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COVER

Barloworld Power designed and assembled two Cat C175 diesel engine motivators to power up the Cat 7495 electric rope shovels as well as Cat MD6290 and MD6640 rotary blasthole drills at the Husab mine in Namibia and move these giant machines between pits. Here one of the motivators walks an electric rope shovel to the pit. See page 22 for further details.



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Miners at loggerheads over collapse of iron ore price

The current furore – I’m writing this in mid-May – over iron ore production and prices in Australia gives, I think, an indication of just how important the mining of this commodity is to the Australian economy. Not only has the dispute put mining companies at each other’s throats but it has also become a national political issue, with talk of a parliamentary inquiry into iron ore prices – and who has been responsible for driving them down.

I would guess that most South Africans would be inclined to believe that iron ore mining is as important to us as it is to the Australians and that we are one of the world’s top producers. After all, Sishen in the Northern Cape, which has a pit which now extends over about 14 km after six decades of mining, is generally perceived as being one of the world’s biggest iron ore mines.

The reality though is that on a global scale South Africa does not rate particularly highly as a producer of iron ore. We come in at number seven in the world rankings, producing – in 2014 – just 78 Mt of total global production of 3.2 billion tonnes. By far the world’s biggest producer is China (1.5 billion tonnes from a multitude of mainly small and inefficient mines) followed by Australia (660 Mt), Brazil (320 Mt) and India (150 Mt).

If one looks at individual iron ore miners, our biggest single producer is Kumba, which owns not only the Sishen mine but also Kolomela and Thabazimbi. These three mines between them produced just short of 50 Mt in 2014. This makes Kumba a fairly small producer in comparison to Vale (320 Mt in 2014 with 450 Mt a year a possibility within several years), Rio Tinto (234 Mt) and BHP Billiton (250 Mt).

The scale of the operations of the ‘big three’ is enormous. Vale, for example, produces over 100 Mt a year from just one mine – Carajás in northern Brazil – while Rio Tinto’s highly automated Pilbara operations in north-western Australia encompass 15 separate mines, four independent port terminals and a 1 700 km rail network. BHP Billiton has seven mines in the same area.

Getting back to the ongoing dispute in Australia, it revolves around claims made by Andrew Forrest, the founder of Fortescue Metals Group (FMG), a big player in the

Pilbara, that BHP Billiton and Rio Tinto have been deliberately driving iron ore prices down by pumping up production in the face of falling global demand with the intention of forcing smaller and less efficient rivals out of business. He and FMG have even created a website – ‘Our Iron Ore’ – which details the impact of falling prices on Australia’s economy and which urges action to create a sustainable iron ore mining industry in the country.

Forrest recently explained his views at length in an article in Australia’s *Daily Telegraph*. In it he says that prices have “fallen off a cliff not just because of international forces beyond our control but because of the words and actions of companies, particularly London-based multinationals who mine and export our iron ore.” He goes on, “Now I believe in free markets, but when CEOs pursue business strategies which flood the market, in a last man standing race to the bottom, we don’t have free markets.”

Representatives and allies of BHP Billiton and Rio have hit back, both on and off the record, claiming that FMG – now a roughly 160 Mt/a producer after starting from nothing a decade ago – has had a far bigger percentage increase in production in recent years than they have and that any attempt to ‘fix’ prices would simply open the way for rivals such as Brazil to take market share from Australia. BHP Billiton’s Chief Executive, Andrew Mackenzie, has also labelled the call for a parliamentary inquiry into iron ore prices “a ridiculous waste of taxpayers’ money” and argued that low prices are a reflection of market forces – of simple supply and demand.

The whole debate is an interesting one and I can certainly see both sides of the argument. But ultimately I think Forrest is wrong. The reality is that markets rule and that there is currently simply too much iron ore production capacity in the world. Moreover, if Rio and BHP Billiton – the two lowest cost producers in the world – believe that they can boost tonnages and still make a profit, good luck to them. As long as they’re not in collusion to drive rivals out of business via predatory pricing, they’re perfectly entitled to follow growth strategies. Perhaps the real moral of the story is that mining is a tough business and that only the fittest survive.

Arthur Tassell



“Now I believe in free markets, but when CEOs pursue business strategies which flood the market, in a last man standing race to the bottom, we don’t have free markets.”

Andrew Forrest,
founder of iron ore
producer, Fortescue
Metals Group



Metallon's Shamva mine, where underground mining first started in the 1890s. It is Metallon's second biggest producer after How mine (photo: Metallon).

Metallon's quarterly gold production below budget

Metallon Corporation, Zimbabwe's biggest gold producer, reports that its gold production in Q1 2015 was 24 385 ounces, 15 % below the budget of 28 654 ounces but 8 % higher than for the same period last year.

The Group C1 costs and all-in-sustaining costs for Q1 2015 were US\$772 and US\$1 007 per ounce respectively. There has been a significant improvement of costs from Q1 2014. As production and cost

efficiencies improve throughout the year, Metallon expects these costs to reduce further.

Metallon's gold production guidance for 2015 remains approximately 150 000 ounces and all-in-sustaining costs of approximately US\$970 per ounce are expected in 2015.

The gold production shortfall for Q1 2015 was mostly due to equipment breakdowns (hoist, crushers and mills).

This is being addressed through a phased equipment replacement programme. New locos and crushers have been ordered for Arcturus mine and a 4¼ ft crusher is also to be ordered for Mazowe mine.

There were some highlights during the quarter, with How mine near Bulawayo milling an all-time record tonnage of 32 130 tonnes in March 2015.

Work has commenced on the sands retreatment project at Mazowe mine. Metallon has appointed Baldmin Engineering in South Africa to build a 60 000 tonne per month plant for the project. Fabrication of the plant is underway at the factory in South Africa and was approximately 50 % complete (as of 22 April). Construction of civil engineering works at Mazowe commenced in March 2015 and plant erection on site will begin in early June 2015, taking two months to complete. Commissioning of the plant is expected in September 2015.

In March 2015, Metallon also appointed Fraser Alexander to construct new tailings dams at Shamva mine and Mazowe mine. Construction of the tailing dams will be in stages, with commissioning of the first stage six weeks after construction has begun.

At Redwing mine, which is currently not producing, development works above 6 Level have commenced and plant



Underground at How mine. Located near Bulawayo, How is Metallon's flagship and produced approximately 55 000 ounces of gold in 2014. It has been operational since 1942 (photo: Metallon).



refurbishment is to start in the second quarter.

Metallon also reports that it has appointed KBA (Pty) Ltd as New Projects Co-ordinator. KBA will be working closely with the Metallon New Projects Team in Zimbabwe on the 2015 Implementation Programme. The key areas of project management will be the new sands retreatment plant at Mazowe, the Mazowe plant and underground upgrade and the new tailings dams at Mazowe and Shamva mines. Another key focus will be bringing Redwing mine back into production through mine dewatering and plant and underground refurbishment.

Mzi Khumalo, Chief Executive and Deputy Chairman of Metallon Corporation, commented: "There have been some challenges in production during the first quarter due to equipment breakdowns; however, these issues have been addressed through the equipment replacement programme. Despite this we have still seen an improvement in production of 8% from Q1 2014 and work has advanced with our new projects. In the second quarter of 2015, we look forward to continued improvement in production and further progress in projects implementation. Metallon remains committed to a reduction of costs and remaining a low cost gold producer."

Metallon has four mines – How, Shamva, Mazowe and Arcturus – in production with a fifth, Redwing, due to be re-opened this year. All are underground operations. ■

Pickstone-Peerless heads for production

VAST (formerly African Consolidated Resources), the AIM-listed resource and development company, has announced an update on progress on development at the Pickstone-Peerless gold mine in Zimbabwe.

As announced on 17 October 2014, Pickstone-Peerless, situated in the midlands of Zimbabwe, is being jointly developed by VAST's Zimbabwean subsidiary and Grayfox Investments (Private) Limited via a co-owned operating company. The co-owned operating company has a capex budget of US\$4 million equity, funded by Grayfox, with VAST retaining management control via a chairman's casting vote.

As stated in the company's results for the six months to 30 September 2014, mine commissioning at an initial mining rate of 10 000 tonnes per month from the opencast oxide gold cap was planned for the beginning of H2 2015 with first positive cash flows later in H2 2015.

All regulatory requirements are in place, including the mining permit, environmental approval and works plan approval.

A decision was made to acquire slightly enhanced processing equipment to facilitate and reduce the cost of the next phase of expansion. The increased working capi-

tal requirement is planned to be provided by facilities from local financial institutions which have indicated interest in the project. These facilities are now in the process of negotiation.

The majority of the required senior and middle management personnel are in place. A significant part of the operational staff is available. There are ample experienced mining specialists in Zimbabwe and no personnel shortages are expected.

The mining contractor is on site establishing his required facilities. Elements of the mining fleet are also on site and preparation of the opencast mine is underway. Pit preparation will be undertaken during May 2015 and an ore stockpile (one month) will be created in June 2015, ready for hot commissioning and first production in August 2015. Annualised gold production of 10 000-12 000 oz Au is expected from the initial mining rate of 10 000 tonnes per month. Grade control drilling has commenced.

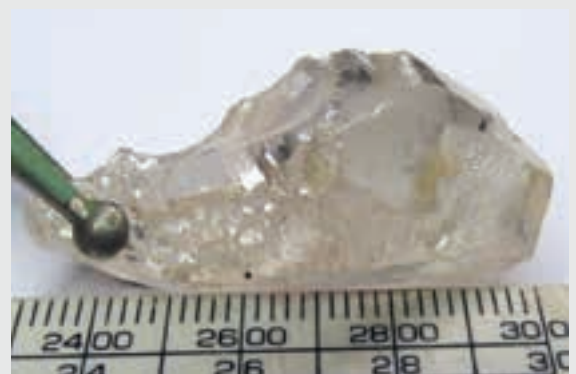
Refurbishment of the existing carbon-in-pulp (CIP)/carbon-in-leach (CIL) facilities and the civil engineering for the new facilities is 70% complete. The new mill and crusher ex-China has arrived in Durban, South Africa, and (as of early May) was en-route by road to the mine. ■

Lucapa recovers 63-carat gemstone at Lulo concession

Lucapa Diamond Company, listed on the ASX, has announced the recovery of another large diamond – an exceptional 63,05 carat stone – from the alluvial mining operations at the Lulo diamond concession in Angola.

Testing with a Yehuda colorimeter has confirmed that the 63,05 gem is a Type IIa diamond, the rarest category of diamond in the world.

The diamond was recovered from mining area 31 at Lulo, which is north of the 150 t/h diamond processing plant. It is the third largest diamond recovered at Lulo behind the 131,40 carat and 95,45 carat gems recovered from the original bulk sampling activities much further south of the plant.



The 63,05 carat stone recovered from the alluvial mining operations at the Lulo diamond concession in Angola (photo: Lucapa)

In November 2014, Lucapa and its partners signed a 35-year mining licence agreement to mine the alluvial diamonds at Lulo within a 218 km² area which includes more than 50 km of the Caculo River, its valley and terraces. Alluvial diamond mining commenced in January 2015. ■



A view of the Mothae project site in the highlands of Lesotho (Photo: Lucara Diamonds).

Paragon to acquire Lesotho's Mothae diamond project

Paragon Diamonds Limited, the AIM-quoted diamond development company, has signed a Memorandum of Understanding (MOU) with Lucara Diamond Corporation, a TSX-quoted mining company, to acquire a 75% interest in and operate the defined Mothae kimberlite resource. Mothae is located only 5 km from the world-class Letšeng diamond mine in Lesotho.

According to Paragon, Mothae represents a low-cost opportunity for the company to generate significant value for shareholders through the recovery of additional large high value diamonds in tandem with the commencement of Stage 1 production at Paragon's nearby Lemphane kimberlite pipe project.

Mothae adds indicated/inferred resources of 39 Mt at 2,7 cph at US\$1 060/ct

to Lemphane's 48 Mt of kimberlite under evaluation and development. Developing Mothae and Lemphane concurrently will allow Paragon to benefit from significant economies of scale resulting in cost savings for equipment, management and services. Paragon says it expects combined revenues of approximately US\$36 million in the first year of full production based on current resource estimates.

An existing processing plant and related infrastructure at Mothae is part of the acquisition cost. It will be upgraded at a cost of approximately US\$5 million, which will allow initial mining of 0,75 Mt/a, rising to 2 Mt/a within two years. Upgrade works are due to commence as soon as the acquisition is closed which is expected to be in Q2 or early Q3 2015.

"This hugely important acquisition

re-rates and simultaneously de-risks Paragon's business model, and elevates us overnight into an important and sizeable diamond company," comments Paragon's Executive Chairman, Philip Falzon Sant Manduca. "Our Dubai-based partners, ITGT, have agreed to provide the entire funding, for both Lemphane and Mothae, of approximately US\$28 million, to allow us to accelerate the combined production schedules of both assets. I do not expect any undue delay in signing the acquisition contract, as the Lesotho Government has been informed of the intended acquisition at every step of the process, intensively so in the last two weeks, and is encouraging a rapid commencement of the production schedule, which suits all of us.

"Mothae is the perfect fit for Paragon at this stage of our growth and business development. We have agreed to incorporate the entire Mothae senior and mid-level Lesotho-based management teams into Paragon within our Lesotho subsidiary, Meso Diamonds. This should ensure continuity along with the efficient recruitment of experienced and proficient professionals, and adds immense depth to our local capabilities both with the relationship with the Government of Lesotho, as well as in all the critical administrative and budgetary matters with mining."

Production can be re-established at minimal cost within a four-month period,

Biennial coal processing conference

The Southern African Coal Processing Society (SACPS) biennial conference is to be held from 25-27 August 2015 at the Graceland Hotel Casino and Country Club in Secunda.

Peter Bethell and Ernst Venter have committed to keynote addresses and will be joined by international presenters from India, Germany and Finland. The event will have sponsored networking booths running under the banner of Coal Africa.

The conference is registered with the

Engineering Council of South Africa (ECSA), and is awarded 3 CPD points for the full conference or 1 CPD point per day. Each delegate will receive a copy of the new *Coal Preparation Handbook*, due for launching at the conference.

Details are available from Ann Robertson at annrobertson@absamail.co.za. She can also be contacted on tel (+27 11) 433-0063. Registration forms can be found on www.sacoalprep.co.za. ■

at a rate exceeding 100 t/h and, once established, development will commence on a full-scale 250 t/h plus long-term main production facility which is earmarked to be operational and producing within 18 months of initiation. Production will initially be concentrated on the high-grade/high-value Southwest/Southcentral resource, which has been shown from previous drilling programmes to exceed 25 Mt and over 0,7 Mct with an in-situ value of US\$867 million. This high value kimberlite can sustain full production, as planned, for a minimum of 12 years, yielding annual revenue in excess of US\$60 million, says Paragon.

Paragon already has extensive knowledge of the lay-out and internal structure of the existing process plant, and is working with its plant designers and manufacturers to rationalise the design, upgrade the capacity and install the latest X-ray Transmission technology (XRT) in order to increase capacity to in excess of 100 t/h and recover diamonds in excess of 200 carats at high efficiencies and with minimised likelihood of breakage. ■

Tom Dale retires from CEO position at Sedibelo

Sedibelo Platinum Mines, whose main asset is the Pilanesberg Platinum Mine (PPM), has announced that its CEO, Tom Dale, is to retire. He has been with Sedibelo and its predecessor companies since 2009. During his four-year tenure, he was instrumental in building Sedibelo's operations and oversaw significant increases in output and recoveries, and reductions in unit operating costs. The company recently reported its maiden year profit for 2014.

He will continue to be associated with Sedibelo as an advisor so that his in-depth knowledge of the company and its operations will be available to the management team and the board during the transition.

The search for a new CEO has commenced. Erich Clarke, the current CFO, will act as CEO for the interim period, and be closely supported by Casper Badenhorst, the current COO. They will report directly to Arne H Frandsen, who has been appointed Executive Deputy Chairman of Sedibelo,

responsible to the Board. Under their leadership, Sedibelo will continue the development of its shallow orebodies, and its preparations for its IPO once commodity and equity markets improve.

Chairman Brian Gilbertson said: "I have worked with Tom since the eighties, and he is one of the true stalwarts of our industry. On behalf of the board and our shareholders, I want to express our gratitude for the unique contribution Tom has provided. Under his leadership, Sedibelo has grown into an exciting PGM producer. I wish him all the best in his well-earned retirement. That said, I am delighted that Tom has agreed to continue in a part-time capacity for a transition period, as adviser to the board and management."

Dale arrived as a young mining engineer in South Africa more than 40 years ago. He started at JCI and for most of his career he worked in hard rock mining, leading the turnaround of Randfontein gold mine and later working at Gengold and Gold Fields. ■

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SRK's Cape Town office makes inroads in Suriname



The Bakhuis bauxite project exploration camp, West Suriname.

Starting a mining operation in a country covered mainly by pristine rainforest is bound to be a challenging task, but SRK Consulting's Cape Town office has for over a decade been successfully applying its environmental and social impact expertise in just such a place.

The fact that Suriname, South America's smallest independent country, is almost 9 000 km away across the Atlantic Ocean has not prevented SRK partner and principal environmental consultant Chris Dalgliesh and his team from developing strong working links there with a substantial network of clients and local consultants.

"Our work in Suriname began in 2003, when we were asked to assist our SRK colleagues in the United Kingdom with an urgent project," said Dalgliesh. "We placed one of our environmental specialists in Suriname for a three-month period, and this led to us working on other contracts

and becoming increasingly involved with colleagues in our field in Suriname."

This initial project led to SRK involvement in about half a dozen mid-size environmental impact assessments (EIAs) in Suriname. The work progressively raised SRK's profile until a very large bauxite venture engaged its input. The project envisaged a potential mine life of 50 years or more, and covered a massive 2 800 square kilometre concession – therefore holding significant environmental and other impacts.

"This was a mega-project with very high stakes for all involved, and we managed the EIA process for over three years, with a large team almost permanently on the job," he said. "It was an extremely busy time in which we made close to 50 visits to site and attended meetings all over the world with the various stakeholders and the client."

Given its location, the project required

an assessment of every conceivable impact a mine could have on its environment, said Dalgliesh.

"Looming large was the prospect of a mine impacting the state of Suriname's indigenous forest, and there was little baseline data to work from," he said. "Indigenous Amerindian communities with unofficial title to land, could be affected; and a suite of international Non-Governmental Organisations also closely scrutinised the EIA process."

The scope of the EIA extended beyond the mine site to include the transportation route that the mined bauxite would have to traverse – including 150 km down the Corantijn River on the border with Guiana, 250 km along the coastline, and 75 km up the Suriname River to an alumina refinery.

"Perhaps one of our most important contributions to date has been to set the benchmark for best practice in environmental and social impact assessments, as Suriname is still in the process of developing its own regulations in this regard," said Dalgliesh. "Our experience in applying global standards such as the Equator Principles – and our familiarity with relevant regulations in mining countries around the world – meant we were well placed to conduct work of the highest quality in Suriname."

SRK's close relationship with the country's National Institute for Environment and Development (Nationaal Instituut voor Milieu en Ontwikkeling in Suriname, or NIMOS) has led to its engagement by government to help accredit local skills. As part of this process, Dalgliesh recently conducted training on behalf of NIMOS for certain of the Institute's staff members, as well about 30 local environmental consultants.

Other than bauxite, oil is also an important commodity for Suriname, and SRK has conducted EIAs for state-owned, integrated oil company Staatsolie; other government clients have included the country's most important energy supplier, Energiebedrijven Suriname (EBS).

"Making communication easier for us is the fact that, while Dutch is the official language, it is spoken in a manner that Afrikaans-speakers can readily understand – quite a rare cultural advantage for our Western Cape team!" said Dalgliesh. ■

Wescoal granted water use licence for Elandspruit

Wescoal Mining, the junior coal miner and supplier, has been granted a water use licence for its Elandspruit mine and will commence with project execution imminently according to acting CEO Waheed Sulaiman. The fast-tracking of this project will be enhanced with the aid of a R200-million funding facility from Investec Bank Limited through its Corporate and Institutional Banking Division.

"It is a benchmark in the group's development as Elandspruit will become our flagship mine doubling our annual coal

output from 2 Mt to 4 Mt by 2016 with a 12 to 15 year lifespan," Sulaiman says.

"In anticipation of acquiring the licence, we have ensured that everything is in place for us to go into production as safely and quickly as possible. The Muhanga coal processing plant which we purchased for R40 million is just 18 km from the mine and has been processing since November 2014 using excess Run Of Mine (ROM) in the market to supply the existing customer base. It will now process the Elandspruit ROM as planned." ■

Commissioning of New Liberty gold mine underway

Aureus Mining Inc, the TSX- and AIM-listed exploration and development company focused on gold in West Africa, reports that construction at its New Liberty gold mine in Liberia is on track for the project to deliver first gold by the end of May 2015.

The hot and cold commissioning phases of the project have begun, with work currently focused on the front end infrastructure, while commissioning has been fully completed on the primary jaw crusher and secondary cone crushing circuits.

Mechanical and electrical cold commissioning has been completed in the screening circuit, the conveyor systems are all completed with belts successfully tracked, trained and running and the ball mill has been fully installed with all alignments completed. The electro-winning circuit is now mechanically installed and leak testing has been completed. The electrical supply installation is also well advanced in this area.

The Komatsu PC2000 excavator was

commissioned during March and is now working in the Larjor pit and mining activities are advancing well with the focus on the weathered eastern and western ends of the Larjor pit, where mining levels are being mined down to the 65 RL elevation. Mining has also commenced in the weath-

ered zone of the Kinjor starter pit, with the first flitch on the 67,5 to 65 RL elevation now completed. The flood bund around the Larjor pit has been completed ahead of the wet season, protecting the mining pit from water ingress during the approaching wet season. ■



View of the ROM tip and the primary and secondary crushers at New Liberty. The mine is due to deliver its first gold shortly (photo: Aureus Mining).



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First Quantum's Zambian projects now ramping up



The new Kansanshi smelter is expected to process 1,2 Mt/a of concentrate to produce over 300 000 t of copper metal once in full operation (photo: FQM).

In its latest quarterly report for the three months ended March 31, 2015, First Quantum Minerals (FQM) notes that technical commissioning of the new smelter at its Kansanshi copper mine near Solwezi in north-west Zambia has been successfully completed. It says that the ramp-up of the facility is progressing well with a subsequent reduction in the mine's copper concentrate inventory and use of by-product sulphuric acid in the mine's oxide and mixed ore circuits replacing third-party purchases.

Also in Zambia's North-Western Province, FQM is developing the Sentinel

open-pit copper mine. It reports that Sentinel's Train 1 is progressing towards steady-state operations and that ramp-up during the peak of the wet season achieved periods above nameplate design throughput. Commissioning of Train 2 continued during the quarter. Commercial production for the mine is currently expected in Q3 2015.

"We're very pleased with the rapid ramp-up of the smelter which reflects the diligent work done throughout the planning and construction of the project to ensure this outcome. As a result, Kansanshi's concentrate inventory is being

reduced and sulphuric acid from the smelter is being used in the mine's processing facilities in higher volumes and much earlier than anticipated in our operating plan," noted Philip Pascall, First Quantum's Chairman and CEO.

"Likewise, the ramp-up of the Sentinel mine is steadily improving as the wet season in the region eases. Over the remainder of the year, we expect the company's total production and unit costs to reflect the benefits of having a dedicated smelter, Sentinel's increasing production and the opportunity at Kansanshi to treat more mixed and oxide ores with free acid from the smelter."

He added that Kansanshi's Q1 performance was in line with previously-provided guidance for 2015. "In that guidance, we mentioned that the mine's output was expected to be at its lowest for the year during Q1 because we intended to limit sulphuric acid consumption, and hence production, until free acid became available as a by-product from our smelter. The latter is now being realised."

The Kansanshi mine is Africa's biggest copper mine and in 2014 produced 263 000 tonnes of copper as well as 155 000 ounces of gold. The new smelter is expected to process 1,2 Mt/a of concentrate to produce over 300 000 t of copper metal once in full operation. It will also produce 1 Mt/a of sulphuric acid as a by-product. The new Sentinel mine is costing US\$2 billion to develop and has the capacity to produce 300 000 t/a of copper concentrate. The project includes a modern, full-service town. ■

DRA secures milestone project in Sierra Leone

Global engineering and project delivery company DRA has announced that it has been awarded Phase 1 of the Gangama mineral sands project in south-west Sierra Leone by Sierra Rutile Limited (SRL).

SRL is a leading producer of mineral sands and reportedly the world's second largest producer of natural rutile. The company's lease in Sierra Leone is the world's largest known deposit of natural rutile and has been mined since the early 1960s.

The 500 t/h Phase 1 project has been awarded to DRA on a lump sum turnkey (LSTK) basis. Design, procurement, con-

struction and commissioning will be carried out by DRA's internal specialist LSTK Projects Group. Beneficiation in the new process plant will include scrubbing, screening, desliming and gravity spirals recovery. Concentrate will be further upgraded on site by the existing beneficiation plant.

Paul Thomson, DRA's global CEO, comments: "This is an especially pleasing award for DRA and represents something of a milestone in our 30-year history. It is a significant mineral sands project for us, and our first project in Sierra Leone. It adds to our growing complement of recent

projects in West Africa, which includes the New Liberty gold project in Liberia for Aureus Mining and the Yaramoko gold project in Burkina Faso for Roxgold.

"We've been working closely with the Sierra Rutile team on studies and alternative designs for the past nine months. This period included a joint value engineering exercise which resulted in cost savings of several million dollars. This demonstrates our ability to develop optimum solutions for projects, based on innovative thinking by the teams of both DRA and our client."

Site works on the project will begin shortly with commissioning expected in April 2016. ■

New platinum company makes JSE debut

Zambezi Platinum (RF) Limited (Zambezi Platinum), the special purpose vehicle created to house the newly constituted HDSA shareholding in Northam Platinum, successfully listed as a debt issuer on the main board of the JSE recently.



Paul Dunne and Lazarus Zim celebrate the listing on the JSE of Zambezi Platinum (photo: Philip Mostert Photography).

Zambezi Platinum will beneficially hold nearly 16 million Northam shares, amounting to approximately 31,4 % of the total issued ordinary share capital of Northam. Zambezi Platinum's preference shares provide an affordable opportunity for a broad range of investors, over and above those directly invested in Northam, to gain exposure to the PGM sector.

Speaking at the JSE listing function, Chairman Elect of Zambezi Platinum Lazarus Zim described the nature of the transaction which saw the establishment of Zambezi Platinum and which has revitalised Northam's empowerment status, as unique and unprecedented.

"Unlike many prior BEE transactions, everyone party to this transaction is protected from the vicissitudes of the market through the ring-fencing of Zambezi," he said. "With Northam's strong balance sheet and visionary and energetic leadership, we can now pursue value-accretive growth opportunities which will benefit shareholders and all stakeholders alike."

Northam Chief Executive Paul Dunne added, "This landmark transaction recognises the fundamental value of Northam along with its growth potential. Now, with meaningful and sustainable empowerment participation, we are well poised to realise further upside." ■

Golder Associates improves its B-BBEE rating by three levels

Golder Associates Africa has in the short space of a year improved its Broad Based Black Economic Empowerment (B-BBEE) contributor rating by three levels. It has leapt from level 6 to level 3, with Level 1 being the highest possible rating. The integrated ground engineering and environmental solutions organisation's MD, Dr Ralph Heath, attributes the significant improvement primarily to increased black ownership.

He says, "The recent ownership transaction involving the Golder Empowerment Trust effectively increased black ownership by another 25 per cent. This allowed us to score 23 out of a potential 25 points for ownership on our Construction Generic Enterprises Scorecard."

The company has also changed its board profile, which now includes Heath and three new directors, Dr Wendy Ngoma, Charles Naidoo (Lead: Engineering Services) and Spencer Eckstein (Lead: Legal and Risk/GAIMS).

Dr Ngoma who is the former Deputy Director General of the Department of Art, Science and Technology, and Lawrence Baloyi, who is the head of the University of Pretoria's Innovation Support programme, serve on the board of the recently formed Empowerment Trust with Collen Monokofala (Senior Hydrogeologist) and Spencer Eckstein. The main objective of the Trust is to give effect to Golder's commitment to implementing its Black Economic Empowerment initiatives. ■



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Strong performance by Zambian emerald producer

In an operational update for the three-month period ending 31 March 2015, London-based Gemfields reports that its 75 %-owned subsidiary, Kagem Mining Limited in Zambia (covered in our April issue), produced 9,9 million carats of emerald and beryl (versus 3,6 million carats in the quarter ending 31 March 2014) at the Kagem emerald mine south of Kitwe.

The average grade was 355 carats per tonne (versus 198 carats per tonne in the quarter ending 31 March 2014), a 79 % increase. Total operating costs of US\$9,8 million were recorded (versus US\$6,6 million in the quarter ending 31 March 2014), largely on account of the increased scale of mining activity being carried out across the mining licence.

The fourth phase of the high wall push-back programme in the main Chama pit continues to be advanced by both Kagem's in-house team and a third party contractor. A total of approximately 4,0 Mt of waste was moved during the quarter, with a slightly accelerated rate of contractor waste mining now likely to result in completion of the push-back project ahead of schedule.

Kagem's trial underground mining project was placed on hold towards the end of 2014. In the interim, and given the continued viability of open-pit operations, supported by the robust emerald prices and well contained unit costs, Kagem says it enjoys a high level of flexibility to continue to extend the open-pit operations through further pushbacks.

Gemfields also owns 75 % of Montepuez Ruby Mining Limitada in Mozambique. During the quarter approximately 1,4 million carats of ruby and corundum were extracted (versus 1,1 million carats in the quarter ending 31 March 2014) at the Montepuez ruby mine.

"This quarter has once again delivered pleasing results for Gemfields," comments Ian Harebottle, CEO of Gemfields. "We have achieved considerable increases in production volumes at both the Kagem and Montepuez mining operations, underpinned by constant growth in market demand for these products as is evidenced by the ongoing successes achieved at our auctions, all of which validates our decision to expand the scale of the operations across our key sites." ■



Mining operations in the main Chama pit at the Kagem emerald mine (photo: Arthur Tassell).

WorleyParsons embarks on Golpu feasibility study

Following approval of the prefeasibility study (PFS) prepared for the greenfield Golpu gold/copper project in Papua New Guinea, WorleyParsons has now embarked on the feasibility study stage. Adopting an innovative approach, the PFS split the project into two stages, the first targeting the upper higher value portion of the orebody, which is expected to have a 27-year life, followed by a second stage encompassing the remaining ore reserve.

The Golpu project feasibility is working up technical, procurement and operational plans to create a long-life, world class mine in Papua New Guinea's Morobe Province. The project comprises an underground mine and process plant with significant associated infrastructure to exploit this prime deposit.

WorleyParsons' Johannesburg Mining Centre of Excellence began work on the PFS in January 2014 and by the end of that year had confirmed a compelling business case for the life of the mine using the two-stage approach. WorleyParsons' scope for 2015 now comprises a Feasibility Study for Stage 1, a PFS for Stage 2 and Early Works Engineering for Stage 1.

"We're delighted that the business case has been given the green light," says WorleyParsons' Rob McGill, Divisional Manager, Mining Studies. "This is the biggest international project study undertaken by WorleyParsons' Mining Centre of Excellence here in Johannesburg, and it has effectively demonstrated our ability to leverage the underground mining and

processing capability that resides in our South African hub to add value to customers globally."

WorleyParsons' in-depth local mining, processing and infrastructure expertise, coupled with the sharing of knowledge and skills across the entire mineral and resources value chain through the greater WorleyParsons organisation, will ensure the best possible outcome for the project.

The client on the project is WGJV, a 50-50 joint venture between Newcrest Mining Limited and Harmony established to facilitate mining, project and exploration activities for the two parent companies.

WorleyParsons RSA recently consolidated its local project delivery capabilities under one roof, effectively establishing the company as one of the largest multi-disciplinary engineering contractors in South Africa. ■

Sibanye updates on its organic growth projects

Reporting on its organic growth projects in its operating update for the quarter ended 31 March 2015, Sibanye Gold says the pre-feasibility studies for the Kloof 4 Shaft and Driefontein 5 Shaft below infrastructure were completed in December 2014, both delivering higher forecast returns than the Group's internal investment hurdle rates. The projects have added approximately 1,1 Moz to the Driefontein and 0,5 Moz to the Kloof gold mineral reserves.

Detailed feasibility studies for both projects remain on schedule for completion during the June 2015 quarter and, due to the favourable forecast returns, initial preparatory project site preparation and development commenced at Kloof 4 Shaft in January, with the Driefontein 5 Shaft project preparation planned to commence in July.

Regarding the West Rand Tailing Retreatment Project (WRTRP), Sibanye says a detailed feasibility study considering a phased development approach

for the WRTRP was completed at the end of the March 2015 quarter and is currently undergoing an internal technical and financial review. This study has incorporated the use of available surface infrastructure to reduce upfront capital and enhance value.

The infrastructure utilised includes existing gold plants and elution capacity at Driefontein and Kloof, as well as uranium processing capacity at the Ezulwini metallurgical complex.

Metallurgical test work undertaken during the study has further enabled refinements to the process design, resulting in reduced capital and operating costs. The outcome of the study will be released during the June 2015 quarter.

Sibanye now also owns the Burnstone project near Balfour. Designed as a shallow (~250 m to ~1 000 m), semi-mechanised mine, Burnstone – on which construction started in 2006 – produced approximately 38 000 oz of gold before being placed on

care and maintenance in mid-2012. It has a complete metallurgical plant with a name-plate capacity of 120 000 tpm.

Capital expenditure of R286 million was approved in July 2014 for a 15-month construction programme to complete critical pumping infrastructure and re-align the shaft steelwork, including the installation of shaft service pipes and cables critical in support of the mine build-up strategy. The infrastructure project is on schedule for completion by the end of September 2015 as originally planned and is forecast to be completed within budget. The feasibility study and development of the life of mine plan is on schedule for completion in the June quarter.

R150 million has been provisionally approved to commence mine development in 2015 with 2 000 m planned to be developed into the initial targeted mining areas by the end of 2015. During February, the development commenced with a total of 192 m completed for the quarter. ■

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Perseus Mining lays first stone at Sissingué gold project

Perseus Mining Limited, listed on the ASX and TSX, has laid the first stone at its second gold mine, the Sissingué gold mine in Côte d'Ivoire, at a ceremony held on site on 26 April 2015.

Subject to finalising debt funding

arrangements, Perseus plans to commence construction at Sissingué in the September quarter of 2015 after a revised Feasibility Study found the project to be technically viable, economically robust and strategically compelling.

MD and CEO Jeff Quartermaine was on site at Sissingué with Prime Minister Kablan Duncan and Minister of Mining and Industry Dr Kassi Jean-Claude Brou to participate in the laying of the first stone ceremony.

Speaking at the event, Quartermaine said the project (originally known as Tengrela) was first drilled by Perseus's exploration team led by geologists, Steffen Brammer and Mathieu Sahou, in late 2005. "Since then Perseus has spent nearly US\$47 million or CFA 21 billion in delineating the

orebody, designing a project and proving its feasibility, not once but twice, making it one of a very few exploration projects which has proved to be successful in Côte d'Ivoire, demonstrating the enormous commercial risk associated with this business. Now we are in a position where we can look forward with confidence to building and operating a mine at Sissingué that will produce its first gold towards the end of 2016."

The project has a measured and indicated mineral resource of 880 000 oz gold and a proved and probable ore reserve of 429 000 oz of gold (using a US\$1 200 gold price pit design). Production of 385 000 oz of gold over a 5,25 year mine life is anticipated at an average of approximately 75 000 oz per year for the first five years. Average all-in sustaining costs (AISC) are estimated at US\$632/oz over the life of mine. The start-up capital cost is estimated at US\$106 million including contingency. ■



Perseus Mining MD Jeff Quartermaine (centre) with Côte d'Ivoire's Prime Minister Kablan Duncan (right of photo) and Minister of Industry and Mines Dr Kassi Jean-Claude Brou.

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One-year old Kibali gold mine already looks to its future

The ongoing search for additional reserve ounces at Kibali in the north-eastern DRC will secure its future as a long-life mine and one of Africa's largest gold producers, says Randgold Resources Chief Executive Mark Bristow. Randgold is the developer and operator of the mine, which it owns in partnership with AngloGold Ashanti and the Congolese parastatal SOKIMO.

In 2014, its first full year of operation, Kibali produced 526 627 ounces of gold at a total cash cost of US\$573/oz and Bristow told a recent media briefing in Kinshasa that production and cost for the first quarter of 2015 were likely to be within guidance.

"When you're producing gold at the rate of around 600 000 ounces per year, the need to replace the reserves that are consumed is of critical importance," he said. "We believe Kibali's KZ structure hosts significant additional resources, and our continuing exploration is confirming this potential. A number of targets have been identified and the Kalimva-Ikamva and Kanga sud targets have been prioritised for in-depth investigation."

Kibali is still a work in progress, with its third open pit now operational and the development of its underground mine ahead of schedule. Ore from its stopes is already being delivered to the plant but the underground mine is only expected to be in full production by 2018. The first of the mine's three hydropower plants was commissioned last year and work on the second is well underway. The metallurgical plant is operating at its design capacity and construction of the paste plant is nearing completion. Despite the high level of production and development activity, some 5 000 people are employed on site. Kibali is maintaining a good safety record, with the lost-time injury rate reduced by 16 % last year.

Kibali represents an initial investment of more than US\$2 billion and, at a gold price of US\$1 200/oz and its current mine plan, is only expected to repay its funding after 2024. Thanks to its strong cash flow, however, it has already been able to repay the first tranche of its debt in March.

Bristow said Kibali was continuing to invest in the development of the regional economy by using local contractors and suppliers wherever possible. ■

ELB awarded the Black Rock RTLS project

ELB Engineering Services reports it has been awarded the Rapid Train Loading Station (RTLS) for the Nchwaning manganese mine, which is part of the Black Rock Mine Operations (BRMO) operated by Assmang, which is jointly owned by Assore and African Rainbow Minerals. The surface scope of the project will be managed by DRA Mineral Projects.

BRMO produces between three and four million tonnes of manganese a year from underground mining and is situated in Northern Cape Province, approximately 80 km north-west of the town of Kuruman.

ELB has been contracted to design, engineer, supply, deliver, install and commission the RTLS and a 518 m feed conveyor for the Black Rock project. The RTLS has been sized to accommodate the filling of a 104-wagon export rake in two hours. The RTLS feed conveyor will be able to accommodate a maximum sustained feed capacity of 5 500 t/h with a nominal feed capacity of 4 200 t/h.

"ELB has over a number of years developed significant experience and capabilities in the fields of materials handling from Rapid Train Loading Stations through to port terminals. An example is the RTLS at Khumani that was commissioned in 2011 and is considered to be state of the art and a leader in its field worldwide," says ELB's General Manager – Business Development, Tony Pinto. ■

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New method for detecting trace gold in drill samples

Researchers at the Institute for Photonics and Advanced Sensing at the University of Adelaide in Australia have developed a portable method for detecting trace amounts of gold in ore samples – on-site at the drilling rig.

Using advanced photonics, Dr Agneszka Zuber and Associate Professor Heike Ebendorff-Heidepriem's method can find gold nanoparticles at detection limits a hundred times lower than current methods such as X-ray Diffraction (XRD) and X-ray Fluorescence (XRF).

"We are working on two optical methods. One of them uses fluorescence and the other is absorption," says Dr Zuber. "The most popular methods are XRF and XRD. These methods work but the problem is the level of detection is quite high – around five to ten parts per million. It means that some ore deposits can just be missed. Our aim is to detect gold in parts per billion."

Dr Zuber and Associate Professor Ebendorff-Heidepriem have already been

able to detect trace amounts down to 70 parts per billion of gold in water and are currently undertaking tests on real rock samples.

"The project we are working on is sponsored by the Deep Exploration Technologies Cooperative Research Centre (DET CRC). They have a drilling site in Brukunga, close to Adelaide, and we have used drill samples from there. They are preliminary, but the first results are promising."

The only other comparably sensitive technique to detect gold in such low concentrations at the moment is the method known as Inductively Coupled Plasma Mass Spectrometry (ICP MS). However, this involves a large off-site machine.

Samples have to be sent to the lab and prepared through special methods such as fire assay and acid digestion before testing. Results can take weeks to arrive.

"It's about time and place," Dr Zuber says. "The point is to analyse it quickly and at the place of drilling. We can achieve similarly sensitive results with a very small setup with a very easy to use method." ■

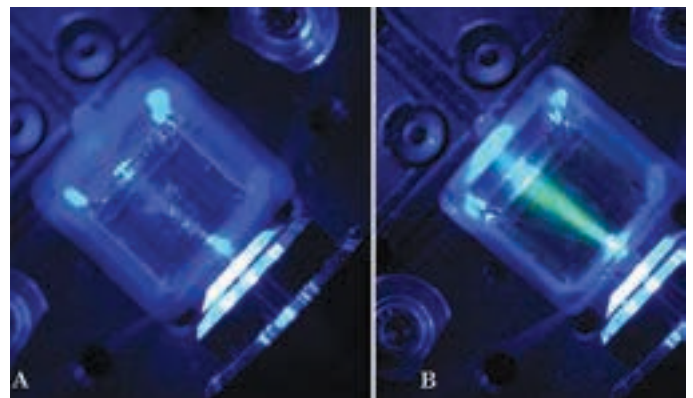


Figure A shows no fluorescence and no gold nanoparticles. Figure B shows a green fluorescence, indicating the presence of gold particles.



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Tongon gold mine on track to meet 2015 guidance

According to Randgold Resources Chief Executive Mark Bristow, the group's Tongon gold mine in Côte d'Ivoire is on track to achieve its production and cost guidance for 2015 after a year in which its management made significant progress in dealing with the recovery and throughput challenges that had hampered the operation in its early stages.

Speaking at the mine's quarterly update

for local media in Mali, Bristow noted that the commissioning of the new flotation circuit and the ongoing expansion of the crushing circuit were having the anticipated impact on production and costs, steadily lifting Tongon towards its designed performance level. The construction of the upgraded flotation circuit is complete and automation and optimisation are underway. At the same time, Sandvik

and Randgold are still jointly working on optimising the crushing circuit upgrade to meet Tongon's planned production outputs.

Following the recent dry season's impact on the Ivorian power utility's power generation capacity, there has been constructive cooperation between the

utility and mine to minimise the impact.

The mine is forecasting production of some 260 000 ounces of gold at a total cash cost of US\$820 per ounce in 2015. At the current gold price, it should be able to repay its capital this year as scheduled. In the meantime, continuing exploration has replaced all the reserves consumed by mining in 2014, effectively extending Tongon's life by a year.

Bristow said that with operational pressure easing, management had been able to advance Tongon's ambitious social initiatives, designed to develop a sustainable agribusiness as the mine's economic legacy to the community. The strategy has two components: an industrial agribusiness to replace the mine after its eventual closure and a community agribusiness based on small farming operations. Work is underway on the construction of a fish farming project capable of delivering almost 10 tonnes of fish per year, while several women's market garden projects have already produced their first crops. ■



Upgrades to the processing plant are steadily lifting Tongon towards its designed performance level (photo: Randgold Resources).

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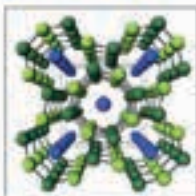
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Weatherly gets to grips with Tschudi start-up problems

Reporting on its third quarter (the three months ending 31 March 2015), London-based, AIM-listed Weatherly International says that its Tschudi mine and plant in northern Namibia became fully operational during the quarter. The crushing and stacking section was commissioned in January followed by the commencement of leaching which culminated in the first copper cathode being stripped on 16 February 2015.

An initial 80 tonnes of copper cathode was stripped in February increasing to 692 tonnes in the month of March. This further increased to 813 tonnes of copper cathode stripped in April.

No sales were recorded in the quarter as sufficient lots were required to be put together for bulk transportation. Following the quarter end, shipping of copper cathode began in April with 970 tonnes delivered during the month at a weighted average price of US\$5 731 per tonne copper. Cathode quality has consistently met London Metal Exchange requirements (for grade 1 cathode) of better than 99,99 per cent copper from the outset.

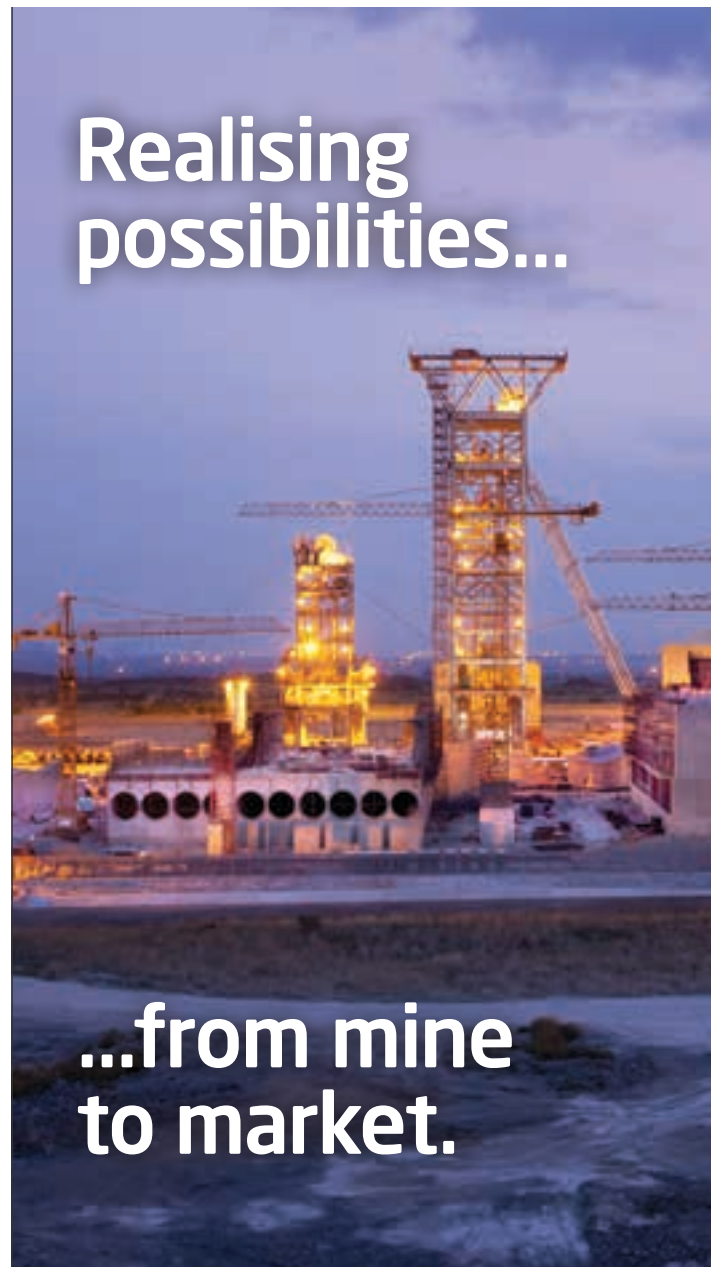
As previously announced by Weatherly, initial production from the uppermost part of the Tschudi orebody was negatively impacted by under-estimation of the extent of a leached cap containing significant carbonate and clay content as well as partly refractory copper oxides. This resulted in lower and slower copper recoveries than anticipated, as well as higher than expected acid consumption in the heap leach. The company has now undertaken considerable work to define the extent of this material and to optimise the processing strategy for it.

Management has confirmed that this material is confined to the western part of the deposit, within approximately 30 m of the surface; and even within this zone, harder more competent rock types present fewer processing issues compared to the more clay-rich units. Customary grade control activities in the open pit determine whether this material may be processed or stockpiled for later blending. In order to further understand how these start-up issues arose, Weatherly will conduct a review of the project's development history.

Mining in the western part of the orebody (pits 1 & 2) has already reached greater than 30 m depth and – with future mining progressing to the east (pit 3) – the impact of this problematic material on ongoing operations will be limited. Weatherly has undertaken a mining optimisation plan which includes accelerating mining during 2015 and 2016 to ensure a sufficient supply of ore to support the plant's designed level of copper output of 17 000 t/a. The additional mining volumes will increase the company's operating costs during this period; however, management has been successful in negotiating a 7,5 per cent discount to current rates on the additional mined volumes with the mining contractor, Basil Read.

Aside from the ore related issues in the heap leaching noted above, the processing plant, which was built both ahead of time and within the original feasibility budget, has performed to expectations since commissioning. Based on comprehensive commissioning trials prior to handover, it is expected to comfortably accommodate production at the design capacity of 17 000 t/a of cathode once there is sufficient material in the heap leach.

Apart from Tschudi, Weatherly also operates two small copper mines, Otjihase and Matchless, in central Namibia in the Windhoek area. Between them, they produced 1 050 tonnes of copper during the three months ending 31 March 2015. ■



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Customised solution to power up

Barloworld Power has designed and assembled a customised start-up solution for Cat electric rope shovels and Cat electric rotary drills supplied by Barloworld Namibia to Swakop Uranium's Husab mine in Namibia.

The Husab project, located about 50 km to the east of Swakopmund, is regarded as the most important uranium discovery of recent years and will elevate Namibia to the third biggest uranium producer in the world. First production is expected towards the end of 2015.

The solution comes in the form of two Cat C175 diesel engine motivators designed specifically to power up the three 7495 electric rope shovels supplied by Cat mining equipment dealer Barloworld Equipment and move them between pits. The motivators were custom built and packaged by Barloworld Power in Boksburg for the specific application and are the largest single units ever assembled by Barloworld Power's Customised Solution Centre.

"In 2012 Barloworld Power received an enquiry to manufacture and assemble two 3 000 kVA, 6,6 kV trailer-mounted generator sets to power up the new Cat 7495 electric rope shovels and Cat MD6640 rotary drills that were being supplied to Husab," explains project manager Andrew Richardt.

Centre: One of the motivators leaves Barloworld Power's Boksburg facility bound for Husab uranium mine in Namibia.



"The power requirement to start up the rope shovel in order to move it is more than 4 000 kVA. This means two motivators are needed running in parallel to perform the start-up. Once the shovel is running, however, one of the motivators can be shut down and the shovel can be walked to its new location powered by a single unit."

The generator model selected for this solution was the Cat C175-16 rated for 3 000 kVA,



The Cat C175 diesel engine motivator in the foreground was designed and built by Barloworld Power to power up the Cat 7495 electric rope shovel in the background for movement around the mine.

and move Husab rope shovels



6,6 kV, 50 Hz. “This is the first time this generating set has been used in this application. Indeed only two other C175 units have been installed in Southern Africa in standby generating applications, and they have proved to be highly successful so far,” Richardt points out.

“The C175 engine represents cutting edge technology in terms of engine size relative to power output and fuel efficiency.”

Barloworld Power tendered to Barloworld

Equipment Namibia for the supply of the motivators and the tender was accepted by Swakop Uranium as part of the total package including the Cat rope shovels and a suite of additional earthmoving machines and drills.

Time constraints

The physical size of this equipment makes it an abnormal load in height, width, length and mass. The trailer was custom built with

Above: The power requirement to start up a Cat 7495 rope shovel is more than 4 000 kVA, requiring two motivators running in parallel to perform the start-up. Once the shovel is running, one can be shut down.



The size of each motivator necessitated a custom built trailer with the generator mounted to a step deck and the electrical equipment enclosure and fuel tank mounted separately on the gooseneck.



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extensive design and planning collaboration between the teams to ensure that redesign during manufacture and assembly was limited to the bare minimum, thus avoiding time delays.

Barloworld Power committed to delivering the first motivator to site a full two months ahead of schedule so that it could be used to move the first assembled rope shovel off the assembly pad on the mine. This meant that the unit had to be on site before the road embargo on abnormal goods in Namibia, which was effected on 3 December 2013. As the unit took four days to get to site, the delivery schedule was extremely tight.

Barloworld Power's Customised Solution Centre, together with the installation team, pulled out all the stops to ensure that this happened and the unit was delivered to the Walvis Bay branch of Barloworld Namibia on Friday 29 November 2013. The second motivator was handed over on schedule by 31 January 2014.

Optimum design

The initial design of the unit incorporated all the equipment and the engine in a single enclosure, but during the detailed design phase this proved to be impractical for several reasons:

- ❑ the trailer became too cumbersome and costly to manufacture;
- ❑ the risk of fire damaging the electrical equipment if it all shared a common enclosure was deemed to be too great;
- ❑ the risk of dust contamination on the electrical equipment was too great;
- ❑ the size of the generator meant that if this solution was pursued, an 18 m long trailer would be needed. This would have made transport and movement of the unit on the mine prohibitively difficult as well as being very costly to build and maintain in the long term;

- ❑ the overall height of the unit on a standard trailer would have resulted in an unacceptably high centre of gravity, increasing the risk of a rollover on a banked gradient.

With these issues in mind, it was decided to design a step deck with a lower centre of gravity and the generator mounted to it. The electrical equipment enclosure with the fuel tank is mounted separately on the gooseneck. This proved to be the most successful arrangement as it brought the centre of gravity down by nearly 2 m and reduced the overall length by 4 m, resulting in a unit that is stable and relatively easy to manoeuvre.

The trailer has to be towed by a suitably sized horse with a special low range gearbox to successfully cope with the low speeds needed to walk the rope shovel and negotiate the gradients of an opencast mine. Owing to the identical design of the trailers, two identical horses were needed.

A comprehensive fire detection and suppression system was installed in the engine compartment and a full detection system in the electrical compartment.

The compact medium voltage switchgear is also state-of-the-art, with IP 67 encapsulated ingress protection of the environmentally friendly vacuum switching contacts and the MV conductors. This characteristic enables the switchgear to be submerged in water for three days without any negative effects on the main conductors.

The durability of this section of the switchgear was one of the main reasons for its selection as it is highly suitable for a dusty desert environment. The very low voltage control circuitry eliminates potential hazards associated with dust or moisture contamination. These design measures do not mean the equipment is maintenance free and a strict maintenance schedule is in place. ■

A motivator moves a Cat 7495 electric rope shovel.

Barloworld Power committed to delivering the first motivator to site a full two months ahead of schedule so that it could be used to move the first assembled rope shovel off the assembly pad on the mine.

Master Drilling adds 'flagship'

Earlier this year Master Drilling, reputedly the world's largest owner and operator of raise boring machines, announced that it had been awarded a contract by Palabora Mining Company (PMC) to construct two 6,1 m diameter, 1,2 km deep ventilation shafts at PMC's copper mine in Phalaborwa. It said at the time that it would be using its brand new RD8 raise boring machine, then in the final stages of development, to bore the shafts. The machine is now fully completed and **Modern Mining's** Arthur Tassell – together with other members of the media and mining analysts – recently had the chance to view it at Master Drilling's Fochville headquarters on the West Rand.

The RD8 – which will be on site at the Palabora mine by the end of May 2015 – weighs 120 tons when fully assembled and is the largest raise borer ever manufactured by Master Drilling and one of the biggest in the world. It is equipped with two hydraulic packs for maximum flexibility and has four variable drive DC motors, providing 1 600 kVA of installed power. Fully designed in South Africa (with Emerson assisting with the sophisticated control system) but largely manufactured overseas, it is seen by Master Drilling as the key to boring deep-level, large diameter shafts in future projects, as it can bore holes of up to 8 m in diameter to a depth of 1,5 km.

Centre: The RD8 on display at Master Drilling's Fochville headquarters.

Below: Danie Pretorius, Master Drilling's CEO, about to inaugurate the machine.



machine to its raise boring fleet



Master Drilling has established itself on site at PMC and has already completed the 30 m presink on the first shaft, a task which took just two months. It expects to complete the shaft in the second half of 2016.

According to Master Drilling's founder and CEO, Danie Pretorius, raise boring will deliver the shafts at a fraction of the cost – less than 20 % – of conventional blind-sinking methods and very much faster as well. He also pointed out to *Modern Mining* that when the machine is operated from an above-ground control room, there will be almost zero exposure to safety hazards. "We will only need a team of two people to operate the RD8 when the rig is fully mechanised in the near future," he said. "Compare this with the situation you have with conventional shaft-sinking where you might have 15 or 20 people – or more – working within the actual shaft barrel and blasting occurring on a daily basis with all that this implies in terms of exposure to risk."

Master Drilling's Executive Director Koos Jordaan added that the contract for two 6,1 m diameter and 1,2 km deep ventilation shafts ranked as one of the largest yet undertaken by the company. "There have been plenty of shafts raise bored in recent years in South Africa and elsewhere but none with quite this combination of depth and diameter," he said. "The largest diameter we've ever done up till now is 7,3 m but not to this depth and the deepest hole

Executive Director Koos Jordaan with the new horizontal boring machine to be deployed at a Sibanye mine in the background. The machine is essentially a tunnel borer based on raise boring technology.





The extensive stores facility at Fochville which serves Master Drilling's global operations.

1 100 m. We believe this latest contract probably represents the largest scope of raise boring work per cubic metre yet seen in the mining field. It represents a landmark in the history of large diameter raise bored shafts.”

Master Drilling's remote operated shaft support unit and inspection device will be used to line parts, or even the full depth of the shafts, either during or after the raise boring process. In comparison to its competitors' systems which can only go down to 350 m, Master Drilling claims its system can line up to a full 1,5 km deep. The inspection device has the capability to scan the geometry of the execution and identify the lithology. This is important to determine the stability of the shaft during or after construction.

Addressing the media/analyst group attending the inauguration of the RD8, Pretorius said Master Drilling's raise boring fleet now numbered 100 machines, roughly three times the number operated by each of its two closest competitors. He said the company was currently operating in 10 countries, mainly in Africa or Latin America, and that it liked to add one new country per annum to its geographical footprint. He also revealed that Master Drilling – whose South American headquarters is in Peru – had just been awarded a contract in Colombia for a hydro-electric scheme. “We believe Colombia, along with some nearby countries, is going to be one of the expansion hubs for the group,” he said.

In Africa Master Drilling is active not only in South Africa, responsible for just over a third of its revenue, but also Zambia,

where it has several rigs working for Mopani Copper Mines, the DRC (where it has four machines working at the Kibali gold mine of Randgold Resources) and Mali (where it has a single raise boring machine working for Randgold Resources with another on the way). In South and Central America, Master Drilling is working in a number of countries, including Peru, Chile, Brazil, Mexico and now Colombia. Roughly half of its raise boring fleet is deployed in Latin America, which also accounts for 50 % of its revenue.

In its recently published results for 2014, Master Drilling reported a 24 % year-on-year improvement in revenue to R1,43 billion (from R1,15 billion in 2013), an 18 % increase in headline earnings to US\$17,98 million and a 32 % improvement in headline earnings per share. It also reported an improved safety performance with zero fatalities and a healthy order book with a value of US\$216 million. By the end of the financial year, it was operating 139 drill rigs of various types worldwide.

These results are impressive given the weak state of mining globally. Pretorius told the media/analyst group that the reasons for Master Drilling's resilience related to its geographic diversification, its machine diversification (it operates not just raise borers but also a range of other machines, including conventional 'slim-hole' drill rigs) and its diversification across commodities (it is currently working on gold, copper, platinum, iron ore and polymetallic projects, among others).

Pretorius noted that Master Drilling's policy was to limit its exposure to a single commodity

to roughly 30 %. Currently gold projects account for 32 % of its revenues followed by copper (15 %), iron ore (20 %), polymetallic (16 %) and platinum (7 %). He also pointed out that while the group was exposed to all stages of the mining process (which he identified as the exploration, capital and production stages), the bulk of its revenue (just over 80 %) was derived from the production stage. “The mining downturn has led to the cancellation or deferment of many mining projects but the effect on Master Drilling has been limited since we rely on the capital stage – essentially new projects – for only about 12 % of our revenue,” he said. “The production stage of mining has been far less affected by the mining downturn.”

Pretorius founded Master Drilling in the late 1980s with a single 24R Robbins rig and has seen the company grow since then into a major JSE-listed entity with a global reputation. Geographical diversification was part of its strategy from the early days, its first cross-border contract being undertaken in 1992 at the Shabanie mine in Zimbabwe. A year later the company went even further afield, being

awarded a contract at Barrick’s El Indio mine in Chile, thus beginning its strong relationship with Latin America.

Landmarks for Master Drilling along the way have included the acquisition of its first Wirth HG380 raise borer – then the largest in the world – in 2001, the acquisition of Master Drilling Exploration (formerly known as Drillcorp Africa) in 2006, giving it a foothold in exploration drilling, the design and manufacture of its first dedicated low-profile, blind-hole drilling rig in 2011, and its JSE listing in 2012. In 2013 it achieved a world record in directional drilling on a Lonmin shaft, drilling a 1 070 m deep, 5,5 m vent shaft, partially completed.

The company’s record of innovation is excellent and it is currently looking at ways of getting around the main drawback of raise boring as compared to conventional shaft sinking – the need for bottom access. It is also working on adapting its existing raise boring technology for horizontal drilling and – to this end – has two development projects underway in cooperation with Sibanye Gold and Petra Diamonds (at the Cullinan mine).

Photos by Arthur Tassell

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MCC pushes the reset button



Justin Colling, CEO of MCC Contract Mining.

MCC, one of South Africa's best known opencast contract mining companies, has a new CEO at the helm. He is Justin Colling, who has notched up almost 25 years in the contract mining field and whose brief is to reinvigorate an organisation that has seen some loss of market share. He says that he has pushed the reset button on the MCC business. "We need to get back to doing the basics right," he says. "Contract mining is in many ways a straightforward business but we often complicate it needlessly. By just putting the focus back where it should be, we're already starting to see results."

Part of the JSE-listed Eqstra Group, MCC (or MCC Contract Mining & Plant Rental, to give it its full name) has now been in business for over 40 years – it was started in 1972 as a plant hire company – and owns and operates one of the largest fleets of mining and construction equipment in Africa. It diversified from plant hire into mining in the early 1980s and contract mining now accounts for the bulk of its annual turnover of approximately R4,7 billion a year.

While MCC is currently operating profitably (it recorded a R6 million profit before tax in the six months to 31 December 2014), the returns it has been delivering over the past couple of years have not been impressive given its asset

base, as Colling readily acknowledges. "Clearly we've got work to do and we're busy with a recovery plan. We've let ourselves down but the good news is that there is not too much that is wrong with the company as it has the right people in place, the right systems in use and the right equipment in its fleet," he says.

A civil engineer by training, Colling – if one looks at his track record – is the almost perfect choice to lead MCC. He joined Moolmans (now Aveng Moolmans) in 1992 and went on to spend 18 years with the group, which is generally recognised as being the largest open-pit mining contractor in Africa. Most of the contracts he worked on were within South Africa but he was also based in Tanzania for several years, running the Moolmans contract at

Below: MCC machines, including a Liebherr 984 excavator and a TR100 mining truck, working at the Karowe diamond mine in Botswana (photo: Lucara).



Resolute Mining's Golden Pride gold mine. He later became a director of Moolmans and managed its South African operations.

He left Moolmans in 2010 to join Leighton's mining division – the world's biggest contract miner – in Indonesia as GM Mining and ended up running Leighton's entire Asian mining operation, including two gold mines and several coal mines in Indonesia, a gold mine in the Philippines and a coal mine in Mongolia. He resigned from Leighton last year – the mining division by then had been rebranded as Thiess – to return to South Africa.

Colling took up his new position in January this year and spent his first few weeks visiting all the MCC sites in order to gain a thorough understanding of the company's operations. Explaining his vision for the company, he emphasises that his goal is not for MCC to be the biggest mining contractor in South Africa, just the best. "To be the best we need to not only give returns to our shareholders but also delight our clients by providing an efficient and economic mining service," he says.

Elaborating on MCC's relationships with its clients, he notes that true partnerships are now called for. "There was a time when you would win a contract and that was the end of the story. You would do what you were paid for without any thought of adding any real value. Those days are now gone. The commodities downturn has left most of our clients under pressure and we need to recognise this fact and work

closely with them to ensure that their projects remain viable. Ultimately, the success of MCC depends on the health of its customer base. There's no point in MCC making profits if its clients are making a loss. That's not sustainable over the long term."

Since taking over as CEO, Colling has changed the leadership at some sites but says that in general he has not had to make any sweeping changes to the management structure at MCC. "We have excellent people within the organisation – they just need the right leadership and it's my task to give them the clear direction they need and to put in place a strategy that everyone understands." He adds that he has no intention of micro-managing his contract managers. "I'm a firm believer in empowering people. If you believe that someone's the right person for the job, then you need to give them the freedom to make a difference."

Colling concedes that the present market is extremely difficult and notes that competition is so fierce that it is not uncommon to see over 30 contractors at a site inspection. "This presents us with a dilemma. On the one hand, you don't want to 'buy' work. On the other, you're not going to win contracts unless you put in very keen prices. So really the challenge for us at MCC is to make sure that we contain our costs and operate extremely efficiently so that we are in a position to put in competitive bids and yet still remain profitable. This is precisely what we're doing and we're currently putting

Centre: A 650-ton Liebherr 996 excavator loads a Cat 793 truck at the Benga site in Mozambique.

Below: MCC apprentices in training. The group has several thousand employees and operates extensive in-house training programmes.



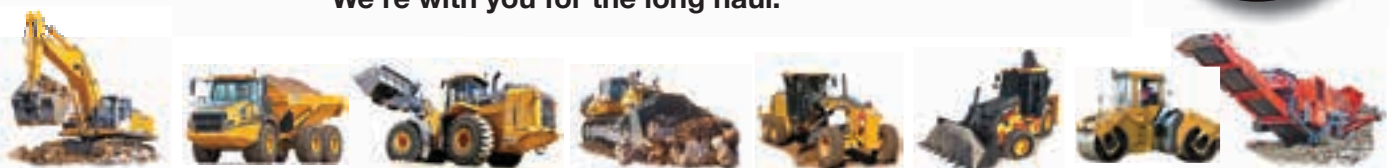
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One effect of the mining downturn is that companies like MCC have a fair proportion of their fleets standing. "Sure, this is a problem but it's also an opportunity," says Colling. "For example, we're now in a position to say to our existing clients, 'Let's see if we can utilise some of these machines so that we can move more tons for you in the short term, thereby reducing your costs'. We also have the option of leasing machines into the market – mainly to mine owners – and this side of our business, which is a collaboration with Eqstra's Fleet Management & Logistics division, is growing quite considerably.

"Not only can we lease out the machines but we can also offer a 'manage, operate and maintain' contract – or various permutations thereof – if that's what the client wants. Leasing makes sense for us as we have equipment that is not currently being utilised while customers like it as it can provide them with modern mining fleets without the huge capital expenditure – difficult to finance in the present market – involved in purchasing new machines from OEMs."

Among the companies and mines with leasing arrangements with MCC/Eqstra are Rockwell Diamonds, which mines alluvial diamonds in the Middle Orange River region of South Africa, and Vedanta's Skorpion zinc mine in Namibia.

Looking at MCC's workload, Colling says the single biggest contract is for the Benga coal mine near Tete in Mozambique, where it has been on site since early 2011. It is currently moving just over 2 million cubic metres (cubes) a month at the mine and to achieve this is using some of the biggest equipment ever deployed by a South African contract miner including a 650-ton Liebherr 996 excavator and a fleet of Cat 793 'ultra class' trucks, each able to handle a 250-ton payload.

When the contract was awarded, Benga was owned by Australian company Riversdale Mining (and later Rio Tinto) but is now in the stable of an Indian joint venture, International Coal Ventures Private Limited (ICVL). The contract is up for renewal at the end of this year. Says Colling: "We are already in negotiation with ICVL on possible future solutions and contract structures. We recognise that the coal mining industry is under pressure due to low coal prices so we're negotiating with ICVL with this reality very much in mind."



In South Africa MCC has contracts at Total Coal's Dorstfontein mine (Total Coal is in the process of being acquired by Exxaro), Anglo American Platinum's Mogalakwena mine, Sedibelo's Pilanesberg Platinum Mine (PPM), Tharisa's chrome mine at Marikana and Sephaku Cement's Aganang limestone mine near Lichtenburg. At Tharisa MCC is now only responsible for bulk waste mining, having exited the selective mining of ore (on which it was losing money).

The biggest contracts are for the Pilanesberg mine, where MCC is moving up to 1.5 million cubes a month, and Dorstfontein, where it is handling similar volumes. The smallest is Aganang (between 100 000 and 200 000 cubes a month), which is MCC's first venture into limestone "Aganang is a new experience for us and quite different from the normal mining contracts that we undertake," says Colling. "It's essentially a factory-like operation where there is just one priority – to keep feeding the plant. But we're experts in moving material so this is a task that is well matched to our skills and we're certainly open to other projects of this type."

MCC's newest contract is across border at Lucara's Karowe diamond mine in Botswana's Orapa Kimberlite Field. MCC took over the mining from another contractor at the end of last year and has a five-year contract at the mine. "In terms of volumes – between 400 000 and 600 000 cubes a month – this is not a huge contract but we nevertheless regard it as very significant," remarks Colling. "Firstly, we're very proud to be part of the team on what is

Operators pictured on site at Karowe with one of the new TR100 trucks deployed by MCC at the mine.

"We recognise that the coal mining industry is under pressure due to low coal prices ..."

MCC's Justin Colling

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proving to be an incredibly successful diamond mine and, secondly, the contract gives us a good foothold in Botswana, a country where we would like to expand our operations.”

Equipment deployed for the contract includes a brand new fleet of Terex TR100 rigid dump trucks. These were supplied to MCC by Eqstra Heavy Equipment, a sister company with the Eqstra group, which distributes Terex’s rigid and articulated trucks in Southern Africa.

Historically, MCC has not ventured much further north in Africa than Zambia but Colling says this could change. “We are prepared to work all over Africa if the right projects present themselves and we’re already looking at opportunities in various countries,” he observes. “Certainly, I’m very receptive to the idea of geographical diversification and, of course, it’s particularly attractive if we can earn in US dollars. If we have to go further afield than Africa, we’ll do that as well – although I suspect that such a move is some way off. The point though is that an international contract mining model can work well, as I saw during my years with Leighton when I was responsible for projects spread over a vast geographic area.”

With mining still in the depths of a downturn,



One of MCC’s Cat 793s hauls a load at the Benga coal mine near Tete.

Colling has taken over at MCC at a difficult time but he is unfazed by market conditions. “I’ve been in the contract mining game long enough to know that it is highly cyclical,” he says. “If you ask me how long the present depressed conditions are likely to persist, I’ve no real idea. It could be 12 months or 24 months or even longer – who knows? But I’m absolutely confident that in the meantime MCC can run profitably and even grow. We’re already starting to see the effects of the changes we’ve initiated and MCC should very soon be back to its best.”

Report by Arthur Tassell, photos (unless otherwise acknowledged) courtesy of MCC

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Sedgman streamlines in Africa

*Sedgman's South African office – located in Centurion, near Pretoria and servicing the African continent – has streamlined its activities and is now focusing on the 'Create' phase of Sedgman's 'Create, Build, Operate' business model. The implications of the changes were recently explained to **Modern Mining** by Mark Berger, Sedgman's newly appointed Manager Business and Projects, and three of his senior colleagues – Steve van Barneveld, Regional Development Consultant, Kent van Twest, Group Manager Engineering, and Danie Coetzee, Group Manager Project Delivery.*

Headquartered in Brisbane, Australia, and listed on the ASX, Sedgman provides engineering and project solutions to the global resources industry with its services ranging from concept to definitive feasibility studies and design through to project execution, commissioning and operations. Established in 1979 by John Sedgman, it founded its reputation on the design and construction of coal handling and preparation plants (CHPPs) and is now regarded as one of the global leaders in this field. In recent years,

however, it has diversified from coal into the metals and minerals sector to give it more flexibility in coping with current market conditions in mining.

Like all engineering groups serving the mining industry, Sedgman has been challenged by the current downturn in the global resources industry leading to the organisation revisiting its global strategy and structure. The measures have been effective and have contributed to the group returning to being a major player in delivering EPC projects globally.

According to Berger, the change in focus of the South African office forms part of a global streamlining of Sedgman's activities. "The idea is for certain of the regional operations to retain strong core skills but not a full standalone capability," he says. "This means that when projects move into the execution phase, the resources required will be delivered by Sedgman globally rather than by the regional office. Typically this might mean that the detailed engineering for a plant in Africa, for example, would be undertaken by our Santiago office, which is our low-cost engineering centre. From the clients' perspective, nothing really changes as the whole process is seamless. From Sedgman's perspective, however, it allows a much more



design (FEED). “Essentially, our task will be to identify opportunities in Africa, develop relationships with clients and carry out the necessary study work on their projects,” he says. “Once a project is ready to move into the ‘Build’ phase, our global engineering, design and procurement capability will be deployed to take it through to commissioning and operation.”

Sedgman’s South African office was established in 2008 by Steve van Barneveld to support two key execution contracts in the coal field that Sedgman had secured in Southern Africa. One of these was for the 800 t/h Benga CHPP near Tete in Mozambique while the other saw Sedgman handling the expansion of the CHPP at ATCOM East in South Africa. Another success for Sedgman South Africa was the award – in 2010 – of the contract to build the 3 Mt/a copper concentrator at Discovery Metals’ Boseto mine in Botswana. Boseto is currently on care and maintenance but the plant reportedly performed extremely efficiently during its roughly 30 months of operation. Last year, Sedgman also completed the DFS for Cupric Canyon’s Khoemacau copper mine, which is located close to Boseto.

efficient use of group resources and reduces unnecessary duplication of skills and facilities, which in turn offers a better commercial proposition.”

Berger, who was previously with Aurecon and Aveng E+PC, explains that the focus by Sedgman South Africa on the ‘Create’ phase of the development cycle means that it will primarily be engaged in general business development, project evaluation, concept and feasibility studies and front end engineering

Van Barneveld, who is currently based in the Centurion office, says that one of the competitive edges that Sedgman has is its EPC (‘fixed price’) contract execution model. “We are able to work on an EPCM basis if that’s what the client wants but we prefer the EPC approach. We have a strong balance sheet so we can take on the risk. Moreover we’re confident in our ability to deliver on time and within budget. Given the cost over-runs seen on many – probably most – mining projects in recent years, we’re

Left: The 3 Mt/a copper concentrator at the Boseto mine, located in Botswana’s ‘Kalahari Copperbelt’.

Below: Seen here (left to right) are Sedgman’s Danie Coetzee, Mark Berger, Steve van Barneveld and Kent van Twest (photo: Arthur Tassell).





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finding that more and more clients are receptive to the EPC delivery model.”

He adds that EPC delivery takes a certain culture. “We see EPCM companies trying to convert to EPC but it’s a huge cultural change for them. To be successful you need an appetite for risk, a ‘can-do’ approach and a willingness to innovate to achieve cost and time savings. These are qualities that Sedgman has in abundance. Being able to come up with a smarter solution and then deliver it with certainty – that’s the core of the Sedgman offering.”

Elaborating on van Barneveld’s comments, Kent van Twest says that another key differentiator separating Sedgman from its competitors is the amount of time it puts into engineering. “We take it to a greater level to ensure that there are no surprises once we start construction,” he observes. “In addition, we place great emphasis on modularising components and sub-systems with a view to reducing the build time on site. This not only has a positive impact on costs but also, of course, on safety.”

As regards procurement, Danie Coetzee – who, as his name suggests, hails from South Africa although he is now based in Perth – points out that part of Sedgman’s strategy is low-cost sourcing. “We have gone through quite a learning curve to understand what it means to source out of Asia but the result is that we now have excellent procedures and systems in place. Our office in Shanghai operates as our Procurement Hub and is able to source a huge range of quality products that benefit from the lower manufacturing costs in China and other parts of Asia,” he says.

On the subject of Sedgman’s delivery model, he stresses that clients and potential clients in the African region should have no reservations about the group’s ability to deliver projects anywhere on the continent. “The fact that we are now operating only a ‘Create’ office in South Africa in no way limits our ability to execute African projects,” he maintains. “Executing globally is what we do and in fact is entirely routine. For example, one of our current major EPC projects is for the Aurora gold project in Guyana in South America. We will shortly be completing this US\$134 million contract which has seen



the construction of a gold processing plant on a very remote site – it is accessed by a 180 km long logging track inland from Buck Hall – but we are well used to challenges of this type.” He adds that the project has thus far enjoyed a superlative safety record, with over a million LTI free hours having recently been achieved.

Finally, and looking ahead, Berger says that one of the messages he wants to get across to the local mining market is the breadth of Sedgman’s expertise. “We still sometimes come across the perception that Sedgman is primarily a coal specialist with only limited experience of other commodities,” he says. “This is simply not true. The group started to move away from a dependence on coal nearly a decade ago and is now active in most metals and minerals.

“Here in Africa it has worked in copper, not only in Botswana – as we’ve mentioned – but also the DRC, while globally recent contract awards show the extent of the diversification. For example, in Australia we secured our first major iron ore order – for a 7,5 Mt/a plant for Fortescue Metals – in July last year and later in the year we won another EPC contract, worth nearly A\$60 million, from Alcoa of Australia for a filtration plant at its Kwinana alumina refinery. We’re also working on a A\$133 million EPC contract in the manganese field in Australia and this year we’ve won two contracts – both from the same client in the US – for mineral sands treatment facilities.

“The result is that Sedgman is now deriving more than half of its turnover from outside the coal sector for the first time in its history. So it truly is a versatile group with the ability to work across a range of commodities. This versatility will be a strength in Africa given the diversity of the continent’s minerals sector.” ■

The 800 t/h Benga Coal Handling and Preparation Plant (CHPP) near Tete in Mozambique.

“.. we place great emphasis on modularising components and sub-systems with a view to reducing the build time on site. This not only has a positive impact on costs but also, of course, on safety.”

Kent van Twest, Group Manager Engineering, Sedgman

Scaw Metals holds its own in a

*A company that is taking the current challenging business environment in South Africa in its stride is integrated steel maker Scaw Metals. Although Scaw derives much of its turnover from the subdued mining sector and is also – being an energy-intensive business – impacted by Eskom’s generating constraints, it is nevertheless performing strongly and is upbeat about future prospects. This was the message to emerge when **Modern Mining** recently spoke to CEO Markus Hannemann and Steve van Wyk, Executive Head of Operations.*



Steve van Wyk

Headquartered in Germiston, Scaw Metals – which has around 6 500 employees – produces steel products for a range of industries, including mining, construction, the rail and power sectors, and the offshore oil and gas industry. In the mining field it is particularly well-known for its forged and high-chromium casting grinding media and for the steel wire ropes used in shaft systems and many other mining applications. It also manufactures wear parts for cone, gyratory and jaw crushers and mining equipment such as draglines, as well as mill liners, rock anchors and ground engaging tools. Scrap metal provides 85 % of the feedstock it uses in its manufacturing operations and its annual steel production is in the region of 750 000 tonnes.

Scaw’s origins date back to the 1920s when it was founded as a manufacturer of steel ceilings and aluminium castings under the name Steel Ceilings Aluminium Works (SCAW). It soon evolved into a mining industry supplier by producing cast steel grinding balls for use in mills. In 1942 it moved to its Union Junction premises in Germiston – which remains its main operational base to this day – and in 1949 commissioned a foundry at the site, which now ranks as one of the largest in the southern hemisphere.

Major corporate developments over the years have included the acquisition of the group by Anglo American in 1964 and the absorption of steel rope manufacturer Haggie Ltd in 1998 (a process which started when Anglo American acquired an initial 36 % stake in Haggie in 1980). In 2009 Anglo American announced its intention to dispose of Scaw as part of its strategy of divesting itself of non-core assets. Scaw

International (essentially the Moly-Cop and AltaSteel operations) was sold off first in 2011 to OneSteel of Australia in a transaction worth US\$1 billion while the balance of the group (all the operations in Africa plus certain overseas assets) followed in 2012, when the IDC purchased 74 % of Scaw for R3,4 billion.

Markus Hannemann was appointed as CEO in August the following year. A qualified Mechanical Engineer with an MBA in strategy and transformation management, he has been with Scaw for his entire career and, prior to assuming the CEO role, was the Head of Manufacturing Operations. He works closely with Executive Chairman Ufikile Khumalo in providing strategic leadership to the entire Scaw Metals Group.

He has clearly taken over at a difficult time as he himself acknowledges. “Obviously, times are tight and the market is ultra-competitive,” he says. “Currently, we’re in a stabilisation phase – we’re taking a long hard look at ourselves and asking the question, ‘what do we need to do to improve our position in the market?’ So there’s a great deal of effort going in to investing in our capabilities and technology. We have, for example, a big capex programme underway. Since 2007 we’ve invested around a billion rand in South Africa and we would like to invest a further R4 billion over the next



Markus Hannemann

challenging market

five years, although this will be dependent on market conditions. Certainly the IDC is very supportive of our plans to remain at the leading edge of steel products manufacture and to grow the business both in Africa and internationally.”

As a private company, Scaw has no obligation to produce annual reports but it does so. The most recent was for the year ending 31 March 2014 and reveals a group that was in extremely good shape at that point, given weak local demand over most sectors combined with increased import competition. Revenue for the 12-month period was R6,5 billion while earnings (before interest, tax and depreciation) were R361 million, an improvement of 10 % over the corresponding prior period. Capex over the 12 months amounted to R356 million.

According to the annual report, export sales accounted for 23 % of total revenue. “We are hoping to grow this figure considerably,” says Hannemann. “Geographical diversification is an important part of our strategy, particularly given the fact that one of our key markets – gold mining in South Africa – is in long-term decline. Africa offers us the biggest growth potential with the areas that look especially promising being West Africa and the Central African Copperbelt region of Zambia and the DRC. But we certainly don’t exclude the overseas market. We already have a presence in Italy, where we own 31 % of GSI Lucchini,



Above: Scaw offers the full spectrum of grinding media products for mining including high alloy cast grinding media and forged steel grinding media. Seen here are forged steel balls been manufactured.

Left: Scaw’s Wire Rod Products Division is a leading manufacturer and distributor of specialised commercial steel ropes, wire, PC strand and chains for applications in mining (and other industries).



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which manufactures grinding media, and in Australia, where we have subsidiaries which manufacture and market chain and which also distribute steel wire rope and crushing equipment. Our next area of focus is South America and we're busy establishing a sales outlet to service that region."

Within Africa, Scaw's ambition – at least in key markets such as West Africa – is to bring its services closer to its customers and possibly establish local manufacturing facilities where sales volumes justify it. "Already we have a sales office in Ghana, which was opened in 2011 and serves the entire West African region," says Executive Head of Operations Steve van Wyk.

Like Hannemann, van Wyk has spent many years with Scaw. A Wits graduate in metallurgical engineering (he was a Scaw bursary student), he progressed to being Mills Divisional Manager before moving to AltaSteel Canada as the VP of Operations in 2007. He returned to South Africa in 2009 to take up the position of Asset Optimisation Manager and, a year later, was appointed as the Business Unit Manager for Grinding Media.

Van Wyk makes the point that one of Scaw's competitive edges is the high quality and sophistication of its beneficiation and manufacturing facilities, which include five foundries (able to produce castings of up to 30 t in weight), a steel wire rope plant, a world-class chain products facility and a scrap metal processing plant with the largest scrap shedder in Africa. The group operates to the best international standards and has ISO 9000, OHSAS 18001 and ISO 14001 accreditation. Its Germiston foundry is US-approved for the manufacture of locomotive frames and associated components while its McKinnon chain operation in Vereeniging is approved to manufacture and supply premium chain products into the European oil, gas and industrial sectors.

Scaw is the largest producer of cast high chrome grinding media in the southern hemisphere, the only significant producer of forged grinding media in Africa and the sole manufacturer in Africa of cast steel railway wheels. It is one of only three manufacturers worldwide able to make the steel wire rope used in hoisting applications in the mines.

Says van Wyk: "Our manufacturing abilities and the high quality of our products are a definite advantage. We're seeing a new demand



Wire rod and reinforcing in coil are products of Scaw's Rolled Products Division.

from the South African mining industry for high-grade products because of failures with cheaper products and we're one of the few – sometimes the only supplier – able to meet these more stringent requirements. In the case of chains, for example, we can supply in grades that are not available out of China. In addition, we're able to provide an in-depth technical service to customers on the application of our products – in terms of performance and longevity – which is a real value-add that can be crucial to the bottom line."

Hannemann adds that Scaw is making good progress in meeting ever more demanding environmental requirements. "We're having to spend over R200 million on our foundries alone to reduce emissions," he says. "This is a big investment with very little direct return but it does put us in a strong, sustainable position as we move forward. Other foundries are going to have to keep up with us if they want to survive."

Finally, Hannemann stresses that Scaw – whose BEE partners are Izingwe Holdings, Shanduka and Southern Palace – has led the way in the South African steel industry in terms of empowerment. "We're the only level 3 B-BBEE steel producer in South Africa. We have a variety of empowerment initiatives underway, particularly in terms of Corporate Social Investment (CSI) programmes and the empowerment of women, and we put enormous energy into all of them – it's not just a box-ticking exercise. Transformation of the group is an imperative that we recognise and we are fully committed to meeting the government's objectives on the revised B-BBEE codes." ■

Preview – twelfth Botswana

While Botswana's mining scene is currently subdued, the organisers of the upcoming Botswana Resource Sector Conference are nevertheless expecting a good turnout at the event, which normally draws between 350 and 400 delegates. It is to be held on 9 and 10 June at the usual venue, the Gaborone International Conference Centre.

Probably one of the highlights this year will be an update on the Karowe diamond mine in the Orapa Kimberlite Field. This will be provided by Paul Day, COO of Lucara Diamond Corp, the Canadian company which owns the mine via its Botswanan subsidiary, Boteti Mining. Only commissioned in 2012, the mine has proved to be a spectacular success, regularly producing large stones including – just recently – a 341,9 carat gem quality diamond. During the first quarter of this year alone, the mine – roughly a 400 000 to 450 000 carat a year producer – recovered 153 diamonds greater than 10,8 carats at an average stone size of 27,7 carats.

As reported in an in-depth article in *Modern Mining* in January this year, a plant optimisation project has been underway at Karowe in recent months designed to ensure a sustainable 2,5 Mt/a throughput. The work has included the building of a 'Large Diamond Recovery Circuit' treating material up to 60 to 70 mm in size. The optimisation project is now largely complete within its US\$55 million budget and commissioning is underway. Early results from commissioning of the X-ray Transmission (XRT) circuit forming part of the upgrade are



Centre: The pit at Lucara's Karowe diamond mine in the Orapa area. This photo was taken when 'Modern Mining' visited the site in September last year (photo: Arthur Tassell).

Below: The processing plant at the new Ghaghoo mine of Gem Diamonds. Officially opened last year, Ghaghoo is not only Botswana's first underground mine but also the first mine in the Central Kalahari Game Reserve (photo: Gem Diamonds).

described as excellent and Lucara recently reported that it had recovered 19 stones ranging between 20 and 50 carats, three ranging between 50 and 100 carats and four of over 100 carats since the integration of the XRT machines into the process plant.

Also due to present on diamond mining is Haile Mphusu, MD of Gem Diamonds Botswana, who will be focusing on Gem's innovative new Ghaghoo mine – Botswana's first underground diamond mining operation – in the Central Kalahari Game Reserve. The mine, which was officially opened in September last year by Lieutenant General Seretse Khama Ian Khama, Botswana's President, is currently in Phase 1 which is designed to produce between



Resource Sector Conference



200 000 and 220 000 carats a year and is still ramping up.

As at 31 December 2014 (Gem Diamonds' most recent reporting period as this article was being written), some 40 000 tonnes of ore had been treated at Ghaghoo with 10 167 carats recovered, including a 20-carat white diamond, a 17-carat white diamond and a 3-carat orange diamond (the recovery of which confirms the presence of valuable coloured diamonds in the orebody). The mine is expected to reach a production rate of 60 000 tonnes a month by mid-2015.

With Ghaghoo now commissioned and the Karowe upgrade all but complete, there is very little new going on in Botswana's diamond mining industry – at least in terms of new projects although Jwaneng is still busy with its Cut-8 project, with more than 50 %

of the waste-stripping required having now been completed. A small upcoming project is the relaunch of the Lerala diamond mine near Martin's Drift. The new owner of the mine, ASX-listed Kimberley Diamonds Ltd (KDL), intends restarting mining at the site once sufficient funds are raised to undertake modifications to the plant to enable it to treat 200 t/h. In the meantime, KDL has undertaken a tender process for the open-pit mining contract and reported at the end of April that the bids it had received were in the process of being assessed.

Diamond exploration will be the subject of at least three presentations with Petra Diamonds, Pangolin Diamonds and Botswana Diamonds all reporting on their projects in Botswana. Petra's current focus is the evaluation of its KX36 kimberlite discovery in the Central Kalahari and an intensified search for other kimberlites in the surrounding area. For its part, Pangolin has several exploration projects in Botswana but seems to be devoting most of its energies at the moment to its Malatswae diamond project located 90 km south-east of the Orapa diamond mine. Like Pangolin, Botswana Diamonds is also working – in conjunction with joint venture partner, Alrosa of Russia – in the Orapa Kimberlite Field. It will be represented at the conference by its chairman, well-known diamond mining personality John Teeling.

The only presentation on copper scheduled for the conference will be by Khoemacau Copper Mining's Johannes Tsimako, a regular at the event, who will be speaking on the subject of Khoemacau's planned new copper mine on the 'Kalahari Copperbelt' of north-west Botswana. A subsidiary of Cupric Canyon Capital of Scottsdale, Arizona in the US, Khoemacau intends developing an underground mine able to produce up to 50 000 t/a

Ghaghoo is expected to reach a production rate of 60 000 tonnes a month by mid-2015.



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Executives of Cupric Canyon and Khoemaçau Copper Mining at a 'turning the soil' event held last year at the site of the tailings dam for Khoemaçau's planned new copper mine in north-western Botswana (photo: Khoemaçau Copper Mining).

of copper in concentrate with commissioning scheduled for 2018 and it will be fascinating to hear how advanced the company is with its plans.

The proposed Khoemaçau mine is the bright spot in an otherwise depressed copper mining sector in Botswana. Australian company Discovery Metals, which commissioned the Boseto open-pit copper mine in 2012, appointed an administrator in February this year, while African Copper, which mines in the Francistown area at Mowana and Thakadu, appears to be struggling. Indeed in a recent trading update it said that should "the Group not secure additional funds and if current market conditions prevail, the Board believes that the company may not then be able to continue as a going concern."

Boseto, which is equipped with a 3 Mt/a concentrator, is located adjacent to the site of Khoemaçau's proposed mine. Cupric Canyon was in talks with Discovery a few months back on a possible deal between the two companies but these were discontinued earlier this year.

As always at the conference, there will be several presentations on Botswana's extensive coal and energy resources, with the presenters including Gabaake Gabaake of Tlou Energy (which has the Lesedi CBM project), Frazer Tabear of African Energy and Mashale Phumaphi of Shumba Coal. African Energy controls the Sese, Mmamantswe and Mmamabula West projects while Shumba Coal is developing the Sechaba thermal coal project.

Given current coal prices and transport constraints in Botswana and South Africa, Botswana's coal sector remains becalmed although African Energy can at least point to the fact that it finalised a joint venture over Sese in January this year with copper and nickel miner First Quantum Minerals (FQM), which is Zambia's (and probably Africa's) biggest copper producer. African Energy and FQM are looking at developing a 300 to 600 MW power station at Sese able to transmit power into the regional power market.

Finally, the conference will feature a panel discussion on the future of Botswana's resource sector. This will be chaired by Boikobo Paya, Head of Research at the Botswana International University of Science and Technology and previously Permanent Secretary in the Ministry of Minerals, Energy and Water Resources. The panelists will include Charles Siwawa, CEO of the Botswana Chamber of Mines, well-known economist Keith Jefferis of Econsult, Mashale Phumaphi of Shumba Coal and Nchidzi Mmolawa, Deputy Permanent Secretary in the Ministry of Minerals, Energy and Water Resources. ■

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Aury Africa takes aim at the capital equipment market

Aury Africa, which specialises in providing screens and other vibrating equipment, as well as associated consumables, to the African mining industry, believes it has now established its name in the local market and is ready to take its business to the next level. Says MD Mark Houchin: "So far we've been sustained by sales of our consumables, which account for the bulk of our turnover. With this side of the business looking very healthy and our reputation as a reliable supplier firmly established, we're now embarking on a concerted drive to carve out market share for our capital equipment."



Above: Aury Africa MD Mark Houchin with one of the company's new looms in the background.

Centre: Extensive stocks of polyurethane panels at the Jet Park premises (photo: Arthur Tassell).

Founded in 2010 (although it only started trading in 2011), Aury Africa has the backing of Aury (Tianjin) in China, which has emerged in just 10 years as one of the biggest suppliers of vibrating screens in the world. According to Houchin, Aury (Tianjin) – which is ISO 9001-accredited – supplied about 700 screens worldwide in 2014 and has about 50 % of the huge Chinese market. Most of Aury Africa's product line comes from Aury (Tianjin) but the local company is also supplying crushers which are sourced from other Chinese manufacturers.

Houchin points out that Aury (Tianjin) is not only a substantial company in its own right but

is also a subsidiary of Dadi Engineering, which he says is China's biggest EPC contractor serving the mining industry. "Dadi's strategy when building projects is to use its own equipment, as it believes that this is the best way to deliver quality and service to its clients," he explains. "It used to source its screens from Schenck but about 10 years ago decided to make its own range – hence the formation of Aury (Tianjin). Apart from manufacturing screens, the company also makes vibrating feeders and centrifuges plus all the related consumables – not only for its own products but also those from other suppliers."

He notes that the Aury screens have built up a reputation for durability and reliability, with not a single instance of a failure since Aury (Tianjin) first started selling them nearly a decade ago.

While Aury Africa has the support of Aury in China (and also enjoys close ties with Aury's Australian operation), the local company is fully independent, with Houchin being the majority shareholder. He has extensive experience of the African mining industry and was, at one point, GM for Africa of Alfred H Knight (AHK), which provides analytical and



inspection services to the minerals industry. Immediately prior to founding Aury Africa, he was GM of Ludowici Africa (now part of FLSmidth). Both these positions saw him travelling extensively in Africa and while with AHK he was based in Zambia for several years.

Aury Africa's consumables range includes woven wire and modular wedge wire screen panels, centrifuge baskets and components, modular polyurethane screen surfaces and systems, as well as wear pipe and pipe linings. The company supplies from its headquarters in Jet Park, Johannesburg, where it has a 5 000 m² facility, but also has branches in Durban and Cape Town. Part of the consumables range is manufactured locally and last year Aury Africa commissioned two looms (representing a R1 million investment) at the Jet Park premises dedicated to producing woven wire screens. The larger of the two looms is capable of manufacturing screens up to 3 m wide and 20 m long.

When Aury Africa first started trading, it was importing the woven wire screens from China. The downside, however, was that there was a three-month turnaround time on orders. "Since we started local production, this lead time has been reduced to two weeks," says Houchin. He adds that the target, now almost achieved, is to produce 1 000 units a month from the Jet Park facility.

The success of the consumables business means that Aury Africa is now ready to put increased focus on selling capital equipment. "Currently, capital equipment sales only account for about 10 % of our turnover. We're not unhappy with this as our strategy from the



The CS cone crusher, part of the crusher range available from Aury Africa.

outset was to build up the consumables business first. But with this essential groundwork having been done, the time is now ripe for Aury Africa to expand its equipment business," states Houchin.

Sales of vibrating screens were constrained until recently by a mismatch between the products available from Aury in China and the needs of the local market. "The primary requirement in China is for large screens, typically in the 3,6 m to 4,9 m wide range," notes Houchin. "This is very wide for the South African market where the main demand is for a 2,4 m screen. To supply us, Aury (Tianjin) simply took its standard 3,6 m screen and scaled it down. The result was an over-engineered product that was capable enough but too expensive for local customers. So went back to Aury (Tianjin) and expressed our concerns. They listened to us and have now designed a 2,4 m screen from the ground up. The product is perfect for the South African – and indeed African – mining industry in terms of both price and performance and our task is now to get this message out to the local market."

With South Africa having several very



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competent ‘homegrown’ manufacturers of screens, an interesting point is whether Aury African can compete on delivery time. Houchin is in no doubt that it can. “We can fulfil an order within three months – from the time of receiving a signed order through to delivery to site,” he maintains. “This is very fast and more than competitive – in fact, I doubt that any South African manufacturer can match this type of turnaround.

“A major selling point for us incidentally is that we can provide a customised solution. For example, we can ensure that a screen fits an existing ‘footprint’, an important consideration given that the global recession in mining has led to a situation where new projects are scarce and most demand is for replacement screens at existing mines.”

Houchin is quick to point out that the competitive price of the new vibrating screen range has not been achieved by compromising on quality. “The same side plates, huck bolting and 305 mm x 305 mm panels are being used during manufacture and guarantee a very reliable and durable product. Economies have, however, been achieved by providing an out of balance drive motor as standard rather than the more expensive exciter drive – though this is available as an option – and by reducing the polyurethane coating on the cross beams from 6 mm to 2 mm.” Elaborating on this last point, he says the 6 mm coating is appropriate for the larger volumes handled by bigger screens but is an unnecessary ‘overkill’ on smaller screens.

Moving on to crushers, Houchin says that Aury Africa is able to supply both jaw and cone crushers. “Aury in China does not yet have any crushers in its lineup so we are sourcing from other Chinese manufacturers, all of whom supply Dadi Engineering,” he says. “We get a very competitive price because of our association with Dadi Engineering and we can, in turn, pass this on to our customers. Our turnaround time on orders is similar to what we are able to offer on our vibrating screens.”

The PE jaw crusher range from Aury Africa offers feed size openings varying between 150 x 250 mm to 1 000 mm x 1 200 mm while the cone crusher range is available in diameters from 2 ft (610 mm) to 5,5 ft (1 676 mm). Other comminution equipment offered by Aury Africa includes vertical impact crushers and hammer mills.

Aury Africa has already achieved some notable successes with its crushing equipment, particularly in Zimbabwe where it has delivered cone and jaw crushers to – among others – Maranatha Ferrochrome in Kadoma. In South



Above: Centrifuge baskets are offered for all centrifuge makes and models (photo: Arthur Tassell).



Left: A PE 600 x 900 jaw crusher from Aury Africa undergoing a routine inspection at a plant in Kadoma, Zimbabwe.

Africa it has supplied Samancor and – as this article was being written – was on the point of securing an order for a 3 ft cone crusher for a new project in South Africa.

Summing up, Houchin says that since being founded Aury Africa’s turnover has shown consistent growth and is now in the region of R50 million a year. “We’ve done well considering the downturn in mining,” he says. “We’re not yet making significant profits but the operation is pretty much paying its way, with the consumable sales alone covering the running costs of the business. We want to at least double this turnover over the next several years and increased sales of our capital equipment will be the key to achieving this goal.”

Report by Arthur Tassell, photos courtesy of Aury Africa (unless otherwise acknowledged)

Bell receives first dual power crushing and screening 'train'

Bell Equipment has just received the first Finlay dual power crushing and screening 'train' on the African continent. These products mean that African customers can now have the flexibility to operate a fully mobile crushing and screening plant that can be powered from mains electric or run self-powered if required.

According to Bell, this is the first in a number of exciting new Finlay product introductions to the Southern African marketplace that will take place in 2015. The dual power train is a new concept for Finlay crushers and screeners and comprises the J-1175 jaw crusher, C-1540 cone crusher and 694+ inclined screen. These three machines are reported to be market leaders in their size category with many units already operational across the African continent.

The dual powered crushers are electrically driven allowing users to run from electrical supply with the aim of giving significant savings on energy costs. These machines are also fitted with an onboard genset allowing the operator to move and use the machine where there is no electricity supply giving the flexibility and versatility of current standard models.

In applications where a full train is powered

by the on-board genset configuration, the crushers generate sufficient energy to enable the operator to run the Finlay 694+ dual power inclined screen for 'free' when used in conjunction with the J-1175 dual power jaw crusher.

"We are excited with the introduction of these new models to the South African marketplace. These crushing and screening models are already well respected and the flexibility of dual power will only enhance their reputation with operators in the marketplace. We've already had a positive response from our conversations with customers and are confident that this will result in firm orders in the near future," remarked Paul Chappel, Finlay Regional Sales Manager.

The dual powered **J-1175 jaw crusher** incorporates the robust JW42 high performance electrically driven single toggle jaw chamber and a heavy duty VGF feeder to give optimum production in quarrying, mining, demolition and recycling applications. Additional benefits are said to include rapid set up time, ease of maintenance, high reduction ratio, high output capacity and an advanced electronic control system.

The jaw chamber is hydrostatically driven which offers operators reversible operation for clearing blockages that may be experienced in demolition and recycling applications.

The hydrostatic system also provides

The J-1175 jaw crusher incorporates the robust JW42 high performance electrically driven single toggle jaw chamber and a heavy duty VGF feeder.



feature

variable chamber speed to suit given applications. Chamber CSS (Closed Side Setting) adjustment is fully hydraulic and can be changed in a matter of minutes.

The dual powered **C-1540 cone crusher** incorporates the proven Terex® 1000 cone crusher with direct electric drive, automatic tramp relief and hydraulic closed side setting (CSS) adjustment. The C-1540 can be fitted with an optional patented pre-screen module which allows fines materials to bypass prior to being fed to the crushing chamber offering better wear rates in the chamber. These fines materials can also be prepared separately and discharged via the optional on-board side conveyor.

The large hopper/feeder has an automated metal detection and purge system

to protect the cone and reduce downtime by removing metal contaminants via the purge chute.

The **694+ dual power inclined screen** uses as standard two 37 kW IE2 electric motors which operate at 50 Hz; however, a 60 Hz and/or IE3 set-up can be configured to suit particular regions.

The intuitive and user friendly electrical and hydraulic system allows the customer to switch between diesel and electric mode at the flick of a switch. The primary operation and controls of the machine remain the same regardless of the selected power.

The unit features a large 6,1 m x 1,52 m triple deck inclined screen giving a total screening area of 28 m² to provide efficient screening and high capacity. ■

Aury Africa specialises in the supply of new and refurbished crushers and crusher spares.

Aury Africa's crusher range consists of jaw, cone, rolls and hammermill crushers as well as the trommel series and conventional screening plants which are available in various sizes and models.



The C-1540 cone crusher makes use of the proven Terex® 1000 cone crusher with direct electric drive, automatic tramp relief and hydraulic closed side setting (CSS) adjustment.



The 694+ dual power inclined screen features a large 6,1 m x 1,52 m triple deck inclined screen giving a total screening area of 28 m².



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Multotec aims to be top in screening

Multotec believes that remaining competitive and driving sustainability are not based on complacency, but rather on strategically mapping a series of plans that will carry its business into the future. The company aims to become the number one screening media technology solutions provider for the global minerals processing industry within the next five to ten years. This objective was set down a year ago and involves the implementation of a number of initiatives.



Above: Rhodes Nelson, MD of Multotec Manufacturing, and Roy Roche, Vice President Screening Media at Multotec, examining a screen panel with the O-slot™ aperture.

Centre: Multotec's state-of-the-art rubber injection moulding plant where rubber screen panels are produced.

With more than 40 years' experience, an extensive branch infrastructure that is situated close to its customers and a team of technically skilled sales personnel with process knowledge, Multotec is geared up to achieve its documented goals. International exposure to best practice, as well as collaboration with international companies and customers, allows the company to stay abreast of technology.

Rhodes Nelson, Managing Director of Multotec Manufacturing, explains that one of the company's action points is to increase its collaborative efforts. "In the past collaboration was done within the local minerals processing environment and included inter-mineral collaboration. A major step has been setting up collaborative initiatives on a global scale and, most importantly, across industry sectors. Markets where collaboration is taking place range from traditional minerals processing in the mining sector to industrial processing, chemicals, food and beverage, and aggregates. On a more intimate level, our collaboration



with global sister companies will allow us to bring technologies and solutions into Africa."

Another very significant initiative is the acceleration of Multotec's R&D programme. This comprises collaboration with tertiary institutions, including universities in South Africa. "While Multotec R&D has largely always been needs driven, we welcome active participation from customers who have specific needs. In these instances we can develop an appropriate solution by including input and feedback from customers. Some of the R&D being done is aimed at reducing costs and also trying to improve process efficiencies, which proves challenging due to the fact that the industry is mature," Nelson continues.

Technology at the forefront

A number of product developments and innovations from Multotec are aimed at increasing throughput and efficiency in various applications. These include visual wear indicators on individual screen media panels that show the incremental wear rates that occur on screening media. In another example, three-dimensional

media solutions



price. “There will always be companies that enter with a low-cost strategy and use disruption strategies to gain market share. This is a short-term achievement and certainly not a sustainable business model. Multotec supports a long-term view of the market, which requires an innate understanding of where you can add value to customers’ operations. The current market conditions present an opportunity for customers that wish to engage in the process of optimising their processes,” he adds.

Roy Roche, Vice President Screening Media at Multotec, cites the Australian model of increasing value by employing smart methodologies and adopting automation of processes. This business model is resulting in a number of companies experiencing both reduced labour costs and increased value of offerings. He feels that in order to remain sustainable, plants in the South African mining industry will need to take heed of this trend and become automated within the next 20 years.

“This model results in highly predictable shutdowns and an increased time period between shutdowns, both of which reduce labour costs. Linked to this is the impact that online monitoring has had on customer operations. The return on investment of these

screening, such as the Multotec TeePee™ panel, is optimising open areas for screen panels.

A further screen panel development is the O-slot™ aperture, which is being used successfully in iron ore applications. This ensures that panel life is optimised while the screen still retains non blinding characteristics.

In general, the company now has multiple material options available, including various polyurethane grades, rubber grades and steel grades, which would be applied as a solution specific to the customers’ process application requirements.

Increasing productivity and value

Multotec subscribes to the philosophy that value should be emphasised over



Multotec's TeePee™ panels which optimise open area installed on a single deck screen.

feature



The Multotec TeePee™ panel, an injection moulded PU screen panel that dramatically increases the open area and drainage capacity.

feature

systems is quite rapid and Multotec has a successful reference base of customer applications where costs have been reduced significantly through the introduction of online monitoring systems such as Hawkeye and Mill Scan,” says Roche.

“An interesting trend is a significant change in the end users’ expectation of product quality and adherence to product specification. This is predominantly because of the oversupply

through a double-pronged representation initiative of Multotec branded companies and third party distributors. “Participation in the African market has to be undertaken on a country by country basis, taking into account the cultures of each region and the varying business models. We will leverage our experience in the local and global screening sector to promote our offering to the pan African market,” Nelson concludes. ■

situation and applies specifically to coal and iron ore. This reality underlines the fact that sampling of product is now far more critical and there is a need for the feed envelopes to the various processes or to the final product to be more accurate,” Roche adds.

Not only will Multotec seek out new customers within the local arena, but it will continue to expand its market share in Africa



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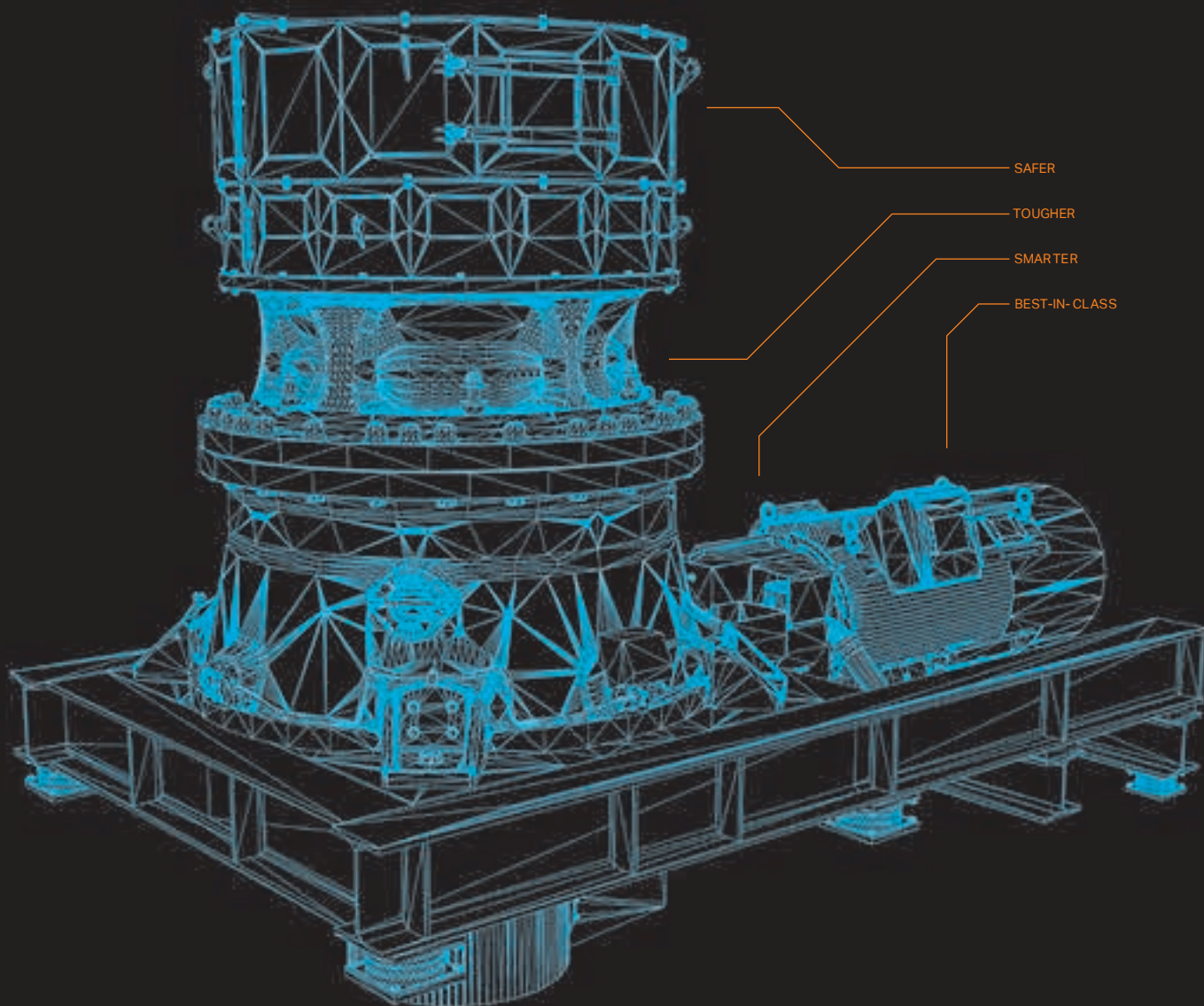
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Careful screen media selection can reduce the 'cost per tonne'

FLSmidth has a range of screen media and related products designed to increase throughput and product quality in the South African mining industry. "Lower commodity prices have meant that mining operations have had to increase their output in order to boost their bottom line or increase life and maintenance of engineered consumable products to reduce the 'cost per tonne' of the process. One of the ways of doing this is to look at screen media and their impact on production," says David Sibley, General Manager: Screen Media, FLSmidth.

Products in the FLSmidth screen media range include woven wire screens, modular polyurethane and rubber screening panels, polyurethane and rubber screening bolt down panels and tension mats, wedge wire products and wire conveyor belts.

Screen media comprise a relatively small proportion of the total cost of a plant but play a critical role in productivity. It is therefore vitally important that mining operations not only ensure that they have the correct screen media in place but that the products used match the overall system. "FLSmidth has the necessary expertise to look at a total processing operation to see where improvements can be made. From the screen media side, we can look at any issues related to the process including wear, mass reduction as well as improvements in open-area percentage and machine operation so as to increase the operational efficiency, throughput and lower the cost per tonne," Sibley explains.

"The open area, or the ratio of apertures to the total panel surface area, is of crucial importance to screen users at a time when plants are upgrading their capacity to increase profitability and maximise screen performance," Sibley continues. "FLSmidth's modular panels are among the highest open area screen panels on the market at present. These combine all the advantages of reduced mass, high mechanical strength and longer wear life of polyurethane with a high open area percentage."

Modular panels are available in plain polyurethane and rubber with additional hybrids listed as Poly Wedge, Poly Wire and Poly Perf.

Looking at fastening systems, Sibley says FLSmidth has enjoyed great success with its patented Bolted Pin System (BPS), a modular polyurethane screening surface designed to meet the current and future needs of the screen

media industry. The grommets of the fastening system comprise a mushroom-shaped bush that is spigoted onto the top frame of the disc and securely L-bolted into position, thereby becoming an integral part of the frame.

The panel is latched securely to the frame, allowing for high g-forces during operation of the machine. "This 'bolted' assembly negates the need for the over-size pins or sleeves whilst preventing the panel from 'jumping' out during normal operations which can be common with the traditional pin systems," Sibley says.

FLSmidth has a range of woven wire screening which it claims is the most versatile and common screening medium in the mining and aggregates industry. Sibley explains that there are two types of woven wire screening available from FLSmidth. Woven wire screens are manufactured from Vibro Optimax™ wire, AISI 304, 316, BMS and GMS, while woven wire mesh is commonly manufactured from AISI 304, 316 and BMS.

"Our woven wire screens are manufactured from stainless steels, Vibro Optimax™ and other exotic materials. These round wires are woven into a weave pattern, with transverse wires holding the wires together to provide an excellent open area for peak performance," Sibley says. The main benefit of this type of



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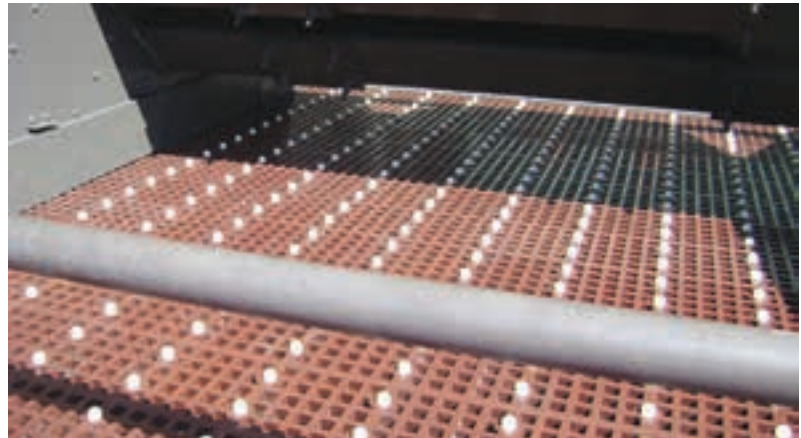
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screen media is its excellent open area, versatility and relative low cost.

FLSmidth's Poly Ripple (a polyurethane-Vibro Optimax™ hybrid) are screens with non-woven wires bound together by polyurethane bands. This construction reduces or even eliminates the blinding and pegging of screen surfaces. These polyurethane bands are located above the nosing rubber, which prevents metal to metal contact and allows tensioning on the machine.

"A correctly installed and tensioned wire screen such as this allows the secondary harmonics from the vibrating equipment to be transferred through the polyurethane to the wire and introduces additional vibrations to the wire itself. This introduces a self-cleaning element to the screen media that eliminates both blinding and pegging in most applications and increases throughput. This eliminates the need to shut down a screen for cleaning purposes, which also contributes to a good health and safety environment," says Sibley.

FLSmidth's wedge wire sieve bend screens can be custom-designed and manufactured for a range of industries. The main application is



to separate solids from liquids. "The curved screen of a sieve bend allows for a greater capacity than a flat wedge screen due to the increased g-forces on material flowing against the curve," Sibley says.

Sieve bend screens, also known as DSM, offer the benefit of an energy-efficient operation with no moving parts, which means no energy input costs and reduced maintenance. These screens can be used for sizing particles down to 0,2 mm and resist clogging by near-size particles. ■

Meshcape™ polyurethane deck with BPS (bolt, pin and sleeve) assembly.

feature

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Massive scalping screen engineered for tonnage

Engineering vibrating screens and feeders requires an in-depth understanding of the nature of the application. Gunter Vogel, Chairman of Joest South Africa, says that it is critical with screens and feeders to ensure that forces are directed through sections of the structure and components that are sufficiently strong to handle them.

In addition, he emphasises that it is important to ensure that for screens and feeders the centrifugal forces generated are directed evenly along the designed drive angle, near or through the centre of gravity. “This ensures that the machines run symmetrically along the longitudinal axis. In this way the material will be carried across the feed deck of the screen or feeder in a steady and even motion, providing effective screening,” he says.

Kenny Mayhew-Ridgers, General Manager Engineering at Joest South Africa, states that screens should not be merely an add-on in a processing plant flowsheet. It is critical that these sometimes very large items of equipment are integrated during the design stages of the project and that all aspects of downstream and upstream processes are factored in to guarantee fit-for-purpose screens. “This is the only way to ensure that a screen is engineered for the required tonnage,” he adds.

Scalping or run-of-mine screens are typically the first step in screening Run-Of-Mine (ROM) material in the extractive metallurgical

Joest scalping or run-of-mine screens are typically the first step in screening ROM material in the extractive metallurgical process on a mine.



Kenny Mayhew-Ridgers, General Manager Engineering at Joest South Africa.

process on a mine. These machines are often required to separate large boulders from vast amounts of smaller material for recrushing.

Joest South Africa produced its first scalping screens during the 1970s and has built a substantial footprint of scalping screens throughout Africa, with the majority of the mines in the Northern Cape operating with some or all types of Joest screens. The biggest scalping screen manufactured to date by Joest South Africa is 3,7 m by 10,2 m and is driven by three of the largest exciter gearboxes which generate a centrifugal force of in excess of 2 MN (meganewton).

“Due to be installed on an iron ore mine, this ROM screen may not be Joest South Africa’s largest screen in terms of its dimensions, but it is certainly the heaviest, weighing in at over 50 tons,” says Mayhew-Ridgers.

Joest South Africa received this significant order to re-engineer, manufacture and commission what is one of the largest screens ever produced to date for a mine in the Northern Cape. The scalping screen is required to handle variable ore conditions with a continuous feed load of a maximum of 6 000 t/h plus a 15 % higher surge capacity.

Mayhew-Ridgers points out that the feed material from the mine is supplied



to the primary crusher and the crusher product has a top size of 400 mm. This product will be fed to the scalping screen to remove the minus 90 mm material and the oversize material will then be fed to the secondary crusher. The crushed material from the secondary crusher will then be added to the undersize minus 90 mm material for further processing.

The engineering scope for this project entailed the design of a robust 50-ton screen that would offer extended wear life. In addition, the screen needs to be able to cope with 30 % more deck loading as a result of changes in the downstream processes as well as screen operating conditions. The mass of the scalping screen had to be limited as the output of the exciter gearbox has a physical limit of centrifugal force.

“Joest manufactures its own exciters and currently offers the highest centrifugal force available of any exciter gearbox manufacturer in South Africa. Three of our largest exciter gearboxes have been used to jointly produce the centrifugal force required for the total mass of this screen,” says Mayhew-Ridgers.

Vogel explains that because the application is for an open-pit mine, the screen must deal with three different types of particle distributions. “In the first cut there may be large amounts of overburden mixed with the material, which means there is a much lighter type of material, with a light bulk and SG (Specific Gravity) density. The medium range of material tends to contain more iron ore, while the coarse fraction generated from the drill and blast operation is much larger with boulders, sometimes over a metre in one dimension. After passing through the primary crusher, this ROM material fraction is generally reduced to minus 400 mm and is then sent to the scalping screen.”

The scalping screen deck is engineered to withstand the gruelling pounding of the feed which will tumble down from wide feed chutes onto the screen deck. During the screening



Joest's large exciter gearboxes that will drive the massive scalping screen.

operation, the screen deck will lift and fall by 12 to 14 mm around 800 times per minute. This generates enormous forces that have to be taken up by the screen body and its component parts.

Furthermore, the screen design, amplitude of stroke, excitation force and screen deck selection have been optimised to limit pegging during the screening operation. Joest selected steel reinforced rubber screen panels for this scalping screen based on the resilience of the panel and its ability to absorb the centrifugal forces placed on the screen and especially on the screen deck during operation.

Screen development is an ongoing process and Joest South Africa opens its doors to industry in terms of collaboration. The company has a number of examples of how access to information can make a difference to the overall engineering of a screen.

“If material is incorrectly fed onto a screen, then the design of the screen has to compensate for this factor. It is this in-depth understanding of downstream and upstream processes, as well as our understanding of the limitations in a given flowsheet, that give us our major competitive advantage. Staying abreast of wear technology allows the company to assess all available options and then select the most appropriate solution,” Vogel concludes. ■

feature

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Mill gear unit powers chrome mine output

A chrome mine in Mpumalanga is able to continue production of up to 110 000 tons of chrome per month following the installation of a technologically-advanced mill gear unit (MGU) by SEW-EURODRIVE.

The SEW-EURODRIVE installation was completed recently in response to technical difficulties the mine was experiencing with its two gearboxes, which had been running since the mine's inception in 1997.

Only one of the gearboxes could be repaired, and SEW-EURODRIVE Nelspruit Area Sales Manager Jonathan McKey states that this prompted the company to offer one of its latest M2 MGU series solutions to replace the defunct unit.

"Powered by a 250 kW motor, the new unit includes a pressure lubrication system, an oil/air cooler, a sight glass and radial labyrinth sealing which protects the unit from dust," he explains. McKey adds that the unit was adapted according to the customer's specific needs. "Condition monitoring sensors were also mounted to the gearbox, and an overload coupling was fitted on the HSS shafts."

Developed as an upgraded version of SEW-EURODRIVE's successful M1 MGU series, McKey points out that the M2 MGU series meets the highest quality, reliability and performance requirements.

"Products in the series feature a horizontally split housing which is equipped with facilities for lifting, an oil inlet and outlet, an oil heater, a lubrication unit attachment and an oil sight glass, along with various other components," he continues.

M2 MGU products are sturdy and rugged,

with the housings composed of various materials, ranging from fabricated steel to cast iron. All of the gears and pinions in the MGU range also meet ISO 6 standards. Additionally, the gear mesh properties have been specially selected to minimise noise and vibration levels, as well as to reduce the risk of surface wear to the unit.

The high speed shafts are equipped with a three-bearing arrangement and the radial load component from the gear mesh is supported by two radial bearings.

An additional thrust bearing load is included to compensate for the axial load component. If necessary, thrust bearings can be spring loaded to avoid minimum load condition for non-loaded bearings.

"Thrust bearings on HS, IM and LS shafts are located on the same side of the housing. This causes a thrust load on the HS shaft and a counter thrust load on the IM/LS shaft to be compensated close to each other, thereby minimising the housing deflections," notes McKey.

According to McKey, SEW-EURODRIVE's relationship with the mine began in 2008 when the company was commissioned to supply the mine with swingbase solutions for its strike and ROM drives. "The relationship has grown from strength to strength and today we supply the operation with all of its geared and industrial gear solutions for operations above and beneath the mine's surface."

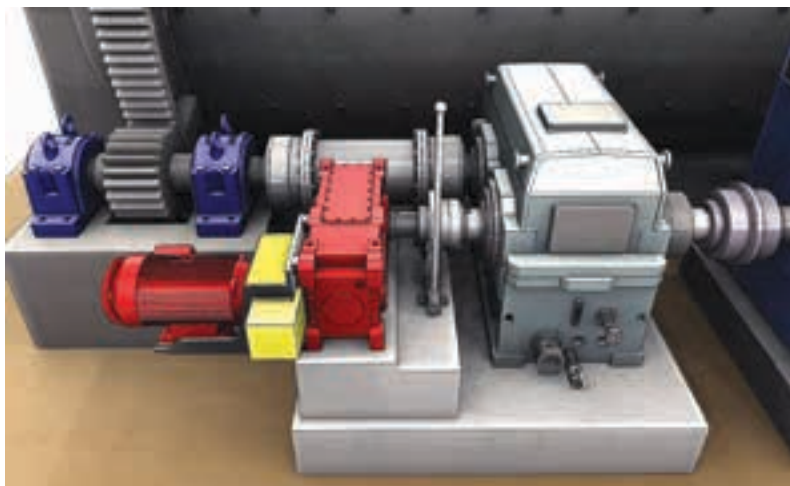
SEW-EURODRIVE also supplied the mine with IG MC lateral strike conveyors. These feed the mine's incline and ROM belts, which transfer raw chrome ore to the surface.

McKey notes that SEW-EURODRIVE's geared motor and smaller IG MC products are also currently found on smaller conveyor belt networks throughout the plant where the chrome ore is readied for transport.

"We are fully committed to providing more efficient and modern engineered solutions to our customers. Given the nature of our relationship with this chrome mine, we also offer a 24/7 service which provides the customer with full peace of mind," he says.

Given the ongoing success of the relationship, McKey is confident of the future outlook. "SEW-EURODRIVE prides itself on improving and reinventing products and drive solutions. We will continue to advise the mine on how we can better improve its solutions, reduce downtime and ultimately save money on running costs," he concludes. ■

M2 MGU products are sturdy and rugged, with the housings composed of various materials, ranging from fabricated steel to cast iron.



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Cat 745C articulated truck sets a new benchmark



The Cat 745C has a newly designed dump body with a capacity (heaped SAE 2:1) of 25 m³ and an increased payload of 41 tonnes.

The new flagship in Caterpillar's articulated truck range, the Cat 745C, comes to market with an all new power train, more power on demand, improved fuel efficiency, plus greater payload capacity.

Rolling out to the Southern African market from May 2015 by Barloworld Equipment, the latest generation Cat 745C is a major advance on the previous Cat 740B model launched locally in 2011, and features a host of new performance features designed to lower owning and operating costs in mining, construction and allied industrial segments.

"Tonnes moved per hour and per litre of fuel burned are key drivers to business success in today's contracting market, and Caterpillar has made this a key focus during

the research and development, and pilot testing phases of the Cat 745C," explains Barloworld Equipment Group Product and Application Manager Johann Venter, adding that this includes comprehensive in-field trials in South Africa.

Along with more power and improved operational efficiencies, the rated payload on the Cat 745C has increased to 41 tonnes, compared to the Cat 740B's 39,5 tonne capacity. The Cat 745C has a newly designed dump body with a capacity (heaped SAE 2:1) of 25 m³.

Manufactured in Peterlee, England, the Cat 745C will be available alongside the current 725C, 730C and 730C EJ (Ejector) models launched in Southern Africa during 2015. Production of the first Cat 745C units at Peterlee commenced from March 2015.

Powering the Cat 745C is a Tier II Cat C18 engine delivering a gross power of 381 kW (SAE J1995) compared to the 365 kW Cat C15 power plant installed on the Cat 740B.

Driving the Cat 745C is a new CX38 High Density Power Shift (HDPS) transmission with Advanced Productivity Electronic Control Strategy (APECS) and nine forward/two reverse gears, combined with Electronic Clutch Pressure Control (ECP), Shift Torque Management (STM) with

improved Shift Control Logic (SCL), and Part Throttle Shifting (PTS).

The Cat 745C features permanent six-wheel drive, with four open differentials for optimum traction in undulating ground conditions and during steering manoeuvres.

"Together, these advanced features allow smoother shifting and greater acceleration on grades as torque is maintained through the shift changes," explains Venter.

SCL provides automatic shift selection that is more specific to the desired machine operation, and downshifts when needed for maximum acceleration when increased throttle is applied. PTS allows shifting at lower speeds during part throttle operation. This results in improved part throttle fuel economy, quieter machine operation, and better manoeuvring in reduced speed operating conditions.

Standard fitment on the Cat 745C is an updated Automatic Traction Control (ATC) system, which is claimed to lead the market in terms of technology. ATC significantly improves ease of operation by removing all manual traction control decisions from the operator.

Automatic Retarder Control (ARC) has been introduced to further improve ease of operation. Working in forward and reverse gears, this feature can now be set to fully automatic in addition to manual control. In automatic mode, the machine manages retarding through a combination of engine brake, gear selection and supplemental application of the service brakes. Two position manual retarding is also retained for more experienced operators.

Additional ease of operation features help towards maximising machine efficiency and include Hill Assist (for easy stop/start on grades) and Waiting Brake (which temporarily applies the service brakes during typical loading/dumping/waiting applications).

The machine is fitted as standard with the Product Link™ transmitting hardware, enabling connection via either GSM cellular or satellite to Caterpillar's online internet portal, VisionLink™ and the Cat Connect telematic suite. Cat Connect technologies offer improvements in three key areas, namely equipment management, productivity, and safety.

Barloworld Equipment, tel (+27 11) 929-0000

Chute systems supplied to copper mine in DRC

Weba Chute Systems has supplied eight chutes to a copper mine in the DRC. This follows on from an initial successful order for four transfer towers for an overland conveyor system. "It is a major reference for us in a highly significant area of mining activity in Central Africa," says Ted Cruickshank, project manager at Weba Chute Systems.

Cruickshank says that the mine called upon Weba Chute Systems due to its expertise in chute design and layout. "Weba Chute Systems believes in accommodating the customer's project schedule and will pull out all the stops to ensure that deadlines are met timeously, without compromising quality," Cruickshank notes.

"We had to design for ore conditions that were extremely sticky," he adds. The bulk density of the material was 1,7 and the

maximum lump size was 375 mm. The belt width was 1 200 mm and the design capacity was 1 500 t/h with a belt speed of 1,9 m/s. "Designing these particular chutes posed a major challenge in that the material has a 60:40 fines ratio. We had to design the transfer points to be able to absorb the impact of the larger sized material and also to alleviate any blockages," Cruickshank says.

South African-based Weba Chute Systems specialises in the custom design of transfer point solutions. Its systems are based on the principle of conveyed material impacting on surfaces that already contain material. These systems are configured precisely to control the direction, flow and velocity of the calculated volume and type of material being processed.

Mark Baller, M & J Engineering, tel (+27 11) 827-9372

New TwisterTrac impact crusher enters production

Pilot Crushtec International has begun its first production run on the ground-breaking TwisterTrac VS350E vertical shaft impact (VSI) crusher. Following an extensive design and development programme, including field trials at both domestic and international sites, the all-new product is good to go.

National Sales Manager Nicolan Govender believes the TwisterTrac VS350E represents a major step change in tertiary and quaternary crusher technology and performance.

"From the outset this product was intended to add significant value to our customers' operations. We have evolved from the traditional diesel-hydraulic drive package to a diesel-electric drive. Customers will enjoy substantial gains in output and at the same time experience reduced fuel bills and maintenance costs," he says.

The concept behind the development project was the construction of a product that could deal with South Africa's notoriously hard rock while delivering high volume output at the lowest possible cost per tonne.

"The product is ideal for the road building, quarrying and construction industries and is able to produce quality G1 and G2 sub-base material, shaping aggregate and producing large volumes of fines from diverse rock. It is also suitable for several mining applications. The rock-on-rock crushing option is well-suited for diamond extraction and the ability to cope with hard rock is useful in applications like the extraction of chromium ore."

Design Manager Dawie Scholtz explains the logic that has achieved these advances

and how it has resulted in some important features that will unlock profitable opportunities for TwisterTrac operators.

"The transition to a mechanical-electrical configuration has gained us several important advantages. The fuel efficient Volvo engine coupled with a large generator is used to generate electrical power which drives the machine's crushing, tramming and conveyor functions. All control systems are now electronic – thus operators will no longer have to deal with the complications of piping and oil servicing or inefficiencies associated with hydraulic systems."

Additional features incorporated in the VS350E design include a load volume control which ensures that the crushing chamber is always fully loaded but never overloaded, while variable rotor speeds can be set when the machine is in operation.

Yet another benefit is the crusher's cascade facility which allows feed that does



The newly developed TwisterTrac VS350E vertical shaft impact (VSI) crusher.

not need processing to bypass the rotor in the crushing chamber. This can raise output to an impressive 400 t/h, eliminate unnecessary fuel consumption and reduce wear on critical parts within the chamber.

The track-mounted TwisterTrac VS350E is also economical from a labour perspective. Using the product's onboard remote control system, the crusher can be off loaded from a lowbed trailer, trammed to site, complete its task and then be reloaded with the aid of a single operator.

Pilot Crushtec International, tel (+27 11) 842-5600

Agent appointed for Oerlikon Leybold Vacuum range

Integrated Pump Technology has secured the agency and distributorship for Oerlikon Leybold Vacuum for sub-Saharan Africa. The agreement covers the full line of fore and high vacuum pumps, vacuum systems, vacuum gauges, leak detecting instruments, flanges, fittings and valves, and accessories.

Graham Russell, CEO of Integrated Pump Technology, points out that this will allow the company to broaden its product offering to include vacuum technology. "This underlines Integrated Pump Technology's business philosophy of partnering with

leading specialist suppliers of technology solutions that add value to complex processes." Oerlikon Leybold Vacuum is already well known in South Africa, with a relatively large installed base of products that form part of OEM equipment packages.

In addition to single vacuum pumps, the core competencies of Oerlikon Leybold Vacuum range from delivering standardised vacuum systems through to the engineering of tailor-made vacuum solutions for industrial applications with complex performance parameters.

Integrated Pump Technology, tel (+27 76) 840-6527



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FLSmidth completes early engineering for Platreef winders

FLSmidth recently completed the early engineering contract for the production, service and auxiliary winders for the No 2 shaft at Ivanplats' Platreef project. The early engineering of the three separate winders was necessary to facilitate the design of the headframe structure by Murray & Roberts Cementation.

Mark Sheward, Sales Manager Mine Shaft Systems for FLSmidth, says the contract award was based on the company's 60-plus years of experience and an extensive reference base of installations. The largest Koepe winders previously supplied by FLSmidth are the two 6,5 m diameter units at Impala 16 shaft and their successful implementation forms the basis of the

design and engineering undertaken for the Ivanplats Platreef project's winders.

"Experience is critical in projects of this nature and the ability to adapt to changing conditions is one which differentiates FLSmidth. Each of the two 6 m diameter Koepe winder installations with drums, brake systems and drives needs to be accommodated within the constraints of the headframe dimensions. The solution we provided involved installing the two Koepe winders at 90 degree angles to each other, with the auxiliary winder being installed in a lower level," Sheward explains.

During the early engineering phase, FLSmidth made use of Finite Element Analysis (FEA) to establish and verify the stress loading in the final design. Other supplied data included dimensions, loads, required tolerances, stiffness requirements and the position and length of the anchor bolts, as well as the mass and dimensions of the major components to be lifted into the headframe.

Both the production and service winders are four rope friction winders. The production winder will hoist two 40-ton skips while the service winder will be equipped with a man/material cage and counterweight. The rock or production winder is being designed for a rope speed

of 18 m/s while the man/material winder will operate at 10 m/s. The auxiliary winder, with a rope speed of 6 m/s, will be a 2,4 m diameter, 1,2 m wide single drum unit and could initially be ground-mounted and used for shaft equipping before being relocated to the head frame on completion of shaft sinking.

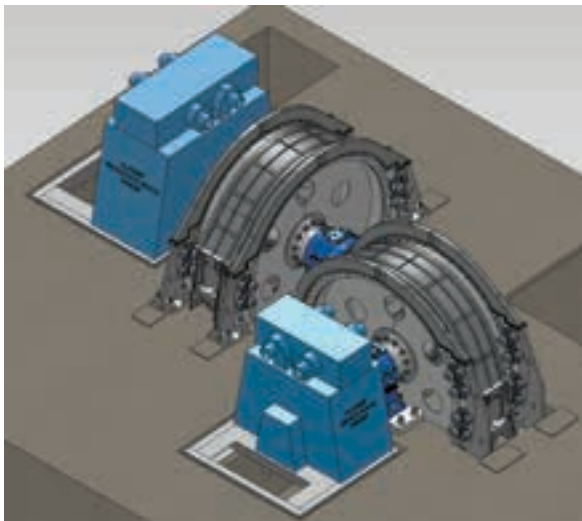
The shaft depth is approximately 1 050 m and braking will be effected on all three winders by a 4-channel closed loop hydraulic system incorporating disc brakes.

The auxiliary winder forms part of the new small winder design which FLSmidth has been developing over the past year. This ongoing development work allows design optimisation and a reduction in the weight of the actual winder, as well as the simplification of the clutch design.

In addition to the early engineering for the winders, FLSmidth also secured the contract for the design and engineering of the conveyances for these winders. This contract comprises the detailed design of the two 40-ton skips for the production winder and a 40-ton double deck cage and cage counterweight for the man/material hoist. The skips will incorporate hydraulic dump mechanisms.

All work for the skips and cages will be undertaken at the FLSmidth technology centre for conveyances in Orilia, Canada, where engineers have access to the latest technical information.

FLSmidth, tel (+27 10) 210-4820



Top view of the production and service winder engineering model for the Platreef project.

Non-detonating rock breaking cartridge range launched

AEL unveiled InstaStem, a technologically-advanced range of non-detonating, self-stemming rock breaking cartridges, at the recent Institute of Quarrying conference and exhibition held at the Lord Charles Hotel in Somerset West near Cape Town.

"InstaStem Cartridges produce no shockwaves which means these products are safe and ideal for use in vibration-sensitive areas. Furthermore, the non-detonating nature of this range of products ensures safer operations because they provide no over-break detonation damage in the tunnel ceiling or floor," says Velly Mngomezulu, AEL's Account Manager for South East Cluster – Northern Region.

With these products there is no risk of auto-ignition and they have a shelf-life of 18 months. In terms of South African legislation, InstaStem cartridges do not require transportation by an explosive truck for quantities less than 250 kg because they are classified as UN:0323 cartridges, power device, Class 1.4S.

"InstaStem operations are also suitable in areas of low-ventilation as the blasts emit only harmless gases – which are quickly diluted even in low-ventilation areas – and there is a minimal gas re-entry time of about 15 minutes," notes Mngomezulu.

As there is no stemming or required change of existing drilling patterns, these products provide 'drop-and-go' ease of use

and do not impact on support infrastructure. Therefore, there is no interruption or downtime caused to the quarry or mine because there is no need to remove equipment or staff.

Mngomezulu says the range is also extremely efficient and competitive with traditional explosive products. "Although these products deflagrate – as opposed to detonate – at 360 m/s, the energy content contained within these cartridges is comparable to that of a high explosive," he explains.

InstaStem is also said to be highly accurate, delivering no overbreak in the visible barrels left behind after the blast, coupled with a reduction of commodity loss in fines and dust.

AEL, website: www.aelminingservices.com

Enl Electrical awarded major contract for Maseve

The Zest WEG Group's Enl Electrical, one of Africa's largest electrical construction companies, has secured a major contract at the WBJV Project 1 (Maseve) mine for client DRA, the main EPCM contractor on the project. This follows Enl Electrical successfully opening its Rustenburg branch in 2014 to service the platinum mining sector in the region.

Trevor Naudé, MD of Enl Electrical, says the contract represents a major coup for the Zest WEG Group. "We secured the Maseve contract towards the end of 2014, in the wake of numerous small brownfield projects whereby we established our base in the region."

Naudé adds that the greater Zest WEG Group will be involved in this flagship project, from supplying the mill motors to the electrical and instrumentation infrastructure and the associated electrical panels. "We will be carrying out all the associated electrical cabling and racking, in addition to installation of all the instrumentation. Enl Electrical mobilised on-site in March this year, with contract completion anticipated by July. This is a significant contract, and it is also fast-track."

In addition, Naudé reveals that Enl Electrical has clinched a major contract from Anglo Platinum for the electrical and instrumentation infrastructure for a new pump station. "We secured the Maseve contract in December 2014 and the Anglo Platinum contract in January 2015, both of which bode well for the year ahead."

Enl Electrical is also progressing with its contract at Swakop Uranium's Husab mine in Namibia, where its scope of work is the construction of 33 kV overhead power lines, as well as the installation and commissioning of all medium voltage and high voltage switchgear. The project is scheduled for completion in August this year.

Elsewhere in Africa, Enl Electrical is running five contracts in Zambia at present for Mopani Copper Mines, which Naudé says is an important client. "Our biggest advantage is that we are not only active in a single sector, but our contracts run the gamut from mining to industry. This gives us the flexibility to be able to supply total solutions for diverse client requirements."

In terms of latest developments, Naudé reveals that Enl Electrical relocated from its Strijdom Park premises to Zest WEG Group's facilities at Linbro Business Park at



Stringing a 33 kV OHL (overhead line) at Enl Electrical's contract at Husab in Namibia.

the beginning of March. "From an expansion perspective, we have outgrown Strijdom Park after nearly 30 years of presence there, and therefore such a move is long overdue."

Kirsten Larkan, Zest WEG Group, tel (+27 11) 723-6000

Osborn modular plant installed in Siberia

A modular plant designed and built in South Africa by Elandsfontein-based manufacturer Osborn is currently being installed and commissioned in snowy Siberia.

Osborn's R11-million export order was for a full modular plant for the Alrosa iron ore facility in Russia. It was shipped from SA to the port of Magadan, then transported to the plant, which is situated close to Vilyuyt in Russia's Siberia region.

Marketing Director Martin Botha says

that Osborn's robust equipment is ideally suited for the harsh operating environment in Siberia, where temperatures drop to minus 40 deg Celsius.

The full modular plant at the Alrosa facility offers primary and secondary crushing and screening capabilities. It features an Osborn 3042 jaw crusher, a 6 x 20 triple deck screen and an Osborn 44H gyrasphere cone crusher. In addition to this, Osborn has supplied a 5 x 14 screen.

Osborn Engineered Products, tel (+27 11) 820-7600

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Gear pump range popular in SA market

The Viking range of internal gear pumps continues to sell steadily into South Africa through local distributor Mather+Platt, which reports that carefully maintained local stock holdings are helping to secure urgent orders. Wadeville-based Mather+Platt has distributed Viking pumps for more than 20 years.

Viking Pump is widely recognised as one of the world's leading companies in internal gear pumps, external gear pumps, vane pumps and rotary lobe pumps. In South Africa, the pumps are widely used in mining and industrial applications, where they transfer viscous

fluids up to 440 000 cSt.

The internal gear pumping principle, invented by Viking Pumps co-founder Jens Nielsen, uses two rotating gears which un-mesh at the suction side of the pump to create a vacuum which pulls fluid into the pump. The spaces between the gear teeth transport the fluid on either side of a crescent to the discharge side, where the gears re-mesh to discharge the fluid.

Mather+Platt's range of Viking gear pumps is extensive, comprising six distinct lines.

There are universal seal pumps in 12 sizes, comprising heavy duty, foot-mounted models with enlarged bearing housings that allow seals and seal technologies to be exchanged without removing the pump from the flow line.

High speed compact pumps in six sizes are recommended for medium to heavy duty applications. No speed reducer is required. Motor-speed pumps in six sizes are manufactured in ductile iron, and may

be foot-mounted or close-coupled to IEC frame motors for a compact footprint.

General purpose foot-mounted pumps in 14 sizes are made of cast iron for medium duty applications. Jacketing options are available.

C-flange mounted pumps in eight sizes are made from cast iron for medium duty applications. No speed reducer is required.

For applications in which leakage and fugitive emissions must be eliminated, or where downtime for seal maintenance would be problematic, there are mag-drive pumps in 12 internal gear and 22 external gear sizes to replace shaft seals with magnetic drive.

Mather+Platt can custom build Viking pumps for special applications. Examples include abrasive liquid pumps with hardened construction and silicone carbide seals, and ammonia pumps with double mechanical seals, pressurised seal chambers and oil reservoirs, lubricated idler bushings, and adjustable return-to-tank bypass valves.

Mather+Platt, tel (+27 11) 824-4810

Viking gear pumps from Mather+Platt.



Veolia reduces water treatment costs at Evander

Veolia Water Technologies South Africa has assumed the day-to-day chemical supply and servicing of the on-site water treatment for Evander Gold Mining in Mpumalanga. Four months into the three-year agreement, Veolia has reportedly already improved substantially on past practices and increased efficiency while reducing overall water treatment costs for the mine.

Veolia embarked on this total water management agreement in November last year following a full site survey of Evander's metallurgical plant as well as 7 and 8 shafts. This survey revealed that large parts of the water circuits were not being treated by

any chemicals due to faulty dosing stations while other parts of the circuits were facing dangerous chemical spillages where dosing station pumps had broken. As a result, highly corrosive water and scale were flowing through the above and below ground water circuits, decreasing the mine's cooling and ventilation efficiency while damaging its equipment.

"We opted for a full operation and maintenance agreement with Evander Gold Mine, where we will manage the entire water treatment system. As part of the agreement, a Veolia specialist will remain on-site for the duration of the contract,

providing 24/7 technical direction, support and consultancy," says Carl van Heerden, Hydrex Industrial Manager, Veolia Water Technologies South Africa.

As part of this agreement, Veolia supplied 12 new treatment solutions, including: new chemical dosing stations; flocculants, coagulants, anti-scalant and micro-biocide chemical treatment; a semi-automated duplex flocculant plant; and coagulant plants to address the water treatment problems. Veolia also supplied its range of Hydrex™ chemicals at a variable fee after a weekly stock-take – meaning the mine will ultimately only pay for chemicals it has used.

Veolia Water Technologies South Africa, tel (+27 11) 974-8161

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Pallet-free bulk bag system ideal for minerals

A key issue facing logistics managers in the mining sector is the need for a safe, reliable and efficient packaging and transport system that is also environmentally sustainable.

"It is critical in the handling of high value minerals to ensure optimum protection of the goods being transported," says Ken Mouritzen, Director, Tellap. "Product contamination and damage is not only expensive, but will ultimately tarnish a company's brand.

"When speaking with logistics managers, we hear concerns of increasing costs, contamination, safety and the issues of wooden pallets as impediments to business efficiency. Pallets are central to these concerns.

"Although acceptance of bulk bags has brought about positive changes in global packaging and transport trends, the inherent problems of heavy wooden pallets, on which bulk bags are typically transported, still exist. For this reason, industry has been forced to look at packaging alternatives."

One of these alternatives is the robust Tellap pallet-free bulk bag system, which has been developed in South Africa in response to ongoing and increasing wooden pallet issues. This customisable packaging system – designed for enhanced safety and efficiency – is manufactured from 100% recyclable polypropylene.

Tellap, which consists of a proprietary bulk bag and two strong integrated plastic sleeves, is lightweight, weighing only 5 kg, whereas a pallet can weigh up to 35 kg. The high strength sleeves are integrated into the base of the bag to replace the pallet, allowing a standard forklift truck to raise the bag from the base. There is no requirement for special handling equipment.

Raising the bag from the base provides better vision and stability while allowing a single operator to handle the bags easily, quickly and efficiently.

Industry is aware of the instability of conventional bags and wooden pallets when stacked, which is why many companies have introduced a single stack

rule. The integrated sleeves of the Tellap form a solid base and this stability increases the safe stacking height, reducing storage and warehouse space requirements.

Benefits from using Tellap pallet-free bulk bags are said to be many and varied. They include increased worker and product safety, as well as greater stability of each load. Efficiencies, such as a smaller footprint, reduced product damage and fast single operator loading and unloading, translate into savings by using this product. Unlike many pallets that are dumped into landfill, this system is recycled.

Tellap, tel (+27 31) 274-8270, e-mail: info@tellapbags.com



Tellap, which consists of a proprietary bulk bag and two strong integrated plastic sleeves, is lightweight, weighing only 5 kg, whereas a conventional wooden pallet can weigh up to 35 kg.

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Palabora chiller installation is a 'first' in Africa

Palabora Copper has acquired two more 3 500 kW York CYK compound centrifugal chillers from Johnson Controls. The latest purchase is part of Phase II of Palabora's ventilation and cooling strategy to facilitate expansion of its operations to 1 600 m, an initiative that commenced in 2012 and will extend the life of the mine to 2030.

Says Gavin Meredith, Manager – Ventilation, Cooling and Water Handling at Palabora Copper: "As of February 2015 we are working 450 m below the 1 200 m lift where the first two CYK chillers were installed in 2013 and 2014. These next two chillers will also be installed at 1 200 m, providing us with the cooling capacity we need to safely develop and mine the new level."

The CYK chiller installation at Palabora is the first of its kind in Africa and the first underground installation globally. By installing the chillers underground, the mine reduces the need to pump water to the surface for cooling. Upcast air is used to reject heat in underground cooling tow-

ers and cool air is blown down to the work face from 1 200 m. But the operation also distinguishes itself in other ways.

Says Meredith: "Palabora is a pioneer in terms of copper mining, firstly because of the depth at which we are mining, and secondly in terms of the hard rock block cave mining method we employ – the composition of the rock being unusually hard for this type of mining which impacts operations and conditions underground. Our ventilation and cooling strategy – and the performance of the chillers – is instrumental in allowing us to achieving safe development of the mine at this depth. To date, the performance of the chillers has been above faceplate specification."

The CYK chiller technology was a key deciding factor for Palabora Copper in its selection of a solution. At 1 650 m, 50 m deeper than initially targeted, virgin rock temperatures in the mine are 52 deg Celsius. This environment requires chillers to operate beyond the limits found in

typical air-conditioning applications. The York CYK water-cooled centrifugal chillers are designed using two centrifugal compressors arranged in series to handle conditions outside the range of typical centrifugal chillers.

"Johnson Controls was the only company that could offer us a high head, high capacity, industrial type machine fit for the mining environment with additional customised features like specialised PLC technology that integrated with our SCADA system," says Meredith.

The first chiller has been operational for just over a year and the second is due to be commissioned in July 2015. The next two chillers will be commissioned in early 2016.

Says Meredith: "This will provide us with the necessary 14 MW capacity we need. A fifth chiller, which is likely to be ordered at the end of 2016 and installed in early 2017, will provide failover capacity, completing the installation."

Johnson Controls, tel (+27 11) 921-7141

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Intercom system for use in stopes developed

Deebar has introduced Winch-Com which it says provides – for the first time – a robust and reliable verbal communication device for use in mining stopes. Currently in stopes, workers have to be in close vicinity to talk to each other or use other means of communication (air whistles) but these signals are often misinterpreted by workers.



According to Deebar, the Winch-Com eliminates all of these problems. Workers can now verbally communicate with each other easily using the system, eliminating miscommunication and resulting in fewer accidents. In case of emergencies – for example, a fall of ground incident – alarms can be rung through the Winch-Com, which will result in a quicker response time to accidents.

The new unit is a small and compact version of the tried and tested Wallcomm/Polycom unit, which is extensively used in the mining industry.

The Winch-Com is a two-wire intercom system with battery backup. The housing is manufactured in a DMC material which is then fitted in a stainless steel tamper-proof housing with a canopy. It is IP65 rated which means it is protected against the entry of dust and water which makes it suitable for stope environments.

The unit is fitted with a built in charger with NiCad batteries, with a standby time of approximately eight hours. The transmit and receive levels are adjustable to eliminate any background noise. An unlimited number of intercoms can be used on a system, which has a tone calling and paging facility and operates using a supply voltage of 525 V AC.

Deebar, tel (+27 11) 873-4332, e-mail: sales@deebar.co.za

Fully empowered company supplies mining industry

Pamodzi Unique Engineering, established in 1971, has recently become a member of the Pamodzi Group. The company – which has 100 % black ownership – supplies locally designed, engineered manufactured products, reaching almost every sector of industry.

Established brands are Eco and Wilflo pumps, Unique blast barricades and BES pantographs, which are distributed through an extensive network of local and international distributors.

The company is well-known for its pump range and one of the mining industry's workhorses is the DD 25 and DD 50 Wilflo double diaphragm pumps, which are locally designed and manufactured. Another product is the ECO range of 'PD' positive displacement, helical rotor pumps, which are 100 % South African manufactured. They are used for various applications in mining and other industries.

In line with the company's local manufacture policy, it has been servicing the Southern African rail industry and opencast mines with a specialist range of pantographs for more than 25 years.

To complete the company's product portfolio, durable and cost effective blast barricades are manufactured from high-density natural virgin white polyethylene (HDPE) to ensure a far longer life than reground material.

Bongani Mankewu, Pamodzi Unique Engineering, tel (+27 11) 826 6111

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Repeat order for two overbelt magnets

Multotec has won a repeat order for two overbelt magnets sold into a coal mining application in the Witbank/Middelburg coalfields. "This order follows on from the successful commissioning two years ago of two overbelt magnets at another coal mine in the same group," says Willem Slabbert, Process and Applications Manager at Multotec.

The magnets will remove tramp metal from run-of-mine material in order to prevent it from entering coal gasifiers.

"This is a critical application as the coal gasifiers have very stringent tramp metal removal specifications," Slabbert says. Tramp iron traditionally removed from coal carrying conveyors includes sections of continuous mine core breaker teeth, conveyor belt idlers, belt joints, roof bolts,

metal plates, tools, tin cans and other such debris.

Multotec supplied the original two overbelt magnets in September 2012, with the latest order representing the second phase of an ongoing expansion project. Stuart Cullum, Process Engineer, explains that the width of the conveyor belts in this coal mining application is 1,8 m, with the overbelt magnets themselves being 5,1 m wide and 2,45 m high. They incorporate the latest technical specifications of the client, including pulley design, control and instrumentation.

The overbelt magnets are suspended over the conveyor on gantries for easy removal for maintenance purposes. Features include an automatic belt-driven self-cleaning system that dumps the tramp

iron into collection bins at the side of the conveyor.

The latest two overbelt magnets were transported to Mpumalanga on lowbed trucks and weigh 28 t each without cooling oil. The latter is added once on site using an oil tanker, with a final total weight of 33,7 t for each overbelt magnet. As per client safety specifications, the overbelt magnets have eight safety chains rated and certified for a load of 16 t each. This is double the normal requirement.

Slabbert confirms that these are the largest overbelt magnets available in the Longi-Multotec range. "Through our partnership with Longi, Multotec now has access to a comprehensive range of off-the-shelf air-cooled overbelt magnets for underground tramp metal removal, with the option of flame proofing."

Bernadette Wilson, Multotec Group, tel (+27 11) 923-6193

Ball mill lubrication system for high altitude mine



The Kumtor gold mine in Kyrgyzstan where the BMG Group has supplied and installed a mill lubrication system.

The BMG Group in conjunction with DRA Global has successfully supplied and installed a mill lubrication system including Motor Control Centres (MCCs) and

Programmable Logic Controllers (PLCs) for the ball mill at Kumtor gold mine in Kyrgyzstan.

"Due to their extensive experience with mill control systems, system refurbishment and with BMG lubrication systems in particular, DRA Global were contracted to provide the MCCs and control solutions for the mills," says Jan Grobler, BMG National Product Manager: Instrumentation.

One of the biggest challenges BMG faced for this project was the altitude (4 000 m masl) and ambient temperatures which can plummet to as low as -50 deg C in winter. This required some unique design features to enable the system to

operate efficiently and reliably.

"We have an excellent reputation of providing solutions across many sectors of industry, and we are particularly pleased to be able to enter the Asian mining sector, and look forward to an ongoing relationship with DRA Global and Kumtor gold mine. Most mining operations established in the 1970s will soon be looking at equipment upgrades, and we believe that the BMG Group is well positioned to become the preferred supplier of quality mill lubrication systems in addition to our offering of professional technical support," says Grobler.

Jan Grobler, BMG, tel (+27 11) 793-5562

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