

# ACCELERATING THE ENERGY TRANSITION

Investor Presentation | Company Description 2022



AMG ADVANCED METALLURGICAL GROUP N.V.



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# AMG IS A CRITICAL MATERIALS COMPANY

## DEMAND

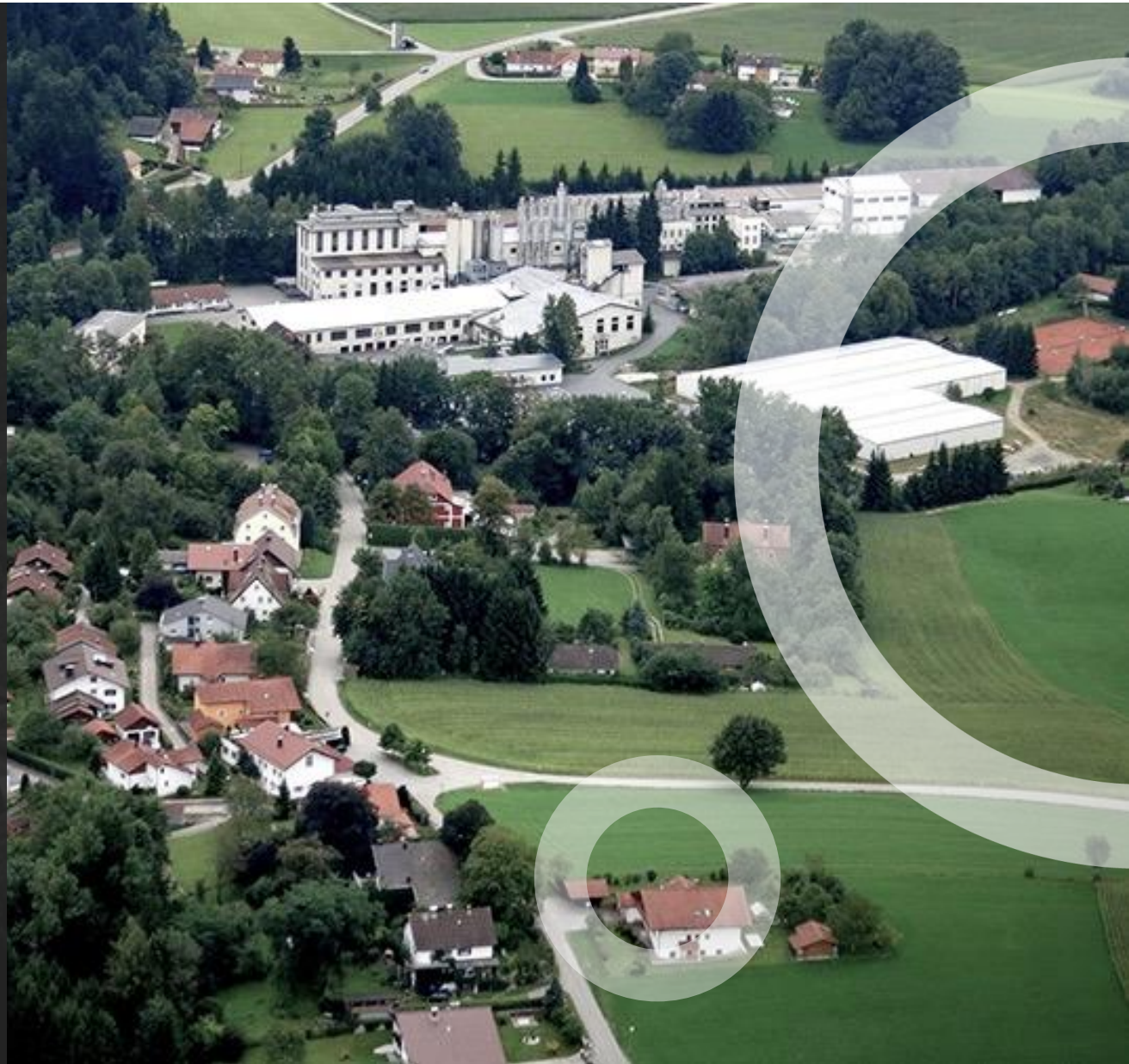
Innovative new products that are lighter, stronger, and resistant to higher temperatures

## SUPPLY

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

## GLOBAL TRENDS

CO<sub>2</sub> emission reduction, circular economy, population growth, increasing affluence, and energy efficiency



# LEADER IN ADVANCED TECHNOLOGIES TO ADDRESS CO<sub>2</sub> REDUCTION

## CO<sub>2</sub> REDUCTION

### A GLOBAL IMPERATIVE FOR THE 21<sup>ST</sup> CENTURY

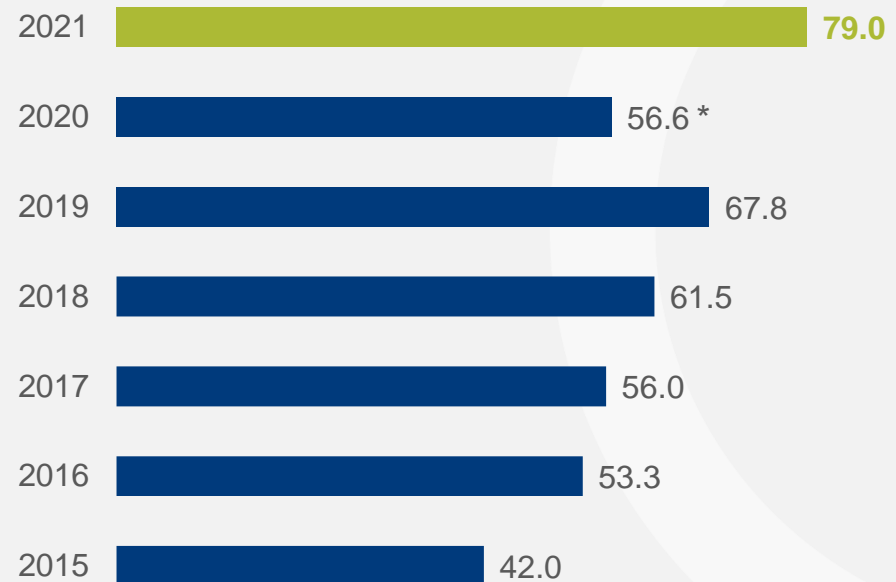
#### AMG: ENABLING TECHNOLOGIES

Products and processes saving CO<sub>2</sub> emissions during use (e.g., light-weighting and fuel efficiency in the aerospace and automotive industries)

#### AMG: MITIGATING TECHNOLOGIES

Products and processes saving raw minerals, energy and CO<sub>2</sub> emissions during manufacturing (e.g., recycling of ferrovanadium)

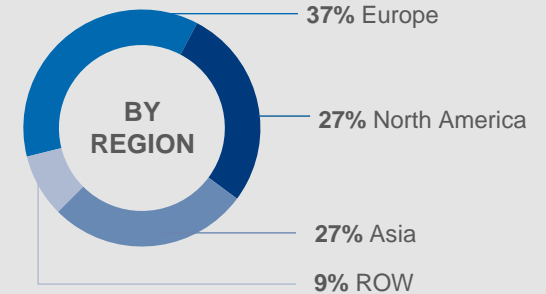
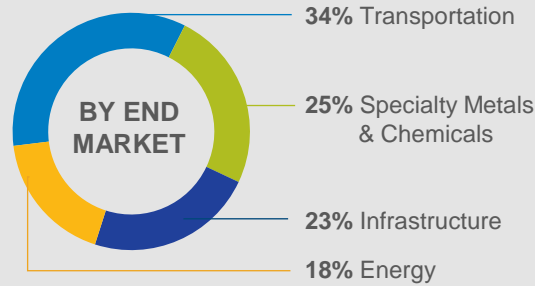
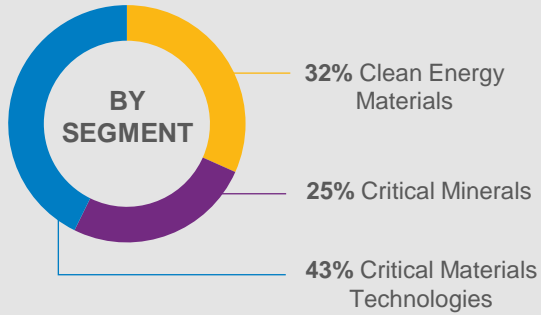
### AMG'S ENABLED CO<sub>2</sub> EMISSION REDUCTIONS (Million MT)



\* 2020 decrease due to the global pandemic significantly impacting volumes in our aerospace exposed businesses

# AMG AT A GLANCE

## FY 2021 REVENUE



AMG IS A GLOBAL SUPPLIER OF CRITICAL MINERALS TO:



ENERGY



TRANSPORTATION



INFRASTRUCTURE



SPECIALTY METALS AND CHEMICALS

Market leading producer of highly engineered specialty metals and vacuum furnace systems

**~3,300**  
Employees

**~\$1.2 billion**  
Annual Revenues

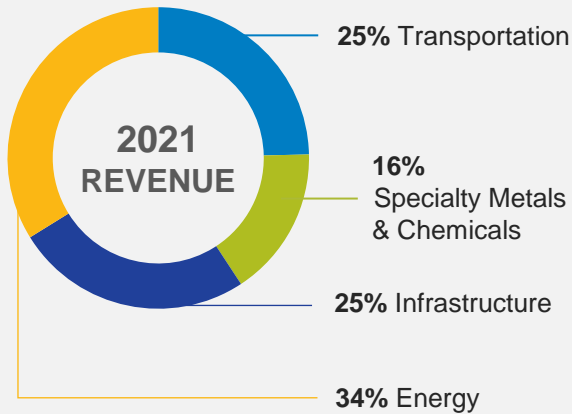
At the forefront of  
**CO<sub>2</sub> Reduction**

# AMG BUSINESS SEGMENTS

## AMG CLEAN ENERGY MATERIALS

AMG's mining and recycling business

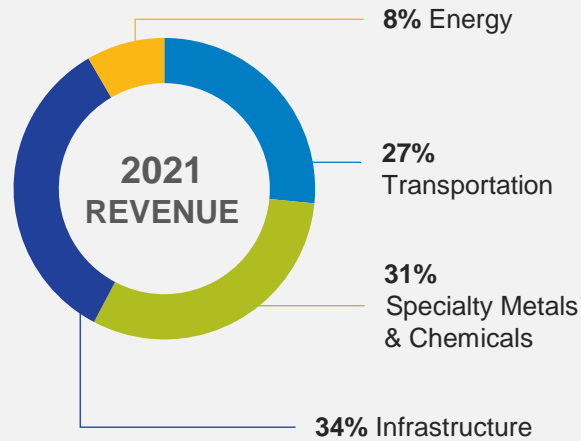
- Vanadium
- Mineração (Tantalum & Lithium)
- Aluminum (Master Alloys)



## AMG CRITICAL MINERALS

AMG's conversion and mining business

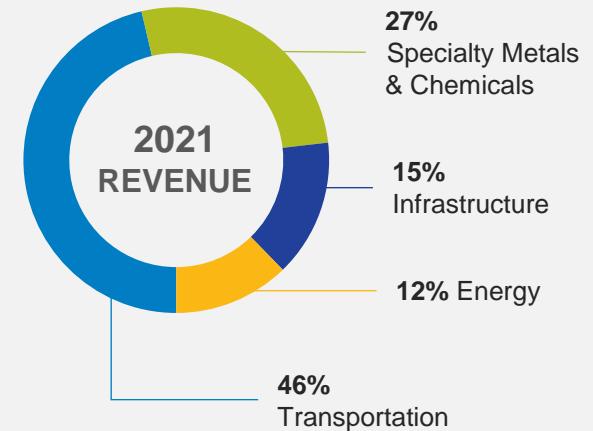
- Silicon Metal
- Graphite
- Antimony



## AMG CRITICAL MATERIALS TECHNOLOGIES

AMG's titanium alloys, vacuum systems and services business

- Titanium Alloys
- Furnaces
- Heat treatment services
- Chrome Metal



# STRONG FUNDAMENTALS, ADAPTIVE TO GLOBAL DISRUPTION

## OPTIMIZED CAPITAL STRUCTURE

- In November 2021, AMG 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 replaced AMG’s prior credit facility and extended the term loan maturity from 2025 to 2028 and revolver maturity from 2023 to 2026.
- AMG Engineering entered into €140 million of long-term bilateral unsecured performance-based guarantee facility agreements in January 2022, which replace the existing ones.
- \$307 million 30-year 4.6% municipal bond finances 100% of the ferrovanadium expansion in Zanesville, Ohio.

## BUSINESS RESILIENCE

- Focus on operational efficiency
- Reduction of operating costs and capital expenditures
- Momentum on positive business gains, strong backlogs into early 2022

## DISCIPLINED APPROACH TO GROWTH

- Shell & AMG Recycling B.V. joint venture pursuing circular refinery residue opportunities globally
- Ohio ferrovanadium expansion underway
- Lithium hydroxide refining plant in Germany

- The fundamental positions of our businesses are sound, and **AMG remains focused on disciplined, sustainable growth**

# STRATEGY

AMG's strategy is to build its critical materials business through industry consolidation, process innovation and product development

## PROCESS INNOVATION & PRODUCT DEVELOPMENT

Continue to focus on process innovation and product development to improve the market position of AMG's businesses

## INDUSTRY CONSOLIDATION

Pursue opportunities for horizontal and vertical industry consolidation across AMG's critical materials portfolio

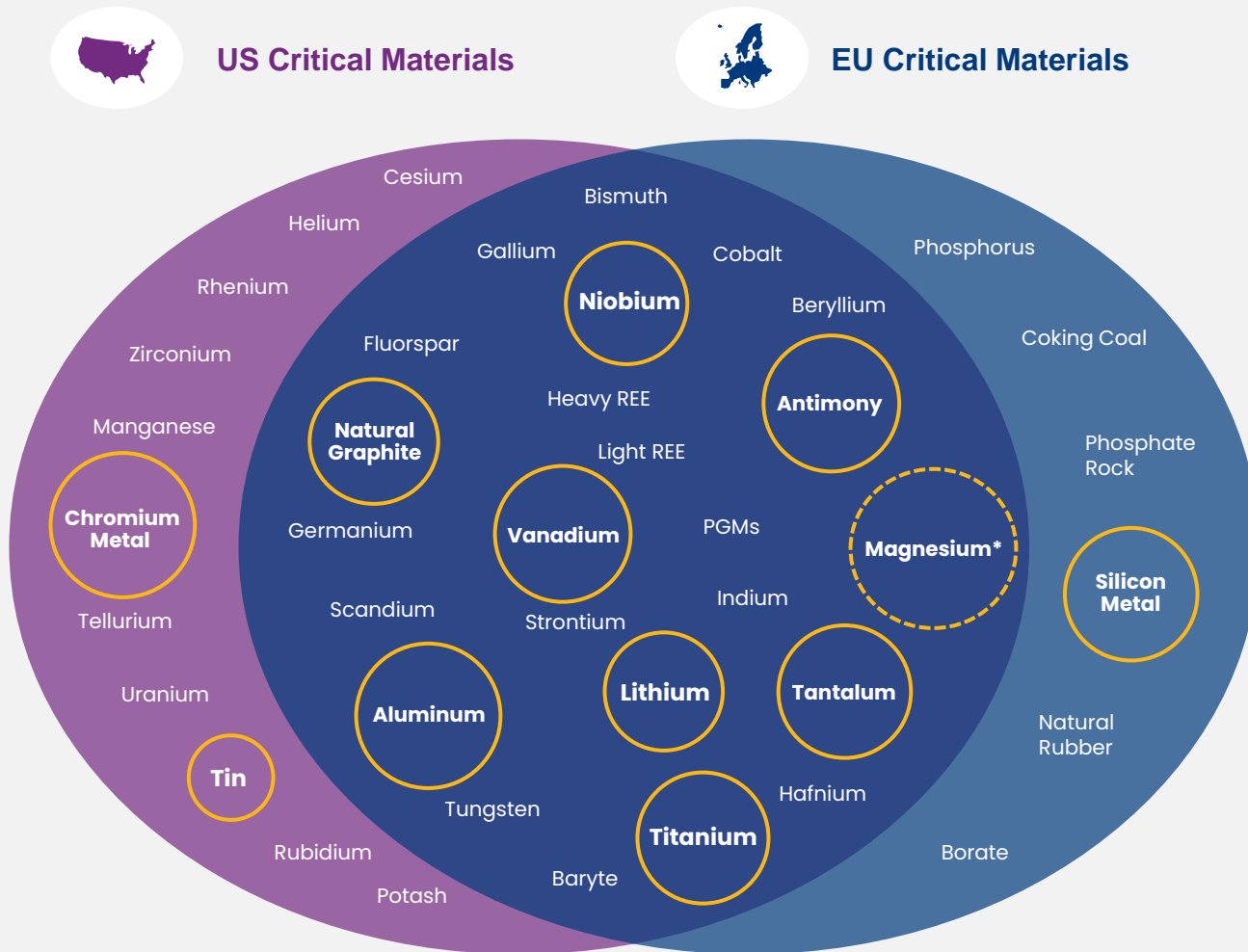
## EXPANSION OF EXISTING HIGH-GROWTH BUSINESSES

Pursue opportunities in high-growth areas within the existing product portfolio

—○ AMG's overriding strategic objective is to **achieve industry leadership** while being the **low-cost producer**



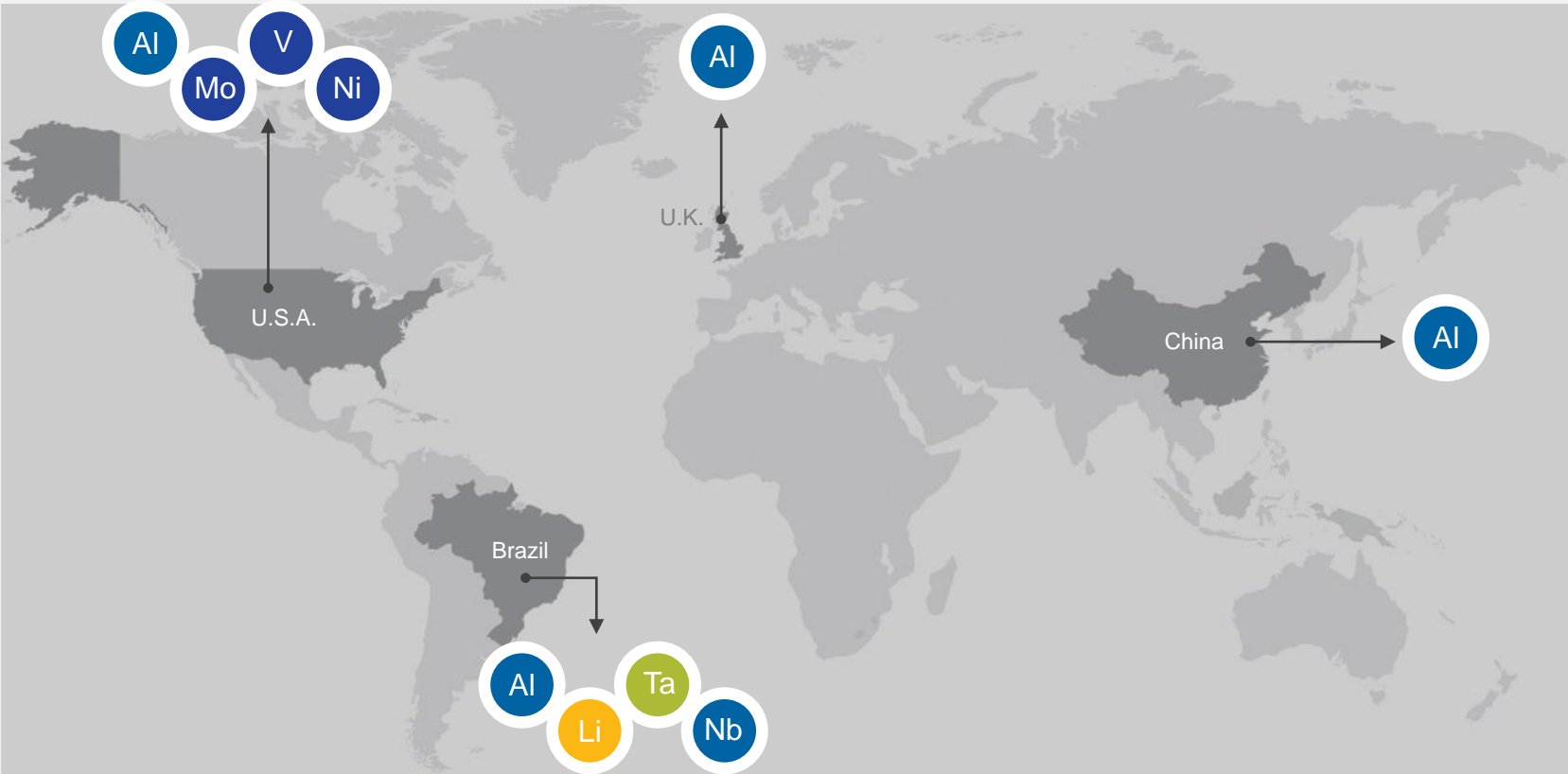
# CRITICAL RAW MATERIALS: AMG PRESENCE



- AMG has a unique critical materials portfolio comprised of 9 EU critical materials and 10 US critical materials
- The EU identifies 30 total critical raw materials, the US 35

\*AMG possesses technology license patent for production of Magnesium products  
 Sources: The 2020 EU Critical Raw Materials List, published September 2020; and the U.S. list of Critical Materials per the May 2018 announcement by the U.S. Department of the Interior.

# AMG GLOBAL FOOTPRINT: CLEAN ENERGY MATERIALS



Al Aluminum Master Alloys,  
Aluminum Powders

Mo Molybdenum

V FeV

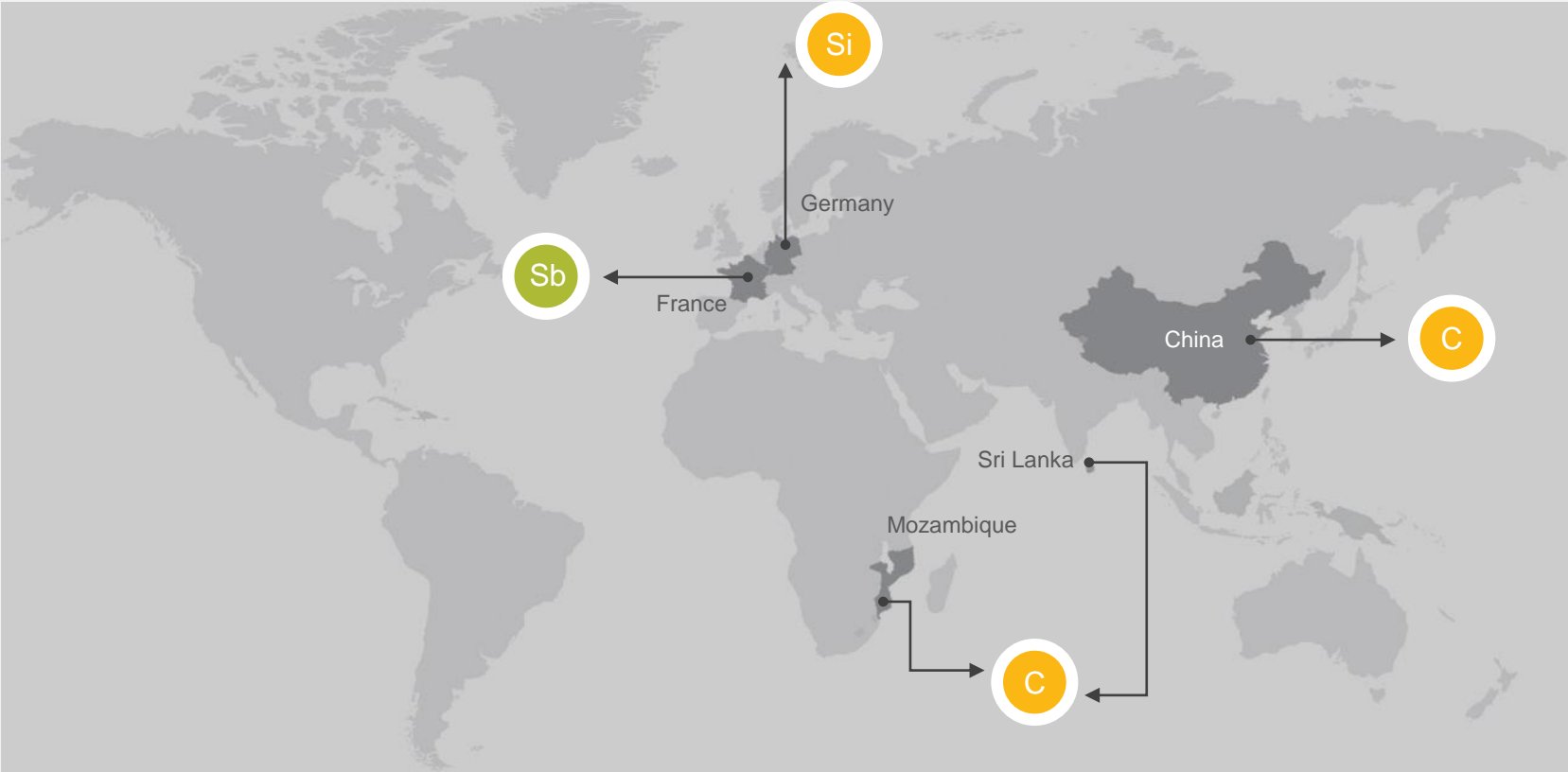
Ni Nickel

Nb Niobium

Li Lithium

Ta Tantalum

# AMG GLOBAL FOOTPRINT: CRITICAL MINERALS

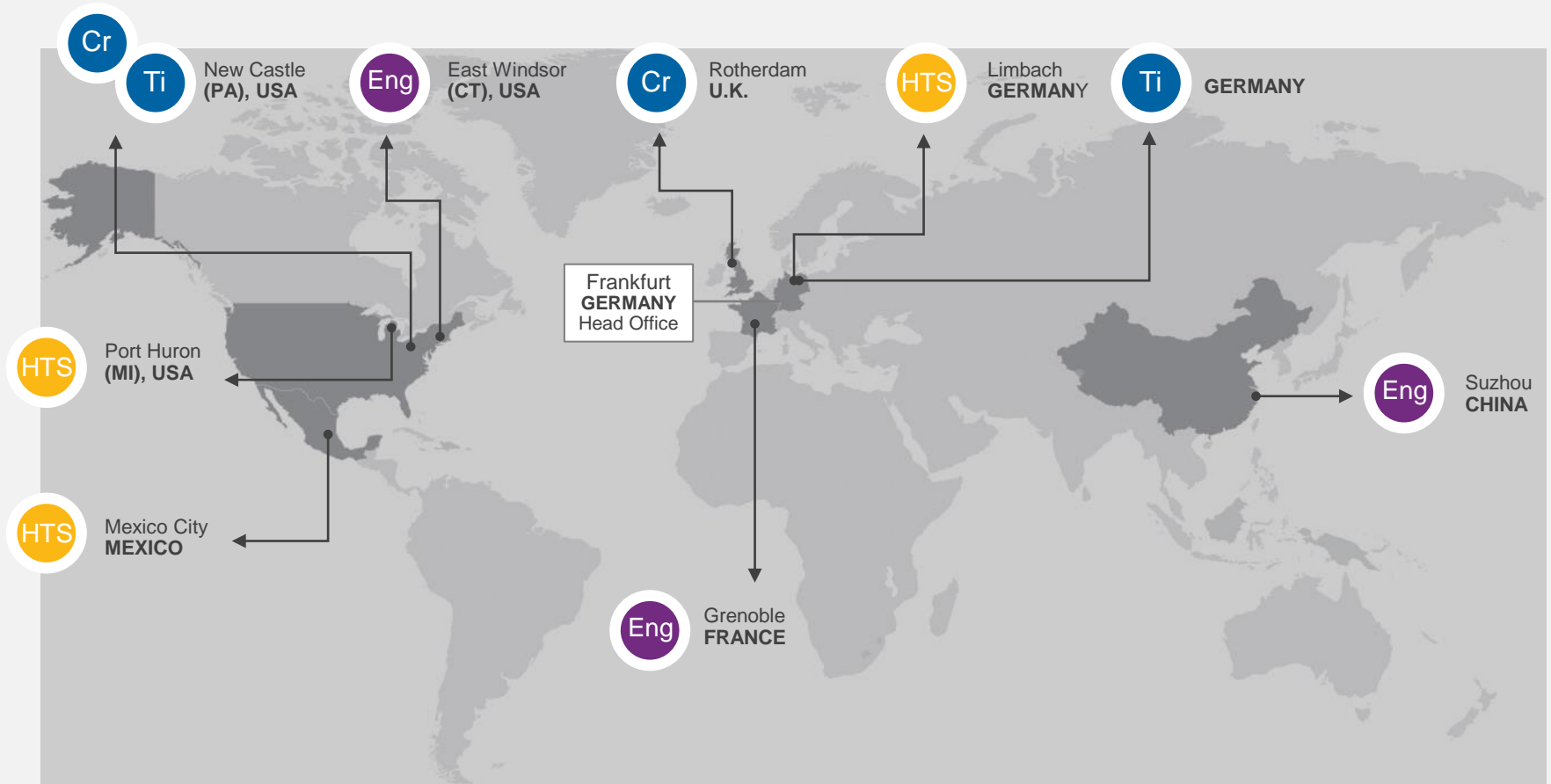


 Antimony

 Natural Graphite

 Silicon Metal

# AMG GLOBAL FOOTPRINT: CRITICAL MATERIALS TECHNOLOGIES



Ti Titanium Alloys & Coatings

Eng Engineering

HTS Heat Treatment Services

Cr Chromium Metal

# HEALTH AND SAFETY FOCUS



## Safety Indicators

AMG compares itself to the industry average for Primary Metal Manufacturing (NAICS 331).

The most recent data provided in 2020 by the United States Bureau of Labor Statistics reports that the Primary Metal Manufacturing industry's total recordable case rate was **3.90** and the lost time rate was **1.30**.












YEAR	LOST TIME INCIDENTS IN THE LAST 12 MONTHS	12 MONTH AVERAGE LOST TIME INCIDENT RATE	12 MONTH AVERAGE TOTAL INCIDENT RATE
2020	16	0.62	1.05
2021	11	0.39	1.08













Internal safety performance in both lost time incidence rate and recordable incidence rate has improved year-over-year.


















# CLEAN ENERGY MATERIALS – MARKET TRENDS

CRITICAL MINERALS	MAJOR END MARKETS	MARKET TRENDS	MAJOR CUSTOMERS
<b>AMG VANADIUM</b> FERROVANADIUM FERRONICKEL- MOLYBDENUM	<b>INFRASTRUCTURE</b>	<b>INFRASTRUCTURE GROWTH</b> <b>VANADIUM REDOX FLOW BATTERIES</b>	 
<b>AMG BRAZIL</b> TANTALUM & NIOBIUM	<b>MICRO CAPACITORS, SUPERALLOYS</b>	<b>COMMUNICATIONS &amp; ELECTRONICS</b> <b>FUEL EFFICIENCY</b>	 H.C.Starck 
<b>AMG LITHIUM</b> LITHIUM CONCENTRATE (SPODUMENE)	<b>BATTERIES</b>	<b>RENEWABLE ENERGY</b> <b>COMMUNICATIONS &amp; ELECTRONICS</b>	CONFIDENTIAL
<b>AMG ALUMINUM</b> ALUMINUM MASTER ALLOYS ALUMINUM POWDERS	<b>AEROSPACE, AUTOMOTIVE</b>	<b>FUEL EFFICIENCY</b>	  
 ENERGY	 TRANSPORTATION	 INFRASTRUCTURE	 SPEC. METALS AND CHEM.

# CRITICAL MINERALS – MARKET TRENDS

CRITICAL MINERALS	MAJOR END MARKETS	MARKET TRENDS	MAJOR CUSTOMERS
<b>AMG GRAPHITE</b> NATURAL GRAPHITE	<b>EXPANDED POLYSTYRENE (EPS), BATTERY ANODES</b>	<b>ENERGY SAVING</b> <b>ENERGY STORAGE</b>	 
<b>AMG ANTIMONY</b> ANTIMONY TRIOXIDE ANTIMONY MASTERBATCHES ANTIMONY PASTES	<b>FLAME RETARDANTS</b>	<b>PLASTICS</b>	 
<b>AMG SILICON</b> SILICON METAL	<b>ALUMINUM ALLOYS, SOLAR</b>	<b>FUEL EFFICIENCY</b> <b>CLEAN ENERGY</b>	 
 ENERGY	 TRANSPORTATION	 INFRASTRUCTURE	 SPEC. METALS AND CHEM.

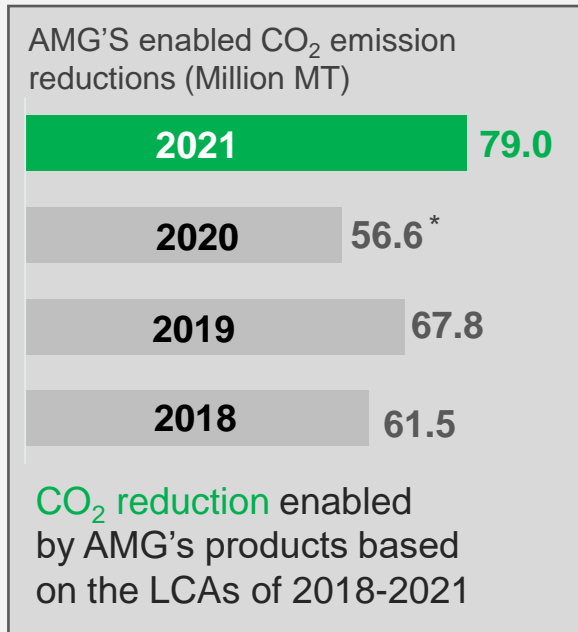
# CRITICAL MATERIALS TECHNOLOGIES – MARKET TRENDS





CRITICAL MINERALS	MAJOR END MARKETS	MARKET TRENDS	MAJOR CUSTOMERS
<b>AMG TITANIUM ALLOYS</b> TITANIUM MASTER ALLOYS & COATINGS	<b>AEROSPACE</b>	<b>FUEL EFFICIENCY</b> <b>ENERGY SAVING</b>	 
<b>AMG ENGINEERING</b> CAPITAL GOODS (VACUUM FURNACES)	<b>AEROSPACE,            AUTOMOTIVE</b>	<b>FUEL EFFICIENCY</b> <b>ELECTRONICS</b>	 <b>Rolls-Royce</b>  <b>CARPENTER</b>  <b>ThyssenKrupp</b> 
<b>AMG ENGINEERING</b> VACUUM HEAT TREATMENT SERVICES	<b>AEROSPACE,            AUTOMOTIVE</b>	<b>FUEL EFFICIENCY</b>	  
<b>AMG CHROME</b> CHROMIUM METAL	<b>AEROSPACE,            DISTRIBUTED ENERGY,            FUEL CELLS</b>	<b>FUEL EFFICIENCY</b>	  <b>Bloomenergy</b>
 <b>ENERGY</b>	 <b>TRANSPORTATION</b>	 <b>INFRASTRUCTURE</b>	 <b>SPEC. METALS            AND CHEM.</b>

# ECO<sub>2</sub>RP IS THE PORTFOLIO OF AMG'S PRODUCTS ENABLING CO<sub>2</sub> REDUCTION

## Strict selection criteria

Products are accepted in **ECO<sub>2</sub>RP** only when the **enabled CO<sub>2</sub> reduction** effect has been established by a LCA performed by a leading third-party expert



- |       |    |   |   |
|-------|----|---|---|
| 50.35 | 1  | Thermal barrier coatings, enabling fuel savings through higher operating temperatures in aircraft engines       |   |
| 7.61  | 2  | Aluminum alloys, enabling reduced fuel consumption by light weighting   |   |
| 4.72  | 3  | Light weighting leading to fuel savings   |   |
| 2.88  | 4  | Ferrovandium, alloy for rebar steel, reducing quantity required for construction, and mitigation from recycling |    |
| 1.27  | 5  | Graphite, as insulation in buildings, enabling lower domestic heating requirements                              |   |
| 0.06  | 6  | Turbocharger wheel casting, turbochargers in vehicle engines enable engine downsizing fuel efficiency           |   |
| 0.02  | 7  | Glass coating, enabling lower cooling requirements  |   |
| 8.77  | 8  | Automotive transmission heat treatment, enabling vehicle fuel savings   |   |
| 3.06  | 9  | Titanium aluminides, enabling fuel savings and use of hotter temperatures                                       |  |
| 0.22  | 10 | Nickel based super alloys, recycling production scrap instead of primary mining                                 |  |
| 0.02  | 11 | Vanadium Pentoxide (V <sub>2</sub> O <sub>5</sub> )   |  |

\*2020 decrease due to the global pandemic significantly impacting volumes in our aerospace exposed businesses



# FINANCIAL HIGHLIGHTS





## FY 2021 AT A GLANCE

AMOUNTS IN \$M (EXCEPT EARNINGS PER SHARE)	FY 2021	FY 2020	% CHANGE
Revenue	\$1,204.7	\$937.1	29%
Gross Profit	\$208.2	\$112.7	85%
Gross Margin %	17.3%	12.0%	44%
Profit (Loss) before Income Taxes	\$22.5	(\$31.3)	N/A
EBITDA	\$136.7	\$66.8	105%
EBITDA Margin %	11.3%	7.1%	59%
Net Debt	\$284.5	\$287.9	(1%)
Return On Capital Employed (ROCE)	11.9%	3.5%	240%
Net Income (Loss) Attributable to Shareholders	\$13.8	(\$41.7)	N/A
Diluted Earnings (Loss) per Share	0.44	(1.47)	N/A

- AMG's results have trended positively since Q2 2020
- AMG management believes that this positive trend will continue and expects EBITDA for 2022 in the range of \$260 to \$290 million in EBITDA

# CONSOLIDATED BALANCE SHEET

<b>AS OF</b> <i>IN MILLIONS OF US DOLLARS</i>	<b>DECEMBER 31, 2021</b>	<b>DECEMBER 31, 2020</b>
Fixed assets	\$693.6	\$551.9
Goodwill and intangibles	44.7	43.2
Other non-current assets	91.3	96.0
Restricted cash	93.4	208.9
Inventories	218.3	152.3
Receivables	145.4	122.4
Other current assets	75.1	56.9
Cash	337.9	207.4
<b>TOTAL ASSETS</b>	<b>1,699.7</b>	<b>1,439.0</b>
<b>TOTAL EQUITY</b>	294.2	141.3
Long-term debt	675.4	673.3
Long-term lease liabilities	45.7	47.1
Employee benefits	162.6	197.2
Other long-term liabilities	55.4	37.7
Current debt	40.4	31.0
Current lease liabilities	4.9	4.8
Accounts payable and accruals	333.5	231.1
Advance payments	35.1	29.9
Other current liabilities	52.5	45.6
<b>TOTAL LIABILITIES</b>	1,405.5	1,297.7
<b>TOTAL EQUITY AND LIABILITIES</b>	<b>1,699.7</b>	<b>1,439.0</b>

# CONSOLIDATED INCOME STATEMENT

FOR THE YEAR ENDED <i>IN MILLIONS OF US DOLLARS</i>	DECEMBER 31, 2021	DECEMBER 31, 2020
Revenue	\$1,204.7	\$937.1
Cost of sales	(996.5)	(824.5)
<b>Gross profit</b>	<b>208.2</b>	<b>112.6</b>
Selling, general & administrative	(139.6)	(117.8)
Environmental expense	(11.9)	(4.3)
Other income, net	0.4	0.2
<b>Operating profit (loss)</b>	<b>57.1</b>	<b>(9.3)</b>
Net finance costs	(33.6)	(21.1)
Share of loss of associates	(1.0)	(0.9)
<b>Profit (loss) before income tax</b>	<b>22.5</b>	<b>(31.3)</b>
Income tax expense	(8.7)	(11.2)
<b>Profit (loss) for the year</b>	<b>13.8</b>	<b>(42.5)</b>
Shareholders of the Company	13.8	(41.7)
Non-controlling interest	—	(0.8)
<b>ADJUSTED EBITDA</b>	<b>136.7</b>	<b>66.8</b>

# CONSOLIDATED STATEMENT OF CASH FLOWS

FOR THE YEAR ENDED <i>IN MILLIONS OF US DOLLARS</i>	DECEMBER 31, 2021	DECEMBER 31, 2020
EBITDA	\$136.7	\$66.8
Change in working capital and deferred revenue	22.7	10.8
Other operating cash flow	(36.8)	(30.0)
<b>Cash generated from operating activities</b>	<b>122.6</b>	<b>47.6</b>
Finance costs paid, net	(21.9)	(19.4)
Income tax paid	(9.9)	(8.6)
<b>Net cash flow from operating activities</b>	<b>90.8</b>	<b>19.6</b>
Capital expenditures	(178.0)	(137.7)
Change in restricted cash	115.5	100.7
Other investing activities	(0.5)	(0.9)
<b>Net cash flow used in investing activities</b>	<b>(63.0)</b>	<b>(37.9)</b>
<b>Net cash flow from (used in) financing activities</b>	<b>111.1</b>	<b>(9.2)</b>
Net increase (decrease) in cash and equivalents	138.9	(27.5)
<b>Cash and equivalents at January 1</b>	<b>207.4</b>	<b>226.2</b>
Effect of exchange rate fluctuations on cash held	(8.4)	8.7
<b>CASH AND EQUIVALENTS AT DECEMBER 31</b>	<b>337.9</b>	<b>207.4</b>

# NET INCOME (LOSS) TO EBITDA RECONCILIATION

FOR THE YEAR ENDED <i>(000's US DOLLARS)</i>	DECEMBER 31, 2021	DECEMBER 31, 2020
Net income (loss) for the year	\$13,779	(\$42,460)
Income tax expense	8,707	11,184
Net finance cost <sup>(1)</sup>	33,602	23,524
Equity-settled share-based payment transactions <sup>(2)</sup>	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 <sup>(3)</sup>	12,157	7,085
Non-recurring legal expense	44	1,353
Share of loss of associates	1,053	947
Others	527	756
<b>EBIT</b>	<b>92,991</b>	<b>23,106</b>
Depreciation and amortization	43,685	43,661
<b>EBITDA</b>	<b>136,676</b>	<b>66,767</b>

(1) Beginning January 1, 2021, AMG has altered its calculation of adjusted EBIT to no longer include the impact of foreign exchange. This alteration was made in consideration of a change in the Company's hedging policy and to better align the reported adjusted EBITDA with the calculation for our bank covenant calculations. 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. Foreign exchange loss in 2021 was \$7.4 million. Because of this hedging policy change, we did not retroactively apply this change to the prior year figures, otherwise it would have resulted in a decrease to the prior year EBIT of \$2.4 million.

(2) Amount includes variable compensation expense which settled in shares in 2021.

(3) 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.