



# AMG CRITICAL MATERIALS

## MATERIALS SCIENCE FOR A SUSTAINABLE PLANET

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2024







# About AMG

## COMPANY OVERVIEW

As a leading lithium producer, AMG enables green mobility. Safety, efficiency and innovation are driving the business. AMG is an entrepreneur in critical materials and provides now and for the future what its customers need to move the world. AMG seizes market opportunities. Through market-leading technologies in turbine blade coatings and specialty alloys, AMG is strengthening its position in the booming aerospace engine market. Another opportunity arises in electricity storage systems. The company is expanding its resource position in lithium as well as its market-leading vanadium recycling technology in North America and globally.

AMG is the world's largest recycler of vanadium-containing refinery waste. The construction of the Zanesville spent catalyst recycling plant has established a truly closed-loop circular economy for the sector in North America and beyond. AMG is also expanding its position in the lithium sector and building an electric vehicle battery materials value chain in Europe.

The company is organized into three divisions: AMG Lithium, AMG Vanadium, and AMG Technologies. With approximately 3,600 employees, AMG operates globally with production facilities in Germany, the United Kingdom, France, the United States, China, Mexico, Brazil, India, Sri Lanka, and Mozambique, and has sales and customer service offices in Japan.

## AMG MARKET FOCUS



### Transportation

Innovation is driving demand for critical materials in the transportation industry. AMG's lithium concentrate is in high demand as electric vehicle battery demand continues to grow. Highly engineered materials science-based solutions are needed to increase operating efficiency, lower aircraft weight and improve economics.



### Energy

Global energy demand growth is driven by two opposing factors—increased energy usage and improvements in energy efficiency. AMG provides materials science-based technologies to improve energy efficiency and increase energy supply, such as graphite used as an insulation material or vanadium electrolyte for vanadium redox flow batteries.



### Infrastructure

Improvements in infrastructure are essential to growing global GDP and reducing carbon emissions. AMG provides critical materials such as ferrovandium 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 materials science-based 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.

# INTELLIGENCE IN LITHIUM

The market for lithium is growing rapidly, driven by a rising need for renewable energy (grid storage) and strong demand for green mobility. AMG will be the first European battery-grade lithium hydroxide producer serving the growing EU cathode material market. By 2028 AMG will become the number one supplier for the battery market in Europe with the highest quality and next generation high-performance battery materials.

The lithium growth strategy of AMG is centred on the company becoming vertically integrated across the entire lithium value chain. The company is entirely backward-integrated and has full control of all conversion steps starting from hard rock mining to manufacturing of battery-grade lithium hydroxide monohydrate.

AMG currently operates its lithium concentrate (spodumene) processing plant in Brazil. Since 2018 the plant processes and produces spodumene from existing tailings at AMG's current mining operations at Mibra in Brazil. The company has an annual spodumene production capacity of 90 ktpa at present and is currently undertaking a project, to expand this annual capacity by 44% to 130 ktpa. The current 90 ktpa is sold through long-term offtake agreements (through 2028). The significance of 2028 is that it marks the point in AMG's growth plan at which spodumene will instead be shipped internally to ultimately produce lithium hydroxide. This intermediate step downstream encompasses a technical-grade lithium precursor plant, effectively creating the intermediate product that can later be upgraded to battery-grade lithium carbonate or hydroxide. Bringing this intermediate process in-house is an important step in AMG's plan to create a full lithium value chain.

The precursor plant, to be located in Brazil, will save on operating expenses but will also mean that AMG can avoid having to ship spodumene out of Brazil for external conversion before subsequently being shipped again to AMG's planned upgrading facility in Germany to become a battery-grade product.

The next stage of extracting further value from the lithium supply chain comes from AMG's planned production of battery-grade lithium hydroxide in Germany. The planned plant is located in Bitterfeld-Wolfen, in eastern Germany. The plant is of a modular design, with a maximum capacity of 100 ktpa, which would be shared across five 20 ktpa modules that can be added individually over time. The first module is in the initial phases of commissioning and the ramp-up and qualification process is planned for the second and third quarters of 2024. Under AMG's published plan, Modules 2 and 3 would come online through 2025-2026, followed by Modules 4 and 5 in 2027-2028.



**Dr. Heinz Schimmelbusch**  
Chairman & CEO AMG Group

"We at AMG combine extensive Lithium expertise in Research & Development, Production, and Marketing with a reliable and secure raw material base. We strive to become the number one supplier for the battery market in Europe. Besides quality and reliability, we focus on sustainable products and processes to minimize the carbon footprint for our customers and ourselves."





# MANAGEMENT BOARD



## **Dr. Heinz Schimmelbusch**

### **Chairman & CEO**

Dr. Schimmelbusch was appointed Chief Executive Officer and Chairman of the Management Board on November 21, 2006, and he was reappointed in 2023 for a term of two (2) years, effective May 4, 2023. He has served in a similar capacity for businesses comprising AMG since 1998. Dr. Schimmelbusch also serves as Non-Executive Chairman of the Board of various companies. Dr. Schimmelbusch served as Chairman of Metallgesellschaft AG from 1989 until he resigned in 1993. His directorships have included Allianz Versicherung AG, Mobil Oil AG, Teck Corporation, Methanex 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). He received his graduate degree (with distinction) and his doctorate (magna cum laude) from the University of Tübingen, Germany.



## **Eric Jackson**

### **Chief Operating Officer**

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. He 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 BS degree in Economics and an MBA, both from the University of Saskatchewan.



## **Jackson Dunckel**

### **Chief Financial Officer**

Mr. Dunckel was appointed Chief Financial Officer of AMG on February 1, 2016 and a member of the AMG Management Board on May 4, 2016. He was reappointed to the AMG Management Board 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 U.S. 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 and completed his MBA in International Finance at the Leonard Stern School of Business in 1995.

## Our Finance OVERVIEW

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