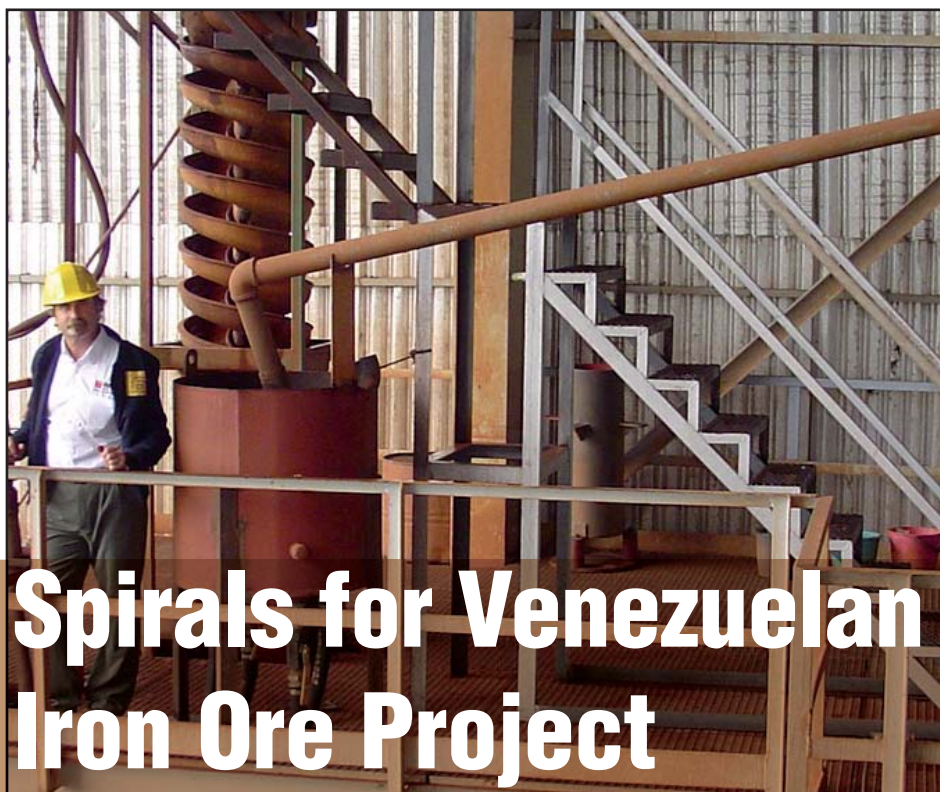


# Gravity Tales



## Spirals for Venezuelan Iron Ore Project

**Roche Mining (MT) was awarded a \$1.6 million spiral supply contract for the new CVG Ferrominera Orinoco CA Iron Ore concentration plant in Ciudad Piar Venezuela.**

Bill Weldon, Roche (MT)'s Regional Manager – America's, said the MD spiral technology is arguably the most effective and efficient spiral technology for fine hematite concentration and this contract is not only significant in size but is also the first supply of technology to Venezuela for the company.

"The client selected the MD spiral technology based on its proven performance in a variety of applications around the world, in addition to their own experience with the product as part of a 5-year pilot plant operation on site," said Bill.

The spirals will be used to remove the silica gangue from the hematite in the iron ore to increase the overall iron content. The concentrate will then be suitable for the hot briquetted iron process designed for high grade iron production," he said.

Roche (MT) will supply 20 banks of 12 twin start

model WW6E 7-turn spirals for the rougher stage of the plant and 6 banks of 10 twin start model WW6E 5-turn spirals for the scavenger stage.

The spirals will be manufactured at Roche (MT)'s state of the art manufacturing facility at Carrara on Queensland's Gold Coast, and equipment will be delivered over a six-month period commencing in September 2006.

Following the equipment delivery and installation, Roche (MT) will be involved in the commissioning of the equipment on site and will also conduct operator training.

"Roche (MT) has been involved on the project in various stages of its unusually long development, from metallurgical testing to the supply of the spiral pilot plant, and is now pleased to be working with project managers, Duro Felguera and process design contractor, MetChem, to see the project's completion in 2007" said Bill.

## International partnering on Indonesian iron sand project

Roche Mining (MT) is working with PT Sugico Graha in its first mineral processing venture.

Dale Henderson, Roche (MT)'s Business Development Manager – Eurasia, said PT Sugico Graha, one of the company's worldwide strategic partners, is working to process a reserve of naturally occurring iron sand to extract a high-grade iron product for sale internationally.

"We began working on the project early last year undertaking testwork at our Carrara facility in Australia to determine the processing requirements of this particular Indonesian Iron Sand material," said Dale.

"Iron sand is similar to typical beach sand but rather than small grains of white quartz it is made up of small grains of black iron oxide. The magnetic separation technology selected for use in this plant has shown to effectively produce the necessary product specifications," he said.

Following the successful conclusion of the testwork, Roche (MT) has been commissioned to undertake the preliminary design of a processing facility to treat 500 tonnes per hour of raw feed material, extracted from a range of ore sources.

"We are happy to be working on a project like this with our strategic partner. Roche (MT) is providing the process technology while our partner is providing the ore body and in-country experience to make a project such as this happen," he said.

Local Indonesian contractors will be involved in the final design and construction of the plant in Indonesia, using local materials and relevant standards and procedures however Roche (MT) will assist PT Surgico Graha to ensure the plant is successfully commissioned to meet the project requirements.

The Sugico Graha group, headed by their founder Mr. Kokos Leo, has Mineral Sand, Coal and Iron Sand concessions across Indonesia as well as Palm plantations, Power Plants and Oil and Gas production wells. They employ 200 staff across 6 offices.

## First Kelsey Jig 1300 supplied to Bolivia



### Roche Mining (MT) has supplied its first J1300 Kelsey Centrifugal Jig to Bolivia to the RGB Minera Huanuni tin operation near Oruro.

Peter Barker, Roche (MT)'s Area Sales Manager, said the order follows two years of extensive testwork on Huanuni's fine tin tails to develop the most effective technology solution.

"Previously supplied equipment included spiral separators supplied in 2003, which is now complemented by the installation of the J1300, to enhance the recovery of tin in their gravity circuit," said Peter.

"The order also includes an Electrical Management System (EMS) & commissioning package, with Roche (MT) providing technical support on the ancillary plant to ensure a smooth integration of the J1300 with the other equipment in the new circuit.

The J1300 Kelsey Centrifugal Jig has demonstrated its effectiveness in the recovery

of fine tin tails, and this is the second Kelsey product to be supplied to Bolivia, the first being the larger J1800 model to Comsur back in 2000.

The unit was manufactured at Roche (MT)'s Carrara facility and is en route to the Bolivian site, with installation and commissioning of the system to take place in early 2006.

Once the Jig systems proves it can achieve the expected grade and recovery, this technology may way be integral in Huanani's future expansion plans.

Pictured above: the Huanuni tin mine in Bolivia is the first in the country to place an order for Roche (MT) proprietary technology.

## Testwork and plant design for FMG



**Roche (MT) recently completed the prefeasibility design of an iron ore beneficiation plant for Australian company Fortescue Metals Group (FMG).**

Dale Henderson, Roche (MT)'s Business Development manager – Eurasia said, FMG is hoping to bring into production many of the stranded ore resources that presently exist in the Pilbara region of Western Australia, and Roche (MT)'s metallurgical services department has been working to help them evaluate the technical viability of beneficiating this material.

"Over 70 tonnes of drill core sample was sent to our Carrara facility for rigorous testing, to understand the yield and recovery achievable from the FMG reserves and the development of a mineral processing flowsheet," said Dale.

"The testwork involved conditioning samples using a drop tower, jaw crusher and screens, to best simulate the mining process prior to separation, and multiple separation techniques were applied to the sample including allmineral jigs for processing both the Fine and Lump ore fractions, and Roche (MT) proprietary equipment including MD spirals and the Reading Wet High Intensity Magnetic Separators (WHIMS)," he said.

"Following testing the Metallurgical Services team prepared the final beneficiation plant flowsheet that would provide the highest yield for FMG, which contains three unit processes: Lump Jigs, Fine Jigs and Spirals.

We look forward to working with FMG to further develop this project.

Pictured above: one of the many stages of testwork involved in treating the FMG sample.



# Q&A with Dolf MacHunter

*Multiple Concentrates from  
Wet Concentrator Plants*

**Roche (MT)'s Principal Technologist, Dolf MacHunter, recently completed a paper investigating the production of multiple concentrates from a wet concentrator. We asked Dolf a few questions about multiple concentrates and the downstream benefits such an approach may provide operations.**

### **What can the introduction of multiple concentrates offer processing operations?**

Typically the Heavy Mineral Concentrate (HMC) from a mineral sands plant contains a wide range of different minerals including leucoxene, garnet and sillimanite (light heavy minerals) and ilmenite, Rutile and Zircon (very heavy minerals). Traditionally Very Heavy Mineral (VHM) components of heavy mineral suites are recovered preferentially to the Light Heavy Minerals (LHM); however, more often these days increased recoveries of LHM are also required.

In order to do this with a single Heavy Mineral Concentrate (HMC) circuit, it invariably requires lowering the HMC grade, which can have significant transport and MSP circuit implications. However, if we design a wet circuit with, for example, two HMC outputs we increase the recovery of the LHM component into one concentrate (usually concentrate 2) while also maintaining a high grade concentrate 1.

Consequently, if we could generate two different heavy mineral concentrates from the gravity concentration plants, one rich in light heavy minerals and the other rich in very heavy minerals, the mineral separation plant design could be simplified and designed specifically for these two different feed types, providing operators with a more efficient MSP circuit.

### **What are the direct benefits of introducing multiple concentrates in gravity concentrator plants?**

In most existing mineral separation plants the wide range of minerals in the plant feed stream results in the need for a complex separation flowsheet to separate these minerals into discrete high grade mineral products. We believe we will see direct benefits in the operation of the Mineral Separation Plants, as the result of two specific feed types with circuits tailored for VHM rich HMC and LHM rich HMC streams. Although we have not yet quantified the benefits, we believe that future work in this area will also show that the plant flowsheet can be simplified as a result.

Introducing a spiral circuit that produces multiple concentrates also offers operators a way to treat the LHM stream, which may be particularly beneficial for operations where there is a reasonably significant amount of light heavy material associated with the very heavy minerals, and where this LHM fraction adds to the bottom line of the project.

**If you would like further information on multiple concentrates, or if you would like a copy of Dolf's complete paper on the subject, please contact [info@rochemt.com.au](mailto:info@rochemt.com.au)**

## **Roche (MT) welcomes new clients in Brazil**



**Roche (MT)'s Brazilian team recently sold equipment to a new client, HSAK Mineração a junior gold mine in north east Brazil.**

Pictured above: Roche (MT)'s Mucio Lima and Raphael Cardoso and Hilberto Speck, who proudly purchased LG7 twin spirals and a Gemeni GT1000 for the mine.

We look forward to assisting them with their mineral separation needs in the future.

## **Commissioning successful for Sons of Gwalia**

**Roche (MT) successfully commissioned the installation of new spirals as part of Sons of Gwalia's Wodgina plant upgrade in February.**

Marc Wellsted, Area Sales Manager - WA, said the \$1.3 million order for 234 new MG4BF spiral starts and 12 Holman 8000 single deck shaking tables were supplied as part of the overall plant upgrade, which was carried out by Roche Mining (JR).

"For efficient use to separate tantalum, minor adjustments were made to the equipment to ensure its ability to cater to the coarser and abrasive feed characteristics," said Marc.

"Additional poly thickness was included on the spiral trough and the tables were engineered to cater for particles up to a maximum of 2mm diameter, and also included a 10 degree tilt option should it be required," he said.

Sons of Gwalia has been using MD Gravity Separation technology for many years, and this order demonstrates Roche (MT)'s longevity of both technology performance and reputation in the separation of tantalum," he said.