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Cover
A Cat 777D off-highway truck is loaded by a Cat 992K wheel loader at Steyn Diamante’s Bo-Karoo alluvial diamond mining operation. See page 20 for further details.
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Phone: 011 421 9916/7, 011 421 6714, 011 421 6761 • Call centre (after hours): +27 10 595 7853 • Fax: 011 845 1472 • email: info@tegaindustries.co.za
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New history recounts the story of SA mining

The latest book to cover South Africa’s mining industry, Jade Davenport’s *Digging Deep*, is a formidable read – in fact, it’s taken me nearly three months to finish it after receiving a review copy from Jonathan Ball Publishers in early February.

Coming in at around 460 pages (excluding the extensive notes and bibliography), *Digging Deep* is a serious attempt – primarily based on secondary sources – to cover the epic story of South African mining in a single volume and is apparently the first history of its kind. Even so, Davenport freely admits that her book is by no means comprehensive and that it concentrates on just seven commodities – copper, diamonds, gold, coal, iron ore, platinum and uranium.

It’s probably worth pointing out that in practice diamonds and gold get the lion’s share of attention. Having said this, the other metals and minerals are for the most part covered in reasonable detail although I did notice that nowhere (unless I somehow missed it) is Palabora – surely one of South Africa’s landmark mines – mentioned. As it is, copper mining in South Africa seems to have started and finished in Namaqualand in Davenport’s account.

Davenport is well qualified to write on South Africa’s mining history. She studied at the University of Cape Town and has a MA (cum laude) in Historical Studies – her dissertation, I understand, was on the evolution of mining legislation at the Cape from the mid-1800s to 1910. She has also worked as a journalist and correspondent for *Mining Weekly* since 2005 and indeed it was her mining history column in this publication which led to Jonathan Ball Publishers inviting her to write a full length book.

Her writing is immaculate and has been complemented by excellent proof reading as I didn’t see a single spelling error anywhere in the book. As far as I could tell, there are few factual errors either, the only one I picked up being a reference to Eskom operating a generating fleet of “13 massive coal-fired power stations each with a capacity of over 34 000 MW”.

One of the problems of a book like this is that it necessarily has to devote a great deal of attention to what one might call the heroic age of South African mining – roughly the period from the late 1860s to around the end of the 20th century which saw, in succession, the diamond rush on the northern frontier of the Cape Colony, the gold rushes in thethen Eastern Transvaal at Pilgrim’s Rest and Barberton, and finally the greatest gold rush of all on the Witwatersrand.

The story of these events – and of the colossal personalities such as Rhodes and Barnato connected with them – has been told so many times by so many writers that it is difficult for a new author to bring anything fresh to the table. Still, Davenport does a marvellous job of re-telling the story and is particularly good in explaining and making sense of the labyrinthine negotiations and deals which consolidated the diamond mines in Kimberley in the late 1870s and the 1880s, putting an end to the short-lived – and chaotic – era of the small digger.

On the subject of the opening up of the Witwatersrand, I was amused to read that Gardner Williams, an American engineer who was an adviser to Rhodes and who became the GM of De Beers, visited the emerging goldfield in its early days – before mining really started in earnest – to assess its prospects. His verdict: “If I rode over these reefs in America I would not even get off my horse to look at them. In my opinion they are not even worth hell room.”

Williams in fact was a very able man by all accounts but this statement must surely rank as one of the most spectacular misjudgements in the history of mining!

Davenport takes her history through to 2002, the year marking the 150th anniversary of the start of commercial mining in South Africa (the first Namaqualand copper mine was established on the farm Springbokfontein in 1852) and also the year that the MPRDA was promulgated. Her coverage of the last decades of the 20th century struck me as being a bit on the light side – given the major restructuring of the industry that occurred in the 1990s in particular – but I can well appreciate that space was an issue and that it was important to keep the book to a manageable length.

Aside from this quibble, I would rate *Digging Deep* as a very fine piece of work and I certainly can’t imagine that anyone with an interest in South African mining history will want to be without their own personal copy.

Arthur Tassell
First blast marks start of mining at Husab

The first blast at Swakop Uranium’s US$2.5 billion Husab project near Swakopmund in Namibia was detonated in March this year, marking the start of mining activities on what will become the world’s second largest uranium mine (after the McArthur mine in northern Saskatchewan, Canada).

Husab is being developed as a low-risk, conventional, large-scale load-and-haul open-pit mine, feeding ore to a conventional agitated acid leach process plant. The project represents a major boost for Namibia’s economy – up to 6 000 people will be employed during construction while 2 000 permanent positions will be created once the mine is in full operation in 2017.

In an article in the latest edition of Husab Voice, the newsletter of Swakop Uranium, the company’s Senior VP: Operations, Deon Garbers, says the plan is to ensure that a run-of-mine (ROM) stockpile will be ready for processing on completion of construction of the processing plant. The mine and process plant are designed to produce 15 million pounds of uranium oxide a year.

An important recent development on the project was the securing of buffer storages for water so that the project can continue uninterrupted until the permanent water line is constructed and comes on stream.

“Due to significant project ramp-up, we envisage increased demand for construction water in the year ahead,” says Garbers in the article. “The project team therefore utilised the Christmas break to mitigate the risk by filling newly constructed ponds which have a capacity of 52 000 m³, roughly ten times that of the temporary pond. A long term off-take agreement signed with NamWater will ensure that all water used during and after the project will be desalinated, thus preserving coastal aquifers.”

Swakop Uranium has in the meantime confirmed plans to build a 500 000 tonne sulphuric acid plant at the mine. Sulphuric acid is a key chemical used to recover uranium in an orebody. Construction of the sulphuric acid plant will start in the second quarter of 2014. The Husab mine is expected to utilise all the sulphuric acid produced at the envisaged plant. Additional acid, if needed, will be imported or sourced locally.

Electricity from the NamPower grid was connected on 3 February through a 17 MVA mobile substation. The Husab mine site will have up to 50 MVA by the end of the year through a permanent substation.

The permanent road and bridge over the Khan River was completed recently and officially opened in early May. The turnoff to the Husab mine is 45 km from Swakopmund and meanders over the Khan River Valley approximately 14 km from the B2 main road. The bridge over the Khan River is 160 m long, linking the mine to the main B2 transport route leading to Swakopmund. The surfaced road connecting the mine with the Namibian road network stretches over 22 km.

Some of the heavy mining equipment needed for the massive open-pit operation at Husab has also arrived on site. By the end of February this year, five of the giant Komatsu 960E-2KT haul trucks (each with a payload of 327 tonnes) had been assembled at the site, as well as the first of three Cat 6060FS hydraulic face shovels (along with three Cat 7495 electric rope shovels, eight rotary blasthole drill rigs and two diesel engine motivators) are being supplied by Barloworld Equipment.
Platinum Group Metals (PTM), based in Joburg and Vancouver, reports – in its financial statements for the six months ended February 28, 2014 – that it has thus far invested US$281 million in the development of its WBJV Project 1 platinum mine (also known as Maseve), located near Sun City.

At Project 1 PTM’s owners’ team oversees engineering, procurement, construction and management firm DRA Mineral Projects and underground mining contractor JIC Mining Services. Including sub-contractors, there are approximately 1 350 persons at present involved in underground development, mining and construction activities on site. Approximately 3,8 million man hours of construction work have been completed.

Underground development has reached the Merensky Reef, and initial mining blocks are in planning and early development. Stockpiling of early ore is underway. Crusher, mill and flotation circuit foundations are constructed to above ground level. Mill components have been ordered and are being fabricated with a number of items now complete. A 10 MVA electrical supply was completed and energised in October last year. Two ventilation raises and fans are now functional and underground mining of multiple declines and headings continues.

Capital costs have generally been within budget, and first concentrate production is targeted for calendar fourth quarter of 2015.

PTM says that on 3 March 2014 Africa Wide failed to pay approximately US$21,52 million for its 26 % share of a unanimously approved six month forward construction budget for Project 1.

PTM estimates that Africa Wide will dilute to approximately a 17,1 % holding in Maseve as a result of the second missed cash call. Africa Wide disagrees with the dilution calculation and the matter has been referred to binding arbitration which will confirm the formula. The company is currently working on a plan to sell Africa Wide’s diluted interest in Maseve to qualified BEE partner Mnombo.

A recent view of the WBJV Project 1 platinum mine near Sun City showing the main elements of the project (photo: PTM).

MDM Engineering Group Limited, listed on AIM, has been awarded the EPCM contract for the execution of Sibanye Gold’s Driefontein number 2 metallurgical plant (DP2) gold project.

Sibanye has three principal operations, namely Kloof and Driefontein in the west Witwatersrand region and Beatrix in the Free State. The company is the largest producer of gold in South Africa and amongst the top ten largest gold producers globally.

The scope of work for the DP2 project includes the EPCM of an 180 000 tonnes per month true Carbon-In-Leach plant that can be expanded with a duplicate plant to 300 000 tonnes per month in future. The project is scheduled for completion in the last quarter of 2014.

“MDM are pleased to be working with Sibanye Gold on yet another one of their projects. This is MDM’s 12th gold project in South Africa and 33rd gold project overall,” comments John Edwards, MDM Principal Process Engineer.
Ivanhoe extends Big Zinc Discovery at Kipushi

TSX-listed Ivanhoe Mines says that early results from the company’s underground diamond drilling programme at the Kipushi copper-zinc-germanium-lead and precious-metals mine in the DRC have established significant down-dip extensions of the unmined high-grade Big Zinc Discovery.

Ivanhoe’s drilling has extended the Big Zinc mineralisation to a depth of approximately 1 700 m below surface, which is an additional 200 m deeper than the previous lowest level of the Big Zinc Discovery’s historical measured and indicated resources as they were recorded 20 years ago, before the Kipushi mine was placed on care and maintenance by its former owner in 1993.

“Based on the initial indications we have seen to date, this has been a very encouraging start to our long anticipated exploration of the principal, known mineralised assets at Kipushi,” said Robert Friedland, Ivanhoe’s Executive Chairman.

The drilling has been designed to confirm and update Kipushi’s estimated historical resources and to further expand the mineralisation on strike and at depth.

Drilling to date has been conducted from the 1 220-m level and from a drill station at the 1 252-m level. Three holes have been drilled on the southern end of the Big Zinc, testing down-plunge continuity and extensions to the south.

Hole KPU001, drilled at -67 deg on a bearing of 298 deg, drilled through massive sphalerite and dolomite from 46,4 m to 399,36 m. This approximately 353-m intersection extends to a depth below surface of 1 550 m.

A second hole, KPU002, drilled on the same azimuth as KPU001 but at an inclination of -61 deg, also intersected the Big Zinc from 32,05 m to 372,4 m (total intersection length of approximately 340 m) to a depth of 1 590 m below surface.

Hole KPU003, drilled on a bearing of 273 deg, aimed to test the southern plunge of the Big Zinc. This hole successfully intersected massive sphalerite and dolomite from 31 m to a drilled depth of 550 m down-hole, or 1 700 m below surface. Importantly, the hole also intersected significant copper mineralisation (chalcopyrite and bornite) from 194,4 m to 225 m down hole and a breccia-hosted zone of copper mineralisation (chalcopyrite) from 439 m to 461,6 m.

Drill testing of the Serie Recurrente copper-mineralised zone on the northern limb of the Kipushi mineralised system is also ongoing. The first hole, KPU004, drilled at an angle of -45 deg on a bearing of 005 deg, successfully intersected a copper-rich mineralised zone from 56,5 m to 71,5 m down-hole, including zones of massive chalcopyrite from 58,4 to 59,4 m and from 60,0 to 62,1 m.

Two drill rigs are in operation; a third rig has arrived at the site and will soon start drilling. Dewatering at the mine is ongoing and access to the important 1 272-m-level hanging wall drift is expected shortly, which will allow Ivanhoe to begin the drill programme’s phase of twinning the historical drilling.

“Drilling at Kipushi continues to identify thick intersections of strong sphalerite and chalcopyrite mineralisation,” said Lars-Eric Johansson, Ivanhoe’s CEO. “We will continue to carry out more extensional drilling to enable us to identify potential high-grade material down-plunge below the 1 500-m level. Given the close proximity of Kipushi to several copper smelters in neighboring Zambia, the intersections of copper-rich chalcopyrite and bornite mineralisation encountered in the drill holes below the former mine workings are highly encouraging.”

Crews have been upgrading underground and surface infrastructure to support the start of the drilling programme since access was restored to the mine’s principal working level at 1 150 m below surface in December 2013.

The Kipushi mine is on the Central African Copperbelt in southern Katanga Province, approximately 30 km south-west of the provincial capital of Lubumbashi and less than one kilometre from the international border with Zambia.

The idled mine flooded in early 2011 due to a lack of pumping maintenance.
over an extended period. After acquiring a 68% interest in Kipushi from Gécamines in November 2011, Ivanhoe Mines assumed responsibility for ongoing rehabilitation and pumping, which now has dewatered to the 1 265-m level. Gécamines continues to hold a 32% interest in Kipushi.

Johansson also reported that Ivanhoe recently received the findings of an independent review conducted by MSA Group of Johannesburg, based on results of a comprehensive re-sampling programme of historical Kipushi core from drilling by Gécamines into the Big Zinc Discovery in the early 1990s.

MSA’s review of the recent re-sampling revealed that the zinc assay results generally report higher – and averaged 5.5% higher – than the assay results originally reported by Gécamines. MSA also concluded that the density applied by Gécamines for estimating the tonnage in the Big Zinc Discovery was understated by an average of 9%. Despite the low bias, the review confirms that historical assay values reported by Gécamines are reasonable and can be replicated within a reasonable level of error by international accredited laboratories under strict QA/QC control. This is an important milestone for Ivanhoe as part of its programme to establish current resource estimates for its Kipushi project.

Sese coal project could export power to Zambia

ASX-listed African Energy has entered into a non-binding Memorandum of Understanding (MOU) with Zambia’s electricity utility, ZESCO, and Maysen and Borowski Investments (M&B), an Australian-based investment and corporate advisory firm.

Zambia is currently experiencing a period of strong economic growth centred on new mine and smelter developments in the Copperbelt in the northern part of the country. These new developments, plus the expansion of several existing large-scale mines, are leading to a substantial increase in demand for power.

In terms of the MOU, the parties have agreed to work together to explore the potential for the delivery of 300 MW of base-load electrical power from African Energy’s Sese coal and power project into ZESCO’s grid in southern Zambia, 500 km to the north of Sese.

African Energy will undertake a desktop study to evaluate preferred options for the transmission and integration of power from Sese into southern Zambia. Preliminary studies have confirmed that there are no fatal flaws in the transmission options under evaluation. ZESCO will provide access to its technical capability and information to assist African Energy with the transmission and integration study.
Jubilee commissions third ARC furnace

Jubilee, the AIM-quoted and AltX-listed Mine-to-Metals specialist, says that commissioning of the third ARC furnace has started at its Middelburg smelter operations. The company also reports that the Scoping report in regard to the mining right application for Jubilee’s targeted 70 million PGM ounces Tjate platinum mining project has been submitted on schedule to the DMR.

Leon Coetzer, CEO of Jubilee, says: “I would like to congratulate our Smelter Operations personnel, engineering contractors and support services for their tremendous team effort to successfully conclude the construction and refurbishment of our third ARC furnace. The project had to contend with very challenging adverse weather conditions but was able to limit this impact through innovative solutions and team work.

“This phase of our Smelter Operations renewal programme is the final step in establishing a sustainable operation with positive earnings setting Jubilee apart from most of its peers in the emerging platinum mining space. Our focus now intensifies in line with our stated company strategy of bringing into production our access to platinum containing surface material, ultimately to migrate our Smelter Operations onto processing platinum concentrates.”

The commissioning of the third ARC furnace marks the final phase of the four-phase renewal programme implemented by Jubilee at the Middelburg Smelter over the past two years. The renewal programme’s objectives were to expand and upgrade the Smelter Operations to establish a sustainable toll processing operation which is able to deliver positive cash flows to the Smelter Operation on the back of secured smelting contracts.

ABG to accelerate Bulyanhulu project

African Barrick Gold (ABG) reports that its board has approved the next step in the optimisation of Bulyanhulu through the acceleration of mining of the Upper East Zone. The development of this area will require additional 2014 capital of approximately US$15 million, with initial production from the zone expected within three months. The area is expected to produce 1,7 million ounces of gold, averaging 60 000 ounces per annum, over a life in excess of 25 years at all-in sustaining costs of below ABG’s target run rate for Bulyanhulu for year-end 2015 of US$900 per ounce.

Commenting on the news, CEO Brad Gordon said: “One of our key aims for this year is to demonstrate the potential that exists at Bulyanhulu and to ensure that the production base is more representative of the scale of the reserve base. We are in the process of commissioning the CIL expansion at the mine, which together with the acceleration of the Upper East Zone and the mined grade improvement, provides a clear path to increasing annualised production levels at Bulyanhulu to over 350 000 ounces per annum by the end of 2015.”

Bulyanhulu is an underground mine with reserves of 9,1 Moz at a grade of 9,5 g/t Au and further resources of 6,2 Moz at 11,6 g/t Au.

The Upper East Zone is situated approximately 1,5 km east of the process plant, on the eastern extension of the strike length of the mine. The zone is currently included in reserves and was scheduled to be mined later in the mine life. The Upper East was initially accessed in 2001 through a 1,8 km decline from the central ramping system but was subsequently not developed.

ABG investigated a number of options to bring forward the ounces contained in the Upper East with the results of recent supplemental studies further optimising capitalised waste development and refining the geotechnical model. As a result, the company has completed a revised mine design which will utilise long hole stoping for both Reef 1 and Reef 2. The new design minimises upfront capital expenditure and ensures positive cash flow generation in each full year of production at current gold prices.

ABG now expects to mine Reef 1 and Reef 2 simultaneously using existing underground access infrastructure for the first four years before a boxcut is developed to provide additional access to the zone and the use of larger trucks than current infrastructure will allow. In conjunction with the underground development, ABG is undertaking a plant expansion to increase plant capacity from 1,1 Mt/a to 1,3 Mt/a.
Côte d’Ivoire’s new mining code is investor-friendly

Côte d’Ivoire’s investor-friendly new mining code, developed in close collaboration with its mining industry, will accelerate the country’s emergence as a significant gold producer, Randgold Resources Chief Executive Mark Bristow told a media briefing held in Abidjan recently. Randgold operates the Tongon gold mine in Côte d’Ivoire and has extensive exploration holdings elsewhere in the country.

Bristow noted that the depletion of the world’s mature goldfields had shifted gold miners’ focus to new regions, notably in Africa. Despite the continuing fallback in supply from South Africa, once the world’s largest gold producer, Africa still accounted for 20% of global gold output, thanks to the recent growth of the gold mining industries elsewhere on the continent, notably in West Africa.

“Considering the continent’s vast mineral wealth, however, it still has a long way to go to deliver on its full potential,” Bristow said. “Investors are deterred by the political and infrastructural risks associated with Africa, but in Côte d’Ivoire we have shown how these challenges can be overcome by a true partnership between a mining company, the government and the people.”

This spirit of cooperation was evident in the process of formulating the new code, said Bristow, and he was sure that the country’s mining companies would also be involved in the finalisation of the decree of application which will lay down the rules for the code’s implementation.

Partnership implied a long term commitment to mutual goals between the partners, Bristow said. Randgold’s commitment to Côte d’Ivoire was evident from its nurturing of the Tongon project through a protracted civil war and its investment in the development of the mine in the aftermath of that war. The mine was commissioned amidst the unrest which followed the disputed outcome of a presidential election but even so it made a profit in its first quarter of operation and every quarter since, and has made a significant contribution to the State’s treasury at a time when it was most needed.

“Tongon has made good progress in dealing with a number of technical challenges but the issue of lower than expected recoveries is still being addressed. As we have reported before, this requires the expansion of the flotation circuit which is scheduled to be commissioned at the start of 2015, and the associated pressure on throughput and costs will have to be managed carefully,” he said.

“Challenges in reaching consistent availability in the crushing plant have resulted in a joint decision with the supplier Sandvik to change the current equipment to conventional Sandvik CH660 cone crushers. Randgold is working closely with Sandvik to combine the replacement with an upgraded flow sheet including additional equipment and circuits to achieve the required capacity with an improved performance.”
Processing specialist B&E International says its appointment as the BOO (Build-Own-Operate) contractor for the crushing, agglomeration and stacking plant for the 17 000 t/a Tschudi copper project in northern Namibia represents a milestone in the company’s strategic plan to build on its solid reputation as a contract crushing and mineral processing specialist in order to position itself as a leading engineering project service provider. The Tschudi contract, B&E International’s first in the copper sector and its first installation on a greenfields mine, is set to become the company’s biggest engineering contract.

Tschudi will be an open-pit, heap leach, solvent extraction, electro-winning project producing 99.99% pure copper cathodes on site. Awarded in the fourth quarter of 2013, B&E International’s crushing, agglomeration and stacking contract involves primary, secondary and tertiary crushing, agglomeration and plant maintenance as well as operation of the heap leach stacking process. The crushing, agglomeration and stacking plant will process 2.1 Mt/a of copper ore on a BOO basis at the mine.

The B&E International portion of the contract is currently in the design phase and B&E International will shortly initiate the manufacture of ancillary plant equipment. All major capex items have been specified and procurement finalised, with site establishment likely to begin this month (May). The plant must be fully operational by the end of December 2014.

“About three years ago we took a strategic decision to diversify our offering to the mining industry in Southern Africa to include engineering, procurement, construction and management of mineral processing plant,” says Ken Basson, Director responsible for the Plant & Engineering Division of B&E International. “We’ve amassed a vast pool of intellectual and mechanical resources that enables us to manage entire process solutions for our customers, from conception to commissioning and day-to-day operations, at very favourable rates in comparison to traditional project houses. Our competitive advantage lies in the fact that we’ve designed and operated plant for our own use for many years and this experience is incorporated into our design philosophy.”

B&E International’s first turnkey project was successfully completed in 2012 and involved design, manufacture, installation and commissioning of a 600 t/h dry coal processing plant for the African Exploration Mining and Finance Corporation’s Vlakfontein colliery in Mpumalanga. Basson says the successful delivery of this project is a clear indication of the company’s ability to provide a single source service.

A subsequent major project saw the design, build, commissioning and handover of a complete turnkey aggregate processing plant for Raumix Aggregates. Similar smaller contracts have been executed in Namibia and South Africa for customers in the diamond industry over the past two decades.

“We’re differentiated in the market by virtue of the fact that we can actually run the plants that we design, taking all the responsibility and risk for their performance,” comments Dewald Janse van Rensburg, MD at B&E International. “Our revenue stream is based on a certain level of production per month, so we design with reliability as a critical criterion.”

B&E International has extensive experience providing entire process solutions in remote locations.
ASX-listed Tiger Resources reports it has welcomed MCK Trucks sprl as a shareholder of the company. MCK has been the mining contractor at Tiger’s Kipoi copper project in Katanga in the DRC since the company started producing copper concentrate at Kipoi in May 2011.

MCK, a local DRC-based company, approached Tiger about becoming a shareholder. Tiger issued 35.6 million shares to MCK at $0.36 per share, with proceeds to be settled through the provision of mining services for the Stage 2 solvent extraction/electro-winning (SX/EW) operation at Kipoi.

Construction of the Stage 2 SX/EW plant commenced in January 2013 and the overall project was 92% complete at the end of March 2014. According to Tiger, the project remains within budget and ahead of schedule, with first production and sales of copper cathodes due in Q2 2014. The feasibility study for Stage 2 has confirmed the operation as a low-cost, high-margin project capable of producing 532,100 tonnes of copper cathode over 11 years, processing ore reserves from the Kipoi Central, Kileba and Kipoi North deposits and HMS reject floats, slimes and medium and low-grade ore stockpiles from the Stage 1 HMS operation.

Comments Tiger MD Brad Marwood: “Having MCK on our share register demonstrates the confidence and support we’ve got from the local community and strengthens our in-country relationships. Our alliance with MCK will reduce the development cost for the next phase of works whilst maintaining a presence at site of a key contractor who has been an integral part of our success story to date.”

Tiger's Kipoi Stage 2 project. Material from the HMS floats stockpile – containing 38,500 tonnes of copper – is now being stacked onto the heap leach cells (photo: Tiger Resources).
Market briefing on Mozambique’s new mining law

The final draft of Mozambique’s new mining law is expected to be approved during the current sitting of parliament.

The major sections of the new mining law focus on key issues relating to new mining titles including mining treatment and mining processing, new timing requirements for exploration and prospecting and mining concession licences, restrictions on the transfer of mining rights and titles, the new tax regime, and the effect on existing rights.

Additionally, provisions have been put in place for the establishment of a local content policy that will see further acceleration through 2014.

Since the drafting of the new mining law began, the Minister of Minerals in Mozambique has been quoted as saying “The state should have a percentage of participation in consortia or companies that have mining concessions to explore mineral resources that are considered strategic.”

Some of the changes have radical and far reaching consequences for all companies invested into the mining and resource space.

The new legislation should have been passed by the time an upcoming auction of coal mining concessions takes place in June. The concessions will be in the provinces of Tete and Niassa.

A one-day market briefing on the legislation organised by AIE will take place in Johannesburg on the 8 July. Further details are available from website www.africanin-fex.com or by calling 081-777-0028.

Moma ore production up by 81 per cent

Kenmare Resources, which owns and operates the Moma titanium minerals mine on the coast of north-eastern Mozambique, has issued a trading update with respect to the period from 1 January 2014 to 23 April 2014 and covering production and shipments from 1 January 2014 to 31 March 2014 (Q1 2014).

Ore mined was up 81 % to 7,54 Mt (Q1 2013: 4,15 Mt) while production of heavy mineral concentrate (HMC) increased by 51 % to 287 000 tonnes (Q1 2013: 189 800 tonnes). Production of ilmenite was up 53 % to 210 800 tonnes (Q1 2013: 137 500 tonnes) and production of primary zircon increased by 35 % to 7 700 tonnes (Q1 2013: 5 700 tonnes). Sales of finished products amounted to 193 900 tonnes, an increase of 299 % on the Q1 2013 figure of 48 500 tonnes.

“The first quarter of the year saw a significant increase in mining and production compared to Q1 2013 following the completion of the expansion of Moma in late 2013,” comments Michael Carvill, Kenmare’s MD. “Q1 has historically been our lowest production quarter due to the issues associated with power supply in the Southern Hemisphere summer months. Consequently, we are pleased to have reached an agreement to bring a diesel-powered electricity generating plant on site as an auxiliary power source, providing the Mineral Separation Plant (MSP) with increased security of power supply to more effectively utilise our new expanded facilities. With the rescheduling of debt payments completed and the problem of power fluctuation having been mitigated, we look forward to reporting further progress on lowering unit operating costs and ramping up production to nameplate capacity.”

On the subject of power supply, Kenmare says the MSP is more sensitive to voltage fluctuations than the mining and wet concentrator plants and that it is continuing to improve MSP operating procedures and equipment to minimise downtime caused by these fluctuations. In addition, a rental contract has been signed to supply a 7,5 MW diesel-powered electric generating plant to the mine, which will supply stable power to the MSP during the Southern Hemisphere summer months when most voltage stability problems occur. The generating plant is expected to be available for use on site from early H2 2014 and will also be available on standby in case of any unanticipated failure of the transmission system during the rest of the year.
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Fleet rental model adopted for New Liberty

Aureus Mining Inc, listed on the TSX and AIM, reports it will engage in owner mining at its New Liberty gold project, located within the Southern Block of the company’s 100%-owned Bea Mountain mining licence in Liberia. MonuRent (Liberia) Limited has been awarded a contract to provide and fully maintain a new mining fleet in support of the owner mining operations over the life of mine.

Aureus says that MonuRent has provided a fleet over the past 18 months for the clearing, civils and earthworks at New Liberty during the construction and development phase under a separate contract and that overall fleet availability to date is 92%.

In terms of the new contract, MonuRent guarantees a minimum fleet availability of 85% and will assist with the training of local operators. Aureus believes that the arrangement will allow it to focus on its core strengths and activities in respect of the mine planning and scheduling, removing the responsibility and obligation to purchase and maintain the fleet over the LOM.

According to Aureus, the fleet rental model in mining is an established global concept and is used extensively in Australia, North and South America, and south-east Asia.

Aureus will be responsible for the open-pit mining, geology, survey and planning and will provide the operators and other in-pit personnel to undertake the mining and pumping activities. Thinus Strydom, Aureus’ GM, will be responsible for managing the mining operations, having performed this role previously at the Bisha, Loulo and Emperor mines. The majority of the mining team are already working at New Liberty and are currently in the planning phase for the pre-strip and the subsequent mining operations.

MonuRent is an international company with a proven track record of heavy equipment solutions and services across West Africa. It was founded in 2010 with the vision of becoming the leading equipment rental and operational outsourcing business in Africa. Its current fleet of equipment consists of over 350 units operating in Nigeria, Sierra Leone, Ghana, Liberia and Botswana.

Ironveld plc has announced a summary of the Definitive Feasibility Study (DFS) assessing the economic viability of its pig iron and ferro-vanadium project. Located in Limpopo Province, approximately 80 km north of Mokopane, the project will consist of a 15 MW DC smelter with planned production of 41,966 tonnes of high purity iron, 415 tonnes of vanadium (in slag) and 8,269 tonnes of titanium (in slag) per annum from late 2015.

The study confirms the project’s viability to deliver an exceptionally high grade iron product (99.5 % Fe) called High Purity Iron (HPI) which commands a premium to the pig iron price. Vanadium and titanium slag containing commercial grades of vanadium and titanium will also be produced and sold. Project life is in excess of 100 years and highly scalable.

Ore from the main magnetite layer on the company’s properties can be fed directly to the proposed smelter without the need for beneficiation.

The study shows the ability of the project to deliver an annual turnover of £26.4 million with an EBITDA of £8.1 million per annum (based upon current costs and commodity values). The project is also projected to be cash flow positive from the commencement of production. The capital expenditure is projected to be approximately £36 million, a proportion of which will be funded out of early cash flow from the project.

The robust nature of the project has apparently attracted interest from a number of capital providers.

Commenting on the study, Peter Cox, CEO of Ironveld, said: “We are delighted to have completed the DFS and to be able to show that the 15 MW smelter is a robust project and will be cash flow positive from commencement of production. Following our smelting campaign last year, we have been testing our products with potential end users and have generated significant interest in the products and particularly for the HPI product which commands a premium in price and enhances project economics. The ability to sell the titanium slag has also added to the project’s robustness.

“This is a very exciting time for the company and we remain on track to commence construction later this year with first production scheduled for late 2015.”
ASX-listed Resource Generation Limited says that development of the Boikarabelo coal mine in the Waterberg region continued during the first quarter of this year. It reports that construction of the mine’s infrastructure progressed, with 260 personnel already working on the site. The 200-person construction camp is close to completion, and earthworks to expand the camp to accommodate 1,320 people have been finished.

Earthworks for the 40 km rail link from the mine to the existing Transnet Freight Rail network have begun and will continue into 2015. Initial rail and sleepers have been delivered. Other projects in progress are earthworks for the coal handling and preparation plant, upgrading of the current access road, construction of the main mine access road, a provincial road bypass and road underpasses for the water pipeline from Marapong.

All regulatory consents have been received, all necessary land has been acquired and rail haulage and port access contracts sufficient for the mine’s stage 1 production have been signed.

Construction is expected to take a further 21 months and, subject to finalisation of funding agreements by June 2014, production is due to begin in December 2015. Stage 1 of the mine development targets saleable coal production of 6 Mt/a.

Regarding funding, Resource Generation says that negotiations on term sheets for project finance to complete the mine are now in their final stages, and negotiations are also underway with three parties to fund the mobile equipment that will be required in August 2015.

Binding term sheets are in place with Noble Group for a US$65 million loan for construction of infrastructure and a US$55.3 million loan for construction of the rail link. US$20 million was drawn down from the rail link loan during the quarter. EKF, the Danish state-owned export credit agency, is undertaking due diligence regarding a guarantee for approximately 50% of the cost of constructing the coal handling and preparation plant, for which a binding term sheet has been received from FLSmidth Roycemec.

Resource Generation announced in November last year that the cost of the plant was expected to be below US$200 million, more than US$50 million less than earlier estimates.

In terms of offtake agreements, three long-term export contracts have been entered into with CESC, Valu Investments and Noble Group. These contracts underwrite most of the forecast revenue from Boikarabelo’s stage 1 production and a substantial portion of stage 2 production. A domestic offtake contract for 3 Mt/a of middlings coal has been entered into with Noble Group for the first eight years of production.

The Boikarabelo project has a resource of over 6 billion tonnes and a probable reserve of 745 Mt.
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SRK’s 40-year success story

SRK Consulting, an independent, global company providing services to the mining and water resource industries, is celebrating 40 years of business. From its small, 1974 beginnings in Johannesburg, South Africa, it has grown into an international company with more than 1,500 employees.

“We are grateful to our clients for the opportunities to provide them with advice and solutions,” said Andy Barrett, SRK Group CEO. “Our company’s reputation and track record have been built largely on their projects, and we thank them for their trust and confidence.”

Group and UK Chairman Mike Armitage added that SRK’s achievements can be attributed to its people. “We have been able to add value to our clients’ projects by attracting and retaining talented professionals, some of whom are world leaders in their fields,” he said.

While SRK initially focused on providing geotechnical and mine design services, over the last four decades it has broadened its scope to cover all aspects of the mining industry from grass-roots exploration to mine closure.

“Mining, by its very nature, requires a multi-disciplinary approach,” said Roger Dixon, Chairman of SRK (South Africa). “This applies more today than ever before, particularly with respect to the environmental and social impacts of mineral projects.”

For example, SRK recently undertook environmental and social impact assessments and management planning – including stakeholder engagement – for several mines in the Congo and Zambia. A major objective of clients was to augment their social licences to operate through transparent, open, and good-faith engagement with stakeholders.

“Key outcomes of this work include improved relationships and trust between the client, communities, and other stakeholders; access to funding from financial institutions requiring Equator Principles compliance; and permit renewal for several of the projects,” Dixon said.

SRK regards its independence – through employee-ownership and not holding equity in any project – as a fundamental attribute that enables it to provide demonstrably conflict-free, objective recommendations on crucial judgement issues.

“One of our regular tasks is providing high-level assurance to clients contemplating financial transactions where ‘real money’ is on the line for buyers and lenders,” said Simon Hanrahan, Chairman of SRK (Australasia). “Good corporate governance usually requires technical valuations to be confirmed through independent, third-party reviews.”

When Barrick recently offered its Yilgarn South assets for sale in Australia, Gold Fields not only conducted its own internal analysis but also appointed SRK to conduct an independent, parallel review. SRK’s study addressed geology, resource, mining, geotechnical, mineral processing, tailings management, infrastructure, and environmental issues, and contributed towards Gold Fields’ ultimately successful purchase of these Barrick assets.
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Mwana Africa turns in improved figures

Reporting on its operations and exploration activity for the quarter ending 31 March, 2014, Mwana Africa says that tonnes milled for the quarter at its Freda Rebecca gold mine in Zimbabwe were 8% higher at 279,879 t compared to 258,184 t in the preceding quarter. The increase in tonnage processed is attributed to a 4% increase in throughput as a result of the second mill speed increase and a 4% improvement in running time, attributable to improved maintenance.

The average feed was 1% higher at 1.91 g/t from 1.89 g/t in Q3. Stope preparation that had affected Q3 was completed and grades improved in the main stopes, as anticipated. Consequently, a combination of improved milled tonnes and feed grade resulted in gold production rising by 2% to 13,380 oz, compared to 13,072 oz in the previous quarter.

Cash operating costs for the quarter under review decreased to US$1,053/oz from US$1,066/oz. All-in sustaining costs increased by 3% from US$1,291/oz in the last quarter to US$1,325/oz this quarter. This is attributable to an increase in the asset amortisation charge for the quarter by 10%, a result of the commissioning of the Tailings Retreatment Project pilot plant.

Mwana says that pilot plant commissioning is continuing. The new transformer for the section had to be returned to the manufacturers for repairs whilst the agitator drives design has been revisited and upgraded drives are expected during the quarter.

Mwana also controls Bindura Nickel Corporation (BNC) and reports that nickel in concentrate sales of 2,207 tonnes from BNC’s Trojan mine were achieved, representing an increase of 9.5% compared to the previous quarter. All-in sustaining costs (C3) cash costs increased from US$11,819/t to US$12,220/t as a result of the continued production ramp-up and shaft re-deepening.

At Mwana’s Klipspringer diamond mine in South Africa, located 35 km south of Polokwane in Limpopo Province, retreatment of the Marsfontein slimes dam produced 12,383 carats during the quarter, an increase of over 100% on the previous quarter. An average price of US$21 per carat was achieved.

African Copper appoints mining contractor

African Copper, the AIM- and Botswana-listed copper production and exploration company, has announced a production and exploration update for the fourth quarter and its financial year to 31 March 2014.

The company’s flagship project is the copper-producing open-pit Mowana mine. African Copper also owns the rights to the adjacent Thakadu-Makala deposit. Both deposits are situated on the highly prospective Matsitama belt, located close to Botswana’s second largest city, Francistown, in the north-eastern part of the country.

For the fourth quarter of fiscal 2014, the company produced 2,515 tonnes of copper in concentrate, a marginal increase on the third quarter when 2,499 tonnes were produced.

The amount of ore mined from the Thakadu pit was impacted by frequent breakdowns of the mining contractor’s fleet and rain. Ore transported from Thakadu to Mowana for processing was also severely affected by torrential rains during all three months of the quarter which resulted in the frequent flooding of the Lepashe River on the ore transportation route.

During the quarter Diesel Power Mining, a subsidiary of JSE-listed Buildmax, was appointed to provide hard-rock opencast mining services to African Copper. The contract commenced during February and has a duration of 52 months. It is denominated in Botswana Pula (BWP) and is valued at approximately BWP1 billion (around US$112.7 million) over the contract period.

The decline in ore processed during the quarter was offset by higher grade ore from the Thakadu pit during January and March, and improved recoveries when compared with the previous quarter.

Saleable copper in concentrate increased to 9,951 tonnes for fiscal 2014, an increase for the third consecutive year.

A preliminary geotechnical report was received during March for the area north of the current Mowana pit. The results of this ongoing work will be factored into current studies being undertaken to assess the potential for developing an underground mine at Mowana.
The Orange and the Vaal Rivers converge near the Northern Cape town of Douglas, and bring with them an ancient trail of alluvial diamond deposits that have been the focus of intensive mining activity since the late 19th century, when the first discoveries were made.

It has never been easy to mine here, considering that the carat yield can be as low as 0,2 per hundred tonnes, plus there are the complexities of alluvial mining: diamond bearing gravel, by its nature, tends to be widely dispersed, and larger stones hard to find, which means that expert experience is required to unlock the potential.

Within this sphere, Douglas-based mining company Steyn Diamante is widely regarded as one of the market leaders in the alluvial field, with the company currently mining on three sites within the Orange River region.

Bo-Karoo is the latest development, an opencast diamond mine situated in the middle Orange River some 30 km south of Douglas, where Steyn Diamante has secured the mining rights for an existing operation.

This right extends to 2038 on a site with rich reserve potential, amounting in total to around 14 million tonnes, with the varied deposit defined by an upper and lower terrace. In this respect, the lower terrace is situated some 20 m above the river level, and the upper terrace at between 30 and 40 m.

The anticipated life of mine, given current production scenarios, is estimated at around 12 years.

Mining operations are currently concentrated on a section of the lower terrace at Bo-Karoo, around 8 to 15 m of sand overburden needs to be removed to access the diamond bearing gravel layer beneath. The challenge is to efficiently strip 8 to 15 m of soft sand overburden to access the 6 m thick diamond bearing gravel layer beneath, a costly exercise for a relatively low grade deposit and one that requires precise machine selection, optimum production management and the latest beneficiation technologies to make mining profitable. Consider that approximately...
180 000 to 200 000 tonnes of overburden needs to be removed for every 130 tonnes of diamond bearing gravel sent through the process plant.

“In the past, and on other sites where we mine, articulated trucks have been our dedicated haulers,” explains Schalk Steyn, head of Steyn Diamante. “However, given the massive overburden volumes at Bo-Karoo, we needed to move to larger off-highway trucks to achieve a viable cost per cubic metre, in the process ensuring that we keep ahead of the stripping and rehabilitation phases, the latter occurring in advance of the mining programme.”

To meet these production demands, Steyn Diamante has invested in three Cat 777D 90.4 tonne nominal payload off-highway trucks, and a Cat 992K wheel loader, which together form the backbone of the load and haul overburden stripping operation, and subsequent environmental rehabilitation. These machines, which are supplied and supported by Barloworld Equipment, join an existing Cat fleet, which includes D11T and D10T track-type tractors. (Barloworld Equipment is the Cat dealer for Southern Africa.)

Powered by a 607 kW (net power) Cat C32 engine, the Cat 992K has a rated payload in standard lift configuration of 21.7 tonnes, making it a four to five pass match for the Cat 777D.

“Based on our research, the Cat 777 truck series and Cat 992K wheel loader are both leaders in their class worldwide, and designed to deliver high availability at the lowest cost per tonne,” Steyn continues. “This has certainly been proven at Bo-Karoo, where to date we have achieved major savings.”

The 777D truck is purpose-designed to withstand the rigours of opencast mining.
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featuring a rugged and durable frame structure that is intended for a long life with low operating costs. “Simplified service and maintenance features reduce downtime, allowing the machine to spend less time being serviced and more time on the haul roads,” explains Barloworld Equipment Kimberley Cat sales professional, Hendrik de Wet.

Power is generated via a Cat 3508B EUI (Electronic Unit Injection) engine delivering a gross output of 746 kW (SAE J1995), whilst the peak torque is 4 713 Nm. The 23 per cent torque rise provides unequalled lugging force during acceleration, on steep grades and in rough underfoot conditions. (This torque rise effectively matches transmission shift points for maximum efficiency and fast cycle times.)

Both in terms of mining and downstream mineral processing, liberation of the exposed gravel is another key consideration when it comes to equipment selection and application technique. Here Steyn Diamante’s Cat track-type tractors are used to rip up the diamond bearing conglomerates. “The more you rip, the better the grades, so you need to work the gravel extensively to yield the best recoveries,” Steyn explains.

Liberated material is then loaded onto track-mounted in-pit scalping screens, where further process efficiencies are achieved: diamond bearing materials under 80 mm that are destined for the process plant are fed by conveyor into awaiting articulated trucks, reducing double handling. Oversized material in turn is loaded continuously for immediate dispatch to designated rehabilitation zones.

In terms of beneficiation, Steyn Diamante has eight pans at the processing plant, a DMS, and the latest technology in high speed diamond recovery. Initially, approximately 115 000 to 130 000 tonnes of diamond fissures gravel are expected to be processed per month.

The final recovery plant will only treat material sized under 45 mm. This equates to a potential stone size of up to 400 carats, and Bo-Karoo has yielded gems this large in the past from across the full colour spectrum. Examples include a 29-carat pink stone that sold for around R55 million, plus a number of D-Colour stones of more than 100 carats and even a 300 carat light brown gemstone.

Initial exploration of Bo-Karoo’s upper terrace indicates that whilst the grade remains low, the stones will be of higher quality. The mining method will also differ, with drilling and blasting required to open up the deposit.

Meanwhile, as mining progresses at Bo-Karoo, production is ongoing at Steyn Diamante’s other two operations, namely De Kalk and Remhoogte.

Remhoogte, situated near Prieska, is similar in scope to Bo-Karoo. Lying approximately 105 m above the level of the Orange River, the mine has an anticipated working life of eight to 10 years.

A much older mine, De Kalk, situated in the Upper Orange River, has the distinction of being the site of South Africa’s first recorded diamond discovery, and there are still good gem yields being achieved.

On these two mines, articulated dump trucks are being used. However, as the hauling distances increase, along with the amount of overburden, Steyn says that the logical move is to switch to rigid mining trucks.

At the moment there are around 72 items of earthmoving equipment within Steyn Diamante’s mixed fleet to support the company’s ongoing expansion plans.

“We have been experiencing strong growth as a company in recent years and our past focus on acquiring prospecting rights has now shifted to the acquisition of mining rights that provide larger and longer operational scope,” says Steyn. “Going forward, for example, we are investigating the potential acquisition of more reserves in the middle Orange River.

“This is not an easy area to mine, but it’s widely accepted that the best quality stones in South Africa come from there. You just need the right equipment, knowledge and skill to extract the value.”
The Namib project is best described as a brownfield development. Says French: “The deposit was discovered in 1932 but it wasn’t exploited until the late 1960s, when a shallow underground mine was established to extract lead. In the 1970s it was realised that the orebody could also support a zinc mining operation and a zinc flotation circuit was added to the plant. The combined zinc and lead operation then continued until 1991 when the mine was closed down, a result – we understand – of falling commodity prices at the time, as well as some labour problems.

“As near as we can estimate, approximately 1 million tonnes of ore was mined over the 24-year life of the mine. This resulted in the production of over 100 000 tonnes of lead and zinc concentrate and more than a million ounces of silver. After net smelter returns, we calculate that this would have yielded revenues in excess of US$100 million at current commodity prices.”

French, who started his career with Merrill Lynch and has 25 years’ experience in international capital markets and the junior resource sector, says North River purchased the project in 2009. “At that point, it was in the hands of Kalahari Minerals,” he recalls. “That company had a big involvement in the Rössing South project, now Husab, which had recently been discovered, and wanted to dispose of what it considered its non-core assets, including the Namib property.

“Once the acquisition went through, it took us some time to properly focus on the project, as we had a number of assets at that point demanding our attention, but we finally got going in earnest in 2011. We’ve made excellent progress since then. We’ve dewatered the lowest two levels of the mine, which had flooded, and we’ve pulled all the scrap out of the workings. Essentially, we’re ready to start mining. Everyone has been surprised at the pace at which we’ve moved and so far we’re on budget.

The tempo of development at North River Resources’ Namib lead-zinc mine in Namibia is steadily building up, with an application for a mining licence having recently been submitted to the Namibian Ministry of Mines and Energy and a feasibility study due for completion shortly. Modern Mining’s Arthur Tassell recently spoke to North River’s MD, Martin French, and Dominic Claridge, Project Manager, about the redevelopment of the mine, which could be recommissioned and in production by the first quarter of 2015.

Namib lead-zinc project heads for 2015 start-up
Last year alone we invested around £2 million in the project.”

The Namib mine is located 25 km from Swakopmund and 55 km from the port of Walvis Bay in an area which already supports two large-scale uranium mines, Rössing and Langer Heinrich, as well as a host of developing uranium projects, including the US$2.5 billion Husab mine, now in the early stages of construction.

“You couldn’t find a better place in Africa to develop a mine in terms of skills, engineering support and infrastructure,” says French. He adds that the mine site is accessed via a good 8 km-long gravel road linking with the main Windhoek-Swakopmund road (part of the Trans-Kalahari highway) and that a rail line runs literally through the property. “Water, of course, is a problem for all mining developments in the area but we have been assured that it will not be an impediment to project development,” says French, who notes that the main water supply pipeline to Rossing skirts the Namib property.

Dominic Claridge, who has charge of the project on a day to day basis, has been with North River for about 15 months. A mining engineer (he earned his degree at the University of Sydney), he has worked in Australia, Africa and China and, immediately prior to joining North River, was employed by Weatherly International in Namibia. “While at Weatherly, one of the projects I was involved with was Berg Aukas, which is located in the north of the country and, which – like Namib – was also mined in the past for lead and zinc,” he says.

Describing the infrastructure at the Namib site, Claridge says North River has inherited an underground mine which requires only limited redevelopment. “The previous owners put in a 150 m deep vertical shaft initially and supplemented this in the 1980s with two declines, and all are still in good shape,” he states. “Three orebodies were mined – the South, Junction and North orebodies – with the bulk of the production coming from the South and Junction orebodies, which were developed to the 7.5 and 7 levels respectively – with the levels being being roughly 30 m apart. Not too much was done on the North orebody, which was only developed to 2 level, and this will probably be the area where we start mining.

“The mining techniques used were very traditional and fairly labour intensive – for the most part, shrinking stope or gallery style mining methods were employed. As regards our own plans, we envisage a fairly simple compressed air mine, using airleg mining methods. Our approach will be more mechanised than our predecessors inasmuch as we’re planning to haul the ore out of the mine using 12 to 15-t trucks travelling in the existing declines – one of which will have to be slightly enlarged. The
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vertical shaft will become primarily a vent shaft. No waste will come to surface – it will all go into underground voids which we believe can accommodate about 750 000 tonnes.”

Claridge points out that the Karib Formation host marble at the Namib mine is extremely competent and that there are only a couple of rock bolts in the existing workings. “We’re not anticipating having to do any significant support work once we restart mining,” he says.

Turning to the plant, Claridge says that the plant that was on site has been removed. “We’ll put in a brand new plant which will be modular in design and which shouldn’t take more than about six months to build,” he states. “It will probably encompass a single stage of crushing using an impact crusher, screening, milling via a single 450 kW ball mill, sequential flotation of the lead and zinc, and final thickening. We would then transport the concentrates – either by road or rail – to Walvis Bay for export. The plant will have a 250 000 t/a capacity but will be designed to allow expansion.”

In respect of tailings disposal, French notes that a new tailings dam was constructed in the mid-1990s for a tailings reprocessing operation. It was designed by Epoch and has a capacity of 1.5 Mt. “This is the beauty of this project,” he says. “We have an underground mine in place with very limited work to be done in order to restart mining, as well as a tailings facility which is ready for use. As a result, our capex is going to be very low. The feasibility study will give accurate figures but at this stage we think we’re looking at an investment of only about £15 million.”

The feasibility study – which is being undertaken by Snowden, with Tenova handling the plant design – was due for completion at the end of April but has been delayed slightly – a result of metallurgical testwork taking longer than expected. It should now be released by August, possibly sooner.

On site, infill and exploration drilling is continuing, using a Kempe U3-9B diamond drill belonging to North River, as well as an Atlas Copco 262 drill, which is operated by Shali Drilling. The Kempe is currently working in a 300 m drive being developed under the northern lodes of the orebody.

Drilling and mining contractor Shali, which is run by Namibian businessman Wilhelm Shali, is emerging as a fully fledged partner of North River. The two companies signed a ‘drill-for-equity’ agreement earlier this year, in terms of which Shali will be paid in shares of North River rather than cash for the drilling it undertakes. The agreement was established to cover the first £175 000 worth of invoicing for drilling activities and shares are being issued at an equivalent of 0.6 pence each for works invoiced.

The latest resource figures for the Namib property were released in December 2013 and show a 129 % increase in the overall resource to 1,57 Mt. This is made up of 917 000 tonnes (indicated) of fresh ore at 2.4 % Pb, 5.7 % Zn and 44.8 g/t Ag and 610 000 tonnes of tailings (measured and indicated) at 0.3 % Pb, 2.1 % Zn and 7.6 g/t Ag. These figures give an in-situ metal inventory of 23 700 tonnes of lead, 65 500 tonnes of zinc and 1,48 Moz of silver.

“The orebody at the mine is open at depth and the exploration drive we’re developing will allow us to assess the potential for deep ore at Namib. In addition, we had a new exploration licence granted last year which has expanded the near mine exploration area by over 12 000 ha to give us a total exploration area of nearly 17 000 ha. The area has numerous surface gossans that are similar in size to the one that led to the discovery of the Namib mine so there is clearly considerable exploration upside for the project,” French concludes. ■
Kibali, which will rank as one of the largest gold mines in Africa when it is in full production, is owned by Randgold Resources and AngloGold Ashanti, each with a 45% stake, and the DRC state gold mining company, Société Minière de Kilo-Moto (SOKIMO). Kibali is being operated and developed by Randgold, and represents an investment of more than US$2.5 billion by Randgold Resources and AngloGold Ashanti. By the end of this year it will employ over 5 000 people (including contractors).

While still a work in progress (it is both an operating mine and a development project), Kibali produced 88 200 ounces of gold and made a profit from mining, before interest, tax and depreciation, of US$68.3 million in the three months to 31 December, its first production quarter. Current production is from its open-pit mine and an oxide circuit. Commissioning of the sulphide circuit started during the past quarter and development of the underground mine remains on track with the vertical shaft reaching the halfway mark and the first underground ore accessed. The first of four hydropower stations is currently being commissioned and, with a capacity of 22 MW, it is the largest of its kind in the Province Orientale.

In 2014, Kibali – which has proven and probable reserves of 12 Moz of gold – is targeting a production of 550 000 ounces. Once in full production, the mine is expected to produce an average of 600 000 ounces a year over...
the first 12 years of its life – which currently extends to 2031.

The two-stream metallurgical plant is designed to treat 7.2 Mt/a and includes two ball mills with a capacity of 465 t/h, 11 CIL tanks and 2 x 6 flotation tank trains. There is one lined Tailings Storage Facility (TSF) for cyanide-treated ore and an unlined TSF for sulphide ore.

The open-pit mine consists of the main KCD pit, with eight satellite pits also in the mine plan, while the underground mine is accessed by a twin decline which was completed at the end of last year (reaching a total of 3 948 development metres). The declines will be supplemented by a vertical shaft system which will be sunk to 860 m and have a capacity of 3.6 Mt/a. It is scheduled for handover in 2016.

The mine in full production will require 47 MW of power. The four hydropower plants will only be able to provide peak output during the wet season so 36 diesel gensets will supplement their output. All the hydro plants are expected to be complete by 2016.

The opening of Kibali represents the revival of the famed Kilo-Moto goldfield which was exploited during the Belgian colonial era. The Belgians operated at least two shafts and a number of open pits in the Kibali area which reached peak production in the 1950s. After the DRC became independent in 1960, production declined and ceased altogether (at least on a formal basis) in the 1990s. Randgold acquired the Kibali property in 2009 via its acquisition of Moto Goldmines.

Kibali lies in a remote part of the north-eastern DRC, 150 km from the Ugandan border town of Arua and 1 800 km from the Kenyan port of Mombasa. Access was difficult when Randgold first took over the project and the company and its partners have had to invest in considerable roadworks – the re-establishment of the Arua-Doko road and more than 500 km of additional roads – to facilitate development of the mine.

Speaking at the opening, Randgold’s outgoing Chairman Philippe Liétard said the successful development of Kibali in the face of many infrastructural and other challenges was a triumph for the company’s partnership philosophy.

“Here we have shown what can be achieved in Africa when we all work together: a government that understands the importance of attracting and retaining the investments that are necessary to build a modern economy; two mining companies that believe in sharing the value they create with all their stakeholders, especially the local community; a labour force that is eager to grasp the opportunity of working and learning; and a people who have welcomed us and supported our endeavours,” Liétard said.

Also at the opening, Randgold CEO Mark Bristow said the successful development of Kibali could herald the birth of a new DRC economic region to rival Katanga Province.

“To achieve that, we cannot rest here. We need to ensure that we deliver the returns expected by the investors who entrusted us with their money. We have to run a profitable mine, focused on long term viability, that pays taxes, and employs and develops citizens from this region and this country. Kibali must become the catalyst that triggers the additional investment required to grow a strong regional economy,” he said.

“Wishful thinking will not make this happen. But if we continue to work together as partners pursuing a common goal – if mining companies, the government and communities cooperate as we did in the development of Kibali – then this dream of greater things will also come true.”

AngloGold Ashanti Chief Executive Srinivasan Venkatakrishnan said that for Kibali’s full potential to be realised it was of the utmost importance that the DRC’s mining code remained supportive of the gold mining sector.

“The government now has an important opportunity to show the world that it is welcoming of gold mining by helping to create what can in a short time become one of the largest gold producers in the world and an engine of growth for this region and this country,” he said.

Photos courtesy of Randgold Resources
Based in Johannesburg, South Africa, DRA has successfully worked with the leadership team at Asanko on multiple projects in Africa over many years and has recently completed engineering work on Asanko’s Esaase project. DRA is a well-known and highly respected EPCM contractor, with a strong track record of successfully building, commissioning and operating gold plants across Africa. Recently, DRA has acted as EPCM contractor for Randgold Resources on the 7.2 Mt/a gold processing facilities and associated infrastructure at the recently built and commissioned Kibali site in the DRC (see page 28) and is currently working as the EPCM contractor for Aureus Mining at its New Liberty project in Liberia (see page 14).

Peter Breese, President and CEO, said: “The appointment of DRA as EPCM contractor marks the initiation of Phase 1 at our flagship project, the Asanko gold mine, which will form the foundation of our vision to become a mid-tier gold producer. My team and I have worked extensively with DRA for many years and together we have successfully built and commissioned mines in Africa that have all been delivered on time and on budget. It is this track record that gives us confidence that we will be able to deliver first gold in Q1 2016.

“Work is progressing well on all other fronts and the Board is targeting to make an investment decision mid-year. We are fully funded for Phase 1 with US$255 million cash and we are making good progress with Red Kite to modify the security provisions and loan documentation for our existing agreements. We expect to have these revisions completed in Q2 2014.”

Breese is well-known in Southern African mining circles. Some years back he was COO of LionOre, which controlled Tati Nickel. When LionOre was acquired by Norilsk, he became Chief Executive of Norilsk International. More recently, he served as CEO of Mantra Resources until it was acquired by ARMZ. Mantra’s primary asset was the Mkuju River uranium project in Tanzania. Breese’s long-time colleague, Colin Steyn, is Chairman of Asanko Gold. Steyn was CEO of LionOre and, in an earlier phase of his career,
was Executive Director in charge of metallurgical operations in Zimbabwe for Rio Tinto. Asanko Gold has also appointed Knight Piesold to design the tailings storage facility (TSF) and carry out detailed geotechnical engineering works for the project. Knight Piesold are well known in Ghana and have designed, built and operated several tailings storage facilities in the country. They have reviewed the current TSF design and concluded that the selected location can be expanded to hold tailings from both Phase 1 and Phase 2 operations.

Earlier this year Asanko Gold acquired PMI Gold Corporation and the Phase 1 development of Asanko is based on PMI’s Definitive Feasibility Study (DFS) on the Obotan project, published in September 2012. Asanko Gold is currently updating the DFS capital and operating cost estimates.

As part of the competitive EPCM tendering process, Asanko received and reviewed a selection of bids for the process facilities. Based on this, the company believes that the US$83.7 million capital cost for the construction of the processing plant included in the DFS capital cost estimate of US$298 million is still valid. As well, the company is modifying certain technical elements to incorporate Phase 2’s future requirements.

Asanko has also undertaken work on enhancing the information utilised to complete the mineral resource estimate at Nkran and Adubiaso. The updated estimate for these two deposits will form the basis of the detailed mine plan, which will be completed by mid-year along with the project’s Control Budget Estimate to allow Asanko’s Board to make the full investment decision.

The September 2012 Feasibility Study for Phase 1 targeted approximately 220 000 ounces of annual gold production over the first five years of mine life via an open-pit, contractor-mining operation and a 3 Mt/a carbon-in-leach (CIL) processing plant. The primary source of feed material for the CIL plant will be the Nkran and Adubiaso pits. In addition, Asanko Gold will be investigating the potential for the newly discovered Dynamite Hill deposit to provide additional feed material in the early years of production.

Nkran is an existing pit that was mined from 1998-2002 and requires approximately four months of dewatering prior to starting the pre-strip. The company has a permit to dewater the pit and expects to commence pumping later in 2014.

The plant, mine and associated infrastructure, such as the TSF and waste rock dumps, have been fully permitted for construction to start. Detailed design of the plant is well advanced and is in the process of being transitioned to DRA.

The SAG and ball mills, which were ordered in 2012, have been fabricated. The manufacture of the SAG mill liners and girth gears for both mills will start as soon as Asanko Gold has made an investment decision. Due to the advanced nature of the mills’ fabrication, it is expected that the mills will be ready for delivery well ahead of the dates required in the final project schedule.

Once an investment decision has been made, construction and commissioning of the mine is expected to take place over 21 months, with first gold targeted during Q1 2016. In the meantime, Asanko Gold has just started an early works construction programme funded by a budget of US$16 million. These early works will include advancing detailed engineering to allow for construction to commence in Q3 2014; commencement of bulk earthworks on the CIL plant site; re-routing of a power line; roadworks; and installing the temporary construction camp accommodation.

Peter Breese, CEO of Asanko Gold.

“...”

Photos courtesy of Asanko Gold

Location of Asanko Gold’s projects in Ghana.
Katanga’s first gold mine on the horizon

The DRC’s Katanga province, famous for its rich copper/cobalt endowment, could soon get its first dedicated gold mine. AIM-listed Armadale Capital is planning to develop its Mpokoto project near the manganese mining town of Kisenge in the far south-west of the province, and is hoping to get into production with a small (25 000 oz of gold a year) first stage open-pit operation by the second half of next year, an exercise which will involve a very modest capex of just over US$20 million.

Armadale is managed by Justin Lewis, originally from the UK but now based in Melbourne in Australia, who was one of the key figures behind the Minas Moatize coal project of Beacon Hill Resources near Tete in Mozambique. He is an experienced public company director who has spent 17 years working with small and mid-cap UK and Australian corporates, mostly in the energy and resources sectors.

*Modern Mining* recently interviewed Lewis at the Mining Indaba in Cape Town. Explaining the background to Mpokoto, he said its appeal to Armadale was based on the fact that previous holders of the project – Cluff Gold in the late 1990s, followed by Gold Fields and Casa Mining – had spent US$20 million on exploration with their combined work culminating in the declaration of an open-pit, non-refractory 380 000 ounce gold resource – since upgraded – in 2010.

“We’ve been involved with Mpokoto since August last year when we made an initial investment of US$150 000 in the project. We’ve since invested further and we now have the right to acquire an 80 % interest in the project,” Lewis said. “We’re not simply an investment company and we could put Mpokoto into production, either by ourselves or possibly with a joint venture partner. On the other hand, we are in the business of creating value and if someone else values Mpokoto more highly, giving our shareholders a sufficient return, we might sell our stake in the project.”

Seen on a map, Mpokoto looks extremely remote but access is not particularly difficult. The property lies just off the national road (which needs rehabilitation) linking the mining centre of Kolwezi with the town of Dilolo on the Angolan border. The nearest town to Mpokoto is Kisenge, which emerged as a mining centre in the 1950s when the now-defunct Kisenge manganese mine – apparently the second biggest manganese mine in the world at one point – was commissioned. Kisenge lies approximately 200 km to the west of Kolwezi and 150 km to the east of Dilolo.

There is also the prospect of a good rail link from Kisenge to the Angolan port of Lobito being established. The Chinese have already reconstructed the Benguela line through to the Angolan border town of Luau, which lies directly across the Kasai River from Dilolo, and there are plans for the Katangan section to be rehabilitated (although the timeframe for this to be achieved is not yet clear).

“We see no problems with developing Mpokoto,” said Lewis. “The transport links are more than adequate for what is a relatively small project and the renaissance of mining in Katanga which has taken place over the past decade means that the support infrastructure in terms of engineering companies, mining contractors and virtually every type of service a mine needs is in place in centres such as Lubumbashi and Kolwezi. On the downside, there is very little prospect of our getting grid power in time for the startup of the project so we will have to depend – at least initially – on diesel gensets.”
the horizon

He added that Armadale’s in-country team in the DRC was headed by Alain Van Landuyt, a qualified chemical engineer and engineering geologist based in Lubumbashi. “Alain knows the Mpokoto area intimately and indeed he was associated with the original gold discovery and the subsequent exploration programmes. He has an in-depth knowledge of how mining works in Katanga and is very familiar with government structures and the Congolese Mines Department.”

Geologically, the Mpokoto deposit is located within a metavolcanic-sedimentary succession known as the Lukoshi formation. The gold mineralisation is hosted within sheared interlayered conglomeratic sandstones and occurs as northwest to southeast striking and moderately sheared intervals between clastic meta-sedimentary rocks in the hanging wall and meta-igneous rocks in the footwall.

The latest resource statement for Mpokoto estimates the resource at 506 700 ounces of gold from 11,12 Mt at 1.42 g/t Au at a cut-off grade of 0.5 g/t. Some 75% is in the indicated category and the balance in the inferred. A feature of the estimate is that the oxide mineral resource has increased by 500% (from 20 500 ounces to 109 500 ounces) from the previous estimate, a result due to a revised interpretation of the weathering profile by Armadale’s geologists. Considerable exploration upside remains at Mpokoto with the exploration target being 10 Mt to 15 Mt at 1.2 g/t to 1.5 g/t Au.

Since Modern Mining spoke to Lewis at the Indaba, the company has released a Scoping Study on the project prepared by Bara Consulting, whose principals are Jim Pooley (well-known in South African mining circles) and Pat Willis. The study demonstrates that Mpokoto is a robust project with attractive economic fundamentals even at a gold price of US$1 100 an ounce. It analyses a Stage 1 operation based on the mining of shallow, weathered oxide ores down to approximately 40 m depth and estimates the capex of Stage 1 at US$20.2 million (assuming the use of a contract miner). The post-tax NPV (at a discount rate of 8% and a gold price of US$1 250 per ounce) is put at US$33 million and the IRR at 141%. The payback period is estimated at just 20 months.

Stage 1 would be a 60 000 tonnes/month operation designed to produce over 120 000 ounces of gold over an initial mine life of five years. Mining would be undertaken using standard open-pit methods in two pits identified along the strike of the orebody. The fact that the ore is weathered means that it should be free-dig down to about 40 m with no expensive drill and blast being required. A total of 3.44 Mt – at a run of mine grade of 1.28 g/t – will be mined at a strip ratio of 4.53 tonnes of waste to 1 tonne of ore. It is expected that the majority of the ore will be oxide material although small amounts of transition material will also be extracted from the pits.

Given that the oxide ore is amenable to gravity methods of separation, the proposed 0.72 Mt/a plant – which will be modular in design – is based on a relatively simple process route consisting of scrubbing followed by various stages of gravity concentration prior to leaching (CIL), elution and electrowinning of gold. The estimated metallurgical recovery from the oxide ore is expected to be 90% (falling to 70% for the small quantities of transitional ore).

The project capital cost estimate includes US$8.25 million for the plant, US$6.50 million for the infrastructure, US$2 million for the tailings dam and US$1.73 million for the mining pre-strip. According to the study, the value of the plant to be deployed is in the region of US$10 million. Since a contract miner will be used, this figure goes into the operating costs of the project.

The cash operating cost is estimated at an attractive US$649/ounce (excluding royalties) over Stage 1.

With the conclusion of the Scoping Study, Armadale is now embarking on a three-stage programme to enhance Stage 1 and further reduce risks. This programme will involve additional exploration drilling to increase the level of confidence in the mineral resource and to identify additional resources; further metallurgical testwork to enable more detailed process design work to be undertaken; and a more detailed geotechnical evaluation which will include a detailed geotechnical drilling programme at the pits identified and laboratory testwork on the cores recovered.

The company – which recently submitted a mining licence application to the DRC authorities – also says it will launch a Stage 2 Scoping Study shortly. This will focus on the less weathered ore below 30 m, which constitutes the bulk of the mineralisation at Mpokoto and which offers the prospect of Mpokoto eventually evolving into a significant mid-tier gold mining operation.

Report by Arthur Tassell

Botswana’s next diamond mine to enter commercial operation will be the Ghaghoo mine, where the first ore has already been put through the plant. Although no speakers from Gem Diamonds, the company developing the mine, have been lined up to speak in Gaborone (as of this writing), the company will very likely be present at the event and its representatives should be able to provide informal updates on the progress of the project.

Delegates will no doubt also be eager to hear Kimberley Diamonds’ plans for the reopening of the Leralu mine near Martin’s Drift, and the company’s MD, Lee-Anne de Bruin, will be talking on this topic. Kimberley Diamonds finalised its acquisition of Leralu earlier this year. It said then that it would target a production rate of approximately 400 000 carats per annum, with its plans for re-opening the mine including modifying the 230 t/h processing and recovery plant situated on site to reach 1.9 Mt/a of ore throughput. More recently, however, it has announced that it would delay the recommissioning “until the appropriate funding is available, either from operating cash flow or external sources”.

Diamond exploration will be covered by, amongst others, Jim Davidson, Technical Director of Petra Diamonds, and Brent Bittner of Pangolin Diamonds. Petra, which operates mines in South Africa and Tanzania, has diamond prospecting licences in Botswana covering over 20 000 km², its key prospect being the KX36 kimberlite in the Central Kalahari, while Pangolin has a number of licence areas, encompassing the Tsabong North, Jwaneng South, Malatswae and Mmadinare projects.

The most promising emerging sectors within Botswana’s mining industry are copper and coal (and, in the longer term, uranium). The copper mining sector is the most advanced with two dedicated copper mining operations – both of which have had their problems – now up and running. One is the Boseto mine of Australia’s Discovery Metals, which has under-performed...
since opening in 2012, and the other the Mowana mine (and the related Thakadu pit) of African Copper, listed on London’s AIM and the Botswana Stock Exchange. Speakers from both companies will be presenting at the conference.

Discovery recently reported a record monthly production of 2 011 tonnes of copper for April and has also received approval from Botswana’s Ministry of Minerals, Energy and Water Resources to amend its mining licence to incorporate the proposed Zeta underground mine in the Boseto project. If Zeta is developed it could add 1.5 Mt at 1.3 % Cu to Boseto’s annual ore production. Present thinking is that the operation would be based on a sub-level caving method with 20-25 m spaced sub-levels, conventional trackless mining techniques, twin decline access, and mine development rates of between 600 and 850 m/month (including ore drive development).

African Copper, for its part, produced 2 515 tonnes of copper in concentrate from its operations in the first quarter of this year, a marginal improvement in the figure of 2 499 tonnes recorded in the previous quarter. The company recently appointed Diesel Power Mining as its mining contractor (see also page 19 of this issue). The contract, which commenced during February, is valued at approximately BWP1 billion over the 52-month contract period.

Botswana’s next copper mine could be the Khoemacau (previously Ghanzi) project of Khoemacau Copper Mining (owned by Cupric Canyon Capital) in the north-west of the country (in much the same area as the Boseto project). Botswana press reports suggest that development of the project – which will apparently be an underground operation – is imminent and awaiting only the issue of a mining licence. Khoemacau Copper Mining’s Johannes Tsimako is scheduled to provide an update on the project at the conference.

Another interesting presentation on Botswana’s copper resources will be given by Simon Jones of copper/nickel miner First Quantum. The company entered a strategic partnership last year with Tsodilo Resources giving it the right to explore on Tsodilo’s tenements in the north-west of the country. First Quantum is examining whether these properties host the south-westerly extension of the Central African Copperbelt of Zambia and the DRC, an hypothesis based on Tsodilo’s realisation that the area contains a sequence of rocks identical in age and composition to those on the Copperbelt.

While copper is providing diversification from diamonds for Botswana’s mining industry, clearly it is coal which has the best prospect of providing a firm base for the industry in the future (given that diamond mining will inevitably decline over the next couple of decades). The country only has one operating coal mine at present, Morupule (which will be covered in a presentation by the mine’s Business Development Manager, Matthews Bogopi) but many others could be developed once the impediment of inadequate rail links to neighbouring countries is removed.

A bi-lateral agreement on the proposed US$100 million, 1 500 km long Trans-Kalahari Railway between the governments of Namibia and Botswana was signed in March in Walvis Bay but it is not yet clear when construction – which will take an estimated five years – will start. Perhaps offering more immediate hope of
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relief is the planned 105 km heavy-haul coal rail line between South Africa and Botswana, on which construction is due to start next year and which will reportedly have a capacity of 40 to 80 Mt/a.

In the meantime, the company that seems closest to developing a new coal mine is ASX-listed African Energy, whose CEO, Frazer Tabeart, will be speaking at the conference. African Energy has just released a pre-feasibility for an underground coal mine based on a 200 Mt portion of the A-seam within its Mmamabula West indicated resource, which evaluates a 4.4 Mt/a ROM operation producing up to 3 Mt/a of 6 200 kcal/kg export quality thermal coal over a 20-year mine life. The capital cost is estimated at a manageable US$113 million for an owner-operated mine and coal plant. African Energy also has the advanced Sese project 50 km south of Francistown, which it is planning to develop as both a coal and power project.

Other companies presenting on coal are Shumba Resources, which is developing the Sechaba Energy Complex, ASX-listed Hodges Resources, which holds the Morupule South property (hosting a 2.45 billion tonne resource), and Minergy, also Australian, which is developing the Masama coal project. A shallow, flat-lying 2.8 billion tonne deposit, Masama is located in the Mmamabula coal field.

Financial services to the mining industry will also be covered at the conference and RMB Botswana’s William McFerren will be outlining RMB’s experience in funding major resource projects.

Finally, it should be mentioned that an exhibition will accompany the conference. More than 30 exhibitors have already booked their stands. They include mining companies such as Discovery Metals and Kimberley Diamonds, suppliers of professional services such as Sedgman South Africa and Tenova Bateman, and equipment suppliers, notably Sandvik Mining Systems Africa. Vivo Energy will be sponsoring all the networking events.

Editor’s note: Readers should note that the programme of the Botswana Resource Sector Conference is subject to change. Full details of the conference are available from the website www.capconferences.com or by e-mailing Emma Rynn on emma@capresources.co.uk.
Of course, most consultants and EPCM contractors will claim to have saved their clients money but how many can actually provide convincing evidence of this? PPM – based at Rand Airport in Germiston – believes its track record provides all the evidence needed. Says Clarke: “We can show clients and potential clients multiple projects – complete with all the hard figures – where we’ve managed to create very significant savings through innovative design and implementation. To take just one example, we took a feasibility study done by one of the majors on a new diamond mine development in Botswana and totally reworked it, driving down the projected capex of the project from US$400 million to US$120 million – so we knocked 60% off the capital cost. The operating costs were also dramatically reduced. The project – Karowe – was ultimately built pretty much to our design and within the revised budget we had estimated and today it ranks as one of the most successful mines in Botswana.”

According to Clarke, PPM’s ability to bring down the costs of mining projects owes much to a methodology it has developed which it terms ‘Strategic Value Management’ or SVM, which he stresses is not to be confused with conventional ‘value management’. As Clarke explains it, value management is mainly focused on preserving the full functionality of a project while at the same time attempting to drive down the cost, an approach that often stifles innovation and doesn’t always provide the results required by the business.

“As we define it, SVM is a strategic intervention that is aimed at provocatively assessing a project to reveal substantial latent value that significantly improves viability or mitigates major risk,” he elaborates. “We question all the assumptions that have been made in respect of a particular project and ask whether the technical solutions proposed are fit for purpose and consistent with both the limitations and opportunities associated with the mineral resource, and whether or not they will ultimately satisfy the business requirements.

“We don’t regard even functionality itself as sacrosanct. In many cases, sacrificing a degree
of functionality can deliver substantial savings. Say you chase an 85% recovery in your gold plant, for example, as opposed to 92%. Yes, you lose 7% of your potential recovery but your capital costs to build the plant might go down by 50%. We’re not afraid to say to a client, ‘You don’t need that, it doesn’t make you money.’ We look at every unit process and ask, does it add to the bottom line of the business? We find our junior clients in particular are very receptive to this approach, as they typically have projects that many majors would consider marginal.”

Clarke also holds strong views on the mine development cycle from exploration through to commissioning. “The standard route to implementation involves evaluation of the resource, at least one conceptual or scoping study, pre-feasibility and feasibility studies, financing, construction, and finally commissioning and production,” he says. “This whole process can typically take eight years, sometimes longer. Frankly, this is crazy, particularly for juniors. We are developing a model that can dramatically compress these activities without any loss of value or any reduction in standards.”

When PPM was founded, the original team – including Clarke – had a mostly De Beers background and the company was identified as a diamond mining specialist. Since then, PPM has moved on. “We’ve now worked with 17 commodities, including gold, platinum, copper, zinc, uranium, tin, iron ore, ferrochrome, coal and tantalite,” Clarke points out. “Diamonds are still important to us and we have completed over 50 projects involving this commodity, but our order book is currently very diverse with diamonds only accounting for a relatively small proportion of our work.”

He adds that PPM has also seen a shift in the geographical location of the projects it works on. “At one stage, the bulk of our work was concentrated in South Africa and Botswana but currently we only have one major contract in South Africa and none in Botswana. We’re doing much more work in West Africa of late,
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with projects either underway or imminent in Guinea, Sierra Leone and Burkina Faso. In principle, we’re prepared to work anywhere in Africa and we’ve now provided services to projects in around 18 African countries.”

The scope of the services PPM offers is very diverse and includes consulting on all aspects of exploration and mining, project management, due diligences, engineering design, project implementation and even business rescue (as was the case with Mintails, when Clarke was appointed as interim CEO for a three-month period during which time he turned the business around). The company applies a variety of models or roles to project delivery, depending on the client’s requirements. Often it acts as an EPCM contractor or owner’s representative while, on other occasions, it will inject specific resources into the client’s organisation or assist with building internal capability and capacity.

An interesting question is how it manages to achieve all this with a staff of just 20 people. Clarke’s answer is that PPM has forged alliances and informal partnerships with a number of specialist companies that, in effect, mean that it can call on the services of around 300 people, most of them skilled professionals. “Among the companies that we are very close to are MSA, which has a stellar reputation in terms of geological services in particular, Leeba Electrical, which handles virtually every aspect of electrical engineering and is very strong in mining, and Ritchie Midgley Consulting Engineers, civil and structural specialists,” he says.

While studies form a major part of PPM’s work, the company’s involvement in project implementation is impressive. “We don’t have the resources or balance sheet to chase multi-billion rand projects, at least not without some type of joint venture arrangement, but we have nevertheless been responsible for some quite substantial projects,” notes Clarke. “Probably our biggest to date was the execution on an EPCM basis of a new plant and related infrastructure – worth a total of US$40 million – at the Marropino tantalum mine in Mozambique. In general, we believe that we can take on projects up to a value of about US$150 million and we are eager to get an assignment of this scale.”

Clarke says that while PPM can tackle large-scale projects, it is also quite happy to work on even small assignments. “Probably our shortest ever project was a two-day desktop gold plant review and we also once carried out a study on the relocation and recommissioning of gensets from one country to another for which we charged just R27 000,” he says.

Among current noteworthy contracts that PPM is involved in is Kalagadi Manganese, where PPM is acting as the engineer on the Owner’s Team supervising the development of Kalagadi’s new underground manganese mine in the Northern Cape. The company also remains active in Lesotho, where it has had an involvement in virtually every diamond project including Letšeng, Mothae, Liqhobong and, now, Lemphane, which is owned by AIM-listed Paragon Diamonds.

Paragon is planning to start a two-year Stage 1 mining programme at the site designed to process 500 000 t/a of kimberlite to produce an anticipated 10 000 carats a year and has already stated that PPM will be appointed to manage the plant operation. The plant that will be used has been purchased from Lucara’s Mothae project and PPM will supervise its strip-out and transport to Lemphane and adapt it to suit the characteristics of the Lemphane ore. Comments Clarke: “We’ll be using an unusual split crushing system at Lemphane designed to
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stage release not just the small diamonds but also the big ones.”

In West Africa a client that stands out is AIM-listed Stellar Diamonds, whose CEO is Karl Smithson, a well-known personality in diamond mining who earlier in his career spent 10 years with De Beers. PPM completed scoping studies on Stellar’s Tongo Dyke-1 and Droujba projects in Sierra Leone last year. In the case of Tongo, the study focused on approximately 682,000 carats of the Dyke-1 resource to a depth of 300 m from surface over an initial 13-year life of mine while the Droujba study identified a three-year life of mine open-pit opportunity. Based on PPM’s conclusions, Stellar has decided to prioritise Tongo and PPM – while acknowledging that there are no certainties – is hoping for further involvement as the project moves forward. PPM will also be completing the resource definition for Stellar’s Baoulé project in Guinea.

Also in Sierra Leone, PPM recently collaborated with MSA Group on a pre-feasibility study on Nimini’s flagship Komahun gold project, which could be developed to become Sierra Leone’s first underground gold mine.

In Côte d’Ivoire, PPM has completed a pre-feasibility study on Taurus Gold’s Afema project, located 120 km east of Abidjan. According to Taurus, the first phase of the project will see the development of a US$23 million, 40 koz/a, open-pit mine with a five year life.

Quite apart from projects for clients, PPM occasionally devotes some of its energies to in-house R&D – a case in point being its current initiative to develop a new DMS plant. “This initiative has not yet reached the point of commercialisation but it is well advanced and looking good,” says Clarke. “Essentially, we’ve taken a standard DMS design and taken away everything that we think is unnecessary. If we thought we could get away with a 400 mm pipe, for example, we’ve gone down to 250 mm – we’ve literally created a unit which gives a new meaning to the term ‘fit for purpose’. We’ve learned a lot during this exercise and are quite convinced that most DMS plants are grossly over-designed. The prototype has already been tested with the only real problem encountered being a sump design that was good in concept but proved to be impractical in the field. Incidentally, we are working very closely on the testing with Rockwell Diamonds, who is one of our established clients.”

The DMS can be made very small and compact or large enough for fairly substantial projects. “We could go down to 1 t/h or as high as 100 t/h in terms of capacity,” says Clarke. “In the former case, we would be aiming at the exploration market where there is a need for highly mobile units that can be easily moved from site to site on the back of a bakkie or a light truck.”

On the future strategic direction of PPM, Clarke says the company is very happy with the niche it has carved out in the market and is not proposing any major changes in the way it works and the markets it targets. “We are, however, looking at strengthening our BBBEE credentials,” he states. “PPM is currently owned by seven shareholders, four of them major ones, but we’ve made a business decision to broaden the existing employee share ownership scheme as well as engage with a strategic BEE partner and we expect to finalise a deal by the end of the year. We need to ensure the longevity of the company and this will be a major step in meeting this goal.”
MMD believes its Mineral Sizer technology represents one of the biggest advances in comminution in 100 years. The technology has made massive inroads into the mining industry and today MMD’s Mineral Sizers are processing ore in both soft and hard rock applications. The Mineral Sizer has proved particularly popular in Africa and MMD Mineral Sizing Africa, which supplies and supports the MMD range throughout Africa, estimates that there are around 150 active MMD Mineral Sizer installations around the continent.

MD were the original designers and developers of the twin shaft Mineral Sizer in the UK in the late 1970s – the inventor was Alan Potts – and the first machines manufactured went into Britain’s underground coal mining industry. Since those early days, MMD, with its policy of constant improvement, has greatly expanded the range and today its sizers work in both soft and hard rock environments treating almost every type of ore in both underground and open-pit mines. Coal mining remains a major part of the market but the machines are being successfully used in a wide array of mining operations, including gold, diamond, copper, uranium, nickel, mineral sands and iron ore. In all, MMD Mineral Sizers are being used to size over 80 different minerals in applications around the world.

The MMD Group of Companies headquarters is in the Isle of Man with offices in number of countries and regions, namely the UK, North and South America, Canada, Australia, China, India, Thailand and, of course, South Africa. The South African company, run by MD Martin Vorster, is a wholly owned subsidiary of the MMD Group, and operates from a modern headquarters and workshop in the Longmeadow Business Estate near Johannesburg. The machines supplied in Africa are largely manufactured locally, although the gearboxes are imported. The designs are generated by the UK office based on the specific requirements of the customer while manufacture, installation and commissioning is handled by MMD Mineral Sizing Africa, which offers a full turnkey service to customers.

The MMD presence in South Africa dates back to 1981 when MMD entered the local market under the name MMD Mineral Sizing South Africa to cover the South African market but the company was ‘mothballed’ as the country entered the era of sanctions. It was re-established in 2000 under the name of MMD Mineral Sizing Africa to cover the African continent and since then the growth has been vigorous with the original handful of staffers having now grown to a workforce of approximately 100 people.

As described in MMD’s literature, the basic concept of the MMD Mineral Sizer is the use of two rotors with large teeth, on small diameter shafts, driven at a low speed by a direct high torque drive system. This design produces three major effects which all interact when breaking materials using sizer technology. The unique effects are: a three-stage breaking action, a rotating screen effect, and a deep scroll tooth pattern.
Crushing, Screening and Milling

CRUSHING, SCREENING AND MILLING

feature

sizing solutions

Initially, the material is gripped by the leading faces of opposed rotor teeth. These subject the rock to multiple point loading, inducing stress into the material to exploit any natural weaknesses. At the second stage, material is broken in tension by being subjected to a three-point loading, applied between the front tooth faces on one rotor, and rear tooth faces on the other rotor. Any lumps of material that still remain oversize are broken as the rotors chop through the fixed teeth of the breaker bar, thereby achieving a three-dimensional controlled product.

A major advantage of the MMD Mineral Sizer is its compact size, which has obvious benefits (particularly in underground mines where space is often constrained). Based on a medium/hard feed, a jaw crusher able to handle 1 000 t/h would typically come in at around 170 tonnes in weight and a gyratory crusher at 120 tonnes. By contrast, an equivalent Mineral Sizer would have a mass of just 60 tonnes, says MMD. Also the way a Mineral Sizer processes minerals means that heavy foundations are not needed and supporting structures are substantially less than those required for gyratory and jaw crushers, resulting in reduced capex and faster installation.

Another advantage of the MMD Mineral Sizer is its ability to process not just hard, dry rock but also wet, sticky material which tends to cause problems for traditional crushers, allowing year round production. In addition, the breaking principle which takes advantage of the natural fracture planes by breaking in tension and shear produces fewer fines than crushers that work against the compressive strength of the ore; this principle also requires much less energy to process material as generally ore is ten times weaker in tension and shear than it is in compression.

The original Mineral Sizer developed by MMD was specifically designed to work in the confined space of underground coal mines and was able to handle tonnages of up to approximately 1 500 t/h. Building on the success of this original 500 Series machine, MMD developed a range of sizers from the original 625 Series. These are the 750, 850, 1000 1150, 1300, 1500 Series all currently in use with a 1650 sizer available, which is capable of handling material up to 3 m³ at a capacity of more than 15 000 t/h. Depending on the sizer shaft centres, machines can be configured for primary, secondary or tertiary crushing and all can be customised to the client’s requirements.

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Tenova TAKRAF is a key supplier of equipment and systems for open pit mining & underground solutions, materials handling and mineral processing to the global mining and general industries.
shovel extraction, which – says MMD – proved to be a significant economic improvement over the traditional systems previously employed. A typical three-tooth Series 1500 unit with twin 400 kW drives has an approximate mass of 160 tonnes.

Complementing its Mineral Sizers, MMD has a range of heavy-duty apron plate feeders to convey raw material to the crushing plant. Available with an optional in-built fines retrieval system, the main features of the apron feeders are the heavy-duty rolled steel flights, mounted on chains and rollers from the Caterpillar range. The design of the feeders is such that impact force is reduced to a minimum. The impact force is initially absorbed by the conveyor plates, which, due to the method of manufacture, can deform within their elastic limits without damage. The impact rails then transmit the forces which are dissipated into the main frame construction.

Four feeders are available, designated the D4, D7, D9 and D11, offering effective widths from 1 500 mm to 4 000 mm. The advantage of the use of rolled steel flights is that it is possible to ‘dump’ material onto an empty feeder directly, a feature unique to MMD feeders, which is an essential requirement for fully mobile sizing systems.

The full range of MMD Mineral Sizers can be incorporated into a wide range of mobility options enabling them to operate as mobile or semi-mobile units. Specifically, wheeled, track modular, transportable modular and fully mobile track-mounted options are offered. One of MMD’s latest innovations is the 9 000 t/h ‘Low Profile Fully Mobile Sizer Station’ which, it says, allows the flexibility of a mining shovel to be matched with the cost effectiveness of long distance conveyor haulage.

In a typical fully mobile application, the Sizer Station would be positioned between the mining bench and face conveyor, with the hopper on the Sizer Station being directly fed from the face with run of mine material by a mining shovel. Material is then drawn up the variable speed MMD apron feeder and discharged into the sizer, reducing the material to a definable product size suitable for efficient long distance conveyor haulage. Material is subsequently discharged from the Sizer Station, via the discharge conveyor and into a hopper car that travels along the face conveyor. It then moves onto an overland conveyor to the downstream processes. The Sizer Station and the shovel work together along the face length moving frequently and are relocated to other benches as the face line progresses.

Where the mining method does not provide ideal conditions for a fully mobile system to work efficiently, the use of a semi mobile system gives some of the advantages of both a truck and shovel operation and an in-pit sizing operation. A modular Sizer Station consisting of truck bridges, feeder module, sizer module and sacrificial conveyor can be positioned in the mine at an optimal position and be loaded by a truck fleet travelling short distances to the station. Once the trucking distance gets beyond a certain point, the Sizer Station can be relocated in a few days to a new location closer to the mining area keeping trucking distance to a minimum and optimising cost savings while retaining the flexibility of a truck and shovel operation.

Notable current or recent contracts secured by MMD Africa include the supply of units to Exxaro’s Leeuwpan opencast coal mine in Mpumalanga, South Africa and ARM/Vale’s new Lubambe underground copper mine on the Zambian Copperbelt. Its flagship contract, however, is definitely the supply of three semi-mobile systems to Exxaro’s huge Grootegeluk Medupi Expansion Project (GMEP) near Lephalale in Limpopo Province to provide a complete in-pit crushing solution. This contract is ongoing with the first system up and running and the second just installed. An interesting aspect of the second station is that it was assembled outside the pit and then transported into the pit over a distance of over 5 km using a transporter specially developed by MMD for the purpose utilising several unique features to enable the sizing station to be moved in the shortest time.

Of course, the reliability of sizing installations is critical to mining operations since the failure of these systems can bring a mine to a complete halt. MMD recognises this and prides itself on providing fast, efficient backup throughout Africa to ensure that any downtime is reduced to an absolute minimum, which is why MMD provides a full service backup with teams available 24 hours a day.
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Tega targets growth in mill liner market

Tega Industries South Africa, which markets a broad line of products for mining including a ‘flagship’ range of rubber-based mill liners, is planning to push up its share of the mill liner market and is investing heavily to do so, with its Mining Division about to move from cramped premises in Benoni to an extensive new complex in Vulcania, Brakpan, which will greatly expand its manufacturing capacity.

The new premises offer 45 000 m² of space compared to the 3 000 m² available at the factory in Benoni. “We’ve already moved our Industrial Division to the new facility and the Mining Division is about to follow,” says Vishal Gautam, Marketing Manager of Tega Industries South Africa. “Once the move is complete, we will be well positioned to meet the increasing demand we are seeing for all our products, particularly the mill liners. We are also investing in new machinery which will further enhance the quality of our product ranges and allow more efficient and economical manufacturing.”

Tega’s Mining Division has five separate product lines – mill liners, screen panels, hydrocyclones, conveyor accessories (such as ceramic pulley lagging and skirt sealing systems) and wear liners (in a variety of materials such as rubber and polyurethane). The primary mill liner products are rubber mill linings but metal embedded and rubber metal composite liners are also offered.

Explaining the background to Tega Industries South Africa, Gautam says the company is owned by Tega Industries of India, headquartered in Kolkata, India. The Group traces its origins back to the 1970s, when it was incorporated as a licensee of Swedish company Skega and it commissioned its first factory in 1978 to manufacture Skega’s mill linings. Although the joint venture with Skega (since absorbed into Metso) was dissolved in the 1990s, the mill liner business remains at the forefront of the Tega Industries range and Tega liners are now used in over 500 mills worldwide.

“Over the past 15 years Tega has become increasingly international in character and it now operates in 72 countries and has 22 country offices,” says Gautam. “It has been active in Africa since the late 1990s – when it made its first sales to the mining industry in Ghana – and in 2006 launched a major expansion into the South African market by purchasing a local company, Beruc (Benoni Rubber Company), which was formed in the 1980s to manufacture rubber products, particularly mill liners. This acquisition gave Tega a manufacturing base in South Africa and the company subsequently operated as Tega Beruc until 2011 when the name was changed to Tega Industries South Africa.”

Gautam adds that Tega’s expansion into South Africa has been followed more recently by a move into two other key mining regions – South America and Australia. In 2011 the company acquired both Acotec in Chile, a rubber metal composite liners such as its metal-embedded PM mill lining system.
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manufacturer of abrasion and wear-resistant products for mining, and Losugen of Australia, an engineering company specialising in wear components, again primarily for the mining industry. As Gautam says, the acquisitions in South Africa, Chile and Australia have helped transform Tega into a truly global player in the mining supply industry.

The South African operation handles the sale and support of Tega products throughout the southern African region – roughly everywhere south of the equator – and offices are maintained in Chingola in Zambia and Kolwezi in Katanga in the DRC, which between them serve the important Central African Copperbelt region. Clients of Tega Industries South Africa include most of the major mining houses, as well as many mid-tier and junior miners. Says Gautam: “We are by no means the biggest supplier in the markets in which we operate but we do believe we are steadily increasing our market share. Most importantly, we are maintaining our customer base and we have not lost a major client over the past two years.”

The South African company, which employs around 160 people, is headed by Fernando Monteiro, who joined Tega Industries South Africa in 2012 as MD. He has made a number of key appointments that will take the local operation forward and which have transformed it from a generalist type of business (which Beruc was) into a modern, specialist, efficient manufacturing and marketing organisation with a global outlook but with its roots in South Africa. The company, incidentally, has a Level 5 BBBEE rating but is aiming to achieve Level 4 within 18 months.

Outlining Tega Industries South Africa’s strategy, Gautam says the company is positioning itself as a supplier of ‘Total Solutions’. “Given our design and manufacturing capability, and our extensive R&D facilities, we are able to develop customised solutions which are based on our analysis of a customer’s operation,” says Gautam. “Generally, we are able to deliver significant improvements in performance, which in turn translate into cost savings. In the case of mill liners, which are our biggest selling product line, the effects can be quite dramatic measured in terms of the reduction of mill liner cost per tonne of grind. Milling is at the heart of any processing operation and any improvements in efficiency impact on the performance of the entire processing plant.”

Tega’s primary lining product is its rubber mill liner, which – says the company – provides optimal grinding solutions in applications such as secondary milling. The fastening system is very efficient with Tega reinforced lifers having an integrated (vulcanised) aluminum channel to accommodate the fixing clamp. Non-reinforced Tega lifter bars are installed with detachable steel clamps which can slide inside the groove on the lifter base and be bolted to the mill shell. Tega’s lining bolt attachment systems are compatible with conventional attachments for rubber liners used in grinding mills.

For more demanding applications, including primary milling, Tega can offer rubber metal composite liners such as its metal-embedded PM mill lining system. The metal can be
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rolled or in cast form, depending on the resistance to impact and abrasion required for the application.

Complementing its mill liner range, Tega also manufactures and markets an extensive range of metal back rubber, polyurethane, Elastocer and Ceraflex liners which can be applied at many points in the ore processing route, including transfer points, screens and chutes. Tega’s view is that all the modifications that can be done to a plant, the installation of liners matched to specific applications is one of the easiest ways to boost efficiency without incurring major capital expenditure.

Comments Gautam: “The fact that we have such an extensive liner range means that we can design systems to meet virtually every type of application. For example, rubber liners are ideal at transfer points, where high impacts need to be absorbed, while polyethylene or ceramic products are more suitable when the flow of material needs to be enhanced. We can provide combinations of liners to arrive at the optimum solution for a customer.”

Another important Tega product line with the ability to improve processing plant efficiencies is its range of screen panels, with the best-selling product being its rubber panel for coarse and medium screening applications. The panel is manufactured from steel reinforced specialised wear resistant rubber – Tega panel cord – using a high pressure moulding that moulds rubber and steel. According to Tega, rubber panels are generally far more durable than steel panels, often lasting from six to ten times longer depending on the type of screening being carried out. Supplementing the rubber panels are a PU (polyurethane) panel and what Tega calls a Flip FLO panel, the latter designed to handle highly sticky ores.

Summing up, Gautam says that Tega Industries South Africa is establishing itself as a new force in minerals processing and has aggressive development and marketing programmes in place designed to increase its market share. “We’re operating in a very competitive market but we believe we have the products, people and manufacturing facilities in place to allow us to emerge as a new force in minerals processing in the African region,” he concludes.

Report by Arthur Tassell
Metso screen panels solve pegging problem at Tarkwa

Ghana’s Tarkwa gold mine faced a challenge: chronic pegging of screening media was causing daily downtime, inefficiency and wear. The solution was Metso’s modular, rubber LS screening media, which helped the mine to reduce downtime by 90 hours annually as well as achieve savings in screen replacement costs and a safer working environment.

The Tarkwa gold mine, located in the Western Region of Ghana, is owned and operated by Gold Fields Ghana Limited. Tarkwa is a centre of gold and manganese mining and the open-pit mine is one of the largest gold mines in southern Ghana, with four pits currently in operation. Roughly 100 million tonnes is excavated and processed each year to yield around 24 tons of gold. The processing involves an extensive system of conveyors and comminution equipment to ensure the right product is produced at the right capacity.

The Tarkwa mine has two processing plants: a heap leach facility and a carbon-in-leach (CIL) facility. The heap leach facility is a three-stage crushing circuit with a 1,200 ton/hour capacity. The tertiary screen is a two-deck screen, which utilises rubber and polyurethane on the top and bottom decks respectively. These media were previously sourced from a competing supplier.

However, problems arose when the near-mesh rocks clogged the screening media openings, impeding the passage of the undersize material. This led to a higher recirculation load. Mine operators had to stop the line every day for about fifteen minutes to knock the trapped material out of the screening media. Moreover, the tertiary bins became over-filled due to the bottleneck downstream.

Gold Fields evaluated several suppliers to find a solution. Metso came in first for the mine’s primary selection criteria. In January
2011, Metso’s Trellex LS modular, rubber screening media – which are antipegging – were installed. They lasted ten months versus an estimated three months for the previous supplier’s screens, and they didn’t collapse under heavy loads.

With Metso’s screening media in place, the mine has eliminated the need to stop production on a daily basis to liberate the clogged screens. According to the most recent reports, annual operational downtime at the mine has been reduced by 90 hours, meaning that an extra 108 000 tons of ore can be processed annually. The annual cost savings from the new Metso screening media are at least US$315 000, and possibly greater. Plus, the benefit to managers in removing a chronic problem and reducing headaches is priceless.

“The installation of the Metso panels has brought great relief: our operational downtimes have been drastically reduced, increasing the plant’s throughput,” says Louis Baanuo, Ag Unit Met Manager, NHL at Tarkwa mine.

The fact that material no longer has to be removed from pegged screening media also makes the mine a safer, cleaner place to work. Metso’s media also last longer, further enhancing efficiency, safety, and profits – and also reducing waste. Gold Fields is now implementing the media in other parts of the mine, including the CIL facility.

Acknowledgement: This article has been reproduced from Metso Minerals’ customer magazine ‘Results Minerals and Aggregates’, issue No 2/2014.
The new and improved Atlas Copco DM30 II

The Atlas Copco DM30 II is a crawler mounted, hydraulic tophead drive, multi-pass rotary drilling rig specifically designed for production blasthole drilling. An optional four-position drill pipe changer is available to achieve drilling depths of 45.7m, with a nominal hole size of 127mm to 200mm. The DM30 II generates a bit load force of up to 133kN.

The DM30 II is an improved and upgraded version of the DM30. Major upgrades include:

- A larger, thermal insulated cabin mounted on the right side of the carrier
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Sustainable Productivity
Metso believes that the latest addition to its mobile crushing and screening range, the Lokotrack LT220D, is set to revolutionise the way aggregate contractors operate around the world.

Combining a cone crusher and a three-deck screen on a single track-mounted plant, the Lokotrack LT220D reduces operational costs in several ways, most notably by substantially lowering fuel consumption and reducing the need for maintenance.

“The Lokotrack LT220D is the first track-mounted crusher/screen combination to be developed with such compact dimensions, a world first for Metso,” says Jarmo Vuorenpää, project manager at Metso Mining and Construction. The machine is available from Barloworld Equipment, Metso Mobile’s dealer for Southern Africa.

The unit is equipped with a proven, high-performing Metso cone crusher, either the HP200 or the GP220. Paired with Metso’s primary Lokotrack LT106 mobile jaw plant, the LT220D secondary crushing and screening unit is capable of producing up to three calibrated end products. In turn, the large 8.4 m² screen fitted on the LT220D provides high capacity, as well as excellent screening efficiency.

Power to run the crusher and screen is delivered by a single Cat C13 diesel engine generating 309 kW.

Weighing in at 48 tonnes, the LT220D measures 16.5 m in length, with a width and height of 3 m and 3.5 m respectively.

Metso’s Lokotrack LT220D is said to be the most compact combined crushing and screening plant on the market.
Bell machines deployed at Katanga’s Chemaf Etoile mine

Bell machines are playing an important role at the historic Chemaf Etoile mine in the DRC. ‘Etoile’ in French means ‘star’ and the site where the mine is situated just to the east of Lubumbashi, capital of the mineral-rich Katanga Province, was reportedly the first bit of land to be mined in what was then the Belgian Congo. This happened as long ago as 1909 and a shallow underground mine was active until the 1960s, after which the mine lay dormant for some 40 years.

In 2001, the Shalina Group, led by Shiraz Virji, established a pilot plant on the site.

When favourable results were obtained with strong indicators to a sustainable mining operation, the group established a processing plant and has been mining copper and cobalt from an opencast pit since 2003. The construction of the plant was undertaken by Dubai-based ACE Ltd, which has ACE SPRL as its Lubumbashi subsidiary.

Concentrates obtained from the copper-oxide ore are sent to the group’s nearby Usoke plant for further processing into copper cathode products.

“We’re blessed with three solid orebodies which should extend the life of our mine into a long-term future,” says Georgy Kemwenzenze, Chemaf’s Mine Manager. “We’re nearing the end of our copper oxide orebody after which we’ll experience a mixture of oxide and sulphide before hitting a large sulphide orebody which dips from east to west, deeper down.

“Until fairly recently, we had the well-known DRC contract mining company, MCK Trucks, doing our mining and when we decided to do the mining ourselves, we had no hesitation in buying similar equipment to that of MCK, which was earthmoving equipment from Bell Equipment,” Kemwenzenze adds. “This was as a direct result of seeing the equipment’s performance and, equally important, the technical back-up service MCK Trucks enjoyed from Bell Equipment.”

Chemaf bought four Bell B40D articulated dump trucks (ADTs), a Bell HX500E excavator, two Bell L2706E front-end loaders and a Liebherr PR754 dozer.

The B40D ADTs and the HX500E excavator are used in the mining pit and the L2706E loaders are used to feed the plant and load trucks taking the concentrate to the Usoke plant. The Liebherr PR754 dozer is used to maintain roads and stockpile ore and discard.

“Although our pit is relatively dry due to our dewatering system, we’ve been impressed with the full bins our Bell ADTs are able to haul over underfoot conditions that do become a little unstable in the DRC’s wet summers,” Kemwenzenze says. “We have Bell Equipment’s excellent Fleetm@tic system monitoring our fleet and on-board load indicators tell us exactly what tonnages we’re moving.”

Chemaf’s Bell fleet was bought with standard warrantees but the company insisted on a maintenance contract which would see all maintenance done by a site-based technical team from Bell Equipment totalling nine qualified mechanics and assistants.

“Given the nature of mining, any earth-moving equipment needs maintenance and considering the strict service regimes that the Bell Equipment service crews follow, we’re enjoying high mechanical availabilities of way over 90 %, which translates into a constant feed of ore into our plant,” states Kemwenzenze. “Much can be said for the benefits of having the Bell service team on site and having them consistently doing preventative maintenance results in maximum uptime for our Bell Equipment fleet of machines.”

Service kits and consumables are kept on site but any larger parts can be quickly sourced from Bell Equipment’s Customer Service Centre in Lubumbashi.

With the mine planning to mine the richer and deeper sulphide orebody in the near future, Chemaf will have to expand its mining fleet and, already, Kemwenzenze is planning the use of more Bell ADTs loaded by bigger excavators such as the Liebherr R974C machine with its massive 4.6 m³ bucket.

“I’d like to see us match one Liebherr R974C excavator with six Bell B40D ADTs as I see this type of combination giving us a lower cost per tonne of material moved,” he says. “Our Bell B40D ADTs only burn 19 litres of diesel an hour and with stripping ratios working in our favour, I believe this is the sustainable way forward, supported by Bell Equipment’s legendary back-up service.”

Bell Equipment, tel (+27 11) 928-9700

COMPACT DIESEL FUEL DISPENSER

Meter Systems has recently added the innovative Piusi Pitstop dispenser to its fluid handling equipment range. This compact product can safely and conveniently pump diesel fuel from a container through a connection to a 12 V battery supply at a guaranteed 45 litres per minute from the automatic nozzle.

“Comprising two DC bypass fuel transfer pumps, a water filter and an automatic nozzle, the Pitstop pump is versatile and easy to install in both fixed and mobile tanks,” says Warren Erasmus, MD of Meter Systems.

The company, which also supplies a range of modern products and various fluid products, explains that this dispenser can be used in various industries where diesel can be pumped with a 12 V battery supply.

“There is no other product like this in the market which offers customers convenience and safety and we are pleased to have it as part of our product range,” concludes Erasmus.

Warren Erasmus, tel (+27 11) 451-7000, email: sales@metrosystems.co.za
After 56 years of extensive experience in the local and global market, Actom Group company Marthinusen & Coutts (M&C) has earned its stripes as Africa’s largest medium voltage machine repairer. With four production workshops covering 32 000 m² in Southern Africa, the company is conveniently located to provide its customers with a fast turnaround on all machine repairs and upgrades.

To ensure complete customer satisfaction, Marthinusen & Coutts has made substantial investments in equipment and services at its facilities in Cleveland, Benoni, Rustenburg and Kitwe, Zambia. The machine shops house shaft and bearing presses, horizontal and vertical boring mills, CNC lathes and machine centres, as well as micro welding equipment.

Marthinusen & Coutts is also solely licensed to apply InsulCore to cost effectively solve selected core problems. The InsulCore chemical treatment repairs electrical lamination steel by simultaneously etching inter-laminar shorts and forming a durable core plate, without having to dismantle the core. The company’s state-of-the-art 32-ton Schenk balancing machine is complemented by the company’s seven test facilities for full mechanical test loading of HV, LV and DC motors.

In addition to its well-equipped facilities, Marthinusen & Coutts regularly deploys its experienced team to sites across the continent. The comprehensive on-site capabilities have been used by a number of large blue chip mining and industrial companies to provide high level repairs, where logistics or urgent time frames discourage transportation of machines to and from the central workshops.

Capabilities include coil design and manufacturing from VPI class F and H, through DC and traction pole coils to equaliser coils. AC and DC fans are repaired or refurbished, tested and balanced to ensure conformance with stringent test parameters. Redesigning of existing motors extends their lifespan and improves their efficiency and reliability.

In addition to repairs and load testing of vibrator motors on a specialised test bed, Marthinusen & Coutts also undertakes repair and refurbishment work on specialised motors. Notable projects include the repair and specialised assembly of scraper winch motors, combined with bearing modifications from imperial to metric, to ensure cost effective repair on older motors. In addition, the company manufactures and repairs specialised 75A and 75D loco motors and 8E traction motors.

In the power generation market, the company undertakes both electrical and mechanical repairs, overhauls and complete refurbishments. General overhauls of any design or type of generator stator or rotor, including modifications, rewinding and on-site balancing, are offered. Mechanical services include fault finding and root cause analysis, diaphragm refurbishment, re-blading and balancing of turbine rotors, as well as metallurgical investigations and reporting.

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The WEG CWM general purpose contactor line has been designed with due consideration for industrial duty and reliability, as well as extended mechanical and electrical life with dependable switching in even the most heavy-duty applications. These contactors allow total panel space optimisation, while reducing inventory is easy with CWM common accessories.

All WEG contactors are tested and approved to be used under Type 1 and Type 2 short circuit coordination.

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

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New Cat wheel loader fills market gap

Whether deployed in primary or secondary materials loading tasks, Caterpillar’s new Cat 986H large wheel loader delivers with lowest cost per tonne production in varied sectors and applications including open-cast mining, underground loading, granite block handling, steel mill applications and quarrying.

The first Cat 986H models rolled out of Caterpillar’s Tongzhou factory in China from the fourth quarter of 2013 and are now available for deployment in the Southern African market.

“The development of the Cat 986H comes in response to global customer demand for a purpose-built machine that fills the gap between the Cat 980H and Cat 988H, with a major emphasis on simplified and safe operation, ease of maintenance and improved bottom line operating margins, key considerations in today’s mining environment, especially when it comes to diesel fuel consumption,” explains Barloworld Equipment group product application specialist, Brandon Stonefield. (Barloworld Equipment is the Cat dealer for Southern Africa.)

In the field, the Cat 986H has a rated payload of 10 tonnes in standard lift and 9.5 tonnes in high lift specification when equipped with a rock bucket, with a breakout force of 328 kN. In turn, the general purpose bucket (standard lift) has a 12 tonnes rated capacity, and 10 tonnes in high lift. (By definition, rated payload is the material weight in the bucket that the loader is designed to carry, excluding the weight of the bucket itself, GET and wear material.)

Equipped with standard lift configuration, the Cat 986H is a four pass match for the Cat 740B articulated truck and Cat 770G off-highway derivative (the approximate payload in both instances being around 39 tonnes). In turn, and equipped with a high lift linkage, the Cat 986H will load a Cat 772G (47.7 tonnes) or 773G (56 tonnes) rigid truck in five and six passes, respectively.

At the heart of the Cat 986H is its six-cylinder turbocharged Cat C15 engine, generating a net output (ISO 9249) of 305 kW. This is one of the most fuel efficient engines in its class, underscored by competitive tests conducted by Caterpillar. During a recent controlled truck loading study, for example, the Cat 986H burned between 30 and 35 litres per hour, in the process loading around 650 tonnes during system production.

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

The Cat 986H comes standard with a 6,1m³ Performance Series rock bucket, designed to maximise material retention and minimise digging time, achieving a 100 to 115 % fill factor, depending on the ground engaging tools (GET) installed, which in this case is the Cat K110 tip series (in either general duty or penetration specification).
SNC-Lavalin designs innovative DMS plant

With the price of diamonds rising, a specialised 5 t/h Dense Media Separation (DMS) pilot sampling plant designed by SNC-Lavalin’s South African office could pave the way for the increasing reclamation of very fine diamonds from dump material.

The innovative containerised plant was ordered for deployment at a mine in Russia. It is the third order that has been placed with SNC-Lavalin’s South African office in recent times for this region.

“The new 5 t/h DMS sampling plant has been designed to process the fine dump material previously generated by the operation’s autogenous grinding (AG) mill,” says Roger Rousseau, Manager of the modular group at SNC-Lavalin’s South African office.

“The material contains a high amount of minus 0,5 mm materials, mostly clay and other fines, and our scope was to treat material from minus 2 mm to plus 0,5 mm.

“This was handled as a fast track project because we needed to ship the containerised plant to site before the onset of winter in the northern hemisphere. However, since winter temperatures in this far eastern region of Asia drop as low as minus 60 deg C, the recovery plant will only operate during the summer months.”

The full scope of the order involved the design, manufacture and commissioning of the 5 t/h pilot plant, comprising front-end scrubbing and screening and a DMS plant to recover diamonds from alluvial and kimberlitic deposits in the required range.

The plant was designed and executed by a dedicated modular team at the Johannesburg office. This specialised team was established three years ago to meet the increasing market demand for compact plants that can be split into smaller sections and transported in containers to all parts of the world. The DMS sampling plant was skid mounted and shipped to site in two containers.

Rousseau comments that the trend towards containerising operational plant equipment has a number of advantages, including simplified logistics and a reduction of the time spent on site, since the equipment can be cold commissioned at the SNC-Lavalin yard before being despatched.

“The modular team is made up of highly skilled professionals who are able to multi-task on any given project,” Rousseau adds.

“This invariably creates a price advantage for SNC-Lavalin when tendering for smaller projects.”

Alistair McKay, SNC Lavalin, tel (+27 11) 535-4906
Modular water plants delivered to DRC mine

In a logistical feat, a large mining project in the DRC has received a total of seven modular water treatment plants – four to treat domestic sewage, and three for supplying drinking water – from Veolia Water Solutions & Technologies South Africa, a subsidiary of Veolia Water. The plants will service construction and operations camps in the area.

Six of these plants will be installed at the construction-phase gold mine in the north-eastern DRC to support construction, maintenance and operations staff, while one of the drinking water plants will be installed at an important trading post nearby. The largest of the wastewater plants will treat 3 000 litres per hour to serve roughly 300 people.

“These plants use trickling filter technology that is ideally suited for operation in Africa,” says Warrick Sanders, Project Engineer at Veolia. “Trickling filter plants are robust and recover easily from power cuts with minimal disruption to the biological processes. With typically one to two sets of motors being the only moving parts, these plants need minimal maintenance.”

Plastic honeycomb carrier elements, designed for high-performance biological growth, facilitate the aerobic treatment which breaks down organic matter and supports nitrification. After the subsequent clarification process to remove accumulated biomass, water is disinfected with chlorine and discharged, while any sludge is fed back into the system for re-digestion. This discharge typically conforms to South African general standards for effluent discharge into natural water sources.

Veolia was also contracted to supply septic tanks which form a pre-treatment step by facilitating anaerobic digestion of COD (chemical oxygen demand) and BOD (biochemical oxygen demand).

The three drinking water plants will source water from boreholes: filtration will remove any sediment, while chlorination will ensure water is disinfected and suitable for human consumption.

Veolia’s modular plants are assembled to 95 % completion at the company’s Sebenza factory in Johannesburg. They are completely containerised for easy transportation and scalability, and need minimal setup once on site.

Veolia Water Solutions & Technologies South Africa, tel (+27 11) 663-3600
Crushtek Mining recently took delivery of a Sandvik UD211 heavy-duty integrated crushing and screening unit for use in its Zambian operation.

The product is in effect a complete mobile crushing plant – a combination of grizzly feeder, jaw crusher, cone crusher and triple deck screen contained in a single, compact trailer.

Wayne Warren, Africa Sales Manager for Sandvik’s Southern Africa distributor, Pilot Crushtec International, says the deal was concluded following a demonstration of the product working in a mining application.

“Crushtek was looking for a powerful crushing solution for a major new project and the one-stop features of the UD211, combined with its past experience of our sales and support, made it a natural choice.”

The Sandvik UD211 has been designed to process a diverse range of materials, including granite, quartzite, basalt, sandstone and iron ore. Crushtek’s machine is the latest addition to its existing fleet of Pilot Crushtec International equipment which includes a Pilot Modular GFH560 grizzly feeder and a Pilot Modular DD2412 screen.

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

Specialty chemicals group LANXESS has appointed Protea Mining Chemicals, a division of the Omnia Group, to provide technical, sales and distribution services, effective from March 2014, into sub-Saharan Africa. The LANXESS products covered by the agreement are the Lewatit ion exchange resins and Lewabrane reverse osmosis membranes.

According to Duilio Rossoni, Sales Director for Sub-Sahara Africa at the LANXESS business unit Liquid Purification Technologies (LPT), the strategic partnership will assist LANXESS in optimising its sales into sub-Saharan Africa. The partnership with Protea Mining Chemicals will ensure customers are served with the necessary technical and logistical support and that the new application development plans for LPT products are sufficiently resourced.

LANXESS SA, tel (+27 11) 457-4000
Eye protection range launched by MSA

The African division of MSA has recently launched new eye protection spectacles and goggles for use in various applications.

MSA Africa’s Senior Head, Eye, Face, Hearing and Communication (HEFHC) Product Manager, Loren Pearson, notes the importance of eye protection in industrial applications. “There are many hazards that workers in industrial settings face. These include mechanical, thermal, chemical and biological, radiation and electrical hazards, and quality, approved eye protection is an absolute necessity,” she explains.

Pearson points out that all MSA eye protection products are EN 166 approved on the lenses and the frames and are marked according to the CE standards. “The spectacles and goggles boast premium quality polycarbonate lenses, and have a superior anti-fog and limited scratch resistant coating. The lenses also offer superior class 1 optical correctness, as well as 99,9 per cent UV protection,” she adds.

For general safety and indoor applications, clear lenses are recommended, as they offer impact protection and provide maximum visual acuity. Grey, bronze or mirror coated lenses are recommended for general use outdoors, as they reduce glare and bright light. Specialised lenses should be considered for applications such as furnace work and welding which involve intense UV and IR rays.

Pearson indicates that there are many causes of eye injuries. “Around 70 per cent of all of these injuries are a result of flying or falling objects, while another 20 per cent of eye accidents are caused by some form of contact with chemicals. Other eye injuries are the result of people wearing safety spectacles with no side protection, and from wearing ill-fitting or non-approved safety specs,” she says. Additional eye injuries are the result of exposure to dust and particles, as well as ultraviolet and infrared rays.

Joy miner designed for SA conditions

Joy Global (Africa) has expanded its underground continuous miner product line by adding the Joy 12HM37-C high seam continuous miner. This continuous miner was specifically designed and developed to meet the high productivity requirements of the Southern African underground mining industry.

“The new continuous miner offers a cutting capability of 30 tonnes per minute with a maximum cutting height of 5 100 mm,” says Deon Wessels, Product Manager Mining. Other features of the Joy 12HM37-C include an integrated scrubber for more effective dust control and a poly-coated chain to reduce noise levels by up to 10 dBA.

Joy Global (Africa) is currently providing pricing quotations for the Joy 12HM37-C continuous miner. Since the delivery of the first unit in January this year, it has received an order for the supply of a further six units.

Joy Global (Africa), tel (+27 11) 821-7300
JCH provides holistic lifting packages

 Ranked amongst the top crane hire companies in the world, Johnson Crane Hire (JCH) has long been distinguished as the ‘smartest’ in its field. Qualifying this statement, Peter Yaman, Sales Executive, explains that this accolade was earned through the company’s emphasis on providing more than just a crane hire service. “Operating cranes involves a great deal more than just lifting loads and moving them from one place to another. In its quest for providing a holistic lifting package, Johnson Crane Hire adopted the SMART (Safety, Maintenance, Availability, Reliability and Total cost effectiveness) philosophy as its business credo,” he says.

 Running the largest mobile crane fleet in Africa is an immense undertaking, so it is important that the company approach each lift with due diligence and care. “We provide cost effective total lifting solutions that are appropriate to individual customer requirements. Operating large cranes is a specialised field that needs careful planning. Elements such as CAD rigging studies, comprehensive assessments, method statements and risk assessments must all be factored in,” Yaman explains.

 Due to the nature of heavy lifts, Johnson Crane Hire places safety at the top of its checklist. This entails ensuring that all lifting equipment is kept in optimum condition through regular, proactive maintenance schedules and ongoing inspections by third party inspectorates. Comprehensive workshop facilities, technical expertise and superior systems have earned Johnson Crane Hire the reputation of owning the most well maintained lifting equipment in Africa. “All our branches are equipped to undertake maintenance and our mechanics are capable of completing various levels of repair. Major repair work is undertaken at the comprehensively equipped national workshop based in Germiston, Gauteng,” adds Yaman.

 In addition to the systematic upkeep of the company’s machines, Johnson Crane Hire has a team of highly skilled and trained operators. Not only are the operators well versed in the actual operation of the cranes, but they are also completely familiarised with the application of comprehensively documented and implemented safety systems. Compliance with industry safety standards ensures that these systems and the risk assessments conducted before each lift form an integral part of the safety culture ingrained in every Johnson Crane Hire employee.

 Yaman says that staff turnover in the company is remarkably low, with many employees clocking up service records of 30 years and more. “Many of the children of our employees follow in their parents’ footsteps and are employed by Johnson Crane Hire as crane operators. This is a rare occurrence within any industry.”

 In order to provide industry with best practice heavy lifting, Johnson Crane Hire operates its own comprehensive in-house training facility in Vanderbijlpark.

 Founded in 1976, Johnson Crane Hire operates across the country with a fleet of hydraulic and crawler cranes ranging from 8 to 750 tons, for both the short and long term, on any type of project. The company works together with customers to design the optimum lifting solution supplying professional operators and full supervision, including all necessary rigging equipment, in a single source supplier approach.

 The Johnson Crane Hire South African operation extends its services into Lesotho, Mozambique, Namibia, Swaziland, Zambia, Zimbabwe and other Southern African countries on both an ad hoc and project basis. The company has an acknowledged track record in delivering appropriate solutions for the power, petrochemical, refinery, industrial, mining and civil infrastructure industries, throughout Africa, on a number of milestone projects.

 The company’s reputation for quality service is attributable to a number of factors including its dogmatic decision to purchase only tried and proven brand names like Tadano, Grove, Liebherr and Terex, including the only 750-ton crawler crane in Africa.

 Peter Yaman, Johnson Crane Hire, tel (+27 11) 455-9242

 Primer on phosphate beneficiation

 As the leading international resource for technical information about mining and related industries, the Society for Mining, Metallurgy & Exploration Inc. (SME) has announced the availability of Beneficiation of Phosphate Ore.

 This new publication examines various methods for processing phosphate rock, an important mineral commodity used in the production of phosphoric acid, which has a wide variety of uses such as the production of fertilisers, pharmaceuticals and detergents.

 This innovative publication covers a full range of processes including the beneficiation of: siliceous sedimentary phosphate ores; high-MgO sedimentary phosphate ores; and igneous phosphate ores.

 The majority of phosphoric acid is produced by the wet process, in which phosphate rock reacts with sulphuric acid to produce phosphoric acid and gypsum. This wet process demands a phosphate rock feed that meets certain specifications to produce phosphoric acid efficiently and economically. Beneficiation of Phosphate Ore thoroughly explains the methods used in the beneficiation of different types of phosphate ores for use in the wet process. The mineralogical properties of the two major types of phosphate deposits, sedimentary and igneous, are described, along with the processing methods. The benefits and disadvantages of each process are discussed in detail.

 This hard cover book can be ordered from www.smenet.org/store, and is also available as an e-book from www.smenet.org/ebooks, book order No 391-5.
Fleetguard range of coolants protects engine components

Cummins – a global leader in the manufacture, sales and servicing of diesel engines and related technology – distributes a range of Fleetguard coolants which protect engine components from cooling system problems. Cummins Technical Sales Manager for the mining division Gerald Annandale notes that coolant is composed of three components, namely water content, ethylene glycol and a chemical portion.

“The coolant is an integral part of vehicle engine maintenance. Its water content portion cools down the engine, while the ethylene glycol forms the anti-freeze portion of the mixture. The smallest, but arguably the most important, component is the chemical make-up of the coolant which protects the internal surfaces of the engine,” he explains.

The cooling system of a vehicle comprises a number of different types of metal, which results in sensitivity to corrosion. “Aluminium for example is extremely sensitive to corrosion by chemical attack. In order to protect aluminium components in the engine, a silica compound forms part the coolant formulation to specifically protect the surface of the aluminium. The foundation of the formulation is protection, cooling, anti-boil and anti-freeze,” observes Annandale.

Water makes up an extremely important part of a vehicle’s cooling system; however, if ordinary tap water is used it could be detrimental to the life of the vehicle’s cooling system. “Chemicals such as chlorine are commonly added to water to make it safe for human consumption. These chemicals not only disrupt the chemical makeup of the coolant, but also have the propensity to rust the different components of the cooling system. It is for this reason that long-life pre-diluted coolants such as ES Compleat were formulated,” states Annandale.

ES Compleat Glycerin pre-diluted coolant is a new and innovative heavy duty engine coolant made with Glycerin, a raw material derived from renewable energy sources, such as a by-product of biodiesel manufacturing. Glycerin is used in place of ethylene glycol (EG) or propylene glycol (PG), ensuring environmental responsibility with green products that continue to provide superior engine protection.

According to Annandale, a good vehicle cooling system maintenance programme should include regular testing of the coolant. “Coolants can be tested effortlessly and accurately with either a refractometer or with coolant quality test strips, both of which are supplied by Cummins. The Fleetguard Refractometer is a fast, easy way to determine the freeze point protection of both ethylene glycol and propylene glycol coolants.

Cummins-branded Restore alkaline-based cleaning fluid is designed to clean a vehicle’s engine and cooling system by removing all unwanted deposits and residue from inside the cooling system itself.

Cummins also supplies a wide range of Fleetguard coolant products, which protect engine components against corrosion, liner pitting, cavitation, scale and deposits and acidification. These include; ES Compleat OAT, ES Compleat, Fleetcool EX, Fleetcool and Fleetcool Recycled.

Cummins, tel (+27 11) 321-8712
Optimum replaces ageing pumps with Viking units

Optimum Colliery has replaced ageing cooling oil pumps with ten new Viking model H4124A internal gear pump sets fitted by supplier Mather+Platt with 2,2 kW motor-gearbox combinations and mounted on mild steel base plates.

The order is a consequence of a proposed solution to inefficiencies experienced with the older, belt-driven pumps installed on crushers at the colliery, where vibration was causing belts to slip on their pulleys and occasionally become dislodged.

Mather+Platt proposed that the new Viking pumps be connected directly to their motors and gearboxes to overcome this problem, and mounted on base plates. Optimum’s new machines are heavy duty standard gear pumps with duties of 0,16 litres/s at a head of 13,8 bar.

They come from Viking’s universal seal pump family, which is manufactured in twelve sizes and features castings from stainless steel, ductile iron or cast iron. Customers can choose between gland packing, component seals or cartridge seals, and there is a behind-the-seal option. Flanged or NPT ports are incorporated in multiple locations. Jacketing is optional and a pressure relief valve is standard.

Mather+Platt reports steady sales of Viking internal gear pumps. The Wadeville-based company last year increased stock holdings across the Viking range to reduce delivery times, and claims to hold the largest ready stock of these pumps in South Africa.

Series 4125 pumps in the range can handle liquids with viscosities up to 15 000 SSU.

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

Latest Smartcom leaky feeder system has modular design

Becker has introduced its latest Smartcom VHF leaky feeder system, which ensures dependable underground communications.

“The Smartcom VHF leaky feeder system offers the mines multiple simultaneous voice and data radio channels, with low intermodulation noise levels, to ensure clear and reliable communications underground, at all times,” says Johann Smit of Becker Mining South Africa. “This leaky feeder system, with a modular design, features the option of local and remote diagnostic amplifiers with manual and automatic gain control to ensure every installation and subsequent maintenance procedures are safe and effortless.

“Mines are usually remote to major cities and established infrastructure, which makes access to communication specialists and services difficult for the mining sector. The Smartcom VHF leaky feeder system, which has been installed in mines throughout the world, is known for dependable performance, requiring little maintenance.”

The system is designed with local diagnostics via three on board LED indicators as standard. This unit facilitates fault finding and system troubleshooting by quickly being able to identify the faulty component and communicate relevant information on the display unit, thus reducing downtime and repair costs. This amplifier is suitable for installations that do not require the added expense of Ethernet and where remote diagnostics are not necessary.

Becker’s latest Smartcom VHF leaky feeder system, with local and remote diagnostics, also has Ethernet capabilities. The unit has the functionality to send information to an amplifier installed on the surface, enabling a control room operator to retrieve relevant information. This is particularly useful in the event of a system fault, as the operator can easily identify precisely where the problem is. The system also provides relevant information on what equipment is needed to repair the fault.

The flexibility of this system supports both analogue and digital radio repeaters, which means users have a choice of radio infrastructure.

Smartcom also supports telemetry and can be used for effectively controlling underground equipment such as ventilation fans, pumps and stench gas fires. Important information is communicated efficiently back to mine control systems for optimum productivity and enhanced safety.

Becker Mining South Africa, tel (+27 11) 617-6300

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