

# Gravity Tales



## Teaming up in Egypt

**Roche Mining (MT) has teamed with Snowden to deliver a US\$2.5 million feasibility study for a project in the Nile Delta for the Egyptian Government.**

Glen Zille, General Manager of Roche (MT), said the project involves conducting a comprehensive feasibility study into the mining and processing of mineral sands at the site.

"Following the addition of Snowden to the Roche Mining fold, this project presented our first opportunity to team together and include Snowden's unique knowledge and detailed experience in ore body evaluation for such a project," said Glen.

The scope of work will include reviewing previously generated drilling data and mineralogical information, estimating resources to an internationally recognised protocol, mine design and production scheduling, metallurgical testwork and the generation of flowsheets for processing plants, engineering design for all processing and associated infrastructure and services, cost estimations, a market study and environmental review.

The El Burulus site contains significant quantities of mineral sands, and although Roche (MT)

was involved in initial site investigations in the early 1990s, the development of the project has become an urgent priority for the Government as the deposit is suffering the effects of sea erosion.

"The study is expected to take around 14 months to complete, with all the metallurgical testwork to be conducted at Roche (MT)'s Carrara facility on the Gold Coast using the latest equipment to provide the best opportunities for efficient mineral recovery," said Glen.

"This project provides Roche (MT) with access to the emerging mining industry in Egypt, and the opportunity for Roche Mining to showcase its extended capabilities in converting an orebody into an operation for clients," he said.

Photo: Adjacent to the coastal beach resort town of Baltim, Lake El Burulus is a coastal lake within the Nile Delta on the Mediterranean coast of Egypt. The site contains significant quantities of 'black sand' rich in ilmenite, rutile, zircon and other heavy minerals.

## Kelsey Jig lives up to its reputation

**Roche (MT)'s proprietary Kelsey Centrifugal Jig technology is proving itself to be a valuable asset in gravity separation circuits.**

Dale Henderson, Roche (MT)'s Business Development Manager – Eurasia, said since its development in the 1980's, the Kelsey Jig has found acceptance in a number of industries; however the bulk of the installations have been in zircon circuits within Mineral Sand separation plants. Operators in these plants rely on the Kelsey Jig as one of the only devices in the world that can effectively separate different minerals based on small differences in their specific gravity.

The separation efficiency of the Kelsey Jig was recently put to the test at the Carrara testing facility, to separate Feldspar (SG 2.6-2.8) from Apatite (SG 3.2).

"Previously, testing over a shaking table had indicated that the best performance that could be expected was the production of an apatite concentrate (34.3% P<sub>2</sub>O<sub>5</sub>) at a recovery of just 50% - we thought we could achieve a better result using Kelsey Jigs", said Dale.

"After we investigated the characteristics of the feed material, a range of operating conditions was selected for evaluation – the results confirmed our theory that the Kelsey Jig could indeed make an apatite concentrate with a much better recovery," he said.

The Kelsey Jig was able to recover 89% of the apatite to the concentrate, compared to just 50% on the shaking table. This improved recovery, coupled with the significantly reduced plant area required for Kelsey Jigs compared to tables are currently being considered in the economic evaluation of the Kelsey Jig option.

## Presence extended at Minsur



### Roche MT recently supplied a second Kelsey J200 centrifugal jig to Minsur for a tailings reclamation project at their San Rafael tin mine in Peru.

Peter Barker, Area Sales Manager, said Minsur has been doing test work for the last 2 years on a tailings recovery project, Bofedal 2, and it is expected the final flowsheet will rely heavily on gravity processing.

"Minsur purchased a Kelsey J200 jig about 2 years ago and they recently purchased a second unit to be used in their pilot plant with rougher-scavenger jigs in series and also rougher-cleaner jigs in series," said Peter.

The Kelsey Jig is gaining a reputation for its application in tailings reclamation providing a number of process, economic and environmental benefits for clients, due to its efficiency with small particle sizes.

"The use of Kelsey Jig technology in tailings retreatment ensures recovery of additional saleable ore and can effectively lower the net site costs for clients, with regards final tailings placement" he said.

Minsur's San Rafael operation is based at 4500m high in the Andes Mountains in Peru and is a particularly rich deposit supplying almost 14% of the world's tin. Minsur also purchased a number of banks of MG2 large capacity spirals at the beginning of 2005 and these are now all installed and running successfully in the plant.

Pictured above: Minsur staff with the two installed Kelsey Centrifugal Jigs.



**With recent improvements made to Roche (MT)'s spiral technology we asked Area Sales Manager, Graeme Wylie, to explain the benefits of this new design for clients.**

#### **What prompted the need to make changes to the existing design of the coal spirals?**

A better product quality can be achieved by processing the coal through a two-stage spiral circuit and previously designed two-stage circuits use two discrete banks of spirals, a rougher stage followed by a cleaner stage. The rougher stage is essentially a first pass at cleaning the coal.

The cleaned coal, consisting of the product and middlings cuts, is then processed through a second or cleaner stage that further reduces the ash content of the coal. Each stage requires floor space, pumps and pipes - we saw a need to reduce the space requirement for clients and for a simplification of the process circuit.

#### **What are the features of improvement and what efficiencies do they offer?**

Rather than having two-stages operate as two distinct banks, a new 7-turn spiral, incorporating both stages on a single column was designed. After being processed over the first three turns, reject material is removed and the product and middlings material is re-mixed and slowed in a remixer box located on the spiral trough. The resultant material is then introduced onto the final four turns of the spiral trough for final processing

By incorporating the two stages onto one column, the floor space requirement is reduced with consequent reductions in new plant capital cost. The single column eliminates the need for pumping to the second stage leading to a simpler circuit design and reduces pumps and pipe-work required along with reduced operating costs.

#### **How can clients upgrade their existing equipment?**

Given enough headroom, clients can replace their existing system with the new single column units, which occupies less floor space and may allow for a greater processing capacity within existing plants.

# Significant progress at Moma



## Roche (MT) has made significant progress in the delivery of the \$25 million contract for Kenmare's Moma Titanium Minerals project in Mozambique.

Graeme Wells, Roche (MT)'s Senior Project Manager, said the wet concentrator plant design was completed in May, all equipment has been completed and shipped to site, and the detailed design for the mineral separation plant (MSP) is nearing completion.

Kenmare's Moma Titanium Minerals Mine is being built by the Multiplex - Bateman Joint Venture (MBJV) and involves the refurbishment and relocation of the Beenup mine's Wet Concentrator Plant (WCP) and MSP from Western Australia to the coastal town of Moma in north Mozambique where proven deposits of heavy mineral-bearing sands are located.

"Roche (MT) was originally involved in the detailed flowsheet design for the original Beenup plant over 10 years ago, and following Kenmare's purchase of the Beenup plants, has been involved to verify the flowsheet changes necessary to adapt the plant to suit the Moma deposit," said Graeme.

"Following preliminary testwork, Roche (MT) designed the process flowsheets to meet product grade and recovery targets, and as a consequence of this work was able to offer extensive process guarantees in support of these targets," he said.

Roche (MT) is subcontracted by the MBJV to refurbish the original Beenup MSP machines and WCP spirals, and supply new equipment including its proprietary electrostatic and electromagnetic equipment.

Roche (MT)'s Australian and South African facilities have supplied four banks of new MD HG10S spiral separators for the WCP and ten Reading Induced Roll Magnetic Separators, five Reading Rare Earth Drum Separators, three Reading Rare Earth Roll Magnetic Separators, 12 Carrara High Tension Roll Separators, bucket elevators and rotary table feeders, and wet shaking tables from Wilfley Holman in the United Kingdom.

Roche (MT) will also provide on-site services, with commissioning and acceptance testing of both the WCP and MSP due to take place in August 2006.

Pictured above: A barge arriving on site with some of the Wet Concentrator Plant pontoons, and some 40 containers of equipment for the project.

## Hat Trick at the Blitz



**Roche (MT)'s house band "Flash Machine" delivered another stellar performance at the Boardroom Blitz - Battle of the Bands competition, picking up an award for the third year in a row.**

Flash Machine, with the help of their Solid Gold Dancers, won the Best Rock Presence award after facing nine bands in their toughest competition yet.

There was a disco inferno as the band had fun with the theme of "Studio 54 Revisited", belting out five classic hits, sending guests on a time warp back to the 1970s, when it was all about Farrah's hair, platform heels and disco glo-mesh suits.

Congratulations to the band: Graham Fairweather (guitar), Bill Ferguson (drums), Dale Henderson (vocal), Tom Lawson (bass, vocals), and Steve Nash (alto & soprano saxophone), Mark Palmer (vocal and keyboard), Kees Payens (guitar, vocals), and the Solid Gold Dancers (all Roche MT employees) Alley Aiken, Jess Dunning, Shirley Lothian, and Kimberly Purcell.

Roche (MT) has been involved in Boardroom Blitz, the only rock charity event of its kind in Queensland, since it was launched three years ago. During this time the event has raised more than \$80,000 for the Cerebral Palsy League of Queensland.

## HAPPY HOLIDAYS

**We'd like to take this opportunity to thank all our clients for their support in 2005.**

The Roche (MT) Carrara office will be closed from 23 of December and will reopen in the New Year on the 9th of January; however, if you have an urgent request, we will have people available to assist with your enquiries.

We wish you and your families a safe and prosperous New Year and look forward to your continued support in 2006.