

# CRITICAL MATERIALS FOR A SUSTAINABLE PLANET

AMG provides critical materials and related process technologies to advance a less carbon-intensive world. To this end, AMG is focused on the production and development of energy storage materials such as lithium, vanadium, and tantalum. In addition, AMG's products include highly engineered systems to reduce CO<sub>2</sub> in aerospace engines, as well as critical materials addressing CO<sub>2</sub> reduction in a variety of other end use markets.

## AMG'S 2030 COMMITMENT ON CO<sub>2</sub> REDUCTION

AMG was founded on the principle that CO<sub>2</sub> abatement targets would create increased criticality for specialty materials. This strategic focus is encapsulated in the Enabled CO<sub>2</sub> Reduction Portfolio concept (ECO<sub>2</sub>RP) at the level of AMG's customers. Our strategic focus is fully aligned with – and in support of – the EU Taxonomy initiative on sustainability and its climate objectives.

AMG Commits to reduce its direct CO<sub>2</sub> emissions by 20% 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<sub>2</sub>.

AMG commits through its ECO<sub>2</sub>RP concept, to increase its enabled CO<sub>2</sub> reduction by 10% per annum from 2021 levels through 2030. Substantive contributions will come from what we refer to as "Circular Economy" projects.

- 38%** REDUCED DIRECT CO<sub>2</sub> IN 2023
- +11%** ENABLED CO<sub>2</sub> REDUCTIONS IN 2023 equivalent to
- 110.3** MILLION TONS LESS CO<sub>2</sub> IN 2023

Source: AMG Annual Report 2022

## ACCELERATING THE ENERGY TRANSITION – STRATEGIC HIGHLIGHTS

- AMG Lithium has commissioned production of battery-grade lithium hydroxide (BG LiOH) at the first of its five modules planned for its Bitterfeld-Wolfen, Germany site, Europe's first. Annual capacity of one module is 20,000 tons per year – enough for the batteries of around 500,000 electric vehicles. Depending on market conditions, AMG's concept is to expand annual production up to 100,000 metric tons of BG LiOH by 2030. Lithium hydroxide is an important raw material for the production of cathode materials for batteries in EVs and thus for the path to climate-neutral mobility.
- AMG is the world's largest recycler of vanadium-containing refinery waste in spent catalysts. Vanadium is needed for the rapidly growing industrial energy storage market. AMG's recycling strategy of vanadium reduces the CO<sub>2</sub> emissions by up to 85% compared to typical mining process.
- AMG's LIVA Hybrid Energy Storage System (HESS) for industrial applications helps to improve energy and power management to reduce energy costs and CO<sub>2</sub> emissions. The custom tailored ecosystem combines a lithium-ion battery as high-power unit with a vanadium redox-flow battery as energy storage unit. HESS can serve an energy demand up to 100 Megawatt hours.



AMG Lithium, Lithium Refinery, Bitterfeld-Wolfen, Germany



"We strive to become the number one supplier of battery-grade lithium hydroxide in Europe. Besides quality and reliability, we focus on sustainable products and processes to minimize the carbon footprint for our customers and ourselves."

Dr. Heinz Schimmelbusch, CEO AMG N.V.

