

Sustainable Development

AMG is committed to achieving the highest standards of safety and environmental conduct at all of its manufacturing facilities and producing materials that help its customers to minimize negative environmental impact.



Scope and Boundaries

AMG Facilities ⁽¹⁾	2008	2009
ADVANCED MATERIALS DIVISION		
Cambridge, OH	Y	Y
Chauny	Y	Y
Lucette	Y	Y
Nürnberg	Y	Y
Rotherham	Y	Y
Sao Joao del Rei, Manufacturing	Y	Y
Nazareno	Y	Y
Minworth	Y	Y
Anglesey	Y	Y
Freiberg	Y	Y
ENGINEERING SYSTEMS DIVISION		
Hanau	N	Y
Berlin	N	Y
Port Huron, MI	N	Y
Columbia, SC	N	Y
Limbach	N	Y
Ramos Arizpe	N	Y
CORPORATE OFFICES		
Amsterdam	N	Y
Wayne, PA	N	Y

This section provides an evaluation of AMG's safety and environmental performance for 2009 compared to 2008. The report focuses on the Global Reporting Initiative (GRI) labor and environmental aspects that are most material to AMG's manufacturing operations. The GRI is a network-based organization that publishes the world's leading sustainability reporting framework. During 2009 AMG increased the scope of its sustainable development data collection and reporting. Although no locations were acquired or closed during 2009. Several manufacturing sites and administrative offices were added to this performance analysis. The total number of reporting sites increased from 9 in 2008 to 17 in 2009. The main change is the inclusion of data for the Engineering Systems Division, driven in part by the opening of its manufacturing and assembly plant in Berlin. Data for corporate office activities are included within the Advanced Materials Division information. The facilities included in the report are detailed in the table on the left.

All sites reported environmental performance at the end of the fourth quarter of 2009 and no forecast data was utilized. AMG utilizes a standard environmental reporting template on which all sites report their data in order to ensure consistency in the interpretation of definitions of the key indicators. This approach is supported by training and by consistent auditing by AMG's third party check partner, Conestoga-Rovers & Associates.

AMG's publicly traded Graphit Kropfmühl and Timminco business units also collect sustainable development data and either currently do, or will in coming years, report this information in their own Annual Report.

The environmental key performance data for the Advanced Materials and Engineering Divisions are summarized in the table on page 56.

(1) The chart indicates which facilities were included in the scope of the sustainable development data.

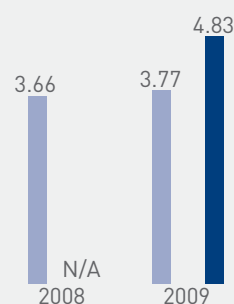
Workforce and safety data

GRI Indicators LA1, LA4 and LA7

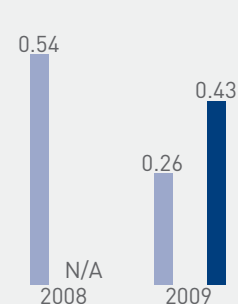
Employee safety remains a key focus of the AMG business units. As of year-end 2009 the Advanced Materials Division had a workforce of approximately 1,140 of which 76% were covered by collective bargaining agreements. There were no fatal accidents amongst this workforce during 2007, 2008 or 2009. Safety performance remained almost unchanged with the lost time accident (LTA) rate¹ at 3.8 per 200,000 hours worked. The accident severity rate² showed a marked improvement, with an almost 50% reduction from 0.54 in 2008 to 0.26 in 2009. Further improvements in these rates remain a key focus of AMG and all sites are required to report all injuries to the corporate office each month. This allows AMG to quickly react to sites experiencing unacceptable safety performance, identify trends in the industry and promote shared learning within the business units.

As of year-end 2009, the Engineering Systems Division had a workforce of approximately 672, of which 43% were covered by collective bargaining agreements. There were no fatal accidents amongst this workforce during 2009. The Division had an LTA rate of 4.8 and a severity rate of 0.43. An improvement program has already been implemented in 2010 with the aim of significantly reducing the lost time accident rate.

Lost time accident rate



Accident severity



■ Advanced Materials ■ Engineering Systems

Resource efficiency and recycling

GRI Indicators EN1 and EN2

The Advanced Materials Division operations can be separated into those that exclusively utilize primary raw

materials by the nature of their business, for example mining, and those that specifically utilize recycled or reused raw materials to recover metal values. Across the Division, and excluding mining operations in Brazil which are by definition primary, 103,000 metric tons of raw materials were utilized, of which 23,000 metric tons, or 23%, were secondary or recycled materials. The Brazilian mine utilized a further 304,000 metric tons of primary raw materials.

The Engineering Systems Division is primarily an engineering services provider, with additional furnace service operations (heat treatment services) and furnace manufacturing and assembly plants. As such, the Division uses limited amounts of raw materials, mainly component parts, and does not knowingly use significant recycled materials. It is likely that some of the metallic components contain a proportion of recycled metals. As a result of the nature of the business, raw materials are routinely measured in units rather than by mass which means in many cases data is unavailable or must be approximated. In 2009 this Division reported using 4504 metric tons of raw materials, all of which were classified as primary.

Energy consumption

GRI Indicators EN3 and EN4

Energy usage was determined by collecting data on all energy carriers. In addition to the two most significant contributors, electricity and natural gas, minor energy sources such as gasoline, diesel, bottled gases (LPG) and purchased steam and compressed gases continue to be included in 2009. Additionally the split between renewable and non-renewable sources of energy was assessed. Administrative offices collected data for the first time in 2009, and this is included within the Advanced Materials Division report.

The Advanced Materials Division total energy usage in 2009 was reduced 12% at 830 terajoules (TJ) in 2009 compared to 944 TJ in 2008. This reduction is primarily related to the lower production tonnages in 2009 as a result of the economic downturn and challenging market conditions. Direct (446 TJ) and indirect (385 TJ) energy usage each accounted for approximately half of the total energy usage. The most significant energy carriers by a wide margin are electricity and natural gas.³

1 Lost time injury frequency rate = (number of lost time injuries * 200,000)/total hours worked. Lost time injury was defined using local regulations and ranged from minimum one lost day to three lost days.

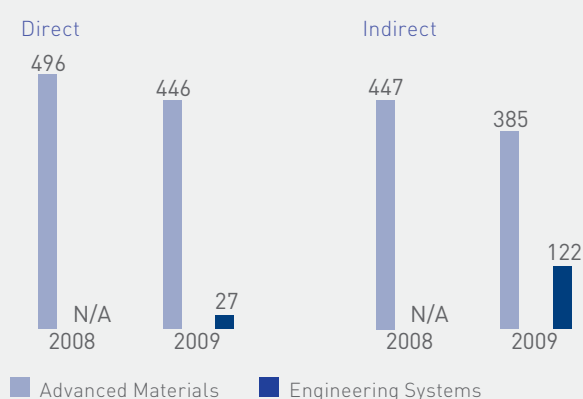
2 Severity is defined as the number of worker-days lost as a result of disabling injuries per thousand worker-hours of exposure.

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

The Engineering Systems Division uses significantly less energy than Advanced Materials which uses high energy furnace processes to produce metals in the molten state. In contrast, the majority of energy used by Engineering Systems Division is to power furnaces used for heat treatment at the own and operate facilities in Limbach, Port Huron, Columbia and Ramos Arizpe. These are lower temperature processes that consume less energy. In 2009 the Division used a total of 149 TJ. Indirect energy, in the form of electricity, accounted for 82% of the energy usage (122 TJ) while direct energy, primarily natural gas and some liquid fuels made up the remaining 18% (27 TJ).

At both Divisions, the unavailability of data from electricity utilities makes the split between renewable and non renewable energy sources difficult to accurately measure. The one exception is for the Brazilian sites since electricity is either generated internally at the newly expanded hydroelectric facility, with surplus clean electricity sold back to the grid, or purchased from the local supplier, Companhia Energética de Minas Gerais (CEMIG), which also generates over 97% of its power utilizing hydroelectric plants.

Energy usage (terajoules)



Water consumption

GRI indicator EN8

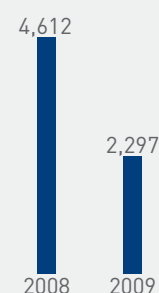
Water is often essential for AMG's manufacturing processes and is most predominantly used for non-contact cooling purposes in closed cycle loops. In other cases it is used for evaporative or single pass cooling. Water consumption across the Company is reported for all purposes, including both sanitary and process uses. Although AMG does not currently operate in areas of drought or water shortage, the Company recognizes that careful use of water resources is essential to overall efficiency and sustainability.

The Advanced Materials Division water usage (excluding the Brazilian mine) remained relatively constant in 2009 at 311 million liters compared to 308 million liters in 2008. In 2009 a number of improvements in measurement were made such as the installation of new, or recalibration of existing, meters.

The largest water consuming site is the mine in Brazil and this is considered separately. In 2009 direct water metering was installed at the mine and new more water efficient equipment was brought on line. As a result of these factors water use declined in 2009 to 2,297 million liters, remarkably lower compared to 4,612 million liters in 2008.

Data on water usage within the Engineering Systems Division, collected for the first time in 2009, revealed consumption of 42 million liters. This water is used almost exclusively for non-contact cooling purposes associated with furnace operations at the Company's heat treatment facilities. Additionally, small amounts of water are used for quenching purposes in some treatments.

Mine Water Usage (millions of litres)



Climate change

GRI Indicators EN16

The most significant greenhouse gas (GHG) emissions for AMG are related to the generation of heat for metallurgical processing using purchased electricity. This electricity use gives rise to emissions of CO2 equivalent (CO2e), calculated using emission factors available from the electricity supplier, the local environmental agency or the GHG protocol. Whenever possible the most up to date emission factors have been utilized. Electricity is the major source of indirect GHG emissions, defined as those emissions generated by sources outside of AMG's control, but where AMG ultimately uses the energy.

Combustion of carbon containing materials on our sites for either the generation of heat energy or as part of the metallurgical process, such as using coke as a reductant, gives rise to the Direct GHG emissions reported here.

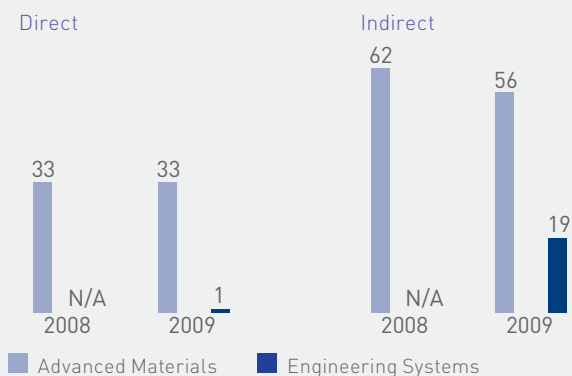
These combustion processes generate carbon dioxide, nitrous oxide and small amounts of methane. The amounts are calculated using local guidance and regulations, the GHG protocol methodologies and tools, or first principles. Other GHGs occurring from processes other than combustion, such as hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride, are minimal for the AMG business units.

The Advanced Materials Division GHG emissions in 2009 were 88,500 metric tons of CO₂e, down from 94,000 metric tons in 2008, or a 9.5% reduction. This reduction is partially due to reduced energy usage as a result of reduced production volume, offset marginally by improved measurement and calculation methods. In order to compare year on year performance, the Division has utilized the overall GHG intensity, defined as metric tons of CO₂e produced per metric ton of product, which reduced to 0.36 in 2009 from 0.39 in 2008, a 7% reduction.

The Engineering Systems Division's GHG emissions in 2009 were 20,170 metric tons. These emissions come primarily (94%) from indirect emissions associated with electricity usage and are highly dependent on the emission factors associated with the electricity suppliers in the locations of the plants.

Greenhouse Gas Emissions

(thousands of metric tons)



GRI Indicator EN17

Indirect greenhouse gas emissions, sometimes referred to as scope 2 emissions, result from the purchase of electricity, heat or steam. AMG reports these under GRI aspect EN16. Scope 3 emissions cover other sources such as employee commuting, business air travel, deliveries of raw materials and products and waste disposal. Due to the difficulty in collecting this information in a global operation such as AMGs, the Company does not calculate scope 3 emissions and has no plans to do so in the near future.

Emissions to air

GRI Indicators EN19 and EN20

The emissions of ozone depleting substance remain de-minimis for the Advanced Materials Division. No known sources of these substances were identified. Other air emissions considered included particulate matter (PM), SO_x, NO_x and volatile organic compounds. Of these emissions, the most significant in 2009 were sulfur dioxide (422 metric tons), PM (37 metric tons) and NO_x (7 metric tons). Reliable data was only available for regulated air emission sources. Although there may be other minor emissions, these are not expected to be material for the purposes of this report.

The Engineering Systems Division did not emit any known or measurable quantities of ozone depleting substances in the reporting period and it is expected that such emissions will not be material going forward. Additionally the nature of the Division's operations means that other air emissions such as NO_x, SO_x and PM are minor and not considered material for this report.

Emissions to water

GRI Indicator EN21

AMG facilities maintain records of the volume of aqueous effluents, including process water and non-sanitary sewer releases, discharged to local water courses. Chemical analysis of the effluent is used to determine the total mass of primary constituents in the discharge.

In 2009, total waste water disposed to water courses by the Advanced Materials Division, excluding the Brazil mine, totaled 151 million liters compared 190 million liters in 2008. The Brazil mine site, which has recently installed more efficient process equipment and water meters, discharged 1,933 million liters of water to the local river, compared to an estimated 4,976 million liters in 2008. Although some of this reduction can be attributed to operational shutdown periods, the majority is derived from true efficiency savings from new process equipment.

Although most of the Division's water is used for cooling purposes, there are a small number of wet chemical processes generating waste streams. For the four production sites reporting industrial process water disposal, the major constituents were metals (179 kg), fluoride (158 kg), sulfate (520 metric tons) and total suspended solids (7.5 metric tons). Additionally, this water included 3,021 kg of chemical oxygen demand or biological oxygen demand. Further, the large volume of water discharged to surface water from the mine site in Brazil contains suspended solids totaling approximately 465 metric tons.

The Engineering Systems Division also utilizes water almost exclusively for non-contact, closed-cycle cooling purposes. In 2009, 42 million liters of water were discharged. Because of the nature of the use, data on constituents in the discharge is not available but is not expected to be material to this report.

Waste disposal

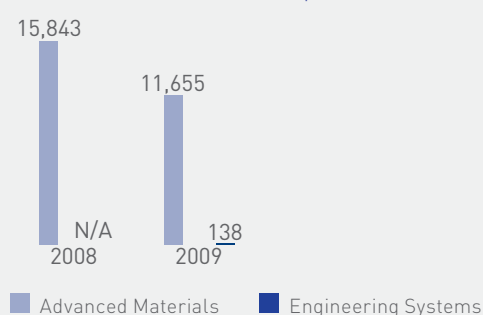
GRI Indicator EN22

All facilities are required to report a detailed breakdown of waste streams and information regarding the disposition of these wastes. Wherever possible, the Company seeks on-site recycling options or beneficial reuse rather than landfill disposal for its wastes. The Company believes the majority of waste streams can be utilized as by-products either by virtue of their chemical composition or physical properties. AMG actively seeks internal and external customers for all these materials.

In 2009, the Advanced Materials Division disposed of 11,655 metric tons of waste to landfills, representing a decrease of 26% compared to the 2008 figure of 15,843 metric tons. The majority of waste produced (71%) is non-hazardous, although it is generally easier to recycle or beneficially reuse non-hazardous wastes.

Although full data was not available for all sites, the Engineering Systems Division disposed of approximately 525 metric tons of waste to landfills in 2009, 87% of which was non-hazardous waste. A further 271 metric tons of waste were recycled or beneficially reused, including scrap metal, used oil and wood products.

Total landfilled waste disposal (metric tons)



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 on page 56 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 to ensure that AMG's reporting is consistent with the GRI reporting principles. AMG believes that in all material aspects the report meets the requirements of a minimum of a C+ report level. Some additional indicators beyond those required for this reporting level are included and these are indicated on the table.

Environmental Remediation

The completion of environmental remediation tasks at AMG's subsidiary Metallurg Vanadium in Cambridge, Ohio marks a major milestone for the site. Soils and sediments have been cleaned, landfills capped and closed and surface water quality dramatically improved. First identified in the mid 1990's, these complex legacy issues have been resolved under the careful oversight of Ohio Environmental Protection Agency and Ohio Department of Health. As part of a multi-million dollar project, the Company has placed over 100 acres of wetlands under a protective Environmental Covenant and set aside significant funds in trust to monitor and maintain the site for years to come.

A similar legacy environmental clean up is underway at the Shieldalloy subsidiary's Newfield, New Jersey site where over \$20 million has been spent on ongoing groundwater remediation. The oversight of the landfill at the Site, which contains small percentages of uranium and thorium, recently transferred from Federal to local State regulation and the new State regulations are substantially different to those under which decommissioning has been carried out for many years. As a result, the Site is the matter of litigation to determine if the proposed and proven onsite remediation allowed under Federal rules will still be possible under the State regulation. Off site disposal, if even possible would be significantly more costly.

See note 38 to the Consolidated Financial Statements for information regarding environmental matters affecting the Company.

United Nations Global Compact

AMG commits its support to the principles of the United Nations Global Compact (the Global Compact). The Global Compact, which is overseen by the United Nations (UN), 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 Management Board of AMG approved its

commitment to the Global Compact and on December 1, 2009 Dr. Heinz Schimmelbusch, Chairman and CEO submitted a letter to the Secretary General of the United Nations, Mr. H.E. Ban Ki-moon, expressing the intent of AMG to support the ten principles of the Global Compact. AMG will submit its first Communication on Progress (COP) in December 2010.



Extractive Industries Transparency Initiative

AMG supports the Extractive Industries Transparency Initiative (EITI), 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. The Initiative works to build multi-stakeholder partnerships in developing countries in order to increase the accountability of governments.

Over 20 countries have now committed to the EITI principles and criteria, although, as of today, AMG does not have any active extractive operations in any EITI implementing country that has completed at least one validation.



Global Reporting Initiative

AMG supports the Global Reporting Initiative (GRI), and is an Organizational Stakeholder (OS). 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. The third version of the Guidelines – known as the G3 Guidelines – was published in 2006, and is a free public good. Other components of the framework include Sector Supplements (unique indicators for

industry sectors) and National Annexes (unique country-level information).

The Organizational Stakeholder Program is located at the center of the global multi-stakeholder network that constitutes GRI. Organizational Stakeholders put their name to the GRI mission, products and processes, and broadening participation around sustainability and transparency. The Organizational Stakeholders provide a key basis for legitimacy to GRI and reinforce its common commitment as a network to change.



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 were responsible for the collection and presentation of the information. Conestoga-Rovers & Associates (CRA) was retained by AMG to conduct an independent review and assurance of the information and data reported in the Sustainable Development section of this Report. The objective of the assurance process was 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. CRA'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. CRA 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

CRA'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. CRA conducted site visits to eight of the 18 sites, and met with/interviewed personnel responsible for collecting, reviewing and interpreting the data and information for presentation in the Report for all 18 sites. Stakeholder engagement was not within the scope of the assurance activities.

Conclusions/Recommendations

On the basis of the method and scope of work undertaken, and the information provided to CRA 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 2009.

In our opinion the processes for collecting and reporting sustainability-related data that AMG introduced in 2007 have been further enhanced through better communication and awareness, and more consistent application of the environmental indices. Some challenges remain related to ensuring consistency in the approach related to various performance metrics and 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.

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www.CRAworld.com



Overview of AMG Social and Environmental Key Performance Indicators and GRI Content Index

Social and Environmental Key Performance Indicators

GRI	INDICATOR	DESCRIPTION	ADVANCED MATERIALS		ENGINEERING SYSTEMS	
			2008	2009	2008	2009
LA1	Total workforce		1,394	1,140	No Data	672
LA4	% of employees covered by collective bargaining agreements		77	76	No Data	43
LA7	Accident Rates	Total	3.7	3.8	No Data	4.8
LA7	Accident Severity Rate	Total	0.54	0.26	No Data	0.43
EN2	% Recycled Raw Materials	%	18	23	No Data	0
EN3	Direct Energy Consumption	TJ	496	446	No Data	27
EN4	Indirect Energy Consumption	TJ	447	385	No Data	122
EN8	Water consumption (manufacturing)	Million l	308	311	No Data	42
EN8	Water consumption (mining)	Million l	4,612	2297	Not Applicable	Not Applicable
EN16	CO ₂ equivalent emissions	mt	94,000	88,500	No Data	20,170
EN20	SO _x emissions	mt	121	4221	No Data	0
EN20	NO _x emissions	mt	6.8	7	No Data	0
EN20	Particulates discharged to air	mt	40	37	No Data	0
EN21	Metals discharged to water	kg	62	179	No Data	0
EN22	Hazardous waste (including recycled)	mt	5,368	4,859	No Data	91
EN22	Non-hazardous waste (including recycled)	mt	17,477	11,629	No Data	614
EN22	Percent of waste recycled	%	30	29	No Data	34
EN22	Waste disposed to landfill	mt	15,843	11,655	No Data	524

GRI Content Index

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1 Includes additional calculated furnace emissions not included in the 2008 data.