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One Source

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COVER

The Volvo L350F, part of the Volvo wheel loader range available from Babcock, has proven to be a popular machine in the mining field. See our story on page 16 for further details of Babcock's line up of machines for mining, quarrying and construction.

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Deloitte pins down the top trends for mining in 2015

What are the top mining trends for 2015? The answer is in *Tracking the Trends 2015: The top 10 issues mining companies will face this year*, which was released recently by Deloitte Touche Tohmatsu Limited (DTTL or Deloitte). This report is the seventh in the series and makes for some interesting reading, given the blowout in the global mining industry we've seen over the past year.

According to Deloitte, the number one trend it has identified is what it calls 'Back to basics: The pursuit of operational excellence'. Explaining what it means by this, it says: "If one theme epitomises the focus of mining executives over the past year, it would be a return to productivity. And no wonder. Throughout 2013, mining industry productivity (defined as the GDP value contribution an average worker creates in an hour of work) dropped to new lows."

Deloitte goes on to say that mining executives – unable to rely on a commodity price rally – have sharpened their focus on achieving sustainable productivity improvements. "Over the last year, mining companies have undertaken substantive cost reductions and are now moving forward with more streamlined cost structures. Capital discipline has also supplanted capital projects, with mining companies simplifying their portfolios, divesting non-core assets, renegotiating debt and shutting down marginal operations. Now, they are turning their attention to wringing more productivity from their organisations by heightening their focus on operational excellence."

A sidebar in this section of the report looks at the issue of 'insourcing' versus 'outsourcing' and says that more and more functions that were traditionally outsourced are now being brought back in house. Deloitte notes that during "the go-go years of the mining boom", as it puts it, one of the many input costs that ran wild were the fees paid to global contractors and EPCM suppliers. "Budget overruns were rife and mining companies struggled to gain clear visibility into the ballooning expenses," it says.

I don't have space here to go through all of Deloitte's 'top 10' list but the trend which has come in at number two is the need for innovation in mining, with Deloitte identifying this as the "new key to survival". It argues that innovation implies much more than just R&D around particular processes or technologies. "Companies can, in fact, innovate in multiple ways, such as leveraging supplier knowledge around specific operational challenges, redefining their participation in the energy value chain or finding new ways to engage and partner with major stakeholders and constituencies," it states.

"To reap these rewards, however, mining companies must overcome their traditionally conservative tendencies. In many cases, miners struggle to adopt technologies proven to work at other mining companies, let alone those from other industries. As a result, innovation becomes less of a technology problem and more of an adoption problem."

Third on Deloitte's list is 'The new energy paradigm: reducing project power costs', a topic which has special resonance here in South Africa, given the fast rising cost of electricity (assuming, of course, that we can get it from Eskom in the first place). The report has some interesting data on energy consumption by mines around the world. Chilean mining projects, for example, apparently consume an average of 25 MWh of energy per tonne of material processed, 10 % higher than the world average.

Other countries are fast catching up to Chile. Says Deloitte: "Across South America, high-altitude mines are seeing ballooning capital expenditures as their energy costs to pump water to greater heights mount. In the last decade, Australia's mines incurred a 60 % rise in energy use. Zimbabwe's annual electricity demand of 2 200 MW vastly exceeds its current 1 200 MW production."

Discussing solutions to the rising cost of power, Deloitte recommends that mines make more use of renewables. It notes that until recently these were seen as "overly-expensive, unreliable and unproven" but says that capital costs associated with them have dropped sharply in recent years.

Jumping somewhat and moving on to trend No 5, Deloitte identifies this as the lack of capital available for the mining industry, and particularly the junior mining sector, a phenomenon which it labels 'Financing's great disappearing act'. One result is that between June 2013 and September 2014 nearly 200 Australian mining companies filed for bankruptcy.

Deloitte says that to stay afloat, juniors might need to consider unconventional – and less palatable – alternatives to traditional financing. "These could include offtake deals, royalty and metal streaming arrangements, equipment financing and high-yield debt. Convertible debt structures are also emerging, but juniors should beware: failure to lift share prices fairly rapidly could see them handing over corporate ownership."

Readers wanting the full report can download it from *www.deloitte.com/trackingthetrends*. It's not much more than 40 pages long and is well worth a read, particularly by those in management positions in mining.

Arthur Tassell

"In many cases, miners struggle to adopt technologies proven to work at other mining companies, let alone those from other industries. As a result, innovation becomes less of a technology problem and more of an adoption problem."

A key area of the business improvement focus at Buzwagi (seen here) has been centred on improvement of the process plant and circuit performance. The recovery achieved during the quarter was 94,2 % – which is 6 % higher than during the same period in 2013 (photo: Acacia Mining).

Acacia's costs drop for ninth successive quarter

In its fourth quarter production report for the three months ended 31 December 2014, Acacia Mining (formerly African Barrick Gold) reports that gold production for the reporting period totalled 181 084 ounces, a 10 % increase on the corresponding quarter of 2013. The increase in production was predominantly driven by increased throughput at the North Mara mine and the contribution of the reprocessed tailings through the new CIL circuit at Bulyanhulu. This was partially offset by a planned reduction in grade at Buzwagi impacting production at the mine.

Gold ounces sold for the quarter were 194 243, a 16 % increase from the corresponding quarter of 2013. Gold ounces sold were 7 % higher than gold produced as a result of gold on hand from Q3 2014 being sold during the quarter.

"We are pleased to report further progress in the fourth quarter resulting in full year production of 718 651 ounces, ahead of our original 2014 guidance and a 13 % improvement on 2013," comments Brad Gordon, CEO of Acacia Mining. "As a result of our continued cost discipline, we have delivered our ninth successive quarterly reduction in all-in sustaining costs (AISC) and generated net cash flow of US$7 million in the quarter."

At Bulyanhulu, total production amounted to 66 033 ounces, including 7 035 ounces from reprocessed tailings. Production from run-of-mine processing was 11 % ahead of Q4 2013, with a 7 % increase in throughput and a 14 % increase in grade to 9,0 g/t (partially offset by lower recoveries). Recoveries were predominantly impacted by instability issues in the reagent mix in the elution circuit whilst the expanded CIL circuit was brought on stream, which led to higher tailings losses than planned.

The ramp up of the mine during the quarter was also slower than planned, with low grade alimak stopes mined during the quarter and access to high grade stopes delayed due to lower loader availabilities. These issues are in the process of being resolved and Acacia says it expects the step up in grade and production to take place as 2015 progresses.

At Buzwagi, gold production of 44 398 ounces was 14 % lower than in Q4 2013, as a result of the planned reversion to around reserve grade during the quarter which led to a 26 % reduction in head grade against Q4 2013. A key area of the business improvement focus at Buzwagi has been centred on improvement of the process plant and circuit performance. As a result, the stability of the plant and circuit performance has been improved, which in turn resulted in a recovery of 94,2 % for the quarter, 6 % higher than the same period in 2013, which – together with improved throughput – partially offset the expected reduction in grade.

At North Mara, total production for the quarter amounted to 70 655 ounces with mining continuing to focus on the main orebody in the Gokona pit, supplemented by mining in the Nyabirama pit. The feasibility study into mining Gokona via an underground operation was completed successfully during the quarter and portal development of the underground continued to progress in line with expectations. Mill throughput for the quarter of 718 000 tonnes was 12 % higher than the same period in 2013. The higher milled tonnes were due to improved mill efficiencies and less maintenance downtime compared to the same period in 2013.

The average grade processed for the quarter was 2,7 g/t which was 16 % lower than the prior year period. The decrease in grade was predominantly due to Buzwagi and the impact of the tailings reprocessing at Bulyanhulu, and was in part offset by a higher run-of-mine grade at Bulyanhulu.

Updated higher grade resource at Otjikoto's Wolfshag zone

Canada's B2Gold Corp has announced a significantly higher grade updated gold mineral resource estimate for the Wolfshag zone located directly adjacent to the east and north-east of its new open-pit Otjikoto mine in Namibia.

The updated inferred mineral resource contains 675 000 ounces of gold within 2,58 Mt grading 8,14 g/t gold utilising a 3 g/t cut-off. This inferred resource is below a pit shell containing an additional 1,03 Mt at 2,81 g/t gold (93 000 ounces gold) in the indicated category. The previously released initial inferred resource estimate for the Wolfshag zone was 6,8 Mt at 3,2 g/t gold containing 703 000 ounces of gold.

Mineral resources are reported within a pit shell based on a 0,5 g/t cut-off grade. Mineral resources located below and down plunge of the shell are reported at a 3,0 g/t gold cut-off grade. The reason that the down plunge resource is still in the inferred category is because the 2014 drill spacing was designed to evaluate the Wolfshag zone from an open-pit extraction perspective using a drill spacing of 25 m by 100 m. As the majority of the Wolfshag zone is now envisioned to be mined from underground, additional drilling will be required to infill the resource to the indicated category (25 m by 25 m spacing). Engineering studies are under way to determine which portion of Wolfshag could be mined by open pit and which portion by underground mining.

B2Gold currently plans to commence open-pit mining at Wolfshag in 2016. The conceptual plan would be to blend higher grade material from Wolfshag with ore from the Otjikoto pit resulting in an increase in annual gold production at Otjikoto and improved project economics. The main Otjikoto open-pit deposit is 29,4 Mt at a grade of 1,42 g/t gold containing 1,34 million ounces of gold.

For 2015, Otjikoto is expected to produce between 140 000 to 150 000 ounces of gold at a cash operating cost of approximately US$500-$525 per ounce and all-in sustaining costs of approximately US$700 per ounce. Once the planned mill expansion is completed in the third quarter of 2015, increasing the annual throughput at the mill from 2,5 Mt/a of ore to approximately 3 Mt/a, the company expects annual gold production to increase to approximately 200 000 ounces in 2016 and 2017.

New Liberty gold mine heads for commissioning

Seen below is a recent view of the New Liberty gold project site in Liberia, which Aureus Mining, listed on the TSX and AIM, describes as "the most advanced gold mine under construction in West Africa". New Liberty, which involves a capex of US$152 million, has an eight-year life on current reserves and should achieve an annual production of approximately 120 000 ounces of gold over the first six years of its life at an all-in sustaining cash cost of US$850/oz.

It will be an open-pit operation with the processing route consisting of conventional gravity and CIL processing. Plant construction was around 70 % complete by late last year and commissioning is due to start in the second quarter of this year.

The EPCM contractor is South Africa's DRA Mineral Projects, which was also responsible for the studies on the project, including the PEA and the DFS. Aureus will undertake the mining itself with MonuRent contracted to provide and maintain the mining fleet. Already several 100-tonne dump trucks and a 120-tonne excavator have arrived on site.

Kumba Iron Ore delivers on its plans and promises

Heavy mining equipment at Kolomela. The mine produced 11,6 Mt of iron ore in 2014, an increase of 7 % (photo: Kumba Iron Ore).

Kumba Iron Ore reports that in the year to 31 December 2014, it successfully delivered on its plans and promises.

Commenting on the results, CEO of Kumba Iron Ore, Norman Mbazima, said: "Iron ore prices were the single biggest factor to negatively affect our results for 2014. Markets have become much tougher, with prices significantly declining throughout the year. We have successfully delivered on the commitments we made at the beginning of last year. At Sishen mine, we exceeded our production target of 35 Mt, producing 35,5 Mt as the recovery plan was successfully implemented. The robust performance at Kolomela mine continued, lifting output by 7 % to 11,6 Mt. Total export sales increased 4 % to 40,5 Mt."

According to Kumba, the export price at the beginning of the year was US$134/dmt and ended at a level of US$71,75/dmt at the end of December 2014, following strong growth in supply, particularly from the major suppliers, and slower crude steel production growth in China.

Plans implemented at Sishen mine over the past few years yielded benefits and were complemented by the implementation of the Operating Model at Sishen North mine in August 2014. The Operating Model represents a consistent approach across the business to ensure that Kumba operates its assets to their full potential and enhances their long-term operational capability.

"The three basic principles underpinning the Operating Model are: stability in operations that deliver predictable outcomes, experience lower operating costs and fewer capital expenditure requirements; lower variation in operational performance to increase capability and efficiency; and a clear understanding by team members of their own work, and how their team works. The model was implemented at the internal waste and ore mining in the North mine. It is already yielding results including improving scheduled work, now over 70 % compared to 20 % on commencement; a 50 % reduction in waiting time on shovels; and 23 % efficiency improvements in total tonnes handled since June 2014," said Mbazima.

Sishen production of 35,5 Mt increased 15 % (2013: 30,9 Mt), with total tonnes mined rising to 229,9 Mt (2013: 208,8 Mt), including 187 Mt waste (2013: 167,8 Mt). While this is below the previously announced 2014 target of 220 Mt, waste removal run rates are now meeting targets.

The strategic redesign of the western pushbacks of the pit, together with the improved waste removal run rates, means – reports Kumba – that sufficient ore has been exposed to support the 2015 production target of 36 Mt. The improved mining plan has led to 780 Mt of waste being taken out of the revised life of mine plan with an 87 Mt reduction in reserves, increasing the net present value of the mine. The average life of mine stripping ratio has reduced from 4,4 to 3,9 and the life of mine has reduced from 18 to 16 years.

Total tonnes mined at Kolomela mine rose by 18 % to 70,4 Mt, (2013: 59,9 Mt), including 55,5 Mt of waste (2013: 46,7 Mt), an increase of 19 %. The mine produced 11,6 Mt of iron ore, an increase of 7 %. Pre-stripping of the third pit at Kolomela was completed to maintain flexibility and the company aims to increase current production capacity through de-bottlenecking and optimisation of the plant. With the establishment of the third pit, waste levels going forward are expected to decrease and normalise. The new steady state production capacity is 11 Mt/a, up from 10 Mt/a. As a result, the remaining reserve life of Kolomela has reduced from 24 to 21 years.

Production at Thabazimbi mine increased by 74 % from 0,6 Mt to 1,1 Mt as planned. The study for the reconfiguration continues but has been impacted by the current low iron ore price. The low grade project has been suspended and – due to the low price environment in which the company is now operating – the future of this mine is being reconsidered. An impairment charge of R439 million was recognised.

The group's portfolio has been reviewed and optimised to leverage the current asset base. The target remains an additional ~5 Mt in South Africa over the next three to five years, through incremental volumes from the projects at Sishen and Kolomela. Studies are underway to determine value accretive options to deploy UHDMS and other low grade technologies at Sishen. Further long-term expansion at Kolomela from current and additional pits is being considered. Despite the challenges of the current low price environment, Kumba says it will continue to look for long-term opportunities in Central and West Africa to preserve long-term growth options.

Profit for the group amounted to R14,1 billion of which R10,7 billion is attributable to shareholders of Kumba, and R3,4 billion to SIOC's empowerment shareholders. Headline earnings of R11 billion, or R34,32 per share, decreased by 29 per cent.

Looking forward, Kumba is planning increased production to fill the rail line and expects Sishen to produce 36 Mt of ore in 2015, rising to 38 million tonnes in 2016. ■

DiamondCorp provides update on Lace underground project

AIM-listed DiamondCorp says that during the three months ended 31 December 2014 its 74 %-owned subsidiary, Lace Diamond Mines (Pty) Limited (LDM), continued with the implementation of a revised underground development schedule and budget aimed at bringing forward the ramp-up of commercial production from underground kimberlite mining by six months into late H1 2015. LDM operates the Lace diamond mine in the Free State.

As a consequence of the six-week industrial action by members of the Association of Mineworkers and Construction Union (AMCU) in October and November, production will now commence in H2, which will still be four months ahead of the original plan.

During the strike, a number of underground workplace inefficiencies were identified which were addressed when the workforce returned to work. As a consequence of these changes, a 15 % improvement in development productivity has so far been achieved, says DiamondCorp.

Tunnel development costs to date are averaging R40 764/m against a revised budget of R37 000/m. The overspend continues to be the result of increased operating costs on the company's underground mining fleet and delays resulting from the AMCU strike. The benefits of maintenance and repair cost saving initiatives reported previously are currently being offset by cost increases on spare parts resulting from the weaker South African rand.

The mine has taken delivery of its new Sandvik 421 drill rig. This rig has the capacity to drill longholes up to 54 m in length and 127 mm in diameter and will be used to complete all the longhole drilling on the production levels in the UK4 and 47L block cave.

Underground core drilling of the UK4 block continues to delineate significant volumes of K4 (high grade) kimberlite above the 365 m level. The drilling, bulk testing and release of an updated resource statement will now be completed in early Q2, rather than Q1 as previously planned.

Regarding the tailings retreatment operation at Lace, DiamondCorp says that in the year ended 31 December 2014, it processed 308 047 tonnes of tailings and recovered 18 534 carats of diamonds at an average recovered grade of 5,96 cpht, compared with a budget recovered grade of 5 cpht.

Tailings re-treatment processing stopped in September as the surface earthmoving fleet relocated to construct another 150 000 m^3 surface process water storage dam in preparation for earlier than scheduled kimberlite mining. This activity was successfully completed in the dry winter months ahead of the summer rains. The construction of the new dam, plus additional surface drains, has allowed the mine to capture all of the water required for 2015 kimberlite processing.

An additional large surface dam is planned for construction in 2015 which will store sufficient water for full production requirements during low rainfall years. The timing of the re-commencement of tailings retreatment this year will be determined by the dam building schedule. ■

Cobus Loots to take over at Pan African

Pan African Resources, whose operation include Barberton Mines, Evander and Phoenix Platinum, reports that Ron Holding (62) will retire as CEO of the Group with effect from 1 March 2015. He will be succeeded as CEO by Cobus Loots (37), who is currently the FD of Pan African.

To ensure that Holding's experience and knowledge is retained by the Group, Pan African says an exclusive consulting agreement will be concluded with Holding, effective 1 March 2015. This arrangement will be for a minimum period of one year.

Loots has been a director of Pan African since 2009, and was also previously the Group's joint interim CEO from March 2013 to September 2013. Prior to joining Pan African on a permanent basis, he was the MD of Shanduka Resources, where he was directly responsible for the oversight of Shanduka's mining and minerals investment portfolio. ■

PTM strengthens team for its new WBJV Project 1 mine

Platinum Group Metals (PTM) has announced the hiring of full time local mining specialists in South Africa as part of an operational readiness plan as it moves toward first production in Q4 of calendar 2015 at its new WBJV Project 1 mine near Sun City. The operating team will be overseen by the company's Chief Operating Officer, Peter Busse, a mine builder and mine manager with over 40 years of experience.

"This is an exciting and pivotal time for us. With funding for mine completion secure and the WBJV Project 1 75 % complete, the addition of these new local team members to our 1 700 plus person strong construction contracting team provides us with the expertise to take us successfully into production at a promising time for platinum and palladium," says R. Michael Jones, President and CEO of PTM.

Among the new appointments is David Ngubane, General Manager. He has extensive management experience and has worked on projects in Zambia, Botswana and South Africa. His career began with De Beers and progressed to a variety of operational positions. He has also served as Operations Manager at Anglo American Platinum (Rustenburg), and as Mine Manager (Expansion Projects) for Xstrata Alloys. His last position was COO with Lanxess Chrome Mining. He obtained a BTech, Mining Engineering from the University of Johannesburg and a post-graduate diploma in Business Management from the University of KwaZulu-Natal.

Two further key appointment on the technical side are Curt von Graevenitz as Engineering Manager and Rowan Ray as Mine Manager.

According to PTM, Von Graevenitz brings over 26 years of invaluable experience in the mining industry, of which 11 years were in the trackless mining and equipment environment. He has an extensive history in the application and maintenance of the Mine Health and Safety Act, as well as having experience in asset, contract, maintenance and project management.

Ray joins Platinum Group from Murray & Roberts (Zambia) where he was Project Manager. He brings extensive knowledge and experience of the BRPM North and South shafts, both with similar orebodies to the WBJV Project 1. He has extensive experience in conventional, hybrid and bord and pillar extraction, capital projects, mechanised development and hydro powered drill systems. He holds a Mine Managers Certificate of Competency and a BA degree. ■

Technical scoping study on coal deposit completed

ASX-listed Walkabout Resources has announced the results of a technical scoping study finalised as part of the ongoing Pre-Feasibility Study (PFS) on the Takatokwane thermal coal project in Botswana. The project has a JORC indicated resource of 7 billion tonnes. The mine design has focused on the Target Mining Area which hosts 748 Mt of indicated resource.

The conceptual operation at Takatokwane mine contemplates two open-cut strip mines employing dragline machinery, each mining some 6 Mt/a of coal. Some of this product will be upgraded through a modular two-stage washing plant with three products delivered for despatch. These are an international seaborne coal product at a calorific value (CV) grade of 5 500 kcal/kg, a mid-range product at around 4 800 kcal/kg and a power station feed of 4 200 kcal/kg.

"It was always important that we understood the optimum profile for mining the huge Takatokwane deposit," says Allan Mulligan, MD of Walkabout Resources. "We now know that we will be building large scale, open-cut strip mines employing draglines and rope excavators that will produce coal for many years into the future.

"Similar to those planned for the Galilee Basin in Australia, these are going to be long life, stable mines that supply the emerging economies of the world with energy for generations to come. The Takatokwane complex will not be just a mining site but an entire coal mining province."

Drilling underway in the Takatokwane project area. The project is located approximately 195 km west-northwest of Gaborone (photo: Walkabout Resources).

Non-optimised capex for the project is estimated at US$767 million with operating and logistics costs ranging between US$43 and US$57 per tonne FOB. The study has been finalised on the basis of the Trans-Kalahari Rail (TKR) project being constructed by others as per current planning and progress.

Although the study has opted for a 12 Mt/a production rate, this can be significantly upscaled in modular extensions. The study also considers the ability of the project, by virtue of its location adjacent to the route of the Trans-Kalahari Rail project, to move coal product both to the west to Walvis Bay and also southwards to South Africa.

According to Walkabout, the development of the Takatokwane project remains dependent on the construction of suitable rail infrastructure to move the coal product.

Currently, the Coal Development Unit of Botswana is managing the Feasibility Study of the TKR project and this project is expected to be completed by 2019/2020. The Takatokwane coal project is a key input to the viability of the TKR.

Walkabout Resources controls 67 % of the Takatokwane project through two joint ventures it has with Botswana-based companies. ■

Master Drilling awarded landmark Palabora contract

Master Drilling Group Limited has recently been awarded a shaft construction contract with Palabora Mining Company Limited in an industry first for the mining sector. Master Drilling has designed and built the RD8 raise boring machine specifically customised for the Palabora contract, which entails the construction of two ventilation shafts, each 6,1 m diameter and a record-breaking 1,2 km deep.

"Once completed, the project will qualify as the largest scope of raise boring work per cubic metre ever embarked on, not only in South Africa but across the globe," says Danie Pretorius, Master Drilling's CEO.

This unique technology is estimated – says Master Drilling – to be up to four times faster than conventional blind sinking methods, and only requires two persons per shift working from the safety of an above-ground control room. Ultimately, this ground-breaking raise boring machine is key to pursuing deep-level, large-diameter shafts in future projects.

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

Master Drilling recently completed the 1 km deep Rowland shaft at Lonmin using similar technology. Accomplished within budget and schedule and with no incidents, accidents or damage to property, the operation was reportedly a huge success and the company employed three local community members as part of its drilling crew.

"The new crew members will now be moving with us to the next job as they have proven their competency and fit to company culture," says Pretorius. ■

Pre-production capex for tungsten project in Zimbabwe reduced

Premier African Minerals Limited has provided details of the Implementation Study report it has prepared in regard to the open-pit start up strategy for its RHA tungsten project in Zimbabwe. Premier is the operator of the project and holds a 49 % interest.

Highlights of the report include a reduction in pre-production capital to US$4,15 million and in operating costs to US$89,1/mtu (metric ton unit). The pre-tax NPV (at a discount rate of 10 %) is estimated at US$5,4 million, the pre-tax IRR at 161 % and the payback from first production at 10 months.

"The Implementation Study confirms our strategy for RHA and supports our conclusions that the open pit is projected to generate sufficient surplus cash to allow both commencement of repayment of loans made to RHA by Premier, and to finance the build of the underground operations," comments George Roach, Premier's CEO. "Most encouraging is the projected operating cost of US$89,1 per mtu WO_3."

RHA will target processing of 8 000 tonnes of run of mine ore per month at a diluted grade of 10,24 kg/t to produce, on average, 92 tons of concentrate at 63 % WO_3 per month over a 22-month period.

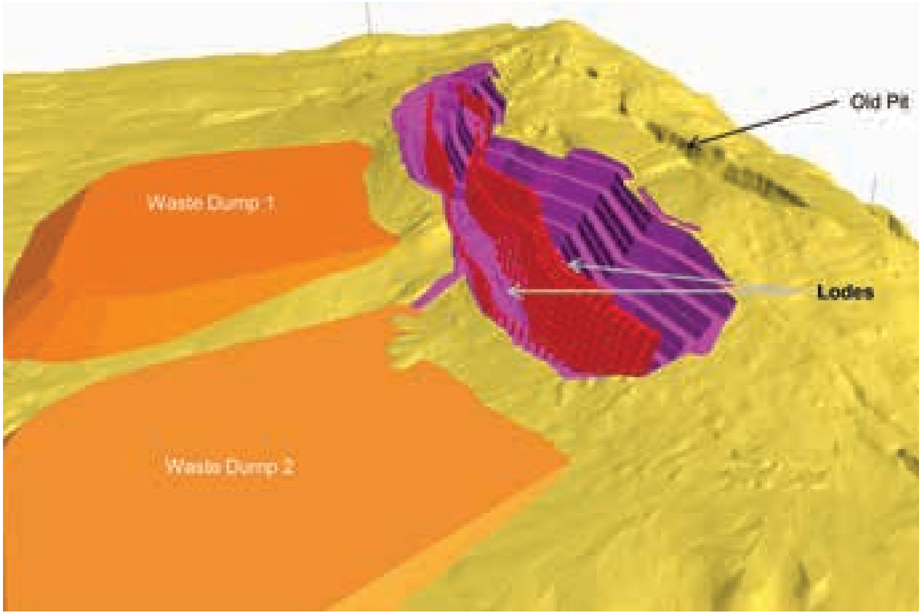
The definitive estimate is a culmination of work performed by Peacocke Simpson & Associates, Appropriate Process Technologies (APT), CAE Mining Africa, Senet, Blonton Management Consultants, Ground Water Development Consultants, Constant Chuma Consulting and Bumira Environmental Consultants and is considered suitable as the control budget estimate for the execution phase (-5 % to +15 %).

The financial model incorporates firm quotations for 80 % of the pre-production capital estimate including fabrication and installation of the process plant, earthworks and civil works, a road upgrade, the mining contract, as well as the procurement and construction management contract.

As we reported in last month's issue, Premier recently placed an order for the project's process plant. The plant is designed to meet a throughput of 16 t/h or 8 000 tonnes per month and achieve a wolframite recovery of 82,8 %. The stated production rate excludes any consideration of a pre-concentration circuit which, if implemented in future, could increase the plant throughput fivefold at a 20 % recovery loss as determined in the metallurgical test work announced in September 2014.

The modular plant will be built in Johannesburg by Appropriate Process Technologies (APT). The modules will be containerised and trucked to site where it is expected that the process plant will be fully commissioned by mid-2015.

The RHA project is located in Matabeleland North province, about 20 km south-east of Hwange and 270 km north of Bulawayo, the provincial capital. ■



The RHA project layout showing pit and waste dumps.

Kibali on course for steady state in 2018

A section of the twin-circuit (oxide and sulphide treatment and sulphide only treatment) metallurgical plant at Kibali. Both circuits are designed for 3,6 Mt/a. The plant has now been fully commissioned and is meeting design parameters (photo: Randgold Resources).

Following the successful completion of the first phase of its development, the Kibali gold mine is now well advanced into the second and final phase which will take it to full production by 2018, Randgold Resources Chief Executive Mark Bristow told a media briefing in Kinshasa recently. Randgold is developing and operating the mine, which it owns in partnership with AngloGold Ashanti and the Congolese parastatal SOKIMO.

Bristow said with the final commissioning of the metallurgical plant and the first of three hydropower plants, Kibali was now operating at design with the ramp-up having delivered against plan. The priorities for the current year were to advance the development of the underground mine, which will complement the existing open-pit operations, ramp up annual production to 600 000 ounces, commission the second hydropower plant and start work on the third, and continue expanding and upgrading the local skills base.

He noted that the past year had also seen the finalisation of the resettlement programme, including the completion of the Catholic Church complex in the new model town of Kokiza, the expansion of the local road network to 350 km, and Randgold's ongoing support for the development of a robust local economy. Since the start of the project, Randgold has awarded business valued at more than US$650 million to Congolese-owned companies while its engagement with local co-operatives has created more than 400 non-mining jobs.

"Our nurturing of Congolese contractors by providing them with capital, technical advice and an order base is enabling us to source many of our requirements locally, without compromising on price or quality," Bristow said. "All road and civil construction related to our hydropower plants is being carried out by Congolese contractors, for example, and by the end of the year, we aim to have at least half of our trucking handled by local truckers."

Despite the size and complexity of the operation and the high level of activity on site, Kibali is maintaining a good safety record, recently posting two million lost time injury free hours. The local incidence of malaria, which kills more people in Africa than any other disease, has been reduced by 55 % since the start of the project in 2011.

"As we've said from the start, we believe Kibali could be the engine that drives not just the transformation of its region but also the foundation for the development of a new mining frontier in north-east Congo to rival Katanga. One of our key objectives is to show the rest of the world that the country is a safe and attractive destination for new investment which is needed to develop its extensive mineral potential," Bristow said.

Seminar on lightning protection coming up

Industry specialist consultants INNOPRO are presenting their updated one-day industry-briefing seminar on 'Best Practices in Lightning Safety and Lightning Protection of Structures and Systems' in Centurion (Gauteng, South Africa) on 27 March 2015.

"Lightning safety and lightning protection is a topic that is often misunderstood, with inappropriate management, strategies, techniques and methodologies being applied as a result," says Ian McKechnie, MD of INNOPRO. "The consequential effects can be severe, both in terms of direct effects and injuries, and in respect of indirect and consequential impacts (including lost production and other effects). The appropriate application of effective lightning safety and lightning protection strategies and solutions for infrastructure, industry and other sectors is therefore of critical importance."

The seminars will be presented by McKechnie and his colleague Ian Jandrell, who is a director of Innopro. Jandrell is also a Personal Professor, CBI-electric Professor of Lightning, and Dean of the Faculty of Engineering and the Built Environment at the University of the Witwatersrand. McKechnie is an Honorary Research Fellow in the School of Electrical and Information Engineering at the University of the Witwatersrand.

These seminars are validated for Continuing Professional Development (CPD) with the Engineering Council of South Africa (ECSA) by the South African Institute of Electrical Engineers (SAIEE) and attendees will earn one credit in the compulsory Category 1.

Interested persons can contact INNOPRO on tel (+27 12) 663-4804, or by e-mail at *learning@gafrica.com*. Further information and registration forms are also available on the Innopro website at *www.innopro.co.za*.

African Copper signs loan agreement

African Copper plc, an AIM-quoted mining company focused on Botswana, has signed a further secured loan facility of US$4,5 million from its controlling shareholder, ZCI. The purpose of the ZCI facility is to provide the company with additional working capital as a result of difficult market conditions and associated cash flow shortfalls caused primarily by lower than planned production levels at its Thakadu mine.

In light of the prevailing market conditions and more specifically the recent fall in the copper price, African Copper is currently conducting a review of its operations in order to consider various short and long term strategies to address the group's current and future funding requirements.

As part of this ongoing review, the board is implementing efficiency and cost optimisation measures to improve liquidity and has taken the decision to suspend waste stripping activities at the Mowana open pit, with a strategy in the short term to focus on the remaining extraction of ore from Thakadu. The company intends mining ore at Mowana open pit that is substantially exposed from recent waste stripping activities, which will allow for copper production beyond July 2015 which is the estimated date at which the reserves at Thakadu are estimated to be depleted.

Says African Copper: "These actions give the business the highest prospects of getting through the current difficult market conditions and also a limited window of opportunity for restructuring the business for long term sustainability. The board recognises the significant mineral resources the company owns at Mowana and Thakadu, on which the basis of a new life of mine plan is currently being prepared."

Kinsevere pushes up its production by 12 %

Annual production at MMG's Kinsevere mine in Katanga in the DRC increased 12 % in 2014 to achieve new annual copper production and sales records. Full year production at Kinsevere of 69 624 tonnes of copper cathode was well above production guidance of 63 000 to 68 000 tonnes. Costs were also within guidance.

This result was assisted by an excellent fourth quarter, with production of 18 897 tonnes of copper, which was 17 % higher than during the same period in 2013. Mining rates and mill throughput increased by 17 % and 6 % respectively when compared to the previous quarter.

Kinsevere General Manager Miles Naude said that the outstanding result was a reflection of the operation's dedicated team and continuing focus on operational excellence.

"Our team has worked diligently throughout 2014 to sustainably increase mining and milling rates. Such an outstanding result – a 12 % increase in production during just the second full year of MMG ownership of Kinsevere – is a reflection of these efforts."

Construction activities underway at the demo plant site at Etango (photo: Bannerman Resources).

Demo plant at Etango nears completion

Reporting on the December 2014 quarter, Bannerman Resources, which is developing the Etango uranium project in Namibia, says it maintained its focus on activities that will enable fast tracking a commitment to the development of the Etango project.

On 22 September 2014 Bannerman announced the award of the major contracts to construct and operate the Etango heap leach demonstration plant and activities at the site commenced in early October. Construction of the demonstration plant at the Etango site was well advanced by the end of the quarter with completion scheduled for the March quarter 2015.

Operation of the plant for at least 12 months will enable demonstration of the heap leach design at a larger scale, as well as provide input data for detailed engineering of the processing plant. First results are expected in the June quarter, 2015.

Bannerman's Chief Executive Officer, Len Jubber, said: "Bannerman's commitment to the Etango heap leach demonstration plant programme, with the support of our major shareholder RCF via the investment from its Fund VI, will enhance our early mover advantage and ability to fast-track the development of the Etango project in a rising uranium price environment.

"The growing awareness of the looming supply deficit is evident in the approximate four-fold increase in the term contract market year on year coupled with the increased spot and term prices in the past quarter."

Etango is located in the Erongo uranium mining region of Namibia which hosts the Rössing and Langer Heinrich mines and the Husab project which is currently under construction by the Chinese state-owned enterprise, China General Nuclear Power Company (CGNPC). It is 73 km by road from Walvis Bay, one of Southern Africa's busiest deep-water ports through which uranium has been exported for over 35 years. Road, rail, electricity and water networks are all located nearby.

The DFS on Etango envisages that the project will produce 7-9 Mlb U_3O_8 per year for the first five years and 6-8 Mlb U_3O_8 per year thereafter, based on an average processing throughput of 20 Mt/a and an average recovery rate of 86,9 %. It estimates cash operating costs of US$41/lb U_3O_8 in the first five years and US$46/lb U_3O_8 over the life of mine. The DFS estimates a pre-production capital cost of US$870 million. ■

Sibanye enjoys a good December quarter

Sibanye, listed on the JSE and NYSE, achieved a record production of 14 079 kg (452 700 oz) for the quarter ended 31 December 2014. Total cash cost and all-in cost for the quarter will be approximately R285 000/kg (US$790/oz) and R375 000/kg (US$1 040/oz) respectively.

Gold production for the year ended 31 December 2014 was in line with guidance at 49 432 kg (1,59 Moz). This is despite the loss of over 500 kg due to the underground fire at Driefontein early in the year and the Eskom load shedding in the latter half of the December quarter. Total cash cost for the year of approximately R295 000/kg (US$850/oz) and all-in cost of approximately R376 000/kg (US$1 080/oz) are also in line with previous guidance. Capital expenditure of R3,3 billion (US$300 million) was marginally lower than guidance.

The Kloof, Driefontein and Beatrix operations produced 45 127 kg (1,45 Moz) of gold for the year, which was just over 1 % higher than in 2013. The Cooke operation contributed 4 305 kg (138 400 oz) during the seven months of incorporation in Sibanye, with the build-up progressing slower than anticipated. This under-performance occurred primarily at Cooke 4 shaft, resulting in the initiation of a Section 189 restructuring process.

Uranium production from the Cooke operation continued uninterrupted from May 2014, resulting in a stockpile of approximately 180 000 lb at year-end. Uranium production costs for the December quarter averaged approximately US$24/lb.

Capital expenditure in 2015 is planned to increase by 10 % to R3,6 billion (US$320 million), largely due to an increase in expenditure on projects to extend the operating lives of the mines and on growth projects such as Burnstone. ■

Randgold considers third underground mine in Mali

With its Loulo-Gounkoto gold mining complex in Mali continuing to grow production, Randgold Resources is looking at the development of a third underground mine there while at the same time expanding its footprint elsewhere in the region, Chief Executive Mark Bristow said recently.

Bristow, who was leading a group of international investors on Randgold's annual tour of its West and Central African operations, said a feasibility study on an underground mine at Gounkoto had been completed and its findings would be made known shortly.

The complex, which already ranks among the largest and most mechanised of its kind on the African continent, is targeting to increase gold production from its existing Yalea and Gara underground mines and the Gounkoto open-pit mine this year, with the underground operations providing some 60 % of the ore feed to its mills. In line with Randgold's policy of employing, training and advancing host country nationals, the complex's entire management and most of its workforce are Malian.

"Regardless of the potential Gounkoto underground mine and subject to the gold price remaining at current levels, the complex is forecast to up its profitability from its existing mining activities through increased production and reduced unit costs on the back of higher grades, improved recoveries and the benefits of its ongoing capital projects," Bristow said.

During the past year, the crusher circuit was upgraded and two additional medium-speed generators were commissioned, giving the complex about 50 MW of installed capacity. In addition, a highly sophisticated underground backfill system was commissioned and ramped up which should enable a virtual 100 % extraction from the high grade stopes at both Yalea and Gara. The finalisation of the refrigeration and next phase of ventilation plans, as well as the upgrading and optimisation of the power distribution system and the elution and regeneration plants, are on the cards for 2015.

"We believe the Senegal-Mali shear zone, which hosts Loulo-Gounkoto, is one of the most prolific gold regions in Africa, with the capacity to rival Ghana's Obuasi, and we are continuing our hunt for more multi-million ounce gold deposits there. We're also expanding our presence in the area through joint ventures with junior miners who have promising early-stage projects," Bristow said. ■

Underground drilling at the Yalea mine (part of the Loulo-Gounkoto complex in Mali) in January this year (photo: Randgold Resources).

Record production of copper by First Quantum in 2014

The new FQM smelter at Kansanshi in Zambia showing the smelter reagents building and the oxygen plant (photo: FQM).

First Quantum Minerals (FQM), listed on the TSX and LSE, produced 427 655 tonnes of copper in the year ended 31 December 2014 compared to 412 281 tonnes in 2013 and 45 879 (contained) tonnes of nickel compared to 47 066 tonnes in 2013. Gold production at 229 813 ounces was down on the 2013 figure of 248 078 ounces.

"Overall our operations performed well in 2014 recording the highest annual copper production in the company's history," comments Philip Pascal, FQM's CEO and Chairman. "Limited local smelter capacity in Zambia persisted and affected Kansanshi's performance and sales; and a structural failure in an atmospheric leach tank at Ravensthorpe suspended operations there in mid-December. The spill from the failure was contained within the plant's protective area, there were no environmental effects or injuries and we anticipate the mine will be back in production shortly."

He adds that 2015 will be an important year for First Quantum. "Our smelter in Zambia is being commissioned with first anodes poured during December 2014. First concentrate was also successfully produced at Sentinel during the fourth quarter 2014. The smelter's ramp up will influence the rate of production build-up of our new Sentinel mine. This will also influence, as more acid becomes available, the level and mix of operations and unit cost of production at Kansanshi.

"The financial and commodity markets have started 2015 with high volatility on concerns about the global economy, demand for natural resources and companies' liquidity positions," he continues. "As a result, our share price, along with others in the sector, has been materially affected. While we have high confidence in the mid to long-term outlook for copper, we are mindful of the current concerns. As always, we pay close attention to the company's financial position to make sure there is sufficient flexibility despite having an active project development pipeline.

"At Cobre Panama, we have substantially reduced the planned capital expenditure for 2015 to US$600 million without compromising the project's progress. We also maintain strong and supportive relationships with our principal banks that have worked with us throughout the development of the company and through several economic and commodity cycles." ■

Coal of Africa takes a step forward at Vele

Coal of Africa Limited (CoAL) reports that the South African Department of Environmental Affairs (DEA) has recently granted an amendment of the Environmental Authorisation in terms of the National Environmental Management Act (NEMA) and the Environmental Impact Assessment Regulations (2010) for its Vele colliery in Limpopo Province.

This amendment is the first of several required to be granted in relation to the planned modifications to Vele's processing plant, and is a further step toward achieving full regulatory compliance required to begin construction.

The company has also sought a renewal of the Integrated Water Use Licence and its amendment. The current IWUL expires in March 2016, and the company felt it was prudent to renew this licence prior to committing further shareholder funds to the project. The approval of the renewal is expected at the end of Q2 CY 2015.

"We will continue to engage with regulatory authorities and other stakeholders at Vele, as we continue to set a new benchmark for the co-existence between mining, agriculture and heritage land uses within the area in which we operate," comments David Brown, CoAL's CEO. "This period also gives the company further time to assess the outlook for coal prices. Discussions continue with appropriate end users regarding off-take agreements." ■

Shanta beats its guidance for 2014 production at New Luika

Shanta Gold, which operates the New Luika Gold Mine (NLGM) in the Lupa goldfield of south-west Tanzania, has released its production and operational results for the quarter ended 31 December 2014. Gold production for the quarter was 19 097 ounces (Q3: 22 721 ounces), in line with guidance. This figure means that the total gold production for 2014 was 84 028 ounces, ahead of guidance of 80 000 to 83 000 ounces and up 31 % on 2013 production of 64 000 ounces.

Unit costs for the quarter were adversely affected as expected by lower gold production driven by the mining/processing of lower grade ore. The cash cost and all-in sustaining cost were US$773 (Q3: US$671) and US$979 (Q3: US$873) per ounce respectively. The 2014 all-in sustaining cost, however, was US$941 per ounce, within guidance of US$900 to US$950 per ounce.

Commenting on the results, Mike Houston, Shanta's CEO, said: "The company has delivered a very positive operating performance over the past year enabling us to report full year production ahead of guidance. Alongside this, there have been a number of important developments progressed which will have a significant impact on the future of Shanta Gold. The plant has been largely de-bottlenecked and the higher plant throughput has provided the flexibility to process increased volumes of ore.

"In addition, following the review of the viability of underground mining, a decision was made on the final Bauhinia Creek pit design and the pushback was commenced in April 2014. The Bauhinia Creek pushback will remain a key operational challenge and focus during 2015 as the company looks to implement the life of mine extension project." ■

Jubilee Platinum and Hernic to partner on tailings project

Jubilee Platinum says it has concluded a Heads of Agreement (HOA) with Hernic Ferrochrome, the world's fourth largest integrated ferrochrome producer. Hernic intends appointing Jubilee as the exclusive party to beneficiate the chrome and PGMs contained in its surface tailings.

In addition to its PGM-containing surface tailings, Hernic also has access to at-surface secondary stocks. The HOA facilitates the processing of approximately 1,7 Mt of chrome tailings material and Hernic identified that the tailings material could exceed 3 Mt through additional drilling programmes. The 1,7 Mt of chrome tailings material has been fully drilled and assayed for chrome and PGM content to produce a resource statement. Approximately 90 % of the resource is classified within the measured category under the internationally recognised SAMREC code.

Comments Leon Coetzer, Chief Executive of Jubilee: "We are very proud as a company to be selected as the exclusive partner to execute Hernic's PGM processing project following an extensive selection process by such a prestigious entity as Hernic. The envisaged project will be the largest PGM beneficiation plant of chrome tailings re-claimed from a surface chrome tailings dam in South Africa."

Under the HOA, Hernic and Jubilee intend concluding a plant engineering and design agreement as well as a co-operation agreement in respect of PGM concentrate to facilitate the construction and operation of a PGM processing plant at Hernic. ■

The Volvo EC700 excavator is well matched to the Volvo A40 articulated hauler.

Babcock takes the mining downturn in its stride

Notwithstanding the tough conditions in the mining market, Babcock – the Southern African dealer for Volvo Construction Equipment (Volvo CE) – ended calendar 2014 with a flourish, securing two substantial orders for Volvo machines, one of them from a cement manufacturer for the replacement of the entire fleet of Volvo equipment at one of its major operations and the other from a civils/mining contractor for 12 top-of-the-range 40-t Volvo articulated dump trucks (ADTs). Says Sales Director – Equipment, David Vaughan, "There's no question that mining – which is one of our primary markets – is in a severe downturn but there is nevertheless business to be had and we're very positive about the medium to long-term prospects for the industry."

Far from tightening in the face of the downturn, Babcock's Equipment business is positioning itself to better service its customer base, with a major development being its investment in a new custom-designed, state-of-the-art sales and service complex in Middelburg in Mpumalanga in the very heart of coal-mining country.

"This is a key region for us, with a significant population of Volvo machines working at coal mines in the area," says Vaughan. "We've outgrown our existing premises and the new facility – which represents an investment of close on R100 million – will ensure that we can continue to deliver the high levels of service and support which are our trademark.

The complex will include offices, workshops and a sophisticated rebuild centre able to refurbish all machines in the Volvo range." He notes that construction of the new premises is well advanced with occupancy scheduled for August this year.

Vaughan says Babcock has also been strengthening its footprint in the Southern African region and has opened a new branch in Matola in Mozambique and established branches in Namibia and Botswana, which were previously served by independent dealers. In Zambia, one of its key markets, it has branches in Kitwe, positioned at the centre of the Copperbelt, and in Lusaka, Zambia's capital. It has also expanded to Solwezi in recognition of the fact that the centre of gravity of the Copperbelt has been shifting further to the north-west of Zambia in recent years with the opening of new copper mines such as Kansanshi and Lumwana in North-Western Province – with a third major mine, Sentinel, in this same area now in the commissioning phase.

One of the biggest sellers in the Volvo line-up marketed by Babcock is the Volvo ADT, which comes in three different models locally, the 30-ton payload A30, the 35-ton A35 and the 40-ton A40. The Volvo ADT is reportedly the global market leader and has proven extremely popular in South Africa and neighbouring states, with the A40 in particular being a best seller. The models available in Southern Africa are from the F-Series and the A40F, first introduced in 2010, was the recipient in 2012 of the 'red dot' design award, probably the most prestigious design award in Europe and arguably the world.

According to Vaughan, one reason for the popularity of the Volvo ADTs is the incredible longevity they offer, with many units in the local market having clocked up over 30 000 hours. "The Volvo haulers can soak up the hours," he says. "In addition, they're noted for their fuel efficiency, which we believe is market leading, and the high standards of safety they offer. The range is also feature rich. To take just one example, all Volvo ADTs are equipped with Volvo's unique Automatic Traction System (ATC), which automatically selects the optimal drive system to suit underfoot conditions.

"In normal mode, ATC selects the fuel-saving 6x4 drive configuration, only switching to 6x6 drive when more traction is needed. The resulting fuel savings can be very substantial – up to 6 % by Volvo's estimates. There is also, of course, a beneficial impact on tyres with tyre life potentially being extended by up to 10 %."

Vaughan points out that the reputation of the Volvo ADT is such that used machines are in huge demand worldwide. "The Volvo ADT is almost like an international currency," he says. "We find that the ratio of the number of

David Vaughan, Sales Director – Equipment, Babcock, pictured with the Volvo L350F loader.

Powered by a 394 kW Volvo engine, the Volvo 350F loader is an ideal machine for tough mining environments.

Another view of the EC700 excavator. The machine has proven popular in Southern Africa with customers in the mining field.

machines we trade in compared to the number that we sell is completely different to the industry average – a result of customers selling their machines directly, particularly to international buyers, rather than trading them in when they need to modernise or expand their fleets."

While the Volvo ADT accounts for the biggest portion of the Volvo construction and mining machines marketed locally by Babcock, the overall range includes hydraulic excavators, wheeled loaders, backhoe loaders (also known as TLBs) and compactors. The excavators – eight models are offered – range from a 5,5-t mini-excavator through to the top-of-the-range 70-ton EC700 while the 11 loaders available have bucket capacities from 0,7 m^3 to 6,8 m^3.

Says Vaughan: "If we're talking mining, the most popular models are the EC700 excavator and the L350F wheel loader, which is an extremely productive unit designed for use in the toughest mining environments." He adds that the EC700 – powered by a 346 kW Volvo engine – is well matched to the A40 hauler. As regards the L350F, rated at 394 kW, he describes it as an "uncompromising machine" which, like all other units in the Volvo range, offers excellent safety, ease of maintenance and durability. Among other things, it features an intelligent load-sensing hydraulic system consisting of two variable piston pumps which provide exactly the flow rate and pressure demanded by the work situation.

Complementing the Volvo range, Babcock also distributes the SDLG range of equipment, which includes loaders and graders. Explaining the positioning of SDLG with respect to the Volvo brand, Vaughan says the SDLG machines cater for the value end of the market, where there is less emphasis on high-tech features. "They are excellent machines and are proving extremely popular with customers who do not need the sophistication and ultra-high specs of the Volvo range," he observes.

An interesting point is that Volvo CE announced in November last year that it would be discontinuing production of Volvo-branded backhoe loaders and graders. In future, it said, these products would be manufactured by SDLG in China rather than at Volvo factories in Europe, the USA and Brazil. Said Volvo CE in its statement: "The current product lines of technologically advanced and high spec Volvo-branded backhoe loaders and motor graders have addressed a relatively small premium segment of the market. SDLG-branded backhoe loaders and motor graders will better serve customer demands in the large and growing value segment of the market."

Commenting on this decision, Vaughan says the message he would like to convey to customers is that Babcock can continue to meet their needs as it has in the past, with no diminishment in the range of machines it is able to offer customers.

Summing up, Vaughan says that Babcock has successfully established the Volvo CE brand in South Africa since acquiring the agency in 2000, with sales increasing many times over during this 15-year period and with just over 7 500 machines now operating in the field "Our performance has been so strong that we've been named as the Volvo CE 'Dealer of the Year' on three occasions," he says. "As I've said, current market conditions are challenging but we emerged from the downturn of 2008/2009 in very good shape and I'm confident that we'll do the same this time around." ■

Construction in full swing on

Asanko Gold Inc (Asanko), listed on the TSX and NYSE, reports it is making good progress on the construction of Phase 1 of its Asanko Gold Mine (AGM) in Ghana. Phase 1 – which is fully funded and permitted – will be a low cost, long life mine producing 190 000 ounces of gold per annum at steady state, with the first gold pour on track for Q1 2016. Construction started in August 2014 and is advancing on schedule with 24 % of the overall project complete as at the end of December 2014.

Peter Breese, President and CEO of Asanko Gold Inc.

By the end of the December quarter procurement was 68 % complete with total capital commitments amounting to US$170 million of the total capital budget of US$295 million. Plant earthworks were nearly complete at 89 % and concrete civils were well underway and at the 8 % mark.

Peter Breese, President and CEO, commented: "Construction of Phase 1 of our flagship project, the Asanko Gold Mine, is proceeding according to schedule and on budget. The plant site is advancing rapidly, with all the key infrastructure foundations established. The pre-mining work has also commenced, with the Nkran pre-stripping operations underway in advance of ore mining operations commencing in Q3 2015.

"The next key milestone for the company will be the publication of the feasibility study on Phase 2 at the end of Q1 2015, which is expected to demonstrate the value of developing the adjacent Esaase deposit and expanding production up to 400 000 ounces of gold per annum."

Breese is very well-known in Southern

Ghana's newest gold mine

African mining circles. His involvement with Asanko Gold (or Keegan Resources, as it was known till 2012) dates back to October 2012 when the Highland Park Group became a major strategic investor in Keegan. The key investors in Highland Park – including Breese – all have a background with LionOre Mining, which was sold to Norilsk in 2007 for US$6,3 billion. LionOre's assets included the Tati nickel mine near Francistown in Botswana. Breese was COO of LionOre while Colin Steyn – currently Asanko Gold's Chairman – was President and CEO. Prior to founding LionOre, both Breese and Steyn worked in Zimbabwe's mining industry.

The team that Breese has deployed to develop the Asanko Gold Mine has in-depth African experience and includes Hugo Truter (among other things, he was GM of Tati Nickel for two years), Rob Sherwen-Slater (at one stage Chief Mining Engineer for JCI Projects and also Projects Director for LionOre Mining) and experienced metallurgist Ed Munnick (previously COO of Chambishi Metals in Zambia and Metallurgical Executive at LionOre Mining's Africa division).

To build its new mine, Asanko Gold has appointed two South African-based companies – DRA and Knight Piesold, both with plenty of West African experience. DRA is the EPCM contractor for Phase 1 while Knight Piesold has been appointed to design the Tailings Storage Facility (TSF) and carry out detailed geotechnical engineering works at the site. Asanko Gold's management has worked with both companies in the past, particularly DRA. As Breese said earlier last year when the contracts were

Left: *A recent view of the Asanko Gold Mine site with concrete pouring underway.*

Below: *Earthworks in progress on the terracing for the processing plant.*

The pit requires 21,7 Mt of waste to be pre-stripped prior to ore mining operations starting in the fourth quarter of this year. The mining contractor, PW Ghana, has previous experience of the site, having mined at Nkran in the late 1990s.

announced, "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 budget."

The project is on schedule for its first gold pour in Q1 2016. Critical path schedule items continue to be installation of the two mills, tailings storage facility infrastructure and installation of the power line to the project site.

Concrete pouring was progressed substantially during December and resumed in January. Importantly, the SAG and ball mill bases were completed ahead of the Christmas construction break and the handover for the mill installation is on schedule. Pouring the foundations of the CIL circuit bases and the pre-leach thickener bases has commenced and these are on target to be finished by the end of Q2 2015.

Steel installation is expected to commence this month (February) with the contractor now mobilising to site. The steel plate work for the CIL tanks was designed on a modular basis which will allow for simple erection on site. The CIL tanks have been fabricated and have been delivered to the site in preparation for site erection.

Earthworks for the run-of-mine tip wall, crusher and primary stockpile tunnel have been completed and handed over to the civil contractor. Progress on the preparation of the tailings storage facility is advancing according to schedule and laydown of the HDPE liner is expected to start in March this year.

Construction of the contractor camp housing is complete and work on all the essential services – water, power and sewerage – is underway and was due for completion by the end of January 2015. As of mid-January there were 503 contractors on site, with the full complement of 820 contractors expected by the end of Q3 2015.

Power for the project will be supplied by a 30 km long, 161 kV line which will be constructed along an existing power corridor. Ground preparation is underway with 3 km completed to date. The company is in the process of negotiating a definitive power supply agreement, which is expected to be finalised by the end of Q1 2015. Power will be sourced from the national grid with the power supplied from either the state-owned power generation company or an independent power producer.

The main mineral resource for Phase 1 is the Nkran pit, located immediately adjacent to the plant site. The pit requires 21,7 Mt of waste to be pre-stripped prior to commencing ore mining operations later this year. Included in the pre-strip will be 423 000 tonnes of ore at a gold grade of 2,09 g/t which will be stockpiled ahead of plant commissioning. Once the mine is in full operation, the strip ratio over the life

Dewatering of the Nkran pit commenced in December 2014 and is expected to take up to ten months to complete.

Workers assembled for a safety briefing. As of mid-January, there had been no lost time accidents on site with 231 days of construction activity and 348 330 man-hours completed on the project.

of mine is expected to be 4,7:1 (waste to ore). Nkran will be the source of 80 % of the ore with the balance coming from four satellite deposits.

The mining contract for the pre-stripping of the Nkran pit and the first year of operations was awarded in November 2014 to PW Ghana Ltd (PW), a subsidiary of PW Mining International Ltd of Accra, Ghana. PW mobilised to site during November and December 2014 and has commenced the first stages of pre-stripping. The process by which PW Ghana was selected was very rigorous and began in May last year when Asanko invited 19 mining contractors to tender. This led to a short-list of seven being compiled. The short-listed companies were invited to submit more detailed tenders in July last year, with four of these tenders then being selected for detailed technical and commercial review.

Dewatering of the Nkran pit – which was previously mined and closed in 2002 due to the then low gold price – began in the December 2014 quarter and is expected to take up to ten months to complete. As at the end of the December, the water level in the pit had already reduced by approximately 2 m. The dewatering will continue throughout the year and will occur in parallel with the pre-stripping operation and is proceeding on schedule.

In terms of the staffing of the new mine, Asanko Gold promoted Charles Amoah to General Manager – Asanko Gold Mine in December 2014 following the resignation of Jonathan Ebo Collins. Amoah was previously Manager – Processing. He is a Ghanaian national and a metallurgist with over 22 years of experience. He has held a number of senior management positions in the Ghanaian gold mining industry, including General Manager of PMI Gold Corporation's Obotan project, as well as Acting GM and Metallurgical Manager of the Damang mine, which is 90 % owned by Gold Fields. He holds a Certificate in Management Development and a Masters degree in mineral processing.

Asanko has now filled the majority of the key operating positions at the Asanko Gold Mine in readiness for the commencement of ore mining operations and plant commissioning later this year.

Photos courtesy of Asanko Gold Inc

Subdued Mining Indaba reflects

*While it would probably be an exaggeration to say that this year's Mining Indaba in Cape Town had an air of gloom hanging over it, there was no question that the 'buzz' that normally surrounds the event was absent, or at least muted, reflecting the downturn in commodity prices and the recession in world mining. Nevertheless there was a line-up of top speakers to listen to and in this article **Modern Mining's** Arthur Tassell looks at just some of the more significant presentations that were given.*

Tony Blair, UK Prime Minister from 1997 to 2007, addresses Mining indaba delegates.

Probably the most eagerly awaited address was that by ex-UK Prime Minister **Tony Blair**. As befits someone who now ranks as one of the world's highest paid speakers, he gave a fluent and compelling presentation which was generally well received by his standing-room only audience (although journalists were miffed by the instruction that they could neither record nor photograph his speech). He told delegates that he was very optimistic about Africa, pointing to the fact that ten of the fifteen strongest growing countries in the world were on the continent. "If you take the continent as a whole and compare it with where it was 20 years ago, the progress has been enormous," he said.

Blair's qualifications to talk on Africa stem as much from his African Governance Initiative (AGI), which he established several years ago and which currently works in Rwanda, Sierra Leone, Liberia, Guinea, Nigeria and Senegal, as from his years as UK Prime Minister. The AGI advises African governments on how to achieve good governance (among other things) and Blair told Indaba delegates that the quality of government was in fact the key to unlocking Africa's potential, adding that African countries needed to prioritise the creation of infrastructure, including power generating capacity, and the quality of education. Given that he was speaking at a mining convention, he sang the praises of the mining industry which he characterised as "absolutely vital for Africa's future".

"Our intention is to establish a new South African mineral-based National Champion. This champion will be community based with a strong worker participation and anchored and run along business principles ... ."

Ngoako Ramatlhodi, Minister of Minerals Resources

The Minister speaks

Another much anticipated address was by South Africa's Minister of Minerals Resources, **Adv Ngoako Ramatlhodi**, with delegates clearly seeking assurance on the future of South Africa's mining industry. He said that "given the centrality of mining to the economy of the country, we are leaving no stone unturned in providing a stable environment for investments."

He continued: "I am fully apprised of the restructuring plans of some of the major players in the industry. Rather than bury our heads in sand, we have decided to take advantage of the new situation and turn adversity into advantage. In this regard, I am satisfied with the conversations taking place between us and the industry. Our intention is to establish a new South African mineral-based National Champion. This champion will be community based with a strong worker participation and anchored and run along business principles, shepherded by a leadership that is prepared to stay in for a very long time. That leadership should not leave the flock in the veld and run for greener pastures. This, then, constitutes the fundamental characteristics of the champion we seek to build, be it a single commodity creature or a multi commodity enterprise. It could also mutate into several creatures carrying with it the many small producers we are building. The underlying principle here is broad based. The era of individual empowerment is gone."

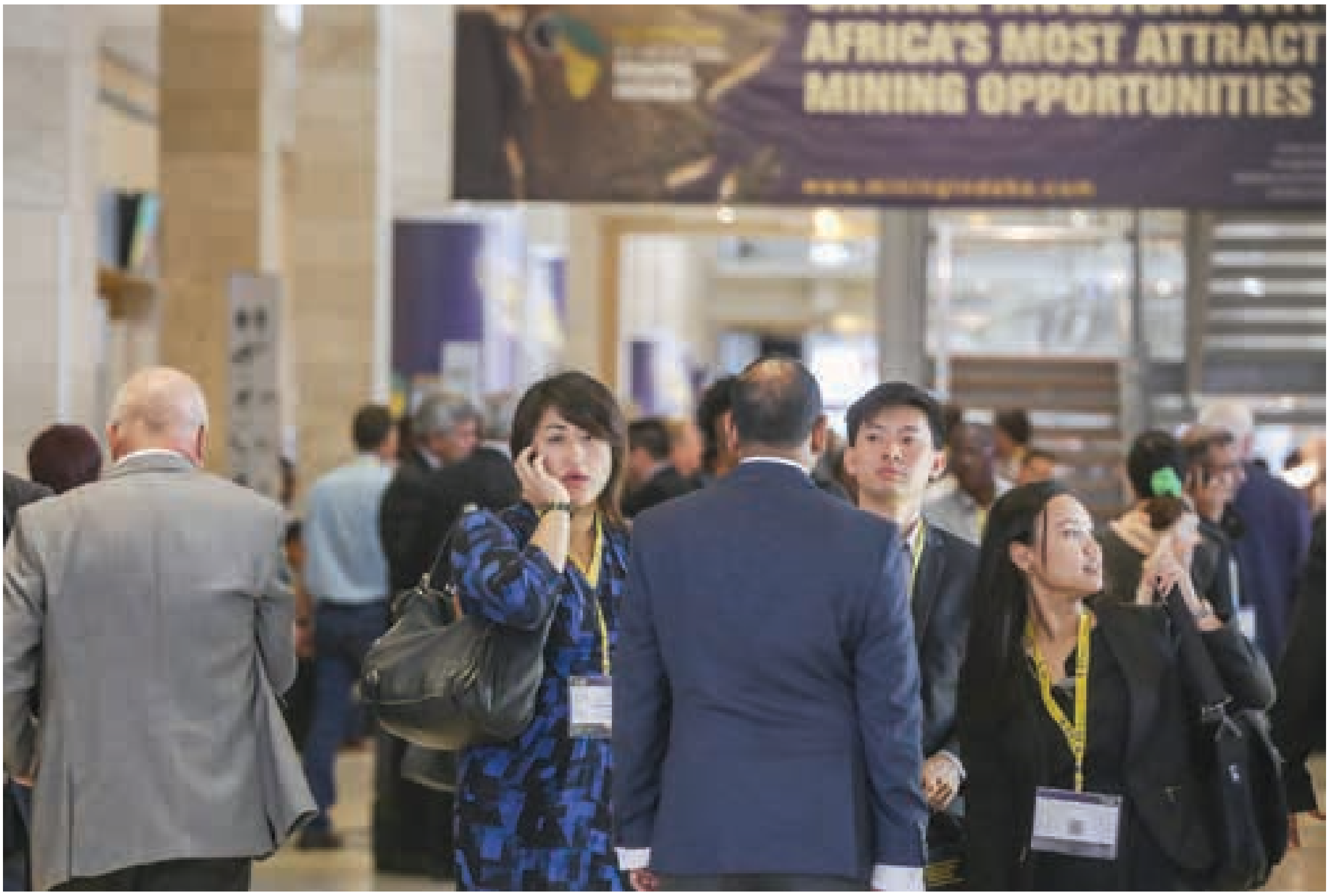
a troubled resources sector

South Africa's Minister of Minerals Resources, Adv Ngoako Ramatlhodi, delivers his keenly anticipated keynote address.

Touching on the thorny problem of power supply, he conceded that South Africa was experiencing challenges. "We are paying particular attention to energy as we acknowledge the reality that there is no mining without energy. Accordingly, we are supporting and augmenting Eskom capacity to attain a long term sustainable financial solution, allowing renewables to come on line, deploying solar power, processing applications for private coal power stations and finding possible partners in the development of nuclear energy. However, our crowning glory is the Great Inga project, where South Africa has signed an off-take contract for 2 500 MW annually by 2023."

Ramatlhodi's speech seemed to get a mixed response from delegates, with some (who *Modern Mining* talked to) labelling it as positive and others believing it failed to deliver the assurances that potential investors in South Africa's mining sector were seeking. There was particular skepticism about the power generation initiatives, not least the promise of power from Inga (in the DRC), a project that has been doing the rounds for years with not much

A typical scene at the Mining Indaba, which attracts delegates from over 100 countries.



Jim O'Neill, the man who coined the term 'BRIC', gives his views on the world economy.

visible progress to date, and confusion over exactly what the 'National Champion' concept entails.

Emergence of a new China

Perhaps filling the role that economist Robert Hale did at previous Mining Indabas, **Jim O'Neill**, Chairman of the Cities Growth Commission and previously Chairman of Goldman Sachs Asset Management (where he was responsible for managing US$800 billion of assets and coining the acronym 'BRIC') gave an overview of the world economy. The title of his presentation was 'Managing the Commodities Curse – What are the Options?' but, in practice, he looked more at global economic trends than this specific issue. Major points he made were that the global economy was doing far better than popular perception suggested, that levels of inequality were actually narrowing rather than widening and that the current low oil prices were a net positive for global growth.

On China, he observed that its commodity imports were currently running at half the level of a year ago, reflecting the emergence of a new China where the emphasis was on the "quality and sustainability of growth rates" rather than on simply achieving high rates of output to the exclusion of other factors. He predicted that the days of double-digit growth in China had now ended and said the country's GDP growth for the remainder of the current decade would likely be in the range of 5,5 to 7,5 %. He cautioned delegates not to read too much into the latest Chinese trade figures recording a record trade surplus, pointing out that the Chinese economy was today twice as big as six years ago (the implication being that the trade surplus is shrinking measured as a proportion of GDP).

"Copper market fundamentals remain fairly solid and we don't believe they justify the low prices we see in the marketplace today."

Vanessa Davidson, CRU Group

The outlook for commodities

On the outlook for commodities, a particularly interesting presentation was given by **Vanessa Davidson**, Group Manager, CRU Group whose address was entitled 'Copper: Long-Term Bull Story?' She dealt with the issue of whether the sharp decline in the copper price recently to a five-and-a-half-year low was a short-term phenomenon or a long-term structural change that producers would have to contend with for years to come. Her conclusion was surprisingly optimistic. "We believe the copper market will be back in deficit by 2018 at the latest," she stated. She noted that China accounted for around 45 % of world copper demand and said CRU expected Chinese demand to continue growing. She added that all other key regions (in contrast to the past several years) were also expected to see growth in copper consumption over the next few years. "Copper market fundamentals remain fairly solid and we don't believe they justify the low prices we see in the marketplace today," she said.

Looking at planned new production, she said 56 % of new projected output would come from the Americas, particularly Chile, but she also noted that Africa's copper output had shown a marked increase in recent years, growing from just over half a million tonnes of copper in concentrate in 2002 to approximately 2 Mt in 2014 (most of it from Zambia and the DRC). On the negative side, she said Africa's copper mines faced significant challenges and were among the highest cost producers in the world, most of them falling into the third or fourth quartile. The increase in royalties – from 6 % to 20 % on open-pit operations – in Zambia, as well as an ongoing dispute over VAT refunds in that same country, were also not good news, with Barrick having already announced that it would suspend operations at its Lumwana mine (which produced around 63 000 tonnes of copper in the first nine months of 2014) and Vedanta reviewing its Copperbelt operations.

On the current malaise in the iron ore market, **Roger Emslie** of Wood Mackenzie – in an address on the 'New era for Iron Ore' – said the more than halving of the iron ore price over the past year (to a price last seen in May 2009) could be attributed in large measure to slackening Chinese demand (which accounts for 66 % of global demand) coinciding with the ramp-up of production from Australia's Pilbara region. He believed the market would remained over-supplied through 2015 and warned that if prices remained in the low 60s more closures from mid-tier producers could be expected, as well as more asset write downs.

A tale of three projects

Delegates disappointed by the recent performance of commodities would have taken heart from **Robert Friedland's** presentation. He, of course, is Executive Chairman of Ivanhoe Mines, which is developing three major projects in Africa – the Platreef PGM project in South Africa's Limpopo Province and Kamoa and Kipushi in the DRC, Kamoa (25 km west of Kolwezi) being a copper discovery and Kipushi near Lubumbashi primarily a zinc project.

He stressed – as he has done at previous Indabas – that the world was urbanising at breakneck speed with China and Africa being the main drivers of this phenomenon. As a result, the resources sector had a bright future. He pointed out, for example, that the 90 million passenger cars on China's roads would increase to 430 million by 2030, in the process creating a huge demand for platinum and palladium.

On copper, he maintained that it was a major beneficiary of the urbanisation phenomenon and that, in addition, it was now well established that it was a metal that could – when applied as a lining material to surfaces – kill the 'superbugs' that infested most hospitals worldwide. As for zinc, it was increasingly being recognised that decades of farming generally resulted in soils becoming deficient in the metal and that the addition of zinc to fertilisers could result in an "explosion in yield".

Friedland described Kamoa – which hosts over 50 billion pounds of copper – as a world-class virgin discovery and told delegates that the exploration team that had worked on the deposit would be the recipient of this year's Thayer Lindsley Award for international mineral discoveries, which honours the memory of one of Canada's greatest mine finders. Referring to Kipushi, one of the DRC's historic mines, he said Ivanhoe had successfully dewatered the underground workings and was continuing to

Robert Friedland, Chief Executive of Ivanhoe Mines, at the podium.

Mali – a prime West African destination for gold miners

Coinciding with this year's Mining Indaba – and held in the Westin Hotel opposite the Convention Centre hosting the Indaba – was the first 'Doing Business in Mali' Mining Forum. Seen in this photo taken at the event by *Modern Mining* are (from left) Salma Seetaroo of Medea Capital Partners, who moderated the discussions, Mark Bristow, Chief Executive of Randgold Resources, Peter Sullivan, CEO of Resolute Mining, Mali's Minister of Mines, Boubou Cissé, Clive Johnson, CEO of B2Gold Corp, and Dan Betts, who heads Hummingbird Resources.

Randgold and Resolute both operate gold mines in Mali, the Loulo-Gounkoto Complex and Morila in the case of Randgold and Syama in the case of Resolute. B2Gold's involvement in the country stems from its control of the Fekola project (now at the feasibility stage), which it acquired last year when it merged with Papillon Resources, while Hummingbird is developing the Yanfolila project, an advanced gold project (acquired from Gold Fields last year), which is due to move into construction shortly.


LH410

get spectacular results from drilling – including an intersection in the Big Zinc orebody which had returned an incredible 44,8 % zinc over 340 m.

Much of Friedland's address focused on the Platreef project near Mokopane, which he said would eventually be developed into the "world's largest and most sustainable platinum mine" with a stage three production rate of 12 Mt/a of ore. He said it would be a highly mechanised bord and pillar mine exploiting the so-called Flatreef resource – with an average width of 24,5 m – at a depth of about 700 m. Workers, he said, would be trained professionals and would be paid accordingly and – with the hyperbole for which he is well known – he added that "no one working in the mine would be required to lift anything heavier than a pencil."

Friedland also introduced his colleague, **Dr Patricia Makhesha**, MD of Ivanhoe subsidiary, Ivanplats, who gave delegates a briefing on what she called the company's unique BEE initiatives, designed to benefit thousands of residents in the Mokopane area. "You will never find any big name in our structure. You know why – this is broad based. It's not narrow based, it's not about individuals, it's about the entire population." She added that Ivanplats, despite being the 'new kid on the block', was the top-ranked PGM sector mining company in terms of sustainability and had achieved Level 3 status in its first verification assessment on the BBBEE scorecard.

Amplats' modernising strategy

Also presenting on the topic of platinum was **Chris Griffith**, CEO of Anglo American Platinum (Amplats), who noted that the price of platinum had not recovered since the global financial crisis in 2008 despite input costs having continued to rise well above the CPI. Mining generally in South Africa was also challenged by a critical energy situation, adversarial labour relations and declining labour productivity.

He updated delegates on Amplats' restructuring process. "The restructuring of the operations is now largely complete, with the consolidation of Rustenburg from five mines into three and Union mine from two mines into one. The next phase is optimising these assets to improve profitability and sustainability, and the respective mine plans have been reviewed and refined with benefits coming through." He added that Amplats' objective "remains to exit our Union and Rustenburg mines in the most appropriate manner, whether separately or together, through either a sale or public market exit."

Griffith also gave an account of Amplats' modernisation strategy, including the mechanisation of mining and extraction processes. "With industry margins being squeezed on all fronts, we simply have to embrace innovation if we want to find more productive, efficient and sustainable ways of extracting value from the minerals we mine. We can't rely on only small, incremental changes and a business-as-usual philosophy to get us out of this predicament."

Griffith detailed some of the technological advances that Amplats had made and innovations it had introduced. These included the full mechanisation of the Bathopele mine, which he described as a "bord and pillar operation utilising low profile equipment and operating at three times the productivity of our conventional mines", and the replanning of Twickenham to be the first hard rock mechanised mine to operate with extra-low and ultra-low profile mining technology.

On the subject of hard rock cutting, he

Chris Griffith, CEO of Anglo American Platinum, explained the group's 'modernising strategy'.

Rio cultivates innovative partnerships

Alan Davies, Rio Tinto's Chief Executive, Diamonds & Minerals, gave delegates – in a presentation entitled 'Cultivate innovative partnerships for the long term' – an overview of Rio's activities in Africa. His division manages Richards Bay Minerals (RBM) in South Africa, QIT Madagascar Minerals in Madagascar, Murowa Diamonds in Zimbabwe, the controversial Simandou iron ore project in Guinea and the Mutamba mineral sands project in Mozambique.

Rio Tinto's Alan Davies.

Just prior to attending the Indaba, he visited QIT Madagascar Minerals. The project, he said, had involved an investment of US$1 billion in "a very remote part of the planet". Its success, he told his audience, was attributable to the partnerships it had established with the Government of Madagascar, a 20 % shareholder in the project, communities in the vicinity of the mine and the World Bank.

As regards RBM, Davies revealed that it was currently completing a feasibility study for an extension of the operation through the development of the Zulti South deposit. Turning to Simandou, he said it would involve the investment of billions of new dollars in Guinea. "A railway will be built. A deep water port will be established. Many kilometres of new and upgraded road will be built."

Concluding, he said: "I can think of no good reason why Africa should not – with its abundant resources and demography – make this an African century."

characterised this as "a much more difficult nut to crack" but told delegates that Amplats had a number of projects underway at its operations.

"A number of these are collaboration projects between Amplats, Impala and Joy Global for activated disk cutting in stoping, and Amplats and Atlas Copco for a reef borer, and Amplats and Sandvik for compression cutting in stoping," he elaborated. "These projects are all underground and on trial. Also with Atlas Copco we are developing a machine that uses disk cutting for high rate access tunnels. This trial machine will be available for testing at Twickenham mine in the latter party of 2015."

Summing up

One could write pages on the pluses and minuses of this year's Mining Indaba but suffice it to say that the content (in terms of presentations) was of a very high quality and fully comparable with previous years. The organisation was excellent (and probably superior to previous events) but attendance – a figure of around 6 750 was given to *Modern Mining* by the organisers – showed no year-on-year growth. In the exhibition area, suppliers of goods and services (as opposed to mining and exploration companies) were much in evidence with some delegates complaining to *Modern Mining* that the character of the trade show was inexorably changing year by year, and not necessarily for the better. Overall, however, most delegates and exhibitors seemed reasonably happy with the event and its status as Africa's leading mining show and a mandatory meeting place for Africa's mining industry is clearly under no immediate threat.

Photos (unless otherwise acknowledged) courtesy of Mining Indaba™

Vedanta assembles team for Gamsberg project

Ivanhoe's Kipushi project is not the only major zinc development planned in Southern Africa. Another is the Gamsberg project of Vedanta Resources, which will see the development of an open-pit zinc mine near Aggeneys in the Northern Cape. Construction of phase one will start this year and deliver a 4,4 Mt/a ROM project but Vedanta is eventually targeting a 'mega pit' with a capacity of 10 Mt/a ROM. The project was described by Vedanta's CEO, Tom Albanese, who said the current focus was on putting together a world-class project team to drive delivery. As he said, "Given the excess capacity in the market, we see an opportunity to recruit the best skills."

Sustainable mining – how

Professor Caroline Digby.

In the wake of the Marikana tragedy, there has been much hand-wringing in South Africa about the failings of the country's mining industry and its lack of progress in achieving sustainability. But matters are not necessarily as dire as is sometimes perceived. One expert who takes a more sanguine view of the situation, for example, is Professor Caroline Digby, Director of the Centre for Sustainability in Mining and Industry (CSMI) at Wits University, who says the industry has taken huge strides towards the goal of sustainability in recent years. "There is still a long way to go but I see no reason for pessimism," she says. "There is a clear understanding on the part of many mining companies, certainly the bigger ones, that they need a 'social licence' to mine and that this in turn depends on the sustainability of their operations."

Digby does point out though that there is still a considerable gap between theory and practice. "I think we – and by 'we' I mean the industry, the government and organisations such as the CSMI – know what needs to be done but I'm not sure we've figured out how to do it," she says. "There's been a large number of initiatives undertaken over the past 10 years or so and these have resulted in a plethora of standards, laws, guidelines, toolboxes and the like but we haven't yet spent a huge amount of time working out what really works on the ground."

On the question of South Africa's regulatory framework governing mining, she says that while it is fairly prescriptive by world standards it is also generally regarded as 'cutting edge' by international observers. "We're definitely not lagging the field and many countries regard South Africa's mining legislation as something to emulate. The key piece of legislation of course is the Mineral & Petroleum Resources Development Act (MPRDA) of 2002 which specifies in detail the social responsibilities of mining companies and the BEE requirements that they need to meet. The MPRDA has been a great enabler of empowerment and

As part of its approach to sustainable development, Kumba Iron Ore's Thabazimbi mine handed over a R16 million bio-energy and organic vegetable project to the community of Regorogile near Thabazimbi, Limpopo in September last year (photo: Kumba Iron Ore).

feature

does SA's mining sector rate?

Damang – a large-scale open-pit gold mine in Ghana in West Africa. Projects on this scale inevitably have major environmental impacts which need to be ameliorated using the best modern practice. The owner of this mine – Gold Fields – was recently rated as the top mining company in the 2015 Sustainability Yearbook (photo: Gold Fields).

sustainability in the industry and – on balance – can be considered a great success. Having said this, it's not perfect – and indeed is currently in the process of being amended."

South Africa's demanding BEE and sustainability requirements have been criticised on the grounds that they have deterred mining investors from ploughing money into South Africa's mining industry. Digby rejects this argument, saying that the goals of the MPRDA and Mining Charter are eminently reasonable. "South Africa has a mature, stable mining sector and there are potentially excellent returns for companies who choose to mine here – but they need, at the same time, to accept their responsibilities," she observes. "They also need to accept that mining in the developing world brings with it a different set of imperatives from mining in First World jurisdictions and that they're going to have to partner with communities and promote socio-economic development to a far greater extent than would be the case in, say, Canada or Australia. If they don't acknowledge this reality, then probably we're better off without them."

Digby stresses that it is also important for mining companies to accept the spirit of South Africa's mining legislation. "Just focusing on the letter of the law can result in a lot of ticking of boxes and that's not necessarily helpful or effective," she argues. "We need to get concrete results on the ground and there's certainly a case to be made for focusing on outcomes rather than the methods by which we get to those outcomes."

The goal of achieving sustainability in mining means that the industry needs to have a

Community participation is an essential part of the mine planning process (photo: SRK).

feature

As part of its community development programmes at its Tongon mine in Cote d'Ivoire, Rangold Resources has built four clinics and rehabilitated a further two. No health facilities were available in the area prior to Tongon being developed (construction of the mine started in 2008). Tongon's total contribution to community development since 2008 now stands at US$4,14 million (photo: Randgold Resources).

clear vision of what sustainability actually means. "There are obviously multiple ways in which we can define sustainability but the word I'm increasingly using is 'responsible' – essentially, what we're looking for is responsible mining," says Digby.

"In practice, there are three dimensions to responsible mining. Firstly, mining companies have a duty of care to their workers and to the communities surrounding their mining operations in respect of health and safety. Secondly, they have a duty of care for the biophysical environment encompassing not only environmental management over the life of mine but also after mining finishes. Thirdly, mining companies must contribute to socio-economic development to ensure that communities derive some benefit from mining activities. As I've said, without that benefit there is no social licence to mine."

Digby is no ivory-tower theorist. Of Irish birth, she is an economist educated at Trinity College Dublin and the University of British Columbia in Canada. She spent the first ten years of her career with CRU International in London, where she was a mining and metals analyst, and more recently – from 2004 to 2013 – worked at the Eden Project in Cornwall in the UK, a showpiece of post-mining regeneration which has attracted more than 14 million visitors since being opened in 2001. The project has seen the transformation of a worked-out clay quarry into a huge complex which includes a number of artificial biodomes housing more than a million plants from around the world.

In between her stints at CRU and the Eden Project, Digby completed an MSc in environmental assessment and evaluation and served as the Research Director of the Mining, Minerals and Sustainable Development (MMSD) project of the International Institute for Environment and Development. She later joined the International Council on Mining and Metals (ICMM), which was tasked with implementing recommendations stemming from the MMSD.

"I only came on board at Wits as Director of the CSMI in January 2014 but, in a sense, my involvement with the Centre dates back to this earlier period in my career," says Digby. "I say this because while I was working on the MMSD project, we had a number of regional partners, including Wits through its School of Mining Engineering, and it soon became evident that the university – and, for that matter, South Africa's mining industry – would benefit from a dedicated centre focusing on sustainability in mining. As a result, the CSMI was set up in 2004. In the 11 years since, it's emerged as a global centre of excellence in its field and really the only organisation of its type in Africa, a continent where the issue of sustainability in mining looms very large – perhaps larger than anywhere else in the world."

The CSMI was formed as a partnership between the School of Mining Engineering and mining companies BHP Billiton, Lonmin and AngloGold Ashanti, with its role being to promote good governance and good practice in the mining sector in respect of sustainability. To quote from its own documentation, its main activities include "education and training across a range of accredited short courses and qualifications at both certificate and MSc level, particularly targeting continuous professional development for practitioners in both the public and private sector. It undertakes applied research projects which build the understanding of what works on the ground and underpins the content of the CSMI's training programmes and capacity building mandate."

Looking at recent achievements of the CSMI, Digby says the Centre is particularly proud of its Certificate Programme in Community Relations Practice in the Extractive Industry, developed in conjunction with Synergy Global Consulting (and with funding from AngloGold Ashanti, Anglo American and Xstrata). It is aimed at building the capacity of community relations practitioners and consists of four courses, each running for five days. Already around 120 professionals from 23 African countries have completed one or more of the modules.

"We want this programme to become the standard – there's very little else around," says Digby. "In essence, the goal is to create a new generation of community relations practitioners whose training has been specifically tailored to meet the special challenges which are unique to African mining. The standardisation aspect

feature

is important as, at the moment, we have a situation where the methodologies and approaches adopted by community relations practitioners can differ quite markedly from one country to another – and indeed from one mining company to another."

She adds, incidentally, that it is quite frustrating when international mining companies fly in people from overseas – at great expense – to do training in Africa. "This is quite unnecessary. We're here and we can help. If overseas companies use our services, they'll find we're not only very effective but that we can also save them money," she says.

On future goals for the CSMI, Digby says the Centre will be looking to strengthen its African 'footprint'. "Historically, most of our work has been done in South Africa but we're increasingly interested in engaging with other organisations – including universities – in sub-Saharan African with a view to taking some of the work we've done and rolling it out more broadly," she points out. "We need partners in Africa and this will be something we're going to devote a lot of time to in the coming year."

Digby is also hoping to see the CSMI do more work on the complex issue of artisanal mining. "This is not an activity we can ignore," she explains. "By some estimates, around 20 million people worldwide are engaged in informal mining, which is many times the number employed in formal mining. It's an issue that's not going to go away and clearly mining companies are going to have to engage with informal miners operating on or close to their properties, irrespective of whether their activities are legal or not. We're planning a series of seminars this year to bring together interested parties to discuss this whole issue and chart a way forward."

Finally, and on the future of mining in South Africa, Digby makes the point that the industry is at the crossroads. "As with most things, there are a range of possible scenarios ranging from good to bad," she says. "Essentially, we have a mining sector with many legacy issues which is in the process of transitioning into the 21st century. If it can manage this transition successfully – and this will depend to a large extent on achieving true sustainability in mining operations – then there is no reason why we cannot have a vibrant and prosperous mining sector 10, 20 or 30 years hence. If the industry fails to address the issue of sustainability effectively, then one can envisage a future where workers and communities increasingly adopt a confrontational approach to mining activities and where more Marikanas are a distinct possibility. My impression is that the mining industry is starting to make the right choices and that the optimistic scenario is the more likely outcome."

Report by Arthur Tassell

A typical artisanal mining site in Africa (photo: SRK).

Methane gas provides power to Beatrix

Aggreko has – together with Sibanye Gold – delivered an innovative and environmentally friendly alternative source of power to Sibanye's Beatrix gold mining operations that utilises naturally occurring methane gas intersected during underground mining operations. The 2 MW installation generates additional power for Beatrix from fuel which was previously being flared.

Aggreko South Africa began discussions with engineers at Sibanye Gold when they were considering how to produce energy from the methane gas being intersected. Until that point, the gas had to be flared on surface to ensure that it was safely removed from the environment. As this was a completely new initiative, the reliability of the gas supply was unclear.

Aggreko gas-powered generators.

Sibanye Gold opted for an Aggreko rental solution as the flexibility of rental meant that the precise amount of generation capacity could be easily tailored to fit the amount of gas supply available.

"We knew that we wanted to generate electricity from the gas as it was a precious resource that was being completely unutilised through flaring," commented Dirk van Greuning, Environmental Engineering Manager, Sibanye Gold, "Due to the precise characteristics of the gas supply being uncertain, the flexibility offered by the Aggreko solution was very attractive compared to the option of buying a fleet of generators. The Aggreko team worked tirelessly to adjust and fine tune the installation and manage the gas supply so that now we have an additional 2 MW of power that runs completely on free fuel, which is released naturally underground."

As the Environmental Engineering managers at Sibanye Gold predicted, the methane supply was shown to vary in terms of the flow, quality and quantity. To address this, Aggreko developed an innovative system incorporating a gas accumulator and a methane sensor at its power generators. The gas accumulator acts as a reservoir balancing out peaks and troughs in gas supply, while the sensor alerts the system to changes in gas consistency to allow the generators to intuitively adapt to any changes in gas quality.

"The Beatrix project is an outstanding example of successful innovation and value being achieved through the close cooperation and trust between customer and supplier," commented Martin Foster, General Manager, Aggreko Southern Africa. "Getting the installation just right took both significant effort and investment from Sibanye Gold and Aggreko, but the result is an extremely satisfying vindication for all the hard work."

Aggreko plc claims to be the world leader in the supply of temporary power and temperature control solutions. It employs over 6 000 people operating from 202 locations and in 2013 served customers in about 100 countries. Headquartered in Scotland, it is listed on the London Stock Exchange. Its revenues amounted to £1,6 billion in 2013. ■

Randgold Resources sponsors Ebola awareness film

A film on the measures people should take to avoid contracting the Ebola virus, locally produced and sponsored by African gold miner Randgold Resources, was premiered recently at the five-star Hotel Salam in Bamako, Mali.

Among the dignitaries who attended the first screening of the film, which will also be made available in Liberia, Guinea and Sierra Leone, were Malian Minister of Health and Public Hygiene Ousmane Koné and the Malian Minister of Mines, Boubou Cissé.

The government of Mali and the United Nations declared Mali an Ebola-free country on 18 January 2015 following a remarkably successful joint effort by the country's health authorities and its mining industry to curb the spread of the disease.

Chaired by Randgold, the Mali Ebola Private Sector Mobilisation Group, comprising the mining companies operating in the country, provided a coordinated response in support of the government's campaign against the deadly virus. Among other actions, medical practitioners employed by these companies met on a daily basis to provide technical input to the state's health professionals, provide community clinics with training and equipment, develop protocols and procedures for Ebola preparedness, and assist with border-post screenings.

Speaking at the premiere, Randgold Chief Executive Mark Bristow – who was awarded the honorary title of 'Knight of the National Order of Mali' (Chevalier de l'Ordre national du Mali) at the screening for his role in the development of the Malian mining industry – said that perhaps the industry's most important contribution had been to use its international reach to persuade governments and NGOs to engage actively with the Ebola crisis rather than to isolate it. "The effectiveness of the Mali initiative has shown what can be achieved through cooperation and local capacity building," he said.

"Working closely with our host governments to tackle the infrastructural, educational and healthcare challenges endemic to Africa is a key component of our business philosophy, so stepping up to the plate for Ebola was all in the day's work for us," said Bristow. "While Mali is now officially Ebola-free, it will have to remain on the alert for a recurrence. The voluntary testing and treatment procedures Randgold developed for the fight against HIV Aids virtually wiped it out at our West African operations, and can be used as the model for an effective Ebola monitoring programme." ■

feature

Zibulo Colliery runner up in sustainability awards

Anglo American Coal's Zibulo Colliery was named the runner up in the Resources & Non-Renewable Energy category at the prestigious 2014 Nedbank Capital Sustainable Business Awards held in Johannesburg in late October last year. Zibulo was recognised for what it has achieved through its Phola sanitation and waste management initiative.

An early shot of opencast mining operations at Zibulo, which was officially opened in 2012.

Zibulo operates an opencast pit near the town of Ogies in Mpumalanga which incorporates the Phola township. Even before operations began at the mine in 2011, Zibulo management recognised the dire need for sanitation and waste management interventions in the local community. Two separate projects were initiated as part of the mine's Social and Labour Plan to improve the safety and health of residents and to mitigate the adverse environmental impacts. The two projects were informed by the needs of the local municipality and have become part of its Integrated Development Planning process.

The sewerage infrastructure project has upgraded the Phola township's entire sewerage network and doubled its existing capacity in anticipation of the area's future growth needs. The project involved increasing the existing capacity of the Ogies outfall sewer line, the complete refurbishment of the pump station and treatment works, expansion of the treatment works to cater for an increase in wastewater flow, implementation of mechanisms to ensure the efficient operation and maintenance of the system, as well as provision of ongoing monitoring and evaluation.

The refuse removal project began with the clearing of more than 20 informal dumping grounds, after which 32 refuse waste containers were placed at strategic sites across the township. To provide a sustainable solution to the eMalahleni Local Municipality's transport constraints, the Zibulo team acquired two refuse collection trucks that will be transferred to local government once the transfer of skills is complete.

The Phola sanitation and waste management initiative also involved capacity-building and employment creation, successfully creating nearly 40 jobs for full-time project employees and 'enviro teams' to run refuse collection activities.

"As we are not in the business of managing waste, it was vital that a partnership-based approach be taken to initiate the project and to ensure that the municipality will ultimately be able to run these services independently, making use of the improved infrastructure and skills imparted through the venture," says Themba Mkhwanazi, CEO at Anglo American Coal in South Africa. "We're also committed to ensuring that both projects extend beyond the life of the operation and that community members continue to benefit from these essential services once operations have ceased." ■

feature

MRS now using shaft inspection cameras in rescue operations

Mines Rescue Services (MRS) has now added specially developed shaft inspection cameras to the line up of equipment it can deploy during rescue operations. The first prototype unit was developed in 2011 and the technology has since proved highly successful. MRS is a private sector, non-profit organisation that – through the training of volunteer brigadesmen – provides the resources and expertise for an effective emergency service primarily to the mining industry.

The shaft camera being lowered down an abandoned mine to check the water level in the shaft.

MRS South Africa is one of the founding members of the International Mines Rescue Body (IMRB) and hosted the first International Mines Rescue conference in South Africa in 2003. Its CEO, Christo de Klerk, says that prior to the camera technology being developed, rescue operations – in cases where miners had fallen down shafts – were problematic and involved brigadesmen being lowered into the shaft to assess situations and rescue the fallen miners.

"However, this was a very risky procedure since brigadesmen were in essence going into the shaft without prior knowledge of the environmental conditions and possible dangers," he says. "Previous deaths of brigadesmen during rescue operations prompted us to consider a solution to our existing rescue plan. In order to expedite rapid and safe rescue missions, we decided to deploy cameras to first assess the situation and then to guide our rescue teams during the rescue process."

MRS discussed their idea with wireless IP convergence company MiRO and a shaft inspection solution using a VIVOTEK surveillance camera was born. The first prototype, developed in 2011, was capable of being lowered to depths of 1 200 m and has been extensively used in shaft inspections throughout the country.

De Klerk highlights the incident where 22 illegal miners were trapped in a shaft at Welkom in May 2012. Using the VIVOTEK shaft camera, all 22 illegal miners were located and safely lifted to the surface. "Apart from its excellent image resolution, the VIVOTEK camera is extremely robust, making it the ideal choice for the harsh and demanding environment encountered in the mining industry. Reliability plays a big role in the choice of camera, since we simply cannot afford to lose the image at any stage during the assessment and rescue process," adds De Klerk.

MRS subsequently developed the Rover Ore Pass Camera, which is a VIVOTEK fisheye camera mounted on wheels and attached to a 100-m-long umbilical cord. The Rover Ore Pass Camera is ideal for use in tunnels with a steep inclination. Previously, if a miner fell down an inclined shaft, it was necessary to send a brigadesman down the shaft to locate him and plan a rescue operation.

The Rover Ore Pass Camera eliminates the need to send the brigadesman into the ore pass prior to the rescue by providing feedback to a team at the top of the ore pass with images of the location of the miner and an indication of whether he is alive or deceased. MRS currently operates 25 of these cameras, which have been instrumental in saving many lives.

Another application that has been implemented using a VIVOTEK camera is on mobile rescue winders. MRS developed the most advanced mobile rescue winders in the world and then designed a surveillance system which is the only one of its kind worldwide. De Klerk explains that when miners are trapped underground in collieries, the colliery's mobile rescue winder will be deployed which will then lower a rescue capsule equipped with three cameras, down a 600 mm rescue hole drilled to expedite the safe removal of trapped miners.

The metalliferous mobile rescue winder, specially developed for deployment in gold and platinum mine shafts, can reach depths of 3 100 m and is currently undergoing extensive testing. The cage, which can accommodate five people, is also equipped with three VIVOTEK cameras. ■

"In order to expedite rapid and safe rescue missions, we decided to deploy cameras to first assess the situation and then to guide our rescue teams during the rescue process."

Christo de Klerk, CEO of Mines Rescue Services

Joest screens customised to match metallurgy

A Joest vibrating screen being installed for a gold application in Namibia.

Screens from specialist vibrating equipment manufacturer and supplier Joest are customised to match the metallurgical requirements of a client's processes and the associated mechanical duty. Joest brands this benchmark its 'Engineered Solutions' approach to supplying its clients with a total solution.

"Our customised screens are often the preferred equipment due to the robust design and proven performance. Understanding the difference in design and duty for process plant screens, particularly sizing feed preparation in washing and Dense Media Separation (DMS) applications, is a key feature of our ongoing success in other sectors of the mineral processing industry," says Derrick Alston, CEO of Joest.

Joest continues to make inroads into Africa. "We have supplied six vibrating screens to a gold mine in Liberia, eight vibrating screens to a gold mine in Mali and 15 vibrating screens to a gold mine in Burkina Faso," Yashin Ramdhin, General Manager: Sales, says.

"We have also supplied screens to Tanzania and have had vibratory feeders installed in a large coal mine in Mozambique. We are optimistic that our growth in Africa will go from strength to strength. This is largely due to the excellent reputation that the Joest brand has gained over the years. A particular advantage of Joest's equipment is the increased lifespan, structural integrity and ease of maintenance of the equipment, which is particularly important in remote areas in Africa."

Joest offers a full selection of specialist equipment to meet its customers' total vibrating screen and feeder requirements. Ramdhin says the company's specialist vibrating equipment forms part of a tailored solutions approach to cater for a wide range of duties, "which allows our customers to reduce downtime and achieve production efficiencies at the lowest operating costs."

An example of Joest's 'Engineered Solutions' approach is its design and development of a 4,3 m wide banana screen to cater for the ongoing trend in the coal processing sector to opt for larger equipment so as to increase throughput and boost efficiencies. "We have paid close attention to our clients' needs by assessing the failure modes of existing 4,3 m wide screens from other suppliers in this market and designed our screen with the focus on reduced downtime and ease of maintenance when required," Alston says.

Joest has made a significant investment in its 'Engineered Solutions' capabilities in order to be able to offer its clients this kind of intensive value added benefit. "It is the sum total of our experience, combined with the specific expertise we bring to analysing client problems and developing the most cost-effective and technologically relevant solutions," Alston says.

An example of this is Joest's in house development of a condition monitoring system for integration into its larger 4,3 m screens. "We supply this as part of a total equipment and solutions package. We usually advise our clients to make use of condition monitoring, especially due to the lack of technical skills in the mining industry in general. Condition monitoring can turn out to be the saving grace for such giant screens, because any maintenance issue that is neglected for too long is likely to result in far more costly damage and downtime."

Apart from the coal processing sector, Joest's screens are also making significant inroads into the iron ore industry in Africa. The company has supplied and installed 20 screens at Kumba Iron Ore's Sishen mine at Kathu in the Northern Cape, the largest iron ore mining operation in South Africa. The new Joest 2,4 m by 4,8 m single-deck exciter driven screens for Sishen replace ageing screens in the original plant installation, which have been operating for about 40 years. These float-and-sink screens are located in the DMS plant where cast iron cyclones separate the iron ore from the tailings. "The exciter driven screens provide an increased G-force which should result in improved recovery of ferrosilicon media as well as reduced maintenance costs," Alston notes.

Joest, tel (+27 11) 923-9000

Pilot Crushtec wins accolades from Sandvik Mobiles

Pilot Crushtec International's reputation as a world class supplier of crushing and screening equipment received a global endorsement recently when the company was honoured at Sandvik Mobiles' 2014 Distributor Awards.

The Jet Park-based business was judged to be the top performer in two categories. Firstly, it was recognised as Sandvik's best distributor in terms of marketing support and, secondly, for a remarkable aftermarket sales performance in 2014.

Pilot Crushtec International has achieved this recognition whilst still being a relative newcomer to marketing Sandvik products. CEO Sandro Scherf concluded the distribution agreement with Sandvik as recently as October 2012, and his company's performance was judged against stiff opposition in the form of nearly 75 other distributors from almost 50 countries around the globe.

The panel of judges, drawn from Sandvik management, praised the South African company for its approach to promoting Sandvik mobile products and for its effective use of social media channels.

Special mention was made of the success Pilot Crushtec International has achieved in endowing Sandvik with a vibrant media personality in both local and international publications as well as on the company's website.

Sandro Scherf (right), CEO of Pilot Crushtec International, accepting the award for Best Marketing Support from Eugene Lyons, Global Sales Director, Sandvik Mobiles.

Hytec delivers dispensing system to North Mara gold mine

Hytec Services Africa (HSA), a Hytec Group company, recently completed the supply and installation of a lube and coolant dispensing system at Acacia Mining's North Mara gold mine, located in a remote corner of northern Tanzania. (Acacia was previously known as African Barrick Gold.)

The dispensing system enables more responsive, immediate and efficient servicing and maintenance capabilities for the mine's heavy mobile material handling fleets, comprising haul trucks, graders, loaders and shovels.

The maintenance of heavy mobile equipment in operation at North Mara was previously constrained by the significant distance between the main equipment workshops and the remote workshop located at an opencast pit. A more automated dispensing system – to facilitate faster fluid 'top ups' – was required for a more effective operation, for which HSA was contracted.

The system covers the complete fluid management and distribution process, from the bulk offloading of fluids from tankers into 20 000 litre holding tanks (coolant and transmission oil are stored in 1 000 litre tanks), as well as the steel pipe infrastructure for transfer into remote hose reels, from where machine services can be carried out.

The dispensing system consists of seven steel dispensing lines dedicated for engine oil, transmission oil, two variants of hydraulic oil, coolant, compressed air, as well as a waste oil pipe for the safe removal of used oil from the site. Grease points were also provided. Each oil and coolant flow is filtered through Bosch Rexroth duplex filters, while the bulk tanks are protected with Hy-Pro desiccant breathers.

HSA, together with Hytec, executed the design and layout of the entire dispensing system. All the stands for the bulk offloading pumps, filter stands, waste oil pumps, as well as the cabinets for hose reels, were designed and built by Hytec. Hytec's Installation and Servicing departments were involved in the pre-assembly of pipework in South Africa, as well as its final installation on site.

HSA coordinated the project, including the logistics of delivering materials, equipment and personnel to the site.

Gary Shaw, Hytec Services Africa, tel (+27 11) 573-5460

Holding tanks – of 1 000 and 20 000 litre capacity – store the various lubricants and coolants required at the North Mara gold mine site.

Belt press technology for coal tailings upgraded

FLSmidth's tailings dewatering press.

FLSmidth has upgraded the latest generation of its Tailings Dewatering Press (TDP) technology for coal tailings applications, says Jefrey Pilusa, Filtration Technology Specialist, FLSmidth.

FLSmidth's experience with belt press equipment dates back to 1979 with its EIMCO® branded belt presses, which were instrumental in the original pioneering of this technology. "Combined with its long and successful track record in tailings management over many decades, we have now taken proven TDP technology to the next level," Pilusa says.

The TDP design includes several enhancements which recognise critical design considerations that make a positive difference to the belt press operation, performance and operating expenditure. For example, the design incorporates perforated 'S'-rolls in key areas to double the filtration area and ensure more efficient dewatering of the cake, which means a greater drainage capacity compared to other belt press designs in the industry.

Ricus van Reenen, Sales Manager: Products, FLSmidth, explains that belt press technology is used mainly in the mining, wastewater and pulp and paper industries. "Over the years we have noticed competitive designs that have emulated older FLSmidth designs. As part of FLSmidth's global programme utilising its global resources and experience to review all of our products, we recently decided to take another look at the belt press technology and to upgrade it with the focus on the tailings market. By offering better performance, a user friendly design and more cost effective solutions, FLSmidth hopes to provide our customers with an enhanced 'One Solutions' total service offering for our diverse customer base."

Pilusa says the most significant advantage of the TDP technology is that it offers maximum cake dryness due to the 'S'-roll design. Traditional 'S'-rolls are configured in a horizontal mounting arrangement, which leads to visually discernible water pooling between the 'S'-rolls, resulting in rewetting of the filter cake. In order to avoid this issue, TDP S-rolls are configured in a vertical configuration. This means that the belt travels upwards, with the filtrate (which is now removed from each S-roll) going into its own drip trays, thereby avoiding pooling and rewetting. "This produces consistently drier cake than horizontal designs," Pilusa confirms.

Another significant advantage is increased safety and a more user friendly design due to the low location of the gravity drainage zone. "FLSmidth regards health and safety as one of its topmost priorities," Pilusa says. The TDP design means it is no longer necessary to use a ladder or to build expensive platforms for the purpose of monitoring the gravity drainage zone, where 80 % of the dewatering work happens, as was the case with traditional designs.

"This reduces working-at-height hazards by allowing operators to inspect and monitor such critical areas from a standing level," Pilusa adds. Furthermore, as with any belt press, if the solids are not properly gravity drained, the performance of the whole machine is degraded. "If the gravity drainage zone is 'out of sight and of mind', how can any operator do their job properly?" Pilusa asks.

Reducing the operating expenditure is always a priority. "One of the ways of doing just that is to focus on increasing the life of the belts, which is what the TDP press has done," Pilusa says. Therefore the TDP design includes three unique features. Firstly, a rack-and-pinion belt take-up arrangement ensures that each side of the belt travels the same distance each revolution so as to eliminate belt 'biasing' and belt misalignment problems that lead to premature belt failures.

Secondly, each TDP frame is a built-in structure to ensure that the frame remains true and square. Thirdly, each bearing is located with locating stops to ensure that all rolls are parallel, both when leaving the factory and in the field when rolls are removed and reassembled. These features enhance belt life by eliminating belt 'biasing' and belt alignment problems, while reducing maintenance costs.

FLSmidth, tel (+27 10) 210-4820

Osborn equipment for Williamson mine

An R8-million export order for two Osborn Telsmith 36 x 48 single toggle jaw crushers and an apron feeder – to be employed at Petra Diamonds' Williamson mine in Tanzania – has been awarded to Osborn.

The Osborn apron feeder destined for Tanzania.

This is the latest in a series of orders that the Johannesburg-based manufacturer has received from Petra Diamonds. Osborn's Chris Slade elaborates: "Osborn already has jaw crushers and apron feeders in this application at Petra operations in South Africa, and these have proved themselves over the years. Osborn has also previously supplied an apron feeder to the Williamson mine in Tanzania's Shinyanga Province. This latest order reflects our client's confidence in our products' quality and performance."

Other Petra Diamonds mines where Osborn equipment has been operating successfully for many years include Koffiefontein, Finsch and Kimberley.

Petra's new Osborn Telsmith jaw crushers form part of an expansion project aimed at increasing Williamson's production capacity from 188 465 carats per annum (ct/a) in the 2014 financial year (FY) to approximately 300 000 ct/a by FY 2017.

At 146 hectares in size, Williamson is the world's largest economic kimberlite by surface area. It is Tanzania's only important diamond producer and, despite having been operated continuously since 1940, the pit is just 90 m at its deepest point due to the vast size of the deposit. The Mwadui kimberlite pipe, on which the Williamson mine is based, contains a substantial diamond resource of approximately 33,1 million carats.

The scope of Osborn's contract includes manufacturing and supplying Williamson's new jaw crushers, as well as supervising their installation and commissioning.

Outlining the benefits of Osborn's single toggle crushers, Slade notes that they are designed for a high capacity throughput due to the elliptical movement of the swing jaw, which also assists in the discharge of the crushed material.

"As the single toggle crushers will achieve far higher capacities than the double toggle design, they are often used as primary crushers," he says. "The Osborn Telsmith single toggle jaw crushers offer a production capacity up to 1 000 t/h and boast rock compressive strength up to 500 MPa. They feature a patented hydraulic beam locking system and excellent nip angle, with reversible jaw dies, for maximum wear."

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

Torre acquires Elephant Lifting Equipment

Torre Industries is adding Elephant Lifting Equipment to the Plant and Equipment Division of its group of companies, along with SA French, Manhand and Kanu Equipment. The ultimate aim is to combine SA French and Elephant Lifting Equipment under the umbrella brand 'Torre Heavy Lifting' which, combined with the extensive distribution network of the Torre group, will allow Torre to offer a total lifting solution from consumables to tower cranes to its customers across Africa.

Elephant Lifting Equipment is headquartered in Centurion and has branches in Durban and Pemba, Mozambique, as well as a manufacturing facility in Pretoria West. Its products include EOT cranes, monorails, electric chain hoists, chain and lever blocks, winches and wire rope pulling machines, lifting and spreader beams, mechanical grabs and clamps, slings (chain, polyester and steel wire rope), shackles and rigging accessories.

"For every tower crane we supply, new or used, there is probably another 20 % of the total value of the crane that we can offer in add-on services," Quentin Van Breda, Managing Director, SA French, says. "The acquisition will allow us to offer a genuine one-stop shop for tower cranes, from slings to shackles, concrete buckets and pallet forks, for example. We can now even offer foundation bolts and spreader beams in-house."

Torre, SA French Division, tel (+27 11) 822-8782

I-Site Drive allows fast stockpile volume reporting

Maptek™ has released I-Site™ Drive to provide mines and industrial operations with a faster, more accurate system for frequent stockpile volume reporting.

I-Site Drive continuously acquires data with a recommended I-Site laser scanner mounted on a moving vehicle. Surveyors can quickly measure stockpiles for reporting and comparing daily or weekly volumes, reducing the time for data collection and minimising interruption to site activities.

The Inertial Navigation System (INS) installation in the custom vehicle mount is the key to survey efficiency. It allows the laser scanner to acquire data continuously and automatically assigns real world coordinates to the data, ready for processing.

"Faster data collection, reduced risk to operators and shorter processing time are key benefits of I-Site Drive," say Maptek's Manager of Laser Imaging Systems, Athy Kalatzis. "Accurate stockpile reconciliation is easy using I-Site Drive. The same laser scanner handles stockpile volumes, road and pit surveys, pit updates, face mapping and silo volumetrics."

I-Site Drive continuously acquires data with a recommended I-Site laser scanner mounted on a moving vehicle.

Kalatzis adds that stockpiles are currently measured by driving around the perimeter with a vehicle-mounted GPS. Volumes are then extrapolated by projecting the angle of the GPS string from the base. "I-Site Drive links the laser scanner directly with GPS to generate the stockpile profile as it is circumnavigated. The volume is accurately calculated without estimating or inferring from unknown points," he says.

Maptek, website: www.maptek.com

Set Point awarded lab contract for Husab mine

Set Point Laboratories, a division of the Set Point Group, has recently been awarded the contract to set-up and manage a Chemical Analytical Laboratory in Namibia on behalf of Swakop Uranium for a period of at least five years.

Planned to be fully operational in October 2015, the laboratory will offer a full qualified service spectrum with various techniques such as XRF, ICP and Wet Chemical analysis of geology, run of mine and plant samples up until the production of U_3O_8 at the new Husab mine, currently under construction.

Husab will be the second largest uranium mine in the world when it reaches full production capacity, and it will significantly increase Namibia's uranium production.

Set Point Laboratories, tel (+27 11) 923-7000

Slider cradles reduce conveyor spillage and belt wear

Martin Engineering has introduced two conveyor system components designed to mitigate expensive spillage and belt wear issues at material transfer points. The EVO® slider cradle and the Martin® slider cradle both support the belt and prevent spillage due to belt edge sag. Located under the skirt board in the chute box after the impact cradle, the units utilise 'double-life' slider bars, which are claimed to offer a superior seal with low friction. The result is a flat and stable belt surface throughout the settling zone, reducing fugitive material and extending belt health.

"Transfer points can be prone to spillage as the conveyed material lands on the receiving conveyor," explains Daniel Marshall, Product Engineer at the USA business unit. "Once the belt leaves the impact cradle, it can sag while the material is still settling. This compromises the skirt seal, allowing dust and fines to escape, while creating pinch points where material can get caught and gouge the belt."

Marshall says that belt health is a big concern for operators, as edge wear and sagging contribute to misalignment and belt damage, which can also become a potential workplace safety hazard. "Cradles and impact beds are the foundation of our material handling strategy," he continues. "Not only are they on the bottom and everything is built on them, but they offer the flat surface to seal against, which is critical in preventing spillage and dust."

The cradles utilise 'double-life' slider bars for a flat, stable belt surface throughout the settling zone.

The Martin Engineering slider cradles are designed for conveyor systems with speeds of up to 3,5 m/s and belts lengths of more than 15 m. Typically 1 220 mm long, the units are also available in custom sizes for special applications.

The belt glides over low friction 62 durometer (shore D) UHMW polyethylene sidebars featuring the company's unique 'box' design and low drive-power consumption.

Martin Engineering South Africa, tel (+27 13) 656-5135

Tight schedule on mine ventilation fan retrofit project

Leading mining ventilation fans manufacturer and contractor ACTOM Mechanical Equipment successfully completed a major mine ventilation fan retrofit project recently, replacing an existing fan assembly with an extended version within a three-day shutdown period at Assmang's Black Rock underground manganese mine near Kathu in the Northern Cape.

This picture shows the new shaft top being lowered into place over the mouth of Black Rock mine's 500 m deep main vent shaft.

As a result of expansion of its mining operations, Black Rock required an upgrade of its main ventilation fan system with the addition of a fourth 2,9 m diameter centrifugal fan to the existing three-fan installation, which ACTOM Mechanical Equipment designed, manufactured and supplied eight years ago.

"Traditionally we have always produced mine vent fans for new installations, either for a new shaft for an existing operating mine or for a new mine that is about to start up, so what was new for us in this project was that it involved a retrofit on an already operating shaft where we were allowed a very limited shutdown period in which to execute the changeover," says William Nichol, ACTOM Mechanical Equipment's Project Manager on the project.

He adds that the shutdown period was exceptionally tight at only three days because the mine depends on this main ventilation system for all its ventilation.

The changeover involved having to remove the existing shaft top, replace it with a new one and make the entire system ready to go back into service on the morning of the fourth day. "This required careful preplanning that included coordinating the civils in preparation for the new installation and delivering the fan system comprising the replacement shaft top and quadfurcation to site to preassemble them on site ahead of the shutdown," Nichol explains.

"We were also required to present method statements, safety procedures and an installation schedule to satisfy the mine's engineering consultants overseeing the project as to the soundness of our installation procedures and to ensure that they met all the mine's requirements."

ACTOM Mechanical Equipment, tel (+27 11) 878-3029

Longi-Multotec offers new generation demagnetising coil

Demagnetising coils are commonly used in the minerals processing industry to demagnetise magnetised slurry. The media used in the Dense Medium Separation (DMS) process is magnetic to allow for simple recovery and regeneration processes.

In the past, traditional demagnetising coils have been plagued by inefficiencies. Longi-Multotec now offers a solution that – it claims – addresses these issues and provides continuous, high frequency demagnetisation.

"It is well known that recovery of the media by means of magnetic separators induces a residual magnetisation, which causes flocculation of the magnetised particles and increases the viscosity of the medium. It is possible to reduce or even eliminate these effects by demagnetising the magnetic over-dense product stream," says Stuart Callum, Process Engineer at Multotec's Solid Liquid and Magnetic Separation business line.

"The process of demagnetisation requires an alteration of an applied magnetic field from north to south, while monotonically decreasing the field intensity steps. This elimination of the magnetic hysteresis will bring about scrambling of the magnetic domains striving towards a zero net resultant charge."

DMS efficiency may be improved by lowering and then controlling medium viscosity as well as medium stability and density control. These improvements are clearer in cyclones, where gravitational forces are higher, compared to DMS drums.

"Over the years, demagnetising coils have been developed to improve the frequency of alternating magnetic fields, as well as to decrease the distance over which the field is dissipated. These products were aimed at allowing more energy efficient and compact designs. Ironically, however, this drive has led to inefficiencies in process performance," says Willem Slabbert, Applications and Process Manager at Multotec's Solid Liquid and Magnetic Separation business line.

The constant wave, high frequency demagnetising coil has been designed to overcome the inefficiencies of previous generations of coils by generating a continuous wave of a consistently decreasing magnetic field across distance in the direction of fluid flow, at high frequencies of up to 200 Hz. This allows continuous demagnetisation of slurry through all consecutive slurry elements.

"Even though the actual magnetic coil remains the same, new advances in electrical component technology allow improved control over the electrical energy supply to the coil. The performance advancement of the new generation Longi-Multotec demagnetising coil will allow more efficient demagnetisation, which will facilitate better viscosity management and in turn will improve cyclone performance in terms of separation efficiency and quality," Slabbert concludes.

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

Johnson now providing alternative lifting technologies

Johnson Crane Hire is positioning itself as a heavy lifting solutions provider rather than a crane hire company as it focuses on alternative lifting technologies as being complementary to cranes. "Adopting alternative lifting technologies has definitely given us an edge in the marketplace. This falls within the ambit of our brand promise, which is total cost effective solutions," says James Robinson, Heavy Lift Manager for the Crawler Cranes and Projects division of Johnson Crane Hire.

"We have the equipment but, more importantly, we have the expertise to apply to solutions. This is a highly specialised and niche sector of the market. What sets us apart is that our experience and intellectual property reside within Johnson Crane Hire; we are very much hands-on and in-house."

Johnson Crane Hire recently successfully completed a specialised lifting solution at the B2Gold Otjikoto project In Namibia.

Robinson says that while "sometimes there is no getting away from using a crane," alternative lifting technologies come into their own in terms of expanding into the African market, or where the need arises.

"We love cranes but know it is not always practical to send a crane into Africa. When it is there it does the best job possible but the logistics of getting it there are almost a project in and of itself. Alternative lifting technologies are a lot easier to mobilise and therefore represent a much more cost effective solution in some instances," Robinson says.

While Johnson Crane Hire has already used jacking and sliding techniques with great success on some projects, Robinson says "there is a range of other technologies where we have the know-how and are ready to expand into if need be." These include hydraulic gantries and strand jacking. However, the latest trend is Self-Propelled Modular Trailers (SPMTs). "These are modular trailers like Lego pieces with hundreds of wheels underneath them that are assembled to whatever size is needed. It forms a platform that essentially drives itself."

The Crawler Cranes and Projects division of Johnson Crane Hire is ideally positioned to offer such alternative lifting technologies to its clients. "We have invested in one of the latest versions of jacking and sliding technology, opting for a system that is ultra portable. This is particularly important in confined or cramped areas where you cannot get any other sliding equipment in," Robinson says.

In keeping with its focus on total solutions, Johnson Crane Hire has invested significantly in boosting its crawler crane fleet. "We recently expanded our big cranes, not in terms of capacity, but in numbers. We now have a 750-t lattice boom truck-mounted crane, a 600-t crawler crane and a 750-t mobile crane." Robinson says the truck-mount lattice boom unit has been acquired specifically for the wind energy sector, where installation of wind turbines is a growing market in South Africa.

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

SME publishes manual on mine rescue

The Society for Mining, Metallurgy & Exploration Inc (SME) in the US has released *Mine Rescue Manual: A Comprehensive Guide for Mine Rescue Team Members*.

"There are other materials on mine rescue available but they are scattered among training centres, universities and government agencies," said SME Executive Director David L. Kanagy. "The authors have brought together the best available information in the industry and coalesced the material into one concise reference manual."

Prepared and tested at the Colorado School of Mines, the manual is designed to help mine rescue teams address emergency situations successfully by maximising the protection of human life while minimising the cost, not only of rescue and recovery, but to the corporate reputation.

Topics include: surface operations and incident command; gases and ventilation; team safety; injured workers; communication; and mine recovery and operations.

This spiral-bound manual can be ordered from *www.smenet.org/store*, and is also available as an e-book from *www.smenet.org/ebooks*, book order No 405-9.

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