

AMG Critical Minerals

AMS: AMG



Current Price: \$18.05
Implied Price: \$30.54
Implied Upside: 69.2%

Pitchbook — Grigshaw Research

All figures in \$USD

Last Updated: 7-31-2024

In the words of the brilliant Warren Buffet, “Money is attracted to patient people.”

AMG Critical Minerals, backed by an all-star management team, stands as a unique gem in the metals & mining industry. Its ESG-oriented emphasis on sustainability, industry-leading ROIC rate and attractive valuation with a nearly 70% upside make it a noteworthy investment.

A key producer of metals like silicon, AMG is poised for growth in the booming A.I. sector as a crucial supplier of the materials that are the backbone of modern science.

Despite recent decline from a crash in lithium prices, the metal is nevertheless critical in electric vehicle production—an already-established market that is only set to expand further in the next 10 years.

Therefore, considering their future-proof stake in A.I. and electric vehicles, along with their explicit dedication to forward-thinking environmental goals, AMG Critical Minerals is an undervalued diamond of a stock.

It is only a matter of patience as we await the company to reach its full potential.

Company Overview

Operations | Divisions | Revenue Breakdown | Management



Overview of Operations

- AMG Critical Minerals (AMG) is a leader in the production of **specialty metals** like lithium, vanadium, and titanium.
- 39 production and mining sites worldwide

Divisions & Responsibilities

- Mining and production is spread across the **three divisions of AMG**
 - **AMG Lithium**
 - Produces **lithium** critical to the batteries used in **electric vehicles (EVs)**
 - Spodumene mines in Brazil (key lithium source)
 - **AMG Vanadium**
 - Produces vanadium, titanium, and ferrovanadium used in **spacecraft, nuclear reactors, aircraft**
 - “The metal we can’t do without but don’t produce”
 - **AMG Technologies**
 - Produces avant-garde metals like **silicon** and graphite used in **CPU and GPU production for A.I.**

Management Profile (CEO & CFO)



Dr. Heinz Schimmelbusch, CEO

- Former CEO of **Metallgesellschaft AG**, one of Germany’s former biggest industrial conglomerates

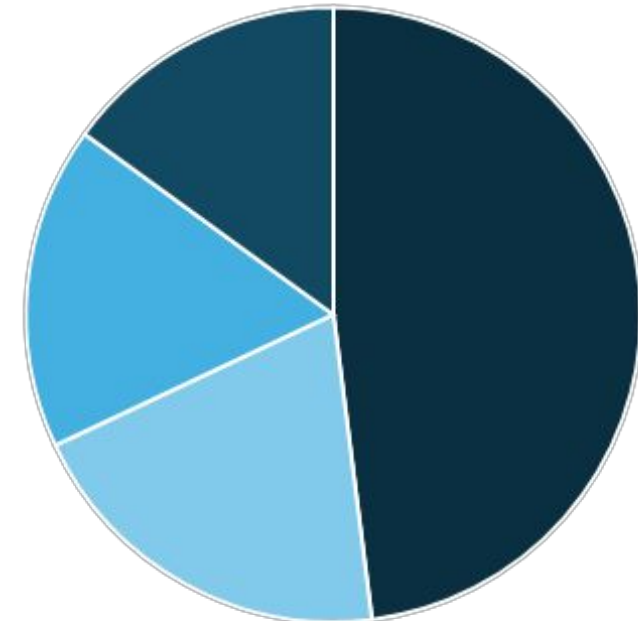


Jackson Duncel, CEO

- Former **J.P. Morgan Chase Executive Director**, key player in several Private Equity firms

Revenue Breakdown

% OF REVENUE BY PRODUCT

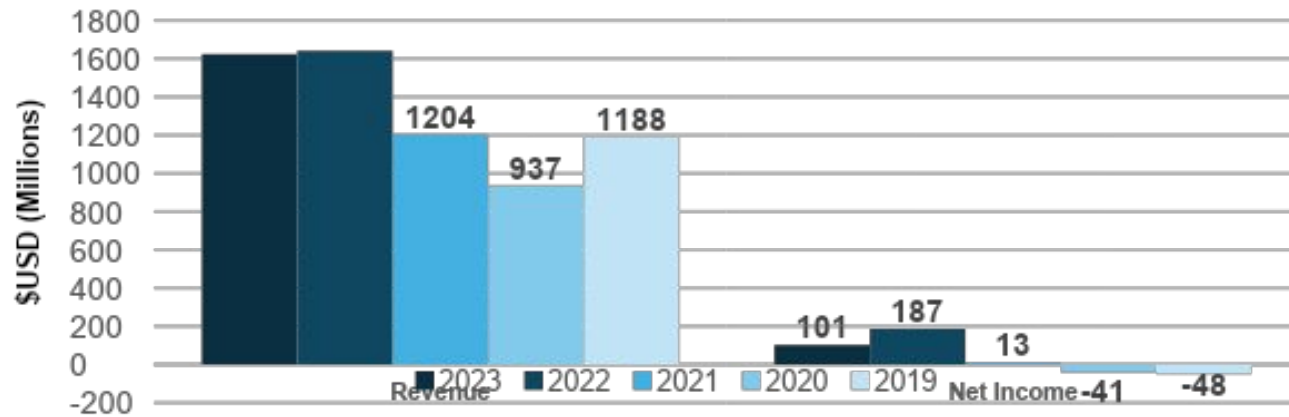


Company Overview

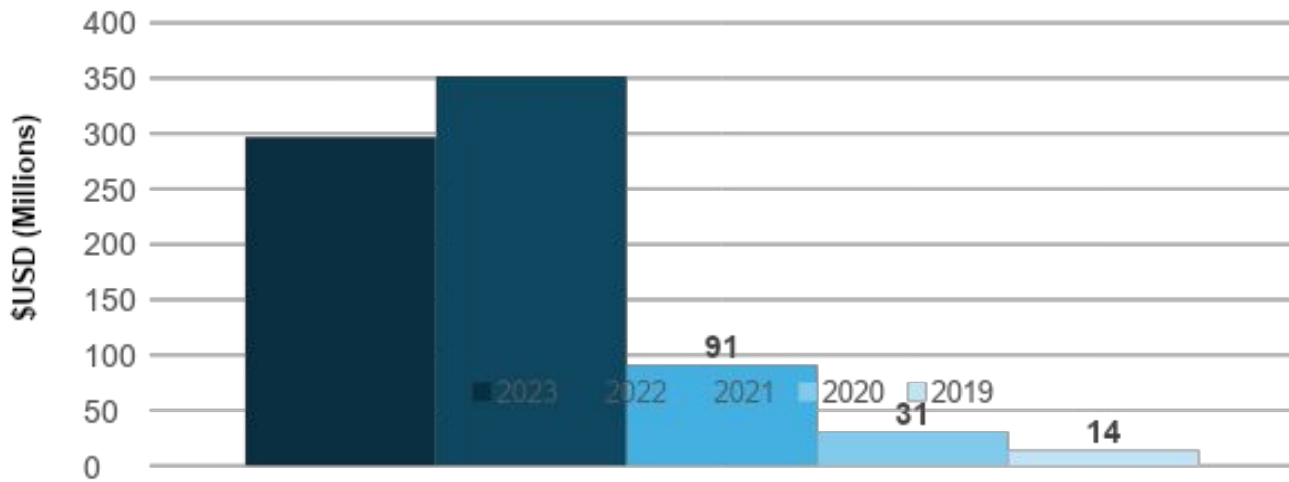
Revenue | EBITDA | Free Cash Flow



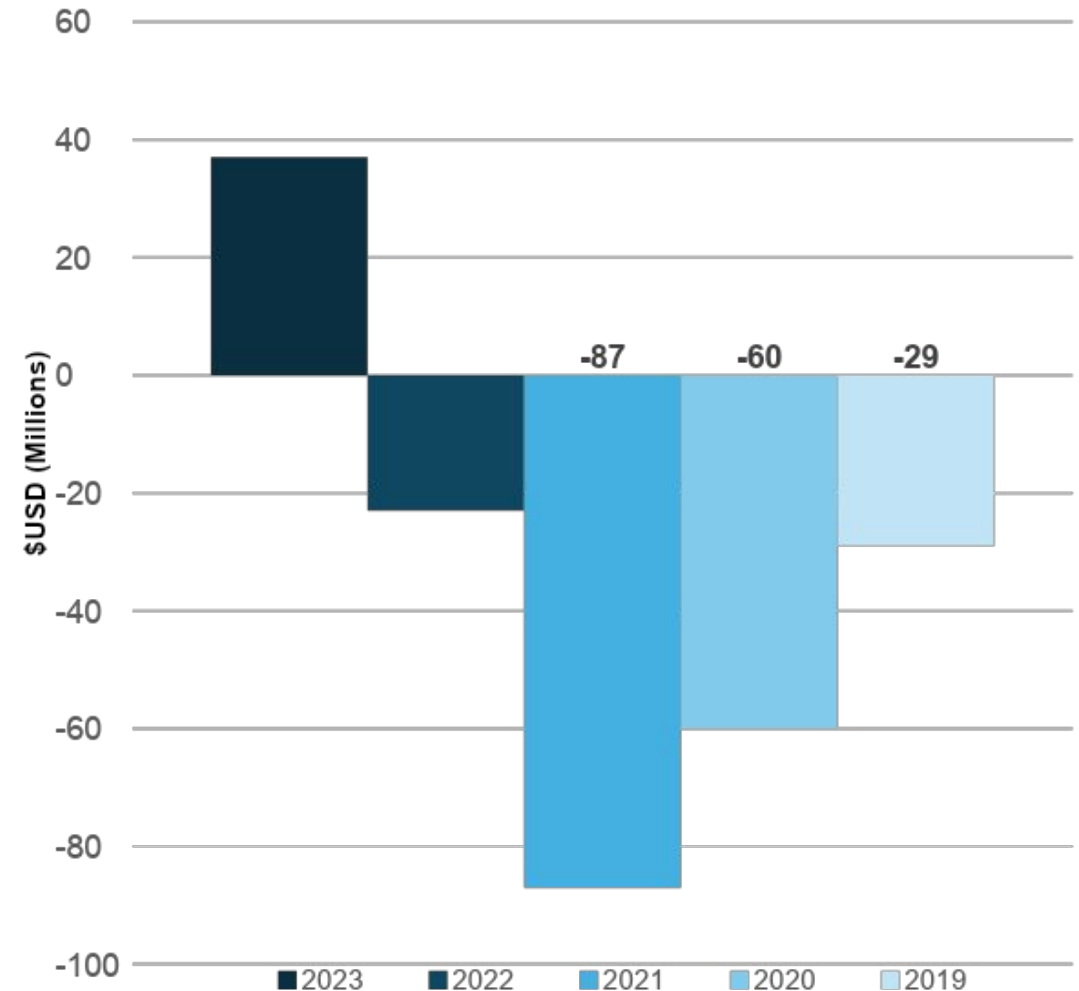
Revenue & Net Income (5yrs)



EBITDA (5yrs)



Free Cash Flow (5yrs)



Industry Overview

Scope | Lithium | Vanadium | Silicon

AMG

Industry Scope

- Mining, processing, and selling metals
- Growth driven by rising finished metals prices (e.g: lithium, titanium), demand surges

Industry Characteristics

- Capital-intensive (equipment, processing, acquisitions)
- Low margins
- Product domination by firm



GOLD
DOMINATION



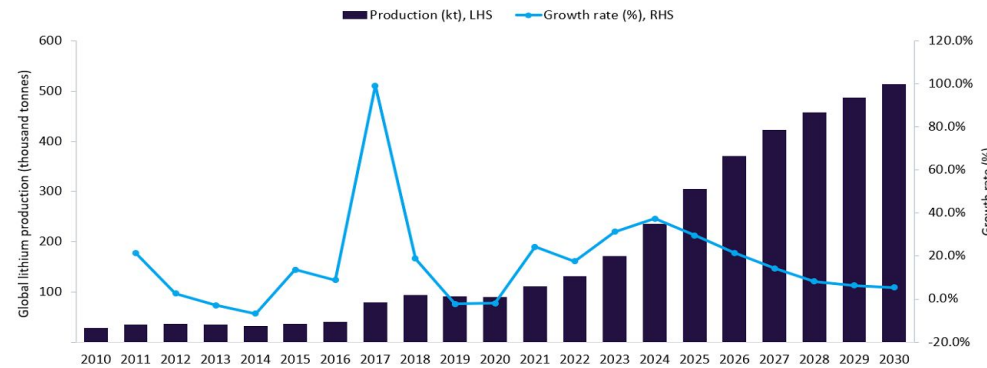
IRON ORE
DOMINATION

GLENCORE

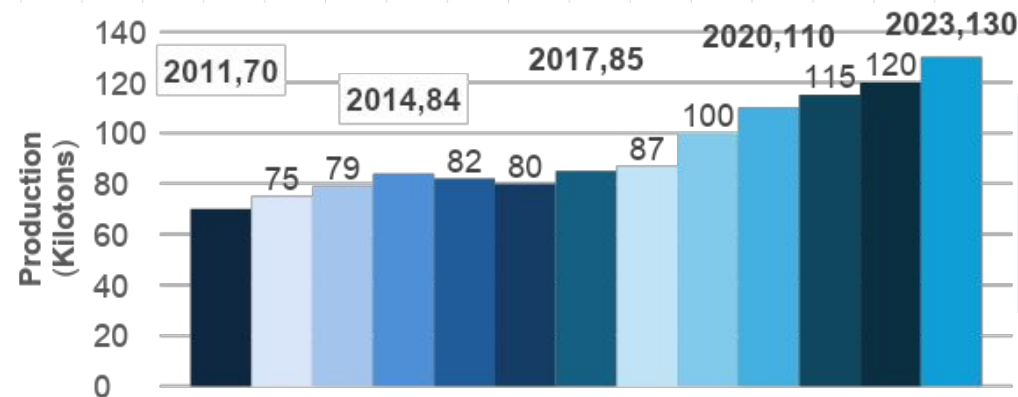
COPPER, ZINC, COLBALT
DOMINATION



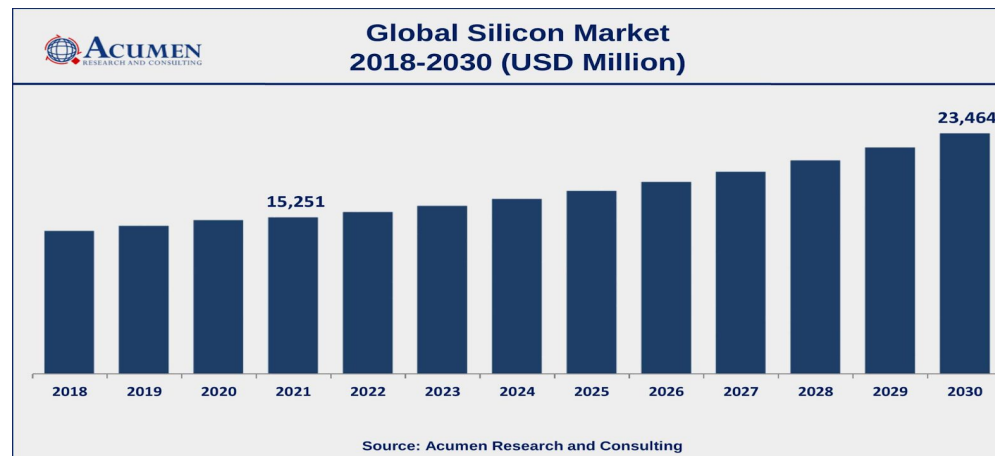
PLATINUM
DOMINATION



**Lithium
Production +
Forecast
(via Statistica)**



**Vanadium
Production
2011 - 2023**



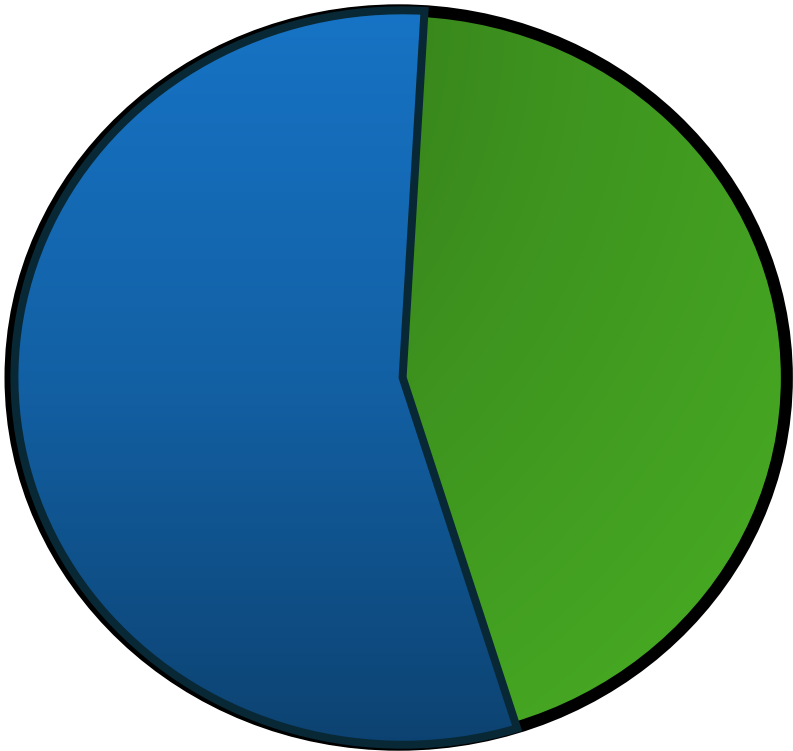
**Silicon Market
Value +
Forecast
(via ACUMEN)**



AMG CRITICAL MINERALS DCF

Ticker	AMG	Implied Share Price	\$30.54		
Date	2024-07-30	Today's Share Price	\$18.05	Upside (Downside)	69.2%

Summary:



69.2%

UNDervalUED

Current Price: \$18.05
Implied Price: \$30.54

Analysis of AMG Lithium

AMG LITHIUM				
2022 AVG SPOT PRICE \$/MT		2023 AVG SPOT PRICE		APRIL 2024 AVG SPOT PRICE
\$	72,457	\$	35,797	\$ 15,264
Change %		-51%		-57%
Q1 2023 REVENUE (\$USD MIL)		Q1 2024 REVENUE		KEY DRIVERS
\$	131	\$	42	Price ∨ Volume ∨ Chinese economic slowdown
SITUATION ANALYSIS IMPACT ON REVENUE				
<ul style="list-style-type: none"> • Chinese EV market project to recover in H2 2024-2025 • Jump to est. ~10,000,000 units sold in 2024, 45% of all Chinese cars sold—still a bullish future ✓ Turnaround for lithium prices supported by U.S. EV popularity ✓ Turnaround further propelled by project to cover its entire lithium supply chain by 2026 ✓ Strategic acquisitions + networking in 2024 will allow AMG to immediately take a stake in the American, European, Chinese markets—taking advantage of market downtime for strategy 				
BOTTOM LINE IMPACT ON STOCK				
✓ Take advantage of current lithium crash and AMG's temporary decline				

GOAL: Gain a more accurate perspective with regards to forecasting



Analysis of AMG

Vanadium

AMG VANADIUM				
2022 AVG SPOT PRICE \$/LB		2023 AVG SPOT PRICE		APRIL 2024 AVG SPOT PRICE
\$	23	\$	17	\$ 12
Change %		-26%		-29%
Q1 2023 REVENUE (\$USD MIL)		Q1 2024 REVENUE		KEY DRIVERS
\$	194	\$	165	Price ▼ Volume < >
SITUATION ANALYSIS IMPACT ON REVENUE				

- New Nuremberg titanium plant to be completed in H2 2024
- Prices expected to decline throughout 2024

✓ Sales are still exploding | +45% sales in ferrovanadium sales alone (2023)

BOTTOM LINE IMPACT ON STOCK

✓ Even with declining prices + waning volume, AMG's strong fundamentals and iron grip on the market allow them to prosper—a testament to their corporate strength

GOAL: Gain a more accurate perspective with regards to forecasting

Analysis of AMG

AMG TECHNOLOGIES				
2022 AVG SPOT PRICE \$/MT		2023 AVG SPOT PRICE		APRIL 2024 AVG SPOT PRICE
\$	4,787	\$	3,041	\$ 2,800
Change %		-36%		-8%
Q1 2023 REVENUE (\$USD MIL)		Q1 2024 REVENUE		KEY DRIVERS
\$	125	\$	155	Price ^ Volume < >
SITUATION ANALYSIS IMPACT ON REVENUE				
<ul style="list-style-type: none"> • TREMENDOUS growth in A.I. and chip-making, all require silicon for CPU/GPU production • AMG has a critical stake in the new frontier of technology 				
✓ Only growing division of AMG In 2024				
BOTTOM LINE IMPACT ON STOCK				
✓ As silicon + graphite prices recover with the further explosion of A.I. and CPU/GPU demand, AMG has an important role in the supply chain ✓ This higher demand obviously has bullish implications on AMG stock				

GOAL: Gain a more accurate perspective with regards to forecasting

Income Statement		2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Revenue		\$ 1,189	\$ 937	\$ 1,205	\$ 1,643	\$ 1,626	\$ 1,320	\$ 1,530	\$ 1,805	\$ 2,112	\$ 2,350
% growth		-	-21%	29%	36%	-1%	-19%	16%	18%	17%	11%
EBIT (loss)		(\$27)	(\$12)	\$ 48	\$ 307	\$ 243	\$ 90	\$ 166	\$ 160	\$ 208	\$ 220
% of sales		-2%	-1%	4%	19%	15%	7%	11%	9%	10%	9%
Taxes (tax benefits)		(\$5)	\$11	\$9	\$84	\$95	\$ 32	\$ 60	\$ 57	\$ 75	\$ 79
% of EBIT		19%	-93%	18%	27%	39%	36%	36%	36%	36%	36%
Cash Flow Items		2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
D&A		\$ 42	\$ 44	\$ 44	\$ 45	\$ 55	\$ 40	\$ 46	\$ 54	\$ 63	\$ 70
% of sales		4%	5%	4%	3%	3%	3%	3%	3%	3%	3%
CapEx		\$ 79	\$ 137	\$ 178	\$ 190	\$ 168	\$ 220	\$ 382	\$ 530	\$ 497	\$ 399
% of sales		7%	15%	15%	12%	10%	17%	25%	29%	24%	17%
Change in NWC		\$160	\$43	(\$153)	(\$224)	(\$88)	(\$140)	(\$184)	(\$253)	(\$258)	(\$299)
% of sales		13%	5%	-13%	-14%	-5%	-11%	-12%	-14%	-12%	-13%

Notes

- Little analyst coverage for such a small company (no access to FactSet / CapitalIQ)
- **2024, 2025:** Declining lithium price forecasts weigh down revenues
 - **2024:** Completion of strategic acquisitions to strengthen network of European mines and manufacturers, like buying a controlling stake in Savannah Resources | CapEx impacted by money put into maximizing Brazilian lithium mine production
- **2026:** Completion of project to cover entire lithium supply chain from extraction to battery production + securing deals with European automobile manufacturers | High maintenance costs for renovations of older plants to align production with sustainability goals—both impact CapEx, NWC, revenue
- Changes in NWC and CapEx inflated by high debt (\$350M+ for new Nuremberg facility)

Valuation

Free Cash Flow Forecasting



DCF	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
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% of EBIT	19%	-93%	18%	27%	39%	36%	36%	36%	36%	36%
EBIAT	(\$22)	(\$23)	\$39	\$223	\$148	\$57	\$107	\$102	\$133	\$141
D&A	\$ 42	\$ 44	\$ 44	\$ 45	\$ 55	\$ 40	\$ 46	\$ 54	\$ 63	\$ 70
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% of sales	13%	5%	-13%	-14%	-5%	-11%	-12%	-14%	-12%	-13%
Unlevered FCF	(\$224)	(\$148)	\$67	\$386	\$218	\$16	(\$46)	(\$121)	(\$43)	\$111
Present Value of FCF						15	(39)	(93)	(30)	72

Notes

- 2028 surge in cash from final maturity dates for revolving loans, beginning operations in new facilities (moving to maximum output/production) + completed renovations to meet sustainability goals

Valuation

Terminal Value Calculations + WACC Breakdown



WACC

Debt	690
% Debt	54%
Cost of Debt	5%
Tax Rate	18.0%
Equity Value	581
% Equity	46%
Cost of Equity	15.2%
Risk Free Rate	4.31%
Beta	1.621
Market Risk Premium	11%
Debt + Equity	1,271

WACC	9.15%
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Terminal Value	1,817
Present Value of Terminal Value	1,173
Enterprise Value	\$1,098
+ Cash	581
- Debt	\$690
Equity Value	989
Shares	32.37
Share Price	\$ 30.54

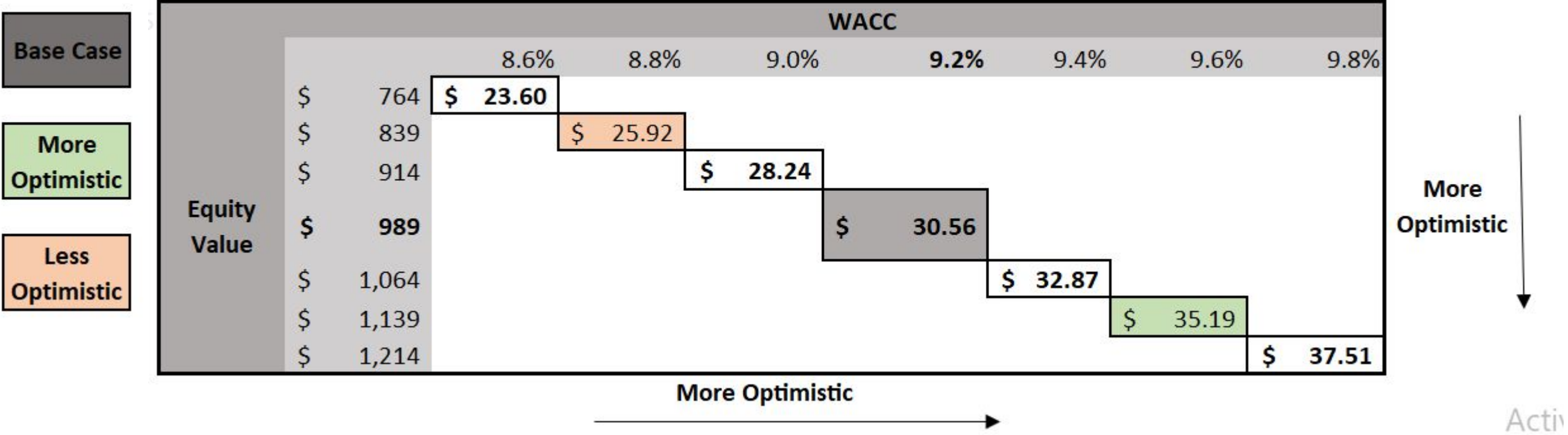
Current Price: \$18.05 | Implied Price: \$30.54

Base Case		WACC								
		8.6%	8.8%	9.0%	9.2%	9.4%	9.6%	9.8%		
More Optimistic	TGR	2.25%	\$ 30.30	\$ 28.89	\$ 27.56	\$ 26.32	\$ 25.14	\$ 24.04	\$ 22.99	More Optimistic
	2.50%	\$ 31.78	\$ 30.26	\$ 28.84	\$ 27.51	\$ 26.26	\$ 25.09	\$ 23.98		
	2.75%	\$ 33.38	\$ 31.75	\$ 30.23	\$ 28.80	\$ 27.46	\$ 26.21	\$ 25.03		
	3%	\$ 35.13	\$ 33.37	\$ 31.72	\$ 30.19	\$ 28.76	\$ 27.42	\$ 26.16		
	3.25%	\$ 37.04	\$ 35.13	\$ 33.35	\$ 31.70	\$ 30.16	\$ 28.72	\$ 27.37		
	3.50%	\$ 39.13	\$ 37.05	\$ 35.13	\$ 33.34	\$ 31.68	\$ 30.13	\$ 28.69		
	3.75%	\$ 41.45	\$ 39.17	\$ 37.07	\$ 35.13	\$ 33.33	\$ 31.66	\$ 30.11		
Less Optimistic		← More Optimistic								

Note: Due to Excel rounding errors, all figures slightly deviate from the \$30.54 reality

Base Case	2028 Revenue	WACC								
			8.6%	8.8%	9.0%	9.2%	9.4%	9.6%	9.8%	
\$ 850		\$ 0.51	\$ 0.19	-\$ 0.12	-\$ 0.40	-\$ 0.66	-\$ 0.90	-\$ 1.13		
\$ 1,350		\$ 12.05	\$ 11.25	\$ 10.50	\$ 9.80	\$ 9.15	\$ 8.54	\$ 7.97		
\$ 1,850		\$ 23.59	\$ 22.31	\$ 21.11	\$ 20.00	\$ 18.96	\$ 17.98	\$ 17.07		
\$ 2,350		\$ 35.14	\$ 33.37	\$ 31.73	\$ 30.20	\$ 28.76	\$ 27.42	\$ 26.16		
\$ 2,850		\$ 46.68	\$ 44.43	\$ 42.34	\$ 40.40	\$ 38.57	\$ 36.86	\$ 35.26		
\$ 3,350		\$ 58.22	\$ 55.49	\$ 52.96	\$ 50.59	\$ 48.38	\$ 46.31	\$ 44.36		
\$ 3,850		\$ 69.76	\$ 66.56	\$ 63.57	\$ 60.79	\$ 58.19	\$ 55.75	\$ 53.46		
More Optimistic										
Less Optimistic										
		More Optimistic								

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Investment Thesis

Four Key Points

A close-up photograph of a blue and yellow electric vehicle charging cable, with the text overlaid in the center.

**LITHIUM IN
ELECTRIC CARS.**

#1

A photograph of several wind turbines silhouetted against a sunset sky over a body of water, with the text overlaid in the center.

SUSTAINABILITY.

#2

A screenshot of a TradingView stock chart for Apple Inc. (AAPL) showing a candlestick price movement over time, with the text overlaid in the center.

VALUATION.

#3

A photograph of a central processing unit (CPU) chip mounted on a colorful, illuminated circuit board, with the text overlaid in the center.

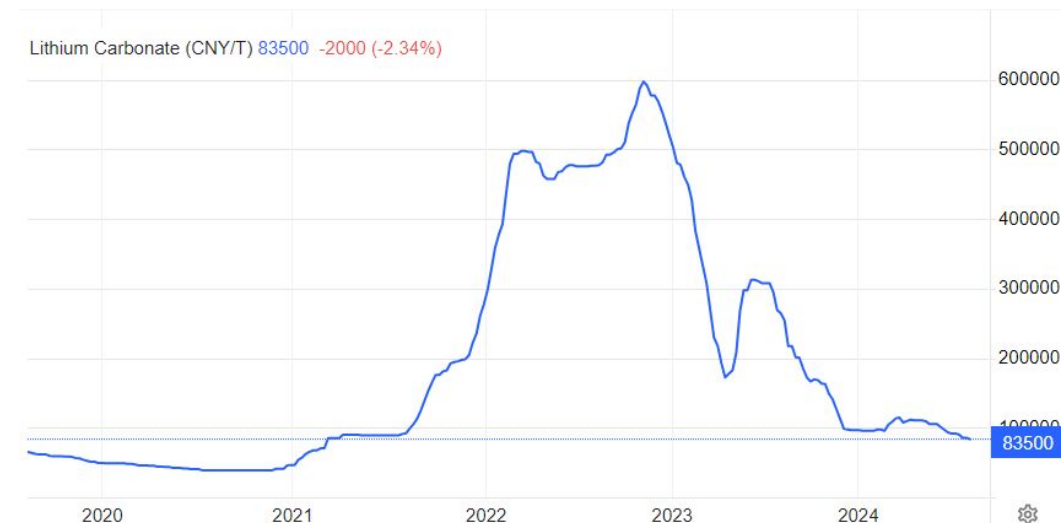
STAKE IN A.I.

#4

Lithium

- Key metal in all EV batteries
 - **United States**
 - Projected for **60% of all sales to be EVs by 2030 (Environmental Protections Agency)**
 - Biden-Harris administration laws to push EV usage
 - **China**
 - BYD Auto overtakes Tesla Inc. in sales
 - 60% of cars sold in 2023 were EVs
 - Slowdown to projected 45% in 2024
 - **Europe**
 - **25% of 2023 car sales made of EVs**
 - 22% in 2022—growth
- ✓ Between regulations pushing for their sale + clearly expanding market, **AMG's stake in the lithium market is a totem of its long-term potential**
- ✓ The firm has negotiated deals to supply lithium to several European EV automakers

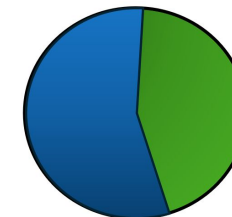
Lithium Pricing



- Recent crash—potential for turnaround with new regulation + market demand.

Valuation

- Stock crash due to lithium's decline leading to poor Q2 2023 earnings
 - Likely an overreaction—poor earnings and bad news do not taint a fundamentally strong company
 - **Attractive low price considering fundamentals | 70% Upside**



69.2%

UNDERVALUED

Current Price: \$18.05
Implied Price: \$30.54

Sustainability

- Caters to ESG investing and long-term fundamental sustainability—a cornerstone of AMG's principles to success
- Strict emphasis on **recycling**
 - **37%** of waste recycled 2023, **23% growth** from 2022
 - **56% of production comes from recycled products**
- Growing while reducing energy consumption
 - **2022:** 3,458 terajoules (TJ) of energy used
 - **2023:** 2,367TJ used, **31% decline YoY**
- Straying from controversy (see articles right via *Reuters*), positive community impact
 - **No** major involvement in scandals, government controversies etc... since inception
 - 6000+ volunteer hours done on behalf of their workforce in 2023

Cage drop **kills 11, injures 72** at
at **Implats** Rustenburg platinum mine

Litigation | White Collar Crime | Social Impact | Regulatory Oversight | Exploration & Production

Glencore sentenced to pay **\$700 million**
in US after **bribery guilty plea**

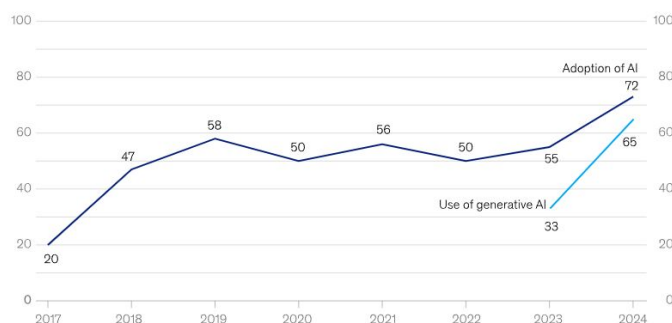
Silicon & Graphite |

A.I. Future-proofing

- Key role in avant-garde sciences as a supplier of **silicon** and **graphite** used in:
 - Solar panels
 - Semiconductors
 - Most important component in parts (CPUs, GPUs) used to power A.I. algorithm
- The presence of A.I. in future everyday life is explicitly growing.
 - >30% of American companies using A.I. in everyday business, 10% in the E.U.
 - **AMG will be able to take advantage of this growth as they supply the metals needed to power modern science**
 - **It is a matter of patience for their key role in this new frontier of technology to be realized, driving investor faith in the company**

A.I. Use

Organizations that have adopted AI in at least 1 business function,¹ % of respondents



- Trillion-dollar companies like **Nvidia** have made their fortunes off A.I. use in data centers and industrial processor (CPU/GPU) sales.
 - This technology is powered by one mineral, the foundation of today's tech: **silicon**.

CEO Dr. Heinz Schimmelbusch

- Former **CEO of Metallgesellschaft AG (Germany's biggest industrial firm)** until its collapse in the 1990s
 - Falsely blamed for the firm's collapse after shaping it into a wildly successful colossus conglomerate
 - 1990s – 2000s: Redefined personal image, growing the 10+ firms that eventually merged into AMG
 - "Comeback" to metals & mining
- Long-term mindset, focused on patience for future prosperity in spite of short-term decline**
- 3 Key Principals for AMG's Growth:

1. Efficiency

- 8% ROIC

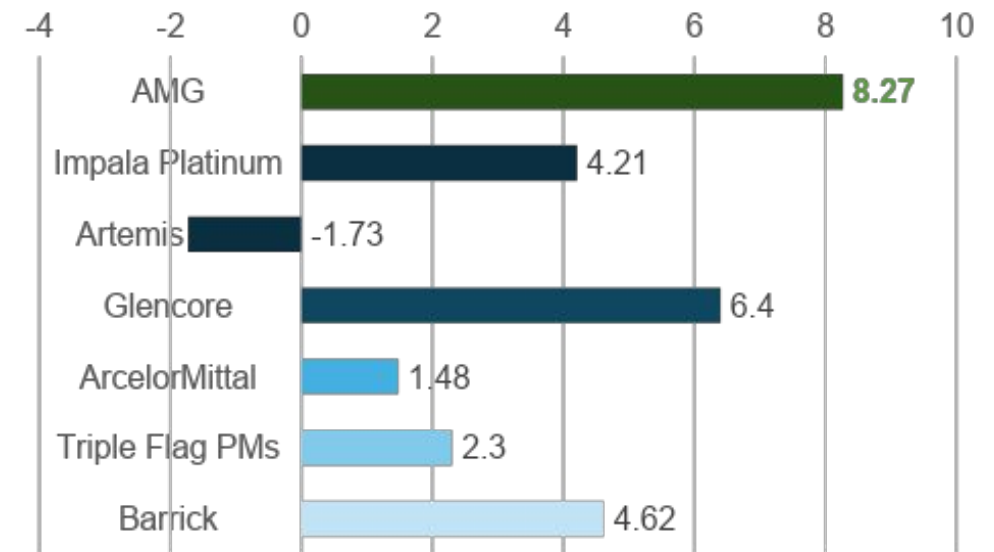
2. Sustainability

- ESG focus (see ESG statistics)

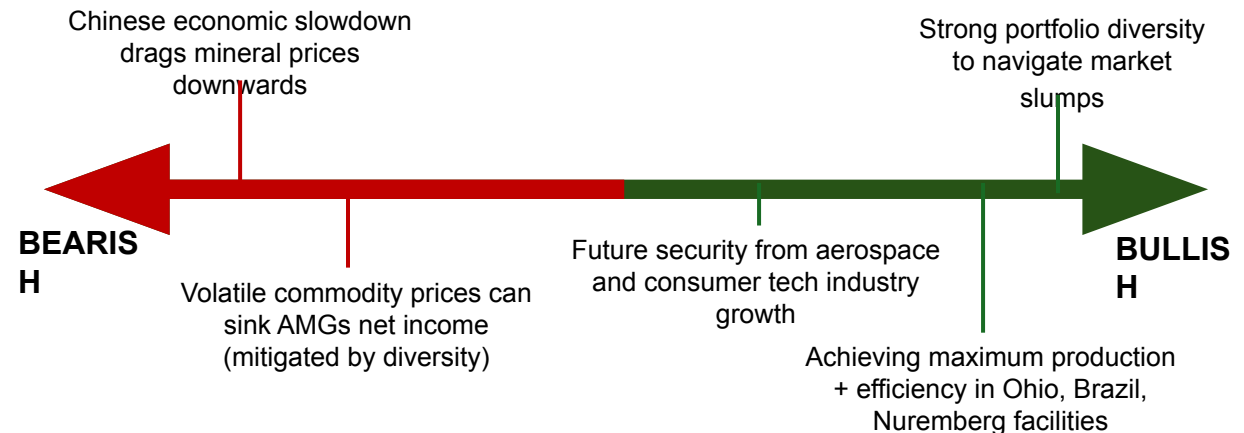
3. Diversity

- Maintain profitability in market decline:
 - +23% vanadium volume despite **30% decline in price**
 - All divisions profitable, even during metals industry slump (Figures from Q4 2024–diversity case study)

ROIC % by Metals & Mining Firm



Outlook Upon AMG's Future



Investment Thesis — Backing Data

Management | CFO | COO | Supervisory Board | Outlook



CFO Jackson Dunckel

- Experienced investment banker, PE fund leader in industrials

COO Eric Jackson

- Extensive time in finance, metals & mining, management

Supervisory Board

Michael Connor

Chief Corporate Development Officer
Finance, economics experience

Dr. Steve Hanke

Chairman
Economist

Willem van Hassel

Vice-Chairman
Legal realm experience, former President of Netherlands Bar Association

Dr. Donatella Ceccarelli

Board Member
Finance experience

Herb Depp

Board Member
Key experience in aerospace technologies

Warmolt Prins

Board Member
Accounting, business management experience

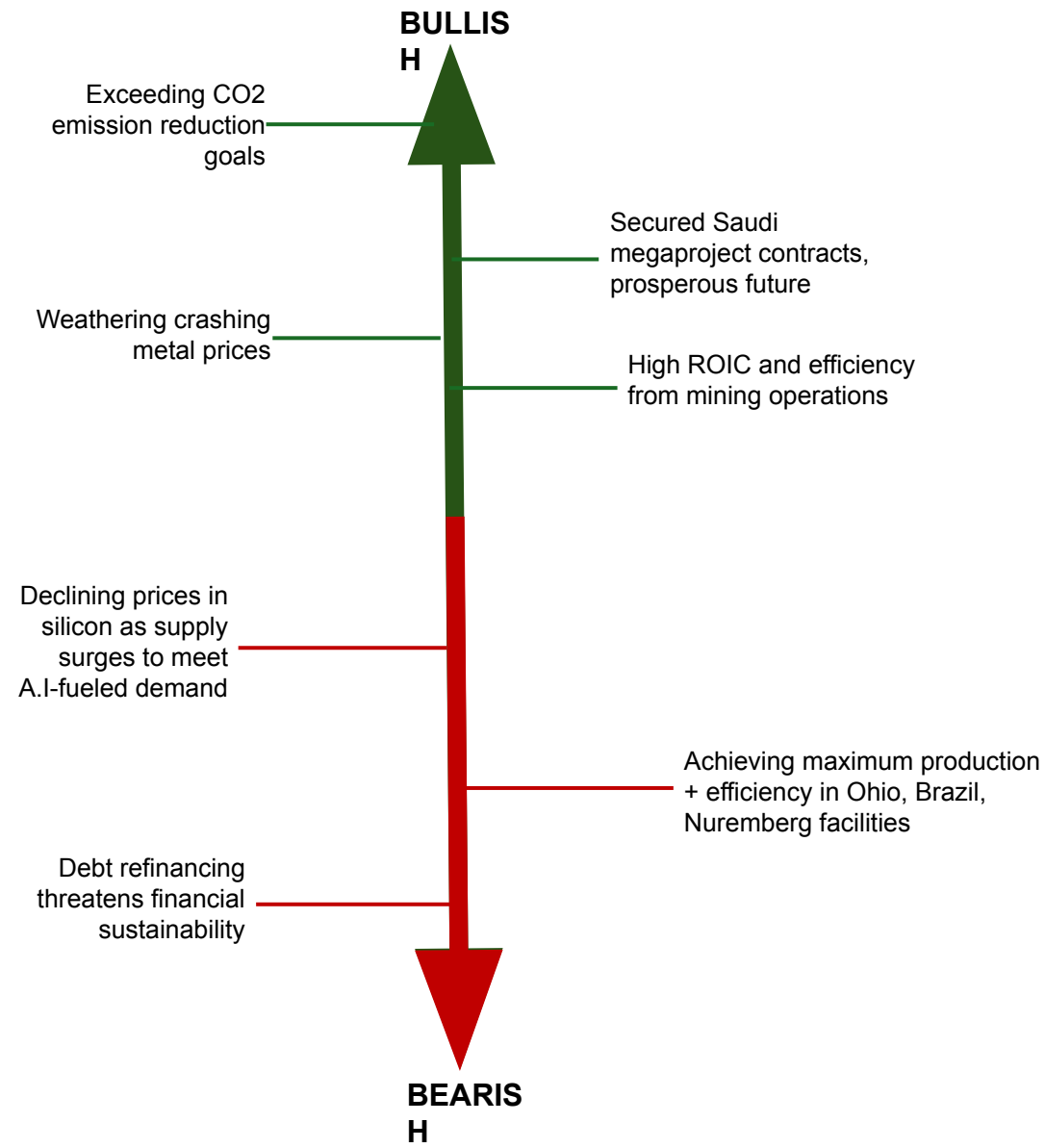
Dr. Anne Roby

Board Member
Engineering, R&D experience

Dagmar Bottenbruch

Board Member
VC fund leader, fundraising and capital management expertise

Collective Outlook (Supervisory Report)



AMG Critical Minerals – Risk Matrix

Highly
Likely

			Further decline in mineral prices Mitigation: Diversification, possible turnaround	
				Further decrease in EV consumption Mitigation: Persevering diversification
		Increase in debt from expansion Mitigation: Partially offset by greater cash flow from expanded productions (Brazil mine)	ESG risk from ESG-sensitive business (mining) Mitigation: Strict emphasis on ESG (sustainability, eco-friendliness)	
EV Industry collapse due to government policy (Trump in U.S.) Mitigation: Universal nature of lithium consumption (consumer tech, aerospace)			Controversy; Scandal; Worker's Strike Mitigation: Strict emphasis on ESG (responsible governance, working conditions)	

Not
Likely

Low Impact

High Impact