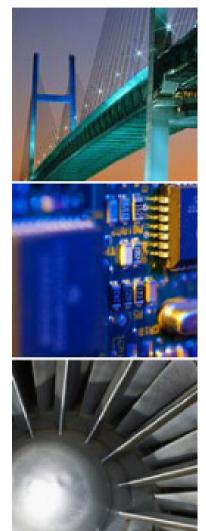


# AMG Advanced Metallurgical Group N.V.



**Engineering Systems Division** Investor Presentation 3<sup>rd</sup> Quarter 2008

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### AMG at a Glance

Preeminent global specialty materials and materials technology company serving high growth end-markets

**Advanced Materials Division: Niche and complex specialty materials** 

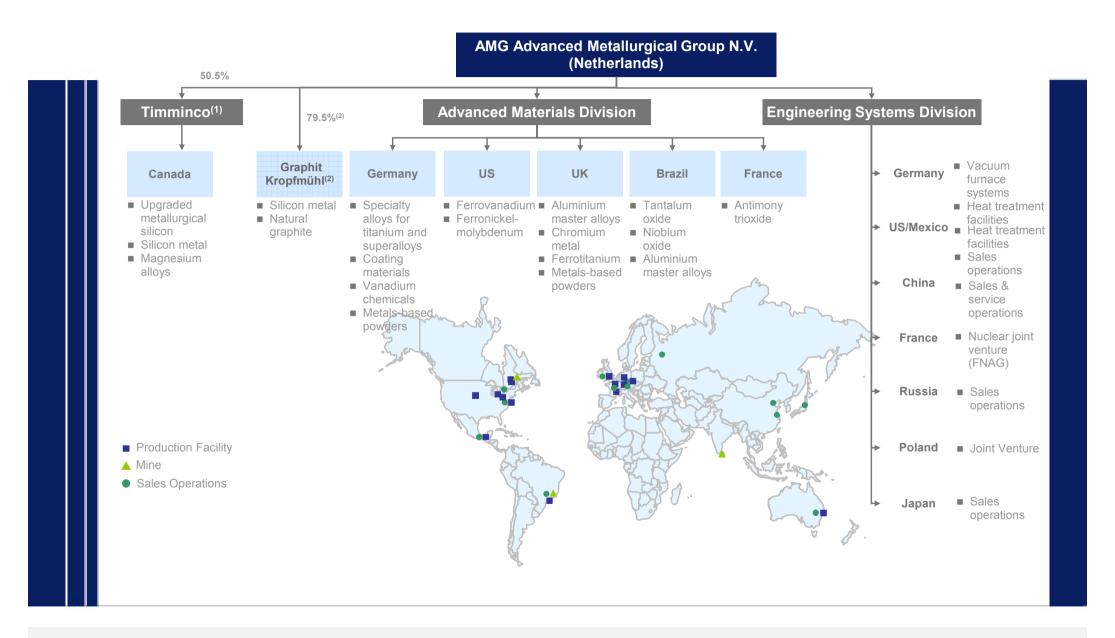
Engineering Systems Division: Advanced vacuum furnace systems for high-purity metals

Timminco (50.5%-owned): Solar grade silicon and lightweight metals

Graphit Kropfmühl (79.5%-owned): Producer of silicon metal and natural graphite

Strong Second Quarter 2008 results: revenue up 48% to \$413 million and EBITDA up 97% to \$63 million

### **AMG** Overview



Note: This chart is a simplified depiction of AMG's organisational structure.

<sup>(1)</sup> Timminco Limited is listed on the Toronto stock exchange (TIM CN / TIM.TO).

<sup>(2)</sup> Graphit Kropfmühl AG ("GK") is listed on the Frankfurt stock exchange (GKRG.DE / GKR GR).

# Focus on CO<sub>2</sub> Technologies and Markets

#### Solar

- Furnace technology leadership for the production of high-purity solar wafers
- Low-cost producer of solar silicon based on proprietary technology
- New Timminco solar silicon facility is producing and shipping
- Significant producer of silicon metal sold to polysilicon producers

### **Fuel Economy**

- Proprietary alloys and superalloys for aerospace applications
- Furnace technology for production of titanium and other weight-advantaged metals

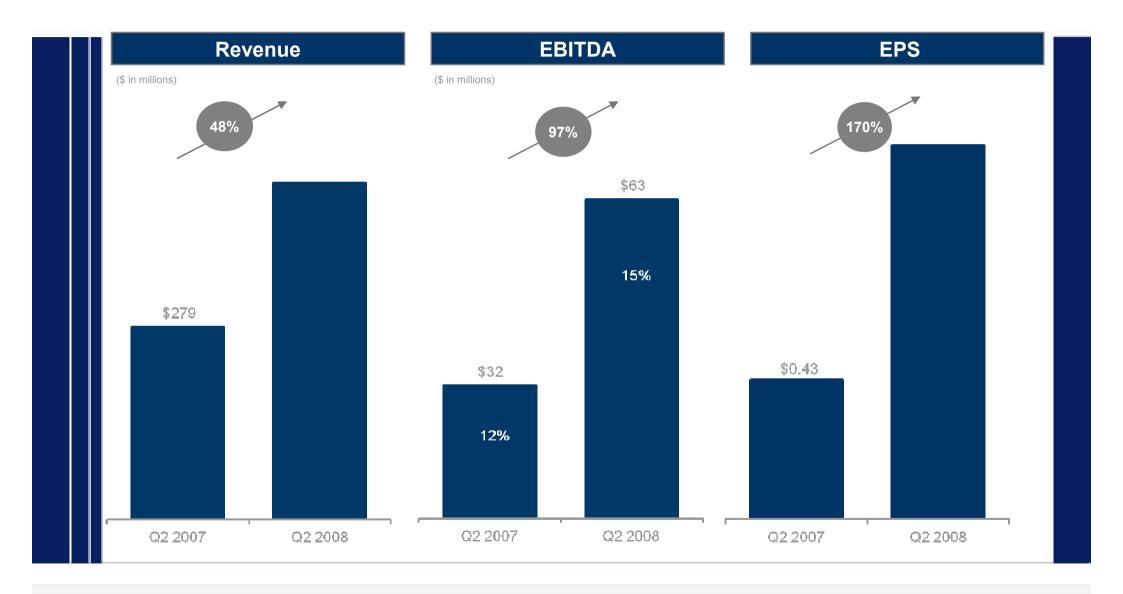
#### **Nuclear**

- Sintering furnaces for nuclear fuel
- Furnaces and process technology for pebble bed reactors
- Graphite production from GK acquisition is a critical input for nuclear components
- JV in France for the production of nuclear fuel sintering and related furnaces

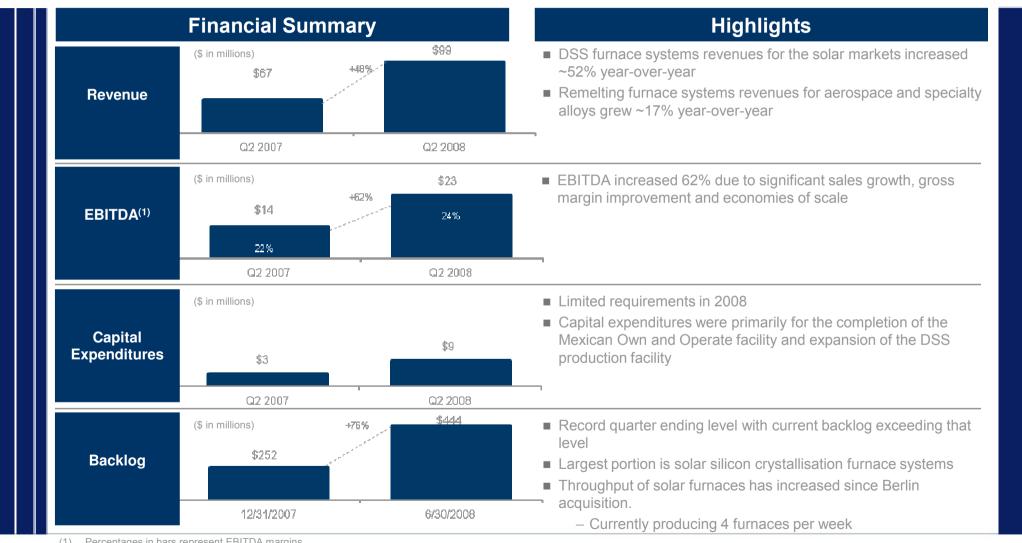
### Recycling

- Spent refinery catalyst and power plant residue recovery for production of ferrovanadium and ferronickel-molybdenum
  - Capacity expansion in progress
- New long-term contract for spent catalysts supports capacity expansion plans

### AMG's Record Results in Q2 2008



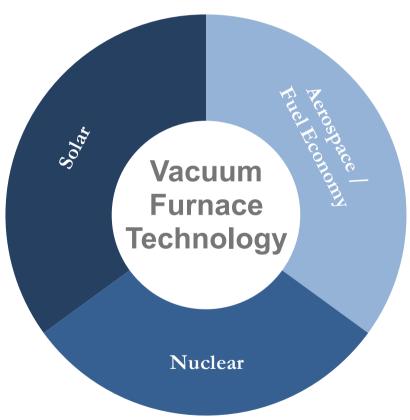
# **Engineering Systems Division**



(1) Percentages in bars represent EBITDA margins.

# **Engineering Systems Division**

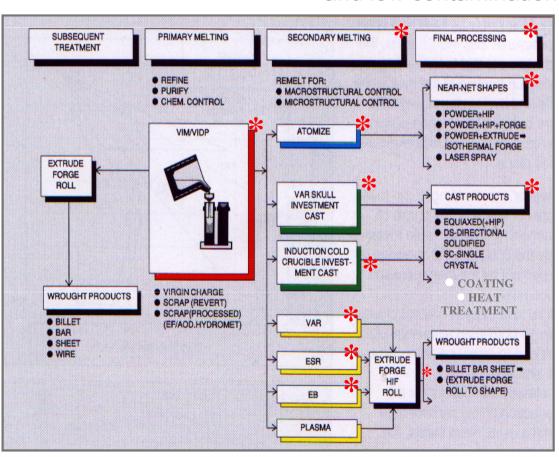
ESD is a platform metallurgical technology company focused on enabling clean technology solutions for multiple major growth markets



ESD's priority target markets are conversion of solar silicon, energy saving in aerospace and automotive, and nuclear energy

# What is Vacuum Technology?

A <u>vacuum furnace</u> operates at very high temperatures used for melting, remelting, sintering, and heat treatment of specialty metals to provide high material consistency and low contamination



The product to be treated is surrounded in a vacuum providing:

- Uniform temperatures between 2,000-2,800 degrees F
- Controlled temperature in a small area
- Low contamination of the product by carbon, oxygen, and other gases
- Quick cooling of the products
- Computer controlled permitting metallurgical repeatability

### **Markets**

Each of ESD's business lines has established a market leading position based on metallurgical technology expertise

#### Solar

- Furnace technology leadership for the melting and crystallization of <u>solar-grade silicon</u> ingots
- June 2008 backlog of \$262 million
- Renewable Energy Corporation (REC) special furnace technology exclusivity with ESD

### **Aerospace/Fuel Economy**

- Furnace technology for the purification of <u>titanium</u> and other weight-advantaged metals
- Proprietary alloys and superalloys for aerospace applications
- Heat treatment for surface hardening of high efficiency six speed transmission gears increase mpg by 10%
- Thermal barrier coating

#### **Nuclear**

- Sintering furnaces and spare parts for nuclear fuel production
- Engineering and furnaces technology for processing of weapons grade plutonium into MOX nuclear fuel
- Developing furnace and process technology for graphite coating used to create pebble bed reactor fuel
- Developing furnace and process technology for long-term storage of High-Level Radioactive Waste

## Markets, Products and Customers

#### **Products**

#### Solar

 Solar silicon melting and crystallisation systems (DSS furnaces)

#### **Notable Successes**

- 2001 Secured furnace exclusivity with REC
- 2005 Broadened market reach by introducing single crucible furnaces

### Sample Customers













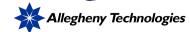
#### Aerospace/Fuel Economy

- Vacuum Melting and Re-melting Systems
- Precision Casting and **Coating Systems**
- Heat Treatment with high pressure gas quenching
- 2007 Market share leader in Ti metal plant engineering in China, the fastest growing Ti market
- 2007 80% market share in turbine blade coating









#### **Nuclear**

 Vacuum Sintering Systems

- July 2008 Secured first nuclear engineering contract with DOE, through Shaw-Areva
- Portfolio of problem solving technologies under development





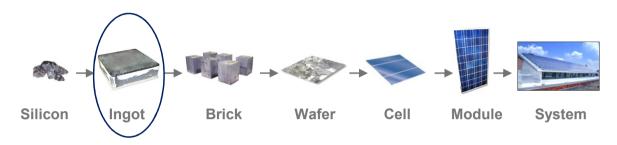






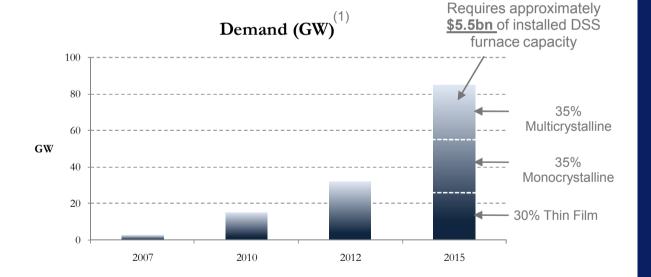
### Solar

As solar economics approach grid parity, demand will grow rapidly, driving the need for increase in upstream furnace melting capacity



Output from DSS Furnace of ESD: Ingots





Assuming a demand of 85GW by 2015<sup>(1)</sup>, the estimate of installed base of DSS furnaces required will be approximately 30GW or approximately \$5.5 billion. As the co-market leader ESD is very well positioned to capitalize on this growth.

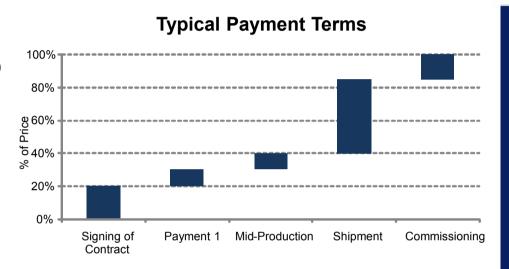
<sup>(1)</sup> PHOTON Consulting – The True Cost of Solar Power (2007)

### Solar

ESD growth will mirror the growth rate of the solar industry:

- Strong and growing backlog
- New Berlin facility provides very favorable economics and plenty of expansion capacity
- Negotiated contracts for custom production
- AMG assembles and tests products before delivery
- Negative working capital (85% of cash received before shipment)
- Minimal credit risk as the customers pay deposit (10-30% of contract value)







# Aerospace / Fuel Economy

### **Vacuum Melting and Re-melting Systems**

- Vacuum arc, electro slag, and electron beam systems used to refine raw materials by removing impurities
- Vacuum induction melting systems used for refinement, treatment, and adjustment of the chemical composition of metals
- Growth generated by high demand for lighter, stronger, and more fuel efficient transportation materials and components
- Estimated market share of 45-50%

### **Precision Casting and Coating Systems**

- Vacuum precision casting furnace systems used to cast high grade metals and nickel based superalloys in a high purity environment
- High-powered electron beam, physical vapour deposition furnace systems used to melt, evaporate, and deposit metals and ceramics onto aerospace and industrial gas turbine blades
- Growth generated by increased demand for titanium products, jet engines and turbines
- Estimated market share of 40% for casting and over 90% for thermal barrier coating for aerospace turbine blades (sole supplier)

### Heat Treatment with High Pressure Gas Quenching (auto parts for next generation of combustion engine)

- Hardening systems used to increase case depth and material hardness of steel and aluminium in a solid state
- Growth generated by increased demand for high tolerance and light materials
- Estimated market share of 45%

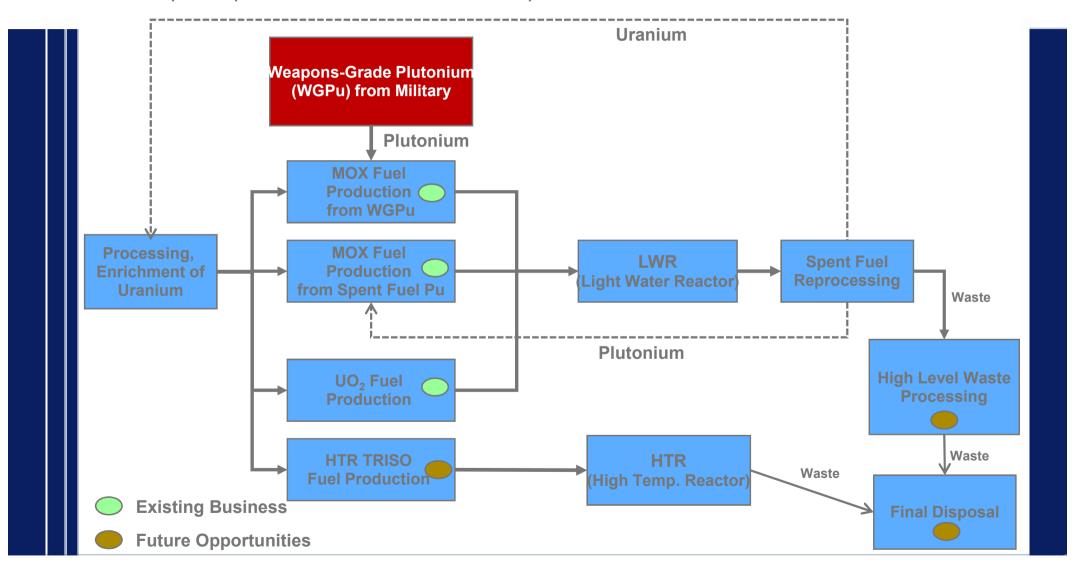






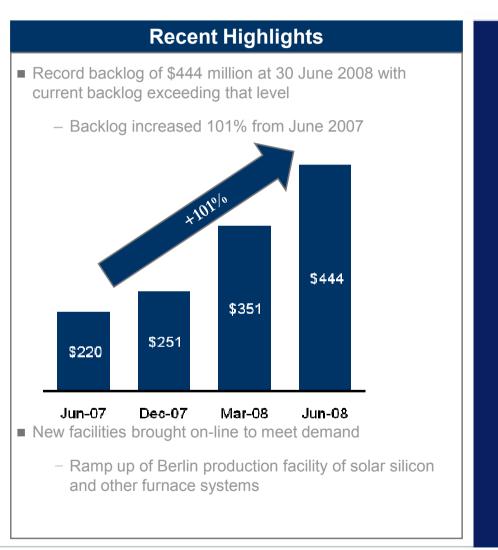
### Nuclear

ESD participates in a number of critical portions in the nuclear value chain



# **Engineering Systems Division**







# **ESD** Governance and Management

#### Heinz Schimmelbusch Chairman of AMG Management Board and CEO

- Chairman of the Management Board of AMG since November 2006
- Chief Executive Officer of Metallurg since November 2002, Chairman since 1998
- Non-executive Chairman of the Board of Allied Resource Corporation and PFW Aerospace AG
- Member of the Board of Directors of Norilsk Nickel, Moscow, Russia since 2004
- Member of the Executive Committee, Partner, and Co-founder of Safeguard International Fund, L.P.
- Executive Chairman of Metallgesellschaft AG from 1989 until 1993, Member of Executive Board 1981-1989
- Former Board Member of Allianz Versicherung AG, Mobil Oil AG, Teck Cominco Limited, and Methanex Corporation
- Graduate degree (with distinction) and doctorate (magna cum laude) from the University of Tubingen, Germany

### Management Board

### Reinhard Walter

Chairman & Chief Executive Officer

#### Werner Katzschner Managing Director Metallurgy

#### Richard Seemann Managing Director Heat Treatment

Matthias Haeberle Chief Financial Officer

- Member of ALD Management Board since 2001, Chief Executive Officer since 2004
- Dep. Chairman and Chief Financial Officer of VBH Holding AG, Stuttgart 1997-2001
- Member of Management Teams within the Metallgesellschaft Group 1983-2004
- Member of the Executive Board of B.U.S Berzelius Umweltservice AG 1989-2004 (CEO 2003 & 2004)
- Member of ALD Management Board and Head of Metallurgy Division since 1999
- Division Manager Crystal Growing, Sales and Marketing, at Leybold AG 1997-1999
- General Manager Systems at EBARA Deutschland GmbH, 1996-1997
- General Manager Semiconductor Equipment at Kokusai Electric Europe GmbH 1990-1995
- Head of Department Semiconductor Equipment at Leybold AG 1988-1990
- Head of R&D Semiconductor Equipment Laboratory Berlin, Leybold AG 1987-1988
- Head of Heat Treatment Division since 1998 and Member of ALD Management Board since 1999
- Sales Manager in ALD's Head of Heat Treatment Division, 1989-1998
- Worldwide responsibility for technical cooperation with joint ventures and license partners at Degussa AG, Hanau 1987-1989
- Manager for Development of processes and specialized systems at Degussa AG, Hanau 1978-1987
- Chief Financial Officer of ALD and GfE Gesellschaft für Elektrometallurgie GmbH, Nürnberg since 2006
- Member of Management Board of BwFuhrparkservice GmbH, Troisdorf 2004-2006
- Controller and Deputy Vice President of g.e.b.b. GmbH, Cologne 2002-2006
- Controller and Deputy Vice President of VBH Holding AG, Stuttgart 1997-2002

### **Advanced Materials Division**

### **Market Leadership** ■ #1 producer in North America ■ #1 global producer from secondary sources (i.e., spent refinery catalysts Recycling -Ferrovanadium and power plant residues) ■ Key customers include Arcelor Mittal and Steel Dynamics ■ Largest global supplier of specialty alloys for the titanium industry **Fuel Economy &** One of a few certified aerospace alloy **Aerospace** producers globally ■ Key customers include Allegheny Technologies and Titanium Metals ■ Antimony trioxide – #1 in Europe ■ Aluminium master alloys – #1 globally Selected ■ High-purity chromium metal – #1 **Other Materials** globally

### **Recent Highlights**

- Cambridge (U.S.) vanadium expansion
  - Phase I successfully completed increasing throughput capacity from 4.0 to 4.5 million lbs
  - Second phase of the expansion is ongoing and on schedule to meet additional raw material supplies in 2010
- Secured highly attractive long-term contract for supply of spent refinery catalysts for ferrovanadium production
- 88% increase in ferrovanadium reference price from Q2 2007 to Q2 2008
- Continued solid demand for specialty alloys for the titanium industry
- Recently approved capacity expansion in production of coating materials for thin film solar applications
- Tantalum mine expansion on target to be completed during forth quarter 2008
  - Corresponding hydro electric expansion on target for 2009
- Current reference prices for antimony and chrome up slightly from Q2 2008 average

### **Timminco**

### **Market Leadership** ■ Leading producer for the rapidly growing solar photovoltaic energy industry ■ Low-cost solar silicon producer with proprietary production technology Solar ■ 99.999% purity achieved ■ Low boron and phosphorous levels ■ #2 independent producer in North America and #1 in Canada Supplier to leading manufacturers in the Silicon Metal chemicals, aluminium and polysilicon industries including Alcoa, Rio Tinto, Alcan and Wacker Chemie ■ #1 producer of magnesium anodes to the North American water heater industry ■ Leading producer of specialty **Fuel Economy** magnesium products for the consumer products, chemicals and pharmaceutical industries

### **Recent Highlights**

- Rapidly growing demand for silicon metal and solar silicon
  - Rising energy prices globally
  - Solar silicon supply shortages
- Multiple long-term contract wins
  - Major contract extension with Q-Cells recently signed
  - 2<sup>nd</sup> contract with SPI signed in May
  - Current capacity sold-out at attractive prices
  - Over 9,000 tonnes contracted for 2009
- Completed construction of first solar silicon facility in Bécancour, Canada
  - Began construction of quadrupling of solar silicon capacity to 14,400 tonnes by mid 2009
- Shipped 221 tonnes in Q2 2008
  - An increase of 121% over Q1 2008
  - Average selling price of \$65 per kilogram.

# Graphit Kropfmühl

### **Market Leadership** Largest producer in Germany Supplier to leading European manufacturers in the chemicals. aluminium and polysilicon industries including Wacker Chemie ■ Silicon metal business supports growth Silicon Metal in solar applications and improves access to the largest solar market in Europe Production site in Germany ■ 64% of total 2007 revenues Natural graphite adds to specialty metals capabilities with significant market opportunities in nuclear applications Fuel Economy & Builds on existing product and Nuclear technology portfolio for nuclear industry ■ 36% of total 2007 revenues Production sites in Germany, UK and the Czech Republic; mine in Sri Lanka

### **Recent Highlights**

- Strong growth since acquisition (April 2008)
  - Revenue and EBITDA of \$24.6 million and \$3.0 million, respectively
- Rapidly growing demand for silicon metal
  - Silicon metal reference prices up approximately 94% since Q2 2007
- Acquired 62.3% of Graphit Kropfmühl AG ("GK") from majority shareholders for consideration of €32.7 million
  - Additional purchase of 17.2% of shares on open market and via a voluntary tender offer
  - AMG currently owns approximately 79.5% of GK at a total cash purchase price of \$62.9 million
- Listed on Frankfurt stock exchange ("GKRG.DE / GKR GR")
- GK reiterated 2008 guidance of revenue and EBITDA in excess of €90 million and €10 million, respectively