

M

ODERN

March 2020 | Vol 16 No 3



MINING

CROWN
PUBLICATIONS

Objective, incisive editorial for people who are serious about mining

IN THIS ISSUE...

- Levelling the diamond playing field
- Key milestones at Yaouré Gold Project
- Uis Tin Mine ramps up towards name-plate capacity

TAKRAF

TENOVA



THE CHOICE FOR LEVEL MEASUREMENT IS EASY: **80 GHZ RADAR!**



One sensor
for liquids.



One sensor for bulk solids.
Sounds simple, is simple!

Looking Forward

VEGA

More information: www.vega.com/radar

Phone +27 11 795 3249 | E-mail info.za@vega.com

CONTENTS



ARTICLES

COVER

- 10 TAKRAF belt conveyor technology for one of the world's largest copper mines

COMMODITY FOCUS – DIAMONDS

- 14 Levelling the diamond playing field

GOLD

- 18 Key milestones at Yaouré Gold Project

TIN

- 24 Uis Tin Mine ramps up towards name-plate capacity

VIBRATING SCREENS

- 28 Discouraging TCO of vibrating screens

MINING TRENDS

- 32 Exploring global mining trends affecting African mines

CONTRACT MINING

- 36 Proposed amendments to the capital expenditure regime for contract miners

EXECUTIVE INTERVIEW

- 42 Innovation – A key priority for new Epiroc boss

EXPERT VIEWS

- 44 Joe Keenan on promising times for mining in 2020
- 45 Kieran Whyte assesses the impact of Covid-19 on energy and mining

REGULARS

MINING NEWS

- 4 Stefanutti Stocks Ghana completes AME project at Ahafo Mine
- 4 Natascha Viljoen appointed Anglo American Platinum CEO
- 5 Barrick completes Massawa transaction
- 5 Quick progress in Bougouni's mining licence application
- 6 Exxaro maintains resilient operational performance
- 6 Sibanye-Stillwater Group accepted as ICMM member
- 7 Minerals Council publishes white paper on advancing women in mining
- 8 Anglo American Platinum shuts down the Anglo Converter Plant
- 9 Resolute adds US dollar hedge book

SUPPLY CHAIN NEWS

- 46 New HQ upholds TOMRA's commitment to southern Africa
- 46 ecomatDisplay: Dialogue modules for mobile cranes
- 46 New Cat 6030 hydraulic mining shovel
- 47 Custom cyclone solution solves Zambian tailings storage challenge
- 47 Seequent wins 2020 Esri Partner Award
- 48 DPM monitoring system could change the face of mining safety in SA
- 48 Skid-mounted dry-type transformer does duty on coal mine
- 49 New Epiroc blasthole drill for single-pass applications
- 49 Manganese mine to up tonnages with vibrating screens
- 50 Australasia agency adds to SA chute expert's global reach
- 50 AECI Mining Pillar stands tall at Mining Indaba
- 51 New Cat dragline bucket boosts fill speed
- 51 WearCheck's expansion in West Africa
- 52 FLSmidth's warehousing facility keeps mines productive
- 52 New Kitwe coolant plant for Cummins Zambia
- 52 Hyundai to develop hydrogen fuel excavators



ON THE COVER

Tenova TAKRAF was awarded a contract to supply the principal ore transportation system to move crushed copper ore from underground storage bins to the surface processing site at one of the world's largest copper mines. See story on page 10.

Harnessing the energy and constraints of volatile conditions

It seems the mining industry has barely recovered its stability before once again facing slowing economic growth. The International Monetary Fund projects the global economy to rise from an estimated 2,9% in 2019 to 3,3% in 2020 and 3,4% for 2021 – a downward revision of 0,1 percentage point for 2020 and 0,2 for 2021 compared to those in the October World Economic Outlook report.

The global growth trajectory reflects a sharp decline followed by a return closer to historical norms for a group of underperforming and stressed emerging market and developing economies. This is exacerbated by the current threat of Covid-19 to the global economy. Economically, the effects are being felt – demand for Africa's raw materials and commodities in China has declined. This is causing further insecurity in a continent already contending with persistent geopolitical and economic instability.

The business of mining has never been easy. As an industry whose fate is tied to the cyclical nature of the commodity sector, mining companies often feel the pinch of sustained dips in the market, and only feel the relief when prospects pick up again.

Although mining companies can't entirely disentangle themselves from this cycle of boom and bust, Deloitte's recently published report, *Tracking the Trends*, notes that if miners are to learn from history, the time is ripe to begin shielding against a downturn.

The release of Deloitte's report coincided with the start of this year's Mining Indaba on February 3. I had the opportunity to sit down with Andrew Swart, Deloitte Global Mining and Metals leader, at Mining Indaba to reflect on some of the key trends that have a great bearing on African miners. As you will see in this edition of *Modern Mining*, he picked a total of five trends that really speak to Africa at this juncture. One of them is how miners can survive the tide of downward cycles.

He reasons that commodity prices rise and fall in tune with economic trends, which are currently foreshadowing a potential downturn or lower growth environment. To avoid being blindsided, he suggests five bold plays mining companies

can make to prepare: future-proof tomorrow; continue to innovate; redesign rather than abandon; review business relationships; and acquire resources.

Traditionally, the natural reaction to a downturn by many mining companies has always centred on cost cutting. Swart argues that if there is need to take that trajectory, mines need to be thoughtful of how they approach their cost cutting initiatives.

Drastic cost cutting during a downturn can see companies trimming muscle, rather than fat. Typically, companies that go through drastic cost reductions without redesigning the underlying processes see all that cost come back within a year to 18 months.

Organisations need the muscle and, in the absence of rethinking how the work gets done, the cost will likely return. To avoid this, Swart suggests that, first, mining companies should take the time to redesign. Companies would be wise to look at the major workflows in their organisation to identify alternative ways to get that work done – perhaps by automating, outsourcing, or using contract employees. The aim is to create something sustainable to position for lasting change.

Secondly, while the instinct is always to cut and reduce, Swart suggests that now might also be the time for mining companies to invest in key resources – specifically, assets and people. Mining companies going into a downturn with balance sheet strength have a considerable advantage. Making strategic acquisitions at depressed multiples can create long-term accretive value.

A downtime is also the perfect time to recognise people as tremendous assets. Downturns can be great opportunities to make strategic hires. Now is the time for companies to think through their longer-term vision for the kinds of talent that can enable their long-term strategy and use the next 18 months to hire strategically.

A period of volatility may offer unique opportunities that businesses can leverage if prepared. The key is to harness both the energy and constraints of volatile conditions to solve tough challenges and spark innovation. ■



Munesu Shoko

Editor Munesu Shoko e-mail: mining@crowm.co.za Advertising Manager Bennie Venter e-mail: benniev@crowm.co.za	Design & Layout Darryl James Publisher Karen Grant Deputy Publisher Wilhelm du Plessis	Circulation Brenda Grossmann Published monthly by: Crown Publications (Pty) Ltd P O Box 140, Bedfordview, 2008 Tel: (+27 11) 622-4770 Fax: (+27 11) 615-6108 e-mail: mining@crowm.co.za www.modernminingmagazine.co.za	Printed by: Tandym Print The views expressed in this publication are not necessarily those of the editor or the publisher.	 Average circulation October-December 2019 - 5009  Publisher of the Year 2019 (Trade Publications)
---	--	---	---	---

DE BEERS GROUP

What does it take to build forever?

Forever doesn't just
happen. It takes
planning for the future
before it arrives.

It takes conserving six hectares of land
for every one used for mining. It takes
protecting 200,000 hectares across
three countries to safeguard endangered
and vulnerable species. It takes moving
200 elephants 1,700 km to benefit two
ecosystems in the largest and furthest
elephant translocation on record.

Forever takes time.

Learn more at
www.debeersgroup.com/buildingforever



Stefanutti Stocks Ghana completes AME project at Ahafo Mine

Stefanutti Stocks Ghana, a subsidiary of South African listed construction group Stefanutti Stocks, has added another successful African project to its track record, with the completion of a major plant expansion project for mining client, Newmont Gold Ghana. The project achieved commercial production on schedule and within budget in October 2019.

Ahafo mine, located in the Brong-Ahafo region of central Ghana, is one of the largest gold mines in the Republic of Ghana and in the world. The project objective was to execute the Ahafo Mill Expansion (AME), to increase mill throughput and production, while lowering life-of-mine processing

costs, as the mine transitions to a harder, lower grade ore resource.

“In total, we erected 1 200 tonnes (t) of structural steel work and installed approximately 2 500 t of mechanicals and 950 t of plating,” says Neels Uys, project manager at Stefanutti Stocks Ghana.

He says the key benefit of the mill expansion includes increasing mill capacity at Ahafo by more than 50%, to nearly 10-million t a year. The engineering procurement construction and management (EPCM) company managing the project was DRA Global, a multi-disciplinary global engineering group with which Stefanutti Stocks has worked successfully on many local and

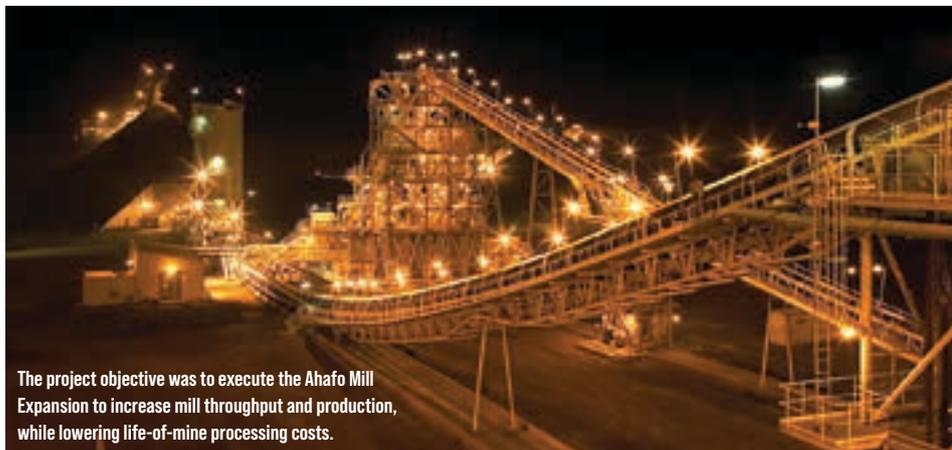
pan-African projects. However, this was the first time that Stefanutti Stocks has had the opportunity of working for Newmont Goldcorp as the end-client.

Commenting on the completion of the project, Uys points out that, common to projects of this nature – particularly with a brownfields component – a certain amount of “project scope growth” occurred (with variations in design and specifications) during execution, adding time and complexity to the overall project.

“A further challenge was that of logistics,” he says. “We dispatched over 200 40-ft shipping containers containing the required tools, equipment, structural and plate steel from South Africa.”

However, despite these project-related challenges, Stefanutti Stocks Ghana is very proud to have completed the two-year project on time.

“We achieved this by working on various aspects of the project simultaneously. The success of such a large and complex project is very much dependent on successful interface between the various companies involved. We were fortunate to have DRA Global as our EPCM, as they have excellent site management experience, so they managed the contractor interface and all other aspects within their ambit of responsibility.” ■



The project objective was to execute the Ahafo Mill Expansion to increase mill throughput and production, while lowering life-of-mine processing costs.



Natascha Viljoen appointed Anglo American Platinum CEO

Anglo American Platinum has appointed Natascha Viljoen as CEO with effect from 16 April 2020. Viljoen takes over from Chris Griffith, who recently stepped down after more than seven years at the helm to pursue other career opportunities.

“I am delighted to welcome Natascha Viljoen as CEO of Anglo American Platinum.

Natascha is a seasoned senior executive, bringing 28 years of operational experience from across our mining industry, spanning many different countries, metals and minerals including, of course, the PGMs. She knows us and our business well, having worked with our executive team over the past five years in leading the changes required to transform the performance of – and commercial value from – our processing operations,” says Norman Mbazima, chairman of Anglo American Platinum.

Viljoen is currently group head of processing for Anglo American, a role she has held since 2014. In that role, she has led a trusted global team that has unlocked value across Anglo American’s processing operations safely and with a long-term perspective, recognising their critical commercial place in the mining value chain.

Prior to joining Anglo American, Viljoen was executive vice president of processing at Lonmin while also leading the company’s

sustainability, employee health, environmental and stakeholder relations work at various times. She began her career as an engineer at Iscor and, among other roles, took on leadership positions at AngloGold and was GM of BHP’s Klipspruit Colliery before joining Lonmin in 2008.

Under Viljoen’s leadership, her team has successfully leveraged and accelerated technology development and deployment to unlock the full potential of mineral endowments through processing, delivering significant financial value and competitive advantage. She and her team are recognised for their work in developing coarse particle recovery technology which enables the separation of metals from rock using a fraction of the energy and water of traditional methods, while increasing throughput and productivity.

“I feel really excited to take on my new role at Anglo American Platinum and I am fortunate to inherit a business in such a strong position. Chris Griffith has reshaped our PGMs portfolio to be fit for the future and I believe we now have an opportunity to re-imagine how we operate – in our mines and our host communities. It is also our responsibility to build upon the wide variety of applications for our platinum group metals that already play a critical role in so many areas of modern life, from clean transport and energy, to health and jewellery, of course,” says Viljoen. ■

Barrick completes Massawa transaction

In line with its strategy of focusing on Tier One assets, Barrick Gold Corporation (NYSE:GOLD)(TSX:ABX) has completed the recently announced transaction of combining its Massawa gold project in Senegal with Teranga Gold Corporation's Sabodala gold mine. Barrick and its Senegalese partner held a 90% interest in the Massawa project.

As part of the transaction, Barrick and its partner will receive an up-front payment valued at US\$380-million at the time of announcement, comprised of 20 718 273 Teranga common shares (with a value at the time of announcement of approximately US\$80-million based on the Teranga share price at that time of US\$3.85 per share), a cash payment of approximately US\$300-million, and a contingent payment of up to US\$50-million which is based upon the average gold price for the three-year period immediately following closing.

The contingent payment, which is payable three years following closing, is: US\$25-million if the three-year average gold price is greater than US\$1 450 and less than US\$1 500 per ounce; US\$35-million if the three-year average gold price is greater than US\$1 500 and less than US\$1 600 per

ounce; and US\$50-million if the three-year average gold price exceeds \$1 600 per ounce.

Barrick president and chief executive Mark Bristow says Massawa is one of the largest unexploited gold deposits in West Africa and its legacy company Randgold Resources had developed this over a period of years to the point where its value could now be optimally realised for the benefit of all its stakeholders, which includes the Senegal government.

"Teranga is best placed to achieve this as it already owns the nearby Sabodala mine and Sabodala's combination with Massawa is expected to deliver significant synergies. Barrick will participate in the upside of the combined asset through the 11% interest it is acquiring in Teranga through this transaction," he says. ■



Massawa is believed to be one of the largest unexploited gold deposits in West Africa.

Quick progress in Bougouni's mining licence application

Kodal Minerals has provided an update on the progress of its mining licence application for the Bougouni Lithium project located in southern Mali.

Senior representatives from Kodal Minerals, including CEO Bernard Aylward, project manager Steve Zaninovich and country manager Mohamed Niare, attended the first technical meeting to review the mining licence application with the Direction Nationale de la Géologie et des Mines (DNGM).

The meeting reviewed all technical aspects of the project and proposed development, as outlined in the feasibility study submitted by the company. Kodal Minerals provided a summary presentation and responded to general questions regarding the proposed operation.

Following endorsement from the DNGM, and with environmental approval already granted, the next step in the mining licence application process is for the company to attend the ministerial commission meeting. This session is convened by the Ministry of Mines and representatives from various ministries are invited, including the Ministry of Finance.

"Our mining licence application is proceeding quickly, and we are pleased with how the DNGM technical review meeting progressed. Kodal Minerals has previously presented the geology, resources and proposed mining development to the DNGM and has hosted technical visits to our Bougouni site on previous occasions and continues our practice of working closely with the Malian authorities to ensure progress of our project," says Bernard Aylward, CEO of Kodal Minerals. ■

MAPTEK

Benchmarking and track key processes

Test technical & economical scenarios
Support safe operational decisions
Improve productivity & profitability
Grow project & shareholder value

www.maptek.com
info@maptek.co.za
+27 11 750 9660

Exxaro maintains resilient operational performance

Exxaro Resources Limited (Exxaro) has reported a R235-million top-line increase for the financial year ended 31 December 2019, a notable achievement in the face of escalating global trade tensions, a deteriorating local economy and a decline in thermal coal pricing.

Core EBITDA declined by 20%, mostly due to the impact of the 27% drop in the export API4 coal price, local inflationary cost pressures and higher rehabilitation costs at its closed operations. The strong performance of iron-ore in its commodities basket saw a 70% increase in core equity income from Exxaro's investment in Sishen Iron Ore Company (SIOC) which led to a 7% increase in core HEPS.

Mxolisi Mgojo, CEO of Exxaro.

CEO Mxolisi Mgojo says that Exxaro continued to successfully advance its key objectives of safety, portfolio optimisation, operational excellence and capital allocation in the year. "We achieved three-years of zero fatalities, grew our coal export volumes by 14%, delivered first coal at Belfast early, progressed divestments and earmarked assets for future disposal, all while creating around 746 new jobs through our Enterprise and Supplier Development

programme, in an environment of chronic unemployment."

Mgojo explains that to arrest the declining trend in safety performance during the year, the company launched a safety campaign Khetha uKuphepha (Choose Safety). "Workers onsite at our mines have increased by over 6 000 in the past three years and we remain well-ahead of the global industry curve according to leading safety surveys. However, our internal benchmark of zero harm dictates our ambitious group safety targets," he says.

We maintained best-in-class performance in terms of our ESG ratings. This is positive and objective recognition and momentum upon which we are building our climate-response strategy. The opportunity for self-generation is being evaluated, which will present additional opportunities for improvement in Exxaro's emission-reduction efforts.

The company acquired the remaining 50% ownership of its renewable energy investment in Cennergi with the last condition precedent being met in March 2020; although it delivered a reduced profit, it showed an improvement in its operating performance in terms of energy generated.

The consolidation of the renewable energy asset comes at a crucial time in South Africa when energy security is needed, and it aligns to the company's response to increasing negative sentiment towards coal-based electricity generation. It further underscores Exxaro's intention to power better lives in Africa. Mgojo says that full control of the investment gives the group time and opportunity to fully consider its options, including the potential for Cennergi to form the bedrock of a renewable energy business within Exxaro. ■

ASPASA
IS YOUR SURFACE MINING
OPERATION LEGALLY COMPLIANT?

SOME OF THE SERVICES WE OFFER

Legal compliance	Explosives Audits
Health and safety	H & S Audits - MSHA & OSHA
Environmental	Environmental Audits
Government liaison	
HR and training (Skills development)	Training & Skills Audits
Transport	Assistance with TSM Legislation
Technical	Quality & Laboratory Audits
Engineering	ECSA Registration
Service provider to members	Associate members

Tel: +27 11 791 3327 | e-mail: office@aspasa.co.za
Unit 8 Coram Office, Ferero Road, Randpark Ridge, Randburg, Gauteng
www.aspasa.co.za

Sibanye-Stillwater Group accepted as ICMM member

Sibanye-Stillwater has been accepted as a member of the International Council on Mining and Metals (ICMM). Following the acquisition of Lonmin, an existing ICMM member, the Sibanye-Stillwater Group went through the ICMM's rigorous company membership assessment process, conducted over several months, and has qualified and been admitted, based on its high level of standards and practices.

Sibanye-Stillwater CEO Neal Froneman says it is a proud moment to be accepted as a member of the ICMM. "This confirms our ongoing commitment to environmental, social and governance best practices throughout our business. The membership will also provide us with an opportunity to learn, define and share best-in-class mining practices through a common set of international standards."

Tom Butler, CEO of the ICMM, says the group went through ICMM's rigorous company membership assessment process and has received a "very positive" assessment from ICMM's Independent Expert Review Panel.

"The group will bring to the council its experience of operating in both southern Africa and North America, alongside knowledge of managing ESG issues unique to gold and platinum group metals extraction and processing." ■



Sibanye-Stillwater CEO Neal Froneman.

Minerals Council publishes white paper on advancing women in mining

A new white paper on women in mining released by the Minerals Council aims to streamline the industry's strategies to advance women in the mining sector. It focuses, in particular, on improving the representation of women in the sector and encouraging leaders to make decisions in the best interest of women.

The white paper forms part of ongoing work that the Minerals Council, together with its tripartite partners in government and organised labour, is doing to promote gender diversity and inclusion at all levels in the workplace. It makes provision for ensuring that women are given ample opportunity to achieve their full potential at work and prioritises the closing of the gender pay gap. The importance of policies and programmes that advance and protect women, including those that address gender-based violence and sexual harassment, is also emphasised.

Women make up 12% of the mining

industry, which places the industry behind others in the country. South Africa also lags behind other mining countries such as Australia and Canada, whose representation of women in mining is at 17% and 16% respectively.

"The participation of women in business has been shown to influence the bottom line of companies positively and to contribute to enhanced sustainability," says Deshnee Naidoo, CEO of Vedanta Zinc International and the Minerals Council board member championing this initiative. "In the mining industry in particular, gender-inclusive workplaces have also been shown to be safer."

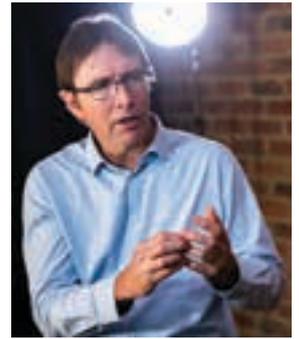
Naidoo was nominated by the Minerals Council Board to lead the development of the initiative, and Dr Thuthula Balfour, head of health, leads the project from within the Minerals Council.

"Gender transformation in the mining industry is a responsibility that I take very

seriously, given the many thousands of lives that we seek to impact positively," says Naidoo. "The true potential of the mining industry will be unleashed when we reach the goal of a 50/50 gender split – that is when we will begin to realise creating a net positive effect as an industry."

Enhancing the representation of women in mining is both a business and moral imperative, but much remains to be done to attract and retain women.

The white paper offers an action plan for member companies to address this issue proactively. It stresses the need for diversity and inclusion programmes that include men, for the inclusion of women in mining to be part of KPIs in senior management performance plans, and for workplaces to be reviewed and adapted to ensure that women's needs are catered for. ■



Minerals Council CEO Roger Baxter.

ABSOLUTE MATERIAL FLOW CONTROL



CHUTE SYSTEMS & SOLUTIONS

- Optimum material flow
- Up to 80% decrease in material degradation
- Reduced dust and noise levels
- Virtually maintenance free
- Greatly reduced spillage
- Significant reduction in belt damage

WEBA
CHUTE SYSTEMS & SOLUTIONS

Tel: +27 (0) 11 827-9372
email: info@webachutes.com

www.webachutes.com

WEBA
SOUTH AFRICA

Anglo American Platinum shuts down the Anglo Converter Plant

Anglo American Platinum has announced the temporary shutdown of the entire Anglo Converter Plant (ACP), part of the chain of processing facilities, and the need to declare *force majeure* (an unanticipated, uncontrollable event).

The company's ACP phase A converter plant at Waterval smelter in Rustenburg, was damaged following an explosion within the converter on 10 February 2020. Nobody was injured in the incident and work has started to repair phase A, which is expected to be completed by Q2 2021.

As per normal business procedure, the phase B unit was commissioned to take over from the phase A plant and was in the process of ramping up to steady state, when water was detected in the furnace. Notwithstanding extensive testing being conducted to determine the source of the water, and a number of circuits being isolated, water continued to be observed in the furnace. This poses a high risk of explosion and the company has determined that it has no other option but to temporarily shut down the phase B unit to ensure



The company's ACP phase A converter plant, at Waterval smelter in Rustenburg, was damaged following an explosion within the converter on 10 February 2020.

the safety of all employees and to avoid a catastrophic event. It is anticipated that the repair works to fix the phase B unit will take approximately 80 days.

As a result of the temporary closure of

the entire ACP, Anglo American Platinum has had to declare *force majeure* to customers, suppliers of third-party purchase of concentrate and suppliers of tolling material, as it is unable to complete the processing of material during the converter repair. Production from own mines will continue, and the concentrate from the mines will continue to be smelted at one of the four smelter complexes. However, production from own mines, as well as third-party material will not be able to be converted to refined production while the ACP is undergoing repairs. ■

Refined production guidance ('000 ounces)	New H1 2020 guidance	Revised full year 2020 guidance	Previous full year 2020 guidance
Platinum	400 – 450	1 500 – 1 700	2 000 – 2 200
Palladium	300 – 350	1 100 – 1 200	1 400 – 1 500
Rhodium	65 – 75	250 – 350	--
Total PGMs (5E + gold)	850 – 1 050	3 300 – 3 800	4 200 – 4 700

Initial estimates of the impact on AAP refined production.

Eurasian Resources Group plans battery material plant for the DRC

Eurasian Resources Group (ERG), a diversified natural resources group, says it is assessing the construction of a battery material plant to produce nickel-cobalt manganese (NCM) precursor materials for electric vehicles.

The group is evaluating technical solutions offered by engineering firms BGRIMM Technology Group from China and Outotec from Finland, which will allow for the production of both NCM 6:2:2 and NCM 8:1:1 precursors, depending on market conditions.

The group is planning to develop the plant in two phases. The first phase is expected to produce 90 000 t of NCM annually, following a two-year construction period. The expansion will be defined depending on market conditions.

“Our vision for a green economy is at the core of our continued commitment to supply the most critical materials for the global battery sector,” says Benedikt Sobotka, CEO of Eurasian Resources Group. “We are leading industry efforts to ensure sustainable, traceable cobalt sourcing in supply chains across Europe, North America, South Korea and Japan. Together with our partners we are considering multiple locations for the development of the precursor plant.”

The plant will be exclusively supplied with cobalt hydroxide from ERG's Metakol RTR in the Democratic Republic of Congo, whose operations are in accordance with recognised responsible and sustainable practices as set out in the ERG Clean Cobalt Framework.

Metakol RTR is a historic tailings rec-

lamation and environmental restoration facility producing quality copper cathode and cobalt in hydroxide. It is positioned to become one of the largest producers of cobalt globally upon completion of its Phase II expansion.

For the precursor plant, the group plans to source nickel sulphate from third parties or produce it itself, using nickel raw materials mixed hydroxide precipitate or mixed sulphide precipitate.

“Our aim is to continue to responsibly service a burgeoning battery sector set to grow by 19 times by 2030, according to a recent report by the Global Battery Alliance, a public-private collaboration platform of about 70 international organisations, where ERG is a founding member,” says Sobotka. ■

Resolute adds to US dollar gold hedge book

Resolute Mining Limited has advised that the company has forward-sold 30 000 ounces (oz) of gold at an average price of US\$1 590 per oz in scheduled monthly deliveries of 5 000 oz between January 2021 and June 2021.

Resolute has taken advantage of strength in the gold price to extend the company's US dollar-denominated gold hedge position for the first half of 2021. The hedging secures price certainty for a portion of the US dollar revenues generated from Resolute's African gold mines, the Syama Gold Mine in Mali and the Mako Gold Mine in Senegal.

The additional US dollar hedging extends Resolute's existing US dollar forward gold sales programme, which comprised 115 000 oz of gold forward-sold at an average price of US\$1 535 per oz in scheduled monthly deliveries to June 2021.

The company maintains a hedging policy of committing to forward deliveries of gold production to take advantage of elevated gold prices. Its total gold hedge book

on 17 February 2020, including the new US dollar gold hedges, consists of 225 000 oz in monthly deliveries to June 2021, representing less than 3% of Resolute's ore reserves.

MD and CEO John Welborn is pleased to continue Resolute's success in maximising operating cash flows through responsible hedging strategies.

"Incremental expansion of our US dollar hedging position at levels which are significantly above our budgeted gold price, protects and supports Resolute's near-term cash flows," he says. "Resolute's hedging programme has strong support from our syndicate banks as our modest hedge book protects the company's balance sheet and supports our gold-linked revenues. With long mine lives and large gold inventories, Resolute remains strongly leveraged to future upside in the gold price."

Meanwhile, Resolute's Global ore reserves have increased to 7,4-million oz of gold and global mineral resources have increased to 19,1-million of gold. Global



John Welborn, MD and CEO of Resolute Mining Limited.

ore reserves and global mineral resources include, on a 100% basis, gold inventories managed and controlled by Resolute and, on an attributable basis, gold inventories held within the company's strategic equity investments. ■

Loosen material solidified in bulk bags with BLOCK-BUSTER® Bulk Bag Conditioners

BLOCK-BUSTER® Bulk Bag Conditioners press bulk bags on opposite sides with hydraulically-driven conditioning plates to crush and loosen bulk mining materials that have solidified during storage and shipment.

Bulk bags can be raised, lowered, and rotated for complete conditioning of the bag on all sides at all heights, using automated turntables and scissor lifts, or electric hoist and trolley assemblies.

SOUTH AFRICA
sales@flexicon.co.za
+27 (0)41 453 1871

UK +44 (0)1227 374710
GERMANY +49 170 818 76 13
FRANCE +33 (0)7 61 36 56 12
SPAIN +34 930 020 509
USA +1 610 814 2400
AUSTRALIA +61 (0)7 3879 4180
SINGAPORE +65 6776 9225
INDONESIA +62 81 1103 2400
CHILE +56 2 2415 1286

flexicon
.co.za



Materials typically loosened by BLOCK-BUSTER Bulk Bag Conditioners include ammonium nitrate, lime, thiourea and other products that solidify in bulk bags.

- Heavy-duty construction
- Mobile or stationary
- Diesel or electric
- Gentle on bag fabric
- Safety interlocked
- Interior or weatherproof
- Factory or on-site testing



Also offered: Heavy-duty Bulk Bag Fillers and Bulk Bag Dischargers for low- to high-volume applications.





TAKRAF belt conveyor technology for one of the world's largest copper mines

When contracted to supply the principal ore transportation system to one of the world's largest copper mines – moving crushed copper ore from underground storage bins to the surface processing site – Tenova TAKRAF had to ensure no redundancies, resulting in high system availability, minimal system wear and easy maintenance of components.

In 2019, Codelco's Chuquicamata mine – situated in northern Chile and one of the world's largest copper mines – was converted from an open-pit mine to an underground operation.

Over 100 years of open-pit mining had resulted in a mine that was some 1 000 m deep, 5 000 m long and 3 000 m wide. Once the rock had been mined by drilling and blasting, the ore and waste material was transported to surface by trucks for processing or for disposal.

However, it was becoming no longer economically viable to mine deeper ore bodies using this process. Moreover, longer truck routes combined with a larger number of vehicles resulted in higher costs for vehicle maintenance and fuel, greater environmental pollution and safety concerns.

In 2015, Tenova TAKRAF was awarded the contract to supply the principal ore transportation system, moving crushed copper ore from underground storage bins to the surface processing site. The system called for no redundancies, which meant that high system availability, minimal system wear and easy maintenance of components were critically important.

The project scope called for:

- ❑ Removal of crushed ore from 60 m high underground storage bins with a conveying capacity of 11 000 t/h;
- ❑ Transportation to the surface with a minimum number of material transfer points; and
- ❑ Conveying of the ore from the underground tunnel exit to the existing processing plant, taking into account existing infrastructure.

In designing the system, numerous innovations resulted in six patents being implemented for the first time, translating into a modern, powerful and environmentally friendly conveyor system. Highly efficient electric drive motors replaced diesel truck engines and as a result, CO₂ emissions produced by transporting the material have been reduced by more than two-thirds for the same copper production volume.



Storage bin discharge

TAKRAF employed a feeder conveyor in place of conventional belt conveyors for controlled material discharge. The conveyor belt has a 45-degree trough angle along the entire conveyor route, with the only chutes being in the storage bin discharge area. The contour of the material being conveyed is specified by a shear gate and the flow of discharged material is defined by varying the conveying speed.

The elimination of the vertical sidewalls associated with belt conveyors means less wear and thus reduced maintenance costs, combined with energy savings of around 25%.

Transporting material to surface

Two conventional trough conveyors connect the material discharge of the feeder conveyors with the loading point of the inclined conveyor, around 900 m away. The tunnel extends some 6 400 m to the surface and the inclined conveyors overcome a difference in elevation of 950 m.

As each underground transfer point along the tunnel requires an underground chamber with considerable infrastructure, the number of transfer points was minimised by using an inclined conveyor section with just two conveyors. This was made possible by newly developed components that redefine the performance limits of belt conveyor technology.

St 10,000 quality conveyor belts from ContiTech were used for the first time. Operating belt safety ratings of $S = 5.0$ required belt connections with a reference fatigue strength of over 50%.



Above: Overland conveyor OLC-01 passing over existing infrastructure.

Left: Overland conveyor OLC-01 with feeding point in the drive house of the inclined conveyor C-02 (blue building).

Once again, new dimensions were achieved – this time in terms of installed drive power – with 10 000 kW of installed drive power per drive pulley and 20 000 kW per conveyor.

In cooperation with the drive motor manufacturer, ABB, Tenova TAKRAF engineers developed a drive-train consisting of 5 000 kW synchronous motor; membrane coupling to connect the pulley shaft and rotor shaft; and a drive pulley.

Maintenance of the air gap between the rotor and stator is a crucial requirement for the operation of the motors, with the 14 mm air gap between the rotor and stator only being allowed to deviate from the setpoint within small tolerances. This is because deviations in the air gap reduce the efficiency of the motor and, if the rotor and stator were to make contact, it would damage the motor.

The air gap is continuously monitored during operation. If deformations and/or subsidence in the steel structure or motor foundations lead to a

Feeder conveyor during material discharge.



BELAZ WORKS HERE



32 T



45 T



55 T



90 T



136 T



160 T



180 T



240 T



290 T



360 T



450 T



WHEELED LOADERS



WATER BOWSERS



WHEELED DOZER



AIRCRAFT TUG 600 T

BELAZ AFRICA

14 Bravo Road, Boksburg, R.S.A. Phone: +27 11 397 8006 e-mail: mail@mynbou.com

deviation in the air gap setpoint, the stator has to be realigned. To simplify this process, the spacing between the rotor and stator at the non-driven end of the motor was fixed by a support bearing.

A membrane coupling compensates for deformation of the pulley shaft caused by belt tension. The adjustable motor frame facilitates alignment of the motor during installation and ensures simple realignment if necessary.

Eccentrics and spindles allow the stator to be adjusted in all directions. Should a motor fail, it can be quickly moved into a disabled position by opening the membrane coupling and adjusting the spindles. The system can then operate with reduced power.

From the underground tunnel to processing plant

The landscape has been shaped by over 100 years of mining, with, in addition to processing plants, waste heaps, train tracks, roads, pipelines and buildings.

The challenge was to design an overland conveyor system that took into consideration this landscape for its entire length from the end of the underground tunnel to the processing plant more than 5 km away.

A continuous single flight conveyor was developed as follows:

- ❑ Distance of 5 330 m between the material loading point and discharge with a difference in height of 287 m
- ❑ Horizontal curves with tight radii (1 600 m to 2 300 m) on more than 60% of the conveyor length
- ❑ Approximately 50% of the conveyor length on elevated structure with variable lengths adapted to local conditions for foundations positioning and with support intervals of up to 96 m

All loading points were optimised to reduce conveyor belt wear. Newly designed transfer chutes allow wear plates to be replaced quickly and easily.



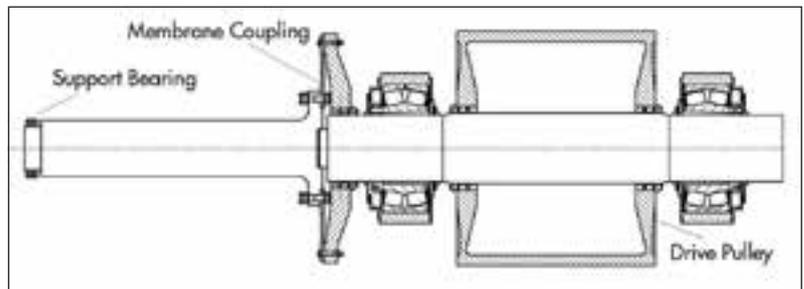
A specially designed TAKRAF maintenance vehicle travels along the conveyor path, enabling the conveyor belt to be lifted and worn idlers to be safely and efficiently replaced.

TAKRAF maintenance vehicle for safely lifting the belt and replacing the idlers.

At the material discharge point, a bunker building provides limited material storage. Two feeder conveyors remove the material and feed it to the processing plants.

Three 5 000 kW direct drive motors drive the conveyor, using a St 6,800 conveyor belt with a belt safety of S = 5. ■

Mechanical components of the drivetrain.



Equipment Nominal throughput 11,000 t/h		Pulley distance	Lift	Belt width	Conveyor speed	Drive power	Belt
		[m]	[m]	[mm]	[m/s]	[kW]	Type
Equipment that can be implemented for the first mining level	Feeder conveyor no. 1 north	36	0	3 200	1,75	400	EP 1,600
	Feeder conveyor no. 1 south	36	0	3 200	1,75	400	EP 1,600
	Level conveyor 1	835	-36	1 800	7,0	800	St 2,250
	Transfer conveyor	53	0	2 400	3,8	200	EP 800
Permanent equipment	Principal conveyor C-01	3 303	495	1 800	7,0	20 000	St 10,000
	Principal conveyor C-02	3 039	456	1 800	7,0	20 000	St 10,000
	Overland conveyor OLC-01	5 330	287	1 800	7,0	15 000	St 6,800
	Feeder conveyor 01	28	0	3 200	1,75	400	EP 1,600
	Feeder conveyor 02	28	0	3 200	1,75	400	EP 1,600

Conveyor system specifications.

Levelling the diamond playing field

The issue of laboratory-grown diamonds has been one of the key talking points in the global diamond market in the past three years. With the 2018 launch of its Lightbox synthetic diamond division, De Beers has successfully drawn a line in the sand between natural diamonds and those grown in a laboratory. *Munesu Shoko* speaks to Richard Steenkamp, sales manager of De Beers Group.

Lab-grown diamonds are a subject of rapidly growing interest in the jewellery industry. While they have existed since the 1950s, the man-made stones have recently become much more visible within the modern jewellery market, says Richard Steenkamp, sales manager of De Beers Group.

To give an idea, in 2018 and 2019, production of lab-grown diamonds increased by 15 – 20%, with the majority being produced in China, as found by the ninth annual report on the global diamond industry, compiled by the Antwerp World Diamond Centre and Bain & Company.

According to Steenkamp, there have been an increasing number of new entrants into the lab-grown diamond market. “We have seen a growing number of companies starting to produce lab-grown diamonds in the past two to three years,” he says.

De Beers’ response

The growth of the lab-grown diamonds market posed a major challenge to the diamond mining fraternity at large; the long-standing concern was the growing level of consumer confusion about synthetics as a result of misleading information being communicated about them. Leveraging over 50 years’ experience in the synthetic diamond industry through its Element Six business, De Beers established Lightbox in 2018 to separately brand and sell synthetic diamonds in jewellery, and to provide clear and accurate information to consumers.

According to Steenkamp, the main purpose of the initiative was to clearly differentiate between natural diamonds, and those grown in a laboratory, as the two product categories have different value



Richard Steenkamp, sales manager of De Beers Group.

propositions. Steenkamp highlights that prior to De Beers’ entry into the lab-grown diamond market, man-made stones were frequently being sold with unsustainable margins at a price that had no correlation to their much lower cost of production.

Since Lightbox’s sale of its first diamond in September 2018, indications are that the price gap between the two has widened. At the time of Lightbox’s launch in June 2018, a 1 carat synthetic diamond cost about US\$4 200 while an equivalent natural gem sold for US\$6 000. But since September 2018, De Beers has been selling gem-quality man-made stones for just US\$800 a carat.

“Before we launched Lightbox, most lab-grown diamonds cost about two-thirds the price of the equivalent natural diamond. Our strategy was to be clear about the distinction between natural diamonds and their lab-grown counterparts – in terms of their origins, their socioeconomic impact and their value proposition – so as to eliminate confusion in the eyes of the consumer. The strategy is yielding targeted results – following our entry into this market, consumer understanding has improved,” he says.

Rough diamonds used for Talisman collection, De Beers Jewellers, NYC.



“There is clear evidence that the education process, explaining the product differences and how a man-made stone is not the same as a natural diamond – is already starting to be successful in helping consumers make informed choices. As people increasingly understand properly what a lab-grown diamond is, and that it doesn’t have the uniqueness or enduring value of a natural diamond, prices for lab-grown diamonds have reduced accordingly.”

Despite the widespread media interest in man-made stones, the lab-grown diamond market remains relatively small – about 2% of the size of the natural diamond market to date. “While the overall lab-grown market remains limited, there was a rapid growth in production of synthetic diamond material and a proliferation of misleading information. We had to act to prevent consumer confusion and to protect the integrity and equity of the natural diamond, which we think we have achieved,” he says.

Protecting the equity

Explaining the ‘equity’ behind the natural diamond, Steenkamp says while the two share physical, chemical and optical properties, natural diamonds are unique, billions of years old with enduring value, while the synthetic stone is a mass produced technological product, potentially limitless in supply, made in a factory. He reasons that part of the natural diamond’s equity emanates from its history – it is an artefact from before the dawn of the human race, a time capsule that contains secrets about the history of life on Earth.

The naturally occurring diamond is one of the oldest and rarest gifts from mother Earth, and the eternal strength and longevity is linked to the notion that ‘diamonds are forever’. This is in direct contrast to lab-grown diamonds that can take six to 10 weeks to develop in a laboratory, depending on size.

He says another difference is that each natural diamond is unique; no two natural diamonds are the same. “Each natural diamond is as unique as the person wearing it; man-made diamonds, however, are produced in uniform batches. The value of natural diamonds also endures over time due to their finite nature, and people want things with this inherent preciousness to celebrate the most precious moments and emotions in their lives,” says Steenkamp.

The sustainability card

The evolution of the lab-grown market has, in recent years, been linked to the ‘sustainability card’ many of the suppliers played in order to appeal to the millennial market. Riding on the growing trend where consumers, especially young people, are demanding more transparent and environmentally responsible practices from suppliers of everything they buy, the general message driven by lab-grown diamond suppliers was that their product was more environmentally-friendly than mined diamonds.



Lightbox Jewellery - lab-grown diamonds by De Beers Group.

Steenkamp says it’s crucial that consumers are given reliable information on which to base their decisions, rather than just marketing messages that don’t stand up to scrutiny; in fact, the Diamond Producers Association (DPA) – whose seven members (including De Beers) are mining companies, together representing 75% of the world’s diamond production – partnered with Trucost, a reputable

Employee sorting and analysing rough diamonds, Kimberley.





Close up of rough diamonds being sorted with tweezers, GSS Botswana.

independent research company, to examine and quantify the collective socio-economic and environmental impact of its members' diamond mining activities.

Aside from highlighting that the DPA members delivered a net US\$16-billion annual benefit to society and the environment through their activities, the

report also found that the greenhouse gas emissions produced by mining natural diamonds are actually three times less than those created by the process of growing diamonds in the laboratory.

The process of creating lab-grown diamonds is energy intensive. They are made using either a High Pressure High Temperature (HPHT) or a Chemical Vapour Deposition (CVD) system, both of which require very high temperatures, which can be several thousand degrees Celsius, and high pressures.

"In this modern era in which we live, consumers seek education about the products they want to buy. They are becoming more interested in how ethical suppliers go about their business in creating or mining their products. They also want to know, as corporate citizens, the company's contribution to the areas in which they do business," says Steenkamp, adding that the natural diamond mining market really plays well into that narrative.

In southern Africa, for example, De Beers has played a leading developmental role in countries like South Africa, Namibia and Botswana, and the latter two economies are largely dependent on diamond mining. Steenkamp says the company has made long-term commitments to the local communities in which it operates through investments in education, skills development, enterprise development and employment, among other initiatives.

He adds that a successful mining operation is always the result of a strong mutually beneficial partnership with local communities. Based on that understanding, De Beers recently launched its Building Forever framework, an integrated approach to creating a sustainable and better future, "one that is fairer, safer, cleaner and healthier, where safety, human rights and ethical integrity continue to be paramount, where communities thrive, and where the environment is protected".

"The framework is underpinned by four key pillars with bold and ambitious targets to reach by 2030. These are protecting the natural world; partnering for thriving communities; standing with women and girls; and leading ethical practices across industry," concludes Steenkamp. ■

Key takeaways

- ❑ Lab-grown diamonds have seen rapid growth in production and have been a subject of much debate in the jewellery industry. In 2018 and 2019, production increased by 15 – 20%
- ❑ To protect the equity and integrity of the natural diamond, De Beers established Lightbox in 2018 to brand and sell synthetic diamonds separately. The idea was to differentiate clearly between natural diamonds and those grown in laboratories, so as to enable consumers to make clear and informed choices
- ❑ At the time of Lightbox's launch in June 2018, a 1 carat synthetic diamond cost about US\$4 200 while an equivalent mined gem sold for US\$6 000. Since September 2018, De Beers has been selling gem-quality man-made stones for just US\$800 a carat
- ❑ Following De Beers' entry into the lab-grown diamond market, the pricing of other synthetic diamond jewellery products has fallen substantially at both wholesale and retail level. ■



TRANSCOR

ABNORMAL LOAD SPECIALISTS

+27 (0)11 256 5000 WWW.TRANSCOR.CO.ZA INFO@TRANSCOR.CO.ZA



Marching to maximum efficiency

We partner with you over the lifetime of your plant, driving continuous process optimisation to enhance plant efficiency and lower your overall cost per ton.

That's why the world's leading mining houses use Multotec mineral processing equipment.

Constantly working to lower your cost per ton



MULTOTEC

www.multotec.com



Key milestones at Yaouré Gold

Development of Perseus Mining Limited's Yaouré Gold Project in Côte d'Ivoire has reached a 45% project completion milestone as at end of February this year, with process plant construction ahead of schedule and under budget, writes *Munesu Shoko*.

Construction at ASX- and TSX-listed Perseus Mining's third mine, Yaouré Gold Project, located in central Côte d'Ivoire, 40 km northwest of the political capital, Yamoussoukro, and 260 km northwest of Abidjan, is forging ahead with some key project milestones achieved thus far.

The construction of the project is managed by Perseus Mining's development team and Lycopodium, the same team and engineering company that built Perseus Mining's Sissingué gold project, also located in Côte d'Ivoire, ahead of time and on budget.

Project milestones

Speaking to *Modern Mining*, Andrew Grove, Group GM BD and IR at Perseus Mining, says several key substructures of the project are progressing well, in line with the stretch target of pouring the first gold by December 2020, and contracted date for first gold in January 2021.

Detailing some of the most recent project milestones, Grove says the engineering works are fully complete, and so is the process plant and camp earthworks. The mill shells have arrived on site two months ahead of the scheduled date. Elsewhere,

the tailing storage facility (TSF) site has been fully cleared and grubbed, with the TSF wall construction at 20% as at end of February.

Construction of the 17 km perimeter fence line is nearing completion, while incoming roads have been upgraded to accept heavy traffic. Meanwhile, a diversion road between villages has also been completed.

Completion targets and budget

These project milestones, Grove says, leave construction of Yaouré at 45% completion. "We have spent US\$116-million as at end of January this year to reach this milestone. In total, about US\$171-million of the total US\$265-million capital has been committed, which leaves any prospect for overruns limited," says Grove.

As of December 2019, Perseus Mining had US\$80-million cash and bullion plus US\$100-million available under the US\$150-million revolving corporate facility. The company also generated a strong quarterly cashflow in excess of US\$30-million and there are generally no issues in the funding of the development of the mine.

Meanwhile, process plant construction is ahead of schedule and under budget. The processing facility at Yaouré is being constructed by Lycopodium and Perseus. The capital cost based on the FEED (Front End Engineering Design) study completed in November 2018 was US\$265-million. The circuit comprises a single stage crushing, SAG milling



Project

followed by Ball milling, gravity and CIL (carbon-in-leach) recovery. The processing plant has been designed to process approximately 3,3-million tonnes per annum (mtpa).

First gold

In view of this, the project remains on course to pour its first gold at the end of this year. “The stretch target of first gold by 2020 is achievable,” says Grove, “with

contracted date for first gold being January 2021.”

Gold mineralisation at Yaouré has been subdivided into two main zones: the CMA Zone and the Yaouré Zone. Pre-stripping of the CMA pit by the construction team has begun by removing the back fill material from the old pit. The mining contract has been awarded to EPSA International SA, who will establish on site between August and October this year.

Mining will commence in November. “First ore will be sourced from the old heap leach pads while the CMA pit is unloaded, given that the previous operation backfilled the pit when they mined the Yaouré Zone pit. Plant commissioning and ramp-up will commence in November 2020 through to February 2021.

Meanwhile, Grove says an operational readiness team is being established, with the GM of Sissingué, Merlin Thomas, taking the role of GM at Yaouré and Michael Cardinaels being promoted to GM of Sissingué.

In the next few months, Perseus’ target is to reach a few more project milestones. The release of rooms in Perseus’ self-performed camp is due for the end of this month, while SMP (structural mechanical piping) and E&I (electrical and instrumentation) contractors will mobilise on site. Meanwhile, the TSF HDPE lining will also be completed shortly.

Managing contests

Highlighting some of the challenges thus far, Grove says the interaction between a major 3D seismic exploration programme and a major construction project was one of the contests on site. This was sidestepped by diverting all earthmoving equipment on the TSF to other jobs for 10 days. However, this has since been completed.

As with any major mining project, managing

Above left: An aerial view of the camp site at the end of February this year.

Below: An aerial view of the plant site at Yaouré.





The tailing storage facility site has been fully cleared and grubbed.

community relations has been a key area of focus for Perseus. The project has strong community support and Perseus anticipates that this will strengthen as development activities commence and greater benefits flow to the local population. The successful model for community engagement employed at Sissingué has been implemented at Yaouré.

“The project currently employs approximately 1 300 to 1 500 people on site, 89% of whom are Ivorian and 54% from the local communities,” explains Grove. “We established a Community Consultation Committee, comprising representatives from all the affected villages, through which all local employment opportunities and communications are conducted.”

Perseus is currently undertaking community and youth training programmes, including welding and heavy equipment operation. Most of these trainees have already gained employment on the construction project.

There are four directly affected communities, namely Akakro, Angovia, Allahou Bazi and Kouakougnanou. No relocation was required for the development of the project as it lies within a previously disturbed mining site. However, Perseus is finalising land and crop compensation payments ahead of commencing operations.

The release of rooms in Perseus' self-performed camp is due for the end of March this year.



Meanwhile, 0,5% of future revenue from Yaouré will be paid to the Community Development Fund (CDF) which is managed by the Comité de Développement Local Minier (CDLM) which comprises government and community representatives.

Project in detail

Yaouré was acquired in April 2016 when Perseus took over Amara Mining PLC. Perseus completed a definitive feasibility study (DFS) in October 2017, demonstrating that the project had strong economics with an internal rate of return (IRR) of 27% and a 32-month payback period at a gold price of US\$1 250/oz.

Since the completion of the DFS, Perseus has completed a FEED study, contracted Lycopodium to construct the plant, secured funding, obtained the exploitation permit and commenced construction.

Yaouré holds three exploration permits in a region covering 360 km². The exploitation permit PR397 covers a 53 km² area. Perseus owns a 90% interest in Perseus Mining Yaouré SA, owner of Yaouré, with the other shareholder being the government of Côte d'Ivoire with a 10% free carried interest.

Proved and probable ore reserves total 27-million t, grading 1,8 g/t gold containing 1,56-million oz of gold inclusive of 2,1-million oz of Measured and Indicated Resources, as at 30 June 2019. Yaouré's life of mine gold production totals 1,4-million oz at an AISC of US\$759/oz over 8,5 years. Exploration potential is significant including an initial underground Inferred Resource of 595 koz grading 6,2 g/t gold.

Yaouré lies within the eastern half of the informally named Bouflé greenstone belt in central Côte d'Ivoire. The belt is a north-north-east-trending assemblage of Palaeoproterozoic volcanic, sedimentary and intrusive rocks of the Birimian Supergroup.

Geology and mining

The CMA zone is a relatively continuous 20 – 45 m thick fault zone featuring quartz-carbonate

THE VOLVO A60H SETTING NEW RECORDS IN HAULING...

Babcock Branches

Bartlett
+27 (0)11 230 7300
Botswana
+267 390 2869
Bloemfontein
+27 (0)51 432 1226
Cape Town
+27 (0)21 001 4480
Durban
+27 (0)31 700 6009
East London
+27 (0)43 001 0090
George
+27 (0)44 001 0050
Kathu
+27 (0)82 578 5676
Kimberley
+27(0)53 001 0010
Middelburg
+27 (0)13 001 1234
Mozambique
+258 21 900 120
Nelspruit
+27 (0)13 001 1280
Port Elizabeth
+27 (0)41 407 5900
Richards Bay
+27 (0)35 001 7660
Rustenburg
+27 (0)14 001 0031
Steelpoort
+27 (0)13 230 9054
Wolmaransstad
+27 (0)18 596 1514
Windhoek
+264 61 305 560/3
Zambia
Kitwe
+260 212 216 200
Lusaka
+260 211 127 2926/28
Zimbabwe
+27 (0)11 230 7300

Independent Dealers

Polokwane
RGR Services
+27 (0)15 297 6711



...AND PRODUCTIVITY

With a payload of 55 tonnes, the Volvo A60H is the largest articulated hauler ever to go into production. Powered by a 16 litre Volvo engine that delivers 495 kW of power, 3,200 Nm of torque and exceptional fuel efficiency, the A60H is designed to bring your cost per tonne crashing down as it powers its way through even the most forbidding terrain. The On Board Weighing System ensures you're achieving the optimal load every cycle; and when it comes to customer support, Volvo is the best in the industry: always there to help guarantee you obtain optimum machine availability. With the Volvo A60H, you'll be smashing all productivity targets.

babcock[™]

Babcock International Group
www.babcock.co.za

Authorized Dealer for
Volvo Construction Equipment

Volvo Construction Equipment
Building Tomorrow





Construction of the process plant is ahead of schedule and under budget.

The processing facility is being constructed by Lycopodium and Perseus.

(dominantly ankerite) veining and disseminated pyrite in albite-carbonate altered metabasalt wall rocks. It strikes approximately north-south, dips at 30 degrees to the east, extends along a 1 200 m strike and its down-dip continuity has been tested for in excess of 450 m.

The Yaouré Zone comprises a system of structures in a 300 m wide zone, 200 m stratigraphically below the CMA Zone. Gold mineralisation is hosted by a series of brittle-ductile structures divided for convenience into 'Y' and 'S' types. The 'Y' fault

zones, parallel to CMA, consist of Y1, Y2 and Y3 – shallow easterly dipping reverse faults with associated albite, carbonate and quartz veins in variably altered host rocks with disseminated pyrite.

The 'S' type structures comprise sub-vertical faults filled with quartz-tourmaline veins. The 'S' type structures are oriented southwest-northeast and northeast-southwest.

Mineralisation in the Yaouré Zone is hosted by metabasalts and by a north-south trending granodiorite intrusive body.

Significant exploration potential exists on the Yaouré tenements. The underground resources defined in November 2018 are open down dip and along strike and have only been drilled -200 m down dip of the design pit limits. Strong soil geochemical anomalies have been defined adjacent to the pit areas and more regionally. Deep drilling at this stage has been confined to the pit areas and sterilisation drilling.

A major exploration programme is underway to define the extent of the CMA structure with 1 km step out holes intersecting the down dip extents and a 3D seismic survey currently underway, aimed at mapping the structure at depth for targeting future deep drilling.

Ore will be sourced from these two open pits (CMA and Yaouré pits) and historical heap leach stockpiles. Average annual material movement will be 19-million t using conventional open pit mining methods and a mining contractor to undertake grade control, drill and blast and load and haul.

"With the completion of Yaouré, Perseus' third mine, the group's annual gold production will increase to over 500 000 oz of gold per annum at AISC of approximately US\$850/oz, which will see very strong cash flow generation and establish the group's credentials as a credible West African mid-tier gold miner," concludes Grove. ■



Key takeaways

- ❑ Several key substructures of the Yaouré Gold Project are progressing well, in line with the stretch target of pouring first gold by December 2020, and contracted date for first gold in January 2021
- ❑ The engineering works at the project are now fully complete, and so are the process plant and camp earthworks
- ❑ The mill shells have arrived on site, two months ahead of the scheduled date
- ❑ The tailing storage facility (TSF) site has been fully cleared and grubbed, with the TSF wall construction at 20% as at the end of February

condra (PTY) LTD 20 ton cap *with 8028 year 2008*

condra (PTY) LTD 20 ton cap *with 8028 year 2008*



WORLDWIDE

THESE MACHINES HAVE BEEN ENGINEERED TO ENDURE

Condra cranes and hoists are without equal in their quality, performance, reliability and overall lifetime cost. Operating data and the experience gathered from installations around the globe are today incorporated in all Condra products, the endurance of which has been proven in highly corrosive and abrasive environments, and under wide extremes of temperature, humidity and altitude. Technical support, service and spare parts delivery are guaranteed worldwide.



condra[®]
Cranes & Hoists

11 Indianapolis Boulevard, Raceway Industrial Park, Gosforth Park Ext 4,
Germiston, Gauteng, P.O. Box 752639, Gardenvue, 2047, South Africa
Tel: +27 11 776-6000 | Fax: +27 86 669 2372
e-mail: sales@condra.co.za | www.condra.co.za

portal cranes | bridge cranes | cantilever cranes | hoists | end-carriages
single & double-girder overhead travelling cranes | crane components

Uis Tin Mine ramps up towards name-plate capacity

Having increased its processing plant output to 11 400 tonnes in January this year, Namibian-based Uis Tin Mine remains on track with throughput ramp-up to achieve nameplate capacity of 45 000 tonnes of ore to the plant and production of 60 tonnes of tin concentrate per month by the end of 2020. *By Munesu Shoko.*

AfriTin Mining Limited (AIM: ATM), a tin mining company with a portfolio of assets in Namibia and South Africa, has made its maiden sale of tin concentrate from its flagship Uis hard-rock tin mine located in the Erongo region of Namibia.

The first shipment – 6 tonnes (t) of tin concentrate more than 60% Sn metal contained – was delivered to Thailand Smelting and Refining Company (Thaisarco) in February this year in line with the terms of the offtake agreement, as announced in August 2019.

Under the off-take agreement concluded with AfriTin in August 2019, Thaisarco agreed to buy tin concentrate from the Uis mine for a period of a year. The agreement also includes an option to extend the off-take contract period beyond 12 months.

At the time of writing, a second shipment of 20 t of tin concentrate had been dispatched from the mine. The concentrate was trucked to the port of Walvis Bay in Namibia before being shipped to Thailand. The offtake agreement provides for an



Anthony Viljoen, CEO of AfriTin Mining Limited.

80% prepayment for each shipment upon bill of lading in Walvis Bay.

Anthony Viljoen, CEO of AfriTin Mining Limited, says the first shipment of tin concentrate and first revenues from Uis Tin Mine in three decades marks a significant milestone for the company and the Erongo region of Namibia.

“We will continue to deliver this operation as we ramp up production to nameplate of 60 t of tin concentrate per month. Combined with a JORC-compliant

AfriTin is developing the project in two phases, with phase one involving an estimated capital expenditure of £7-million on a processing plant capable of producing 60 t of tin concentrate per month.





mineral resource estimate of 95 539 t of contained Sn, we are well placed to advance the project to the goal of establishing an enlarged mining and processing facility,” says Viljoen.

Throughput ramp-up

The Uis Tin Mine project involves the redevelopment of the historic Uis hard rock mine. AfriTin is developing the project in two phases, with phase one involving an estimated capital expenditure of £7-million on a processing plant capable of producing 60 t of tin concentrate per month.

The phase one processing plant commenced partial operations in August 2019. Following the initial production of tin concentrate, processing plant throughput has increased by an average of 63%

month-on-month from 4 300 t of ore achieved in November 2019, to 5 800 t in December 2019, and to 11 400 t in January 2020.

Viljoen tells *Modern Mining* that the ramp-up programme continues to progress well since the January production levels and the company remains on course to achieve nameplate capacity by the end of the year as planned.

“We expect to continue ramping up plant production over the next six months to nameplate capacity of 45 000 t of ore to the plant and the production of 60 t of tin concentrate per month,” says Viljoen.

Ramp-up initiatives

The ramp-up programme is supported by a number of operational commissioning initiatives, including the transition from the current six-day plant roster to a continuous 24/7 operation, which was granted by the government at the beginning of March; and debottlenecking of and enhancements to the processing plant, in particular the fines tailings dewatering circuits which require additional capacity due to a higher than expected fines ratio in the Run Of Mine (ROM) feed.

Debottlenecking of the processing plant, Viljoen says, focuses on the dewatering of the grits tailings (less than 630 microns), dewatering of the slimes tailings (less than 45 microns) and expanding the feed capacity to the spiral plant.

“The modifications are progressing well and we expect them to be completed by April 2020,” says Viljoen. “When complete, we expect to more than double the throughput capacity of these circuits.”

Other ramp-up initiatives include expansion of the on-site laboratory to facilitate metal accounting and increased plant recovery; and the implementation of computerised maintenance management system to support targeted plant availability.

The phase one processing plant commenced partial operations in August 2019.





Modifications to the processing plant will be completed by April 2020.

With regards to the expansion of the on-site laboratory, Viljoen says this is currently in the design phase and will include the procurement of additional equipment, recruitment of the required human resources, installation of improved procedures and controls. This is expected to be completed by Q3 2020.

Project in detail

The Uis tin project comprises three mining licence areas, namely ML 134, ML 129 and ML 133. The current project activities are located in the ML 134 that is spread over 197 km², while the mining footprint is just 8 km². The site lies approximately 2 km away from the Uis town and 333 km away from Namibia's capital Windhoek.

Tin at the Uis deposit is hosted in pegmatites and the ore bodies are found to be up to 80 m-thick, along

1,6 km strike length. The mine is estimated to hold 71,54-million t of JORC-compliant measured, indicated and inferred resources as of September 2019.

The contained tin is estimated to be 95 539 t, while the contained tantalum and lithium oxide are estimated to be 6 091 t and 450 265 t, respectively.

The Uis tin deposit was discovered in 1911, and mining commenced in 1923. The mine was expanded after Imcor Tin, a wholly-owned subsidiary of the Iron and Steel Corporation of South Africa (Iskor), assumed ownership in 1958. It became the world's biggest hard-rock tin mine in 1980.

The mining operations were, however, ceased due to the fall in tin prices in 1990. AfriTin received environmental clearance for the mine redevelopment in August 2017 and started civil construction works for the phase one development in June 2018. Ore extraction was started in December 2018, while the construction of the phase one processing plant was completed in July 2019.

AfriTin Namibia holds 85% stake in the project, while the remaining 15% stake is held by The Small Miners of Uis (SMU), an enterprise owned by the Namibian Government.

The conventional open-pit mining method involving blast-load-haul operations is employed for the Uis tin mine. Mining is carried out in 10 m-high benches, while loading and hauling are performed using a fleet of excavators and dump trucks.

The phase one processing plant consists of a four-stage crushing circuit and a three-stage concentrating circuit. The concentrating circuit includes dense medium separation (DMS), fine gravity concentration and wet high-intensity magnetic separation (WHIMS) modules for the production of saleable tin and tantalum concentrates.

The phase one pilot processing plant is capable of processing 500 000 t of ore a year to produce 60 t of tin concentrates a month. In phase two expansion, the processing plant is planned to be scaled-up for 3-million t per annum throughput capacity.

Monitoring the situation

That the spread of Covid-19 (coronavirus) is hurting the global mining sector is no overstatement. As a major consumer of natural resources from the continent, the impact of China's economic engine shifting downward due to the coronavirus could have a deep impact on the mining sector in Africa.

However, Viljoen says there has been nothing to prompt change of plans for shipping thus far, but the company continues to monitor the situation closely. "We do, however, expect pricing volatility along with the rest of the commodity market," he says.

Viljoen expects the volatility to persist until there is some clarity around the vaccine for the Covid-19. "Once that shock has worked through the system," he says, "we expect a robust rebound as tin users catch up on lost production ground." ■

Key takeaways

- ❑ Uis Tin Mine concluded its maiden sale of tin concentrate in February this year
- ❑ Processing plant throughput has increased by an average of 63% month-on-month from 4 300 t of ore achieved in November 2019, to 5 800 t in December 2019, and to 11 400 t in January 2020
- ❑ The mine will ramp up plant production over the next six months to name-plate capacity of 45 000 t of ore to the plant and the production of 60 t of tin concentrate per month
- ❑ Debottlenecking of the processing plant focuses on the dewatering of the grits tailings (less than 630 microns), dewatering of the slimes tailings (less than 45 microns) and expanding the feed capacity to the spiral plant

KOMATSU



Built for the future of mining

We're proud of our rich past and together we are ready to take the mining industry where we've always been headed: **FORWARD.**

P&H



MONTABERT



www.mining.komatsu



Kim Schoepflin, CEO of Kwatani.

Discoursing TCO of vibrating screens

Large vibrating screens are a critical part of processing plants at mines. If not correctly engineered, the operating costs can become extremely high – to the detriment of mining operations already operating under severe cost pressures. What are the key design and engineering factors that affect total cost of ownership of vibrating screens? By Munesu Shoko.

Large vibrating screens play an important role in the processing of ore at mining operations. Traditionally, the focus has always been on the capital cost, but Kim Schoepflin, CEO of Kwatani, a leading South African vibrating screen manufacturer, reasons that like any other piece of capital equipment purchase, the cost of owning a vibrating screen should be the principal factor when it is procurement time.

But what are the key factors that affect total cost of ownership of these crucial pieces of equipment? “For me, cost of ownership entails five key parameters: capital cost, maintenance costs, equipment uptime, life of equipment and operating efficiency,” explains Schoepflin. However, she reasons that the

design and engineering of vibrating screens has a great bearing on these five factors. If not correctly engineered, the operating costs of a large vibrating screen can shoot up tremendously.

Knowing the exact type of machine that should be inserted in a plant, understanding the requested function and developing a machine that best suits these needs is important. Therefore, when vibrating screens and vibrating processes in general are concerned, it is important to deal with expert companies like Kwatani.

Leveraging 43 years of experience, with 15 000 units across 37 countries, Kwatani has over the years lived up to its “engineered for tonnage” philosophy, anchored by the drive to offer its customers the lowest total cost of ownership possible. “We believe that innovation and technology are the

A large Kwatani scalper screen loaded and secured, on its way to the end user.





most important pillars of our ‘engineered for tonnage’ philosophy,” she says.

Fit-for-purpose manufacturing

With uptime in mind, reliability of vibrating screens is key. Reliable vibrating screen designs are dependent on the proper marriage of the manufacturer’s

capabilities and the understanding of requirements of the design. It is for this reason that Kwatani doesn’t offer catalogue sales for its vibrating screens; every unit is customised to meet the unique operational requirements.

“The in-house design expertise gives us the ability to customise a piece of equipment to the needs at hand. Our knowledge base stems from a mechanical metallurgy expertise. We have to understand how our equipment integrates into the mine’s processes and how it impacts the upstream and downstream processes,” says Schoepflin.

She adds that Kwatani’s engineers and metallurgists engage the customer to understand what the customer is trying to achieve in terms of their application, what is the ore like and how it behaves, as well as where the vibrating screen will go, because more often these units are supplied on brownfields projects. “It’s not always new plants. New plants are few and far between. We see a lot of improvement projects, plant optimisation, increasing life of mine and brownfield expansions. So we need to understand where the equipment will fit in the existing infrastructure,” says Schoepflin.

“It’s about working through each case through the eyes of a consultant; analyse the condition of existing equipment, the customer’s requirements and the infrastructure. That incorporates the design with the most cost-effective solution,” says Schoepflin, adding that it is pointless to offer a screen that may give better processing efficiency, but not fitting into the existing infrastructure or requires massive plant modification.

She reasons that a plant modification can actually

A completed Kwatani scalper screen in the workshop at Kwatani hoisted and ready to be loaded.





Kwatani has seen mines gradually embrace the value of maintenance contracts to avoid costly downtime.

cost more than the price of a new screen. Therefore, there is need to consider where the screen will go in the existing plant setup, its impact on the existing infrastructure, for example, power requirements, available headroom, weight restrictions and existing shoots, among others.

The information is then disseminated into the mechanical design process where the equipment is designed with the application and existing infrastructure in mind. When designing, Kwatani considers many factors that affect the life of the screen, efficiency and performance. The aim is always to produce a durable, long-life screen that does the job properly.

“These factors have a massive effect on the total cost of ownership equation, and they have to be taken into account, while at the same time meeting the tonnage and process efficiency requirements. It is always important to design a solution that can give the most optimal output at the given infrastructure,” she adds.

Correct choices

Schoepflin also reasons that the choice of various components of the screen, depending on the application requirements, is important in designing and

manufacturing a screen that offers optimal cost of ownership. For example, the correct choice of isolators is significant. “The screen stands on an isolator and it’s an important factor when designing a vibrating screen. It needs to be sized according to the size of screen and type of building structure” says Schoepflin.

There are three basic isolators used in vibrating screens – coil spring, rubber buffer and a torsional spring. A coil spring typically gives the best isolation because its stiffness is linear across the stroke range. A rubber buffer, although non-linear, offers a better load handling and damping capacity. A torsional spring can be mounted on the support frame and that completely prevents sideways movements and keeps the machine in line and stable during start-up and stopping.

Starting and stopping of a vibrating screen needs to be carefully considered in the design process. In the tests done by Kwatani on a specific screen, a coil spring takes 50 seconds to stop, a rubber buffer stops at 21 seconds, while the torsional spring stops within 12 seconds. “For cost-effectiveness, if the machine needs to be stopped in a certain manner, we can adopt a hybrid approach because a torsional spring is a bit expensive. We can provide the required stability by combining a torsional spring and a coil spring to get the cost element in line – and this has a vast impact on the total cost of ownership,” says Schoepflin.

Another important parameter is the testing element. Every Kwatani unit is tested before it’s shipped and all units are commissioned by the company’s experienced and qualified technicians. This process ensures that the unit meets the design parameters that it was designed and fabricated for. “This is done to make sure that the unit meets the desired quality and robustness,” says Schoepflin, adding that in terms of quality, the OEM is one of the only 5% of local manufacturers of its size to be ISO9001:2015 certified.

Reiterating the company’s testing capabilities, Schoepflin makes special mention of the company’s variable speed drive that has been connected to the test bench with specialised monitoring software. This allows Kwatani to experiment with the gearbox at different speeds. “This allows us to be more accurate when specifying the required drive for the vibrating screen or feeder, so that we can specify the right size and capacity in a more scientific way,” she says.

“For instance, we may find that a smaller drive can provide the motion required without necessarily needing a larger drive, allowing the customer to save on energy costs. We are able to size the drive to the need, because often a larger drive means bigger upfront costs, and higher energy consumption.”

Uptime and maintenance costs

Schoepflin says in a sales situation, often customers

Key takeaways

- ❑ The design and engineering of a vibrating screen has a great bearing on total cost of ownership
- ❑ Knowing the exact type of machine that should be inserted in a plant, understanding the requested function and developing a machine that best suits these needs is very important
- ❑ Reliable vibrating screen designs are dependent on the proper marriage of the manufacturer’s capabilities and the understanding of requirements of the design
- ❑ The choice of various components of the screen, depending on application requirements, is important in designing and manufacturing a vibrating screen that offers optimal cost of ownership



Kwatani has customised contracts in place to service its machines.

opt for the cheapest unit in terms of capital cost. However, in most cases the cheapest vibrating screen tends to be the most costly in the end because of lack of required efficiency, breakdowns, maintenance costs and related downtime.

“The fact of the matter is that customers need to compare the actual efficiency of the units, lifetime costs, downtime and how much and difficult the maintenance is. With Kwatani screens, only wear parts and drive components are maintenance items. Typically a steel part is not a maintenance item because it is built to last,” she says.

“One of the most important things in cost of ownership, especially considering the importance of a screen on a mine, is plant uptime,” says Schoepflin, adding that regular, cost-effective maintenance is essential in ensuring plant uptime. “Regular service is probably one of the most important elements in achieving optimal cost of ownership.”

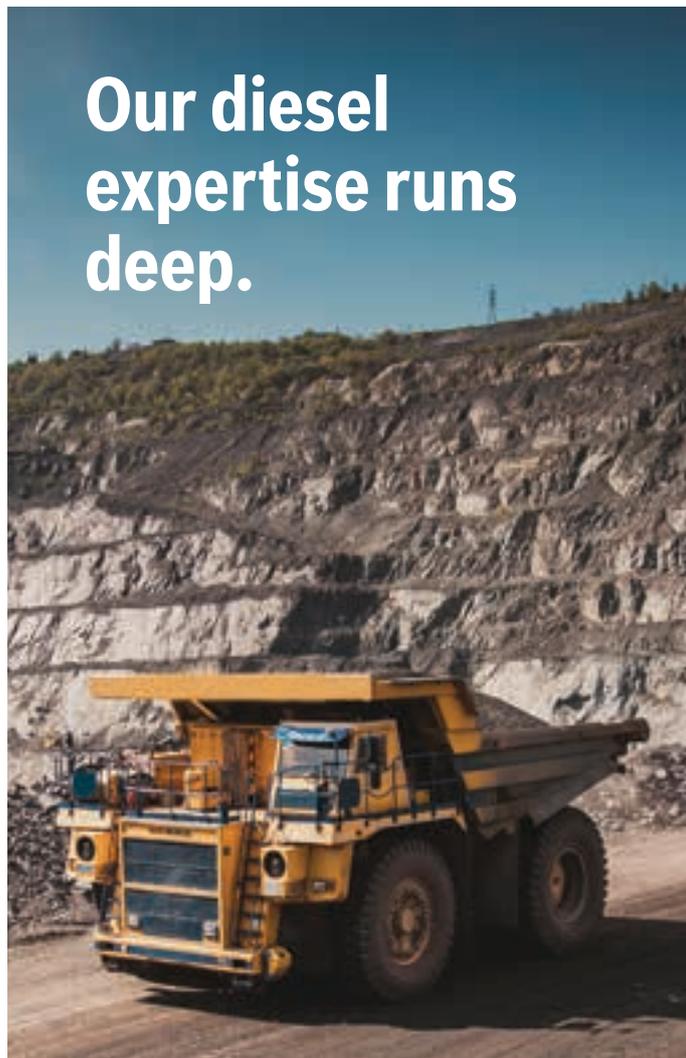
Schoepflin reasons that the industry is currently suffering from a lack of skills. To help close this gap for its customers, Kwatani probably has the highest number of tertiary qualified staff of any OEM of its class. In fact, the company has a building that houses highly-qualified engineers only.

When it comes to maintenance, Kwatani offers customised service level agreements. “We offer customised service level agreements because not every customer is the same. In some instances we have to continuously audit the screens and maintain them ourselves. In other cases we can train the customer’s workforce to oversee maintenance,” she says.

“Our service programmes are not catalogued – it depends on the individual needs of the mine, which is an important factor. Together with the design, quality, efficiency and fitting the infrastructure, we find the service element being an important parameter in the cost of ownership equation,” says Schoepflin.

Kwatani also offers a cost per tonne operational basis. “We also have a cost per tonne agreement, where instead of getting paid for our screens, we get paid on a cost per tonne basis. This type of contractual relationship aligns the interests of both the mine and supplier. This formula of sharing tonnage and risk positions Kwatani as a provider of value,” she says.

To help customers extend the lifetime of their machinery, Kwatani also offers refurbishment programmes. “We refurbish our large screens. They lend themselves to refurbishment. When they come for refurbishment, we also look at the wear patterns and advise the customer on possible changes that can prolong the life of their screens,” concludes Schoepflin. ■



Our diesel expertise runs deep.

Bosch Diesel Service specialises in providing advanced diesel injection system components, as well as the repair and servicing of diesel fuel injection systems in Africa’s ever-growing mining industry.

We’re equipped with state-of-the-art diagnostic software, fuel injection testing and calibration equipment. Our expert services include repairing, overhauling and testing of all mechanical and electronic units, pumps and hydraulically actuated injectors. All of our work is done in-house, and our skilled technicians follow strict repair procedures in accordance with OEM standards.

Book a professional diesel repair today!
www.boschdiesel.co.za





Andrew Swart, Deloitte Global Mining and Metals leader.

Exploring global mining trends affecting African mines

Deloitte Global's mining report, *Tracking the Trends*, explores key trends facing mining companies in their quest for improved productivity, financial discipline, operational excellence and sustainable growth. Speaking to *Munesu Shoko* at Mining Indaba, Andrew Swart, Deloitte Global Mining and Metals leader, highlighted some of the key trends that are relevant to the African context and their implications to the local mining fraternity.

The business of mining has never been easy, and as South Africa's President Cyril Ramaphosa once put it, "mining is an industry that is not for sissies". As an industry whose fate is tied to the cyclical nature of the commodity sector, mining companies often feel the pinch of sustained dips in the market, and only feel the relief when prospects pick up again. Although mining companies can't entirely disentangle themselves from this cycle of boom and bust, increasing productivity and seeking ways to reduce their costs can provide some shield against the downward cycles of the market.

In its *Tracking the Trends* report, Deloitte notes that in the face of these challenges, mining companies have continued to make strides in recent years. Many are embracing intelligent mining through investments in automation and technology modernisation. Some companies are addressing climate change and investor concerns through decarbonisation and uncovering of new opportunities through joint ventures.

Some mining companies are also revisiting their talent and diversity strategies, working to strengthen relationships with local communities, and seeking ways to create value beyond compliance:

Increasing productivity and seeking ways to reduce costs can provide mines with some shield against the downward cycles of the market.

deliver socio-economic impact while simultaneously fostering operational efficiency and business competitiveness.

Thanks to these efforts, many mining companies have been able to streamline their portfolios and create more robust balance sheets, putting them in a stronger position than in the last cycle to weather a potential downturn. However, there is still much work to be done as miners grapple with a host of external challenges, from an uncertain geopolitical landscape and technological disruption to increased demands from both communities and investors.

Deloitte's 12th annual edition report features insights, strategies and forward-thinking ideas packaged as 10 major trends currently affecting the global mining industry. In a one-on-one with *Modern Mining* at the Investing in Africa Mining Indaba 2020, which took place in Cape Town from 3-6 February, Andrew Swart, Deloitte Global Mining and Metals leader, highlighted the five key trends that speak to the African mining sector at the moment and their implications to the continental mining market.

The rise of the social investor

The mining industry continues to face multiple complex challenges, and one of them is the increasing – and increasingly divergent – demands from investors, ecosystem partners, workers and impacted communities.

Swart says the drive towards socially conscious profit is no longer limited to environmental activists. Mining investors, he says, are demanding greater transparency around the true social, economic and environmental impact of mines. To help regain the investor trust, the Deloitte report suggests that "miners should embrace a commitment to value beyond compliance".

The report finds that investors have in recent years become more serious about mining company commitments to environmental remediation, energy efficiency, diversity, health & safety, as well as fair treatment of community stakeholders and employees. The trend toward what is termed "responsible investing" has seen individual investors and institutional asset



managers alike integrating ESG principles into their decision-making.

Particular attention is being placed on how companies are dealing with issues such as climate change, water management, health & safety and communities – all important aspects of mining operations.

“Overall, the pressure on mining companies has increased dramatically. From an investor point of view, there is about US\$25-35-trillion of global investor funding attached to the ESG principles, which means that if a mine doesn’t comply with these stipulations, they get excluded from that capital base,” explains Swart.

From a commodity perspective, Swart believes this has a significant impact on most South African and African operations at large where significant of baseload in the next coming years will still come from coal. He reasons that mining companies will be forced to diversify their energy mix, but the reality is that a country like South Africa “won’t just flip a switch and leave coal just like that”. He also reasons that there is also a big job dependency in coal mining, not just people who are directly employed, but also companies upstream and downstream of the sector.

However, it’s important to drive home the point that mining companies that don’t prioritise the SEG values may find themselves shunned by an investment community intensely focused on delivering both financial and social returns. The report suggests that companies that succeed will be the ones who lay a proper foundation today by establishing clear strategic goals and aligning operations to achieve those goals through financial discipline and the mitigation of risk.

To respond effectively to investor expectations, the report suggests that mining companies will likely need to “move away from a mindset that relegates corporate social responsibility to a discrete function”. Instead, they should consider revising their business models to tackle some of society’s biggest issues – from stakeholder engagement and creating a regulatory dividend to investing in renewable energy, getting proactive about the low-carbon economy, localising procurement, strengthening diversity and inclusion, respecting human rights and fostering cross-industry collaboration.

On the road towards intelligent mining

Digital technologies, artificial intelligence and analytics solutions have the potential to transform the mining industry. While many companies have launched digital programmes, companies often are not deriving the value they originally hoped for. A retrospective look at this trend was taken in Deloitte’s *Tracking the Trends* report, summarising key lessons learned and where companies need to focus going forward.



It has been about two to three years since many mining companies started down their digital journeys in earnest. Looking back over this time, Swart says “we have seen some firms making strong advances but others struggling to realise the full return on their intelligent mining investments”.

Now may be a good time to take stock and review some of the lessons learned so that companies can optimise their digital journeys and unlock sustainable value.

The report states that technology is not the silver bullet. Many have assumed that technology will be the solution to a particular problem. People are also critical, but very often companies need to fix the underlying process. Without that underlying process redesign, technology can become a bandage, trapping the underlying value to the organisation.

“Over the past three years, more mining companies have started to digitise. Some have seen value in their investments, while others haven’t. One of the reasons for failed digitisation regimes is that more often companies are focused on technology and not the people,” says Swart.

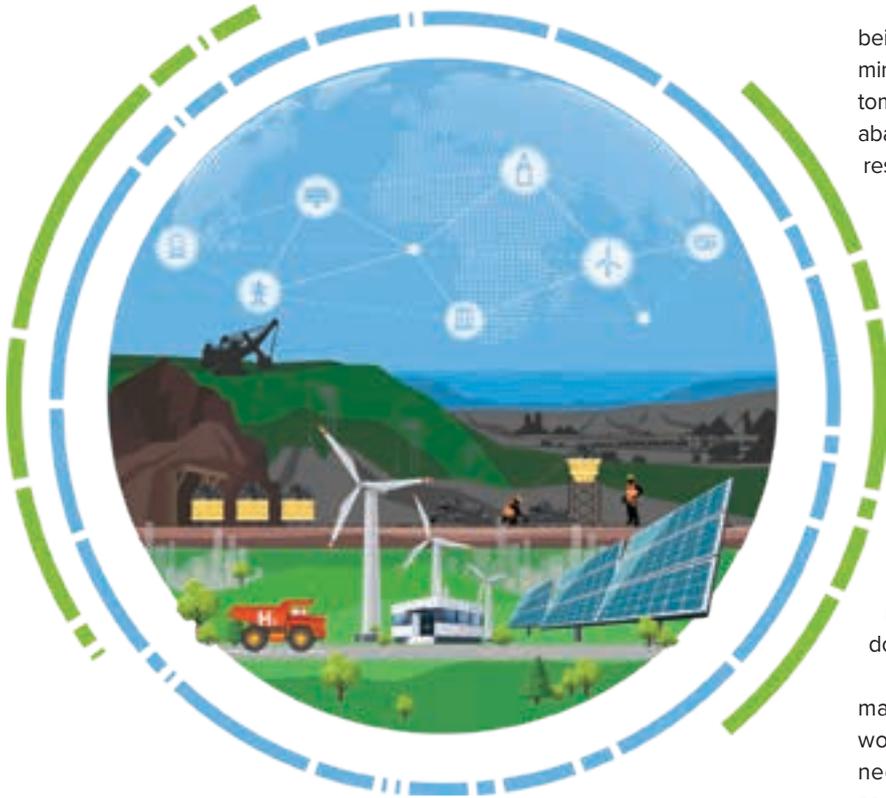
Digitisation is not a technology implementation, he says. “It’s about changing the behaviour of people because you are putting information in their hands and how they use that information to drive different behaviour is important in the success of the overall digitisation programme.”

Intersection of talent and community

To capitalise on the digital revolution, the *Tracking the Trends* report suggests that mining companies need a thorough understanding of the impact that digital transformation can have on work, the workforce and the workplace, and in turn on the communities in which they operate.

Digitalisation, automation and remote work models, including remote operation centres, could potentially disrupt up to 60 or 70% of mine site roles – an impact that will likely be felt most across entry-level roles, which often includes diverse talent,

Many mining companies are embracing intelligent mining through investments in automation and technology modernisation.



Many mining companies have begun to make strides toward decarbonisation.

comprising indigenous talent from local communities in which the mines operate.

While many new roles are also created through Industry 4.0, the question is whether these new roles are at the same level and location as the previous roles. As companies drive the use of automation and digital technologies to enhance operations, there will be key choices to make. These will likely include the extent to which they disrupt current roles and require different talent models where people and machines work together, and the enhanced use of remote operation centres, all of which have direct implications for local employment.

Swart says as mines automate in the next few years, they will need different talent to what they have today. In many parts of the world, of which South Africa is no exception, the more you automate, the more you potentially impact jobs, but it's a choice mining companies would need to make. It's a choice, however, they cannot do in isolation, or independent of the community," says Swart.

He reasons that this has to be done with a thoughtful view of what the implications are on the community. "There is an expectation that mining companies have to drive more shared value with the communities and if it's not being manifested through jobs, it has to be manifested in other ways so that these communities are better off for having that particular mine in their community," he says.

Preparing for the downturn

Commodity prices rise and fall in tune with economic trends, which are currently foreshadowing a potential downturn or lower growth environment. To avoid

being blindsided, the report suggests five bold plays mining companies can make to prepare: future-proof tomorrow; continue to innovate; redesign rather than abandon; review business relationships; and acquire resources.

"If miners are to learn from history, the time is ripe to begin shielding against a downturn," says Swart. "Companies with commodity portfolios that may continue to soften should think about taking proactive action so they can emerge from any potential downturn more robust and in a better position to take advantage of the cycle."

Swart adds that "we are going into a period of slower global growth" and the forecast for South Africa going into next year is less than a percentage point of the growth of the GDP. That's going to put a squeeze on mining companies. How do mining companies prepare for the downturn and a low-growth economy?

"Unfortunately, the natural reaction to this by many mining companies is to just cut costs. We would argue that if you have to cut costs, mines need to be thoughtful of how to do it. What we see over and over again is that mining companies do implement cost cutting measures and within 18 months most of that cost comes back into the system because operations really didn't think of other ways they could approach the downturn in the first place," says Swart.

The path to decarbonisation

Driven both by pressure from stakeholders and the strengthening business case for decarbonisation, mining companies are taking steps to reduce their greenhouse gas emissions. While the path won't be easy, the commitment is necessary if miners are to contribute to the mitigation of risks associated with climate change and at the same time create value for customers, investors, governments, communities and employees.

Swart says decarbonisation is a broader global trend, which is also topical here in South Africa and Africa at large. Recognising these realities, many mining companies have begun to make strides toward decarbonisation.

Since 2008, for instance, Rio Tinto has reduced its Scope 1 and 2 emissions (those generated within its operations) by 24%, and the company recently committed to substantial decarbonisation by 2050. For its part, BHP has set a goal of achieving net-zero operational GHG emissions by mid-century and has been making news for its commitment to work with customers and suppliers to help reduce Scope 3 emissions, which are those generated along the value chain.

To turn this vision into reality, however, companies could need to transform the way they source, use, store, consume and think about energy. ■

Whatever your rig, there's a Galison bit that fits.

Every rig deserves Galison bits.



Our quality mechanised drilling consumables are designed to be compatible with all major brands of rig. Now you can choose the best extension drill rods, threaded drill bits, shanks and couplers to fit your rig as well as your budget.

For our full product listing, visit www.galison.co.za, or call us on +27 (0)57 355 3331
JHB +27 (0)11 475 4838 | Rustenburg +27 (0)14 538 0933 | Zambia +260 212 218593


GALISON
DRILLING

www.galison.co.za

Proposed amendments to the capital expenditure regime for contract miners

Following the Benhaus Mining case, the Annexure C proposals to the 2020/21 Budget have recommended that National Treasury considers the challenges around the tax treatment of contract miners in further detail with possible amendments to the capital expenditure regime contained in section 36(11) of the Income Tax Act. What is the point of contention here and what will be the possible considerations as far as amendments are concerned? *Munesu Shoko* speaks to several experts for further clarity.

The SCA ruling in the Benhaus case held that contract miners do in fact conduct 'mining operations' and 'mining' as defined in the Income Tax Act and were therefore, like mining companies, entitled to claim deductions of the full amount of capital expenditure on mining equipment in the tax year in which it is incurred.

Mining by its nature requires large initial capital outlays and in recognition of this the South African Income Tax Act regime provides for an accelerated deduction of such capital expenditure by miners. The Income Tax Act No 52 of 1968 (ITA) provides for a special regime for taxpayers engaged in mining operations. The reasoning behind the special treatment is that the establishment of a mine is an expensive and lengthy process, with long lead times until any profit is seen by the mining company.

In the Benhaus Mining (Pty) Ltd vs Commissioner

for the South African Revenue Service (165/2018) [2019] ZASCA 1 (Benhaus Case), it was held that the special regime be extended to contract miners who engage in mining operations, under a contract with the holder of a mining right, and who earn a determinable fee under such agreement.

The judgement arguably changed the tax landscape for contract miners. The court found that a contract miner would be entitled to claim the deductions and benefits conferred by sections 15(a) and 36(7C) of the ITA in respect of mining capital expenditure to a mining contractor. This dispensation was



previously thought to be reserved only for mining taxpayers directly deriving income from the sale of extracted minerals.

Brief background

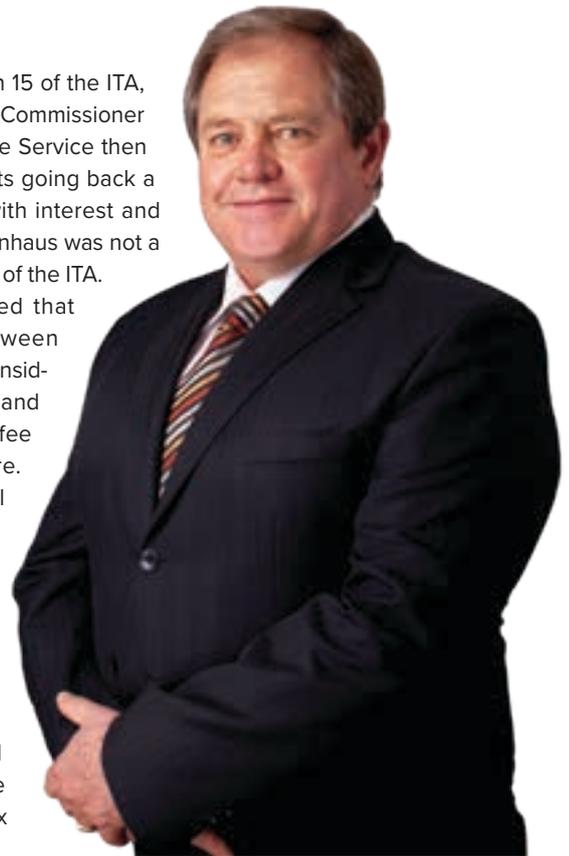
Allan Reid, director – corporate, commercial and head of mining at Cliffe Dekker Hofmeyr, explains that Section 36(7c) of ITA provides a special exemption to miners, which gives them the right to deduct the full amount of capital expenditure actually incurred in any tax year from their income, instead of having to depreciate the capital assets over time, as would be the case with other industries.

“Mining by its nature requires large, risky initial capital outlays where it may be many years before the mine goes into production and the miner can derive income from its investment. This accelerated depreciation or redemption allowance was intended to incentivise miners to enter into the mining industry to exploit South Africa’s vast mineral reserves,” says Reid.

Like many other contract miners, Benhaus Mining entered into contracts with third-parties that held mining rights to render various mining related services to them for a predetermined fee. Benhaus deducted its full capital expenditure from the income

it received in terms of section 15 of the ITA, read with section 36(7c). The Commissioner for the South African Revenue Service then issued additional assessments going back a number of years, together with interest and penalties on the basis that Benhaus was not a mining company for purposes of the ITA.

The Commissioner argued that there was a difference between mining operations that take considerable time to earn income, and contract miners who earn a fee as soon as they mine the ore. The Supreme Court of Appeal (SCA) in the Benhaus case held that contract miners do in fact conduct ‘mining operations’ and ‘mining’ as defined in the Income Tax Act and were therefore, like mining companies, entitled to claim deductions of the full amount of capital expenditure on mining equipment in the tax year in which it is incurred.



Allan Reid, director – corporate, commercial and head of mining at Cliffe Dekker Hofmeyr.

Need for clarity

However, following the Benhaus Case, there has been uncertainty regarding the ability of contract miners to access the benefits offered to mining companies, and whether such contract miners are permitted to claim the capital expenditure allowances offered to mining companies.

It is for this reason that Annexure C proposals set out in the 2020/21 Budget have recommended that National Treasury considers challenges in further detail with possible amendments to the capital expenditure regime contained in 36(11) of the Income Tax Act.

Louis Botha, senior associate – tax & exchange control at Cliffe Dekker Hofmeyr, tells *Modern Mining* that in terms of Annexure C of the 2020 Budget Review, the point of contention is whether a contract miner, who excavates for a fee, and the actual mineral rights holder, as principal, should both qualify for the accelerated capital expenditure allowance provided for under section 36 of the ITA.

“Prior to the SCA’s judgment in the Benhaus Mining matter, which was handed down in 2019, only the mineral



Louis Botha, senior associate – tax & exchange control at Cliffe Dekker Hofmeyr.



TRIO HAS THE ANSWER

Whether you need crushers, screens, feeders, washers, conveyors, or all of the above, the Trio® range has you covered. We're not here to sell you one piece of the puzzle, our highly skilled team of Weir Minerals engineers look at your entire operation and decide how the Trio® range can help. It's everything you need to run a Construction Aggregates plant, all in one place.

Visit www.theanswer.weir to learn how the Trio® range helped Pattison Sand.

Copyright © 2016, Weir Minerals Australia Limited. All rights reserved. TRIO is a trademark and/or registered trademark of Weir Minerals Australia Ltd and Weir Group Africa (P) Ltd. WEIR and the WEIR Logo are trademarks and/or registered trademarks of Weir Engineering Services Ltd.

WEIR

TRIO®

Minerals

www.global.weir

www.weirafricastore.com

rights holder was entitled to claim the allowance. The SCA overturned the Tax Court's judgment in the Benhaus case. The Tax Court had, in a separate judgment handed down prior to the Benhaus Mining judgment, decided that the contract miner could not claim the capital expenditure allowance," explains Botha.

Louis van Manen, tax director at BDO in South Africa, says the contention is that mining companies are generally not limited to a fixed annual percentage or write off period of capital expenditure for tax purposes. The deduction thereof is rather limited to taxable income on an annual basis.

"In contrast, mining contractors in general were deducting capital expenditure at legislated or SARS prescribed fixed percentages, irrespective of taxable income levels. Contract miners were accordingly taxed like most other non-mining companies," explains Van Manen.

With mining companies having to invest significantly pre-production, Van Manen says the mining tax regime ensured they would not be burdened with tax cash outflows once they entered the production phase but only once their capital investments started paying off.

"We hope that the amendments will bring clarity on who will be able to apply for the mining tax regime," says Van Manen.

According to Adèle de Jager, executive, tax at

Bowmans, an amendment is likely to take the form of the current mining tax dispensations (to which mining companies are entitled) to be extended to contract miners, with more clarity as to whether the contract mining industry will be able to rely on the tax relief and benefits offered in section 36(11) of the Income Tax Act. "The Benhaus case confirmed the uncertainty for the contract mining industry and the fact that taxpayers need certainty," says De Jager.

Possible considerations

What will be the possible considerations for the proposed amendments? Are the amendments likely to bring further joy to the contract mining fraternity or will they dampen the short-lived excitement?

"In my view, the amendments are likely to be positive for the contract mining industry but it will require careful drafting and a proper consultation process before enactment. I would also think that not only the provisions of section 36(11) should be considered, but those relevant to mining rehabilitation may also require consideration," says De Jager.



Louis van Manen, tax director at BDO in South Africa.

Following the Benhaus case, there has been uncertainty regarding the ability of contract miners to access the benefits offered to mining companies.



feature



Adèle de Jager, executive, tax at Bowmans.

A contract miner-owned Volvo excavator extracting chromite ore in Madagascar.

Van Manen is of the view that as is clearly evident from the lengths at which SARS contested the matter with Benhaus, it was never SARS' or Treasury's intention for contract miners to benefit equally in terms of capital expenditure deductions.

"As a contract miner is able, in theory, to earn contract fee income from day one, as opposed to having to go through a lengthy investment phase like most of their mining company clients – they arguably don't need an uncapped capital expenditure deduction," says Van Manen.

As a result, adds Van Manen, and with the country's tax revenue under severe pressure, "we don't foresee any amend-

ments confirming the application of the mining tax regime to contract miners. We foresee amendments limiting the application of the regime to those extracting minerals for their own account".

According to Botha, Annexure C states that the



provisions dealing with the capital expenditure allowance will be "reviewed". No indication is given as to how National Treasury will propose changing the legislation, he says.

"The next step in the current legislative cycle is that National Treasury will release draft legislation sometime between June and August this year, in which it will indicate how it proposes to amend the provisions dealing with the capital expenditure allowance. The public will then have an opportunity to comment on the draft legislation. The draft legislation will also deal with other tax proposals mentioned in the 2020 Budget Review," says Botha.

Botha notes that the Davis Tax Committee has made proposals regarding South Africa's mining tax regime, including on the capital allowance issue, but it remains to be seen whether National Treasury will follow and implement its proposals.

Van Manen explains that the Davis committee in 2016 proposed to abolish the 100% capital allowance for mining companies with a proposal to replace it with the 40/20/20/20 regime that currently applies to manufacturing companies, in a move that they say will "level the playing fields".

"With the world economy stagnating and a drop in demand for commodities, we would be surprised if mining companies are further hampered by early cash tax obligations. We would only expect such recommendations to be implemented at a later stage," says Van Manen.

Key takeaways

- ❑ Section 36(7c) of the Income Tax Act provides a special dispensation to miners, which affords them the right to deduct the full amount of capital expenditure actually incurred in any tax year from their income, instead of having to depreciate the capital assets over time, as would be the case with other industries
- ❑ In the *Benhaus Mining (Pty) Ltd v Commissioner for the South African Revenue Service (165/2018) [2019] ZASCA 1 (Benhaus Case)*, it was held that this special regime be extended to contract miners who engage in mining operations, under a contract with the holder of a mining right, and who earn a determinable fee under such agreement
- ❑ Annexure C proposals set out in the 2020/21 Budget have recommended that National Treasury considers challenges in further detail with possible amendments to the capital expenditure regime contained in 36(11) of the Income Tax Act
- ❑ The Budget proposes a review of the definition of the rules relating to the redemption allowance in the Income Tax Act



Botha adds that companies in the mining sector should note that aside from the proposals regarding the capital expenditure allowance, the Budget Review also proposes changes regarding the tax administration issues applicable to South Africa's mining royalty tax legislation.

In conclusion, De Jager says careful drafting and consultation with industry will need to take place. Furthermore, the impact of any amendments to section 36(11) will need to be considered in the context

of the remainder of the sections of the Income Tax Act that deals with the tax treatment for mining companies, for example, rehabilitation.

"In addition, we will need to see whether amendments could be made to the Mineral and Petroleum Resources Royalty Administration Act in respect of the liability for Royalty Tax. Generally, the person who extracts and recovers the mineral resource is liable for the registration and payment of mineral royalty," concludes De Jager. ■

The Benhaus judgement changed the tax landscape for contract miners.

feature



#mybooyco

www.booyco-electronics.co.za





Helena Hedblom, newly-appointed president and CEO of Epiroc.

Innovation – A key priority for new Epiroc boss

As Helena Hedblom takes the reins as Epiroc’s president and CEO, innovation will be one of her key priorities. This, she told *Munesu Shoko* at Mining Indaba, is in line with rapid advances in technological innovation, which are having a fundamental impact on the mining sector.

Helena Hedblom assumed her new duties as president and CEO of Epiroc at the start of this month. She takes over from Per Lindberg, who left his position after successfully establishing Epiroc as a listed company.

To succeed Lindberg and further grow and develop the company, Epiroc’s board of directors looked no further than its former senior executive vice president Mining and Infrastructure, Hedblom, who brings to the table a strong business focus, in-depth knowledge of the business and is an appreciated leader who “breathes and lives the Epiroc values”.

In her previous role as head of Mining and Infrastructure, Hedblom – who also sits on the boards of IPCO AB and the Swedish Association of Mines, Mineral and Metal Producers (Svemin) – grew the business with increased earnings and a focus on strengthening productivity, safety and efficiency for customers.

Speaking to *Modern Mining*, Hedblom says the main purpose of establishing Epiroc as a separate entity from Atlas Copco back in 2018 was to create a concentrated focus on the mining and civil industries, putting the company in good stead to further grow its business in these sectors. “We felt that the mining business would be better off in a separate company with a focused team and board,” she says.

During the first few years of its establishment, Hedblom feels that Epiroc has shown “that we are a fast growing company, and very ambitious when it comes to innovation”. In her new role, she will further prioritise innovation, among other key focus areas such as aftermarket, sustainability and safety.

She is of the view that rapid advances in technological innovation, through automation, digitalisation and electrification, are having a fundamental impact on the mining sector. “I will place a strong focus on innovation, especially in light of the three technology shifts – electrification, automation and digitalisation – as these will have a great bearing on how we can continue to make a difference for our customers and the environment,” she says.

“Innovation will be important, as it has always been. It’s in our DNA, and defines everything that we do at Epiroc,” she says, adding that the company

will always strive to understand what’s next, “putting concerted efforts in improving our offering and products for the long term”.

She notes that the company has been working on electrification for more than 10 years now. At the beginning, the cell technology was not even available, but Epiroc kept on pushing and launched its first generation of electric equipment in 2016. This, she says, was a result of constant learning, and she feels that the efforts are paying off – testimony to this is the 2018 launch of the company’s second generation electric equipment range.

“With continued innovation, we can be part of the mining industry’s transformation and offer a new standard for the industry when it comes to environmentally-friendly production,” says Hedblom.

Other focus areas

Another key area of focus that’s “extremely important” to Hedblom is aftermarket. This, she says, is where Epiroc can make a big difference for its customers. “It’s important that we make sure that machines are kept running to maximise uptime for our customers. This can be achieved by driving excellence in our parts and consumables supply chains,” she says.

A strong aftermarket regime during the lifetime of the equipment, according to Hedblom, allows the original equipment manufacturer to “get closer to its customers”. “This is the time we also get ideas on how to improve our offering, based on the constant feedback from customers,” she says, adding that aftermarket will also be a key enabler in Epiroc’s quest for further growth.

The third aspect of focus is sustainability. She is of the view that sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Epiroc has, over the years, been working on this and is ready to take the lead and drive sustainability in the mining industry.

“We need to think outside the box on how we can reduce our footprint, from our products, operations and the way we transport our goods. We are a large player in the industry and I believe we can make a

“With continued innovation, we can be part of the mining industry’s transformation and offer a new standard for the industry when it comes to environmentally-friendly production.”



difference,” she says, adding that this is important for the mining industry at large, and “is the only way we can attract the young generation into this sector”. “Sustainability, in every aspect, is close to my heart. We already have a lot of good things going on, but I think we could increase our ambition.”

Safety is another key aspect of focus for Hedblom. She says Epiroc is currently rolling out a stringent safety programme across the world, and further focus will be placed on risk reduction. This, she says, can be achieved by prioritising serviceability of machines to reduce the risk for service personnel, for example.

Technology shift

Commenting on the three technological shifts – digitalisation, automation and electrification – Hedblom says these are important in the quest to transform the mining industry.

She says digitalisation creates transparency, and allows mine managers to understand what’s happening in their operations, in real time. “For me, digitalisation is a low hanging fruit when it comes to productivity. It allows mine managers to identify bottlenecks in their processes and quickly deal with issues to optimise productivity. I see digitalisation as the lead platform in the transformation agenda of the mining industry. That’s where the biggest opportunity is from a productivity perspective,” she says, adding that “there is a lot of untapped potential” in that regard.

Automation, she says, gives mines the opportunity to improve safety, in line with the industry’s drive towards Zero Harm. She believes that automation represents a fundamental shift in both potential safety and productivity outcomes. She says a lot of processes in the mining sector could be automated, thus alleviating people’s exposure to dangerous and risky working areas.

Commenting on electrification, Hedblom says the availability of battery-operated machines in the mining sector can lower mines’ costs and promote a healthier work environment. For example, electrification can reduce ventilation costs significantly in

underground mines, she says. “Through electrification, we at Epiroc want to help our customers boost productivity, enhance safety and cut emissions – all while lowering the total cost of operation,” she says.

African market

Hedblom stresses the significance of the African market to Epiroc, which she says is “important as a market and a supplier base”. To drive this point home, she notes that the company has in the past two years made some important acquisitions in South Africa.

In early 2018, Epiroc acquired Renegade Drilling Suppliers, a South African manufacturer and distributor of drilling consumables. The company manufactures and distributes mining exploration drilling consumables, such as drill rods, in-the-hole tools and diamond drill bits.

This was followed by the acquisition of New Concept Mining, a South African manufacturer of rock reinforcement products for underground mining, in April 2019. New Concept manufactures a comprehensive range of underground mining roof support products, rock monitoring systems and related accessories. Hedblom says this was an important acquisition for Epiroc, and the company is now taking these products to the rest of the world.

“We are also building a competence centre for our rock bolting business at New Concept Mining to further capacitate this business,” she says.

“These were two important additions to Epiroc that we are happy to have on board. Hopefully we can continue to build on that footprint to strengthen our business in Africa, which is definitely a high-prospect region for years to come,” concludes Hedblom. ■

In November 2018, Epiroc unveiled its new generation battery-driven machines as part of its target to offer a complete fleet of underground equipment as battery electric versions by 2025.

Talking point

“I will place a strong focus on innovation, especially in light of the three technology shifts – electrification, automation and digitalisation – as these will have a great bearing on how we can continue to make a difference for our customers and the environment.”

More hopeful times for mining in 2020, but plenty of uncertainty

There is considerable uncertainty that plagues the global economy going into 2020, but times are looking better for the mining sector this year and next. By **Joe Keenan, MD of BME.**



Joe Keenan, MD of BME.

Mining is a difficult business at the best of times, with a terrifying cyclical and very little predictability. Miners, it is said, are among the world's optimists, so it is always important to recognise the good signs in the sector. At the moment, these include rising capital expenditure by mining companies, and better global exploration spend.

The world's 20 leading mining companies will reportedly spend US\$60-billion in capex in 2019, increasing from just over US\$50-billion in 2018. This followed an average annual decline in capex spending of almost 17% from 2013 to 2017.

The other important indicator – global mineral exploration spend – increased by about 20% in 2018 and continued during 2019. The leading country destinations in 2018 included Canada, Australia, the United States, Chile and Peru. Africa's leading exploration target was the Democratic Republic of

Congo, attracting 2% of the global budget – and 15% of Africa's total.

Uneven spread

These trends certainly underpin a more encouraging outlook for the sector than we have seen in some time.

In looking ahead to 2020, though, it is clear that the anticipated growth in mining will not be evenly spread. It is likely to be specific to certain commodities, and to certain countries. This is a function of more geo-political instability, not just in Africa but extending to the world's leading players.

The trade war between the US and China has unsettled the markets and contributed to commodity price volatility. More interest than usual will be on the upcoming elections in the United States in 2020, as this will no doubt have a bearing on mining's fortunes. A number of countries in West Africa continue to attract mining projects, while security concerns in others have driven off any interest in mining.

Battery technology will also affect demand for battery minerals like lithium and cobalt. However, do not assume the demand will be a one-way bet; it is still uncertain which minerals will be favoured, as the technology is still developing.

In South Africa there are many good reasons to

hope that the mining business will be looking up next year. Industry and government are on track for better collaboration, although real progress will be built on local firms investing more, which will encourage the real game changer: foreign direct investment.

Key risks

Let's not forget the elephant in the room. For the second year in a row, consulting firm EY has ranked the social license to operate – and the disruption arising from not having it – as global mining's number one risk. An extended period of elections and government changes has meant political uncertainty and volatility in the commodity markets, they argue. There is also more scrutiny of mining from end-consumers, who demand a transparent and ethical supply chain. As complex and difficult as it is to manage the social licence issue, failure to do so is becoming increasingly fatal in the mining space.

EY's second risk is also worth noting, as it has catapulted up from seventh position last year: the future of the mining sector's workforce. This is a reflection of the growing impact of digital and technological innovation in the sector. It is grappling with what its future workforce might look like, and wondering where the necessary skills are best procured.

Innovation has the potential to improve productivity, safety and environmental management in mining, but the skills to drive it come at a cost – in terms of both time and money. Will they be built up from the inside, or will they be bought – and are they affordable – on open market?

These are among the many questions facing decision-makers as we prepare for another year in the demanding but essential business of extracting minerals. ■

The trade war between the US and China has unsettled the markets and contributed to commodity price volatility. More interest than usual will be on the upcoming elections in the United States in 2020, as this will no doubt have a bearing on mining's fortunes.

The impact of Covid-19 on the energy and mining sectors in Africa



Kieran Whyte, partner and head of the energy, mining and infrastructure practice at Baker McKenzie Johannesburg.

The Coronavirus (Covid-19) has resulted in mass production shutdowns and supply chain disruptions due to port closures in China, causing global ripple effects across all economic sectors in a rare ‘twin supply-demand shock’. By *Kieran Whyte*, partner and head of the energy, mining and infrastructure practice at Baker McKenzie Johannesburg.

With South Africa seeing a soaring number of cases of Covid-19, Africa is beginning to feel its full impact and plans to control and manage the humanitarian challenges of the virus are underway across the continent. Economically, the effects have already been felt – demand for Africa’s raw materials and commodities in China has declined and Africa’s access to industrial components and manufactured goods from the region has been hampered. This is causing further uncertainty in a continent already grappling with widespread geopolitical and economic instability.

The number of cases is reportedly slowing down in China, increasing expectations that it will eventually reach a plateau and be brought under control. However, in early March the Organisation for Economic Cooperation and Development noted that “annual global GDP growth is projected to drop to 2.4% in 2020 as a whole, from an already weak 2.9% in 2019, with growth possibly even being negative in the first quarter of 2020”, with global markets plunging in the days thereafter.

Although Chinese growth will fall in the short term, it is expected to rebound quickly, some suggesting this could even happen in the second quarter of 2020 when the virus will hopefully be contained. Uncertainty regarding the spread of Covid-19 is high and its impact on Africa is expected to be serious, given the continent’s exposure to China. So far, cases have been reported in Algeria, Cameroon, Egypt, Morocco, Nigeria, Senegal, South Africa, Togo and Tunisia. If there is a widespread outbreak of Covid-19 in Africa it could overwhelm already weak healthcare systems in the region.

According to ratings agency, Fitch, the Coronavirus outbreak will have a downside risk for short-term growth for sub-Saharan African growth, particularly in Ghana, Angola, Congo, Equatorial Guinea, Zambia, South Africa, Gabon and Nigeria – all countries that export large amounts of commodities to China.

Impact on energy and mining sectors

China appears to have been more interested than any other big economy in investing in the African mining sector. According to China Mining 2018, in 2011, China investors controlled only about 10 mining

operations on the continent and this figure rose to at least 24 in 2018. China’s interest in mineral resources in the African continent has been motivated, on the one hand, by its strong growth in power, construction and industrial manufacturing sectors, and on the other, by its declining internal mining production capacity year-on-year, due to declining ore grades, increasing labour costs and a more stringent regulatory environment.

As such, the African mining industry faces an inevitable hit from China’s Covid-19 outbreak, although there is still much uncertainty as to how much and for how long the sector will be impacted. Reuters reported that China produced nearly 1-billion tonnes of steel in 2019 and consumed around 900-million tonnes due mainly to consumption in its infrastructure and construction sectors. Shutdowns have resulted in a decline in demand for steel and iron ore. African mining companies producing lithium, cobalt, copper and iron ore have already noted decreasing demand from China caused by production shutdowns and global supply chain disruptions.

Port closures, travel restrictions and manufacturing shutdowns are decreasing demand, causing oil importers in China to cancel purchases of African oil, forcing sellers to divert cargoes as they seek new buyers often at discounted prices. OPEC+ recently failed to agree on terms related to oil supply cuts to deal with demand challenges brought about Covid-19, starting an oil price war and causing oil prices plunge further.

Demand has also decreased for Liquefied Natural Gas (LNG), with much of China’s total imports of the gas at risk of cancellation. China is the world’s second largest consumer of oil and one of the largest importers of LNG. However, it is also expected that once China has recovered this could lead to an increase in demand for raw materials.

In addition, significant outbreaks of Covid-19 in mining regions in Africa could affect workforce productivity, the availability of skilled technicians to travel from affected areas and the capacity of labour-intensive mining operations to produce raw materials. Mining companies in the region will be planning carefully to avoid such a scenario and ensure that they can effectively mitigate the spread of the virus. ■

Uncertainty regarding the spread of Covid-19 is high and its impact on Africa is expected to be serious, given the continent’s exposure to China.

New HQ upholds TOMRA's commitment to southern Africa

TOMRA has opened new regional headquarters in Johannesburg to strengthen its commitment to customers in southern Africa. The initiative is meant to enhance customer care through even better technical support, service and training, and to ensure prompt availability of spare parts. The move will also improve operational efficiencies by bringing together under one

roof all three TOMRA business divisions: Mining, Recycling and Food.

TOMRA's new facilities are housed in a two-storey, 1 800 m² building which accommodates offices, a warehouse, spare parts area, two training rooms and three meeting rooms connected to TOMRA's global network of more than 4 000 employees. There is also the space to demonstrate TOMRA's

sensor-based sorting technologies. The building's location on the edge of the Longmeadow Business Estate, Edenvale, to the north-east of Johannesburg, is conveniently close to major road networks and the city's airport.

The most senior executive at the new headquarters is Albert du Preez, senior vice-president and head of TOMRA Mining. Du Preez comments: "The investment affirms TOMRA's wholehearted and long-term commitment to southern Africa. This is a growing market, and one we take very seriously. The 26-strong team operating out of our new headquarters will support customers in South Africa and all other countries in sub-Saharan Africa."

Helga van Lochem, sales manager of TOMRA Sorting Mining, says: "Opening new premises confirms TOMRA's belief in southern Africa as a big player in the global market, and our commitment to supporting mining businesses here in the long term. Investment in sorting solutions pays back handsomely, and now our new training facility in Johannesburg can empower customers to get the most from our profit-enhancing technologies." ■



The 26-strong team operating out of our new headquarters will support customers in South Africa and all other countries in sub-Saharan Africa.

ecomatDisplay: Dialogue modules for mobile machines

The new dialogue modules have been developed for use in cabins and outside vehicles. Thanks to a high protection rating and optical bonding they are optimally protected against moisture. They withstand strong impacts and permanent vibrations

as well as extreme ambient temperatures.

The high-resolution RGB LED panels offer optimum readability even in a bright environment. For operation the displays have freely programmable buttons (5" and 7" versions) or optionally a capacitive touch screen. The

integrated powerful PLC can perform visualisation and operation tasks. It is freely programmable via CODESYS. Numerous interfaces at the back of the device, for example, CAN, analogue video, USB 2.0 and Ethernet offer maximum connectivity.

The displays have a sealed diecast aluminium housing with the protection rating IP 65, IP 67. For connection, sealed M12 connections and a 40-pole AMP connector are used. The displays can be used as surface mount device using the tried-and-tested RAM mount system or can be mounted in a wall. Depending on the requirement, the displays can be installed in any orientation.

The integrated 64-bit controller allows a powerful presentation of the high-resolution graphics, processing of the application program and the device functions. Furthermore, there are many opportunities with regard to communication and networking with other systems and networks. With the integrated real-time clock it is possible to give log data a time stamp for better traceability. ■

New Cat 6030 hydraulic mining shovel

The new Cat 6030 hydraulic mining shovel features Product Link Elite, which enables data communications for comprehensive machine health monitoring in the operations



Cat 6030 hydraulic mining shovel loading a truck.

office using Cat MineStar Health.

To further boost machine availability and utilisation, major 6030 components are fully integrated into Caterpillar product support systems for reliable parts supply and efficient Cat dealer services. The new 6030 also claims the honour of being the first in the hydraulic shovel line to display the new Cat Modern Hex graphics.

As with previous models, the 6030 is offered in backhoe and face shovel configurations to meet site needs. With a bucket payload of 30 tonnes, the shovel is a three-pass match with the Cat 777 truck and a five-pass match with the Cat 785 mining truck. ■

Custom cyclone solution solves Zambian tailings storage challenge

A hydrocyclone solution from Multotec is allowing a large Zambian copper mine to develop a safe and cost-effective tailings storage facility (TSF).

The TSF faced a number of specific challenges, says Frikkie Enslin, senior applications engineer responsible for cyclones at Multotec. These included its extensive planned capacity and the area's flat topography. The mine's process plant pumps some 10 000 m³ per hour of tailings to the TSF, requiring its final circumference to reach about 19 km.

"The flat area around the mine meant there was no suitable topography to provide a natural dam," says Enslin. "It was therefore vital to create strong walls to retain the slurry from the plant, so that the integrity of the TSF could be assured."

Simple gravity separation and sun-drying had proved unable to create material firm enough to constitute walls. In the early days of the plant's operation, it was shown that material being deposited by means of plain spigoting could still not be walked on, even after a month of drying in the sun. By contrast, Multotec's 250 mm GV hydrocyclones were able to deliver an underflow discharge that could be walked on in just two days. After a week, the material could withstand the weight of an excavator.

The sheer volume of slurry being pumped into the TSF, however, created its own challenge. The hydrocyclones had initially been



Multotec GV cyclones are designed specifically for tailings dam applications.

mounted on metal cradles which were inundated within a couple of hours. Extracting the cyclone and cradle from the mud for the next placement was difficult and very time consuming.

"The customer needed a solution that would keep the cyclone above the slurry level for longer, and would be easier to move," he says. "To do this, we designed a cyclone cradle that could be attached to a long wooden pole, giving much greater height, and allowing the customer to leave the cyclones in the same position for much longer."

With Multotec's experience and facilities for custom design and manufacture, the hydrocyclones were then modified to be lighter. This made them easier to handle and manoeuvre.

"Constructed with a lighter metal, these tailor-made units are industry leaders in terms of lightweight and are rubber-lined to ensure long wear life," says Enslin. "We also made some innovative improvements to the vortex finders and the cone sections, which are now metal-spun." ■

Seequent wins 2020 Esri Partner Award

Seequent has received a 2020 Esri Partner Award, Analytics to Insights, for its industry-first tool Target for ArcGIS Pro which enhances the integration of mining and exploration data.

"We are honoured to be recognised for our strong partnership with Esri and the value we have created for customers by focusing on improving workflows and interoperability," says Nick Fogarty, GM Mining & Minerals for Seequent.

The recently released Target for ArcGIS Pro which enables the seamless integration of subsurface drilling and borehole data into ArcGIS Pro, creates a world-leading end to end solution that allows geoscientists to find what's hidden faster.

Alex Miller, president, Esri Canada, says Seequent was recognised with the Analytics to Insights award for "integrating mineral data from around the globe".

Target for ArcGIS Pro is now the industry standard for importing, viewing and analysing geological data.

Sara Deschamps, Seequent's product owner, and her team created the geological software extension that enables mining and mineral exploration customers to visualise their drillhole projects in ArcGIS Pro.

"Our close working relationship with Esri meant we were able to deliver Target for ArcGIS Pro quickly and with even more flexibility and integration in the Esri environment." ■

MINE SMARTER

The latest MMD solution, a Fully Mobile Surge Loader, is designed to help open-pit mines harness the full capabilities of the shovel and experience the benefits of continuous mining using their existing truck fleet.

With reasonable capital investment and reduced OPEX costs, the Surge Loader system quickly outperforms traditional loading methods. Based on simulation data, MMD believes a shovel's utilisation will rapidly rise from an average of 60% to nearly 95%.

Global mining is changing: discover how our worldwide support structure, technical expertise and service excellence will ensure your equipment lives up to your expectations.

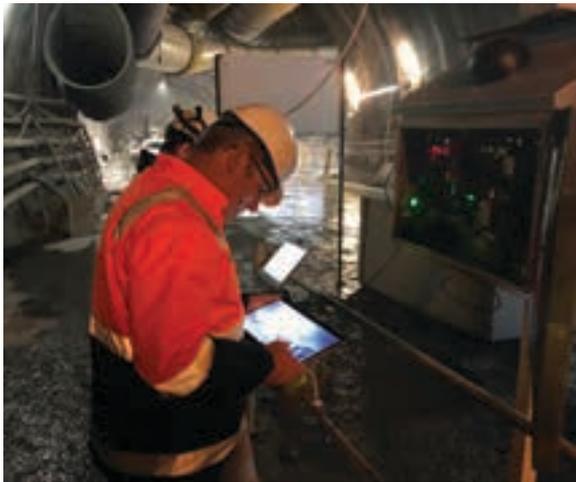
☎ +27 11 608 4801
✉ sizers@mmdafrica.co.za
🌐 www.mmdsizers.com

Green Mining Solutions
Sizers | Feeders | PSC

DPM monitoring system could change the face of mining safety in SA

The South African mining industry's focus on the health and safety of its workers makes it uniquely placed to adopt world best practice in the real-time monitoring of diesel particulate matter (DPM) in confined spaces.

That's the view of an Australian businessman whose company has developed the world's first real-time DPM monitoring system that is set to revolutionise the safety of mining operations across the world.



The technology can monitor a whole mine simultaneously and in real-time, enabling mines to move away from a reactive mode to one where they can drive a proactive approach.

Brisbane-based company Pinssar has developed a low-maintenance, durable DPM monitoring system which is capable of measuring emissions in the critical sub-800 nanometre particle range.

The system has been designed to deliver reliable DPM data to management in real-time, via smartphones, tablets, laptops and desktops. It is ready for deployment in many environments, particularly underground mines, where diesel engine exhaust emissions present a serious health threat to workers.

Pinssar owner and MD Francois Velge, who spent four years developing the ultra-low maintenance continuous DPM monitor specifically designed for harsh environments, says South Africa was a shining light in the protection of mine workers and his company's system could enhance that even further.

"South Africa's tripartite MOSH process, where miners, unions and regulators work together to protect mine workers, is unique and something the country's mining industry should be proud of," Velge says.

"Globally, the new gold standard for regulator support is coming out of the UK with the release of the British Standards (BS 6164) that clearly states the dangers of diesel particle matter and the recommendation that real-time DPM should be undertaken in confined spaces.

"But I believe South Africa leads the way internationally in mining with its step-by-step validation process of best-in-class technology and systems designed to support the evolving DPM regulatory changes in the mining environment.

"A large number of safety initiatives is covered in the MOSH process and the industry has recently completed the process to enable the monitoring of dust and noise.

"I believe the South African mining industry is perfectly placed to consider including real-time DPM monitoring in the MOSH process and making it the gold standard for all mining operations in the country."

Velge says the real-time capabilities of Pinssar's monitoring system meant protecting the health of workers was paramount, as it had previously not been possible to monitor DPM and sub-300 nanometre particles in real-time in harsh environments. ■

Skid-mounted dry-type transformer does duty on coal mine

In a specialised application on a coal mine, Trafo Power Solutions recently supplied a dry-type transformer mounted on a mobile skid.

"The harsh environment of a coal mine required us to specially design a fit-for-purpose solution," David Claassen, MD at Trafo Power Solutions, says.

"The cast-resin dry-type transformer is ideal for the mobile arrangement as it is cooled without oil," he explains. The absence of oil makes it a safer option in

terms of fire hazards, especially on a coal mine.

It is also more environmentally-friendly, as there is no chance of an oil spill. The 1250 kVA dual-MV configuration supplied to this mine allows the unit to be linked up to either 11 kV or 6,6 kV supply.

"The unit was designed for a compact enclosure, while still allowing for sufficient air movement for cooling," Claassen says. "We provided a unique solution of a cast-resin transformer with Class H insulation

rating for both the medium voltage and the low voltage windings."

This insulation standard ensures that the transformer can withstand temperatures of up to 180°C. He notes that the enclosure design had to accommodate these heat factors while also preventing the ingress of dust or water.

Special engineering was also applied to building a high level of mechanical rigidity into the transformer itself, as demanded by the regular relocation of the mobile skid. This movement means considering that vibration and other forces must be borne by the equipment without affecting its performance.

Claassen emphasises that Trafo Power Solutions is experienced in providing dry-type transformers in a range of enclosed formats to suit customers' needs. The inherent safety of these transformers also allows them to be installed in underground mining locations.

"We can provide various dry-type transformer enclosed solutions with a mobile skid, which is a versatile format for a range of mining applications," he says. ■



Fully enclosed mini-sub including cast resin transformer.

New Epiroc blasthole drill for single-pass applications

Epiroc has introduced its DM30 II SP (single pass) rotary blasthole drill for small mining operations. The crawler-mounted, hydraulic tophead-drive rig offers fast hole-to-hole drilling and a lower cost per ton through single-pass capability. The drill rig was showcased at the recently-ended CONEXPO-CON/AGG 2020 show, which took place on March 10-14 in Las Vegas, United States.

Built off the same platform as the Epiroc DM45 and DML blasthole drill rigs, the DM30 II SP is suitable for a variety of single-pass rotary and down-the-hole (DTH) drilling applications. It can achieve a clean hole depth of 11 m for single-pass applications. The small footprint of the DM30 II makes it easy to manoeuvre on tight benches and simple to transport within the pit and over the road between pits.

The DM30 II SP offers a low total cost of ownership, with a structure design life exceeding 45 000 hours. The single-pass capability allows for faster hole-to-hole drilling and decreases the cost per ton. Its design and layout grants quick and easy access to all major service points, simplifying maintenance.

The DM30 II SP is designed to handle 4- to 6,5-inch drill pipe with a hydraulic pull-down of up to 133,4 kN and a hole diameter of 140-200 mm. Customers can choose a low- or high-pressure compressor to create the right configuration for their drilling operation.

“Built off a proven platform and with the new single-pass capability, the DM30 II SP reduces the overall cost of production per ton and improves transportability,” says Heino Hamman, product line manager, blasthole at Epiroc Drilling Solutions. “It offers high quality at an excellent value – and flexibility for the future.”

For increased operator comfort, the DM30 II SP features an insulated, pressurised, heated and cooled cab with tinted glass, a suspension seat, 80 dBA noise level and excellent visibility. All operational functions are controlled from the driller’s console, and the ergonomic layout allows operators to instantly switch from drilling to tramming for increased productivity. In addition, the electric-over-hydraulic controls are common across the DM series, making operation easy for drillers with DM series experience.



Built off the same platform as the Epiroc DM45 and DML blasthole drill rigs, the DM30 II SP is suitable for a variety of single-pass rotary and down-the-hole drilling applications.

The DM 30 II SP is a simple machine scalable to automated features. The DM Series drill rig can be equipped with on-board technology capabilities with the optional Epiroc Rig Control System Lite for added safety and productivity. ■

Manganese mine to up tonnages with Kwatani vibrating screens

Kwatani is supplying four heavy duty vibrating screens and 10 feeders, all engineered for tonnage, to help boost throughput at a Northern Cape manganese mine.

According to Kwatani CEO Kim Schoepflin, the large-scale equipment is custom-designed and engineered for tonnage to meet the mine’s challenging operational requirements.

“Manganese ore is very demanding on vibrating screens as it has a high specific gravity and is also very abrasive,” says Schoepflin. “Our machines are engineered to perform the application’s duty requirement while being robust enough to deliver maximum uptime.”

The units being supplied include a 3,6 m double-deck scalping screen, a 3 m double-deck screen, a 2,4 m screen and a 1,8 m dewatering screen. A leading local OEM that has designed and engineered vibrating screens for over four decades, Kwatani has built a reputation for world-class expertise and capability.

“Customers choose us for our engi-

neering track record – developing technology that can manage the tonnages they require,” she says. “This means understanding each mine’s specific conditions, and then building a design to meet a range of complex mechanical and metallurgical factors.”

The order to the mine is being rolled out on time and on specification to the customer’s satisfaction, says COO Kenny Mayhew-Ridgers. He highlights that on-time delivery of a fit-for-purpose product is as vital as its reliable operation.

“The efficiency and quality of our work process allows us to design, manufacture and deliver custom-designed screens in the same timeframes that other OEMs deliver standard models,” says Mayhew-Ridgers.

This is particularly demanding as custom-designed equipment undergoes an intensive design process after being verified by rigorous finite element analysis in-house. Prior to dispatch all units endure intensive testing before being commissioned on a customer’s site. ■



The newly manufactured manganese screen waiting to be transported from Kwatani to the customer.

Australasia agency adds to SA chute expert's global reach

With its sights set on increased business in Australasia, Weba Chute Systems has concluded an agency agreement with Melbourne-based Mincore. The move marks another significant step in the South African OEM's strategy of extending its global reach.

Based in Germiston near Johannesburg, Weba Chute Systems boasts more than 4 500 transfer point systems successfully operating in countries across the world – with 211 of these in Australia.

“We opened our Australian office in Perth in 2011, focusing mainly on the western side of Australia and the iron ore market,” says Weba Chute Systems sales director Farouk Abrahams. “Due to the vast size of Australia – and the extent of its mining industry – Mincore will cover areas particularly in central and eastern Australia.”

Abrahams says Mincore will also cover international markets such as Papua New Guinea (PNG) and South-East Asia. Mincore is an established engineering company

involved in design, supply and construction services of crushing, material handling, screening, stockpiling, reclaiming and grinding to the resources, mining and building material industries.

“With its wide range of customers and contacts in mining and engineering, Mincore is well placed to support us in promoting our bespoke transfer chute engineered solutions,” he says. “The company also has extensive experience of working with our chutes at mine level, so have the necessary expertise relating to our products.”

He highlights that Mincore has its own team of experienced materials handling design engineers, estimators and project managers, as well as a specialist Weba Chute Systems applications designer. This enhances the synergy between the two companies, placing the agency appointment on an ideal footing for a successful long-term partnership.

“As the world's leading provider of custom-engineered transfer point solutions, we are excited by the prospects of working with a company which has the depth of expertise of Mincore,” he says. “We both recognise the value of bespoke solutions and have the same high level of engineering knowledge and experience that customers expect.” ■



Weba Chute Systems offers a scientific approach to the dynamics of bulk handling at transfer points.

AECI Mining Pillar stands tall at Mining Indaba

With a two-stand display at this year's Investing in Africa Mining Indaba 2020, AECI Mining used the mining investment show to demonstrate how it can provide the mining industry with efficient mine-to-mineral solutions through a combined solution.

The company's brand launch was the main theme of its exhibit this year. The main message was the integration of the AECI

Mining Pillar, which was formed to find ways to harness the energy provided by AECI Mining Explosives (AEL Intelligent Blasting) and AECI Mining Chemicals (Senmin) as a means to optimise the mining value chain at large.

Marketing and communications manager at AECI Mining, Michelle le Roux, says the new brand has rejuvenated the group's position in the mining industry.

“Our new brand in the market supports our strategy to position AECI Mining as the first choice when it comes to explosives and chemicals,” she says.

AECI Mining Explosives MD Edwin Ludick says Mining Indaba offered AECI Mining a platform to engage key stakeholders from Africa.

“Meetings with key decision makers and ministries afforded us the opportunity to form new relationships and strengthen existing ones. Our presence at the exhibit

enforce our message to the market that we, as the new AECI Mining Pillar, are equipped to provide the market with efficient mine-to-mineral solutions.

“We had a lot of positive feedback from customers and the market at large, which demonstrates our impactful presence in the mining industry. The brand integration has been well received and we are excited about what this holds for the future.”

He says some of the key discussions at the show included business development strategies, new market entry planning and ways to optimise existing operations and value-add.

“By providing a combined solution to the market, we are optimising opportunities with our customers and growing our footprint globally. Through our combined effort, we are also increasing our impact on digitised mining by focusing on future technologies that will provide our customers with efficient processes and optimised outcomes,” he says. ■



Edwin Ludick, MD for AEL Intelligent Blasting, congratulating his team on a successful Mining Indaba.

New Cat dragline bucket boosts fill speed

The new Cat double clip back bucket for draglines features an innovative design that increases fill speed and reduces bucket weight for faster cycle times and greater payload. The patented design also eliminates the high-maintenance spreader bar from the rigging system.

The wide mouth, aggressive lip angle and low front height reduce drag power required to fill the bucket. The design minimises the required fill distance for improved productivity and reduced bucket wear. The unique shape of the rear wall enables the bucket to fill without upper rear corner voids, and it increases material density in the bucket for optimum payloads on every pass. It also clearly shows the operator when the bucket is full and should exit the cut.

Eliminating the hoist rigging spreader bar has additional benefits, such as reduced wear and tear on the top rails and trunnions. Fewer system components result in less inventory management and reduced main-

tenance cost. The rigging system design also gives the operator better control of the bucket and reduces the chances of an inexperienced operator damaging it.

The unique trunnion design and location on the clipped portion of the bucket protects the lower hoist link from wear and provides quick dumping of the payload. The design includes a cast-in deflector to protect and increase the life of the trunnion.

The new Cat bucket is available for a wide range of dragline sizes and applications, no matter what the brand of machine. Using data-driven analysis, Caterpillar designs each bucket for the specific dragline and application.

The design process uses all significant parameters, including ground density, wear package, rigging package and bucket weight to optimise performance within the dragline's rated suspended load. Reduced dead weight of the double clip back bucket, as compared to conventional



The wide mouth, aggressive lip angle and low front height reduce drag power required to fill the bucket.

designs, ranges from 2 to 10%, depending on the application.

Cat dragline buckets also include wear packages based on the mine's material abrasiveness and digging conditions. The Cat dragline bucket lip nose casting supports the Cat CapSure adapter and tooth system. The system delivers long wear life and hammerless installation of teeth for enhanced safety and faster removal and replacement. ■

WearCheck's expansion in West Africa

South African condition monitoring specialist WearCheck has upgraded its laboratory in Tarkwa, Ghana into a modern testing centre which can now conduct transformer oil, coolant and fuel analysis, among a host of additional services, as well as traditional used oil analysis.

Tarkwa's new laboratory, now housed in a building a block away from the original converted shipping container, is kitted out with various new instruments that enable extensive testing, and additional laboratory technicians have been employed.

The company also opened a second laboratory in Ghana recently, providing oil analysis and reliability solutions services to

industries in the Ashanti region, in Kumasi.

The developments by are a direct result of increased demand for condition monitoring services in Ghana. This brings to 17 the number of laboratories operated by WearCheck, which was founded over 40 years ago in Durban, South Africa, and today processes in excess of 800 000 used oil samples annually.

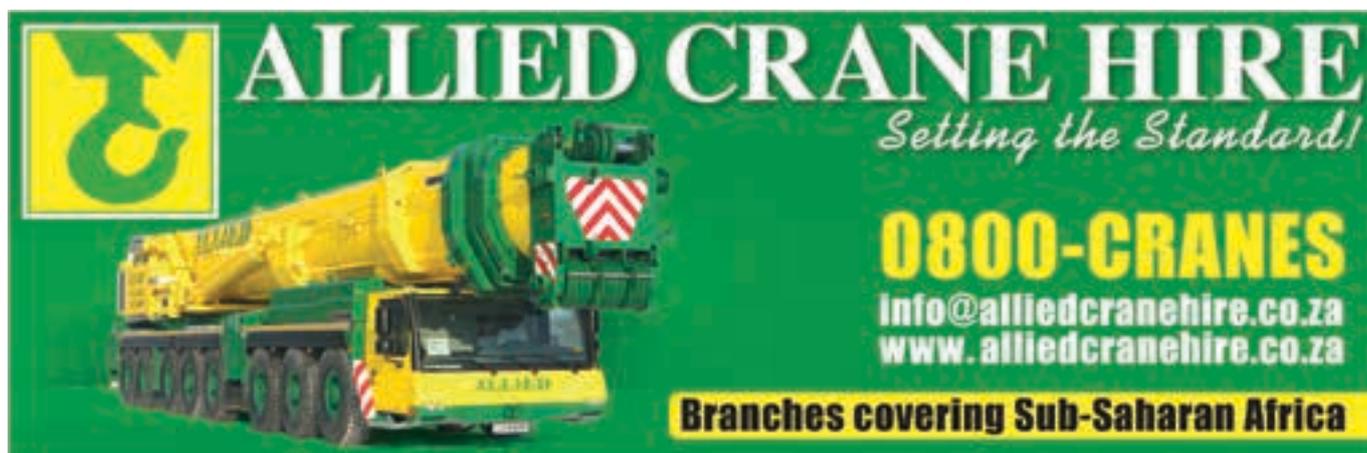
Since 2013, WearCheck Tarkwa has successfully serviced Ghanaian mining operations and other industries, conducting the scientific analysis of used oil and other condition monitoring techniques, all of which reduce maintenance costs and boost productivity by improving equip-

ment reliability and availability.

"The industries in Ghana have welcomed WearCheck with open arms, for which we are very grateful," says MD Neil Robinson. "The positive feedback from our Ghanaian customers has inspired us to expand into the Ashanti area to meet the local need for our laboratory services." ■



The company opened a second laboratory in Ghana recently, providing oil analysis and reliability solutions services to industries in the Ashanti region, in Kumasi.



ALLIED CRANE HIRE
Setting the Standard!
0800-CRANES
Info@alliedcranehire.co.za
www.alliedcranehire.co.za
Branches covering Sub-Saharan Africa

FLSmidth's warehousing facility keeps mines productive

Optimising customers' production and maximising their return on investment is the ongoing mission of the well-resourced FLSmidth's warehousing facility in Stormill, west of Johannesburg.

According to Derek Lane, operations manager at FLSmidth, continued investment in the facility over the past decade has kept it at the leading edge of customer service. Today, it has grown to 10 500 m² under roof and 1 660 m² under crane, with

dual lifting capacity of up to 40 tonnes.

"We have technical capability across FLSmidth's range of KREBS slurry pumps, cyclones and valves," says Lane, "allowing us to service customers through sub-Saharan Africa and into the Middle East."

Meeting customer needs is paramount, and the operation has a strong focus on stocking strategic parts to facilitate the rapid assembly of new product. In addition to this, and central to the pump opera-

tion, is also the efficient refurbishment and retrofitting of equipment. Supporting the customer drive for lowest total cost of ownership, the Stormill facility also stocks a range of service exchange units assisting mines to maintain uptime.

Strategic stocking is done on the full range of KREBS pumps from the UMD heavy duty, millMAX, split casing slurry-MAX, gravelMAX and vMAX range, all of which feature a recessed impeller design allowing the pumps to run dry. In addition, Technequip valves are stocked in a variety of sizes, both flanged and wafer type.

"Our workshop and warehousing capacity equip us to respond quickly to customers in various regions of Africa and beyond," he says. "This is critical in helping maintain their operational uptime while keeping costs down."

The quality of the FLSmidth's KREBS pump range also allows them to be offered to customers on a trial basis. Trial pumps can be run against time or tonnage targets to ensure that they exceed the performance of existing equipment, says service manager Martin Jones.

"The service component in these trials includes a dedicated service technician who visits site for checking and fine-tuning during the trial," says Jones. "This level of technical on-site collaboration from our teams allows operational parameters to be closely monitored and refinements made to specific performance requirements." ■



A view of the spare parts store at the FLSmidth Stormill facility.

New Kitwe coolant plant for Cummins Zambia

Cummins Zambia has completed a coolant plant project in Kitwe on the Copperbelt that received approval from the Zambia

Environmental Management Agency (ZEMA) in 2019. The "plug-and-play" plant will produce two types of coolant, namely ES compleat Hybrid (Blue) and ES compleat OAT (Red).

PLC-driven and automated, the plant has the capability to perform batch correction. It has a blending capacity of around 1 600 ℓ over two hours, including quality testing. The system has two 2 500 ℓ tanks for product storage.

Cummins aftermarket leader (Zambia) John Kaming'a says that, while the plant was originally scheduled for completion within six months in 2018, it took about a year to complete due to delivery and manufacturing logistics, in addition to stringent ZEMA approval reports. The main contractor was CP Engineering, with a Cummins Filtration team overseeing the project from start to finish.

Cummins Filtration built the plant and shipped it to Zambia, where it was installed by a local contractor under the supervision of the project team. The Cummins Filtration team from South Africa also played a key role in commissioning the plant. ■

Hyundai to develop hydrogen fuel excavators

Hyundai Construction Equipment recently decided to join forces with Hyundai Motor Group to develop the world's first hydrogen-powered construction equipment. Last February, Hyundai Construction Equipment signed a Memorandum of Understanding (MOU) regarding the joint-development of hydrogen fuel cell construction equipment with Hyundai Motors and Hyundai Mobis at its Mabuk Research Centre in Yongin-si, Gyeonggi-do.

According to the MOU, Hyundai Motors and Hyundai Mobis will design and manufacture hydrogen fuel cell systems, including power packs, while Hyundai Construction Equipment will design, manufacture and evaluate the performance of excavators. The target date for mass production and distribution has been set for 2023. ■

Index to advertisers

AECI Mining Solutions	IBC
Allied Crane Hire	51
ASPASA	6
Babcock	21
Booyco Electronics	41
Bosch Diesel	31
Condra	23
ContiTech	OBC
De Beers	3
Flexicon	9
Galison Drilling	35
Komatsu Mining	27
Maptek	5
MMD Mineral Sizing	47
Multotec	17
Mynbou/Belaz	12
Tenova TAKRAF	OFC
Transcor Truck Hire	16
Vega	IFC
Weba Chute Systems	7
Weir Minerals	38

 **AECI**TM
MINING CHEMICALS



good chemistry

Your intelligent chemical partner for the
global mining industry.

www.senmin.co.za





Conveying Excellence with High-End Conveyor Belts

Every conveyor belt, every climate zone and every topography calls for perfect conveyor belt technology. ContiTech provides knowledge, experience, a globally encompassing and competent network and a broad product range to give your conveyor belt applications a technological lead. More than 140 years of rubber expertise make us a strong partner, enabling our customers to benefit from the synergies within the Continental corporation. We implement innovative conveyor belt technology reliably, sustainably and safely from development to commissioning and after-sales service.