

Gravity Tales

New Coal Spiral brings significant benefits

Downer EDI Mining - Mineral Technologies has been a dominant supplier of high quality, long lasting and technically innovative spiral separation technology to the USA coal beneficiation industry since the early 1980s when, as Mineral Deposits, it introduced the LD2 spiral separator.

This is an achievement that cannot be matched by competitors.

Since the LD2 there have been several significant milestones of coal spiral development through the LD9, LD10, LD4, LD4E, LD7 and now the LD7RC.

The latest breakthrough in spiral design to excite the US industry is the two-stage (compound) spiral. The processing concepts behind this spiral is not new to Mineral Technologies and is evident in the use of the two stage Rougher/Cleaner LD9, LD10 circuit designs. However, with the introduction of the more efficient and robust large diameter LD4, LD4E and LD7 spirals, the industry's use of two separate stages lost favour with all but a few coal processing technologists.

What came to be accepted was the addition of a middlings scavenger stage to increase recovery. However, this had the effect of increasing incremental ash and quite often, lump coal recovery suffered when trying to compensate for higher ash fines product.

Cont. P2

Golfing with the crocodiles



MT's golfing gurus - Wynand Erasmus, Bill Ferguson, Johan Gouws, Samson Kubheka, Celamusa Khosa, Gordon Prinsloo, Hettie Neethling, Winnie Ntuli, May-ann Bekker

Downer EDI Mining – Mineral Technologies' Richards Bay office recently sponsored a golf tee at the annual Richards Bay Minerals sponsored Nkwazi golf week. All funds raised are donated to the Richards Bay Child Welfare.

After setting up tables and corporate advertisement banners, Mineral Technologies team spirit was running high. Each of the approximately 150 golfers was greeted at the 10th green with much enthusiasm from the MT team. The golfers were offered refreshments, snacks, humour and encouragement before they moved on to their next tee.

Many 'too-good-to-be-true' golfing tales were heard, while evidence of golf ball 'attacks' on trees told a different story with South African Regional Sales

Manager Wynand Erasmus being one of the renowned culprits. However, everyone was astounded to discover that the 'crocodile on the course' story was fact and not fiction. There really was a live crocodile but fortunately it stayed in the water traps.

Numerous memorable moments were captured on film especially of the all ladies team, which insisted on being photographed with resident Scottish gentleman Bill Ferguson, manager of the Richards Bay office.

The glorious weather provided a wonderful day of networking and golfing for all participants, which ended with a prize giving. For the fifth consecutive year MT sponsored the traditional 'crystal eagles' that are awarded to the top three teams and have become much sought after prizes.

Cont. from P1

The industry soon recognised the potential for the Rougher/Cleaner circuit in the US and South Africa to provide superior beneficiation and control for their higher ash content fines. This drove suppliers to develop the concept to combine the two stages into one spiral, which broke the entrenched thinking of a process needing two individual stage systems. Mineral Technologies' challenge was to meet changing demands and bring to the market a superior product backed by the company's respected service support.

The superior performance of the two-stage flowsheet soon became well accepted and Mineral Technologies could see the market in the US turning quickly to this compound spiral concept. A research and development program was put in place to fast track the design and testing of the spiral, which ultimately became the compound Rougher/Cleaner LD7RC.

The LD7RC spiral is more economical and offers plant layout simplicity over the alternative of adding a pumping or launder transfer stage to connect two individual spiral banks.

The first stage of the compound spiral is the rougher stage of three turns. At the end of the third turn, a slide splitter (Mineral Technologies patented technology) is used to draw off the high ash refuse into the centre column to join the final reject. The outer slurry flow containing the clean coal and some middlings is then remixed and the energy dissipated prior to being fed to the remaining four turns on the cleaner section. At the end of this section a ganged, patented, through-the-trough

splitter arrangement divides the clean coal from middlings and refuse.

The LD7RC differs from competitor products in that it utilises three turns in the rougher stage and four turns for the cleaner section. The design philosophy behind this comes from many years of testing spirals of varying lengths and configurations. The Mineral Technologies' coal spirals have been proven to have the ability to make a high ash reject with configurations from two to seven turns. Four turns has proved to be the minimum required to reach the low ash plateau in the clean coal. As such, the optimal three /four combination based on historical testing was chosen.

The two-stage spiral Rougher/Cleaner configuration will remove more of the high ash material from the feed slurry than will the single stage process, thus having the potential to produce a lower ash clean coal for the same separation – d50. It is typically expected that entrainment will be reduced by more than a half, which, when applied to a raw coal containing >25 % of 2.4 SG, will significantly lower the clean coal ash. Many of the coal seams mined in the Appalachian region of West Virginia and East Kentucky fit into this category.

Recent years of testing and the latest plant installations have proved the concept is superior to a single stage process.

Mineral Technologies has now sold more than 150 triple start LD7RC compound spirals within the USA coal sector, treating in excess of 7,000,000 tonnes annually. Orders to be delivered by December 2008 will extend the number installed to more than 200 triple starts.

Another miner bites the dust

The following is a summary of a story that appeared in the Australian Courier Mail, 08 SEP 2008, written by Tony Grant-Taylor).

Monto Minerals sank some \$70 million into an industrial minerals project near the town that gave it its name. But though customers were crying out for the suite of minerals Monto's operation was designed to produce, Monto couldn't get its processing plant up to planned capacity.

Monto would produce ilmenite as its main product. But it also set out to produce a small suite of other value products, for glass making, for fertiliser and for use in washing Queensland's ever burgeoning coal output.

Production of the latter mineral, titanomagnetite, was yet to come on stream when Monto bit the dust just over a week ago.

Unfortunately, Monto couldn't get its project's "feed preparation area" to perform -- eventually assessing it as suffering from "significant design flaws". That left the rest of the project, designed to turn out some 150,000 tonnes of product, producing only half that amount at best.

Cont. P3



Hansie Neethling is chosen to represent Zululand in the Development Angling Team for the year 2008/2009. The sport is extremely competitive and popular across the whole of Kwazulu Natal and South Africa. With several of our employees actively involved, Hansie's achievement ranks high in the Richards Bay community and also serves as an inspiration to all our employees.

Mineral Technologies

will be at

IMME 2008

5 - 8 November 2008

Kolkata, India

Cont. from P2

Mineral Technologies has been intimately involved with the Monto project for around 10 years and undertook a wide range of test programmes to finally come up with a workable flowsheet for what was quite a difficult mineral processing challenge. MT subsequently submitted a bid to design the plant for Monto Minerals but unfortunately were unsuccessful and the project was engineered by others.

Unfortunately, the recent news article shown above tells the story of the ultimate demise of the operation that struggled for about 2 years to operate as planned, due to “significant design flaws”.

This story reinforces the importance of getting right the engineering component in the development of a successful operation. It is crucial that equal importance is placed on four key components of a processing plant:

- The chosen flowsheet must be proven to generate the necessary product quality with sufficient yield to be economical.

- The equipment installed must also be proven to generate the necessary product and be sufficiently robust to operate continuously without failure.

- The engineering design of the processing plant must effectively embody the intention of the flowsheet and the specific requirements of the equipment with an appropriate level of instrumentation and control, effective materials handling equipment, an operator friendly environment and the flexibility to handle the range of problems encountered in an industrial operation.

- The engineering design must accommodate the anticipated ore body fluctuations in grades.

Mineral Technologies is well experienced in handling each of these four crucial functions as well as commissioning, operator training and ultimately guaranteeing the operation and performance of the plant.

Refurbishing 31 Magnetic Separators In South Africa

For the past three years, Downer EDI Mining - Mineral Technologies and its client Richard Bays Minerals (RBM) in the Republic of South Africa (RSA) have successfully implemented a refurbishment program for RBM's 16 pole WHIMS units that delivers on time and provides a significant cost saving to the client.

31 units have been refurbished to date and the program is expected to continue as part of Mineral Technologies' client maintenance program.

Mineral Technologies was able to draw on the full resources and support from its RSA facilities and manufacturing plant in Australia to develop an innovative maintenance service in conjunction with RBM.

RSA Regional Sales Manager Wynand Erasmus explains the process: “RBM delivers the old unit to our site in Alton where Mineral Technologies' technicians disassemble the unit, check for corrosion and carry out a complete inventory of what needs to be replaced or refurbished. Parts are then sand blasted and painted or provided as new components. As the OEM, Mineral Technologies owns the technology and guarantees to use only genuine “Readings” items because it manufactures or procures to its drawings from local South African or Australian made supply. Magnetic coils and the control panel are RBM free-issued items.



Isak Gatebe working on the RBM Whims refurbishment programme

“Using Mineral Technologies' in-house expertise, a WHIMS unit is refurbished to an ‘as new’ condition in three to four weeks.

“Prior to delivery and final client inspection, Mineral Technologies tests the newly refurbished unit for four hours with purpose-built ancillary equipment to simulate the in-process operation. This assures that each unit is in full working order on installation.”

Congratulations to our maintenance team working at Richards Bay Minerals who for the second year in succession have contributed positively to RBM achieving 1 Million man-hours without a recordable injury. This is a significant milestone in their safety programme “Safety Millionaires 2008”. They are now aiming at 2 million recordable injury free hours.