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# **GLOBAL VIEW**

# **Global Trends**

- Need to contain CO<sub>2</sub> emissions
- Operation growth and increasing affluence need a technology counterbalance

# **Demand**

 Material science-based solutions for energy efficiency (lighter, stronger, temperature resistant)

# Supply

 AMG sources, processes, and supplies the materials which are critical because of market demands

# AMG is a critical materials company





#### EXCELLENT PLATFORM FOR ORGANIC AND ACQUISITION LED GROWTH

#### **MISSION STATEMENT**

To increase long-term value through industry leadership, operational expertise and efficient deployment of capital

#### STRATEGIC OBJECTIVE

Identifying long-term trends and leveraging those trends through technological excellence and innovations in the indispensable areas of critical materials and vacuum technologies

#### **GROWTH OBJECTIVES**



Routine organic growth of existing business lines



Non-routine expansion of existing business lines



Transformational projects

AMG Core Business

+



+



+



\$200M \*
≥ EBITDA
in 5 years or less



#### LEVERAGING A STABLE PORTFOLIO OF INDUSTRY-LEADING BUSINESSES



Routine organic growth of existing business lines



Non-routine expansion of existing business lines



Transformational projects

PORTFOLIO OF CRITICAL MATERIAL
AND RELATED PROCESS
TECHNOLOGY BUSINESSES...



AMG CRITICAL MATERIALS



AMG VACUUM TECHNOLOGIES

...TAKING ADVANTAGE OF SECULAR GROWTH IN KEY END MARKETS (PRIMARILY CO<sub>2</sub> REDUCTION)



ANSPORTATION (40%)



INFRASTRUCTURE (24%)



SPECIALTY METALS AND CHEMICALS (23%)



ENERGY

(13%)

Example: AMG Graphite, ongoing expansion of heat insulation materials business



#### OPPORTUNISTIC INVESTMENTS IN "NON-ROUTINE" EXPANSION PROJECTS



Routine organic growth of existing business lines



Non-routine expansion of existing business lines



Transformational projects

# "Non-routine" project characteristics:



Capex intensive



Stepping up growth across the portfolio



Solidifying segment leadership

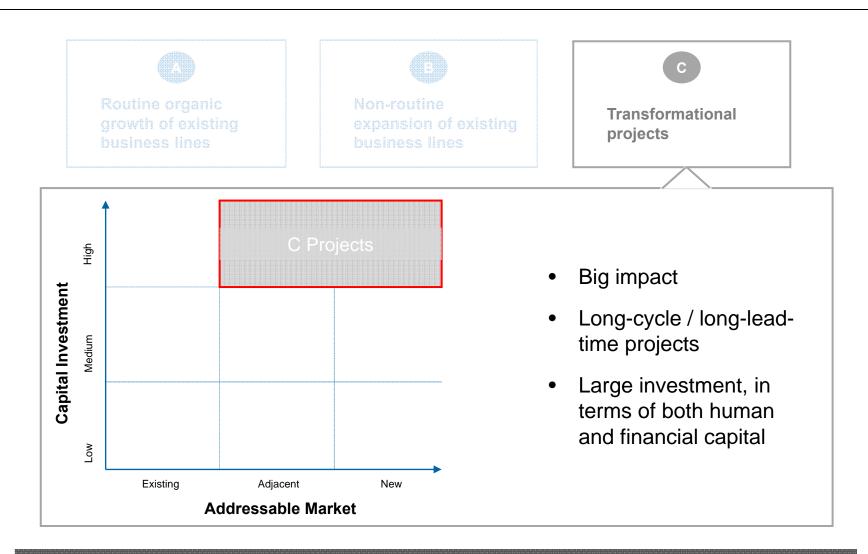


**Process innovation** 

Example: AMG Titanium Alloys & Coatings, ongoing expansion of industry leading Titanium Aluminides business



# IDENTIFYING AND EXECUTING ON TRANSFORMATIONAL PROJECTS



Example: Execution of AMG's transformational lithium project



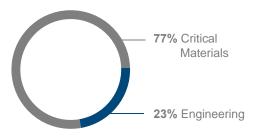




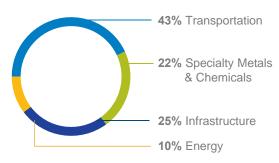
# AMG AT A GLANCE

#### **Q2 2017 REVENUE**

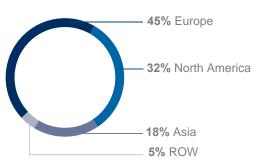
#### BY SEGMENT:



#### BY END MARKET:



#### **BY REGION:**



AMG IS A GLOBAL SUPPLIER OF CRITICAL MATERIALS TO:









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

~3,000 Employees

~\$1 billion
Annual Revenues

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



# Q2 2017 AT A GLANCE

AMOUNTS IN \$M (EXCEPT EARNINGS PER SHARE)	Q2 2017	Q2 2016	% CHANGE
Revenue	\$262.0	\$248.3	6%
Gross Profit *	\$54.3	\$53.3	2%
Gross Margin %	20.7%	21.5%	(4%)
Profit Before Income Taxes	\$20.8	\$15.6	33%
EBITDA	\$31.9	\$26.0	23%
EBITDA Margin %	12.2%	10.5%	16%
Net Debt	\$7.3	\$5.5	33%
Return On Capital Employed (ROCE)	23.9%	17.8%	34%
Net Income Attributable To Shareholders	\$13.1	\$13.4	(2%)
Earnings Per Share	0.42	0.48	(13%)

- Q2 '17 EBITDA up 23% versus Q2 '16 due to improved profitability within both AMG Critical Materials and AMG Engineering
- Annualized ROCE increased to 23.9% in Q2 2017 versus 17.8% for Q2 2016

Net Debt Reduction of \$80.5 million since December 2014

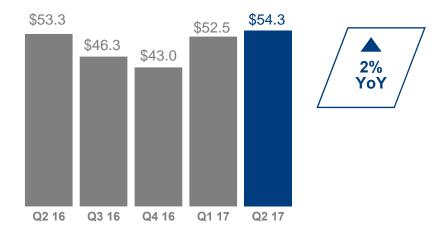


# FINANCIAL HIGHLIGHTS

#### **REVENUE** (IN MILLIONS OF US DOLLARS)



#### GROSS PROFIT \* (IN MILLIONS OF US DOLLARS)



**EBITDA** (IN MILLIONS OF US DOLLARS)

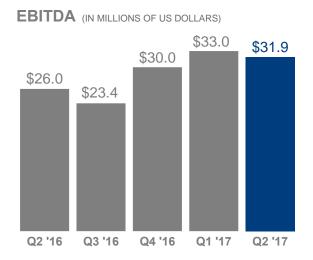


ORDER INTAKE (IN MILLIONS OF US DOLLARS)



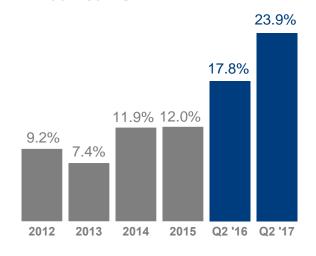


# FINANCIAL DATA: ROCE & EBITDA



Q2 '17 EBITDA UP 22% VERSUS Q2 '16  Q2 '17 EBITDA up 22% versus Q2 '16 due to improved profitability within both AMG Critical Materials and AMG Engineering

#### **Annualized ROCE**



Q2 '17 ROCE IMPROVED TO 23.9% FROM 17.8% IN Q2 '16

- Q2 2017 annualized ROCE improved to 23.9% from 17.8% in Q2 2016
- ROCE improvements are the result of efficient use of capital and improved profitability



### FINANCIAL DATA: NET DEBT & NET CASH FROM OPERATIONS

#### NET DEBT (CASH) (IN MILLIONS OF US DOLLARS)



\$187M **REDUCTION** IN NET DEBT **SINCE 2012** 

#### OPERATING CASH FLOW (IN MILLIONS OF US DOLLARS)



Q2 2017 **OPERATING CASH FLOW OF \$10.6M** 

- Net debt: \$7.3 million
  - 。 \$186.9 million reduction of net debt since December 31, 2012
- AMG's primary debt facility is a \$400 million multicurrency term loan and revolving credit facility
  - o 5 year term (until 2021) with an accordion feature that allows the Company, subject to certain conditions, to increase the commitment amount by up to \$100 million
  - o In compliance with all debt covenants
- AMG generated cash from operating activities of \$28.5 million for the first half of 2017, \$8.5 million higher than the first half of 2016



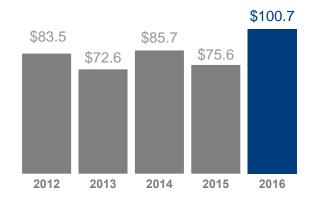
# AMG GROUP FINANCIAL PERFORMANCE – 2016 v 2015 ANNUAL

	2016	2015	% CHANGE
Gross Profit (\$M)	\$186.8	\$160.0	17%
EBITDA (\$M)	\$100.7	\$75.6	33%
Operating Cash Flow (\$M)	\$79.2	\$76.3	<b>1</b> 4%
ROCE	18.8%	12.0%	57%
Earnings per Share	\$1.32	\$0.40	230%
Dividend per Share	€0.27	€0.21	29%



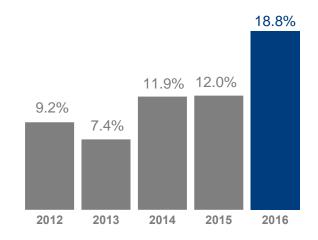
#### 5 YEAR TREND – EBITDA & ROCE

#### **EBITDA** (IN MILLIONS OF US DOLLARS)



FY '16 EBITDA UP 33% VERSUS FY '15

#### **Annualized ROCE**



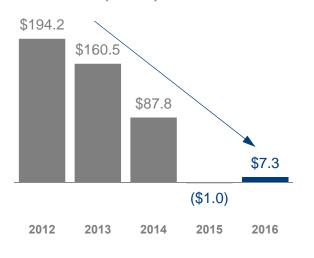
FY '16 ROCE IMPROVED TO 18.8% FROM 12.0% IN FY '15  2016 EBITDA is up 33% due to product mix and operational improvements in Critical Materials as well as a very strong performance by Engineering due to an increase in demand for furnaces from the aerospace industry

- FY 2016 annualized ROCE improved to 18.8% from 12.0% in FY 2015
- ROCE improvements are the result of efficient use of capital and improved profitability



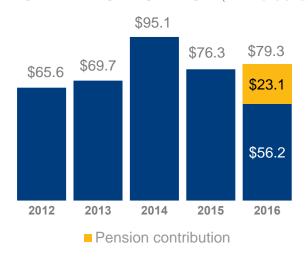
#### 5 YEAR TREND - NET DEBT & OPERATING CASH FLOW

#### NET DEBT (CASH) (IN MILLIONS OF US DOLLARS)



\$187M REDUCTION IN NET DEBT SINCE 2012

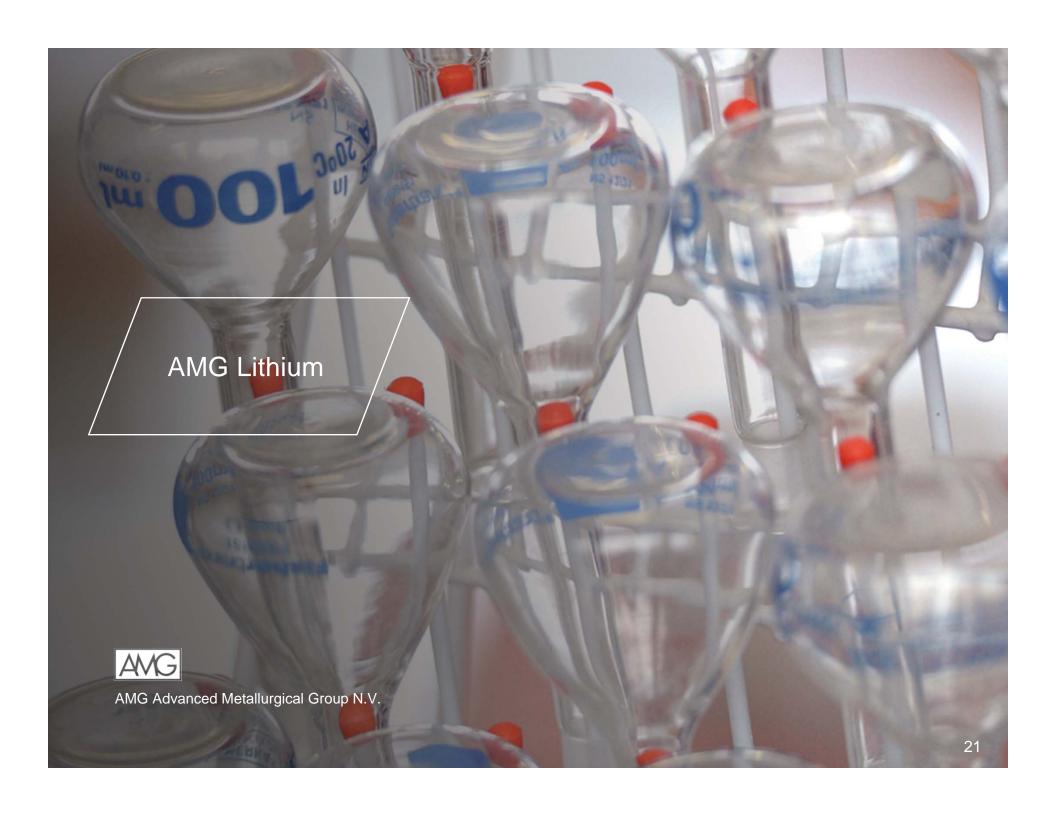
#### OPERATING CASH FLOW (IN MILLIONS OF US DOLLARS)



FY 2016 OPERATING CASH FLOW OF \$56.2M

- Net debt: \$7.3 million
  - \$186.9 million reduction of net debt since December 31, 2012
  - Net Debt to LTM EBITDA: 0.07x
- AMG's primary debt facility is a \$400 million multicurrency term loan and revolving credit facility
  - 5 year term (until 2021) with an accordion feature that allows the Company, subject to certain conditions, to increase the commitment amount by up to \$100 million
  - In compliance with all debt covenants
- FY '16 net cash from operating activities of \$56.2 million, which included voluntary cash contributions to the Company's pension plans of \$23.1 million made during the year





#### AMG'S INTEGRATED LITHIUM STRATEGY

# Lithium I

# Lithium II

# Lithium III

# Upstream (Spodumene)

# Spodumene Plant 1 90k MT per annum of spodumene production

**Status:** Under construction

# Spodumene Plant 2

Increase spodumene production to 180k MT per annum

**Status:** Engineering & due diligence

# Downstream (Lithium Chemicals)

#### **Lithium Chemical Plant**

Participation in lithium value chain downstream

Potential Joint Venture structure with existing producer and/or consumer of lithium chemicals

**Status:** Feasibility study & due diligence



# AMG LITHIUM - PROJECT STRENGTHS

- 1) Existing management and mining infrastructure not a new mine project
- 2) Strong understanding of the mine geology
- 3) Mining infrastructure already in place and operational
- 4) Ore extraction and crushing costs absorbed by profitable tantalum operation
- 5) Spodumene plant will be fed via lithium deposits in existing tailings, as well as incremental lithium-bearing tailings generated via tantalum production
  - 2.8 million metric tons of spodumene plant feed stock already extracted in the form of on-site tailings
- 6) AMG has operated a spodumene pilot plant since 2010
- 7) Strategic flexibility to further develop operational scope

AMG has operated the Mibra mine for 38 years



# AMG LITHIUM - SPODUMENE PROJECT OVERVIEW

# **Lithium Concentrate (Spodumene) Project**

#### **OBJECTIVE**

Monetization of substantial lithium mineral deposits currently residing in AMG Mineração's tailings ponds and tailing stockpiles

Production facility to be co-located with AMG Mineração's tantalum mine and upgrading plant in Brazil

#### TARGETED PRODUCTION

180,000 MT per year of lithium concentrate

#### **STATUS**

**Plant 1** (90,000 MT per annum) capital investment of approximately \$50m was approved by the AMG Supervisory Board on July 19<sup>th</sup>, 2016. Production to commence mid-2018

**Plant 2** (expansion to 180,000 MT per year) final investment decision expected Q4 2017





AMG's objective is to be the low-cost producer of spodumene globally



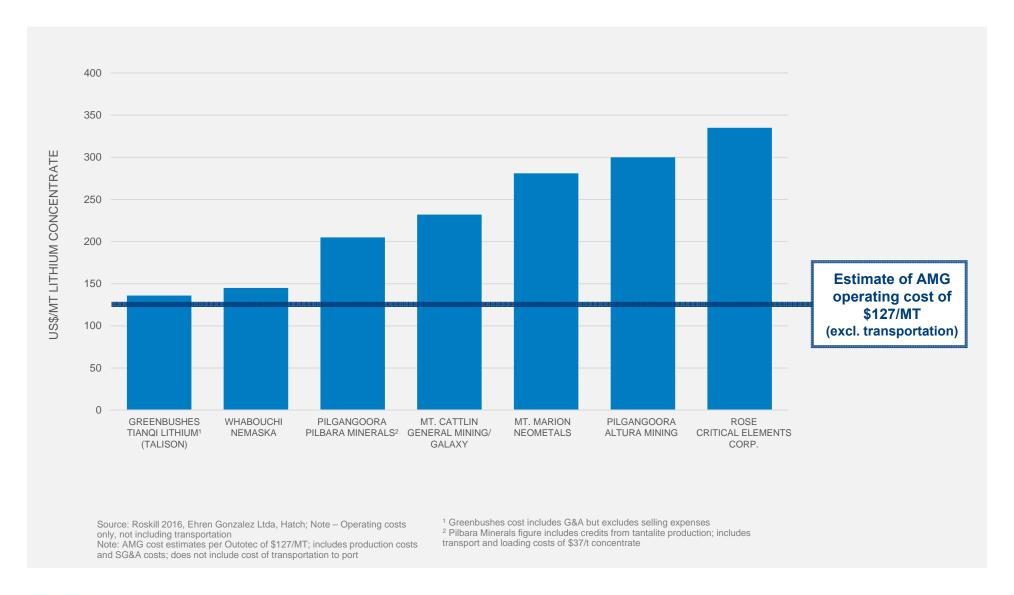
# SPODUMENE PROJECT STATUS

		Status
Construction Approval	AMG approved construction of lithium concentrate plant at the AMG Mibra mine, with annual production of 90,000 tons	Complete
EPC Contract Awarded	AMG awarded EPC contract to Outotec (Finland) for turnkey delivery of lithium concentrate plant	Complete
Offtake Agreement Established	AMG announced a multi-year contract to supply 90,000 tons per year of lithium concentrate; deliveries commencing mid-2018.	Complete
Resource Expansion	Updated resource statement published 3 April 2017 – estimated life of the mineral resource is approximately 20 years, based upon targeted production level of 180k MT of lithium concentrate starting 2020	Complete
Increased Production	Targeted increase in annual lithium concentrate production, to a capacity of 180,000 tons, by end of 2019	Engineering work in progress

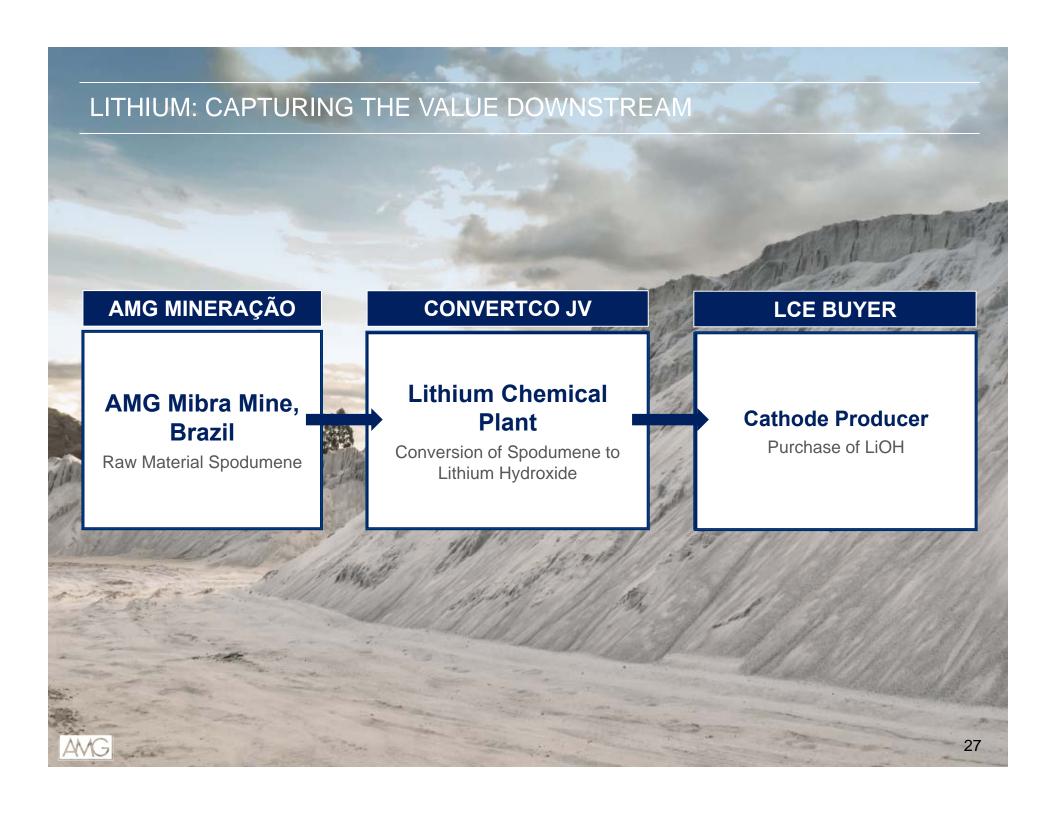
Full offtake agreement established & production expected to commence mid-2018

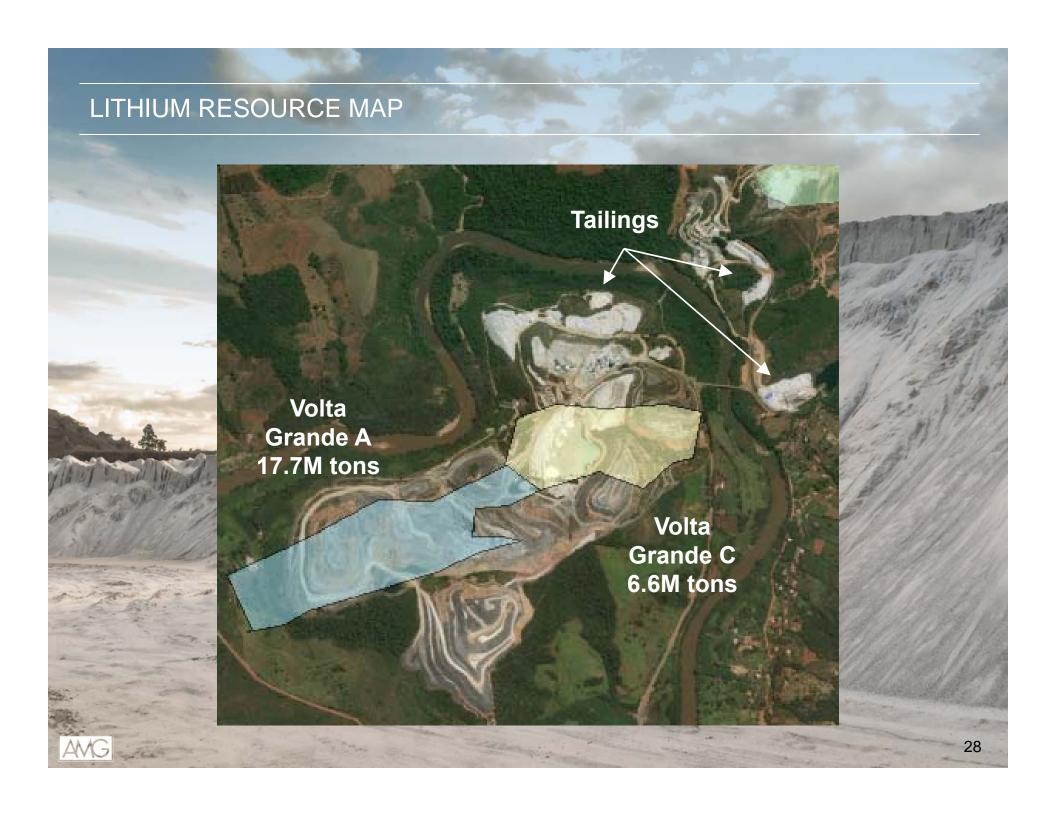


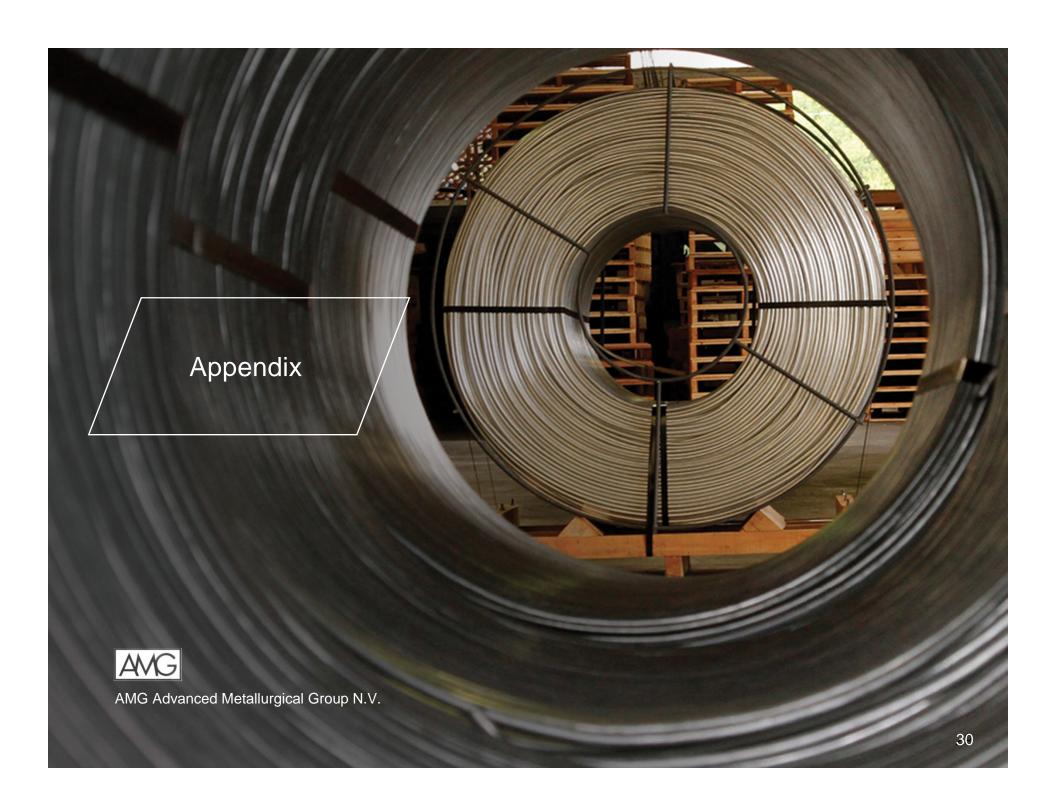
# AMG COST POSITION – LITHIUM CONCENTRATE (SPODUMENE)



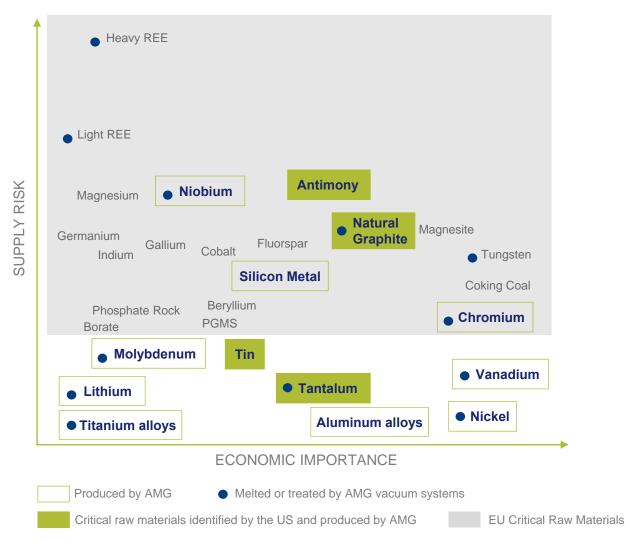








# CRITICAL RAW MATERIALS

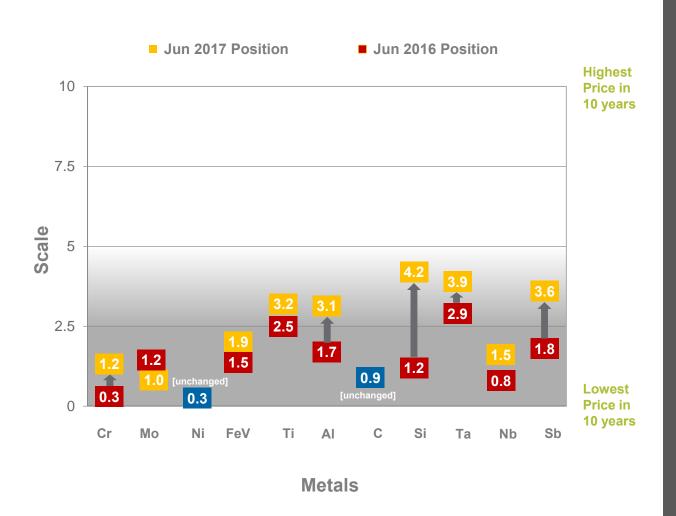


\*Report on Critical Raw Materials for the EU, May 2014; Strategic and Critical Materials 2015 Report on Stockpile Requirements by Department of Defense in January 2015.

- The EU identified 20 critical raw materials\* to the European economy in 2014, focusing on two determinants: economic importance and supply risk
- The US identified 30 critical materials\* which are vital to national defense, primarily through assessing supply risk
- AMG has a unique critical materials portfolio comprising:
  - o 5 EU critical raw materials
  - o 4 US critical raw materials
  - Highly engineered Titanium Alloys for the aerospace industry
  - High value added Aluminum Master Alloys
  - Vanadium, Nickel and Molybdenum from recycled secondary raw materials



# CRITICAL MATERIALS PRICES: 10 YEAR PERSPECTIVE



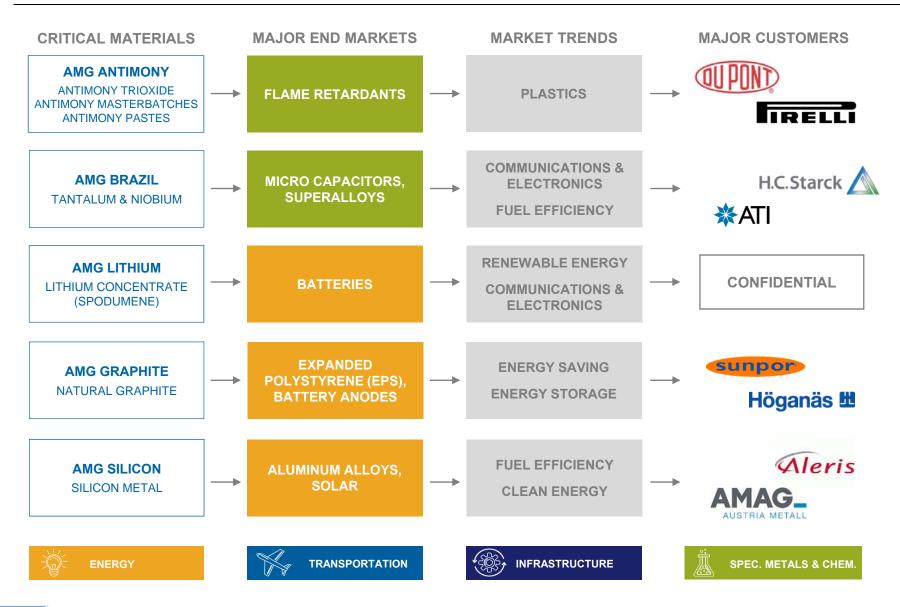
Note: Metal Positions are measured on a scale of 0 to 10, with 0 being the minimum price and 10 being the maximum price. They are calculated using the formula [(Jun '07 month avg – min. monthly avg) / (max. monthly avg – min. monthly avg) \*10] where maximum and minimum monthly averages are measured over the period 1 Jun '07 through 30 Jun '17.

- Metal prices are measured on a scale of 0 to 10, with 0 and 10 representing the minimum and maximum average quarterly prices occurring during the past 10 years
- The positions demonstrate the current price level of each metal with respect to their various historical price points over the past 10 years

AMG's relevant prices have started to move into the second quartile

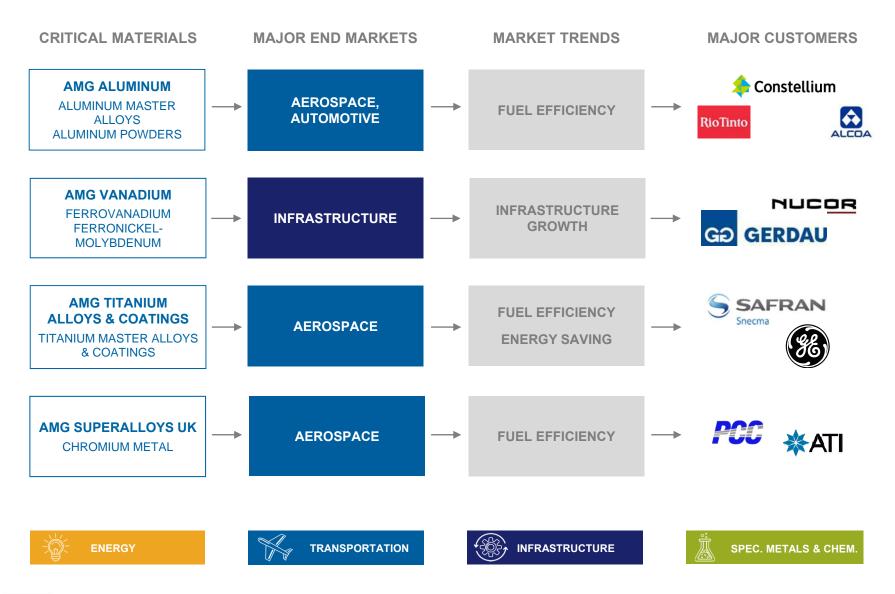


# CRITICAL MATERIALS – MARKET TRENDS



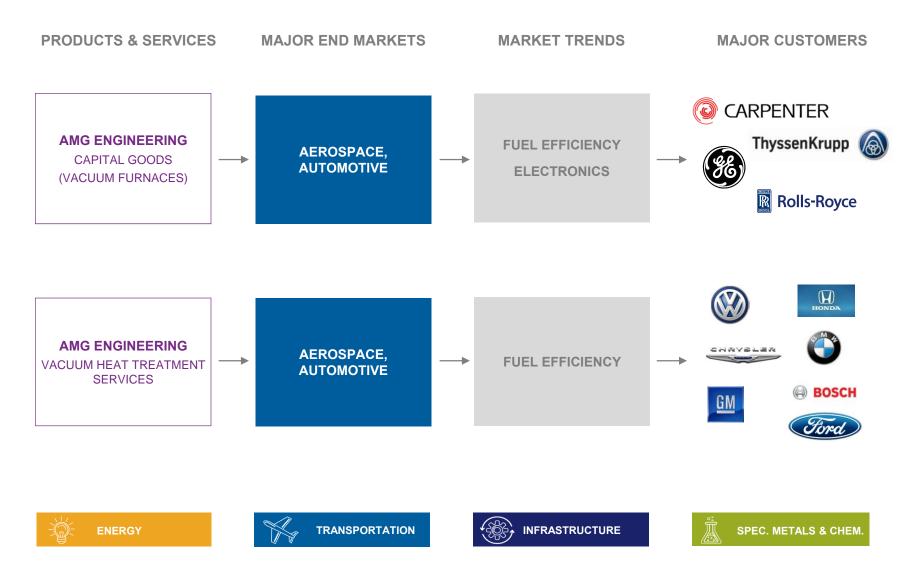


# CRITICAL MATERIALS – MARKET TRENDS



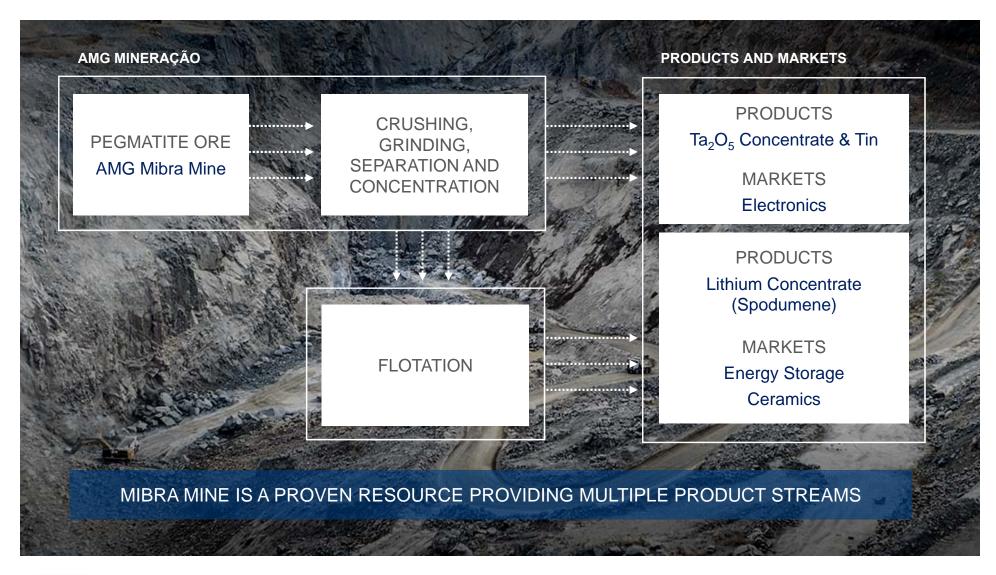


# **ENGINEERING – MARKET TRENDS**





# SPODUMENE PRODUCTION PROCESS OVERVIEW





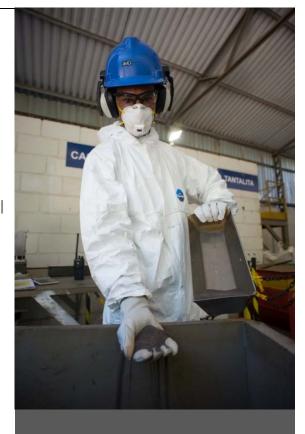
# FIRST SPODUMENE PLANT - LAYOUT **Grinding / Mag** Separation Feed **Flotation Filtration** 36

# **HEALTH AND SAFETY FOCUS**

#### **LEADING SAFETY INDICATORS**

- The number of safety improvement items reported in Q2 2017 was 3% lower than in Q2 2016. These are essential in order to avoid potential injuries.
- Safety training hours increased 4% in Q2 2017 compared to Q2 2016.
- At the end of Q2 2017, lost time incident rate was 48% lower and total incident rate and incident severity rate were down 41% and 36%, respectively, from Q2 2016.

YEAR	LOST TIME INCIDENT RATE	INCIDENT SEVERITY RATE
2013	1.76	0.21
2014	1.20	0.19
2015	1.03	0.17
2016	1.04	0.11
2017*	0.69	0.09



Rigorous commitment to safety reflected in continually improving safety records

