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MBE MINERALS SA LOWERS CAPITAL AND OPERATING COSTS
WITH LATEST IRON ORE AND COAL BENEFICIATION TECHNOLOGY

MBE Minerals SA is a leading supplier of iron ore and coal beneficiation technology, offering basic and detailed engineering, components for complete plants and systems including modernisation and capacity increase measures, as well as automation and process control equipment. The company’s scope of services includes feasibility studies, raw material testing, financing concepts, erection and commissioning, personnel training and pre- and after-sales services.

Pneuflot® technology from MBE Minerals SA continues to attract global attention as a flotation technology of the future, already surpassing the popularity of conventional technology, with 82 installations in coal globally and magnetite and haematite (itabirite) flotation in South Africa. The Pneuflot® flotation cell improves product quality and recovery, delivering lower capital and operating costs, as well as significantly lower wear costs and higher efficiencies.

Pneuflot® pneumatic flotation features a unique design with no rotating parts, achieves low energy consumption and less wear-and-tear than conventional agitator cells. “Its primary advantages are bubble contactability and therefore improved selectability, as well as a reduction in footprint size and ancillary equipment,” says Gregory Niekerk, Business Development Manager, MBE Minerals SA.

Less process complexity also makes for easier operation and management, compared with conventional agitator cell circuits. Pneuflot® cells are simple in design and are characterised by a particularly high yield in the froth product. The simplicity of controlling bubble size through control of the Variable Speed Drive on the feed stream allows for both relatively coarse and ultra-fine particles to be floated in the same machine design.

A specific advantage of the self-aspirating aerators, used in almost all but a few applications, is the very low demand for electrical energy. With no agitator used in the float cell itself, which means a much lower turbulence regime can be maintained, both grade and mass pull are often significantly better for Pneuflot® cell types compared to agitation cells.
MBE Minerals SA’s BATAC® jig technology has been field-proven through extensive and diverse test work to deliver higher efficiency, huge economic benefits, better product quality, better machine availability and higher throughput rates. The main advantages are its excellent separation accuracy, its relatively small footprint and comparatively low capital cost.

Accuracy is achieved through electronic control of the air pulse generator and sensing of the thickness and densities of the material layers being separated. BATAC® jigs not only excel in their high separation efficiencies, but also in terms of ease of operation, robust designs, minimised maintenance costs and high throughput capacities, making them the preferred technology for numerous beneficiation plants the world over.

Since its introduction to the marketplace, MBE Minerals SA’s ROMJIG® has proved particularly suitable as a reliable and economical solution in destoning raw coal. The lower percentage of refuse in the washery feed means 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.

The robust Jones® Wet High Intensity Magnetic Separator (WHIMS), operated at up to 14 500 Gaus, offers a high throughput capability coupled with simple maintenance and lower energy consumption. The WHIMS is ideally suited to treating feebly magnetic minerals with a particle range from 20 microns up to 1.5 mm with unit throughput capacities from 500 kg/h up to 250 tph. MBE Minerals SA recently completed the largest WHIMS plant in the world outside of Brazil in the Northern Cape.

The Permos® Medium Intensity Magnetic Separator (MIMS) drum type unit from MBE Minerals SA is suitable for materials which can be attracted by a field strength of between 2 000 and 5 000 Gaus. “Designs for both dry and wet feeding are available from MBE Minerals SA,” says Niekerk.

The Palla Mill® offers the flexibility of being suitable for wet and dry applications in primary and secondary grinding and for pulverising materials of any hardness. This technology has a major advantage over other machines as it is capable of grinding more than 100 different materials,
including a range of minerals and commodities previously considered unviable due to the costs involved. “This technology is known for being able to produce ultra-fines in a very tight Particle Size Distribution (PSD),” Niekerk says.

MBE Minerals SA also manufactures a variety of vibrating screens, available 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. The company’s screens have been operating in the African mining industry for the past 40 years, mainly in the coal, diamond and iron ore sectors.

With products for sizing, scalping, dewatering and media recovery, the company’s screens feature an innovative side plate mounted drive, making them lighter than those using vibrator motors. MBE Minerals SA also supplies screens with vibrator motors where required, while its resonance screens offer the benefit of low power consumption. Each screen is designed with sound mechanical features including vibration damping, side plates, cross members and the appropriate feed and discharge chutes. All types of screening surfaces can be accommodated.

Compared with conventional designs, the TESKA separator from MBE Minerals SA is characterised by several differentiating features. Dense media separation is performed 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 float, such as coal.

The TESKA separator 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 can be achieved through higher stability, controlled by two way medium flow, of the separation bath.

MBE Minerals SA receives expertise and technical support from its worldwide network, including the MBE Coal and Minerals Technology’s R&D centre in Cologne, Germany. The R&D centre consults with customers from all parts of the world with regard to optimum processing and this service is backed up by an in-house laboratory facility and pilot test work capabilities. The centre is also used
as a training facility for customers, either on general mineral processing or on the operation and maintenance of specific MBE equipment.

MBE TECHNOLOGY RANGE PIC 01: The Palla Mill® from MBE Minerals SA can pulverise materials of any hardness.

MBE TECHNOLOGY RANGE PIC 02: The BATAC® jig from MBE Minerals SA offers excellent separation accuracy.

MBE TECHNOLOGY RANGE PIC 03: Pneuflot® cells are simple in design, with a high yield of froth product.

MBE TECHNOLOGY RANGE PIC 04: The robust Jones® Wet High Intensity Magnetic Separator (WHIMS) from MBE Minerals SA offers a high throughput with low maintenance and energy costs.

MBE TECHNOLOGY RANGE PIC 05: The Permos® medium Intensity Magnetic Separator (MIMS) drum type from MBE Minerals SA.

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