



AMG Graphite, formerly known as Graphit Kropfmuehl, began mining graphite in Bavaria, southern Germany, over 100 years ago.

Romkanton

AMG Graphite: Bringing Bavarian intelligence to new markets

Nestling amid the rolling green hills and medieval towns of southern Bavaria in Germany lies the quiet village of Kropfmuehl, home to one of the world's oldest and most significant graphite companies.

Demonstrably proud of its pedigree, AMG Graphite, formerly known as Graphit Kropfmuehl and now rebranded in recognition of its takeover by Netherlands-based AMG Advanced Metallurgical Group NV, was formed in 1870 to mine graphite from the Bavarian hills. Next year will be its 100th year as an industrial player in the graphite industry.

"We have been in this business a long time and we consider ourselves to be leaders in

Formerly known as Graphit Kropfmuehl, AMG Graphite traces its graphite mining routes in Bavaria back over 100 years. *Laura Syrett, Acting Editor*, travelled to the company's mine in Germany to discover how, following a recent equity injection by Alterna Capital, this seasoned company is moving to build on its already formidable stature as a processor of speciality graphite material, spurred by the prospect of growth in new, high value markets.

graphite processing," says Frank Berger, president of AMG Graphite.

The company mines around 10,000 tpa of its own graphite from sites in Hauzenberg, Zimbabwe and Sri Lanka and buys in extra material – around 15,000 tpa – mostly from China, where it operates a processing facility

near Qingdao, plus a handful of other countries. AMG also has an exploration project in Ancuabe, Mozambique, which it expects to be up and running by April next year.

Aside from Qingdao, the company has two processing plants in Europe, AMG Graphite's

biggest regional market, located at Kropfmuehl (Hauzenberg) and Tyn in the Czech Republic, where it receives, refines and distributes material from its various mines.

He also stresses that the company is “not in the commodity business”, that is to say, it is not a volume trader of homogenous products, but rather a niche market operator – a speciality processor of one-of-a-kind graphites. Berger says that the company’s depth of experience in processing sets it a long way ahead of newer entrants in the graphite sector. “Processing is a bottleneck,” he said. “You can say you are going to open a mine and buy a flotation plant and a mill, but you need to have the know-how to make it work.”

Kropfmuehl mine

Located approximately 15km northeast of the chocolate box-pretty Danube town of Passau and nudging the Austrian border, Kropfmuehl to the south of Hauzenberg is the original home of Graphit Kropfmuehl now AMG Graphite’s, mining operations.

Largely shielded from the view of the few surrounding houses and roads, the company has one mine operated by 12 miners in the area and expects Hauzenberg to produce around 1,000 tonnes graphite concentrate this year.

AMG’s plant is modern, clean, compact and quiet, with a covered mine shaft bringing up 20 tpd from an underground mine on a single eight-hour shift, five days per week.

The ore, which grades at between 25% C and 35% C, is crushed, floated, screened, milled (micronised) then chemically and/or thermally purified. It can then be separated out into different fractions for further processing into products including a range of high purity (>99.99% C) flake sizes, expandable graphite, dispersions and parts.

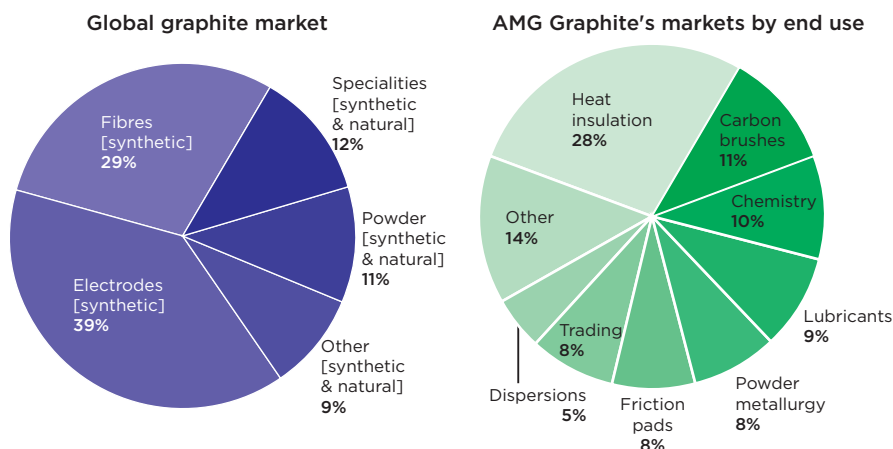
The company keeps a significant amount of inventory and “safety stock” onsite in Kropfmuehl for supply flexibility enabling it to meet the demands of its customers at short notice.

The graphite is stored in bags and packets in wooden-roofed sheds to stop condensation dripping onto the product – a touch of what Berger calls “Bavarian intelligence” – from where it can be loaded onto the company’s own trucks and be on a main European highway within a matter of hours.

“If a customer is kept waiting for two weeks, or even one week, for their order then they will quickly substitute with another supplier or go to a trader. We want to maintain our links,” Berger explained.

AMG estimates the global graphite market to be around 2.7m tpa, consisting of 1.2m tpa natural graphite, worth approximately \$1.3bn, and 1.5m tpa synthetic material, worth considerably more at around \$12.3bn, owing to its predominantly high-value end markets.

AMG Graphite’s markets by end use



The company estimates that the global graphite market is worth around \$14bn, of which 9% consists of natural graphite products, accounting for \$1.3bn and 1.2m tpa.

Source: AMG Graphite



AMG Graphite has a supply agreement with the Lynx Graphite Mine in Zimbabwe. The company’s chairman, Frank Berger, told *IM* that the Lynx mine was a “very secure source” of graphite for AMG and has been supplying the company for 50 years.

Of the natural portion, AMG believes that around 80-85,000 tpa consists of high-value grades. AMG Graphite’s own output in this category comes to approximately 20,000 tpa, giving it a 25% share of the global high-end graphite market.

The largest consuming segment for its graphite is heat insulation materials, which takes around 28% of its annual sales volumes. This is followed by carbon brushes at 11% of its output, chemistry, 10%, lubricants, 9%, powder metallurgy, 8%, friction pads, 8% and dispersions, 5%. A further 8% is sold to

traders for untracked end markets, while the remaining 14% is accounted for by a handful of other, smaller uses.

AMG Graphite’s customers include Austrian insulation materials specialist Sunpor, Germany-based chemicals producer Henkel, Swedish powder metallurgy company Hoganas and US multinational silicon materials supplier, Dow Corning – among a host of other buyers too many, or too secret, to list.

According to Berger, graphite typically accounts for just 3-5% of the end use

materials its customers make, but being unable to source this highly specific fraction of raw material could mean a hugely expensive overhaul of an entire manufacturing recipe. “Customers ask us for a plan B,” Berger said. “That’s why it’s important to guarantee reliable supply to the exact specifications the customer needs.”

Corporate strategy

AMG completed its takeover of Graphit Kropfmuehl in 2012, acquiring first 80% then 93.5% of the capital, which enabled it to squeeze out and compensate the remaining minority stakeholders, having taken an initial 60% equity stake in the business in 2008.

In December 2014, US investment group Alterna Capital Partners acquired a 40% stake in AMG Graphite, by way of a capital increase combined with a 10.33% equity interest in Bogala Graphite Lanka Plc, AMG Graphite’s Sri Lankan subsidiary.

The stake was hailed by AMG Group as an equity injection, which would allow it to “reposition our global value chain” to take advantage of the projected growth in, and expand its portfolio of, graphite-based critical materials products.

Berger says that the company is anticipating significant demand growth to come from markets such as battery anode graphite, nuclear waste disposal solutions and graphene technology – for which its Sri Lankan material is ideally suited, according to AMG – whereas more modest organic growth can be expected from the heat insulation, lubricants, dispersions and expandable graphite markets.

For the more rapid, sizeable growth opportunities, Berger does not altogether buy into the theory that the industry is facing a ‘supply readiness gap’, where growth in consumption by new markets will outstrip production, leading to shortages and price hikes.

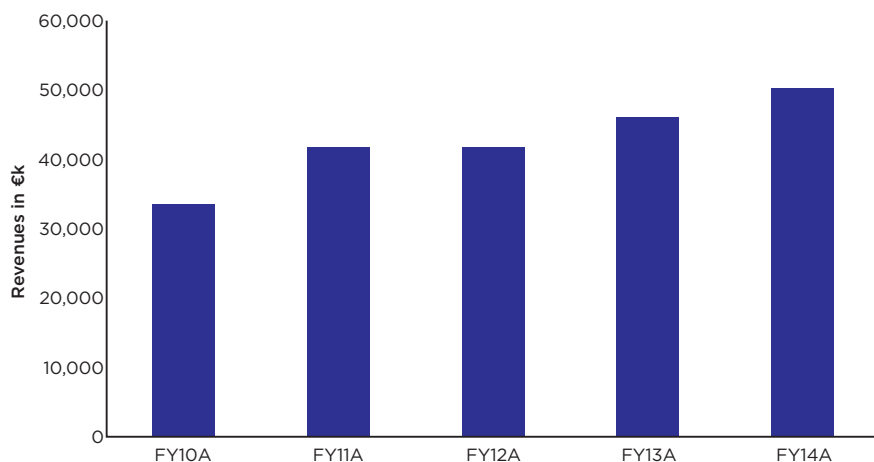
“In my experience, change in demand has always been gradual,” Berger said. “But if it does increase quickly, then we have the processing know-how to meet it. There may be a shortage in supply of very special graphites, such as expandable or vein graphites, but not anything that will risk industrial development – the shortages will not be in spot-driven markets.”

Mozambique

AMG’s decision to invest in redeveloping the past-producing Ancyabe graphite mine in Mozambique is based on its desire to increase its own mine capacity to supply two thirds of its raw materials by 2020.

At present, the company purchases most of its additional graphite from China, with prices typically decided on six monthly or yearly supply contracts – a situation that

AMG graphite revenues



Apart from a slight dip in 2012, AMG Graphite has managed to grow its revenues steadily since 2010. The company said that prices for graphite have been more or less stable, with speciality niche products retaining their value, despite weakness in the more “commodity-type” graphite markets.

Source: AMG Graphite



AMG expects to reopen the Ancyabe graphite mine in Mozambique, formerly operated in the 1990s by Kenmare Resources, by April 2016 with an initial capacity of 6,000 tpa.

leaves the company open to volatility in both pricing and material availability.

If all goes to plan, AMG's Ancuabe mine will be the first of its kind to reopen in Mozambique. Formerly operated by Irish mining group Kenmare Resources Ltd between 1992 and 1998, the project has a projected initial capacity of 6,000 tpa, which can be scaled up to 9,000 tpa. At first, this will substitute for AMG's existing external supply, rather than top up its present 25,000 tpa volume.

Helped by the fact that Ancuabe is a brownfield site with a history of exporting graphite, AMG's mine is in a logistically enviable position compared with some other projects in Africa.

To fund the development, the company has secured and is in final contract negotiations for \$10m financing from DEG, a subsidiary of German banking group, KfW, which specialises in sustainable business investments in emerging economies.

AMG's plans for Ancuabe involve redeveloping the site and building new processing capacity. According to Berger, all the environmental and operational permitting necessary to begin work at the project has now been completed and the company is waiting on the first instalment of cash to begin construction.

AMG also recently inked a deal with ASX-listed Triton Minerals Ltd to explore the licences surrounding its Ancuabe site for further graphite mining potential.

Details on the arrangement are sketchy, as AMG signed a non-disclosure agreement with Triton over the deal's terms, however Berger did not rule out a possible joint venture with Triton in the future, or possibly buying the licences from the Australian company outright. "It depends what we find in the ground," he said. "We wouldn't buy them just because they surrounded us."



AMG Graphite's mine and plant in Kropfmuehl in southern Bavaria is expected to produce around 10,000 tpa concentrate in 2015.

Ancuabe is the closest graphite mine to Mozambique's Port of Pemba, affording the company a relatively easy route to ship the graphite out, Berger said.

The company believes it can be cost competitive with China in Mozambique for graphite raw material, otherwise it wouldn't be pursuing the investment.

Following the successful recommissioning of Ancuabe, AMG is considering turning its attention to the nearby Nipacue greenfield graphite project.

Preliminary investigations at the site have yielded a JORC resource of 900,000 tonnes graphite and AMG is looking at potentially commencing operations at the project in 2020.

Zimbabwe and Sri Lanka

As for AMG Graphite's other captive sources of graphite, it intends to keep these in hand. In Zimbabwe, the company has a supply-only agreement with the Lynx graphite mine in Karoi, in the north of the country. In Sri Lanka, AMG is the majority shareholder in Bogala Graphite Lanka Plc for the Bogala vein graphite mine and is the leading graphite exporter in the country.

Extracting graphite from the deep, old underground mine shafts in Sri Lanka is a complicated business, according to Berger, particularly as AMG applies "Western standards" to the operation.

Despite the recent decline in prices and demand for vein graphite, Berger said that AMG would not bow to market pressures and try to dump its material on buyers. The Bogala mine is staffed by a principally local workforce in line with AMG's policy of benefitting the communities in which they operate.

"We will not just push this material onto the market at a cheap price, as has happened in the past," he said. "Sri Lankan vein graphite is a very special material and we don't want to undermine its value."



Formerly known as Graphit Kropfmuehl, AMG Graphite was finally taken over by Netherlands-based AMG Advanced Metallurgical Group NV in 2012.