the share options.

For the year ended December 31, 2021, there were 25 (2020: 175) shares related to outstanding stock options that could potentially further dilute basic EPS in future periods but were anti-dilutive in 2021 due to the strike price of the options relative to the average price of the Company's shares for the year.

As a result of the Company's net loss for the year ended December 31, 2020, the dilutive effect of 55 shares related to stock options and 222 shares of performance share units were not included in the calculation of diluted EPS because the effect would have been anti-dilutive for the period presented.

Earnings	2021	2020
Net profit (loss) attributable to equity holders for basic and diluted earnings per share	13,771	(41,692)
Number of shares (in 000's)		
Weighted average number of ordinary shares for basic earnings per share	30,958	28,431
Dilutive effect of stock options and other share-based compensation	60	—
Dilutive effect of performance share units	361	—
Weighted average number of ordinary shares adjusted for effect of dilution	31,379	28,431
Basic earnings (loss) per share	0.44	(1.47)
Diluted earnings (loss) per share	0.44	(1.47)

20. NON-CONTROLLING INTERESTS

As of December 31, 2021, non-controlling interests totaled $25,718 (2020: $25,790).

On March 30, 2015, the Company sold a 40% equity interest in a German subsidiary, Graphit Kropfmühl GmbH ("AMG Graphite"). This sale resulted in the Company owning 60% of this subsidiary and a non-controlling interest of 40%. The Company has maintained control of the subsidiary and continues to consolidate the financial results. The non-controlling interest has rights to the financial position and results of AMG Graphite in proportion with their ownership. The non-controlling interest also has protective rights which prevent fundamental changes to AMG Graphite as well as restrictions on the ability to transfer cash out of the subsidiary.

The summarized financial information of this subsidiary is provided below. This information is based on amounts before intercompany eliminations:

Summarized financial information as of December 31:	2021	2020
Revenues	74,034	57,449
Current assets	64,317	55,508
Non-current assets	39,316	43,732
Current liabilities	25,056	14,927
Non-current liabilities	17,049	17,615
Total equity	61,528	66,698
Attributable to:		
Equity holders of parent	37,949	41,573
Non-controlling interest	23,579	25,125

The Company has additional non-controlling interests as of December 31, 2021, included in equity attributable to non-controlling interest of $2,139 (2020: $665).

21. LOANS AND BORROWINGS

This note provides information about the contractual terms of the Company's interest-bearing loans and borrowings. For more information about the Company's exposure to interest rate and foreign currency risk, see note 28.

Non-current	Interest rate	Maturity	2021	2020
Term Loan B[1]	LIBOR +3.5%	11/30/2028	338,397	331,140
Municipal bond	4.6%	7/1/2049	319,476	319,699
Subsidiary debt	4.8% - 8.5%	5/2022 - 11/2028	17,511	22,423
Total			675,384	673,262

Current	Interest rate	Maturity	2021	2020
Term Loan B[1]	LIBOR +3.5%	11/30/2028	3,500	3,500
Subsidiary debt	4.8% - 8.5%	5/2022 - 11/2028	23,841	19,892
Total			27,341	23,392

1 Effective under the new 2021 Term Loan B, the interest rate is subject to a 0.50% LIBOR floor. As of December 31, 2021, the effective floating interest rate was 4.0%.

TERM LOAN AND REVOLVING CREDIT FACILITY

On November 30, 2021, the Company entered into a new $350,000 7-year senior secured term loan B facility ("term loan") and a $200,000 5-year senior secured revolving credit facility ("revolver"). The total facility amount of $550,000 replaced AMG's existing credit facility and extended the term loan maturity from 2025 to 2028 and revolver maturity from 2023 to 2026. Proceeds from the facility were used to repay AMG's previous credit facility.

As of December 31, 2021, the total outstanding principal on the term loans was $350,000 (2020: $339,500). As of December 31, 2021, available revolver capacity was $170,000 (2020: $169,851). Interest on the revolver is based on current LIBOR (or in the case of any loans denominated in euros, EURIBOR) plus a margin that is dependent on AMG's corporate credit rating. Additionally, the new revolver, as a sustainability-linked loan, is subject to a margin adjustment based on annual CO_2 intensity reduction targets. At December 31, 2021 the margin on the revolver was 2.75%. As part of obtaining the revolver the Company is responsible for maintaining Net Debt to EBITDA not to exceed 3.5:1.0. Interest on the term loan is based on current LIBOR plus a margin of 3.5% and, as of December 31, 2021, is subject to a LIBOR floor of 0.50%.

To mitigate interest rate risk, on November 30, 2021 the Company entered into interest rate swaps totaling $350,000 in connection with the execution of the term loan and revolver. This determination was made as part of the ongoing risk management process as these instruments mitigate the interest rate risk on the Company's credit facility. See note 29 for additional information on the interest rate hedging activities.

The credit facility is subject to several affirmative and negative covenants including, but not limited to, the following: Net Debt to EBITDA not to exceed 3.5:1.0. EBITDA and Net Debt are defined in the credit facility agreement. The definitions per the credit facility agreement may be different from management definitions. The credit facility limits the amount of cash that can be included in the calculation of Net Debt. AMG's current cash balance is significantly in excess of the credit facility limit. As a result, the Net Debt to EBITDA ratio as defined by the credit facility as of December 31, 2021 was 1.6:1.0 (2020: 2.7:1.0). As of December 31, 2021, the Company was in compliance with all of its debt covenants.

Mandatory repayment of the credit facility is required upon the occurrence of (i) a change of control or (ii) the sale of all or substantially all of the business and/or assets of the Company whether in a single transaction or a series of related transactions. If the Company were not in compliance with all covenants under the credit facility, the loan could become due in full or the Company could be subject to significant amendment fees.

In July 2017, the United Kingdom's Financial Conduct Authority, which regulates the London Interbank Offered Rate (LIBOR), announced it intends to phase out LIBOR by June 30, 2023. The Alternative Reference Rates Committee ('ARRC'), a group of private-market participants convened by the Federal Reserve Board and the Federal Reserve Bank of New York to help ensure a successful transition from U.S. dollar LIBOR ('USD-LIBOR') to a more robust reference rate, has proposed that the Secured Overnight Financing Rate ('SOFR') represents the best alternative to USD-LIBOR for use in derivatives and other financial contracts that are currently indexed to USD-LIBOR. The Company's Credit Agreement and interest rate swaps include a hardwired transition process from LIBOR to SOFR, as the successor benchmark reference rate, to occur before the cessation of LIBOR, on or before June 30, 2023.

Debt issuance costs

In connection with the term loan and revolver that were refinanced in 2021, the Company incurred issuance costs of $7,240, which were deducted from the proceeds of the debt from the term loan or paid by the Company. The amounts have been allocated to the term loans and revolver based on the amount which would have been incurred if the facilities were obtained separately.

The amount allocated to the term loans of $4,703 is shown net against the outstanding term loan balance and are amortized using the effective interest method. The Company recorded amortization expense of $58 during the year ended December 31, 2021 related to these costs. The balance of unamortized costs net against the book value of the term loan was $4,645 (2020: $3,896) as of December 31, 2021.

The amount allocated to the revolver of $2,537 is included in other assets because there were no borrowings outstanding. This amount is being amortized on a straight-line basis over the life of the facility. The Company has recorded amortization expense of $53 during 2021 related to these costs. The balance of unamortized costs recorded in other assets related to the revolving credit facility was $2,484 (2020: $564) as of December 31, 2021.

Additionally, the Company recorded amortization of $4,850 (2020: $1,694) related to issuance cost from the previous credit facility in 2021 including $390 in fees incurred during the year.

Original issuance discount

The term loan included an original issue discount (OID) of 100 basis points, or $3,500 which is shown net against the outstanding term loan balance and is amortized using the effective interest method. The Company has recorded amortization expense of $42 during the year ended December 31, 2021 related to this original issuance discount. The balance of unamortized costs recorded was $3,458 (2020: $964) as of December 31, 2021. Additionally, the Company recorded amortization of $964 (2020: $285) related to original issuance discount from the previous credit facility in 2021.

MUNICIPAL BOND

On July 11, 2019, the Company entered into a $307,200 municipal bond in the US tax-exempt bond market generating proceeds of $325,000 as the bond was issued by AMG Vanadium LLC at a premium. The bond was issued through the Ohio Air Quality Development Authority for the purpose of constructing a new catalyst recycling facility in Ohio. The bonds have a coupon rate of 5.0% and an effective interest rate of 4.6% maturing on July 1, 2049. The bonds are fully guaranteed by the Company. There are no financial covenants related to the bonds. The bonds are unsecured and subordinated to the term loan and revolver.

Under the terms of the loan agreement with the bondholders, the proceeds of the bonds are restricted for the purpose of financing a portion of the cost of the acquisition, construction and equipping of the new spent catalyst recycling facility; paying construction period interest on the bonds; and paying issuance costs of the bond, which are defined as any financial, legal, administrative and other fees incurred by the Company. The funds are held by a third- party trustee and invested in cash and highly liquid money market funds (notes 16 and 28). While the project is under construction, the Company has classified the proceeds of the bonds as restricted cash as a non-current asset in the statement of financial position.

The bonds have several redemption provisions. The Company has an optional redemption whereby it can redeem the bonds beginning on July 1, 2029 through the date of maturity for the par value plus accrued interest at the date of redemption. If upon completion of the project there are excess funds, then the loan agreement indicates that a mandatory redemption of the excess funds shall be used to redeem an equivalent amount of the outstanding bonds. Additionally, the Company will also be required to repay a pro rata amount of the original issue premium in the event of a mandatory redemption. The repayment of the premium is calculated as the number of remaining years until the ten-year call date (July 1, 2029) divided by ten years and multiplied by the amount of the original issue premium on the redeemed bonds.

The municipal bond also grants the holders of the bonds the right to tender their bonds for purchase by the Company upon a change in control of the Company at a purchase price of 101% of the principal amount of the bonds plus accrued interest.

Debt issuance costs

In connection with the issuance of the municipal bonds in July 2019, the Company incurred issuance costs of $4,981, which were deducted from the proceeds of the municipal bonds. These issuance costs are presented net against the outstanding municipal bond balance and are amortized using the effective interest method. The Company recorded amortization expense of $77 (2020: $74) during the year ended December 31, 2021 related to these costs. The balance of unamortized costs was $4,794 (2020: $4,871) as of December 31, 2021.

Bond issuance premium

The municipal bond included a premium of $17,800 which is shown with the outstanding municipal bond balance and is amortized using the effective interest method. The Company recorded amortization of $300 (2020: $286) during the year ended December 31, 2021. The balance of unamortized premium recorded was $17,070 (2020: $17,370) as of December 31, 2021.

SUBSIDIARY DEBT

As of December 31, 2021, a Brazilian subsidiary had $37,274 (2020: $40,704) of fixed and floating rate debt facilities outstanding. These arrangements are denominated in US dollar and Brazilian reais and mature from 2022 through 2025. During 2021, the company repaid $3,203 on these loans and the balance was impacted by $227 due to foreign exchange movements. During 2020, a local bank approved a loan to a Chinese subsidiary with a borrowing capacity of ¥28,000 for the construction of an aluminum master alloys facility in China. The facility matures in 2028 and has an interest rate of 4.9%. As of December 31, 2021, the outstanding balance for this loan was $4,078 (2020: $1,530).

DEBT REPAYMENTS

The Company made debt repayments of $342,781 (2020: $4,072) during 2021. The payments included $339,500 (2020: $3,500) repayment of the term loans and additional payments of $3,281 (2020: $572) made to various banks related to other debt repayments.

RECONCILIATION OF MOVEMENTS OF LIABILITIES TO CASH FLOWS ARISING FROM FINANCING ACTIVITIES

	Total
Balance at January 1, 2020	691,237
Changes from financing cash flows:	
Proceeds from loans and borrowings	9,134
Repayment of borrowings	(4,072)
Total changes from financing cash flows	5,062
The effect of changes in foreign exchange rates	(891)
Amortization of transaction costs related to loans and borrowings	1,246
Balance at December 31, 2020	696,654
Balance at January 1, 2021	696,654
Changes from financing cash flows:	
Proceeds from loans and borrowings	348,972
Payment of transaction costs related to the issuance of debt	(5,093)
Repayment of borrowings	(342,781)
Total changes from financing cash flows	1,098
The effect of changes in foreign exchange rates	(155)
Amortization of premiums, discounts and transaction costs related to loans and borrowings	5,128
Balance at December 31, 2021	702,725

22. SHORT-TERM BANK DEBT

As of December 31, 2021, the Company had outstanding short-term bank debt of $13,046 (2020: $7,561). The Company's Brazilian, Chinese, and French subsidiaries maintain short-term borrowing arrangements primarily to fund working capital needs with various banks at a weighted-average interest rate of 3.8% (2020: 3.1%). Borrowings under these arrangements are recognized as short-term debt on the consolidated statement of financial position when it is due to be settled within 12 months from inception.

23. EMPLOYEE BENEFITS

DEFINED CONTRIBUTION PLANS

Tax qualified defined contribution plans are offered which cover substantially all of the Company's salaried and hourly employees at US subsidiaries. All contributions, including a portion that represents a company match, are made in cash into mutual fund accounts in accordance with the participants' investment elections. The assets of the plans are held separately, under the control of trustees, from the assets of the subsidiaries. When employees leave the plans prior to vesting fully in the Company contributions, the contributions or fees payable by the Company are reduced by the forfeited contributions.

In Europe, the employees are members of state-managed retirement benefit plans operated by the governments in the countries where the employees work. The subsidiaries are required to contribute a specified percentage of payroll costs to the retirement benefit scheme to fund the benefits. The only obligation of the subsidiaries with respect to the retirement benefit plan is to make the specified contributions.

The total expense as of December 31, 2021, recognized in the consolidated income statement of $3,685 (2020: $4,253) represents contributions paid and payable to these plans.

DEFINED BENEFIT PLANS

North America plans

The Company offers tax-qualified, non-contributory defined benefit pension plans for salaried and hourly employees at US subsidiaries covered under collective bargaining agreements. The plans generally provide benefit payments using a formula based on an employee's compensation and length of service. These plans are funded in amounts at least equal to the minimum funding requirements of the US Employee Retirement Income Security Act.

Non-qualified additional supplemental executive retirement plans (SERPs) also cover four of the Company's current and former executive officers. Pursuant to the terms of the agreements, these officers earn additional retirement benefits for continued service with the Company. The amounts payable under the SERPs are guaranteed by AMG.

Actuarial assumptions

A majority of the North America plans are frozen to new entrants. As a result, the principal actuarial assumptions for these plans are the rate of discount and mortality rates. The rate of discount utilized as of December 31, 2021 (expressed as a weighted average) was 2.53% (2020: 2.15%). The SERP plan assumptions are developed using specific assumptions about the individual participants.

Assumptions regarding future mortality are based on published statistics and the mortality tables developed by the Society of Actuaries for private sector plans in the United States using MP-2021 as published in October 2021. The valuation was prepared on a going-plan basis. The valuation was based on members in the Plan as of the valuation date and did not take future members into account. No provisions for future expenses were made.

Medical cost trend rates are not applicable to these plans.

The best estimate of contributions to be paid to the plans for the year ending December 31, 2022 is $1,660.

European plans

The Company's European plans include qualified defined benefit plans in Germany, the UK and France. The plans in Germany and France are partially funded or unfunded while the UK plan is partially funded. Benefits under these plans are based on years of service and the employee's compensation. Benefits are paid either from plan assets or, in certain instances, directly by AMG. Substantially all plan assets are invested in listed stocks and bonds.

Non-qualified additional supplemental executive retirement plan (SERP) also covers one of the Company's current executive officer. Pursuant to the terms of the agreement, this officer earns additional retirement benefits for continued service with the Company. The amounts payable under the SERP are guaranteed by AMG.

Actuarial assumptions

Principal actuarial assumptions at the reporting date (expressed as weighted averages) are presented below.

	2021	2020
	% per annum	% per annum
Salary increases	1.12	1.21
Rate of discount at December 31	1.49	0.97
Pension payments increases	2.57	2.35

Assumptions regarding future mortality are based on published statistics and mortality tables including the RT 2018G and S2PxA mortality tables.

The best estimate of contributions to be paid to the primary plans for the year ending December 31, 2022 is $10,481.

Presented below are employee benefits disclosures for plans aggregated by geographical location into the North American and European groups.

2021 changes in the defined benefit obligation and fair value of plan assets:

	North America			Europe			Total		
	Fair Value of Plan Asset	Defined Benefit Obligation	Total	Fair Value of Plan Asset	Defined Benefit Obligation	Total	Fair Value of Plan Asset	Defined Benefit Obligation	Total
January 1, 2021	40,749	(60,699)	(19,950)	114,866	(292,074)	(177,208)	155,615	(352,773)	(197,158)
Service costs	—	(586)	(586)	—	(3,727)	(3,727)	—	(4,313)	(4,313)
Net interest	710	(1,274)	(564)	646	(2,599)	(1,953)	1,356	(3,873)	(2,517)
Subtotal included in profit or loss	710	(1,860)	(1,150)	646	(6,326)	(5,680)	1,356	(8,186)	(6,830)
Benefits paid	(2,938)	2,938	—	(6,134)	10,075	3,941	(9,072)	13,013	3,941
Amounts included in OCI (see following table)	60	1,433	1,493	1,007	17,123	18,130	1,067	18,556	19,623
Contributions by employer	854	—	854	4,096	—	4,096	4,950	—	4,950
Effect of movements in foreign exchange rates	—	—	—	(1,536)	13,591	12,055	(1,536)	13,591	12,055
Change in the fair value of defined benefit plans that are in net asset position as of December 31, 2021[(a)]	902	—	902	(111)	—	(111)	791	—	791
Net liability for defined benefits obligations at December 31, 2021	40,337	(58,188)	(17,851)	112,834	(257,611)	(144,777)	153,171	(315,799)	(162,628)

(a) $210 included in non-current assets in the Statement of Financial Positions.

2021 subtotal included in OCI:

	North America			Europe			Total		
	Fair Value of Plan Asset	Defined Benefit Obligation	Total	Fair Value of Plan Asset	Defined Benefit Obligation	Total	Fair Value of Plan Asset	Defined Benefit Obligation	Total
Return on plan assets (excluding amounts included in net interest expense)	60	—	60	1,007	—	1,007	1,067	—	1,067
Assets Ceiling	—	—	—	—	(5,218)	(5,218)	—	(5,218)	(5,218)
Actuarial changes arising from changes in demographic assumptions	—	(189)	(189)	—	816	816	—	627	627
Actuarial changes arising from changes in financial assumptions	—	2,208	2,208	—	21,760	21,760	—	23,968	23,968
Experience adjustments	—	(586)	(586)	—	(235)	(235)	—	(821)	(821)
Subtotal included in OCI	60	1,433	1,493	1,007	17,123	18,130	1,067	18,556	19,623

2020 changes in the defined benefit obligation and fair value of plan assets:

	North America			Europe			Total		
	Fair Value of Plan Asset	Defined Benefit Obligation	Total	Fair Value of Plan Asset	Defined Benefit Obligation	Total	Fair Value of Plan Asset	Defined Benefit Obligation	Total
January 1, 2020	38,398	(56,564)	(18,166)	102,616	(260,320)	(157,704)	141,014	(316,884)	(175,870)
Service costs	—	(514)	(514)	—	(3,135)	(3,135)	—	(3,649)	(3,649)
Net interest	958	(1,663)	(705)	1,340	(3,582)	(2,242)	2,298	(5,245)	(2,947)
Subtotal included in profit or loss	958	(2,177)	(1,219)	1,340	(6,717)	(5,377)	2,298	(8,894)	(6,596)
Benefits paid	(2,897)	2,897	—	(6,219)	9,956	3,737	(9,116)	12,853	3,737
Amounts included in OCI (see following table)	3,094	(4,855)	(1,761)	10,640	(16,883)	(6,243)	13,734	(21,738)	(8,004)
Contributions by employer	878	—	878	2,810	—	2,810	3,688	—	3,688
Effect of movements in foreign exchange rates	—	—	—	3,679	(18,110)	(14,431)	3,679	(18,110)	(14,431)
Change in the fair value of defined benefit plans that are in net asset position as of December 31, 2020 [(a)]	318	—	318	—	—	—	318	—	318
Net liability for defined benefits obligations at December 31, 2020	40,749	(60,699)	(19,950)	114,866	(292,074)	(177,208)	155,615	(352,773)	(197,158)

(a) $1,001 included in non-current assets in the Statement of Financial Positions.

2020 subtotal included in OCI:

	North America			Europe			Total		
	Fair Value of Plan Asset	Defined Benefit Obligation	Total	Fair Value of Plan Asset	Defined Benefit Obligation	Total	Fair Value of Plan Asset	Defined Benefit Obligation	Total
Return on plan assets (excluding amounts included in net interest expense	3,094	—	3,094	10,640	—	10,640	13,734	—	13,734
Actuarial changes arising from changes in demographic assumptions	—	569	569	—	31	31	—	600	600
Actuarial changes arising from changes in financial assumptions	—	(5,226)	(5,226)	—	(17,310)	(17,310)	—	(22,536)	(22,536)
Experience adjustments	—	(198)	(198)	—	396	396	—	198	198
Subtotal included in OCI	3,094	(4,855)	(1,761)	10,640	(16,883)	(6,243)	13,734	(21,738)	(8,004)

Plan assets consist of the following:

	North America plans		European plans		Total	
	2021	2020	2021	2020	2021	2020
Equity securities and ownership of equity funds	8,880	8,389	68,543	66,364	77,423	74,753
Fixed Income	30,629	32,612	—	—	30,629	32,612
Insurance contracts and other	927	749	44,402	48,502	45,329	49,251
Total	40,436	41,750	112,945	114,866	153,381	156,616

The assets of funded plans are generally held in separately administered trusts, either as specific assets or as a proportion of a general fund or insurance contracts. Assets are invested in different classes in order to maintain a balance between risk and return. Investments are diversified to limit the financial effect of the failure on any individual investment. For many of the funded plans, asset- liability matching strategies are not in place, however the fixed income assets are held in investments with varying term lengths.

The assets included in equity securities in the table above consists of securities held at market value. The fixed income assets consist primarily of investment grade and corporate bonds at market value. The insurance contracts and other consist of insurance contracts and other investment vehicles held at market value.

The expense is recognized in the following line items in the income statement:

	North America plans		European plans		Total	
	2021	2020	2021	2020	2021	2020
Cost of sales	401	432	1,557	1,613	1,958	2,045
Selling, general and administrative expenses	749	787	4,123	3,764	4,872	4,551
Total	1,150	1,219	5,680	5,377	6,830	6,596

A quantitative sensitivity analysis for significant assumptions as of December 31, 2021 is as shown below:

Assumptions	Discount rate		Future salary increases		Future pension cost increase	
Sensitivity level	1% increase	1% decrease	1% increase	1% decrease	0.5% increase	0.5% decrease
Impact on the net defined benefit obligation North American Plans	(5,347)	6,338	128	(135)	123	(113)
Impact on the net defined benefit obligation European Plans	(34,815)	41,410	4,578	(4,064)	10,460	(9,614)
Total impact on the net defined benefit obligation	(40,162)	47,748	4,706	(4,199)	10,583	(9,727)

The sensitivity analyses above have been determined based on a method that extrapolates the impact on net defined benefit obligation as a result of reasonable changes in key assumptions occurring at the end of the reporting period.

The following payments are expected to be made in the future years out of the defined benefit plan obligation for the year ending December 31:

	North America Plans	European Plans	Total
2022	3,820	10,481	14,301
2023	3,750	10,391	14,141
2024	3,770	10,604	14,374
2025	3,730	10,792	14,522
2026	3,710	10,999	14,709
2027-2031	18,670	55,591	74,261

The average duration of the defined benefit plan obligation at the end of the reporting period is 14 years (2020: 15 years).

These defined benefit plans expose the Company to actuarial risks, such as longevity risk, currency risk, interest rate risk and market (investment) risk.

24. SHARE-BASED PAYMENTS

In May 2021, the shareholders of the Company approved an amendment to the Company's Remuneration Policy and long-term incentive program at the Annual General Meeting. Under the terms of the new Remuneration Policy, equity-settled stock options will no longer be awarded, and all awards for members of the Management Board will be in the form of performance share units ("PSU's"). The PSU's will continue to feature a three year service period; however, the new PSU plan will also require an additional two year holding period subsequent to vesting in line with the Dutch Corporate Governance Code. The PSU's will also continue to have a market performance vesting condition based upon the Company's total shareholder return relative to a relevant global peer group. However, the performance share units will no longer vest for performance below the 50th percentile (previously, the awards would fail to vest for performance below the 30th percentile). Only members of the AMG Management Board will receive PSU's. The Company established a new restricted share unit ("RSU") plan for the Company's employees outside of the AMG Management Board, which is discussed in detail below. These revisions to the Company's Remuneration Policy were effective on May 6, 2021 and did not impact or modify previously issued share-based payment awards.

EQUITY-SETTLED STOCK OPTIONS

As noted above, equity-settled stock options were discontinued as a result of the Company's amended Remuneration Policy. However, all previously issued and outstanding stock options to the Management Board were subject to the 2009 AMG Option Plan ("2009 Plan") approved on May 13, 2009 at the Annual General Meeting. Each option issued under the 2009 Plan entitles the holder to acquire shares at a future date at a price equal to the fair market value of the share at the date on which the option was granted. One half of the options granted to each option holder on any date will vest on each of the third and fourth anniversaries of the grant date. The vesting is subject to a performance condition related to return on capital employed. The options expire on the tenth anniversary of their grant date.

During the year ended December 31, 2021, 122,137 options were exercised (2020: nil) under the 2009 Plan. Total grants under the 2009 Plan during 2021 were nil (2020: 144,445). During the year ended December 31, 2021, there were no grants expired or forfeited (2020: nil).

All options under the 2009 Plan are equity-settled, in accordance with IFRS 2, by award of options to acquire ordinary shares or award of ordinary shares. The fair value of these awards has been calculated at the date of grant of the award. The fair value, adjusted for an estimate of the number of awards that will eventually vest, is expensed using a graded vesting methodology. The fair value of the options granted was calculated using a Black-Scholes model. Changes in the assumptions can affect the fair value estimate of a Black- Scholes model. The assumptions used in the calculation are set out below.

During the year ended December 31, 2021, AMG recorded compensation expense from equity-settled option transactions of $915 (2020: $295) which is included in selling, general and administrative expenses in the income statement.

Movements

	2021		2020	
	Number of options (in 000s)	Weighted average exercise price (in €)	Number of options (in 000s)	Weighted average exercise price (in €)
Outstanding at January 1	427	20.91	283	21.73
Granted during the year	—	—	144	19.31
Exercised during the year	(122)	9.78	—	—
Forfeited or expired during the year	—	—	—	—
Outstanding at December 31	305	25.37	427	20.91
Exercisable at December 31	89	28.35	160	13.50

At December 31, 2021, the number of common shares subject to options outstanding and exercisable was as follows:

Price range	Outstanding options	Weighted average exercise price (in €)	Weighted average remaining life (in years)	Exercisable options	Weighted average exercise price (in €)
€19.31 to €25.50	220,152	21.44	7.22	75,707	25.50
€31.43 to €44.24	85,251	35.51	6.93	13,569	44.24

At December 31, 2020, the number of common shares subject to options outstanding and exercisable was as follows:

Price range	Outstanding options	Weighted average exercise price (in €)	Weighted average remaining life (in years)	Exercisable options	Weighted average exercise price (in €)
€9.78 to €19.31	266,582	14.94	7.43	122,137	9.78
€25.50 to €31.43	133,822	28.08	7.15	37,854	25.50
€44.24	27,136	44.24	7.34	—	—

The maximum number of options that can be granted is 10% of total shares outstanding up to a maximum of 50,000,000. As of December 31, 2021, the total options outstanding under the 2009 Plan were 305,403 (2020: 427,540).

Assumptions

The following table lists the inputs into the model used to calculate the fair value of the share-based payment options that were granted in 2020 under the 2009 Plan:

	2021	2020
Exercise price	—	€19.31
Share price at date of grant	—	€19.31
Contractual life (years)	—	10
Expected volatility	—	41.56%
Life of option (years)	—	10
Weighted average fair value	—	€3.96

The expected volatility was calculated using the average share volatility of the Company (over a period equal to the expected term of the options). The life of the options is ten years, and they are valued as Bermudan options. The 2009 Plan options vest 50% each on the third and fourth anniversary of the grant date. There are performance requirements for vesting of these options. The risk-free rate of return is the yield from EBC Eurozone interest curves for instruments whose maturities approximate the vesting period of the options. AMG's option expense is recorded in equity (refer to note 18).

Under IFRS 2, the return on capital employed vesting condition is deemed to be a non-market performance condition. In accounting for non-market performance conditions, the Company recognizes expense based on the number of equity instruments that are expected to vest at the grant date. The Company revises that estimate, if necessary, if subsequent information indicates that the number of equity instruments expected to vest differs from previous estimates. For the year ended December 31, 2020, Management determined that the 2019 awards were unlikely to achieve the required level of return on capital employed based on projections at that point in time due to the ongoing negative effects of the pandemic. At that time, Company reversed the cumulative previously recognized expense for these awards which resulted in a decrease in stock-based compensation expense of $320 during the year ended December 31, 2020. However, the 2021 results have exceeded those previous projections, and the Company achieved the required level of return on capital employed to allow the awards to vest. As such, the Company recognized an increase of $502 to stock-based compensation in the year ended December 31, 2021 for the cumulative expense related to these awards.

Performance share units

In May 2009, the Annual General Meeting approved a remuneration policy that utilizes share-based payments as a part of compensation. This policy was subsequently amended by the May 2021 Annual General Meeting as discussed previously. In the year ended December 31, 2021, the Company issued 90,161 PSU's under the 2021 Plan to members of the AMG Management Board which are share-settled. For the year ended December 31, 2020, the Company issued 242,840 PSU's under the 2009 Plan to employees which were also share-settled. The PSU's granted to each employee on any date will vest on the third anniversary of the grant date. The vesting is subject to performance conditions related to return on capital employed. As these awards will be equity-settled, the balance is recorded in equity rather than as a liability in accordance with IFRS 2.

AMG utilized a Monte Carlo simulation to develop a valuation of the PSU awards. This calculation was performed on the date of issuance. The following table lists the inputs into the model used to calculate the fair value of the equity-settled performance share units that were granted 2019 through 2021:

	2021 Grant	2020 Grant	2019 Grant
Fair value at grant date	€32.49	€15.87	€34.44
Share price at date of grant	€31.61	€19.31	€31.43
Contractual life at issuance (years)	3.0	3.0	3.0
Expected volatility	50.30%	44.00%	40.03%
Discount for lack of marketability	15.00%	—%	—%
Expected departures at grant	—%	8%	8%

The expected volatility was calculated using the average share volatility of the Company (over a period equal to the expected term of the shares). The expected life is the time at which shares will vest. For the risk-free rate, the Company utilized the European Central Bank Eurozone yield for the 2021 grants. The risk free rate does not have a significant impact on the valuation of the awards.

The Company recorded expense of $8,413 (2020: $1,134) related to these awards during the year, which is net of $45 (2020: $16) of expense that was allocated to non-controlling interests. AMG's expense related to equity-settled awards is recorded in equity.

In the year ended December 31, 2021, 16,241 PSUs were forfeited (2020: 9,111). The total number of equity-settled PSUs outstanding as of December 31, 2021 was 456,323 (2020: 491,627).

During the year ended December 31, 2021, the Company adjusted the forfeiture rate on the 2019 awards from 8% to 7%, which approximates the actual departures to date. The 2020 awards continue to apply an 8% forfeiture assumption given the historical rate of departures. As discussed above, the 2019 PSU awards are subject to the same return on capital employed non-market performance condition. At December 31, 2020, the Company did not expect the awards to vest. As such, the Company had reversed the cumulative previously recognized expense related to these awards as of December 31, 2020. During the year ended December 31, 2021, the Company achieved the required return on capital employed to allow the 2019 awards to vest and consequently recorded a cumulative expense related to these awards. The impact on the income statement as a result of the decrease in the forfeiture rate and the recognition of the cumulative expense for the 2019 awards resulted in an increase (decrease) to stock-based compensation expense of $5,755 (2020: ($3,766)) during the year ended December 31, 2021.

The PSU awards include a performance multiplier which can range from 0x – 1.75x the target award based on the Company's share price performance relative to its peers.

The Company achieved 0.75x for the 2018 grant which was settled in 2021 (2020: 0.75x). During the year ended December 31, 2021, 84,314 shares (2020: 117,432) were paid out with respect to the vesting of equity-settled performance share units granted in 2018.

RESTRICTED SHARE UNITS

In May 2021, the AMG Management Board approved a new RSU plan that provides share-based payments as a component of compensation to employees of the Company. In the year ended December 31, 2021, the Company issued 80,057 (2020: nil) RSU's to employees which are share-settled under the new plan. The RSU's granted to each employee will vest on the third anniversary of the grant date. The vesting is subject only to service conditions provided that the employee has remained continuously in the employment of the Company or a Group Company until the vesting date. In the event that the Supervisory Board has approved to pay-out any dividends to shareholders of the Company, the equivalent of the cash amount of the dividend will be converted to incremental RSU's to be awarded upon the vesting date to employees. As these awards will be equity-settled, the balance is recorded in equity rather than as a liability in accordance with IFRS 2. The fair value of the RSU's granted during the year ended December 31, 2021 was €31.61 based on the closing price of AMG's shares on the date of grant. The Company recorded expense of $700 (2020: nil) related to the outstanding RSU's in the year ended December 31, 2021, which is net of an 8% forfeiture rate based on the expected departures at the grant date.

In the year ended December 31, 2021, 1,424 RSUs were forfeited (2020: nil). The total number of equity-settled RSUs outstanding as of December 31, 2021 was 78,633 (2020: nil).

25. PROVISIONS

	Environmental remediation costs and recoveries	Restructuring	Warranty	Cost estimates	Partial retirement	Restoration costs	Other	Total
Balance at January 1, 2020	26,527	1,394	4,495	6,768	696	10,676	879	51,435
Provisions made during the period	4,342	6,238	3,446	2,710	—	—	1,620	18,356
Provisions reversed during the period	—	(233)	(1,543)	(1,141)	(51)	(130)	(371)	(3,469)
Provisions used during the period	(22,138)	(2,782)	(780)	(692)	—	—	(107)	(26,499)
Increase due to discounting	1,767	—	—	—	—	866	—	2,633
Currency and transfers	207	24	376	699	61	(2,346)	167	(812)
Balance at December 31, 2020	10,705	4,641	5,994	8,344	706	9,066	2,188	41,644
Balance at January 1, 2021	10,705	4,641	5,994	8,344	706	9,066	2,188	41,644
Provisions made during the period	11,941	1,377	2,855	4,353	24	20	436	21,006
Provisions reversals during the period	—	(283)	(2,579)	(2,828)	—	—	(968)	(6,658)
Provisions used during the period	(15,384)	(3,482)	(574)	(1,884)	(114)	—	(155)	(21,593)
(Decrease) / increase due to discounting	(344)	—	—	—	—	235	—	(109)
Currency and transfers	(192)	(516)	(474)	(614)	(52)	(418)	(129)	(2,395)
Balance at December 31, 2021	6,726	1,737	5,222	7,371	564	8,903	1,372	31,895
Non-current	5,081	—	—	—	706	8,876	659	15,322
Current	5,624	4,641	5,994	8,344	—	190	1,529	26,322
Balance at December 31, 2020	10,705	4,641	5,994	8,344	706	9,066	2,188	41,644
Non-current	4,133	—	—	—	564	8,889	712	14,298
Current	2,593	1,737	5,222	7,371	—	14	660	17,597
Balance at December 31, 2021	6,726	1,737	5,222	7,371	564	8,903	1,372	31,895

ENVIRONMENTAL REMEDIATION COSTS AND RECOVERIES

The Company makes provisions for environmental clean-up requirements, largely resulting from historical solid and hazardous waste handling and disposal practices at its facilities. Environmental remediation provisions exist at the following sites and are discounted according to the timeline of expected payments. Due to timing and low interest rates, the undiscounted and discounted liability amounts do not differ significantly, except for with respect to the liabilities in the US.

Cambridge, OH USA

The most significant items at the Cambridge, Ohio site relate to a 1997 permanent injunction consent order ("PICO") entered into with the State of Ohio and Cyprus Foote Mineral Company, the former owner of the site. While AMG's US subsidiary and Cyprus Foote are jointly liable, the Company has agreed to perform and be liable for the remedial obligations. The site contains two on-site slag piles that are the result of many years of production. These slag piles were capped in 2009, in accordance with the PICO requirements, thereby lowering the radioactive emissions from the piles.

The PICO also required 1,000 years of operations and maintenance expenses ("O&M") through the year 3009 at the site. The Company has reserved for ongoing O&M which is expected to cost $43,787 on an undiscounted basis and $2,575 (2020: $2,975) on a discounted basis. Annual payments for O&M are expected to be $59 for the next 15 years, declining from that point on. These amounts will be paid out of an environmental trust and annuity which have already been established by the Company. The total value of these trust and annuity assets is $4,660 of which $2,085 has not been recognized due to the liability amount recorded being less than the value of the assets. One additional provision relates to groundwater monitoring. This project is expected to create cash outflows of $85 ($98 on an undiscounted basis), and is expected to be completed within the next 14 years. Discount rates of 0.39% - 1.73% (depending on the expected timing of payments) were used in determining the liabilities recorded.

There were no environmental expenses recorded in the year ended December 31, 2021 (2020: nil) and payments of $84 (2020: $84) related to the Cambridge site.

Newfield, NJ USA

The Newfield, NJ site is a former manufacturing facility of the Company that ceased operations in 2007. The United States Environmental Protection Agency (the "US EPA") and the New Jersey Department of Environmental Protection ("NJDEP") are the regulating authorities in regards to remediation of environmental liabilities identified at the site. The US EPA identified three environmental issues requiring remediation pertaining to contaminants in groundwater, contaminants in soil and sediment and perchlorate in groundwater. The liability associated with the non-perchlorate contaminants was transferred to a third-party in 2006. Refer to note 33 for additional details. The Company maintains responsibility for the remediation activities related to the perchlorate in groundwater.

The NJDEP maintains oversight for the remediation of low-level radioactive materials residing at the site. Newfield conducted operations that created a substantial slag pile with low-level radioactive materials. AMG completed negotiations with the NJDEP regarding a removal plan for the Newfield Site in 2016. The remedy consisted of the removal of low level radioactive material for transportation and disposal at an approved licensed disposal facility. During the year ended December 31, 2021, the Company recorded an environmental expense of $11,651 (2020: $3,965) in relation to these activities. This expense was largely driven by additional slag quantities discovered by the Company's decommissioning contractor that were located below surface level and were not anticipated in earlier estimates. This increase to the provision was offset by payments totaling $16,036 to the environmental provision for remediation efforts performed during the year ended December 31, 2021. As of December 31, 2021, the Company has completed a majority of the requirements under the Decommissioning Plan. Once the final steps are completed, the Company can file for termination of the license to possess low level radioactive materials with the NJDEP. Final license termination is subject to the approval of the NJDEP, and the Company could be required to perform additional activities by the NJDEP before final approval is granted.

A balance of $1,374 (2020: $4,947) ($1,380 on an undiscounted basis) remains in the provision at December 31, 2021. These costs are expected to be paid over the next 2 years, subject to negotiations with the regulatory agencies, and primarily relate to activities associated with perchlorate in groundwater. The Company will perform analysis of perchlorate in groundwater over that timeframe, and based on the results of those studies, the Company will submit final reports to the US EPA for remedy selection.

The remaining accrual represents Management’s best estimate given the information available. Given the nature of the activities to be performed, there remains potential uncertainty with respect to the ultimate costs for which currently no reliable estimate can be made.

On March 6, 2020 the Company amended its Transportation and Disposal Agreement with one of its major contractors as part of the cost removal for all covered material on our facility in Newfield, NJ. Under the terms of the amendment the Company deferred its payments through 2023 and recorded a long-term liability of $6,640 as of the year ended December 31, 2021 (2020: $5,580). See note 26 for additional details.

In addition to the removal of the slag pile the Company has agreed to an operations and maintenance agreement (O&M) provision of $221 at December 31, 2021 (2020: $258).

Remediation trust funds

The Company’s US subsidiaries have established trust funds for future environmental remediation payments. The amounts are kept by commercial banks, which are responsible for making investments in equity and money market instruments. The trust funds are to be used according to the terms of the trust deed which require that these funds be used for O&M at the two US sites. Amounts are paid out following completion and approval of rehabilitation work. The assets are not available for general use. The trust funds are discounted and are shown within other non-current assets in the consolidated statement of financial position. The recognized values of the trust funds at December 31, 2021 were $3,200 (2020: $3,599). The total amount of the trusts as of December 31, 2021 were $5,285 (2020: $5,115).

Pocking, Germany

An environmental remediation liability exists with respect to the silicon metal operation and its waste storage. As of December 31, 2021, the liability for the remediation of this site is valued at $540 (2020: $532). There was an expense of $60 (2020: $57) and payments of $11 (2020: $6) made during 2021. There are expected payments in 2022 of $540. A discount rate of 0.0% was used to determine the liability recorded.

Nuremberg, Germany

Over time, damage to the sewer lines from the plant in Nuremberg, Germany has occurred. Management is working with German authorities in order to repair the sewer lines. In the year ended December 31, 2021, there was an expense of $230 (2020: $320) and payments of $57 (2020: $313). The expected liability for continued work on the sewer rehabilitation project is $1,931 (2020: $1,889). Payments for this project are expected to occur over the next 4 years with spending taking place in a relatively consistent pattern over those years. Discount rates of 0.34% - 0.49% (depending on the expected timing of payments) were used in determining the liabilities recorded.

RESTRUCTURING

During the year ended December 31, 2021, the Company recorded restructuring expenses of $805 in cost of good sold and $572 on selling, general and administrative expenses, totaling $1,377 (2020: $6,238) which was offset by a reversal of ($283) (2020: ($233)). The current year net expense was largely driven by restructuring expenses in our production facilities and severance payments on two of our European operations and one facility in the United States resulting on a headcount reduction of 57.

WARRANTY

The Company's Engineering business offers warranties related to their furnace construction contracts. These warranties are only provided on select contracts and the provisions are made on a contract by contract basis. Each contractual warranty is expected to be utilized or derecognized within twelve months. The provisions for these warranties are based on the historical return percentages. Warranty payments of $251 (2020:$574) were made and warranty provisions included an expense of $2,447 (2020: $2,948) and reversal of ($2,579) (2020: ($1,514)) recorded in the year ended December 31, 2021. The additional provisions were primarily related to new projects in the turbine blade coating field and plasma melting technologies as well as several special furnaces for various heat treatment and metallurgy applications that were finalized during 2021. Reversal related to expired warranties periods.

Two other German subsidiaries provide warranties for a limited number of products. The provisions are based on actual claims made by customers. There were provisions made of an additional expense of $408 (2020: $498), a reversal of nil (2020: ($29)) and there were payments of $323 recorded during 2021 (2020: $206).

COST ESTIMATES

AMG Engineering builds a project cost provision for long-term contracts that are completed. The provision is developed on a contract by contract basis and is based on contractor estimates. The provision is utilized or derecognized depending on actual performance of the contracts and expected total of project costs. A provision made of an additional expense of $4,353 (2020: $2,710) and reversal of ($2,828) (2020: ($1,141)) was recorded in 2021 related to new projects related to the turbine blade coating field and plasma melting technologies as well as several special furnaces for various heat treatment and metallurgy applications while $1,884 (2020: $692) of provisions were used.

PARTIAL RETIREMENT

The collective agreements for retirement indemnities on our French subsidiary and the corresponding commitments have been valued as of December 31, 2021. There was an expense of $24 (2020: nil), reversal of nil (2020: ($51)) and there were payments of $114 (2020: nil). Additional payments of approximately $67 are expected to occur over the next 5 years. Discount rate of 0.7% was used by the Company's French subsidiary to determine the liabilities recorded. Furthermore, 4 of our partial retirement obligations expired during 2021.

RESTORATION, REHABILITATION AND DECOMMISSIONING COSTS

Decommissioning provisions represent the accrued cost required to provide adequate restoration and rehabilitation upon the completion of extraction activities. These amounts will be settled when rehabilitation is undertaken, generally at the end of the project's life.

Hauzenberg, Germany

The Company maintains a recultivation provision related to its graphite mine in Germany. There were additions of $17 recorded as of December 31, 2021 (2020: nil). The total restoration liability for this mine was $5,740 as of December 31, 2021 (2020: $6,158). A discount rate of 0.2% was used to determine the liability recorded.

Nazareno, Brazil

During the year ended December 31, 2021, there was a net increase in the liability of $255, which totaled $3,163 as of December 31, 2021 (2020: $2,908). A discount rate of 9.41% was used to determine the liability recorded. The following table summarizes the activity as of December 31, 2021:

	Brazil restoration costs
Balance at January 1, 2020	5,296
Provisions reversed during the period	(130)
Decrease in fixed assets	(1,189)
Increase due to discounting	212
Translation loss	(1,281)
Balance at December 31, 2020	2,908
Balance at January 1, 2021	2,908
Provisions made during the period	3
Increase in fixed assets	250
Increase due to discounting	205
Translation loss	(203)
Balance at December 31, 2021	3,163
Non-current	2,718
Current	190
Balance at December 31, 2020	2,908
Non-current	3,149
Current	14
Balance at December 31, 2021	3,163

OTHER

Other is comprised of additional accruals including guarantees made to various customers. As of December 31, 2021, the other liability is valued at $1,372 (2020: $2,188) which mainly relates to one of our German subsidiaries.

26. OTHER LIABILITIES

Other liabilities are comprised of the following:

	2021	2020
Accruals for operational costs	17,670	13,324
Accrued bonus	12,658	6,734
Accrued interest	8,489	9,531
Accrued employee payroll expenses	7,983	6,201
Other benefits and compensation	7,115	7,694
Construction retainage	7,296	3,780
Long-term environmental disposal	6,640	5,580
Accrued professional fees	4,720	5,600
Taxes, other than income	4,348	4,083
Fiscal contingency	3,876	3,011
Acquisition earn-out liability	2,673	—
Non-controlling interest dividend	1,426	1,542
Claims	971	1,090
Sales commission	307	662
Government grants	20	113
Other miscellaneous liabilities	5,578	5,474
Total	91,770	74,419
Thereof:		
Non-current	11,098	8,237
Current	80,672	66,182

See notes 29 and 30 for additional information on acquisition earn-out liability. See note 25 for additional information on long-term environmental disposal.

27. TRADE AND OTHER PAYABLES

	2021	2020
Trade payables	235,214	139,651
Trade payables – contract work	17,551	25,348
Total	252,765	164,999

The Company has limited exposure to payables denominated in currencies other than the functional currency, and where significant exposure exists enters into appropriate foreign exchange contracts.

- Trade payables are generally non-interest bearing and are normally settled on 30 or 60 day terms except for payables related to furnace construction contracts as well as retainage payables for our expansion project in Zanesville (note 10 and 26) that settle between one month and twelve months. Other payables are non- interest bearing and have an average term of six months.
- Interest payable is normally settled quarterly or semi-annually throughout the financial year.
- For terms and conditions relating to related parties, refer to note 34.

As of December 31, 2021, the Company has outstanding supply chain financing of $38,048 (2020: $15,479).

28. FINANCIAL RISK MANAGEMENT OBJECTIVES AND POLICIES

The Company's principal financial liabilities, other than derivatives, are comprised of loans and borrowings, short-term bank debt and trade payables. The main purpose of these financial instruments is to provide capital for the Company's operations, including funding working capital, capital maintenance and expansion. The Company has various financial assets such as trade and other receivables, cash and cash equivalents and restricted cash, which arise directly from its operations.

The Company enters into derivative financial instruments, primarily interest rate swaps, interest rate caps, cross-currency interest rate swaps, foreign exchange forward contracts and commodity forward contracts. The purpose of these instruments is to manage interest rate, currency and commodity price risks. The Company does not enter into any contracts for speculative purposes.

The Supervisory Board has overall responsibility for the establishment of the Company's risk management framework while the Management Board is responsible for oversight and compliance within this framework. The Company's risk management policies are established to identify and analyze the risks faced by the Company, to set appropriate risk limits and controls, and to monitor risks and adherence to limits. Risk management policies and systems are reviewed regularly to reflect changes in market conditions and the Company's activities.

The main risks arising from the Company's financial instruments are: credit, liquidity and market risks.

CREDIT RISK

The Company's exposure to credit risk with respect to trade and other receivables is influenced mainly by the individual characteristics of each customer. The demographics of the Company's customer base, including the default risk of the industry and country in which customers operate, has less of an influence on credit risk. No single customer accounts for more than 10% of the Company's revenue. There are no geographic concentrations of credit risk. It is the Company's policy that all customers who wish to trade on credit terms are subject to credit verification procedures which ensure their creditworthiness. In addition, receivable balances are monitored on an ongoing basis to ensure that the Company's exposure to impairment losses is not significant. Collateral is generally not required for trade receivables, although the Company's furnace construction contracts do often require advance payments. The Company's maximum exposure is the carrying amount as discussed in note 14.

With respect to credit risk arising from the other financial assets of the Company, which comprises cash and cash equivalents, restricted cash and derivative instruments, the Company's exposure to credit risk arises from the default of the counterparty, with a maximum exposure equal to the carrying amount of the instruments. The Company's treasury function monitors the location of cash and cash equivalents, restricted cash and the counterparties to hedges and monitors the strength of those banks. The Company's financial assets are held with bank and financial institution counterparties, which all carry investment-grade credit ratings. Impairment on cash and cash equivalents has been measured on a 12-month expected loss basis and reflects the short maturities of the exposures. The Company considers that its cash and cash equivalents have low credit risk based on the external credit ratings of the counterparties. The amount of impairment allowance at December 31, 2021 is $1 (2020: $1). The Company's maximum exposure is the carrying amounts as discussed in notes 16, 17 and 29.

LIQUIDITY RISK

Liquidity risk is the risk that the Company will not be able to meet its financial obligations as they fall due. The Company's approach to managing liquidity is to ensure, as far as possible, that it will always have sufficient liquidity to meet its liabilities when due, under both normal and stressed conditions, without incurring unacceptable losses or risking damage to the Company's reputation.

The Company monitors cash flows at varying levels. At the Company level, this monitoring is done on a bi-weekly basis. However, at several subsidiaries, this type of monitoring is done daily. Typically, the Company ensures that it has sufficient cash on demand to meet expected operational expenses for a period of eight weeks, including the servicing of financial obligations. In addition, the Company maintains various borrowing facilities for working capital and general corporate purposes. The Company's primary facility includes the following:

- $350,000 term loan B facility and a $200,000 revolving credit facility with a syndicate of banks that is secured by certain assets of the material subsidiaries of the Company. Interest is payable at a base rate plus a spread based on a leverage ratio.

The table below summarizes the maturity profile of the Company's financial liabilities at December 31, 2021, based on contractual undiscounted payments. The financial derivatives obligations are presented on a net basis for balances where it is appropriate to net the obligation position within a subsidiary for the respective period.

2021	Contractual cash flows	< 3 months	3-12 months	2023	2024	2025	2026	> 2026
Term loan / revolver	350,000	—	3,500	3,500	3,500	3,500	3,500	332,500
Cash interest on term loan	119,625	2,813	14,480	17,121	17,133	16,819	16,767	34,492
Municipal bond	307,200	—	—	—	—	—	—	307,200
Cash interest on municipal bond	430,080	7,680	7,680	15,360	15,360	15,360	15,360	353,280
Other loans and borrowings	41,352	709	23,132	12,140	2,440	801	798	1,332
Cash interest on other loans and borrowings	3,769	586	1,582	774	347	161	132	187
Financial derivatives	7,781	2,751	3,355	1,091	386	198	—	—
Lease payments	69,240	1,363	5,019	5,048	4,239	3,645	3,600	46,326
Trade and other payables	252,765	194,728	58,037	—	—	—	—	—
Short-term bank debt	13,046	2,344	10,702	—	—	—	—	—
Total	1,594,858	212,974	127,487	55,034	43,405	40,484	40,157	1,075,317

The table below summarizes the maturity profile of the Company's financial liabilities at December 31, 2020 based on contractual undiscounted payments.

2020	Contractual cash flows	< 3 months	3-12 months	2022	2023	2024	2025	> 2025
Term loan / revolver	339,500	—	3,500	3,500	3,500	3,500	325,500	—
Cash interest on term loan	42,650	—	10,614	10,504	10,394	10,284	854	—
Municipal bond	307,200	—	—	—	—	—	—	307,200
Cash interest on municipal bond	445,440	7,680	7,680	15,360	15,360	15,360	15,360	368,640
Other loans and borrowings	42,315	604	19,288	16,132	2,904	2,154	390	843
Cash interest on other loans and	5,791	528	2,909	1,420	588	227	50	69
Financial derivatives	15,796	6,573	4,746	2,557	1,662	241	17	—
Lease payments	71,654	1,703	5,528	5,591	4,466	3,868	3,736	46,762
Trade and other payables	164,999	121,564	43,435	—	—	—	—	—
Short-term bank debt	7,561	61	7,500	—	—	—	—	—
Total	1,442,906	138,713	105,200	55,064	38,874	35,634	345,907	723,514

The difference between the contractual cash flows and the carrying amount of the term loan noted above is attributable to issuance costs and an original issue discount in the amount of $8,103 and $4,860 as of December 31, 2021 and 2020, respectively, which are offset against the carrying amount of the debt.

The difference between the contractual cash flows and the carrying amount of the municipal bond noted above is attributable to issuance costs and a premium in the amount of $12,276 as of December 31, 2021 (2020: $12,499), which are included in the carrying amount of the debt.

MARKET RISK

Market risk is the risk that the fair value of future cash flows of a financial instrument will fluctuate because of changes in market prices. Market prices comprise three types of risk: interest rate, foreign currency, and commodity price risk. Financial instruments affected by market risk include loans and borrowings, derivative financial instruments, trade and other receivables, and trade and other payables.

The sensitivity analyses in the following sections relate to the positions as of December 31, 2021 and 2020.

The sensitivity analyses have been prepared on the basis that the amount of net debt, the ratio of fixed to floating interest rates of the debt and derivatives and the proportion of financial instruments in foreign currencies are all constant and on the basis of the hedge designations in place at December 31, 2021.

The analyses exclude the impact of movements in market variables on the carrying value of pension and other post-retirement obligations, provisions and on the non-financial assets and liabilities of foreign operations.

The following assumptions have been made in calculating the sensitivity analyses:

- The statement of financial position sensitivity relates to derivatives.
- The sensitivity of the relevant income statement item is the effect of the assumed changes in respective market risks.

This is based on the financial assets and financial liabilities held at December 31, 2021 and 2020, including the effect of hedge accounting.

INTEREST RATE RISK

Interest rate risk is the risk that changes in interest rates will affect the Company's income or the value of its holdings of financial instruments. The Company's fixed rate borrowings are exposed to a risk of change in their fair value due to changes in interest rates. The Company's floating rate borrowings are exposed to a risk of change in cash flows due to changes in interest rates. Short-term receivables and payables are not exposed to interest rate risk.

The Company's policy is to maintain at least 75% of its borrowings as fixed or capped rate borrowings. The Company either enters into fixed rate debt or strives to limit the variability of floating rate instruments through the use of interest rate swaps or caps. These are designed to hedge underlying debt obligations. At December 31, 2021 and 2020, after considering the effect of interest rate hedges, all of the Company's borrowings are at a fixed or capped rate of interest.

The following table demonstrates the sensitivity to a reasonably possible change in interest rates adjusting for multiple interest rate caps and swaps effective as of December 31, 2021 and 2020, with all other variables held constant, of the Company's profit before tax (through the impact on floating rate borrowings).

2021	Increase/ decrease in basis points	Effect on profit before tax	Effect on equity before tax
US dollar	+50	—	5,791
Brazilian real	+50	(36)	—
US dollar	–50	—	(6,380)
Brazilian real	–50	36	—

2020	Increase/ decrease in basis points	Effect on profit before tax
US dollar	+50	(1,698)
Brazilian real	+50	(54)
US dollar	–50	1,698
Brazilian real	–50	54

See note 21 for loans and borrowings explanations.

At December 31, 2021, the Company's interest rate derivatives had a fair value of ($2,460) (2020: ($3,670)). In November 2021, the Company entered into interest rate swaps with two financial institutions in connection with the execution of its new new credit facility and unwound its prior interest rate caps. The original notional value of the swaps was $350,000, and the notional decreases over the term of the contract to align with the outstanding balance on the Company's term loan B. The objective of the hedge is to eliminate the variability of cash flows in the interest payments associated with the 1-month LIBOR benchmark interest rate of the term loan B. The contract swaps the variable 1-month LIBOR rate to a fixed rate of 1.41% over the expected life of the term loan B. Prior to the execution of the interest rate swaps in November 2021, the Company utilized interest rate cap agreements to hedge its interest rate risk on its prior credit facility that was extinguished in the current year (refer to note 21). The Company had capped the variable rate of interest for a $350,000 notional value of debt at 3%.

FOREIGN CURRENCY RISK

Foreign currency risk is the risk that changes in foreign exchange rates will affect the Company's income or the value of its holdings of financial instruments. Many of the Company's subsidiaries are located outside the US. Individual subsidiaries execute their operating activities in their respective functional currencies which are primarily comprised of the US dollar and euro. Since the financial reporting currency of the Company is the US dollar, the financial statements of those non-US dollar operating subsidiaries are translated so that the financial results can be presented in the Company's consolidated financial statements.

Each subsidiary conducting business with third parties that leads to future cash flows denominated in a currency other than its functional currency is exposed to the risk from changes in foreign exchange rates. It is the Company's policy to use forward currency contracts to minimize the currency exposures on net cash flows. For several subsidiaries, this includes managing balance sheet positions in addition to forecast and committed transactions. For these contracts, maturity dates are established at the end of each month matching the net cash flows expected for that month. Another subsidiary hedges all sales transactions in excess of a certain threshold. For this subsidiary, the contracts mature at the anticipated cash requirement date. Most forward exchange contracts mature within twelve months and are predominantly denominated in US dollars, euros, British pound sterling and Brazilian reais. When established, the forward currency contract must be in the same currency as the hedged item. It is the Company's policy to negotiate the terms of the hedge derivatives to closely match the terms of the hedged item to maximize hedge effectiveness. The Company seeks to mitigate this risk by hedging a range of 60% to 90% of transactions that occur in a currency other than the functional currency. During the year ended December 31, 2021, the Company modified its hedging polices. Starting January 2021, the Company is no longer hedging intergroup balance sheet exposures as well long-term operating costs, primarily in Brazil.

The Company deems its primary currency exposures to be in US dollars and euros. The following table demonstrates the sensitivity to a reasonably possible change in the two primary functional currencies of the Company: US dollar and euro exchange rates with all other variables held constant, of the Company's profit before tax (due to changes in the fair value of monetary assets and liabilities) and the Company's equity (due to changes in the fair value of forward exchange contracts). Changes in sensitivity rates reflect various changes in the economy year-over-year.

2021	Strengthening/ weakening in functional rate	Effect on profit before tax	Effect on equity before tax
US dollar	+10%	668	316
Euro	+10%	3,350	(2,213)
US dollar	–10%	(668)	(316)
Euro	–10%	(3,350)	2,213
2020	**Strengthening/ weakening in functional rate**	**Effect on profit before tax**	**Effect on equity before tax**
US dollar	+10%	2,244	2,066
Euro	+10%	(5,238)	855
US dollar	–10%	(2,244)	(2,066)
Euro	–10%	5,238	855

COMMODITY PRICE RISK

Commodity price risk is the risk that raw materials prices will increase and negatively impact the gross margins and operating results of the Company. The Company is exposed to volatility in the prices of raw materials used in some products and uses forward contracts to manage these exposures for exchange-traded metals when possible. For these exchange-traded metals, the Company aims to maintain a greater than 50% hedged position in order to avoid undue volatility in the sales prices and purchase costs attained in the normal course of business. Commodity forward contracts are generally settled within twelve months of the reporting date. However, most of the metals, alloys and chemicals that the Company processes and sells such as vanadium, chrome metal, tantalum, graphite, niobium, and antimony trioxide, cannot be hedged on an exchange. For these materials, the Company mitigates its price exposure by aligning raw materials purchases with sales orders and ensuring that it is managing working capital in a manner that minimizes commodity price exposure.

CAPITAL MANAGEMENT

With regard to its capital structure the primary objective of the Company is to maintain strong capital ratios in order to support its business and maximize shareholder value.

The Company manages its capital structure and makes adjustments to it, in light of economic conditions. Its policy is to ensure that the debt levels are manageable to the Company and that they are not increasing at a level that is in excess of the increases that occur within equity. During the planning process, the expected cash flows of the Company are evaluated and the debt to equity and debt to total capital ratios are evaluated in order to ensure that levels are improving year-over-year. Debt to total capital is a more appropriate measure for the Company due to its initial equity values of the subsidiaries from the combination in 2007. Management deems total capital to include all debt (including short-term and long-term) as well as the total of the equity of the Company, including non-controlling interests.

	2021	2020
Loans and borrowings	702,725	696,654
Short-term bank debt	13,046	7,561
Less: cash and cash equivalents and restricted cash	431,311	416,285
Net debt	284,460	287,930
Total equity	294,152	141,270
Total capital	578,612	429,200
Debt to total capital ratio	49.2%	67.1%

29. FINANCIAL INSTRUMENTS

FAIR VALUES

The carrying amounts presented in the financial statements approximate the fair values for all of the Company's financial instruments, other than as discussed below.

The fair value of the financial assets and liabilities are included at the price that would be received to sell the instrument in an orderly transaction in the principal (or most advantageous) market at the measurement date under current market conditions.

- Current assets and liabilities approximate their carrying amounts largely due to the short-term maturities of these instruments and as such are not included in the following tables.
- The calculation of fair value for derivative financial instruments depends on the type of instruments: Derivative interest rate contracts are estimated by discounting expected future cash flows using current market interest rates and yield curves over the remaining term of the instrument; Derivative currency and commodity contracts are based on quoted forward exchange rates and commodity prices, respectively.
- The Company's term loan B is a floating rate borrowing and is carried at amortized cost. The fair value of the term loan B was $347,375 (2020: $339,500) at December 31, 2021. The Company's municipal bonds are fixed rate borrowings and are carried at amortized cost. The fair value of those bonds was $353,434 (2020: $337,708) at December 31, 2021. The fair value of the term loan and municipal bonds is based on quoted prices for similar securities adjusted for the prevailing market-based yields and are deemed to be Level 2 inputs. The remainder of the Company's borrowings and notes receivable maintain a floating interest rate and approximate fair value. Fair value of the Company's floating rate loans and borrowings are estimated by discounting expected future cash flows using a discount rate that reflects the Company's borrowing rate at December 31, 2021.
- The consideration of non-performance risk did not significantly impact the fair values for fixed and floating rate loans and borrowings.
- Contingent consideration is calculated using a valuation model that considers the present value of the expected future payments, discounted using a risk-adjusted discount rate.

FAIR VALUE HIERARCHY

The Company uses the following hierarchy for determining and disclosing the fair value of financial instruments by valuation technique:

Level 1: quoted (unadjusted) prices in active markets for identical assets or liabilities

Level 2: other techniques for which all inputs which have a significant effect on the recorded fair value are observable, either directly or indirectly

Level 3: techniques which use inputs which have a significant effect on the recorded fair value that are not based on observable market data

As of December 31, 2021, the Company held the following financial instruments measured at fair value:

Assets measured at fair value

December 31, 2021	Total	Level 1	Level 2	Level 3
Non-current financial assets				
Restricted cash	85,023	85,023	—	—
Equity investments classified as FVOCI (note 12)	12,300	—	—	12,300
Other investments (note 12)	17,530	11,079	—	6,451
Forward contracts – hedged	95	—	95	—
Current financial assets				
Restricted cash	8,411	8,411		
Forward contracts - hedged	4,026	—	4,026	—
Interest rate derivatives	30	—	30	—

Liabilities measured at fair value

December 31, 2021	Total	Level 1	Level 2	Level 3
Non-current financial liabilities				
Forward contracts – hedged	574	—	574	—
Interest rate derivatives	1,490	—	1,490	—
Contingent consideration	2,015	—	—	2,015
Current financial liabilities				
Forward contracts - hedged	5,010	—	5,010	—
Interest rate derivatives	1,000	—	1,000	—
Contingent consideration	658	—	—	658

As of December 31, 2020, the Company held the following financial instruments measured at fair value:

Assets measured at fair value

December 31, 2020	Total	Level 1	Level 2	Level 3
Non-current financial assets				
Restricted cash	208,919	208,919	—	—
Equity investments classified as FVOCI (note 12)	11,292	—	—	11,292
Other investments (note 12)	16,182	10,744	—	5,438
Forward contracts – hedged	1,854	—	1,854	—
Interest rate derivatives	40	—	40	—
Current financial assets				
Forward contracts – hedged	5,682	—	5,682	—
Interest rate derivatives	279	—	279	—

Liabilities measured at fair value

December 31, 2020	Total	Level 1	Level 2	Level 3
Non-current financial liabilities				
Forward contracts – hedged	986	—	986	—
Interest rate derivatives	3,403	—	3,403	—
Current financial liabilities				
Forward contracts – hedged	9,678	—	9,678	—
Interest rate derivatives	586		586	

During the years ended December 31, 2021 and 2020, there were no transfers between Level 1, Level 2, and Level 3 fair value measurements.

The following table shows a reconciliation from the opening balances to the closing balances for Level 3 fair values.

	Equity Securities	Contingent Consideration
Balance at January 1, 2020	12,278	—
Purchase of other investments	990	—
Change in fair value	3,462	—
Balance at December 31, 2020	16,730	—
Purchase of other investments	990	—
Change in fair value	1,031	—
Acquired in business combination	—	2,759
Foreign currency adjustments	—	(86)
Balance at December 31, 2021	18,751	2,673

HEDGING ACTIVITIES

Interest rate hedges

In November 2021, the Company entered into interest rate swap contracts with two financial institutions in connection with the execution of its new credit facility. The contracts have a notional value equivalent to the total balance of the term loan B. The contracts swap the variable interest payments on the term loan B to fixed payments of interest. The interest rate caps related to the prior credit facility were unwound and replaced by these contracts. The interest rate swaps were executed so that the Company could hedge its exposure to changes in the benchmark interest rate on the term loan B facility. The Company has matched the critical terms of the swaps to the term loan B and consequently has designated the interest rate swaps as effective cash flow hedges. The amount of losses related to the interest rate hedges included in equity was ($295) and ($426) in the years ended December 31, 2021 and 2020, respectively. The amount included in equity is anticipated to impact the income statement through November 2026, which is the term of the contracts. During the years ended December 31, 2021 and 2020, $426 and $104 was transferred from equity to the income statement as an increase to finance costs. There was no ineffectiveness for contracts designated as cash flow hedges during the years ended December 31, 2021 and 2020, respectively.

The Company also continues to maintain derivative contracts with a financial institution to mitigate its exposure to changes in the benchmark interest rate on portions of its Brazilian subsidiary debt. The contracts include interest rate swaps and cross-currency interest rate swaps, which the Company has not designated for hedge accounting. All gains and losses are recognized in profit and loss. During the year ended December 31, 2021, ($636) (2020: ($1,479)) of losses related to these outstanding interest rate derivatives were recorded to finance costs in the income statement.

Commodity forward contracts

The Company is exposed to volatility in the prices of raw materials used in some products and uses commodity forward contracts to manage these exposures. Such contracts generally mature within twelve months. Commodity forward contracts have been designated as cash flow hedges and contracts not designated as cash flow hedges are immediately recognized in cost of sales.

The open US dollar denominated forward contracts to purchase commodities contracts as of December 31, 2021 are as follows:

	Metric tons	Average price	Fair value assets	Fair value liabilities
Aluminum forwards	2,775	2,677	445	(36)

The open US dollar denominated forward contracts to purchase commodities contracts as of December 31, 2020 are as follows:

	Metric tons	Average price	Fair value assets	Fair value liabilities
Aluminum forwards	2,475	1,823	711	(143)

The amount from the commodity cash flow hedges included in equity was $384 and $487 in the years ended December 31, 2021 and 2020, respectively. The amount included in equity is anticipated to impact the income statement over the next 12 months. During the years ended December 31, 2021 and 2020, ($2,127) and $247, respectively, were transferred from equity to the income statement as (decreases) increases to cost of sales. There was no ineffectiveness for contracts designated as cash flow hedges during the years ended December 31, 2021 and 2020.

Foreign currency forward contracts

At any point in time, the Company also uses foreign exchange forward contracts to hedge a portion of its estimated foreign currency exposure in respect of forecasted sales and purchases. These contracts are negotiated to match the terms of the commitments and generally mature within two years. When necessary, these contracts are rolled over at maturity. Foreign exchange forward contracts that are not part of a hedge relationship are held at fair value with fair value changes recognized through profit or loss.

The open foreign exchange forward sales contracts as of December 31, 2021 are as follows:

Exposure	Notional amount	Contract rate	Fair value assets	Fair value liabilities
Cash Flow Hedges				
EUR (versus USD)	€16.0 million	0.87	380	(115)
USD (versus EUR)	$76.1 million	1.20	5	(3,794)

The open foreign exchange forward sales contracts as of December 31, 2020 are as follows:

Exposure	Notional amount	Contract rate	Fair value assets	Fair value liabilities
Cash Flow Hedges				
EUR (versus USD)	€12.9 million	0.86	—	(845)
USD (versus EUR)	$111.6 million	1.19	4,776	(198)

The open foreign exchange forward purchase contracts as of December 31, 2021 are as follows:

Exposure	Notional amount	Contract rate	Fair value assets	Fair value liabilities
Cash Flow Hedges				
USD (versus EUR)	$95.7 million	1.171	3,015	(87)
EUR (versus USD)	€28.5 million	0.861	42	(679)
GBP (versus USD)	£24.4 million	1.386	43	(865)
CNY (versus EUR)	¥58.7 million	0.136	191	(8)

The open foreign exchange forward purchase contracts as of December 31, 2020 are as follows:

Exposure	Notional amount	Contract rate	Fair value assets	Fair value liabilities
Cash Flow Hedges				
USD (versus EUR)	$148.5 million	1.178	142	(4,732)
GBP (versus USD)	£18.6 million	1.282	1,551	—
BRL (versus USD)	R$129.7 million	4.413	334	(4,742)
CNY (versus USD)	¥12.2 million	0.123	22	(4)

The amounts from the foreign currency cash flow hedges included in equity were ($683) and $717 in the years ended December 31, 2021 and 2020, respectively. The amount included in equity is anticipated to impact the income statement over the next two years. During the years ended December 31, 2021 and 2020, $2,735 and $12,282, respectively, were transferred from equity to the income statement as increases to cost of sales and selling, general, and administrative expenses. There was nil (2020: $187) recognized in profit or loss during the year ended December 31, 2021 due to ineffectiveness.

30. ACQUISITION OF SUBSIDIARY

On August 20, 2021, the Company completed a stock purchase agreement to acquire certain assets and assume certain liabilities of Phyr7, GmbH ("Phyr7") located in Heidelberg, Germany. Phyr7 was acquired to manage AMG's entrance into the lithium vanadium battery market. AMG is currently developing this technology to service the industrial power management application market as an alternative to diesel powered generators. Phyr7 is a specialist in artificial intelligence-based power management solutions whose technology will provide key functionality to the Company's lithium vanadium batteries that are currently under development. The acquired entity was included within the AMG Critical Materials Technologies segment. For the period ended December 31, 2021, Phyr 7 contribute nil revenues to the Company's results. The consideration transferred to acquire Phyr7 consisted of $473 of cash and $2,759 of contingent consideration. The contingent consideration relates to potential additional future payments the Company may have to make to the selling shareholders. These payments include a one-time payment upon successful integration of the acquired software with the Company's lithium vanadium battery as well as a percentage of the acquiree's future EBITDA. The $2,759 related to this potential additional consideration represents the fair value of the estimated future payments at the date of acquisition. There were no changes to the value of the contingent consideration from the date of the acquisition through December 31, 2021 (see note 26).

During 2021, the Company incurred acquisition-related costs of $170 on legal fees and due diligence costs. These costs were included in selling, general and administrative expenses.

The following table summarizes the recognized amounts of assets acquired and liabilities assumed at the date of acquisition:

	Note	
Intangible assets	11	3,774
Deferred tax liability	9	(1,122)
Total identifiable net assets acquired		2,652

The valuation techniques used for measuring the fair value of material assets acquired were as follows:

- Intangible assets - multi-period excess earnings method: The multi-period excess earnings method considers the present value of net cash flows that are expected to be generated by the acquired software, by excluding any cash flows related to contributory assets.

During 2021, the Company recognized $580 of goodwill which was the difference between the consideration transferred and the fair value of the identifiable net assets acquired. The goodwill was attributable mainly to the skills and technical talent of Phyr7's workforce and the synergies expected to be achieved from integrating Phyr7 into the Company's existing AMG Critical Materials Technologies business.

31. LEASES

LEASES AS LESSEE

The Company has entered into leases for office space, facilities and equipment. The leases generally provide that the Company pays the tax, insurance and maintenance expenses related to the leased assets. These leases have an average original term of 5-7 years with renewal terms at the option of the lessee and lease payments based on market prices at the time of renewal. There are no restrictions placed upon the lessee by entering into these leases.

Set out below are the carrying amounts of the Company's right-of-use assets, which are included in property, plant and equipment in the statement of financial position, and lease liabilities as well as the movements during the period:

	Right-of-use assets				
	Land, buildings and improvements	Machinery and equipment	Furniture and fixtures	Total	Lease liabilities
January 1, 2020	46,064	3,305	765	50,134	50,717
Additions	1,758	1,103	426	3,287	3,287
Retirements and transfers	(1)	(58)	(15)	(74)	(25)
Depreciation expense	(3,907)	(1,138)	(428)	(5,473)	—
Interest expense	—	—	—	—	1,726
Lease modifications	(988)	(65)	—	(1,053)	(1,126)
Payments	—	—	—	—	(6,464)
Foreign currency translation	3,286	226	53	3,565	3,766
December 31, 2020	46,212	3,373	801	50,386	51,881
January 1, 2021	46,212	3,373	801	50,386	51,881
Additions	5,948	770	576	7,294	7,294
Retirements and transfers	1,116	(10)	(2)	1,104	(57)
Depreciation expense	(4,190)	(1,169)	(458)	(5,817)	—
Interest expense	—	—	—	—	1,807
Payments	—	—	—	—	(7,120)
Foreign currency translation	(2,956)	(169)	(47)	(3,172)	(3,256)
December 31, 2021	46,130	2,795	870	49,795	50,549

The Company recognized rent expense from short-term leases of $861 (2020: $713) and leases of low-value assets of $244 (2020: $203) for the year ended December 31, 2021.

32. CAPITAL COMMITMENTS

The Company's capital expenditures include projects to improve the Company's operations and productivity, replacement projects and ongoing environmental requirements (which are in addition to expenditures discussed in note 25). As of December 31, 2021, the Company had committed to capital requirements in the amount of $71,080 (2020: $78,265). These capital commitments related primarily to the construction of AMG Vanadium's catalyst recycling facility in Ohio, AMG Lithium's site preparation and construction of building site facilities in Bitterfeld, Germany and AMG Brazil's capital expenditures related to Spodumene 1+.

33. CONTINGENCIES

GUARANTEES

The following table outlines the Company's off-balance sheet guarantees and letters of credit for the benefit of third parties as of December 31, 2021 and 2020:

	Guarantees	Letters of credit	Total
2021			
Total amounts committed:	118,673	26,202	144,875
Less than 1 year	42,845	26,202	69,047
2–5 years	68,508	—	68,508
After 5 years	7,320	—	7,320

	Guarantees	Letters of credit	Total
2020			
Total amounts committed:	120,701	33,464	154,165
Less than 1 year	70,709	33,464	104,173
2–5 years	29,899	—	29,899
After 5 years	20,093	—	20,093

In the normal course of business, the Company has provided indemnifications in various commercial agreements which may require payment by the Company for breach of contractual terms of the agreement. Counterparties to these agreements provide the Company with comparable indemnifications. The indemnification period generally covers, at maximum, the period of the applicable agreement plus the applicable limitations period under the law. The maximum potential amount of future payments that the Company would be required to make under these indemnification agreements is not reasonably quantifiable as some indemnifications are not subject to limitation. However, the Company enters into indemnification agreements only when an assessment of the business circumstances would indicate that the risk of loss is remote.

The Company has agreed to indemnify its current and former directors and officers to the extent permitted by law against any and all charges, costs, expenses, amounts paid in settlement and damages incurred by the directors and officers as a result of any lawsuit or any other judicial administrative or investigative proceeding in which the directors and officers are sued as a result of their service. These indemnification claims will be subject to any statutory or other legal limitation period. The nature of such indemnification prevents the Company from making a reasonable estimate of the maximum potential amount it could be required to pay to counterparties. The Company has $100,000 in directors' and officers' liability insurance coverage.

ENVIRONMENTAL

In 2006, a US subsidiary of the Company entered into a fixed price remediation contract with an environmental consultant, whereby that consultant became primarily responsible for aspects of the environmental remediation. This subsidiary of the Company is still a secondary obligor for this remediation, in the event that the consultant does not perform. The US subsidiary is also still subject to remediate any contamination associated with perchlorate contamination work which commenced in 2019.

The Company has other contingent liabilities related to environmental regulations at several locations. Environmental regulations in France require monitoring of wastewater and potential clean-up to be performed at one of the French subsidiary's plant sites in Chauny. Although the extent of these issues is not yet known, there is a possibility that the Company could incur remediation costs.

As discussed in note 25, a German subsidiary of the Company has a sewer system liability, which is in the process of being resolved via a sewer replacement project. Based on the liability associated with the sewer, it is also believed that there may be a groundwater contamination issue. This German subsidiary has performed remediation feasibility trials but has not received a demand from the government with respect to any potential wider groundwater treatment and it has recorded no provision for this, but it is possible that some remediation will eventually be required. The Company believes that the maximum exposure related to this contamination is $10,000.

TAXATION

There is one outstanding tax case with a subsidiary in Brazil whereby the federal tax authorities claim that $6,477 is due in unpaid federal VAT taxes and penalties. The Brazilian subsidiary disputed the claim and is awaiting a court date. The Brazil subsidiary has accrued $142 as of December 31, 2021 (2020: $149) as the probability to pay the majority of the claim is remote.

LITIGATION

We are party to various pending or threatened legal actions and other proceedings that arise in the ordinary course of our business, including matters arising under provisions relating to the protection of the environment. These types of matters could result in compensatory damages, cost reimbursements or contributions, penalties, non-monetary sanctions, or other relief. We believe the probability is remote that the outcome of each of these matters will have a material adverse effect on the Company as a whole. We cannot predict the outcome of legal or other proceedings with certainty.

OTHER

One of the Company's subsidiaries closed a pension plan in 2005, prior to becoming part of AMG. The Company has been made aware that there are potential flaws in the paperwork which substantiates the closure, which could make this closure invalid. If a claim was made on this basis, the potential liability could approximate $10,000. Due to the length of time since the closure, the Company does not believe that any claim is likely, and no provision has been made for this contingency.

34. RELATED PARTIES

TRANSACTIONS WITH KEY MANAGEMENT PERSONNEL

Key management personnel compensation

The Company considers the members of the Management Board and the Supervisory Board to be the key management personnel as defined in IAS 24 Related parties. For the year ended December 31, 2020, Management determined that the 2019 awards were unlikely to achieve the required level of return on capital employed based on projections at that point in time due to the ongoing negative effects of the pandemic. At that time, the Company reversed the cumulative previously recognized expense for these awards. However, the 2021 results have exceeded those previous projections, and the Company achieved the required level of return on capital employed to allow the awards to vest. Refer to note 24 for further details.

For remuneration details of the Management Board and the Supervisory Board, see below.

The compensation of the Management Board of the Company comprised:

For the year ended December 31, 2021	Salaries and bonus	Share-based compensation	Post-employment benefits including contributions to defined contribution plans	Other remuneration [a]	Total
Heinz Schimmelbusch	2,628	3,539	181	175	6,523
Eric Jackson	1,814	1,252	103	42	3,211
Jackson Dunckel	1,383	1,041	417	41	2,882
Total	5,825	5,832	701	258	12,616

[a] Other remuneration includes car expenses and insurance paid for by the Company.

For the year ended December 31, 2020	Salaries and bonus	Share-based compensation	Post-employment benefits including contributions to defined contribution plans	Other remuneration [a]	Total
Heinz Schimmelbusch	1,035	602	229	333	2,199
Eric Jackson	837	195	133	40	1,205
Jackson Dunckel	637	177	357	26	1,197
Total	2,509	974	719	399	4,601

[a] Other remuneration includes car expenses and insurance paid for by the Company.

Each member of the management board has an employment contract with the Company which provides for severance in the event of termination without cause. The maximum severance payout is limited to two years base salary and two years of target annual bonus.

The compensation of the Supervisory Board of the Company comprised:

For the year ended December 31, 2021	Cash remuneration	Share-based remuneration	Total compensation
Steve Hanke	110	71	181
Willem van Hassel	75	47	122
Herb Depp	80	41	121
Donatella Ceccarelli	80	41	121
Frank Löhner [1]	22	14	36
Dagmar Bottenbruch	65	41	106
Warmolt Prins	43	27	70
Total	475	282	757

For the year ended December 31, 2020	Cash remuneration	Share-based remuneration	Total compensation
Steve Hanke	110	69	179
Willem van Hassel	75	46	121
Herb Depp	80	40	120
Donatella Ceccarelli	80	40	120
Frank Löhner [1]	65	40	105
Dagmar Bottenbruch	65	40	105
Total	475	275	750

[1] Frank Löhner stepped down from the Supervisory Board effective May 2021.

Total Management Board and Supervisory Board Compensation for the year ended:	Cash remuneration	Share-based compensation	Post-employment benefits including contributions to defined contribution plans	Other remuneration [(a)]	Total
December 31, 2021	6,300	6,114	701	258	13,373
December 31, 2020	2,984	1,249	719	399	5,351

[a] Other remuneration includes car expenses and insurance paid for by the Company.

ENTITIES WITH SIGNIFICANT INFLUENCE OVER THE COMPANY

Foundation

In July 2010, the foundation “Stichting Continuiteit AMG” (“Foundation”) was established following the resolution adopted at its Annual Meeting on May 12, 2010. The board of the Foundation consists of three members, all of whom are independent of AMG. The purpose of the Foundation is to safeguard the interests of the parent company, the enterprise connected therewith and all the parties having an interest therein and to exclude as much as possible influences which could threaten, amongst other things, the continuity, independence and identity of the parent company contrary to such interests.

By agreement on December 22, 2010, between the parent company and the Foundation, the Foundation has been granted a call option pursuant to which it may purchase a number of preference shares up to a maximum of the number of ordinary shares issued and outstanding with third parties at the time of exercise of the option. The agreement cannot be terminated by the Company as long as the Company has not cancelled, or repurchased preferences shares acquired by the Foundation.

The Company entered into a cost compensation agreement with the Foundation dated December 22, 2010. As per the agreement, the Company is required to provide funds to the Foundation for the costs incurred in connection with the fulfillment of the objectives of the Foundation. These costs include costs for establishing the Foundation, remuneration and out of pocket expenses for the members of the board of the Foundation, commitment fees, advisory fees and certain other costs. During the year ended December 31, 2021, the amounts paid by the Company to or on behalf of the Foundation were $72 (2020: nil).

PARENT COMPANY FINANCIAL STATEMENTS

AMG ADVANCED METALLURGICAL GROUP, N.V. — PARENT COMPANY STATEMENT OF FINANCIAL POSITION (AFTER PROFIT APPROPRIATION)

For the year ended December 31	Note	2021	2020
In thousands of US dollars			
Fixed assets			
Goodwill and other intangible assets	6	9,761	9,792
Tangible fixed assets	5	1,587	756
Financial fixed assets			
Investments in subsidiaries	7	351,045	295,774
Loans due from subsidiaries	7	61,901	58,983
Deposits and other assets	8	1,839	470
Other investments		—	53
Financial fixed assets		414,785	355,280
Total fixed assets		426,133	365,828
Related party receivables	9	12,366	11,849
Prepayments and other assets	10	1,572	1,714
Cash and cash equivalents	11	79,746	6,061
Total current assets		93,684	19,624
Total assets		519,817	385,452
Equity			
Issued capital	12	853	831
Share premium	12	553,715	489,546
Foreign currency translation reserve	12	(27,862)	(21,644)
Hedging reserve	12	(962)	247
Capitalized development expenditures reserve	12	1,146	1,524
Defined benefit obligation reserve	12	(71,134)	(90,654)
Fair value reserve	12	2,008	(601)
Cost of hedging reserve	12	383	535
Treasury shares	12	(16,596)	(80,165)
Retained earnings (deficit)	12	(173,117)	(184,139)
Total equity attributable to shareholders of the Company		268,434	115,480
Long-term liabilities			
Long-term debt	13	241,712	236,533
Lease liabilities	17	883	248
Derivative financial instruments	16	210	1,283
Long-term liabilities		242,805	238,064
Short-term liabilities			
Current portion long-term debt	13	2,500	2,500
Lease liabilities	17	606	414
Amounts due to subsidiaries	15	647	13,393
Loans due to subsidiaries	13	—	12,100
Other payables	14	4,825	3,386
Provisions		—	115
Short-term liabilities		8,578	31,908
Total liabilities		251,383	269,972
Total equity and liabilities		519,817	385,452

The notes are an integral part of these financial statements.

AMG ADVANCED METALLURGICAL GROUP, N.V. — PARENT COMPANY INCOME STATEMENT

For the year ended December 31	Note	2021	2020
In thousands of US dollars			
General and administrative expenses		(30,530)	(20,331)
Other income net	2	16,179	10,574
Net other operating income		16,179	10,574
Operating loss		(14,351)	(9,757)
Finance income	3	4,422	7,339
Finance cost	3	(15,904)	(12,221)
Net finance cost		(11,482)	(4,882)
Share of loss of associates		(1,053)	(947)
Loss before income tax		(26,886)	(15,586)
Income tax expense	4	—	(564)
Loss after tax		(26,886)	(16,150)
Profit (loss) from subsidiaries		40,657	(25,542)
Net profit (loss)		13,771	(41,692)

The notes are an integral part of these financial statements.

NOTES TO PARENT COMPANY FINANCIAL STATEMENTS

1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

For details of the Company and its principal activities, reference is made to the consolidated financial statements.

The parent company financial statements have been prepared in accordance with Part 9 of Book 2 of the Netherlands Civil Code, as generally accepted in the Netherlands. In accordance with the provisions of article 362-8 of Book 2 of the Netherlands Civil Code, the accounting policies used in the financial statements are the same as the accounting policies used in the notes to the consolidated financial statements, prepared under IFRS as endorsed by the European Union. Investments in subsidiaries are valued at their net equity value including allocated goodwill.

For a listing of all material operating entities in which the Company has an ownership interest, please refer to note 1 in the consolidated financial statements. The Company has filed a complete list of entities in which AMG has an ownership interest, with the Dutch Chamber of Commerce.

PARTICIPATING INTERESTS IN GROUP COMPANIES

Group companies are all entities in which the Company has direct or indirect control. The Company controls an entity when it is exposed, or has rights, to variable returns from its involvement with the group company and has the ability to affect those returns through its power over the group company. Group companies are recognized from the date on which control is obtained by the Company and derecognized from the date that control by the Company over the group company ceases. Participating interests in group companies are accounted for in the separate financial statements according to the equity method with the principles for the recognition and measurement of assets and liabilities and determination of results as set out in the notes to the consolidated financial statements.

Participating interests with a negative net asset value are valued at nil. This measurement also covers any receivables provided to the participating interests that are, in substance, an extension of the net investment. In particular, this relates to loans for which settlement is neither planned nor likely to occur in the foreseeable future. A share in the profits of the participating interest in subsequent years will only be recognized if and to the extent that the cumulative unrecognized share of loss has been absorbed. If the Company fully or partially guarantees the debts of the relevant participating interest, or if it has the constructive obligation to enable the participating interest to pay its debts (for its share therein), then a provision is recognized accordingly to the amount of the estimated payments by the Company on behalf of the participating interest.

SHARE OF RESULT OF PARTICIPATING INTERESTS

The share in the result of participating interests consists of the share of the Company in the result of these participating interests. Results on transactions involving the transfer of assets and liabilities between the Company and its participating interests and mutually between participating interests themselves, are eliminated to the extent that they can be considered as not realized.

The Company makes use of the option to eliminate intragroup expected credit losses against the book value of loans and receivables from the Company to participating interests, instead of elimination against the equity value / net asset value of the participating interests.

As of December 31, 2021, non-monetary assets and liabilities have been converted to USD using a conversion rate of EUR:USD of 1.1342 (2020: 1.2264).

2. OTHER INCOME AND EXPENSES

Other income during the year ended December 31, 2021, includes income from management fees charged to subsidiaries of $16,179 (2020: $10,574). The services provided for these fees include general management services and other professional services.

3. FINANCE INCOME AND COST

Finance income during the year ended December 31, 2021, includes interest income from loans to subsidiaries of $4,405 (2020: $7,339) and interest income from bank deposits of $17 (2020: nil). See note 7 for additional details. Finance cost during the year ended December 31, 2021, includes interest expense on loans due to subsidiaries of $186 (2020: $119), interest expense on external debt of $14,948 (2020: $11,618) and other items of $770 (2020: $484). See note 8 in the consolidated financial statements for additional details.

4. INCOME TAXES

AMG Advanced Metallurgical Group N.V. is head of the fiscal unity that exists for Dutch corporate income tax purposes. In the income statement in 2021 and 2020, the Company reported an income tax expense of nil (2020: $564). The taxable loss is reduced by non-deductible expenses of $8,838 and $6,687 in 2021 and 2020 respectively, and is primarily related to share-based compensation expenses as well as stewardship expenses.

During the years ended December 31, 2021 and 2020, the income tax benefits related to the current year losses and other tax attributes of the fiscal unity were not recognized. In total, $4,512 and $2,226 were not recognized in 2021 and 2020, respectively, as it is not probable that these amounts will be realized.

Deferred tax assets are recognized to the extent it is probable that the temporary differences, unused tax losses and unused tax credits will be realized. The realization of deferred tax assets is reviewed each reporting period and includes the consideration of historical operating results, projected future taxable income and potential tax planning strategies. At December 31, 2021, net operating loss and tax credit carryforwards for which no deferred tax assets have been recognized in the balance sheet amount to $111,501 (2020: $88,687).

5. TANGIBLE FIXED ASSETS

Tangible fixed assets of $1,587 (2020: $756) consists primarily of leasehold improvements, leases and office furniture and fixtures. See note 17 for additional details. These are carried at cost less accumulated depreciation and are depreciated over their anticipated useful life. The depreciation during the year ended December 31, 2021, was $569 (2020: $510). All tangible fixed assets are pledged as collateral under the AMG Credit Facility. Refer to note 10 of the consolidated financial statements for additional information.

6. GOODWILL AND OTHER INTANGIBLE ASSETS

Intangible assets of $9,761 (2020: $9,792) primarily related to the merger of Sudamin Holding SPRL of $9,702 and $59 includes computer and software licenses. They are carried at cost less accumulated amortization and are amortized over their anticipated useful life. The amortization during the year ended December 31, 2021 was $84 (2020: $73).

7. FINANCIAL FIXED ASSETS

INVESTMENTS IN SUBSIDIARIES

The movement in subsidiaries was as follows:

	Investment in subsidiaries
Balance at January 1, 2020	304,100
Dividend to parent	(8,227)
Investments in companies	(8,952)
Loan conversion to equity	25,000
Intergroup cash pooling conversion to equity	—
Loss for the period	(25,542)
Change in non-controlling interest	(600)
Changes in hedges and fair value hedges	2,920
Gain on FVOCI investments	4,161
Actuarial losses	(9,631)
Effect of movements in exchange rates	8,126
Equity-settled share-based payments	(72)
Movement of negative participation to loans	4,491
Balance at December 31, 2020	295,774
Balance at January 1, 2021	295,774
Dividend to parent	—
Investments in companies	5,600
Loan conversion to equity	—
Intergroup cash pooling conversion to equity	4,007
Profit for the period	40,657
Change in non-controlling interest	(758)
Changes in hedges and fair value hedges	(1,576)
Gain on FVOCI investments	2,609
Actuarial gains	19,520
Effect of movements in exchange rates	(6,218)
Equity-settled share-based payments	2,100
Movement of negative participation to loans	(10,670)
Balance at December 31, 2021	351,045

CHANGES IN HEDGES AND FAIR VALUE HEDGES

This represents the effect of the Company's subsidiaries recording the changes in their equity from the effective portion of the cumulative net change in the fair value of cash flow hedging instruments related to hedged transactions that have not yet occurred.

EQUITY-SETTLED SHARE-BASED PAYMENTS

Subsidiaries are locally recording the effect of share-based payments for their employees in their equity. The equity balance of the subsidiaries is comprised of the value of equity- settled share-based payments provided to employees (and outside consultants), including key management personnel, as part of their remuneration. The change in the Company's investment in subsidiary balance is equal to the change recognized in retained earnings at the subsidiaries.

LOANS DUE FROM SUBSIDIARIES

	Non-current loans due from subsidiaries	Current loan due from subsidiaries	Total
Balance at January 1, 2020	95,117	1,000	96,117
Loan conversion to equity	(25,000)	—	(25,000)
Loans	5,357	—	5,357
Repayments	(13,000)	—	(13,000)
Loan reclassification	1,000	(1,000)	—
Movement of negative participation	(4,491)	—	(4,491)
Balance at December 31, 2020	58,983	—	58,983
Balance at January 1, 2021	58,983	—	58,983
Loans	21,383	—	21,383
Repayments	(29,000)	—	(29,000)
Currency translation adjustment	(135)	—	(135)
Movement of negative participation	10,670	—	10,670
Balance at December 31, 2021	61,901	—	61,901

There were three non-current loans due from subsidiaries of the Company as of December 31, 2021. One of the non-current loans is due in the United States with a loan amount of $41,564 (2020: $37,969). The second non-current loan is due from our Brazil subsidiary, totaling $37,357 (2020: $51,857). The third non-current loan is due from one of our German subsidiaries with a loan amount of $3,153 (2020: nil). The loan due from our German subsidiary had an interest rate of 1-Month-EURIBOR plus a margin of 1.75%. The other two loans had an interest rate range of 5.45% – 5.50% at December 31, 2021 (5.45% – 5.50% at December 31, 2020). The remaining balance as of December 31, 2021 included above pertained to the cumulative impact of the negative participation.

8. DEPOSITS AND OTHER ASSETS

The deposit and other assets account include debt issuance costs related to the undrawn amounts on the revolving credit facility and security deposits for the Amsterdam and Frankfurt office locations of the Company. See note 13 for additional information.

9. RELATED PARTY RECEIVABLES

Related party receivables of $12,366 (2020: $11,849) primarily represents management fees owed to the Company of $9,974 (2020: $498), interest owed on loans due from subsidiaries of $2,323 (2020: $4,098), and amounts owed by subsidiaries that represent expenses paid for by AMG and billed back to the subsidiaries of $69 (2020: $3,063). As of December 31, 2021, there were no intergroup cash pooling arrangements (2020: $4,190).

10. PREPAYMENTS AND OTHER ASSETS

At December 31, 2021 and 2020, prepayments primarily represent prepaid insurance for the Company of $1,572 (2020: $1,714).

11. CASH AND CASH EQUIVALENTS

Bank balances earn interest at floating rates based on daily bank deposit rates.

12. SHAREHOLDERS' EQUITY AND OTHER CAPITAL RESERVES

	Equity attributable to shareholders of the parent					
In thousands for US dollars	Issued capital	Share premium	Treasury shares	Other reserves	Retained deficit	Total
Balance at January 1, 2020	831	489,546	(83,880)	(116,358)	(129,626)	160,513
Foreign currency translation	—	—	—	2,996	—	2,996
Change in fair value of equity investments classified as fair value through other comprehensive income	—	—	—	4,161	—	4,161
Gain on cash flow hedges, net of tax	—	—	—	3,024	—	3,024
Actuarial loss, net of tax	—	—	—	(4,501)	—	(4,501)
Net gain recognized through other comprehensive income	—	—	—	5,680	—	5,680
Loss for the year	—	—	—	—	(41,692)	(41,692)
Total comprehensive gain (loss) for the year	—	—	—	5,680	(41,692)	(36,012)
Purchase of common shares	—	—	(684)	—	—	(684)
Equity-settled share-based payments	—	—	—	—	1,429	1,429
Settlement of share-based payment awards	—	—	4,399	—	(4,052)	347
Transfer to retained deficit	—	—	—	85	(85)	—
Change in non-controlling interests	—	—	—	—	(600)	(600)
Dividend	—	—	—	—	(9,513)	(9,513)
Balance at December 31, 2020	831	489,546	(80,165)	(110,593)	(184,139)	115,480
Balance at January 1, 2021	831	489,546	(80,165)	(110,593)	(184,139)	115,480
Foreign currency translation	—	—	—	(2,220)	—	(2,220)
Change in fair value of equity investments classified as fair value through other comprehensive income	—	—	—	2,609	—	2,609
Loss on cash flow hedges, net of tax	—	—	—	(1,361)	—	(1,361)
Actuarial gain, net of tax	—	—	—	15,522	—	15,522
Net gain recognized through other comprehensive income	—	—	—	14,550	—	14,550
Profit for the year	—	—	—	—	13,771	13,771
Total comprehensive gain for the year	—	—	—	14,550	13,771	28,321
Issuance of common shares	74	118,648	—	—	—	118,722
Purchase of common shares	—	—	(1,210)	—	—	(1,210)
Re-issuance of treasury shares	—	—	1,010	—	135	1,145
Cancellation of treasury shares	(52)	(54,479)	54,531	—	—	—
Equity-settled share-based payments	—	—	—	—	10,028	10,028
Settlement of share-based payment awards	—	—	9,238	—	(4,934)	4,304
Transfer to retained deficit	—	—	—	(378)	378	—
Change in non-controlling interests	—	—	—	—	(758)	(758)
Dividend	—	—	—	—	(7,598)	(7,598)
Balance at December 31, 2021	853	553,715	(16,596)	(96,421)	(173,117)	268,434

OTHER RESERVES

	Legal reserves						
	Foreign currency translation reserve	Hedging reserve	Cost of hedging reserve	Capitalized development expenditures reserve	Fair value reserve	Defined benefit obligation reserve	Total
Balance at January 1, 2020	(29,770)	(4,274)	2,032	1,439	(4,762)	(81,023)	(116,358)
Currency translation differences	8,126	—	—	—	—	(5,130)	2,996
Gain on FVOCI investments	—	—	—	—	4,161	—	4,161
Movement on cash flow hedges	—	2,082	(1,331)	—	—	—	751
Tax effect on net movement on cash flow hedges	—	2,439	(166)	—	—	—	2,273
Actuarial losses on defined benefit plans	—	—	—	—	—	(7,693)	(7,693)
Tax effect on net movement on defined benefit plans	—	—	—	—	—	3,192	3,192
Transfer to retained deficit	—	—	—	85	—	—	85
Balance at December 31, 2020	(21,644)	247	535	1,524	(601)	(90,654)	(110,593)
Balance at January 1, 2021	(21,644)	247	535	1,524	(601)	(90,654)	(110,593)
Currency translation differences	(6,218)	—	—	—		3,998	(2,220)
Gain on FVOCI investments	—	—	—	—	2,609	—	2,609
Movement on cash flow hedges	—	1,591	(239)	—	—	—	1,352
Tax effect on net movement on cash flow hedges	—	(2,800)	87	—	—	—	(2,713)
Actuarial gains on defined benefit plans	—	—	—	—	—	19,819	19,819
Tax effect on net movement on defined benefit plans	—	—	—	—	—	(4,297)	(4,297)
Transfer to retained deficit	—	—	—	(378)	—	—	(378)
Balance at December 31, 2021	(27,862)	(962)	383	1,146	2,008	(71,134)	(96,421)

EQUITY-SETTLED SHARE-BASED PAYMENTS

The value of equity-settled share-based payments provided to employees, including key management personnel, as part of their remuneration is recognized in equity. The amount reserved for share-based payments is recorded within retained earnings.

LEGAL RESERVES

AMG is a company incorporated under Dutch law. In accordance with the Dutch Civil Code, legal reserves have to be established in certain circumstances. The legal reserves consisted of the cumulative translation adjustment reserve, the unrealized losses on derivatives reserve, the legal participation reserve, the investment reserve and the capitalized development expenditures reserve. Legal reserves are non-distributable to the Company's shareholders.

DIVIDENDS

Dividends of $7,598 have been declared and paid during the year ended December 31, 2021. Dividends of $9,513 have been declared and paid during the year ended December 31, 2020.

APPROPRIATION OF NET PROFIT

Pursuant to section 26 of the Articles of Association, the Management Board shall, subject to the approval of the Supervisory Board, be authorized to reserve the profits in whole or in part. The General Meeting is authorized to distribute and/or reserve any remaining part of the profits.

During 2021, AMG's Supervisory Board adopted an addendum to its dividend policy which states that AMG has cyclical elements in its product mix and that it desires to have a relatively consistent dividend pay-out, the revised policy allows for stable dividend pay-outs and targets gradual increases to historic dividend levels, provided that such pay-outs and possible increases are supported by AMG's liquidity and cash flow generation, and subject to prevailing statutory requirements. AMG intends to declare a dividend of €0.40 per ordinary share over the financial year 2021. The interim dividend of €0.10, paid on August 13, 2021, will be deducted from the amount to be distributed to shareholders. The proposed final dividend per ordinary share therefore amounts to €0.30.

Preference shares

In July 2010, the foundation “Stichting Continuiteit AMG” (“Foundation”) was established following the resolution adopted at its Annual Meeting on May 12, 2010. The board of the Foundation consists of three members, all of whom are independent of AMG. The purpose of the Foundation is to safeguard the interests of the parent company, the enterprise connected therewith and all the parties having an interest therein and to exclude as much as possible influences which could threaten, amongst other things, the continuity, independence and identity of the parent company contrary to such interests.

By agreement on December 22, 2010, between the parent company and the Foundation, the Foundation has been granted a call option pursuant to which it may purchase a number of preference shares up to a maximum of the number of ordinary shares issued and outstanding with third parties at the time of exercise of the option. The agreement cannot be terminated by the Company as long as the Company has not cancelled, or repurchased preferences shares acquired by the Foundation.

13. LONG-TERM DEBT

On November 30, 2021, the Company, Metallurg, Inc. and AMG Invest GmbH entered into a new $350,000, 7-year senior secured term loan B facility ("term loan") and a $200,000 5-year senior secured revolving credit facility ("revolver"). The total facility amount of $550,000 replaced AMG's existing credit facility and extended the term loan maturity from 2025 to 2028 and revolver maturity from 2023 to 2026. Proceeds from the facility were used to repay AMG's previous credit facility. As of December 31, 2021, the total carrying value of the term loan was $244,212 (2020: $239,033).

AMG Advanced Metallurgical Group N.V. is one of the borrowers under the revolving credit facility. Refer to note 21 in the consolidated financial statements for additional information relating to the long-term debt.

As of December 31, 2021, there was an asset of $1,774 (2020: $403) related to debt issuance costs incurred on the undrawn portion of the revolving credit facility. This is included in deposits and other assets on the statement of financial position. See note 8 for additional details.

The Company directly borrowed $250,000 of the $350,000 senior secured term loan B facility. To mitigate interest rate risk, on November 30, 2021 the Company entered into interest rate swaps totaling $250,000 in connection with the execution of the Term Loan B and revolving credit facility. This determination was made as part of the ongoing risk management process as these instruments mitigate the interest rate risk on the Company's credit facility. See note 29 in the consolidated financial statements for additional information on the interest rate hedging activities.

LOANS DUE TO SUBSIDIARIES

During the year ended December 31, 2021, a current loan due to a German subsidiary, which is the holding company for several German companies was paid in full (2020: $12,000).

	Non-current loans due to subsidiaries	Current loan due to subsidiaries	Total
Balance at January 1, 2020	—	—	—
Loans	—	19,683	19,683
Dividend to parent	—	(8,227)	(8,227)
Currency translation adjustment	—	644	644
Balance at December 31, 2020	—	12,100	12,100
Balance at January 1, 2021	—	12,100	12,100
Repayments	—	(12,100)	(12,100)
Balance at December 31, 2021	—	—	—

14. OTHER PAYABLES

Trade and other payables represent amounts owed to professional service firms, accrued employee costs and accrued interest. There was $125 payable to Dutch tax authorities for wage taxes as of December 31, 2021 (2020: $50).

15. AMOUNTS DUE TO SUBSIDIARIES

Certain payroll, travel and entertainment and other expenses are paid directly by one subsidiary and billed to the Company at cost. As of December 31, 2021 and 2020, these amounted to $647 and $13,393, respectively.

16. DERIVATIVE FINANCIAL INSTRUMENTS

Please refer to notes 28 and 29 in the consolidated financial statements for more information on financial instruments and risk management policies.

INTEREST RATE HEDGES

In November 2021, the Company entered into interest rate swap contracts with two financial institutions in connection with the execution of its new credit facility. The contracts have a notional value equivalent to the total balance of the term loan B. The contracts swap the variable interest payments on the term loan B to fixed payments of interest. The interest rate caps related to the prior credit facility were unwound and replaced by these contracts. The interest rate swaps were executed so that the Company could hedge its exposure to changes in the benchmark interest rate on the term loan B facility. The Company has matched the critical terms of the swaps to the term loan B and consequently has designated the interest rate swaps as effective cash flow hedges. The amount of losses related to the interest rate hedges included in equity was ($210) and ($426) in the years ended December 31, 2021 and 2020, respectively. The amount included in equity is anticipated to impact the income statement through November 2026, which is the term of the contracts. During the years ended December 31, 2021 and 2020, $426 and $104 was transferred from equity to the income statement as an increase to finance costs. There was no ineffectiveness for contracts designated as cash flow hedges during the years ended December 31, 2021 and 2020, respectively.

At December 31, 2021, a balance of $210 (2020: nil) related to the interest rate swaps was recorded as a non-current derivative liability. At December 31, 2020, a balance of $1,283 related to the interest rate caps was recorded as a non-current derivative liability. During the year ended December 31, 2021, $750 (2020: $332) of expense related to the interest rate caps that were unwound was recorded as finance cost in the parent company statement of income.

17. LEASES

The Company has entered into leases for office space in Amsterdam and Frankfurt. The Amsterdam lease term originally had a termination date of March 31, 2013, but it has since been extended through March 2023. The Frankfurt lease term has an unlimited term but can be cancelled with six months' notice beginning December 31, 2012.

The Company applied IFRS 16 (lease accounting) for the first time as of January 1, 2019. The Company recognized new assets and liabilities for its operating leases which are primarily comprised of buildings, equipment and automobiles. See note 31 in the consolidated financial statements for additional information on leases.

Set out below are the carrying amounts of the Company's right-of-use assets, which re included in property plant and equipment in the statement of financial position, and lease liabilities as well as the movements during the year:

	Right-of-use assets				
	Land, buildings and improvements	**Machinery and equipment**	**Furniture and fixtures**	**Total**	**Lease liabilities**
Balance at January 1, 2020	913	92	39	1,044	1,091
Additions	—	33	—	33	33
Depreciation expense	(404)	(34)	(22)	(460)	—
Interest expense	—	—	—	—	45
Payments	—	—	—	—	(507)
Balance at December 31, 2020	509	91	17	617	662
Balance at January 1, 2021	509	91	17	617	662
Additions	918	111	25	1,054	1,048
Retirements and transfers	263	—	5	268	203
Depreciation expense	(462)	(49)	(17)	(528)	—
Interest expense	—	—	—	—	74
Payments	—	—	—	—	(593)
Foreign currency translation	—	—	—	—	95
Balance at December 31, 2021	1,228	153	30	1,411	1,489

18. RELATED PARTIES

Key management compensation data is disclosed in note 34 of the consolidated financial statements.

The Company entered into a cost compensation agreement with the Foundation dated December 22, 2010 (see note 12). As per the agreement, the Company is required to provide funds to the Foundation for the costs incurred in connection with the fulfillment of the objectives of the Foundation. These costs include costs for establishing the Foundation, remuneration and out-of-pocket expenses for the members of the board of the Foundation, commitment fees, advisory fees and other costs. During the year ended December 31, 2021, the Company funded $72 (2020: nil).

19. EMPLOYEES

At December 31, 2021, the Company had 27 employees (2020: 29), of which 3 are employed in the Netherlands.

20. AUDIT FEES

KPMG has served as our independent auditor for the year ending December 31, 2021 and 2020. The following table sets out the aggregate fees for professional audit services and other services rendered by KPMG and their member firms and/or affiliates in 2021:

	2021			2020		
	KPMG Accountants N.V USD' 000	KPMG Network USD' 000	Total	KPMG Accountants N.V USD' 000	KPMG Network USD' 000	Total
Group financial statements	744	1,188	1,932	861	1,176	2,037
Audit of statutory financial statements	—	232	232	—	392	392
Other assurance services*	—	30	30	—	30	30
Total	744	1,450	2,194	861	1,598	2,459

*The other assurance services in 2021 by the amount of $30 (2020: $30) related research services for one of our US operations and one German operation.

AMSTERDAM, MARCH 11, 2022

MANAGEMENT BOARD

AMG ADVANCED METALLURGICAL GROUP N.V.
AMSTERDAM, MARCH 11, 2022

Dr. Heinz Schimmelbusch

Eric Jackson

Jackson Dunckel

AMSTERDAM, MARCH 11, 2022

SUPERVISORY BOARD

AMG ADVANCED METALLURGICAL GROUP N.V.
AMSTERDAM, MARCH 11, 2022

Steve Hanke, Chairman

Willem van Hassel, Vice Chairman

Herb Depp

Donatella Ceccarelli

Dagmar Bottenbruch

Warmolt Prins

OTHER INFORMATION

Article 25 and 26 of the Articles of Association

25. Adoption of Annual Accounts

25.1 The annual accounts shall be adopted by the general meeting.

25.2 Without prejudice to the provisions of article 23.2, the company shall ensure that the annual accounts, the annual report and the additional information that should be made generally available together with the annual accounts pursuant to or in accordance with the law, are made generally available from the day of the convocation of the general meeting at which they are to be dealt with.

25.3 The annual accounts cannot be adopted if the general meeting has not been able to take notice of the auditor's report, unless a valid ground for the absence of the auditor's report is given under the other additional information referred to in article 25.2.

26.1 The management board shall, subject to the approval of the supervisory board, be authorized to reserve the profits wholly or partly.

Independent auditor's report

To: the Annual General Meeting of Shareholders and the Supervisory Board of AMG Advanced Metallurgical Group N.V.

Report on the audit of the financial statements 2021 included in the annual report

Our opinion

In our opinion:

- the accompanying consolidated financial statements give a true and fair view of the financial position of AMG Advanced Metallurgical Group N.V. (herein referred to as "the Company", "AMG NV" or "AMG") as at December 31, 2021 and of its result and its cash flows for the year then ended, in accordance with International Financial Reporting Standards as adopted by the European Union (EU-IFRS) and with Part 9 of Book 2 of the Dutch Civil Code.
- the accompanying company financial statements give a true and fair view of the financial position of AMG Advanced Metallurgical Group N.V. as at December 31, 2021 and of its result for the year then ended in accordance with Part 9 of Book 2 of the Dutch Civil Code.

What we have audited

We have audited the financial statements 2021 of AMG based in Amsterdam. The financial statements include the consolidated financial statements and the company financial statements.

The consolidated financial statements comprise:

1. the consolidated statement of financial position as at December 31, 2021;
2. the following consolidated statements for the year 2021: the income statement, the statements of comprehensive income, changes in equity and cash flows; and
3. the notes comprising a summary of the significant accounting policies and other explanatory information.

The company financial statements comprise:

1. the parent company statement of financial position as at December 31, 2021;
2. the parent company income statement for the year 2021; and
3. the notes comprising a summary of the accounting policies and other explanatory information.

Basis of our opinion

We conducted our audit in accordance with Dutch law, including the Dutch Standards on Auditing. Our responsibilities under those standards are further described in the 'Our responsibilities for the audit of the financial statements' section of our report.

We are independent of AMG in accordance with the 'Verordening inzake de onafhankelijkheid van accountants bij assurance-opdrachten' (ViO, Code of Ethics for Professional Accountants, a regulation with respect to independence) and other relevant independence regulations in the Netherlands. Furthermore, we have complied with the 'Verordening gedrags- en beroepsregels accountants' (VGBA, Dutch Code of Ethics).

Our audit procedures were determined in the context of our audit of the financial statements as a whole. Our observations in respect of going concern, fraud and non-compliance with laws and regulations, climate and the key audit matters should be viewed in that context and not as separate opinions or conclusions.

We believe the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Audit approach

Summary

Materiality

- Materiality of $4.5 million
- 0.4% of revenue

Group audit

- Audit coverage of 92% of total assets
- Audit coverage of 93% of revenue

Going concern, Fraud/Noclar and Climate

- Going concern: no significant going concern risks identified
- Fraud & Non-compliance with laws and regulations (Noclar): we identified as fraud risks the presumed risks laid down in the auditing standards, being management override of controls and revenue recognition for the sale of goods and projects.
- Climate: the Management Board's risk assessment with respect to possible future effects of climate change, the response thereto and their anticipated outcomes have been disclosed. We have considered the impact of climate-related risks on our identification and assessment of risks of material misstatement in the financial statements.

Key audit matters

- Revenue recognition for the sale of goods and projects

Opinion

Unqualified

Materiality

Based on our professional judgement we determined the materiality for the financial statements as a whole at $4.5 million (2020: $3.5 million). The materiality is determined with reference to revenue of $1.2 billion in 2021. The materiality of $4.5 million represents 0.4% of revenue. We consider revenue as the most appropriate benchmark because of the volatility in profit before tax in the past years. Materiality changed compared to last year due to increase in revenue. We have also taken into account misstatements and/or possible misstatements that in our opinion are material for the users of the financial statements for qualitative reasons.

We agreed with the Supervisory Board that unadjusted misstatements in excess of $225 thousand would be reported to them, as well as smaller misstatements that in our view must be reported on qualitative grounds.

Scope of the group audit

AMG is at the head of a group of components. The financial information of this group is included in the financial statements of AMG.

Our group audit mainly focused on significant components that are (i) of individual financial significance to the group, or (ii) that, due to their specific nature or circumstances, are likely to include significant risks of material misstatement of the group financial statements.

We have selected 9 components where we performed an audit of the complete reporting package and 4 components where we performed an audit of specific items and/or specified audit procedures (2 components and 2 corporate entities).

We have:

- performed audit procedures at group level in respect of the parent company and for valuation of goodwill, other investments, share-based payments, and loans and borrowings as well as for income tax and certain other corporate positions in the United States of America ('US');
- made use of the audit procedures performed by other KPMG auditors in Germany, France, the United Kingdom, the United States, China and Brazil.

The group audit team provided detailed instructions to all component auditors who were part of the group audit, covering the significant audit areas, including the relevant risks of material misstatement, and set out the information required to be reported back to the group audit team.

The group audit team has applied a similar approach as in prior year's audit to evaluate the component auditors' communications and the adequacy of their work. In view of restrictions due to the Covid-19 pandemic, travelling to component audit teams was not always practicable. We visited the component auditors and some of the Company's subsidiaries in the United Kingdom and in Germany and visited the Company's corporate office in the US. We have requested certain component auditors to provide us with remote access to audit workpapers to evaluate their work, subject to local law and regulations. In addition. During our visits and through virtual meetings the audit approach, findings and observations reported to the group audit team were discussed in more detail.

For the residual population not in scope we performed analytical procedures in order to corroborate that our scoping remained appropriate throughout the audit.

By performing the procedures mentioned above at group components, together with additional procedures at group level, we have been able to obtain sufficient and appropriate audit evidence about the group's financial information to provide an opinion about the financial statements.

The audit coverage as stated in the section summary can be further specified as follows:

Total assets

80%	11%	1%
Audit of the complete reporting package	Audit of specific items	Specified audit procedures

Revenue

90%	0%	3%
Audit of the complete reporting package	Audit of specific items	Specified audit procedures

Audit response to going concern – no significant going concern risks identified

The Management Board has performed its going concern assessment and has not identified any significant going concern risks. To assess the Management Board's assessment, we have performed, inter alia, the following procedures:

- we considered whether the Management Board's assessment of the going concern risks includes all relevant information of which we are aware as a result of our audit;
- we inspected the new financing agreement in terms of conditions that could lead to significant going concern risks, including the term of the agreement and any covenants;
- we analyzed the operating results forecast and the related cash flows compared to the previous financial year, developments in the business sectors and any information of which we are aware as a result of our audit;
- we analyzed the company's financial position as at year-end and compared it to the previous financial year in terms of indicators that could identify significant going concern risks.

The outcome of our risk assessment procedures did not give reason to perform additional audit procedures on the Management Board's going concern assessment.

Audit response to the risk of fraud and non-compliance with laws and regulations

In the chapter "Risk Management & Internal Controls" of the Annual Report, the Management Board describes its procedures in respect of the risks of fraud and non-compliance with laws and regulations and the Supervisory Board reflects on this in the chapter "Report of the Supervisory Board" of the Annual Report.

As part of our audit, we have gained insights into AMG and its business environment, and assessed the design and implementation of the Company's internal controls in relation to fraud and non-compliance. Our procedures included, among other things, assessing AMG's code of conduct, Speak Up and Reporting policy, and inspection of the incidents register. Furthermore, we performed relevant inquiries with the Management Board, Supervisory Board, Audit Committee, and other relevant functions, such as Internal Audit, Legal Counsel and Chief Compliance Officer. As part of our audit procedures, we:

– assessed other positions held by Management Board members and paid special attention to procedures and governance/compliance in view of possible conflicts of interest;

– evaluated correspondence with supervisory authorities and regulators as well as legal confirmation letters.

In addition, we performed procedures to obtain an understanding of the legal and regulatory frameworks that are applicable to AMG and identified the areas that are most likely to have a material effect on the financial statements, including legislation with an indirect effect such as competition legislation, employment legislation, contract legislation, environmental and mining legislation, GDPR and health and safety legislation.

We, together with our forensic specialists, evaluated the fraud and non-compliance risk factors to consider whether those factors indicate a risk of material misstatement in the financial statements.

Based on the above and on the auditing standards, we identified the following fraud risks that are relevant to our audit, and responded as follows:

– Revenue recognition in relation to sale of goods and projects (a presumed risk)

Our procedures to address fraud risk related to revenue recognition are included in the key audit matter.

– Management override of controls (a presumed risk)

Risk:

– Management is in a unique position to manipulate accounting records and prepare fraudulent financial statements by overriding controls that otherwise appear to be operating effectively.

Responses:

– We evaluated the design and the implementation of internal controls that mitigate fraud risks, such as the internal controls related to journal entries.

– We performed data analyses of high-risk journal entries. Where we identified instances of unexpected journal entries or other risks through our data analytics, we performed additional audit procedures to address each identified risk. These procedures also included testing of transactions back to source information.

– We verified the accuracy of material post-closing entries recorded in the general ledger.

– We evaluated key estimates and judgments for bias by the company's management including retrospective reviews of prior year's estimates with respect to employee benefits and various provisions. We assessed the appropriateness of changes compared with the prior year to the methods and underlying assumptions used to prepare accounting estimates.

– We incorporated elements of unpredictability in our audit, such as the inclusion of two new smaller entities in our audit scope.

Our procedures to address identified risks of fraud and related to non-compliance with laws and regulations did not result in any other key audit matter.

We communicated our risk assessment, audit responses and results to the Management Board and the Supervisory Board.

Our audit procedures did not reveal indications and/or reasonable suspicion of fraud and non-compliance that are considered material for our audit.

Audit response to climate-related risks

The Management Board is responsible for preparing the financial statements in accordance with the applicable financial reporting framework, including considering whether the implications from climate-related risks and commitments have been appropriately accounted for and disclosed.

The Management Board has performed its analysis of the impact of climate-related risks on AMG's business and operations going forward and on its accounting in the current financial statements. In the “Climate Change Risk” paragraph in the “Risk Management & Internal Controls” chapter of the annual report, the Management Board concluded that the effect of climate-related risks and climate commitments do not have a material impact on accounts and disclosures, including judgements and estimates in the financial statements as at December 31, 2021.

The evaluation of the effectiveness of Management Board’s strategy against internal or external goals set is not in scope of our audit of the financial statements. As part of our audit we consider potential effects of climate-related risks on the accounts and disclosures, including estimates and judgements in the current year’s financial statements to determine whether the financial statements are free from material misstatements. This includes discussion of AMG’s strategy in relation to climate change with the Management Board, and inspecting minutes and external communications for significant climate related commitments, strategies and plans made by the Management Board.

Our key audit matters

Key audit matters are those matters that, in our professional judgement, were of most significance in our audit of the financial statements. We have communicated the key audit matters to the Supervisory Board. The key audit matters are not a comprehensive reflection of all matters discussed.

Compared to last year the key audit matter with respect to the valuation of the lithium concentrate plant in AMG Brazil is no longer included as a key audit matter because prices for lithium have increased significantly resulting in increased profitability of AMG Brazil.

Revenue recognition for the sale of goods and projects

Description

As described in note 5 to the financial statements, revenue for sales of goods is recognized at the amount of the consideration to which the Company expects to be entitled at the point in time at which it transfers control of the good to the customer. Revenue related to furnace construction contracts is recorded over time based on the progress made towards complete satisfaction of the contract as determined by management. Revenue is recognized based on an overall engineering design plan and estimate of the progress made over time towards complete satisfaction of the project, based on work performed in-house and by sub-suppliers. The determination of the progress made involves examination of third-party statements for activities outsourced, and the assessment whether the control of the good has transferred to the customer requires consideration of incoterms, shipping times and, in some cases, customer acceptance notifications. Revenue recognition is significant to our audit and contains a risk of fraud in respect of cut-off at year-end.

Our response

With involvement of our local KPMG auditors, our procedures for revenue included, amongst others, assessment of the revenue recognition method per revenue category. We evaluated the design and implementation of the controls set up by the Management Board surrounding the correctness of cut-off, with respect to the progress made for furnace contracts and the transfer of control of the goods sold. Detailed procedures were performed, including testing on a sample basis underlying evidence of revenue recognized. Contracts and other relevant documentation (amongst others sales orders, shipping documents and third party confirmations) were assessed to determine accurate revenue recognition, including whether sales transactions taking place before and/or after year-end were recognized in the appropriate period.

Our observation

Based on our procedures performed for revenue recognition we consider that the accounting for revenue is satisfactory and in accordance with EU-IFRS.

Report on the other information included in the annual report

In addition to the financial statements and our auditor’s report thereon, the annual report contains other information.

Based on the following procedures performed, we conclude that the other information:

– is consistent with the financial statements and does not contain material misstatements; and

– contains the information as required by Part 9 of Book 2 of the Dutch Civil Code for the management report and other information.

We have read the other information. Based on our knowledge and understanding obtained through our audit of the financial statements or otherwise, we have considered whether the other information contains material misstatements.

By performing these procedures, we comply with the requirements of Part 9 of Book 2 of the Dutch Civil Code and the Dutch Standard 720. The scope of the procedures performed is less than the scope of those performed in our audit of the financial statements.

The Management Board is responsible for the preparation of the other information, including the information as required by Part 9 of Book 2 of the Dutch Civil Code.

Report on other legal and regulatory requirements and ESEF

Engagement

We were engaged by the General Meeting of Shareholders as auditor of AMG on May 4, 2016, as of the audit for the year 2016 and have operated as statutory auditor ever since that financial year.

No prohibited non-audit services

We have not provided prohibited non-audit services as referred to in Article 5(1) of the EU Regulation on specific requirements regarding statutory audits of public-interest entities.

European Single Electronic Format (ESEF)

AMG has prepared its annual report in ESEF. The requirements for this format are set out in the Commission Delegated Regulation (EU) 2019/815 with regard to regulatory technical standards on the specification of a single electronic reporting format (these requirements are hereinafter referred to as: the RTS on ESEF).

In our opinion, the annual report prepared in the XHTML format, including the partially tagged consolidated financial statements as included in the reporting package by AMG, has been prepared in all material respects in accordance with the RTS on ESEF.

The Management Board is responsible for preparing the annual report including the financial statements in accordance with the RTS on ESEF, whereby the Management Board combines the various components into a single reporting package. Our responsibility is to obtain reasonable assurance for our opinion whether the annual report in this reporting package, is in accordance with the RTS on ESEF.

Our procedures taking into consideration Alert 43 of NBA (the Netherlands Institute of Chartered Accountants), included amongst others:

- obtaining an understanding of the entity's financial reporting process, including the preparation of the reporting package;
- obtaining the reporting package and performing validations to determine whether the reporting package containing the Inline XBRL instance document and the XBRL extension taxonomy files have been prepared in accordance with the technical specifications as included in the RTS on ESEF;
- examining the information related to the consolidated financial statements in the reporting package to determine whether all required taggings have been applied and whether these are in accordance with the RTS on ESEF.

Description of responsibilities regarding the financial statements

Responsibilities of the Management Board and the Supervisory Board for the financial statements

The Management Board is responsible for the preparation and fair presentation of the financial statements in accordance with EU-IFRS and Part 9 of Book 2 of the Dutch Civil Code. Furthermore, the Management Board is responsible for such internal control as the Management Board determines is necessary to enable the preparation of the financial statements that are free from material misstatement, whether due to fraud or error. In that respect the Management Board, under supervision of the Supervisory Board, is responsible for the prevention and detection of fraud and non-compliance with laws and regulations, including determining measures to resolve the consequences of it and to prevent recurrence.

As part of the preparation of the financial statements, the Management Board is responsible for assessing the Company's ability to continue as a going concern. Based on the financial reporting frameworks mentioned, the Management Board should prepare the financial statements using the going concern basis of accounting unless the Management Board either intends to liquidate the Company or to cease operations, or has no realistic alternative but to do so. The Management Board should disclose events and circumstances that may cast significant doubt on the company's ability to continue as a going concern in the financial statements.

The Supervisory Board is responsible for overseeing the Company's financial reporting process.

Our responsibilities for the audit of the financial statements

Our objective is to plan and perform the audit engagement in a manner that allows us to obtain sufficient and appropriate audit evidence for our opinion.

Our audit has been performed with a high, but not absolute, level of assurance, which means we may not detect all material errors and fraud during our audit.

Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements. The materiality affects the nature, timing and extent of our audit procedures and the evaluation of the effect of identified misstatements on our opinion.

A further description of our responsibilities for the audit of the financial statements is included in the appendix of this auditor's report. This description forms part of our auditor's report.

Amstelveen, March 11, 2022

KPMG Accountants N.V.

J. Schrumpf RA

Appendix
Description of our responsibilities for the audit of the financial statements

We have exercised professional judgement and have maintained professional scepticism throughout the audit, in accordance with Dutch Standards on Auditing, ethical requirements and independence requirements. Our audit included among others:

– identifying and assessing the risks of material misstatement of the financial statements, whether due to fraud or error, designing and performing audit procedures responsive to those risks, and obtaining audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than the risk resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control;

– obtaining an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control;

– evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the Management Board;

– concluding on the appropriateness of the Management Board's use of the going concern basis of accounting, and based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Company's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause a company to cease to continue as a going concern;

– evaluating the overall presentation, structure and content of the financial statements, including the disclosures; and

– evaluating whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

We are solely responsible for the opinion and therefore responsible to obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the group to express an opinion on the financial statements. In this respect we are also responsible for directing, supervising and performing the group audit.

We communicate with the Supervisory Board regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant findings in internal control that we identify during our audit. In this respect we also submit an additional report to the audit committee in accordance with Article 11 of the EU Regulation on specific requirements regarding statutory audits of public-interest entities. The information included in this additional report is consistent with our audit opinion in this auditor's report.

We provide the Supervisory Board with a statement that we have complied with relevant ethical requirements regarding independence, and to communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.

From the matters communicated with the Supervisory Board, we determine the key audit matters: those matters that were of most significance in the audit of the financial statements. We describe these matters in our auditor's report unless law or regulation precludes public disclosure about the matter or when, in extremely rare circumstances, not communicating the matter is in the public interest.

SHAREHOLDER INFORMATION

MANAGEMENT BOARD

Dr. Heinz Schimmelbusch

Chairman and Chief Executive Officer

Eric Jackson

Chief Operating Officer

Jackson Dunckel

Chief Financial Officer

SUPERVISORY BOARD

Steve Hanke

Chairman

Selection & Appointment Committee (Chair)

Willem van Hassel

Vice Chairman

Audit & Risk Management Committee

Herb Depp

Remuneration Committee (Chair)

Donatella Ceccarelli

Audit & Risk Management Committee (Chair)

Selection & Appointment Committee

Dagmar Bottenbruch

Remuneration Committee

Warmolt Prins

Audit & Risk Management Committee

LISTING AGENT

ABN AMRO

PAYING AGENT

ABN AMRO

EURONEXT: AMG

Trade Register

TRADE REGISTER

AMG Advanced Metallurgical Group N.V. is registered with the trade register in the Netherlands under no. 34261128

COPIES OF THE ANNUAL REPORT

and further information can be obtained from the Investor Relations Department of the Company or by accessing the Company's website:

EMAIL

info@amg-nv.com

WEBSITE

amg-nv.com

This document is the PDF/printed version of AMG Advanced Metallurgical Group N.V.'s 2021 annual report in the European single electronic reporting format (ESEF) and has been prepared for ease of use. The ESEF reporting package is available on the company's website. In case of any discrepancies between this PDF version and the ESEF reporting package, the latter prevails.

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AMG ADVANCED METALLURGICAL GROUP N.V.

ANNUAL REPORT 2021