

SUSTAINABLE DEVELOPMENT



## THIS SECTION PROVIDES OUR EIGHTH ANNUAL SUSTAINABILITY REPORT, WHICH EVALUATES AND COMPARES AMG'S SOCIAL AND ENVIRONMENTAL PERFORMANCE TO PREVIOUS YEARS.

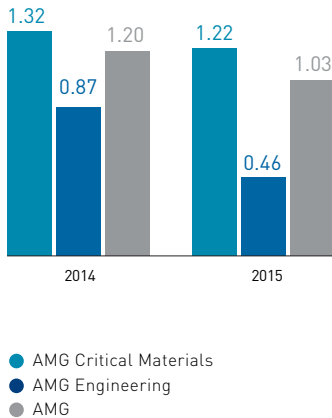
Site Name <sup>1</sup>	Location	Country	Division
AMG Headquarters	Amsterdam	Netherlands	AMG Corporate
AMG USA Headquarters	Pennsylvania	USA	AMG Corporate
ALD USA <sup>3</sup>	Connecticut	USA	AMG Engineering
ALD France	Grenoble	France	AMG Engineering
ALD Vacuum Technologies	Hanau	Germany	AMG Engineering
ALD Vacuheat <sup>2</sup>	Limbach	Germany	AMG Engineering
ALD TT USA <sup>2</sup>	Michigan	USA	AMG Engineering
ALD Dynatech <sup>3</sup>	Mumbai	India	AMG Engineering
ALD TT Mexico <sup>2</sup>	Ramos Arizpe	Mexico	AMG Engineering
ALD Japan <sup>3</sup>	Shinjuku-ku	Japan	AMG Engineering
ALD C&K <sup>3</sup>	Suzho	China	AMG Engineering
AMG Intellifast	Speyer	Germany	AMG Engineering
AMG Antimony	Chauny	France	AMG Critical Materials
Bogala Graphite Lanka	Colombo	Sri Lanka	AMG Critical Materials
AMG Mining <sup>2</sup>	Kropfmuhl	Germany	AMG Critical Materials
AMG Antimony	Lucette	France	AMG Critical Materials
AMG Mineração <sup>2</sup>	Nazareno	Brazil	AMG Critical Materials
AMG Silicon <sup>2</sup>	Pocking	Germany	AMG Critical Materials
AMG Graphite	Qingdao	China	AMG Critical Materials
AMG Graphite Tyn	Tyn	Czech Republic	AMG Critical Materials
AMG Alpoco	Anglesey	UK	AMG Critical Materials
AMG Titanium Alloys and Coatings <sup>2</sup>	Brand Erbisdorf	Germany	AMG Critical Materials
AMG Aluminum <sup>3</sup>	Jiaxing	China	AMG Critical Materials
AMG Aluminum	Kentucky	USA	AMG Critical Materials
AMG Alpoco	Minworth	UK	AMG Critical Materials
AMG Titanium Alloys and Coatings <sup>2</sup>	Nürnberg	Germany	AMG Critical Materials
AMG Vanadium	Ohio	USA	AMG Critical Materials
AMG Superalloys and AMG Aluminum <sup>2</sup>	Rotherham	UK	AMG Critical Materials
AMG Superalloys <sup>2</sup>	Sao Joao del Rei	Brazil	AMG Critical Materials
AMG Aluminum	Washington	USA	AMG Critical Materials

<sup>1</sup> The chart indicates which facilities were included in the scope of the sustainable development data. Only data from these facilities is included in this section which may therefore show inconsistency with other sections of this annual report covering all facilities.

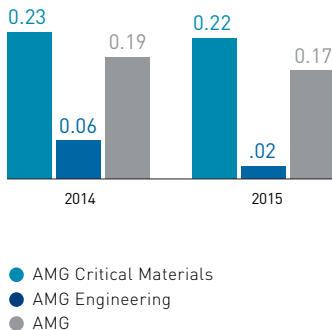
<sup>2</sup> Remote externally audited data 2015.

<sup>3</sup> Minor or office facilities with estimated data.

### LOST TIME INCIDENT RATE



### INCIDENT SEVERITY



The reporting boundaries have not changed significantly since 2014; one operational site and two office locations have been closed. The 30 locations reporting in 2015 (in which AMG has a 51% or greater stake holding) are detailed in the table on page 39.

They include mining and manufacturing operations and sales and administrative offices in 13 countries across 4 continents. Following restructuring of business units in 2015, this report covers two segments: AMG Critical Materials and AMG Engineering. Where possible 2014 data has been restated using these segments so that trends can be identified and comparisons made. AMG continues to assess the boundaries of this report based on the corporate ownership structure. All locations report their performance at the end of the fourth quarter, and no forecast data is used. However, sales and administrative offices and some smaller engineering sites (typically with less than 10 employees or with environmental impacts <1% in all aspects) have been determined to be non-material to the report, and therefore estimated data has been used for these in 2015. Those sites utilizing estimated data are indicated in the table on page 39.

### SCOPE OF THIS REPORT

AMG continues to utilize the Global Reporting Initiative (GRI) G3, Mining and Metals Sector Supplement aspects in 2015 but is beginning to transition to G4. The GRI is a network-based organization that publishes the world's leading sustainability reporting framework. AMG has applied GRI's principle of materiality from G4 to the report, which states: "The Report should cover Aspects that:

- Reflect the organization's significant economic, environmental and social impacts; or
- Substantively influence the assessments and decisions of stakeholders."

AMG utilizes a standard template, which sites use to report their data in order to ensure consistency in the interpretation of definitions of the key indicators. The report is independently verified by GHD. The environmental key performance data for both segments are summarized in the table on page 47. AMG Advanced Metallurgical Group N.V. [amg-nv.com](http://amg-nv.com) contact: [global.sustainability@amg-nv.com](mailto:global.sustainability@amg-nv.com)

### AMG PEOPLE

GRI INDICATORS LA1, LA4, LA6, LA7, LA10, LA13 AND MM4

At year-end 2015, AMG Critical Materials had a workforce of 2055 and AMG Engineering had 789 employees. For those

<sup>†</sup> GRI, G4 Sustainability Reporting Guidelines, Reporting Principles and Standard Disclosures, 2013, p. 17.

facilities reporting here, including corporate staff (33), the total AMG workforce was 2844 (facilities not yet covered in this section employ a further 97 people). Geographically, these were located in Asia (358), Europe (1515), North America (530) and South America (441).

A further 270 directly supervised contract workers were employed at AMG sites. AMG assesses the diversity of its workforce in terms of gender and age. The multinational, and therefore multicultural, nature of the business means that ethnic diversity is significant, but because of the difficulty in defining minority employees in such an environment, the Company does not collect data on this aspect. Of the total employees, 16% are female; 19% are under 30 years of age, 54% are between 30 and 50, and 27% are over 50. The Management Board is 100% male. The Supervisory Board is 89% male and 11% female. One Supervisory Board member is aged 30-50 while 8 are over 50.

AMG respects the freedom of its individual employees and their rights to join, or to choose not to join, unions. Across the Company, 1,850 AMG employees (65%) were covered by collective bargaining agreements. 71% of AMG Critical Materials are covered by such arrangements. AMG Engineering, which includes a higher proportion of professional salaried staff, has 49% of its employees covered by collective bargaining agreements. AMG facilities had no strikes or lockouts in 2015.

AMG is pleased to report that no fatal incidents occurred at any of our sites in 2015. The improving trend in safety, since our first report in 2008, continued into 2015. AMG's medium-term goal is zero lost-time incidents – we cannot accept that any incident is inevitable. In 2015, we saw the best safety performance yet. For AMG as a whole, the Lost Time Incident Rate<sup>1</sup> dropped from 1.20 in 2014 to 1.03 (a 14% improvement). The incident severity<sup>2</sup> was also lower at 0.17 compared to 0.19 in 2014 (a 12% improvement). Of the 30 locations included in this report, 19 achieved zero lost-time incidents in 2015. No specific occupational diseases were reported in 2015. The Company continues towards its ultimate goal of zero harm to any employee. Fifteen sites are now OHSAS 18001 certified. Formal health and safety committees, with representatives from all levels of the organization, and which are intimately involved in decisions regarding safety, are in place at every major production facility and many of the smaller facilities. In 2015, 85% of the AMG workforce was represented in these committees. The average absenteeism rate across AMG was 2.5%.

AMG also collects data on the hours we invest in our people to develop their skills, categorized into management; professional, technical, sales and administration; and production and maintenance employees. The categories of training tracked included technical and professional development, quality, anti-corruption policies, human rights policies and health and safety.

This is important to our safety, environmental and ethics programs, and in maintaining our technical competitive advantage. Training data on corporate employees is not fully available. In 2015, the training provided was: management (145 employees trained, averaging 25.5 hours per person), professional, technical, sales and administration (553 employees trained, averaging 19.6 hours) and Production and Maintenance (1715 employees trained, averaging 44 hours).

Across all the reporting sites, AMG employees received an average of 37 hours of training time in 2015 (approximately 2% of total hours worked).

## HUMAN RIGHTS AND ETHICS

GRI INDICATORS HR 3, HR 5, HR 6 AND SO 3

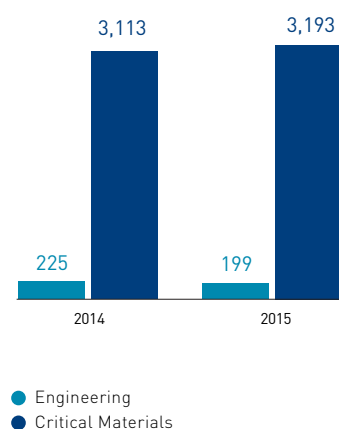
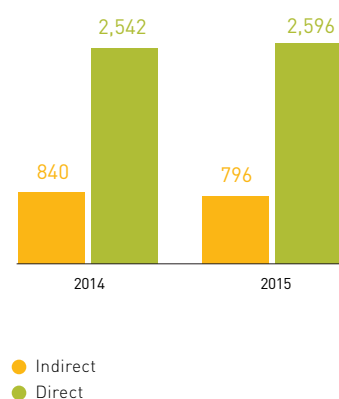
AMG remains fully committed to the protection of internationally proclaimed human rights. The Company strives to make sure it is not complicit in human rights abuses. Each AMG site is assessed during site visits and internal audits to identify if there is the possibility of freedom of association or collective bargaining being put at risk because of political or business factors. In 2015, it was found that no sites were at risk, with the exception of China, where the formation of unions remains restricted. Similarly, the Company has reviewed sites to ensure that they are not at risk for employing child labor or exposing young workers to hazards. It was found that no sites posed a risk at this time. Our policy on human rights is included in the Company Code of Business Conduct and Ethics and detailed in the Company's human rights policy, both are available on the AMG website. AMG is reviewing the policies and plans to update them in 2016.

Refresher human rights and ethics training was performed in 2015, and 528 employees were given refresher training in ethical businesses practices, including 279 in human rights and anti-bribery based materials. Compliance officers at the major sites monitor and implement the Code of Business Conduct and Ethics.

<sup>1</sup> Lost time incident frequency rate equals the number of lost time incidents multiplied by 200,000 divided by the total hours worked. Lost time injury was defined using local regulations.

<sup>2</sup> Incident severity is defined as the number of scheduled work days lost as a result of disabling injuries per thousand hours worked. In some locations, calendar days are counted by local regulators and this data is used here if scheduled work days are unavailable.

## ENERGY USAGE (TJ)



## RESOURCE EFFICIENCY AND RECYCLING

### GRI INDICATORS EN 1 AND EN 2

The use of resources varies between AMG business units, ranging from those that locally mine or purchase primary raw materials to produce metals, alloys, and inorganic chemicals, through those which produce metals and alloys from secondary, recycled resources, to those which provide technology and engineering services. AMG resource usage data comprises raw materials, associated process materials, semi-manufactured goods and parts and packaging, by weight.

AMG Engineering provides predominantly furnace technology and engineering services, including furnace assembly operations and heat treatment services. The segment utilizes limited amounts of resources in these activities, mainly complex component parts for furnaces, which are routinely measured in units rather than by mass. Therefore, unlike the chemicals and alloys business units, only limited data is available on resource mass. In 2015, AMG Engineering reported using 3,303 mt of resources, all of which were classified as primary.

AMG Critical Materials uses a much more diverse range of resources including mined ores for tantalum and graphite production, power plant wastes and spent refinery catalysts for the production of vanadium alloys, and metal salts for aluminum alloy production. The segment uses recycled iron, steel, aluminum and titanium in processes when possible. The segment utilized 1,267,100 mt of resources in 2015, of which 40,700 mt were secondary or recycled materials. In 2015, the primary utilization of resources was by AMG Mineração (872,000 mt of mined ore) and AMG Silicon (190,000 mt of quartz, coal and other raw materials) with the remaining AMG Critical Materials sites using 166,000 mt.

## ENERGY CONSUMPTION

### GRI INDICATORS EN 3 AND EN 4

Energy remains a major area of focus for AMG for both environmental and economic reasons. In particular, high-temperature metallurgical processes and mining operations utilized in AMG Critical Materials are energy intensive. The two most significant energy carriers are electricity and natural gas, although other fuels and energy sources are captured in the data discussed here.<sup>3</sup>

The reported energy usage for AMG Critical Materials was marginally higher in 2015 compared to 2014, increasing from 3,113 terajoules (TJ) in 2014 to 3,193 TJ in 2015. Direct energy usage was 783 TJ and indirect 2,410 TJ.

The energy used by low-energy heat treatment processes utilized by AMG Engineering remains low in comparison.

<sup>3</sup> Indirect energy consumption does not include the energy consumed by electricity producers to generate the electricity or transmission losses.

The segment used 199 TJ in 2015, 11% lower than in 2014 (225 TJ). Indirect energy, in the form of electricity, accounted for 187 TJ, while direct energy use, primarily through natural gas, was 12 TJ.

Across AMG, the split between renewable and non-renewable indirect energy sources is difficult to determine since utilities do not generally publish this information (with some exceptions; e.g. CEMIG in Brazil now produces this data).

However, AMG does generate its own renewable energy. In 2015, AMG's hydroelectric generating facility near São João del Rei, Brazil once again operated at a lower capacity as a result of drought conditions and generated 7,544 GJ (2,100 MWh). This partially supplied AMG's local requirements at its São João del Rei, Brazil plant. Additionally, AMG Vanadium's solar power system generated 710 GJ (197 MWh) in 2015 and AMG Mineração's mine utilization of biodiesel in its truck fleet contributed 146 TJ of renewable energy.

## WATER CONSUMPTION

### GRI INDICATOR EN 8

Water is essential to many manufacturing processes and is used by AMG primarily for non-contact, evaporative or single-pass cooling purposes, although a small number of AMG facilities do use wet chemical processes for the production of metal oxides and other chemicals. In addition, mining operations can utilize water from mine dewatering or for ore processing. Water utilized for cooling, process and sanitary usage is reported by AMG facilities. Reported water use for AMG Critical Materials was essentially unchanged in 2015 at 4,739,000 cubic meters. AMG Engineering's water consumption was 99,600 cubic meters during 2015, also similar to that in 2014 (99,900 cubic meters).

AMG Critical Materials has its largest water use at the mine sites in Brazil, Germany and Sri Lanka, and the silicon metal production plant in Germany. Of these, the mine in Nazareno, Brazil remains the largest user (2,919,000 cubic meters in 2015). While similar to 2014 this is a 40% decrease from the historical position, because of process water recycling and improved measurement. Full data is provided in the table on page 47.

## BIODIVERSITY

### GRI INDICATOR EN 11

Of the 30 locations reporting for 2015, four reported land areas on or adjacent to their property which had high biodiversity value, sensitive habitats or were protected. These areas are: river frontage in Hanau, Germany; native forest in São João del Rei, Brazil; river frontage and setback areas in Nazareno, Brazil; and wetlands in Ohio, United States. AMG remains very aware of the need to be responsible stewards of these important areas.

## CLIMATE CHANGE

### GRI INDICATOR EN 16

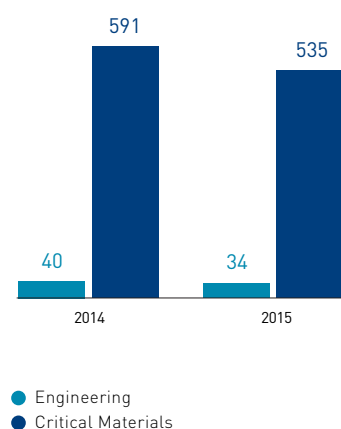
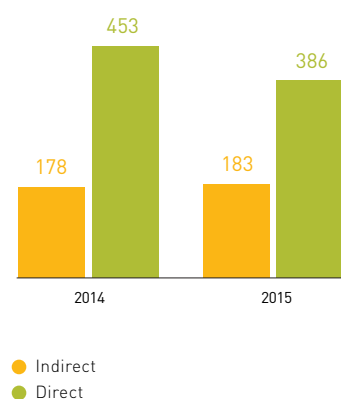
AMG facilities utilize processes that are associated with both direct and indirect greenhouse gas (GHG) emissions, and both types are reported here. Electricity used for the generation of heat for metallurgical processing has been, and remains, the most significant source of GHG emissions for AMG. This electricity use gives rise to indirect GHG emissions of carbon dioxide equivalent (CO<sub>2</sub>e), which are dependent on the nature of its generation. Whenever possible, emissions have been calculated using up-to-date emission factors available from the electricity supplier, the local environmental agency, or the GHG protocol. Indirect emissions are defined as those emissions generated by sources outside of AMG's control, but where AMG ultimately uses the energy. Direct GHG emissions result primarily from the combustion of carbon-containing materials often as part of the metallurgical process, such as using coke as a reductant, but also for the generation of heat, such as burning natural gas in a boiler. Other GHGs occurring from processes other than combustion, such as hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride, are minimal for the AMG business units, but are included if relevant.

AMG Critical Materials GHG emissions were lower in 2015 at 535,000mt of CO<sub>2</sub>e (2014, 591,000 mt). 66% of these emissions are attributed to indirect sources (electricity) while 34% are attributed to direct sources. Emissions remain dominated by the silicon metal production activities which accounts for 374,000 mt of CO<sub>2</sub>e (approximately 6.3kg CO<sub>2</sub>e per kg silicon metal produced), 16% lower than the 7.5kg in 2014. This activity also dominates AMG's overall GHG emissions, accounting for 66% of total group emissions. Further, changes in supply mix, including reduction of nuclear and variations in renewable energy in Germany, resulted in lower emission factors for this electricity and accounted for some of this decrease. These factors, outside of AMG's control, outweighed additional reductions achieved elsewhere.

AMG Engineering GHG emissions in 2015 were 34,000mt, a decrease from 40,000mt in 2014. 99% of these emissions are indirect and associated with electricity usage. The reduction primarily arises from the closure of the Berlin facility.

AMG provides a complex mix of products and services, and it has become clear that year-on-year comparisons are difficult as product mix varies. GHG intensity is therefore defined on the basis of revenue rather than, for example, mt of product. Normalized to a revenue basis, AMG Critical Materials emitted 535,000mt, with revenue of \$758 million, equivalent to 706mt CO<sub>2</sub>e per million \$ revenue. AMG Engineering generated 34,000mt CO<sub>2</sub>e, \$220 million in revenue, or 154 mt CO<sub>2</sub>e per

### GHG EMISSIONS ('000 MT)



million \$ revenue. This wide range reflects the diversity of AMG but also guides focus on reduction opportunities. For AMG as a whole in 2015, GHG emissions were 569,000 mt, down 10% from 631,000 mt in 2014. Revenue was \$977 million, giving a GHG intensity of 582 mt per million \$ revenue, almost unchanged from 2014, despite the adverse effect on revenue caused by global market conditions.

### EMISSIONS TO AIR

#### GRI INDICATORS EN 19 AND EN 20

The emissions of ozone-depleting substances remain de minimis for AMG. AMG Engineering also has de minimis air emissions for other pollutants, resulting from only small sources such as heating and hot water boilers. AMG Critical Material's production facilities do have some other air emissions, including SO<sub>x</sub> (628 mt), NO<sub>x</sub> (780 mt) and particulate materials (81 mt). Data is only available for regulated sources where measurements have been made. The largest particulate emissions come from silicon metal production activities.

### EMISSIONS TO WATER AND SPILLS

#### GRI INDICATORS EN 21 AND EN 23

AMG facilities continue to maintain records of the volume of aqueous effluents, including process water and non-sanitary sewer discharges to local water courses. Clean water (typically freshwater used for cooling purposes that has not been affected in the process) is included in the figures given below. Chemical analysis of the effluent is utilized to determine the total mass of primary constituents of the water emissions.

In 2015, the total water disposed to water courses by AMG Critical Materials equaled 3,629,000 cubic meters compared to 3,555,000 cubic meters in 2014. This slight increase is attributed to variations in production volumes and product mix.

After mining activities, most of AMG Critical Material's water is used for cooling purposes and therefore produces clean water discharges, some of the wet chemical processes generate aqueous waste streams. This included cooling water used by the silicon metal furnaces and mine water from dewatering pumps. In several locations, mine water is utilized for process water before final discharge. For the 8 production sites reporting industrial process water disposal, the major constituents were metals (807 kg), fluoride (5861 kg), sulfate (1033 mt) and total suspended solids (185 mt).

Of the total amount, 2.33 million cubic meters of water were discharged to surface water from the mine site in Brazil.

AMG Engineering utilizes minimal water for non-contact, closed-cycle cooling purposes, and the discharges are therefore clean water and not considered material to this report. The only significant water discharge of non-contact cooling water takes place at the site in Michigan, USA (37,000 cubic meters in 2015).

In 2015, there were no significant spills (defined by GRI as one which would affect the Company's financial statements as a result of the ensuing liability, or is recorded as a spill) of tailings or other process materials at any AMG site.

## WASTE DISPOSAL

### GRI INDICATOR EN 22

Detailed information was collected in 2015 for waste streams generated by AMG, along with documentation of their recycling or disposal method. AMG continues to minimize waste streams by avoiding generation, increasing reuse and recycling and minimizing landfill disposal. Landfill is a last resort. Wastes as defined here encompass materials not purposefully produced for sale and with no commercial value.

The total landfill or incineration disposal for AMG Critical Materials was 24,000 mt, an increase of 26% over 2014 (19,000 mt). 86% of these materials (21,000 mt) were non-hazardous, with the remaining 3,400 mt disposed to licensed hazardous waste landfills. The increase is mainly due to increased chemicals production in Brazil which generates solid waste from water treatment operations.

The waste produced by AMG Engineering is much different in composition, and much smaller in volume. Just 109 mt were disposed to landfills in 2015 (116 mt in 2014), composed mainly of general waste, contaminated oil and metals that could not readily be recycled, and almost no hazardous waste.

Overall, the Company disposed of 24,500 mt of waste to landfills or incineration in 2015 compared to 17,900 mt in 2014. Hazardous waste accounted for 14% of the total.

## SIGNIFICANT FINES FOR NON-COMPLIANCE WITH ENVIRONMENTAL AND OTHER LAWS

### GRI INDICATOR EN 28

No segment received any significant fine or equivalent penalty for non-compliance with environmental laws in 2015.

### GRI INDICATOR S08

In 2015, AMG Engineering and AMG Critical Materials did not receive any fines.

## PRODUCT RESPONSIBILITY

### GRI INDICATOR MM 11

AMG continues its progress regarding its responsibilities under the REACH regulations in Europe, and is continuing to prepare for its 2018 registrations for products with volumes greater than 10 mt. European operations are working with Consortia in developing the health, safety and environmental data required for these registrations and have taken on the role as lead registrant in several cases. Industry groups continue to focus on developing health and safety knowledge of their products

as the regulatory framework grows and expands across the world. AMG units are involved in, among others, the Vanadium International Technical Committee and the International Antimony Association.

## GRI CONTENTS

This section provides an overview of how AMG's Annual Report correlates with the GRI G3 guidelines for the voluntary reporting of sustainable development indices. The table below serves as a reference guide to the sections of the report where information about each item can be found. The GRI G3 guidelines facilitate measurement of economic, environmental, and social dimensions of company performance. Third-party verification has been conducted relative to determining consistency with the GRI reporting principles. For brevity, only the most pertinent data is included in this report.

## UNITED NATIONS GLOBAL COMPACT

AMG commits its support to the principles of the United Nations Global Compact. The Global Compact, which is overseen by the United Nations, is a strategic policy initiative for businesses that, like AMG, are committed to aligning their operations and strategies with ten universally accepted principles in the areas of human rights, labor, the environment and anti-corruption. In 2009, the AMG Management Board approved its commitment to the Global Compact and the intent of AMG to support the ten principles of the Global Compact. AMG will reaffirm its support and submit its fourth Communication on Progress in April 2016.



## EXTRACTIVE INDUSTRIES TRANSPARENCY INITIATIVE

AMG continues its support of the Extractive Industries Transparency Initiative (EITI, [eiti.org](http://eiti.org)), a global initiative to improve governance in resource-rich countries through the verification and full publication of Company payments and government revenues from oil, gas and mining. EITI works to build multi-stakeholder partnerships in developing countries in order to increase the accountability of governments. Over 30 countries have now committed to the EITI principles and criteria. As of today, AMG does not have any extractive operations in an EITI-implementing country, although it does have exploration and development activities in Mozambique.



### GLOBAL REPORTING INITIATIVE

AMG supports the GRI, and is a member of the GRI Gold Community. GRI is a network-based organization that has pioneered the development of the world's most widely used sustainability reporting framework and is committed to its continuous improvement and application worldwide. In order to ensure the highest degree of technical quality, credibility, and relevance, the reporting framework is developed through a consensus-seeking process with participants drawn globally from business, civil society, labor and professional institutions.

This framework sets out the principles and indicators that organizations can use to measure and report their economic, environmental, and social performance. The cornerstone of the framework is the Sustainability Reporting Guidelines.

AMG utilizes the third version of the Guidelines, known as the G3 Guidelines, which were published in 2006. Other components of the framework include Sector Supplements (unique indicators for industry sectors) and National Annexes (unique country level information). AMG has utilized the Metals and Mining Sector Supplement 2010 as a guide in preparing this report. GRI has recently published a fourth-generation of guidelines, G4. As Gold Community Members in the GRI Program, AMG is monitoring the implementation of this revision and will modify its data collection processes to match, although this will take several reporting cycles. Gold Community Members put their name to the GRI mission, products and processes, and promote broadening participation around sustainability and transparency. The Gold Community Member provides a key basis for legitimacy to GRI and reinforces its common commitment as a network to change.

Further information on AMG Sustainable Development and our commitments to these organizations, including our United Nations Global Compact Communication on Progress, can be found on the AMG website ([amg-nv.com](http://amg-nv.com)).



\* LA1, LA4, LA7, LA13, EN1, EN2, EN3, EN4, EN8, EN16, EN20, EN21, and EN22

### ENVIRONMENTAL, HEALTH, SAFETY AND SOCIAL REPORTING STATEMENT OF ASSURANCE

#### SCOPE, OBJECTIVES & RESPONSIBILITIES

AMG's environmental, health, safety and social performance reporting has been prepared by the management of AMG who are responsible for the collection and presentation of the information. GHD was retained by AMG to conduct an independent review and assurance of the key information\* and data reported in the Sustainable Development section of this Report. The objective of the assurance process is to check the materiality of the issues included in the Report and the completeness of reporting. Any claims relating to financial information contained within the Report are excluded from the scope of this assurance process. GHD's responsibility in performing our assurance activities is to the management of AMG only and in accordance with the terms of reference agreed with them. GHD does not accept or assume any responsibility for any other purpose or to any other person or organization. Any reliance that any third party may place on the Report is entirely at its own risk.

#### APPROACH AND LIMITATIONS

GHD's assurance engagement has been planned and performed in accordance with AMG's internal guidance and definitions for the reported indices. The assurance approach was developed to be consistent with the GRI G3 Guidelines and international standards for assurance appointments. Remote audits utilizing telephone and web-based methods were carried out for 12 facilities (see table on page 39) identified by AMG, representing approximately 40% of the total number of AMG facilities. Stakeholder engagement was not within the scope of the assurance activities.

#### CONCLUSIONS/RECOMMENDATIONS

Based on the method and scope of work undertaken, and the information provided to GHD by AMG, the process undertaken by AMG provides a balanced representation of the issues concerning AMG's sustainability performance and is an appropriate presentation of AMG's environmental, safety, health and social performance in 2015. In our opinion, the processes for collecting and reporting sustainability-related data that AMG introduced in 2007 continue to be enhanced through better communication and awareness, and more consistent application of the environmental indices. Some challenges remain related to providing consistent and complete data in an efficient manner. It is recommended that AMG continue to focus on these challenges to improve reporting, but they do not materially affect the conclusions presented herein.

**JULIAN HAYWARD, P. ENG.**

GHD

**ASHLEY VALENTINE, P.E.**

GHD

## SOCIAL AND ENVIRONMENTAL KEY PERFORMANCE INDICATORS AND GRI CONTENT INDEX

### SELECTED SOCIAL AND ENVIRONMENTAL KEY PERFORMANCE INDICATORS\*

GRI INDICATOR	DESCRIPTION		AMG Critical Materials		AMG Engineering		AMG	
			2014	2015	2014	2015	2014	2015
LA1	Total workforce		2,042	2,055	877	789	2,918	2,844
LA4	% of employees covered by collective bargaining agreements		70	71	45	49	63	65
LA7	Accident Rates	Total	1.32	1.22	0.87	0.46	1.20	1.03
LA7	Accident Severity Rate	Total	0.23	0.22	0.06	0.02	0.19	0.17
LA10	Average Hours of Training Per Year	Per person	22.1	25.1	18	69	17	37
EN2	% Recycled Raw Materials	%	7	10	0	0	2.4	3.2
EN3	Direct Energy Consumption	TJ	824	783	17	12	840	796
EN4	Indirect Energy Consumption	TJ	2,334	2,410	208	187	2,542	2,596
EN8	Water consumption (manufacturing)	cubic meters	1,215	1,247	99,000	100,000	1,314,000	1,343,000
EN8	Water consumption (mining)	cubic meters	3,544	3,497	NA	NA	3,544,000	3,496,000
EN16	CO <sub>2</sub> equivalent emissions	mt	591,000	535,000	40,000	34,000	631,000	569,000
EN20	SO <sub>x</sub> emissions	mt	1,037	628	0	0	1,037	628
EN20	NO <sub>x</sub> emissions	mt	712	780	0	0	712	780
EN20	Particulates discharged to air	mt	35	81	0	0	35	81
EN21	Metals discharged	kg	1,122	807	0	0	1,122	807
EN22	Hazardous waste (including recycled)	mt	5,625	5,480	151	63	5,776	5,543
EN22	Non-hazardous waste (including recycled)	mt	23,330	26,130	286	114	23,235	26,245
EN22	Percent of waste recycled	%	34	23	71	39	36	23
EN22	Waste disposed to landfill	mt	17,827	24,406	116	109	17,943	24,514
EN23	Spills	L	0	0	0	0	0	0
EN28	Environmental Fines	\$	0	0	0	0	0	0
S08	Fines for non compliance with laws	\$	0	0	0	0	0	0

\* For a full list see pages 40-45.

### GRI CONTENT INDEX

PART	SECTION	REFERENCE	PAGES
Part I: Profile Disclosures	Strategy and Analysis	1.1, 1.2	1-54
	Organizational Profile	2.1 to 2.10	1-5
	Report Parameters	3.1 to 3.13	47
	Governance, Commitments, and Engagement	4.1 to 4.17	1-47
Part II: Disclosures on Management Approach (DMA)	Economic, Environment, Labor, Human Resources, Society, Product Responsibility	DMA EC, EN, LA, HR, SO, PR	1-47
Part III: Performance Indicators	Economic: Economic Performance	EC1	4-5
	Environmental: Materials	EN1, EN2	42
	Environmental: Energy	EN3, EN4	42-43
	Environmental: Water	EN8	43
	Environmental: Emissions, effluents, wastes	EN16, 19, 20, 21, 22, 23	43-45
	Environmental: Other	EN11, EN28	43, 45
	Social: Labor Practices and Decent Work	LA1, 4, 6, 7, 10, 13	40-41
	Social: Human Rights	HR3, 5, 6	41
	Social: Society	SO3, SO8	41, 45
	Social: Product Responsibility	MM11	45