FOR IMMEDIATE RELEASE

**MBE MINERALS LEADS THE WAY IN COAL BENEFICIATION TECHNOLOGY**

The coal beneficiation sector depends on robust products that provide ease of operation, minimised maintenance costs and enhanced productivity. MBE Minerals is a leading supplier of coal beneficiation technology, ranging from basic and detailed engineering to components for complete plants and systems. This includes modernisation and upgrades, in addition to capacity increase measures and automation and process control equipment.

Each application is assessed carefully in conjunction with the customer in a comprehensive site visit to determine the equipment that will provide the optimal solution. An extensive local and international footprint allows MBE Minerals to leverage the experience and expertise necessary to ensure a profitable and sustainable end result. Its full scope of services includes feasibility studies, raw material testing, financing concepts, erection and commissioning, personnel training and pre- and after-sales service.

**PNEUFLOT® flotation technology**

The PNEUFLOT® pneumatic flotation system was introduced into the market in 1987, with the first coal flotation installation at Pittston Pennsylvania in the US. Since then the technology has been used widely for fine coal slurries treatment. By 2013, 82 PNEUFLOT® units had been installed in 12 countries, treating some 35 930 $m^3$/h or 3 228 t/h of fine coal slurries. Currently PNEUFLOT®'s largest installation base is China and India, with the technology expanding rapidly into Eastern Europe and other parts of Asia.

Test work has proved that PNEUFLOT® can produce a Waterberg flotation concentrate with less than 11% ash at yields greater than 33% and organic efficiencies greater than 68%. In 2012 MBE Minerals decided to introduce PNEUFLOT® into the Sub-Saharan market. To address the key concern that the technology remained untested on South African coals, MBE Minerals invested in a laboratory cell and pilot plant. These units have been used to test material from both the Soutpansberg and the Central Basin over the past year. The laboratory cell has achieved product with less than 10% ash (feed +50% ash) for a Soutpansberg seam while the pilot plant produced a bulk product sample from the tails of a Central Basin plant fit for market acceptance presentation by a coal major.

Prior to the design of an industrial scale flotation plant, laboratory scale test work and where possible semi-industrial pilot test work has to be carried out. The pilot plant can be installed anywhere in an existing circuit as a 'plug and play' device and the results generated can be scaled up directly to a full scale application. MBE Minerals offers a full testing programme in Southern Africa. The laboratory cell is equipped with a 50 litre conditioning agitator tank, where feed rates of 300 to 400 litres per hour can be applied. The pilot plant works with an agitated feed/conditioning tank with a volume of 1 m³ for batch operations and can accommodate feed rates of up to 10 $m^3$/h for continuous in-plant trials.

Industrial machine sizes from 0.8 m to 6 m diameter are available. Slurry feed rates from 10 to 1.400 m³/h (4 to 560 t/h dry solids) can be processed in one cell depending on the cell diameter. The number of required cells and stages is calculated from the test results. MBE Minerals designs the flotation process flow sheet accordingly and can provide customers with a 10% cost estimate and process guarantees based on both laboratory and pilot/semi industrial scale test work. PNEUFLOT® technology works effectively at lower operating costs through much lower energy and maintenance and repair costs compared to column or mechanical agitator flotation. Advantages such as no moving parts, low wear and atmospheric aeration, negating the need for a blower or compressor adds value to a user friendly system, together with low maintenance, low costs and low down time.

The turbulence in the PNEUFLOT® cell is comparatively low and the wide bubble size range in the self aspirated aerator can be varied by changing the speed of the feed slurry rate and using a frequency converter on the motor power supply. PNEUFLOT® copes well with material sizes of 80% passing from 45, 180, 350, 500 or 1 000 micron in the same machine design (size) thus de-risking variations in feed conditions. This also allows the equipment to be used for all flotation stages, from rougher, scavenger and cleaner through to re-cleaner stages.

Gregory Niekerk, Business Development Manager, MBE Minerals South Africa, says: "Users have recognised better selectivity compared to conventional agitator flotation systems, higher recoveries in fewer stages compared to column flotation and lower wear and reduced energy consumption, with a smaller plant footprint, as definitive reasons for selecting PNEUFLOT® over conventional technologies for the flotation of fine coal slurries."

**BATAC® jigs**

MBE Minerals' BATAC® jig technology has undergone extensive test work to prove its capability to deliver increased efficiencies, improved product quality and higher availability and throughput rates. It represents the latest advances in stratification by means of jigging, one of the oldest separation methods deployed in coal and mineral beneficiation. BATAC® jig technology has developed a reputation for its excellent separation accuracy, combined with a fairly small footprint, which translates into a lower capital cost. This remarkable accuracy is due to electronic control of the air pulse generator and sensing of the thickness and densities of the material layers being separated.

MBE Minerals introduced BATAC® jig technology to the market in the 1960s specifically to overcome the counter-productive limitations of traditional technology. The under-bed pulsated BATAC® jig is ideal for coarse applications from 150 mm down to fine coal in the 10 to 0.5 mm size range, with throughput rates of between 100 and 1 200 tph. "Such excellent performance has ensured that BATAC® jigs are the preferred technology for numerous beneficiation plants the world over," says Kottmann.

**ROMJIG®**

MBE Minerals' ROMJIG® has proved particularly suitable as a reliable and economical solution in destoning raw coal. Extensive international testing has produced impressive results, with an operational efficiency (imperfection) of I=0.08 to 0.1. "There was also an overall reduction in the stone handled and indications of a lower percentage of refuse in the washery feed," Kottmann says. This translates into cost-saving benefits such as reduced wear on machinery and transporting equipment, less grain degradation, less dust and slurry and reduced consumption of flocculation and flotation agents in downstream fines recovery circuits.

**Vibrating screens**

MBE Minerals has built up a formidable reference base of vibrating screens in the African mining industry, having supplied products to the coal, diamond and iron ore sectors for the past 40 years for applications from sizing to scalping, dewatering and media recovery. These vibrating screens therefore have a proven track record under arduous and demanding conditions. They are available in a variety of sizes of up to 3.6 m in width and 6.75 m in length, in single or double deck configuration and in either circular or linear motion.

Particular innovations introduced by MBE Minerals include an innovative side plate mounted drive, which means they are much more lightweight than those using vibrator motors. However, screens

can be supplied with vibrator motors if necessary, while resonance screens offer the added benefit of lower power consumption. All types of screening surfaces can be accommodated, with each screen incorporating mechanical design features such as vibration dampening, side plates, cross members and the appropriate feed and discharge chutes.

**TESKA dense media separator**

The TESKA dense media separator from MBE Minerals is a slowly revolving bucket wheel joined to the separating compartment by seals. The bucket wheel for sinks has been partitioned into compartments by means of perforated plates that enable removal of the sinks, while the floats run towards a discharge paddle wheel. A very precise cut point is therefore possible due to this higher stability, controllable by a two-way medium flow of the separation bath.

Dense media separation occurs in a suspension of finely ground solids and water. In this kind of media, particles of high specific gravity settle at the bottom, while particles of lower specific gravity, such as coal, tend to float. The TESKA® dense media separator is used for coal of +6 mm size, with capacities of up to 800 tph. A special feature is the large bath width relative to the size of the machine. It can be supplied with bucket wheel diameters of up to 6 500 mm, bucket widths of up to 1 500 mm and bath widths of up to 3 000 mm. Feed sizes of up to 1 200 mm edge length can be processed. If magnetite is used as the heavy medium, then the TESKA® dense media separator will accommodate medium densities of up to 2.3 g/cm$^3$.

“MBE Minerals remains abreast of developments in coal beneficiation technology,” Kottmann comments. It does this by being part of an international network, which includes the MBE Coal and Minerals’ R&D Centre in Cologne, Germany. This centre consults with customers globally in terms of optimum processing solutions, aided by an in-house laboratory and pilot test work facilities. The centre can also provide specific customer training, from general mineral processing to maintenance of MBE Minerals’ equipment. “MBE Minerals has the capability to design, engineer and supply equipment, as well as carry out projects on a turnkey or EPC basis, in addition to operating complete coal processing plants,” Kottmann concludes.

COAL BENEFICIATION TECHNOLOGY PIC 01 : Pneuflot® has positively demonstrated its efficiency in many coal applications around the world.

COAL BENEFICIATION TECHNOLOGY PIC 02 : Dual feed and product discharge for a 6 metre wide Batac® Jig in a coal application.

COAL BENEFICIATION TECHNOLOGY PIC 03 : A double deck linear screen with modular polyurethane screen decks.

COAL BENEFICIATION TECHNOLOGY PIC 04 : The dewatering drum and jigging mechanism on a Romjig®.

ENDS ... SEPTEMBER 2014

FROM : CORALYNNE & ASSOCIATES
TEL : +27 011 849 3142
EMAIL : communicate@coralynne.co.za
WEBSITE: www.coralynne.co.za

FOR : JOHANNES KOTTMANN
MBE MINERALS SA (PTY) LTD
TEL: +27 011 397 4660
WEBSITE: www.mcnallybharat.com