



FOOTPRINT

NEWS FROM GEKKO SYSTEMS PTY LTD

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San José Expands ILR Installation

South American mining company, Minera Santa Cruz, has ordered an additional five InLine Leach Reactors (ILRs) for its San José mining project in the Santa Cruz province, Argentina. The order comprises Gekko Systems' innovative ILRs, purpose-designed silver electrowinning cells, and associated equipment.

Gekko Systems' technological and design ingenuity, combined with Hochschild's gold and silver mining expertise, has produced unprecedented recovery rates from flotation concentrates. The San José joint venture set intensive leach ILR target recovery rates for gold and silver at 96% and 97% respectively. These targets are consistently being achieved. Since opening in 2007, ILR recovery rates for the Selene mine have achieved 98% for both silver and gold.

"Extracting silver, as well as gold, via intensive leaching from flotation concentrates at such high recovery rates, and therefore being able to produce silver dore on site, provides mining companies with considerable market advantage", said Nick Katsikaros, Technical Specialist at Gekko Systems.

Current processing plant capacity at San José is 265,000 tonnes per annum. Minera Santa Cruz recently advised the market of its intention to double capacity during 2009. The order for five additional Gekko Systems' ILRs will supplement that expansion.



5 x InLine Leach Reactors supplement San Jose expansion

Minera Santa Cruz, jointly owned by Hochschild Mining Argentina Corporation (a wholly-owned subsidiary of Hochschild Mining PLC and Minera Andes SA), commenced gold and silver mining operations during 2007. Hochschild Mining PLC utilizes Gekko Systems' ILRs for its Selene silver and gold mining operation in Peru.

Gekko also installed a direct electrowinning system for the recovery of silver and gold. Gekko's electrowinning system was developed particularly for high-volume silver concentrates which incorporate auto sludge harvesting. In combination with the high efficiency of the ILR, a substantially higher overall recovery is obtained.

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PYTHON Gold plant ramps up to 50 t/hr

The development and installation of a Python 200 unit, operating at 20 t/hr, has resulted in a decision by Johannesburg listed gold mine, Central Rand Gold (CRG), to order and install two further Python units. The additional units are designed to operate at a throughput rate of 50 t/hr.

The Python 200 plant was installed by CRG in Johannesburg in October 2008 and has been commissioned and operated under contract by Gekko's South African office. The unit (pictured above) is operating at a throughput capacity of 20 tonnes per hour.

The 50 t/hr Python 500 design is nearing completion and construction of the initial unit is well under way. It is CRG's intention to operate them underground by the end of 2010. The systems have been designed to be transported down a conventional mine decline.

The Python keyhole processing concept offers significant environmental benefit with reduced comminution costs and a small footprint. High tech, modular and fully automated, the plant crushes, grinds and pre-concentrates ore leaving just 5-30% of concentrate for pumping to the surface.

"Keyhole processing eliminates the need to carry the entire ore body mass up to ground level", said Gekko's Technical Director, Sandy Gray. "Tailings are disposed in voids; haulage, operating and processing costs are substantially reduced;

and environmental impacts are minimised." Key features of the Python include a two-stage, high reduction crushing circuit, InLine Pressure Jig multi-stage gravity circuit, and high capacity flash flotation. The units can be built and shipped to site with speed and ease.

The new Python 500 design is a stepping stone to a broad range of throughput options. Modular expansions can also be included, such as milling or flotation, as dictated by the variability of the ore.

**"It's economical,
it's responsible, and
it's very exciting"**

Sandy Gray.

"We view the Python system more in line with the purchasing of earth-moving equipment where you have the available range of throughput options that can be customised for ore variability," said Sandy Gray.

The key benefits of the pre-design Python modules are savings on design time and costs, as well as the low-energy flow sheet, which saves both capital and operational costs.



Gekko's Python operations team at the Central Rand Gold mine



Python 200 installed at Central Rand Gold mine



Modular Gravity Pre-Concentration Reducing Plant Size and Operating Cost

Pirquitas is Silver Standard's recently commissioned silver, tin and zinc mine located in Jujuy, a province situated at 4,500 metres in the Argentinian Andes. Gekko designed and installed a pre-concentration module consisting of six IPJ2400s to increase the throughput of the milling and flotation circuit.

The Gekko InLine Pressure Jigs will pre-concentrate ore allowing a substantial increase in the plant feed rate prior to the ball mills. This is achieved by passing plus 2-12mm



Silver Standard increases mill throughput using IPJ pre-concentration

crushed material through the jiggling circuit, where the lighter (barren) material reports directly to tails. The total feed is reduced by fifty percent after the In Line Pressure Jig's treatment, recovering over 90% of the values in the concentrate stream. This allows an increase in the plant feed rate without economically compromising recovery. Prior to the InLine Jig process, the crushed material is screened and water added allowing it to be pumped to the Jigs. The concentrate from the Jigs is then de-watered before reporting to the grinding mill, where the water is recycled back to the beginning of the process, making it almost self-sufficient in water use. In the design process, a pump specialist was contracted to select appropriate pumps and motors to compensate the effects of the high altitude.

Significant capital and operating costs savings are achieved with this pre-concentration module, through the fully automated operating system, low power usage and efficient re-cycling of water. The ease of construction has allowed for faster commissioning and start-up of operations.

AusIMM Narrow Vein Mining Conference President talks about the future of mining

The mine of the future will be underground, predicts keynote speaker, Peter McCarthy, at the AusIMM Narrow Vein Mining Conference held at Ballarat, in the Australian state of Victoria.

The 20th Century was characterized by the development of large open pit, low-cost mines and the general economically-based theory of diminishing returns - that prices of commodities would decline over time as costs decline. Mr McCarthy notes, however, that there is a new theory emerging, reflecting environmental, social and community constraints and volatile risks to capital, as well as low exploration discovery rates (especially of large deposits). This argument forecasts that commodity prices will remain stable, or rise, over time. It envisages mines that are smaller, and have less impact on the environment and local communities by operating underground with a small surface footprint. The zero discharge mine of the future could be located in an industrial zone with a small surface infrastructure. The development of non-diesel trucking, or monorail ore management systems allows for

smaller ventilation systems, and a return to 2.5m x 2.5m headings. . . a return to human-sized operations – additional, smaller operations with underground processing and increased levels of automation.

Mr McCarthy also noted that the most significant change in narrow vein mining methods in the last 50 years has been the development of the radio remote or tele-remote LHD.



Peter McCarthy is President of the AusIMM, and co founder and Managing Director of AMC Consultants

Highly Commended at the 5th Annual Australian Mining Prospect Awards



Nigel Grigg receives award on behalf of Gekko Systems

The Australian Mining Prospect Awards aim to recognise and reward companies within the Australian mining industry which have demonstrated innovation and outcome excellence in a range of categories. Gekko Systems won the Highly Commended Award in the Minerals Processing Plant of the Year category for the second time in the award's five-year history. This award was for the Python underground processing plant, whilst the first award in 2006, was for Lihir Mining's Ballarat Goldfields plant.

Green, Clean and Lean

A green focus is an important design element of Gekko's new manufacturing facility. The new facilities feature insulated walls and roof, adaptive lighting, and a storm water reticulation and storage system. Large windows provide natural light and ambience. The high front section of this unique building is designed to allow for the construction of modular pre-concentrate plants (up to 14m under hook) and wet commissioning of equipment prior to disassembly and shipment to site.

Lean manufacturing and mining concepts are a critical part of Gekko's strategic thinking. "We plan to improve our internal efficiencies and increase returns for the mining sector generally through lean principles" said Gekko's Managing Director, Elizabeth Lewis-Gray

The Premier of Victoria, the Honourable John Brumby, visited Gekko to announce Government regional funding to support this exciting project. The whole Gekko team, as well as the Mayor of Ballarat, Councillors and other distinguished guests, were delighted to welcome him to the Gekko site



Marc Amos, Operations Manager, proudly surveys his new domain



The Honourable John Brumby announces Government funding at Gekko H/Q

Crack Shot!

Emma Crouch, a Design Engineer at Gekko, was a crack shot recently at the Australian National Pistol Championships, bringing home the gold medal in the 10 metre air pistol event. This outstanding achievement has been reached by Emma after having only taken up the sport three years ago.

Other successes achieved by Emma include team gold and silver medals, and an individual bronze medal at the Oceania Shooting Championships. Emma has been invited to compete in Singapore at the Asian Shooting Championships in July this year.



Emma proudly displays championship trophy

We wish Emma every success in her pursuit for Olympic team selection!

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