MODERN MINING

CROWN PUBLICATIONS

December 2023 | Vol 19 No 12

For people who are serious about mining

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ON THE COVER
South Africans have an innate competitive streak and the resilience to back it up, says Brelko MD Kenny Padayachee, who likens the fortitude of local business to the heroics of the Springboks (pg 8).

COMMENT

2023 – a most challenging year. Does 2024 hold better for Mzanzi?

As global strife and tensions continue to rock world peace, on the home front, incompetencies of government departments have come home to roost in a big way – potholes and sinkholes continue to become craters, rail freight and port challenges stymie the economy and water woes escalate to unacceptable proportions. It seems too that we can expect further bad news going into the new year, with more hungry mouths to feed as inefficiencies at Transnet are expected to see hundreds of jobs on the chopping block while coal miners Glencore and Seriti Resources mull over job cuts for hundreds of employees as a result of the struggle associated with coal export. However, worse news is on the horizon with a potential increase in taxes for Mzanzi's citizens - Finance Minister Enoch Godongwana earlier hinted at possible tax increases to fund the government's growing expense bill.

There is good news though as those with the means have made power issues a thing of the past. Businesses – big and small – continue to innovate for a cleaner environment, creating remarkable energy saving initiatives along the way.

According to the latest International Energy Agency (IEA) report, which sees huge potential for solar panels in the future energy mix, the World shift to clean energy is unstoppable.

Locally, South Africa's solar boom, aimed at counteracting load shedding, has seen more rooftop and on-site solar installed by private consumers in the past year and a half than in the past 10 years under government programmes.

The IEA has forecast that renewables will provide half of the world's electricity by 2030.

Recent news related to the clean energy drive is that three of Prince William's top five Earthshot Prize winners have delivered innovations related to clean energy. Hong Kong lithium battery start-up, GRST, inventor of a water-based battery manufacturing and recycling technology, offers a pathway to make electric cars of the future even cleaner. S4S Technologies has developed solar-powered dryers and processing equipment to combat food waste, and Boomitra is focused on removing emissions and boosting farmer profits by incentivising land restoration through a verified carbon-credit marketplace. All three winners are among the world's innovators making waves. Other prize winners include Acción Andina and WildAid.

The cash prize from Earthshot will help the five finalists to scale up their operations and offer a positive impact to the planet's climate, environment, and people.

On the commodities front, McKinsey & Company has reported that, owing to a lack of funding for new mining projects, the world could see significant shortages of rare earth metals and minerals critical to the energy transition by as early as 2030.which This is good news for project developers of related minerals. The report indicates imminent shortages of 20%-50% across some rare-earth metals and minerals that are essential for renewables, power grids and EV batteries.

In the meanwhile, base-metals developer, Orion Minerals, is ramping up activities at its flagship asset, Prieska Mine, as it eyes production in the next 12-18 months. Given the strong demand for base-metals, Orion Minerals is eager to dovetail valuable copper and zinc ounces to the 'imminent' supply deficit (pg 14).

Though clean energy initiatives are getting much love, fossil fuels are not, and remain stifled by falling prices. Coal miner, Minergy, is bearing the brunt of soft coal price (pg 12).

Our cover story, Brelko, which has invested heavily to protect itself against power and water interruptions, remains on a growth trajectory and is 'paying it forward' to uplift the community through extensive SLP initiatives, going beyond the call of duty to be the company that embodies the spirit of Ubuntu (pg 8).

On the topic of good stories, the Springboks have done the country proud, claiming the Webb Ellis Cup for a record fourth time, while the Proteas reached the semi-finals of the 2023 ICC Men's Cricket World Cup. Both teams raised our spirits high.

Modern Mining would like to wish its readers, contributors, and advertisers a restful break and a joyful festive season. ■

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Published monthly by: Crown Publications (Pty) Ltd
P O Box 140, Bedfordview, 2008
Tel: (+27 11) 622-4770
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Printed by: Tandym Print

The views expressed in this publication are not necessarily those of the editor or the publisher.

Average circulation
April-June 2023: 14 237


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NextSource Materials announces first bulk shipment of SuperFlake

Battery materials development company, NextSource Materials, has made its first bulk container shipment of SuperFlake® graphite from the company's Molo Mine in Madagascar. The first shipment of Molo SuperFlake® graphite has been sent to the company's downstream technical partner's Battery Anode Facility (BAF) to be processed into spheronised, purified graphite (SPG) that will then be further processed into coated SPG (CSPG) as part of large scale, multi-step verification tests being conducted by automotive EV supply chains in South Korea and Japan.

The company expects to receive its first series of verification test results starting in December 2023. NextSource Materials has also completed commissioning and achieved full operations of its solar and battery hybrid power plant at Molo. The Solar Hybrid Plant is owned and operated by CrossBoundary Energy (CBE) under a 20-year power purchase agreement and comprises a 2.69 MWp solar photovoltaic array (PV array) combined with a 1.37 MWh battery energy storage system (BESS), and a 3.1 MW thermal (diesel) generator plant.

NextSource Materials shipped its first container of SuperFlake graphite and completed development of its Solar Hybrid Plant.

The Solar Hybrid Plant will be able to provide up to 35% of Molo's complete system power needs from renewable energy, significantly reducing all-in sustaining costs and carbon emissions by 2 275 tonnes annually. CEO, Craig Scherba, commented: "Completing our first bulk shipment is a significant accomplishment and the result of the hard work and dedication of our operations team.

As we continue the optimisation phase of the commissioning process and towards ramp-up to nameplate production capacity for Phase 1 of Molo mine operations, NextSource is well positioned to play a critical role in the global, sustainable lithium-ion battery supply chain that is expected to see exponential growth over the next few decades. We are also delighted to have completed commissioning of our Solar Hybrid Plant, which will enable us to significantly reduce our carbon emissions and all-in sustaining costs." ■

Kodal and Hainan Group to complete Bougouni Lithium funding package

The Bougouni Lithium project in Mali.

Mineral exploration and development company, Kodal Minerals, has announced that Kodal Mining UK (KMUK), Hainan Mining (Hainan) and Hainan's wholly owned UK-incorporated subsidiary, Xinmao Investment (Xinmao and together with Hainan, the Hainan Group) have agreed terms to complete the funding package announced on 19 January 2023.

KMUK is the company's new UK registered subsidiary, formed to be the holder of the Mali lithium assets and which will be owned 49 percent by Kodal and 51 per cent by the Hainan Group. The agreement for completion of the transaction follows from the waiving of certain conditions precedent to the reorganisation of Kodal's Mali lithium assets. Bernard Aylward, CEO of Kodal Minerals, remarked: "The development activity is progressing on site with the road upgrades to provide access for the start of construction of site infrastructure. Off-site, Kodal, Hainan and our consultants are continuing to finalise the engineering design of the processing plant as well as progressing mine design and site optimisation. The completion of the funding package transaction is a major milestone for the development of the Bougouni Lithium project and we look forward to working closely with our partners to achieve production as soon as possible from the Bougouni Lithium mine." ■

State Diamond Trader appoints Nosiphiwo Mzamo as new CEO

The State Diamond Trader has appointed Nosiphiwo Mzamo as its new CEO, effective from10 October 2023. She is a highly capable, results-driven Management Professional, holding a Master of Business Administration, B.Sc. Hons Geology, and a Graduate Diploma in Mining Engineering. Mzamo has over 21 years combined experience in the fields of Geological Sciences, Mineralogy Research and Development, Mining, Analytical Chemistry, Strategic Management and Human Resources Management. ■

Monte Muambe Scoping Study results

LSE-listed Altona, a resource exploration company focused on Rare Earths in Africa, has announced a positive outcome of its Scoping Study for its Monte Muambe rare earths project in northwestern Mozambique. The Monte Muambe Scoping Study takes into consideration open-pit mining of Target 1 and Target 4, at an LoM strip ratio of 1.6, over a period of 18 years. An anticipated 750 000 tonnes of ore per annum will be extracted and processed through a beneficiation plant to produce a Rare Earths concentrate. The beneficiation process will include crushing, milling and flotation.

The concentrate will then be processed through a hydrometallurgical plant to produce an average of 15 000 tonnes of MREC per annum. The hydrometallurgical process will involve a weak acid gangue leach, followed by rare earths leaching and purification. The MREC product would be packaged and transported via existing road infrastructure to the port of Beira, in Mozambique, for export. The Scoping Study demonstrates the potential for Monte Muambe to become a viable mining operation. Considerable upside potential has been identified in the Scoping Study and will be developed further in the Prefeasibility Study (PFS), the company said.

The project is now entering Phase 3, which upon completion will allow the company to increase its holding to 70%, with the key deliverable being the PFS. Preliminary PFS activities started in July this year, in the form of in-fill drilling at Target 4 and these will ramp up over the course of the coming months, with additional exploration, planning and consultant services procurement activities, as well as a strong focus on additional metallurgical test work. The company also intends to apply for a mining concession during Phase 3. ■

Altona announces a positive outcome of its Scoping Study for its Monte Muambe rare earths project in Mozambique.

Andrada Mining commences Brandberg West exploration programme

Andrada CEO Anthony Viljoen.

Andrada Mining, an AIM-listed African technology metals mining company, has commenced an initial exploration programme for the Brandberg West exploration licence.

CEO Anthony Viljoen commented: “The exploration programme will enable us to determine the extent of the mineralisation in and around the Brandberg West mine. The project provides an exciting opportunity for us to duplicate the development process we have successfully implemented at Uis, by taking it from an abandoned historical operation, into a fully-fledged producing mine. Brandberg West will solidify Andrada’s tech-metals portfolio by potentially adding critical metals revenue streams of tungsten, and copper as a by-product. We look forward to continuing with our exploration programme, and aimed at re-establishing the historical Brandberg West Mine.” ■

ERG to build a cobalt beneficiation facility in the DRC

Eurasian Resources Group (ERG), a diversified natural resources group, recently signed an agreement with China's BGRIMM Technology Group, an institute in mineral and material industries worldwide, in relation to the cobalt beneficiation facility, which ERG is building in the DRC. The production facility is planned to be commissioned by the end of 2024 and cobalt hydroxide should be provided from ERG's DRC-based Metalkol, one of the world's largest producers for the battery industry, and one of the largest suppliers of cobalt to China.

ERG's flagship operation, Metalkol, in the DRC.

ERG further develops its portfolio of assets, both in the DRC and globally, to produce high quality materials for the li-ion battery sector. At Metalkol, ERG's flagship operation, the Group has expanded the production capacity ten-fold in the last four years. ERG is also developing its another key asset in the DRC, COMIDE, which has some of the world's largest known copper and cobalt resources.

In this vein, the cobalt beneficiation facility, which ERG is building up with BGRIMM, provides an important addition to its portfolio of assets producing key battery materials as it should deliver high purity cobalt hydroxide tailored for the battery market. It should also further strengthen the Group's position as a strategic supplier of traceable materials for the electric vehicle industry.

Test-work at Bengwenyama establishes mine design parameters

ASX-listed Southern Palladium geotechnical study conducted on the UG2 reef at the Bengwenyama Platinum Group Metal (PGM) project has yielded promising results. The project is situated on the Eastern Limb of the Bushveld Complex in South Africa.

Managing Director, Johan Odendaal said: "We are pleased to report the findings of the geotechnical pre-feasibility study conducted by the independent consulting firm, OHMS. The study has yielded promising results, confirming the viability of both conventional and mechanised underground mining from a geotechnical perspective. The study's conclusions are reassuring. It indicates that mining operations at depths exceeding 50 metres underground do not pose a threat to surface infrastructure. Our proposed conventional stope layout is estimated to result in a mining extraction rate ranging from 91% near surface to 78%, contingent upon the depth below the surface. In the case of the mechanised mining layout (bord and pillar), we anticipate achieving an extraction rate of 82% near surface to 67%. It is also worth highlighting that our consultants have noted the absence of chromite stringers in the hanging wall of the UG2. Due to the absence of these stringers, which in other Bushveld operations can lead to dilution, we anticipate a potential minimum stope width of approximately 1 metre, based on an average UG2 reef width of about 70 cm."

Southern Palladium's geotechnical study conducted at the Bengwenyama project has yielded promising results.

Anglo American and Mitsubishi Materials collaborate on copper value chain

Diversified miner, Anglo American, has inked a memorandum of understanding with Mitsubishi Materials Corporation to collaborate on the creation of a copper product offering that responds to growing demand for metals with demonstrably strong provenance credentials. The collaboration will focus on driving traceability across copper's fragmented value chain, with the aim of identifying and measuring sustainability indicators that industry stakeholders and end customers deem most relevant and valuable. By using technology-driven traceability solutions, the two companies will work together to provide stakeholders with secure access to relevant product provenance information.

Anglo American and Mitsubishi Materials will also explore decarbonisation opportunities to reduce the overall carbon footprint of the metal provided to customers.

Paul Ward, Executive Head of Base Metals Marketing at Anglo American, said: "Consumers around the world are increasingly asking that their purchases come with greater assurance of sustainable production. Our work with Mitsubishi Materials aims to accelerate efforts to increase provenance visibility for materials used in some of the key technologies for modern life and to improve living standards for a growing global population through sustainable socio-economic development." ■

Anglo American and Mitsubishi Materials to collaborate on copper value chain.

Jubilee announces award of a New Slag Project with MCM

Jubilee Metals Group, a diversified metals processing business, has announced the award of the large Mufulira Slag Project through a Joint Venture (JV) collaboration with Mopani Copper Mines (MCM). The Slag Project aims to process some 13 million tonnes of historical slag, estimated to contain 0.7% copper and 0.27% cobalt in addition to the current slag arisings. Under the targeted JV, Jubilee is appointed to design, implement and operate the new processing facility with the first right to fund the implementation of the project in collaboration with MCM. The JV reflects Jubilee's commitment to securing high-value waste resources containing copper and cobalt – metals that are critical to the green transition – and underscores the company's proven track record of the responsible extraction and utilisation of high-value waste resources. The Slag Project of 13 million tonnes of historical slag, represents an exciting opportunity for Jubilee to extract and process the valuable resources, estimated to contain 89 000 t of copper and 44 000 t of cobalt, in addition to current arising slag from the on-going MCM facility in Mufulira. The copper grades within the slag are double those of standard tailings, providing an exceptional opportunity to extract maximum value from this significant resource. ■

Jubilee Metals award a Mufulira Slag Project.

Orosur Mining inks lithium JV

South American minerals exploration and development company, Orosur Mining has continued its strategy of securing high quality mineral exploration opportunities in key jurisdictions, having recently signed a joint venture (JV) agreement to explore a number of exploration licences across Nigeria, which the company considers to be highly prospective for lithium mineralisation. The company has long been examining an entry into the lithium space to add to its diversified portfolio of high-quality exploration assets but found few attractive South American opportunities. A team of experienced geologists is in place, with all necessary equipment and logistical support such that field programmes will be commencing immediately. Work will start initially with preliminary reconnaissance, and it is expected that results and additional work can advance quickly, the company said. ■

Orosur Mining inks JV to explore for lithium in Nigeria.

Ubuntu: Brelko pays it forward

South Africans have an innate competitive streak and the resilience to back it up, which is what sets us apart – be it on the playing field or in business, says Brelko MD Kenny Padayachee, who likens the fortitude of local business to the heroics of the Springboks. By *Nelendhre Moodley*.

On the road to victory, the Springboks displayed nothing less than dogged determination when edging out New Zealand 12-11 to win the Rugby World Cup and claim the Webb Ellis Cup for a record fourth time.

"From the onset we played tough teams and, with every match, there was a great possibility of losing, yet we persevered to triumph over our opponents, some at the very last second. This is reflective of most business mindsets operating in our current tough environment, with many companies displaying the same type of grit to face down the challenges. In fact, several businesses in South Africa go beyond the call of duty to rise above circumstances and 'Pay it forward'."

Ubuntu: humanity to others

Ubuntu is an ancient African word meaning 'humanity to others'. It is often described as reminding us that 'I am what I am because of who we all are'.

Paying it forward

Investing in the youth, the disabled and in local communities, Brelko is one such example of companies paying it forward.

Although businesses, and the mining sector in particular, invest heavily in community upliftment initiatives, Padayachee says 'If everyone were prepared to share their dollars to uplift the less fortunate, our society would be richer in so many ways."

According to Rudolf van Rensburg, Director at Carve Consulting, Brelko's philanthropy extends beyond government's requirements to fulfil the BEE scorecard. Each year, the equipment supplier invests millions of rands in skills development programmes for the industry, providing a helping hand to struggling SMMEs and bursaries and learnerships for its employees and surrounding communities.

Goodwill Khupha working in the new hi-impact assembly area.

Carve Consulting is a financial solutions provider that aids Brelko with its tax compliance and social labour plan, and guides the company to retain its Level 1 BEE certification.

"Over the past seven to eight years, Brelko has invested heavily in previously disadvantaged youth, women and the disabled, providing them with access to skills development and experiential training. The company upskills roughly 18 people per annum. This year, we concentrated on previously disadvantaged women and the physically disabled, offering learnerships in different career paths, including administration, accounting, IT, marketing, finance, sales and training for skills related to the manufacturing process that is undertaken at Brelko's manufacturing facility," explains Van Rensburg.

For the duration of the 18-month programme Brelko provides learners with a monthly stipend to tide them over.

"On completion of the training programme, we determine which students are a fit with the company, and those we employ. In fact, among the learners who have come through the programme,

Right: A view of the new roller cutting section.

Below: New assembly section at Brelko's manufacturing facility.

we employed Dimetreou Booysen who now works in the marketing department," says Van Rensburg.

"Dimetreou is an example of what Brelko makes possible for youngsters who would otherwise not have had such an opportunity. Although we are unable to employ most people who come through our programmes, we invest in them so they are able to confidently go out into the world equipped with skills and experience they did not have prior to entering the programme," notes Padayachee.

Further to this, given the strong demand for experiential training, Brelko offers internship programmes, with learners attending vocational training and mentorship programmes twice a week.

"The learner effectively shadows personnel in the identified line of work, picking up the nuances and workplace requirements. Over the past two years, over a dozen learners have gone through Brelko's internship programme," Van Rensburg explains.

The conveyor belt cleaning equipment supplier also aids small SMMEs to stay in business and grow, by ensuring it pays its suppliers on time so they remain cashflow positive and sustainable.

Padayachee says the late payment culture in South Africa continues to have a negative impact on the success and sustainability of SMMEs, often leading to bankruptcy, which is why Brelko ensures it pays its suppliers timeously. In fact, payments are made on a weekly basis.

"Aside from financial advice, we offer SMMEs assistance by making our vehicles available to transport product to them and go so far as to offer office space and related services, where required."

Further to this, the company backs its own employees' educational strides and makes time and training facilities available to ensure a successful outcome.

"If our employees do well, they are promoted and thereby financially rewarded for their efforts. Importantly, given that we are constantly improving the business, their improved knowledge is an asset to the company."

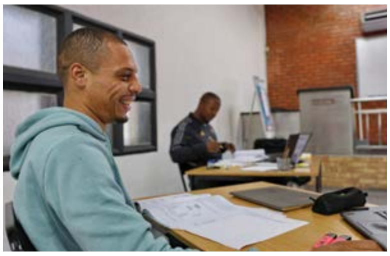
Padayachee explains that Brelko has its eye firmly set on the bigger picture, "By investing in the youth and in communities, we help to uplift not only our society but also our business, which relies on advanced skills sets".

Brelko uses cutting edge technology to produce its range of conveyor belt spillage control equipment for the mining industry. This is supplied across the globe to key destinations in North America, South America, Europe, United Kingdom, Australia, and the Middle East, amongst others.

"As we invest in multi-million-rand state-of-the-art equipment to produce highly technical products, we require well skilled employees who are equipped to handle robotics technology and be innovative solutions providers."

To date, Brelko – which employs 240 people – has over the past five years upskilled over a 100 people and has already identified 20 learners for its programme in 2024.

A view of the recently established park.



Staff studying images: Brelko invests heavily in upskilling its staff and the surrounding community.

"Giving back to society and the community is a personal interest – it is not just to meet the prerequisites set out by government" says Padayachee. "I see it as an important part of service to society. We receive numerous testimonials from learners who have subsequently found employment in various sectors. We also try to aid learners who are not integral to our sector and recently invested in two brilliant young females – one graduated as a chemical engineer who is now employed by petrochemicals giant, Sasol, while the other, graduated as a doctor from the University of Pretoria."

Park pride

The company, located in Booysens south of Johannesburg, recently established a park adjacent to its property which it has equipped with the necessary amenities to afford children in the area a safe space to play.

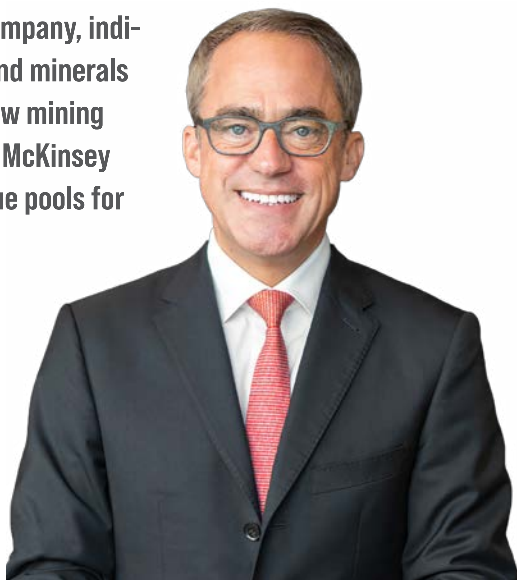
"The area next door was derelict, with many squatters making it home, which meant that it had become a security risk. We applied for permission from City Parks to establish the land as a park and subsequently cleaned it up, installed children's play equipment and benches, beautified it with trees and grass and enclosed the area. It is now extremely safe and user-friendly and, importantly, has uplifted the area. I must admit that it is really heartwarming to see children making use of the park. In fact, every Friday primary school children, accompanied by their teachers, come to play in the park." ■

Philanthropy

The desire to promote the welfare of others, expressed especially by the generous donation of money to good causes.

Climate targets threatened by reduced funding for metal and mineral mining

New analysis released by management consulting firm, McKinsey & Company, indicates the world could see significant shortages of rare earth metals and minerals critical to the energy transition by 2030 due to a lack of funding for new mining projects. Soaring demand is creating a major trading opportunity with McKinsey analysis revealing a more than 170% growth in commodity trading value pools for metals in just three years.



Roland Rechtsteiner, Partner at McKinsey.

The report, titled *The Trading opportunity that could create resilience in materials* reveals that surging interest rates and a reduction in available finance has seen mining companies cutting investment, with sector spending in aggregate falling to around $40 billion in 2022 despite the recent uptick from 2020 lows, thus jeopardizing the energy transition.

The report indicates imminent shortages of 20-50 percent across some rare-earth metals and minerals essential for renewables, power grids and EV batteries by 2030, driving demand for huge investment in new reserves.

Roland Rechtsteiner, Partner at McKinsey, said: "Our analysis shows commodity trading pools have nearly doubled year over year, reaching nearly $100 billion in 2022 and metals and minerals will make up an increasing share of the value pool in the coming years. Traders can capitalise on this opportunity by supporting increased liquidity and price discovery in rapidly evolving metals and minerals markets, providing ESG blending solutions tailored to each market and boosting risk management capabilities

The world could see significant shortages of rare earth metals and minerals critical to the energy transition by 2030.

Rare-earth metals and minerals essential for renewables, power grids and EV batteries.

to provide these services for counterparties including new market entrants."

Yet investors are currently reducing funding for new mining projects due to low commodities prices and long lead times for new mines, exacerbating supply chain shortages for green technologies. McKinsey notes that commodities are currently significantly underpriced despite massive demand with the Goldman Sachs Commodity Index only just starting to rebound from all-time lows vs the S&P 500.

It is anticipated that EV batteries and chargers alone may consume over 50 percent of all available cobalt and rare-earth elements and 36 percent of nickel resources by 2030. McKinsey highlights that recycling could only account for 10 percent of supply for minerals such as copper, lithium, and nickel by 2040 and potential substitute materials are still nascent.

Spencer Holmes, Associate Partner at McKinsey said: "There are many hurdles to developing new metal and mineral reserves with investors favouring other industries, and many proposed mines involving new technologies and inexperienced companies as well as ESG and permitting barriers. Mines take an average of up to 15 years to become operational and some projects planned today wouldn't begin production until about 2040.

"Large energy firms could help address the renewable supply chain shortage at source by expanding into metals and minerals. Traders could also accelerate development by pre-financing junior mines and helping producers gain access to markets. Metals and minerals producers could also encourage long-term supply deals to pre-finance projects."

McKinsey suggests three paths to help companies shore up their positions and find new opportunities amidst the growing uncertainty and complexity of commodities markets.

- ❑ **Traders:** Traders can help address metals and minerals shortages by supporting liquidity and price discovery in rapidly changing metals and minerals markets, providing ESG blending solutions tailored to each market, boosting risk management capabilities to provide these services for new market entrants and directly investing their own capital in alleviating the supply shortage.
- ❑ **Metals and minerals producers:** Producers could negotiate long-term supply deals to pre-finance new mining projects, customise high quality metals to specific customer segments, explore new product differentiators (particularly green product price discovery) understand supply chain vulnerabilities such as over-reliance on some countries for solar parts and use trading to optimise their portfolio management.
- ❑ **Major energy companies:** Big energy firms could expand into the supply chain to alleviate the shortage. For example, energy firms could harness their expertise to expand into metals and minerals. ■

The trading opportunity that could create resilience in materials report

- ❑ The report reveals looming shortages of rare-earth metals and minerals key to the energy transition as low commodity prices cause investors and mining firms to cut spending on critical mining projects.

Minergy suffers knock-on effects of soft

Coal junior, Minergy, will find its way out of its current quagmire, which is underpinned by a cooled coal market and rising input costs, says outgoing CEO Morné du Plessis, who has served at the helm of Botswana's pioneering coal mine for the past seven years. By *Nelendhre Moodley*.


The Masama Coal processing plant.

Du Plessis was instrumental in taking the Masama Coal Mine from grassroots level to a producing entity and was quick to take advantage of serendipitous high coal prices to make six lucrative shipments to international markets in 2022 and early 2023.

Although Minergy's business model was never designed for the export market, the company took advantage of the energy security crisis created by the Russia-Ukraine war to enter the export market, which subsequently earned the miner "profitability for the first time" in H1 2022.

However, owing to recent weak coal prices and an oversupplied market, the company has suffered harsh losses, with Minergy reporting a 33% drop in coal prices since mid-December.

Speaking of the year under review for the Botswana based coal miner, Du Plessis said that strong momentum in the first half of the year was eroded by year-end owing to changes in the international coal market, with H2 2023 experiencing a sudden and significant drop in coal prices due to excess product in the European market caused by voracious buying.

"As good as it was up until around December last year, it's been the opposite for the past nine months in terms of coal prices, which have been impacted significantly by the oversupply of product. It has become a buyer's market. If a company has not secured long-term contracts, then it will have to compete on a spot basis and entertain extremely tight margins."

Du Plessis was instrumental in taking the Masama Coal Mine from grassroots level to a producing entity.

Du Plessis explained that despite the H2 2023 setbacks, when comparing annual statistics, there was an improvement from prior years - with four consecutive years of production and sales increases.

He added that although the coal sector noted a slight improvement in some coal export prices recently, it was still not economical for Minergy to mine in large volumes again as "there needs to be some kind of stabilisation in the supply chain".

"I believe that excess stock has been used and don't foresee a further drop in prices. Expectations are that the price of coal will pick up in the last quarter of this year, but that is largely dependent on the key players - China and India."

Minergy was also caught on the backfoot as mining costs were exacerbated by "a higher mining strip ratio, soaring fuel prices and additional fixed costs accompanying the ramp-up to full capacity".

Further to this, since the beginning of the year, competitor and state-owned open-cast Morupule mine, has become operational.

According to Du Plessis, the new dynamic on

coal price

Coal production volumes increased every year since the company started production in 2019.

Minergy believes that the quality of its products, its loyal customer base, and logistical advantages will set the tone for a solid future.

pricing made it difficult to compete. "Regional demand can now be met by two coal suppliers in Botswana," he said.

Although the size of operations at the Masama Coal Mine was reduced to balance production levels and costs in the current market, Minergy strongly believed that the quality of its products, its loyal customer base, and logistical advantages would set the tone for a solid future.

Meanwhile, following a strategic positioning of the company earlier this year, Minergy's main funder, the Minerals Development Company of Botswana, continued to play a prominent role in the company, having seconded Matthews Bagopi for 12 months to augment the management team. He fulfils the role of Acting Chief Executive Officer at Minery Coal, a subsidiary of Minergy. The CEO of the MDCB subsequently joined the Minergy Board of Directors.

"The Botswana government has been the main funder of the Masama coal project and has been extremely supportive of our business, so it is a natural progression for them to get involved in the business to protect their investment."

Looking ahead

Du Plessis explained that moving forward the company would need to dovetail demand for coal with supply output and possibly downsize the business to realise much needed cost savings.

"Further to this, the company will need to ink agreements with the new mining contractor and seek out further potential buyers for the product."

So, does the change in fortune affect how the project is viewed?

According to Du Plessis, Minergy remains a success story, as it started from 'nothing' to becoming a producing entity that sold 1.8 million tons of coal over a four-year period.

"Coal production volumes have increased every year since we started production in 2019. We have proven to the market and the industry that Minergy is a viable operation. Even though coal export was initially not part of the business model, we have been able to export six vessels"

He added that at peak mining, the project employed 566 people. Importantly, Minergy continues to upskill workers and employs 96% of staff from the local community.

"The state's support and investment into coal when financial institutions have shied away from investing in fossil fuels speaks to the project's importance as a contributor to the local economy," concludes Du Plessis.

Orion Minerals CEO Errol Smart.

Orion Minerals outlines Prieska's

Base metals developer, Orion Minerals, is ramping up activities at its flagship asset, Prieska Copper Zinc-Mine (PCZM) in the Northern Cape, as it eyes production in the next 12-18 months. Having recently awarded a six-month trial mining contract to Newrak Mining, the junior miner is eager to validate the results from its feasibility study, with CEO Errol Smart, upbeat that the trial mining results will be highly favourable. By *Nelendhre Moodley*.

Following the challenging investment environment, the diversified metals explorer has revised its strategy to "start small to grow big", which allows Orion Minerals to achieve early production and become cash generative quicker than initially anticipated.

"Following changed global macroeconomics, increased interest rates and the high cost of debt, we took a decision to grow our production incrementally. By starting at a reduced-scale first phase and a phased build up towards 2.4 million tonnes per annum means that Prieska will have a shorter lead time to first concentrate production, a smaller upfront funding requirement, and can start generating cash early."

Located in the Northern Cape Province, the Prieska Project was historically mined by Prieska Copper Mine (PCM), a subsidiary of Anglovaal Group, between the 1970s and 1990s, however, following a dip in demand for copper and zinc, the mine was closed in 1991. Since its acquisition of the Prieska mine in 2017, Orion Minerals has been taking the project up the value curve and completed an updated Bankable Feasibility Study (BFS) in May 2020.

The BFS is based on the development of a modern 2.4 mtpa underground and open pit mining operation, with a 12-year 'Foundation Phase' targeting 22 000 tpa Cu and 70 000 tpa Zn.

The underground operations at Okiep Copper Project.

The project contains a Volcanogenic Massive Sulphide resource totalling 31 mt at 1.2% Cu and 3.6% Zn, including an Indicated Mineral Resources of 19.13 mt @ 1.18% Cu and 3.59% Zn.

Orion Minerals has since secured over R371 million in pre-development funding from South Africa's Industrial Development Corporation (IDC) and streaming royalty company, Triple Flag, and recently received firm commitments from Clover Alloys for a A$13 million strategic funding package. These investments have helped to accelerate the development of the company's two base metal production hubs (Prieska and Okiep).

Prieska's path to production

Given the strong demand for base metals, which underpin the global clean energy drive, Orion Minerals is eager to dovetail valuable copper and zinc ounces to the "imminent" supply deficit.

"We have a strong belief in the rising metals market, particularly for the critical metal's suite of copper, nickel and zinc. As it stands, there are insufficient copper mines being developed currently to meet the projected supply gap which means that when Orion Minerals brings the Prieska mine into production in the next 12 to 18 months, we will be in a position to take advantage of favourable metals prices," says Smart.

The ASX-listed entity recently awarded a six-month trial mining contract to P2 Mining, a subsidiary of South African mining contractor Newrak Mining Group (Newrak), to undertake an early works trial underground mining programme at the Prieska Copper Zinc-Mine.

The trial mining will target the +105 Level Crown Pillar, using conventional load-haul-dump and alternative mechanised underground mining methods. The process will comprise 120 m of footwall ramp development with ore development along strike for 300 m on the primary access in a cut-and fill mining cycle.

According to Smart, mining contractors and key equipment arrived onsite in mid-September to begin trial mining with the aim of sub-sampling and then stockpiling the mined ore on surface.

The programme ahead also entails metallurgical testing on mined material followed by possible

path to production

Employees in the underground operations at Okiep Copper Project.

The gearhead tower at the Prieska Copper-Zinc Project.

Construction vehicle returning employees from the underground operations at the Prieska Copper-Zinc Project.

installation of a pilot processing plant onsite.

The pilot plant is expected to process 30 000 – 40 000 tpm, with the miner adding modular plants as production ramps up to 200 000 tpm (2.4 mtpa) in five years, by when it will be producing 22 000 tpa copper and between 60 and 70 000 tpa of zinc.

The production efficiencies achieved during trial mining will inform the revised feasibility study, which will be published early next year and inform Orion Minerals' plan of execution as it ramps up to full scale production. Moreover, the company is in talks with potential contractors for the implementation of a Build Own Operate model.

"Five years from now we expect to achieve the original bankable feasibility production profile that we originally set out to achieve," says Smart, who explains that one of the pre-requisites of being funded by the IDC is the need for independent verification by experts before sign-off on the feasibility study.

"This will unlock the next tranche of project financing and enable Orion Minerals to progress project development."

Meanwhile, the company welcomes the benefits associated with resuscitating the brownfields operation, which is accompanied by well-established large scale infrastructure including water pipelines, grid-power, shafts, declines, roadways, accommodation and a rail line 40 km from the site, as it saves Orion Minerals on hefty infrastructure outlay.

"As a brownfields site – with the benefit of existing primary infrastructure and services including grid power, water and decline roadways to access the drilled mineralisation remaining from an era of mining with very low metal prices – the barriers are substantially lowered for redevelopment," says Smart.

However, the challenge for Orion Minerals lies with the fact that the Prieska mine is currently flooded to about 275 metres below surface. Following the mine's closure in 1991, rain run-off has accumulated over the past 30 years, which means that pumping out the amassed water is a key undertaking lined up for the junior miner.

Further to this, the company is developing ventilation for underground mining and establishing refuge chambers and underground electrical feed.

The underground operations at the Prieska Copper-Zinc Project.

Strong on ESG

Smart notes that following the company's significant investment on aspects related to tailings management and water use management, it has realised several high-tech engineering solutions.

"Our prudent water management and water discharge management solutions are pushing the environmental, social and governance side of our business a notch higher. In fact, on the back of our attention to ESG, Triple Flag – which demands adherence to the highest ESG standards – awarded us project financing. Our business philosophy is underpinned by our drive to meet high ESG standards and we work closely with our stakeholders and the community in which we operate to ensure we leave a positive environmental footprint."

Further to this, in making the jump from explorer to producer, Orion Minerals has changed its management team to reflect its changing dynamics – bulking up its staff with engineers, and specialists in environmental management, metallurgy and logistics, amongst others.

"We have identified people with specific skills sets that understand the kind of mining we do. In fact, we were fortunate that Newrak Mining's team has a production manager who previously worked on the Prieska mine when it was in operation 30 years ago which means that coupled with his modern mining skills, he has an intimate understanding of Prieska's operating environment and ground conditions."

Orion targets a pipeline of profitable initiatives

The globally diversified emerging miner was recently granted a further five new 'copper ore' and 'tungsten ore' areas to the Okiep Copper Project (OCP), located in the Northern Cape Province which increases its tenement holding west, south and east of the central Southern African Tantalum mining right area by some 30 000 hectares.

The additional areas open up a number of exciting opportunities for Orion Minerals to explore for potential copper and associated minerals to supplement the Flat Mines Project, currently undergoing an Independent Expert's Review of the Bankable Feasibility Study.

"The ability to operate several individual mines within a twenty-kilometre radius under a central management hub brings economies of scale and lends flexibility with multiple production sites, each accessible via a well-established network of roads."

In addition to advancing its Okiep mine, Orion Minerals is also investigating opportunities to unlock further value from its flagship asset.

"We have been seeking complementary opportunities from our portfolio of existing assets, including prospects from our by-products. For instance, there is currently enormous demand for high quality, clean pyrite. As much as 10% of our ore contains clean pyrite and we have already received several inquiries in this regard. At the moment, clean pyrite trades at over $200/t FOB."

The Prieska mine is also renowned for its byproduct content of barite – a mineral, which is on the US critical minerals list, used in the oil and gas drilling process.

"Following the recent massive oil and gas discovery in offshore West Coast South Africa and in Namibia, and given the looming demand for good quality barite, we believe we have a valuable byproduct on-hand that will significantly lift our profitability," concludes Smart. ■

Right: Employees working at the Prieska Copper-Zinc Project.

Below: Employees working on construction at the Prieska Copper-Zinc Project.

Africa Specialty Risk

Insuring African miners

Mining is big. Big business, big money, big equipment, big pits - and when things go wrong, they can go hugely wrong –costing mining houses billions of rands and dollars in damages. Moreover, climate change effects are underpinning a rise in the number of natural disasters taking place with more cyclones and floods ravaging large tracts of land. This is even more reason for businesses and mining companies to be insured against possible damages and loss, say underwriters at Africa Specialty Risk (ASR) Joe Conlan: Property Underwriter and George Alexander: Political Violence & Terrorism Senior Underwriter. By *Nelendhre Moodley*.

Mikir Shah, Caroline Hilton and other members of the ASR team with H.E. Hakainde Hichilema, President of the Republic of Zambia.

According to Conlan, apart from the usual damages arising from fires, rioting and strike action, climate change is causing more frequent weather-related damages to plant, equipment, and property.

Established in 2020 to fill the gap in the African market for insurance cover, ASR has been growing exponentially since then.

Following losses incurred by insurers during the Covid-19 pandemic, some multinational insurance companies have revoked or reduced their service offerings to the African market to focus on different parts of the globe, which led ASR to address the capacity shortage.

"Our Kenyan-born CEO, Mikir Shah, recognised the need for an insurance offering to businesses operating on the continent and subsequently opened offices in Mauritius and the UK, with a hub in Morocco and more to follow. Shah has an intimate knowledge of the African market and over 25 years of business experience," says Conlan.

He adds: "Our expertise and understanding of African markets is what sets us apart from other companies. As underwriters - we travel extensively across the continent, engaging with key stakeholders, including our clients and brokers to offer them tailor-made solutions. We also travel across Africa for site visits, which sometimes include mining sites – this helps us keep up to speed with our knowledge base of such a dynamic industry. Where others have a standard set of offerings, ASR makes it a point to provide solutions for individual client needs".

For lower-income countries in Africa, access to fossil fuel energy (coal) is essential for their existing power needs, with over 600m people still living without electricity across the continent. ESG constitutes a broader spectrum, beyond environmental stewardship, that encompasses societal and corporate governance issues. Structural integration of ESG information in decision making is vital for ASR and is embedded in all facets of its insurance offerings.

Africa Specialty Risks is focused on protecting businesses in Africa by taking on the risk of financial hardship so its clients can build their businesses without fear of the unexpected. The social implications of changes need to be carefully managed, focusing on important aspects, such as the people – protecting workers, their families and communities as well as the environment.

Product offering

ASR offers a broad range of insurance products: Property, Political Violence & Terrorism, Construction, Energy, Liability, Kidnap and Ransom, Political Risk and Trade Credit, Treaty and Parametric Solutions, as well as the recently launched ASR Captive Solutions.

As mining companies are well capitalised and understand the risks associated with the mining sector, they have insurance cover in place, but "seek to cover potential large losses related to catastrophes that happen once every 10-15 years" that would significantly impact their balance sheet.

Many larger mining companies self-insure a hefty portion of their own risk with high self-insured

Mikir Shah participating in the 2023 Africa Debate panel 'Embracing ESG in African Trade'.

retentions; however, in certain cases, they look to insurers to cover them so they can cope financially with the burden of a potential heavy loss,

Aside from cover for business property, which includes machinery breakdown and loss of profits following damage to assets, ASR offers Political Violence and Terrorism risk cover.

"From a mining perspective, we cover assets including buildings, processing plants and any machinery – be it equipment operated on-surface or underground," says Conlan.

ASR's political risk cover provides investors and miners with confidence to invest in, and or operate, businesses in Africa.

With geopolitical uncertainty rife in some areas of Africa, mining companies are often hesitant to invest in those regions.

A further concern, says Conlan, is resource nationalism as investors and miners fear asset and property expropriation without compensation. There is a risk of resource nationalism in developing countries. The government may feel that the benefits of the mine are not being shared fairly between the local population and the mining company or they may have other incentives to strip mining company of its assets. This heightened risk is a concern for investors who may wish to develop mines across the continent. Political Risk cover is designed to protect foreign direct investment against adverse government interference and covers perils ranging from outright expropriation to forced abandonment.

According to Alexander, when assessing risk in politically charged areas, questions related to type of conflict and the relationship between mining houses and the host communities, are often top of mind.

"When we evaluate political violence and terrorism risk, we consider several factors, such as the level of security in the area and on the mines themselves, the response of police and security staff, the question of disgruntled employees or level of poverty in the local community and how mines provide support to these communities, and finally the ethnic balance between staff and local communities, he explains.

"Over the past few years, we have seen a rise in the rate of strikes, riots, civil commotion, and damage to property in Africa due to economic struggles. Further to this, new areas of political unrest, including Sudan, have emerged on the continent. However, at ASR, we always try to find an adequate solution to all African countries' individual needs, though sadly it is not always possible in active war-torn regions."

New product offering

An increasing number of mining CEOs are highlighting that their companies are exposed to the effects of climate change, including being extremely susceptible to small earthquakes, cyclones, and flash floods.

The ASR team outside the Bermuda Monetary Authority after a meeting with the BMA.

"Global warming is contributing, more than ever before, to more cyclones and floods in general, as demonstrated by the slow-moving storm and floods in KwaZulu-Natal in April 2022. Heavy storms and floods can affect mines profoundly as they tend to be more vulnerable to these than other types of risks, being so exposed in rural locations," Conlan notes.

As a result, ASR has responded with innovative parametric covers that rely on pre-defined conditions to trigger a claim, with the speed of payment being a huge advantage, settlement usually being made within a couple of weeks of the claim being received.

"For instance, farmers or miners may insert a clause in their cover to trigger a claim in the case of an absence of rainfall for sixty days or for an earth tremor of a certain level on the Richter scale. When the event occurs, even if there is no loss incurred, a payout to the client will be triggered. The advantage of a parametric cover is that it doesn't require the same level of effort to investigate the claim. It's a case of the incident took place, and a payment will be made," explains Conlan.

This niche product is proving popular with miners and businesses alike.

Further to this, the insurance provider recently launched another new product – the captive solution offering – which enables corporates and financial institutions to have greater control and flexibility over their insurance programmes.

"A captive is a company set up to help a business handle its own risk. Essentially, we use our expertise to help a firm set up its own share of risk retention – ASR establishes, manages, and administers the captive. The benefit of a captive is that it lowers the cost of covering a client's risk. This is an innovative offering, which is especially relevant in areas where there is a decided lack of insurance capacity," concludes Conlan. ■

Product innovation and geographic expansion

With mining accounting for as much as 70% of business, the sector is a significant generator of revenue for equipment manufacturer, Bell Equipment, which recently posted a sterling set of interim results for the period ended 30 June 2023. By *Nelendhre Moodley*.

The JSE-listed entity's revenue increased by 42% to R6 004,3 million (2022: R4 229,3 million) with profit from operating activities being 74% higher at R535,9 million (2022: R307,8 million).

Bell Equipment is a global manufacturer, distributor, and exporter of a wide range of heavy equipment for the construction, mining, quarrying, sugar, and forestry industries.

Speaking to *Modern Mining* soon after its results presentation, Leon Goosen, CEO of Bell Equipment, attributed the company's profitability to its growth-focused strategy, which is underpinned by being a multi-product, multi-industry international player.

Right: Bell E-series large trucks, such as the B45E, are packed with 35 years of experience in ADT design and manufacturing.

Below: Bell ADTs marry the best in engine and drivetrain technology.

"As a multi-product global player, we continue to experience exponential growth in international markets. We have tracked phenomenal growth in the US market, have become a market leader in most European countries, done extremely well in Indonesia and Australia, and have shown that, as a South African company, we can tackle the world."

Goosen explains that in looking to capitalise on markets in the Northern Hemisphere, Bell Equipment recently invested heavily in the development of a plant in Germany to ensure it remains close to its international client base.

"Further to this, we are also investing locally in the African market as well as in new product developments."

Mining - a key driver of growth

Bell Equipment's product range is ideally suited to the construction sector, in particular, bulk earthworks and large-scale infrastructure projects, including road, water and sanitation, and ports. However, given that investment into large-scale infrastructure developments in South Africa remains sluggish, the equipment manufacturer has looked to the Northern Hemisphere, where large-scale infrastructure developments continue apace.

Locally, Africa's active mining sector – a key contributor to the economy of many countries on the

underpin Bell Equipment's success

Bell Equipment continues to have the largest range of ADTs in the world, with the Bell B50E as its flagship 6x6 truck.

Bell Equipment's niche 4x4 crossover trucks, headed up by the B60E, offer significant advantages to customers not requiring 6x6 off-road capability.

continent – has been Bell Equipment's mainstay.

According to Goosen, although the South African and African mining sector experienced a dip in demand prior to Covid, post Covid the base-metals sector has experienced a turnaround in fortune. This, underpinned by the drive for clean energy products such as renewable energy and electric vehicles, has been the impetus for growth.

"In addition to the continued robust demand for coal locally, the strong demand for minerals and metals such as graphite, copper, nickel and lithium, has led to the development of several new mines which has, in turn, translated to strong demand for large-scale equipment used in the mining process."

The JSE-listed equipment supplier has an extensive range of products, including "the world's largest range of ADTs" and, according to Goosen, remains the preferred equipment supplier for miners looking to deliver on increased productivity.

The company's customer-centric design philosophy, which favours a low cost of ownership, is especially relevant amidst rising energy prices, as it offers agnostic fuel solutions.

"Coupled with our product range being extremely reliable and durable, it has the best fuel burn in the industry, which is what sets us apart from our competitors and has been the impetus for our strong growth over the past five years," says Goosen.

Although the equipment supplier has migrated the majority of its operations in Africa to dealers, it has retained a presence in Zambia and Zimbabwe.

"The dealer network has been expanded and the migration to an independent dealer model has proven beneficial," explains Goosen.

He adds that since the appointment of President Hakainde Hichilema, whose regime has fostered an investment-friendly environment, there has been greater confidence in the Zambian market, which

The Bell B60E 4x4 targets opencast mines and large quarries and is ideally matched to the Kobelco SK850LC.

The Bell Motor Grader has made innovative advances in control, comfort, efficiency, and maintenance and is expected to create a new standard for the grading industry.

has invigorated the mining sector, particularly development for base metals.

"Mining in the DRC, Mozambique, Botswana, and Namibia also remains solid with vast amounts of mining projects currently underway - this translates to continued strong demand for reliable machines carrying maintenance and backup support. Bell Equipment's extensive product range, especially trucks in the larger size range – 50 t and 60 t and ADTs – are in high demand. Moreover, given the focus on safety, equipment operators are seeking six-wheel drives in the ADT range as they are better able to handle the high rainfall season."

However, supply chain challenges at ports in South Africa continue to delay product delivery to customers and have proved to be extremely frustrating to the equipment supplier.

Trends driving the equipment market

According to Goosen, for the Northern Hemisphere, where access to key resources such as drivers is a challenge, the focus is on the adoption of autonomous equipment that enhances productivity and safety.

Bell Equipment has been a front-runner in identifying the trend towards autonomous and remote-controlled trucks which have informed the development of its product range.

"A number of solutions in the market currently align with an autonomous plug and play offering, and our decision early on to develop equipment that can be integrated into existing product ranges has proved to be a boon. As it stands, mining houses operate equipment from a variety of product manufacturers – be it dozers, water tankers, ADTs and drill rigs, etc., which means that a propriety solution is not ideal," emphasises Goosen.

The uptake of autonomous equipment is favoured due to its low cost of ownership as it eliminates the use of drivers and offers improved safety as "there is less product abuse and fewer accidents".

"Often a single truck driver leads the way

followed by a string of three-to-four autonomous vehicles which ensures that the vehicles are managed as they undertake the requisite task."

Moreover, following the promulgation of the Mine Health and Safety regulation on trackless mobile machinery, which looks to prevent collisions involving diesel-powered trackless mobile machinery and thereby reduce fatalities and related injuries, collision avoidance systems (CAS) and pedestrian detection systems (PDS) are now mandatory.

"Bell Equipment has been one of the first adopters of PDS and CAS technology, with the product being bolted onto our equipment to offer seamless integration. Being a first adopter of the technology has been a huge plus for us as not all our competitors were that quick on the technology uptake."

Further to this, the global drive for lower emissions has seen Bell Equipment playing a pivotal role in pushing for the development of products amenable to a variety of fuel types, including hydrated vegetable oil (HVO), a plant-produced fuel with a low carbon footprint.

According to Goosen, HVO has the lowest carbon footprint of any fuel.

"A key consideration has been to ensure that all our products are interchangeable with a range of agnostic solutions, including diesel, gas, and HVOs. Even though HVO is not readily available in South Africa, it is commonplace in Europe, Ireland, and the UK, and our customers absolutely love it."

Given its stated ambition of adopting cutting-edge technology on its product range, Bell Equipment partners with technology experts and product leaders in its industry.

"For instance, we view hydrogen as being the ideal solution for mining and construction equipment as battery electric technology has a range of limitations and needs further technology enhancements before it becomes a solution of choice. As such, we are looking into hydrogen technology for our next generation of trucks."

The equipment supplier is partnering with leading engine manufacturers, for the development of hydrogen-powered trucks and expects to offer clients a hydrogen-powered range from 2027/8 onwards.

"Unlike some of our competitors, we don't have our own engines and currently use Mercedes Benz ones. As such, we have the benefit of being able to cherry-pick the leaders we want as our partners and thus affiliate with industry experts who are at the forefront of industrial developments. This means we are able to adopt the most advanced technology currently available in the market, which benefits our customers in terms of productivity, efficiency, and safety."

Product innovation

Following Bell Equipment's announcement, in April, of a new motor grader, customers and dealers have been testing the prototype, which is scheduled for an official launch in 2024.

The Bell Motor Grader follows the introduction of the Bell Tracked Carrier in 2020 and is a significant step forward in the company's strategy to grow its South African IP.

According to Goosen, the prototype motor graders which have been operating with great success in various applications, expand the company's existing product line.

"We have received fantastic feedback from customers both on what is working well and on areas that need adjustment, and it has been pleasing to see improvements in efficiency and performance identified during the design stage being confirmed in practice," he notes.

Goosen explains that the motor grader is an extremely important primary earthmoving tool that is integral to project developments such as road building, bulk earthwork, and site preparation.

"In the equipment manufacturing industry, there are only a handful of product suppliers that manufacture motor graders and the introduction of the motor grader expands our product offering."

The company is busy testing around 20 prototypes across the African continent and international markets on specific applications and conditions to ensure that the product is suitable across most operational aspects.

"There is a definite thrust to invest in more product developments and the grader is the most significant because it offers Bell Equipment the opportunity to more than double our business. Further to this, we have a number of product innovations underway, including developing an LHD for underground mining, as well as product developments for the forestry and agricultural sectors. We are pushing the envelope to develop an extensive OEM product range for the various sectors in which we operate," concludes Goosen. ■

FLSmidth redefines, aligns to a 'greener' future

Armed with a new strategy and a stronger focus on the mining sector, flowsheet technology and service supplier to the global mining industry, FLSmidth is looking to grow the business sustainably with more 'smaller' acquisitions, said Vice President Site and Service Sales in Sub-Saharan Africa, Middle East and South Asia, Alistair McKay, when he addressed a media delegation visiting FLSmidth's Stormill facility in the west of Johannesburg. By *Nelendhre Moodley*.

FLSmidth Stormill Service Centre in South Africa.

Alistair McKay.

Stephan Kruger.

The technology specialist recently redefined its focus in line with the changing macroeconomic fortunes and transitioned from an engineering company to a technology partner focused on achieving on its sustainability agenda.

The company launched new corporate mining strategy CORE'26 with the 'pure play' plans intended to focus on sustainability, service, technology and performance. The group is also simplifying its operating model to reduce risks, improve efficiencies, ensure stronger execution and improve profitability and quality of earnings.

"The ability of the company to evolve and align with the changing environment is really critical. Today FLSmidth is a very different company from when it started over a century ago – in fact, even if we track back to ten years ago, when it was predominantly a supplier to the cement industry. Today the company is largely focused on the mining sector, which accounts for roughly 80% of FLSmidth's business," said McKay.

Underpinned by its drive towards sustainability and achieving on its net zero emission target by 2030, has been the decision to redirect away from the cement industry, which contributes as much as 8% to global CO_2 emissions, and importantly, has become highly saturated by the entry of several new players.

According to Stephan Kruger, Vice President Pumps, Cyclones & Valves at FLSmidth, on the back of numerous acquisitions, the company has tracked exponential growth.

"Since 1982, FLSmidth has completed a significant number of acquisitions – 95 to be exact. The storyline of more acquisitions will continue into the future," he affirmed.

Following its acquisition of thyssenkrupp's mining business last year, the equipment supplier's strategy now is to grow the business "with smaller type acquisitions" that enhance its sustainability strategy and service agenda. FLSmidth is busy evaluating an option to "acquire a small production facility in South America".

"We are always looking at improving our supply chain footprint, aiming to be closer to our customers. Nearshoring helps us to deliver product quickly and

FLSmidth Mining Strategy - CORE'26 - mining for a sustainable world.

feature

Above: Assembly of KREBS® Technequip™ Knife Gate Slurry Valve.

Left: Assembly of a larger KREBS® UMD™ Ultimate Mill Discharge Slurry Pump.

cost-effectively," added Kruger.

In line with reaping the rewards of nearshoring, the company is eyeing the establishment of more service centres and manufacturing sites globally and recently opened a new service centre in Edmonton, Canada.

"Regionally, we are investigating opportunities to open more service centres in West Africa and the Middle East. On the back of strong growth in these mining regions, the company is looking to be closer to its customer base which will allow a shorter lead time in-country and in the region," explained Kruger.

Over 140 years of uninterrupted service

Backed by 141 years of uninterrupted service to the mining and cement industries, FLSmidth is thus placed as one of the world's oldest engineering companies.

Reflecting on the company's growth during the early years of its establishment, Kruger explained that FLSmidth had quite a fairytale start with founder, Frederik Smith, an engineer by trade, winning the National Lottery in Denmark which subsequently paved the way for startup capital to establish FLSmidth.

The company was initially a consultancy business whose main focus was the purchase of machinery and manufacturing of small machines for local craftsmen.

"FLSmidth supplied product to the first cement plant in 1889 and undertook its first product supply in South Africa to PPC Cement, in 1904. During the early years the company's ethos was characterised by ingenuity as it sought out business opportunities across the world at a time when travel was via ship and train. The global focus was certainly as present back in those days as it is today," stated Kruger.

Following a listing on the NASDAQ Stock Exchange in 1968, the company has continued to grow by leaps and bounds and now employs around 10 600 people with representation in more than 60 countries. It trades in more than 150 countries across the globe.

"FLSmidth delivered consolidated revenues of R59 billion in 2022. The share price is extremely favourable, and our investors have reacted positively to the new strategy, which is evidenced by the almost doubling of the share price from September last year, when it traded at around 165 Danish Kroner to now trading at 345 DKK. This is testament to the confidence the market has in FLSmidth's ability to deliver on our business strategy and confidence in the leadership of the organisation," said Kruger.

Evolving in line with global needs

As companies work to meet their zero emissions targets, the demand for metals and minerals to support the green energy transition, including advances in battery technology, renewable energy and electric vehicles, remains robust.

According to McKay, battery minerals, including copper, lithium and graphite are a key part of the energy transition and will continue to underpin demand for its innovative product range.

"Being a technology partner means that FLSmidth is focused on delivering improvements across the entire spectrum of the business flowsheet for increased productivity at all levels of the operation through to final product," noted Kruger, who explained that the company's efforts are closely linked to the mine of the future which is a zero-emission mine.

FLSmidth's new technology developments into the green metals industry, include "exciting new technologies around hydrogen and biofuels".

"There is also a definite move away from the traditional sources of energy such as fossil fuels to natural gas and hydrogen which offer significant reductions in emissions," noted McKay.

Aside from developing innovative technology for new mines, FLSmidth remains heavily invested in technology improvements for existing operations including "upgrading and implementing technologies into existing circuits to improve performance and grade recovery as well as a reduction in energy and water consumption".

"We understand that brownfields operations are going to be around for a long time and, as such, we are introducing new technologies, such as the high-pressure grinding rolls (HPGR Pro) – an improvement on a technology that's been around for many years

Gender equity

Given the male-dominated industry, FLSmidth is driving the agenda for female empowerment, targeting "at least a 25% of women employment" at all levels, including managerial, by 2030.

Stockholding at the FLSmidth Stormill Service Centre in South Africa.

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– which increase productivity by a further 20% while simultaneously reducing energy consumption by 15%," explained McKay.

"We can deliver innovations to help lower the CO_2 footprint within mine pits and in product transport via conveyor-belt systems. In fact, simply by installing an overland conveyor system, a client which operates a copper mine in Zambia, recently achieved an energy saving of roughly 33 000 tonnes of CO_2 emissions a year."

Aside from developing innovative ways to re-use water in the processing plant and overall operations, FLSmidth's technologies are targeting water savings in tailings storage facilities (TSF).

According to McKay, given the drive for safer tailings dams, there has been a move away from traditional wet tailings dams to "more dry state TSFs".

"As mines are huge consumers of water and energy, especially at their processing facilities, mining houses actively seek out efficient solutions and technologies such as HPGR, which aids in reducing water and power consumption dramatically."

Targeting carbon neutrality itself by 2030, the technology specialist is actively tracking its own performance at its upstream and downstream operations.

"We are focused on turning our operations around to meet our MissionZero agenda and are working closely with our clients to achieve their net zero emissions agenda as well," explained McKay.

He concluded: "From a social impact perspective, we concentrate on our employees and those of our clients and suppliers, and work consciously to ensure a safe environment. No matter where we operate, be it in the office, the plant or the mine itself, we look towards bringing people home safely, every single day." ■

Conveyor Dust and Spillage: The Importance of Skirtboard Sealing Systems

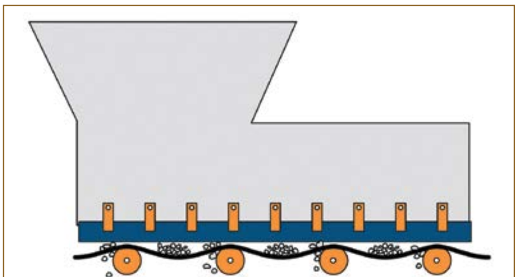
By Dave Mueller : Product Manager at Martin Engineering

Bulk material handling solutions provider, Martin Engineering, designs products around safety, to promote an efficient and clean working environment. Part of this is manufacturing properly sealed conveyor chutes for bulk handling. Latest innovations from the company are the ApronSeal™ Double Skirting for extra sealing in high dust environments and a self-adjusting skirting system with limited maintenance. This article explains some of the issues the older designs experienced; how a sealed environment improves workplace safety; and how skirting can reduce labour costs for cleanup, in turn, lowering the cost of operation.

When tons of transferred bulk material hit a moving belt, three things happen: fines scatter, cargo shifts as it settles and dust becomes airborne. The impact can create turbulent air that seeks the easiest escape from any gap it can find, carrying dust and fines with it. These gaps generally appear on the sides of the enclosure between the chute wall and the belt, and skirting systems address the challenge of containing fugitive dust and spillage.

What is a Skirtboard Sealing System?

Usually made from natural or SBR rubber (or specialty formulations for specific applications such as underground mining, food, etc.), the skirting extends down the entire length of the transition enclosure and is generally tapered at the bottom to match the trough angle of the belt. It is intended to maintain a seal on the enclosure and help trap any fine particles and dust that are not contained by the wear liners and chute wall.



Gaps, spillage and entrapment are not always apparent to the naked eye.

ApronSeal™ Double Skirting offers a dual seal and can be flipped for extended equipment life.

Skirting issues

As the skirt edge loses its seal, gaps are created, which allow material to become entrapped in a 'pinch point'. This causes abrasion that gouges or chafes the surface of the belt down its entire length. Some of the major issues surrounding entrapment include scalloping, when wedged material causes excessive wear, and grooves, where debris collects under the skirt causing friction damage. Regardless of the belt tension, belt sag will create a space for the fugitive dust to escape or for material to become entrapped [see Figure 1]. This is avoided by retrofitting a skirt sealing system, with impact cradles or edge support, rather than rollers in the loading zone.

Proper enclosure configuration

Wear liners are typically welded to the inside of the chute wall with the skirtboard attached on the outside using an adjustable clamp system. However, the internal design [Figure 2] can allow some material buildup in the gap between the wear liner and the skirtboard, depending on the size of the aggregate.

External wear liner and skirting configurations place both pieces of equipment outside the chute wall [Figure 3]. Placing the skirt seal and wear liner outside of the chute makes it easier for workers to

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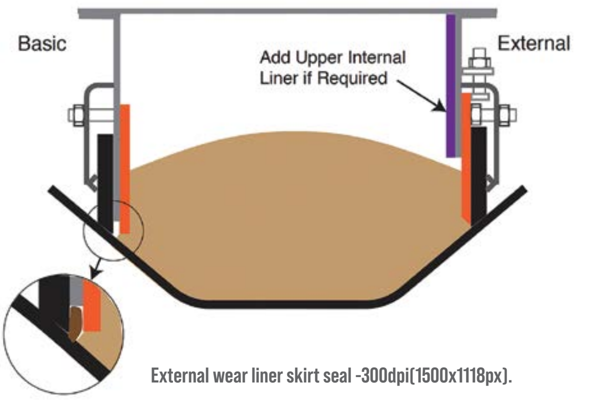
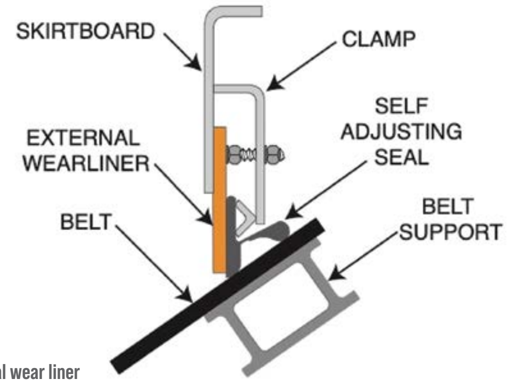


External wear liner skirt seal -300dpi(1500x1118px).



External wear liner
and dual self-adjusting seal with belt support is considered state-of-the-art.

Dust and spillage clog idlers, requiring them to be replaced and raising the cost of operation.

perform adjustments safely. The result is a better seal on the belt and less material entrapment.

Self-adjusting skirting automatically maintains a seal, as the belt path fluctuates due to its design, without the need for adjustment and only periodic inspection. A low-profile skirting assembly should need only 6 in. (152 mm) of clearance for installation and maintenance in small spaces.

Skirting best practices

Since skirts are wear parts, it is important that they are easily installed, adjusted, maintained and replaced to avoid dust and spillage, mitigate downtime, improve workplace safety and reduce the cost of operation. Managers contemplating a capital investment in a skirting and wear liner system should consider:

- ❑ Hiring an outside engineer to design the best system for the application.
- ❑ Installing equipment that features external maintenance.
- ❑ Utilising a skirting strip that extends the entire length of the chute to avoid seams.
- ❑ Choosing skirting material that is free of fabrics, with a lower abrasion resistance than the belt.
- ❑ Installing a self-adjusting system.
- ❑ Choosing the option with the least worker exposure to equipment hazards.

Case Study – Grain Terminal in Brazil Reduces Dust

The Port of Santos in São Paulo is the busiest in Latin America. Operating at Terminal 26, T-Grão manages the import and export of over 3.6 million mt/y of malt, wheat, soy, and maize. Transfer points at T-Grão range between 32-50 feet (10-15 m) in height. The fugitive emissions affected air quality and visibility in the immediate work areas, forcing personnel to wear protective masks when working around any part of the conveyor system. The dust often travelled beyond the site line, sparking complaints. Prior to the chute upgrade, a cleaning crew of 45 workers spent ~24 hours per month on dust and spillage cleanup.

The new loading zone featured a sealing system that mitigated spillage and dust supported by dust bags.

Martin Engineering technicians constructed a longer sealed enclosure with the ability to control airflow and give dust extra space to settle. They added several other critical components, including an external dual seal skirtboard and wear liner system. Impact cradles and slider cradles replaced the idlers to seal gaps in the chute.

Operators immediately observed significant results. As material moved through the system, particulates remained within the enclosure and either collected in the dust bags or settled back into the cargo flow. After a lengthy observation period, operators reported that there had been less downtime for cleanup and maintenance, and improved workplace safety.

By installing modern skirtboards that prevent fugitive material from leaving the loading chute, operators can reduce worker exposure to hazards, minimise labour for maintenance and cleanup, improve equipment and belt life and achieve better compliance. The savings on labour and operating costs alone provide a sound return on investment, but the improvement to workplace safety should be the only motivation needed. ▪

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Omnia Holdings and Hypex in strategic partnership

South Africa-based company, Omnia Holdings, has announced a strategic partnership with Swedish-based Hypex Bio Explosives Technology (Hypex) and the acquisition of a minority equity stake in the company. Hypex is at the forefront of innovative and sustainable civil explosives solutions and has developed a ground-breaking emulsion using hydrogen peroxide (HP) and offering substantially enhanced environmental benefits compared to conventional products.

Seelan Gobalsamy, CEO of Omnia.

Ralf Hennecke, Managing Director of BME.

This collaboration marks a significant milestone for both Omnia and Hypex as it will notably enhance the ongoing development and commercial rollout of Hypex's HP emulsion technology in key markets. In addition, it provides Omnia, the parent company of global blasting solutions provider BME, with access to state-of-the-art technology, the company said.

Omnia, in conjunction with BME, has established a reputation for its dedication to innovation and market-driven product solutions. Extending its services across Africa, Australasia, North America and Brazil, BME offers cutting-edge products and services at every stage in the mining explosives and blasting solutions supply chain, using technology to maximise safety and minimise environmental impact.

Commenting on the transaction, Seelan Gobalsamy, CEO of Omnia said, "Hypex is a good strategic fit for BME and aligns with Omnia's sustainability and high-growth objectives, including pollution and CO_2 reduction. Hypex has developed the first non-nitrate explosive emulsions in the market and reduced the carbon content by 90% over traditional sources. This technology has the potential to completely change the explosives supply industry."

Ralf Hennecke, Managing Director of BME adds, "As one of the largest explosives and blasting solutions suppliers on the African continent, BME is pursuing a globalisation strategy which is optimally aligned to the sustainable, nitrate-free emulsion technology offered by Hypex."

Hypex's experience in rapid yet safe development cycles, combined with the company's proven track record in commercialisation activities, will utilise the proceeds from this transaction to further strengthen the organisation and invest in accelerated growth.

Thomas Gustavsson, CEO of Hypex, said, "We are thrilled to announce the partnership with Omnia, and I am very happy not only to have an ideal investor on board but also a company whose culture is well aligned with ours. I foresee significant synergies and accelerated accomplishments as a direct result. The team and I are grateful for the hard work done by both sides to accomplish this deal."

This partnership agreement aligns seamlessly with Omnia's capital allocation framework of adding new revenue streams in future high-growth international markets while maintaining a diversified and cash-generative business, improving the Group's competitive advantage and resilience given anticipated market changes, and aligning with its sustainability journey.

"As a responsible industry leader, we are committed to sustainable innovation and the responsible use of chemicals for the health, safety and well-being of our planet and its people. Our partnership with Hypex strengthens our ability to develop and distribute eco-friendly products and technologies and is testament to our purpose of creating a greener and safer future for all," said Gobalsamy.

BME is pursuing a globalisation strategy.

AECI Mining awarded explosives contract in Papua New Guinea

Chemicals solutions company AECI has been awarded a five-year contract for the supply of explosives and the provision of services to Newcrest Mining's (Newcrest) Lihir gold mining operation in Papua New Guinea (PNG). Newcrest is the largest gold producer listed on the Australian Securities Exchange and Lihir is one of the world's largest gold mines.

Holger Riemensperger, AECI Group Chief Executive, commented: "The Newcrest Lihir contract not only further expands our reach in the greater Asia Pacific region, but is a significant milestone on our journey to sustainable international business growth."

Mark Kathan, AECI Mining Chief Executive Officer, added; "The contract includes the construction of a modular emulsion plant on the island of Lihir in PNG. This will enable us to deliver full blasting services using our specially formulated hot and reactive ground bulk products, as well as our specially designed delivery systems and hot hole initiation systems."

The construction of the modular emulsion plant is expected to take six months and will be in full production in May 2024.

The contract will also result in the registration of a new AECI Group entity, namely AECI PNG, and comes at a time when the AECI Group is recognising 14 years of operation of its Australasia business. ■

AECI Mining has been awarded an explosives contract in Papua New Guinea

feature

Dr Ross Harvey, director of research and programmes at GGA.

Mining as a key to solving youth unemployment

By Dr Ross Harvey, director of research and programmes at Good Governance Africa (GGA)

Youth unemployment is a significant global concern. It is an especially concerning development challenge across African economies, given our relatively high fertility rates. According to the United Nations, Africa will account for four elevenths of the world's population by 2100, while all other continents move into negative fertility. The nature of this concern is multivariate. In the first instance, high quality jobs provide dignity, and the absence thereof is likely to worsen dynamics that currently undermine security and wellbeing. Job income is also a means to an end. Such income, broadly distributed, tends to produce social and political stability through creating a broad-based middle class. In the absence of such access to income, however, political stability weakens, populist leaders gain traction, and appetite for democracy diminishes. In South Africa alone, 72% of respondents polled in the latest Afrobarometer Survey essentially indicated that they would be willing to forego the right to vote if it meant greater economic opportunity and stability.

Acemoglu recently put it: "Shared prosperity thus depends not only on productivity growth but also on the right composition of technology, institutions, and norms… The necessity of markets for driving innovation does not make them sufficient for producing social benefits".

A recent article by economist Daron Acemoglu notes that since the end of the Cold War, people around the world are increasingly dissatisfied with democracy. *The Economist* makes a similar case. Concerningly, this trend is particularly strong among young people, who "report a growing preference for left-wing or right-wing authoritarian regimes. On both sides of the Atlantic, it is now common to hear arguments advocating new forms of socialism or a move away from economic growth altogether" writes Acemoglu. Appetite for democracy among citizens in African countries appears to remain strong, though many African countries have backslidden in terms of democratic health rankings, according to the latest Economist Intelligence Unit's Democracy Index.

Mining is an increasingly important flywheel for industrialisation across African economies.

The conditions for shared prosperity appear to be optimal when governments are effective at distributing public goods efficiently.

The data is surprisingly clear, though, as are the econometric regression results, that democracies retain significant advantages over non-democracies in both economic growth and in the provision of public goods. Even in instances where democratic governance is sub-optimal, the presence of democratic mechanisms allows citizens to credibly threaten elites with the loss of power if they extract an unacceptably high level of unproductive rents from the system. There is also strong empirical evidence to suggest that across the developing world, the political incentives for expanding the provision of basic public goods such as electricity, especially to highly populated areas, are also higher in democracies than in autocracies at similar developmental levels.

The gradual shifting of cultural preferences away from democracy and towards some kind of autocracy is a problem. Autocracies, regardless of their ideological leanings, have strong incentives to narrowly serve the ruling elite at the expense of the majority of citizens. Correctly identifying the source of democratic dissatisfaction is critical if confidence in liberal democracy as the most effective political system, when measured in terms of the broad-based distribution public goods, is to be restored.

This brings us back to the question of employment. The growing dissatisfaction with democracy was not born in a vacuum. Part of the challenge is that even though they have tended to outperform autocratic counterparts, the economic growth models pursued within liberal democracies have not created evenly distributed benefits. Productivity growth should translate into wage growth, according to standard classical models, but this has not happened because productivity growth has largely been driven by technological progress at the expense of lower-skilled labour. More gains have also accrued to the owners of technology, undermining the bargaining power of workers that had originally been institutionalised under the early waves of democratisation. As Acemoglu recently put it: "Shared prosperity thus depends not only on productivity growth but also on the right composition of technology, institutions, and norms... The necessity of markets for driving innovation does not make them sufficient for producing social benefits".

Notwithstanding some of the profound challenges to shared prosperity created by technological innovation, a standard precept within the economics literature remains that – at least historically – industrialisation has been the dominant channel through which job growth has occurred. In particular, it has been a conduit through which low-skilled workers have been absorbed into the economy. However, in many African countries, manufacturing growth has slowed, as I wrote in this column last month, limiting this channel for employment growth. In the process, it may also have weakened citizens' ability to hold their governments accountable. The conditions for shared prosperity appear to be optimal when governments are effective at distributing public goods efficiently, and when citizens are simultaneously able to demand transparency and accountability. These are two mutually reinforcing vectors of healthy democracies, which create an enabling environment for economic dynamism that distributes its gains relatively evenly.

Given that it was ultimately the bargain between organised labour and elites that gave rise to modern democracy, the absence of a strong organised labour presence through a weak manufacturing sector in African countries does not bode well for the consolidation of democracies and the governance benefits associated with it. So, what does all of this have to do with mining?

Mining is an increasingly important flywheel for industrialisation across African economies, a potential catalyst for industrialisation if it becomes an integral part of development planning. The world is in a transition towards an environmentally cleaner future, which means that a growing quantity of minerals and metals will be required, many of which are located in Africa. It is critical that the exploitation of these form part of smart industrialisation strategies that tap into global value chain opportunities. In the coming commodities boom, African countries will have to be institutionally prepared to ensure that they don't continue to simply export raw materials, which are high-bulk, low-value, and then import high-value products made with that same raw material. I am not advocating unthinking downstream beneficiation, but I am advocating value addition, either through upstream manufacturing to feed mining endeavours, or sidestream research and development into cutting-edge technologies that can both make mining more efficient and spawn their own industries.

Mining itself will contribute increasingly fewer direct jobs to any economy because of capital-deepening (automation technology replacing labour), but it will nonetheless generate wealth that creates opportunities for employment in connected spheres. These opportunities will be foregone unless the right institutional and planning structures are in place. Mining companies themselves have an opportunity to invest in this direction – to modify CSR spend into something more connected to institutional capacity building, which will remain long after any given mine is gone. ■

Above: Mining will contribute increasingly fewer direct jobs to any economy because of capital-deepening.

Left: More gains accrue to the owners of technology.

Mining itself will contribute increasingly fewer direct jobs to any economy because of capital-deepening (automation technology replacing labour), but it will nonetheless generate wealth that creates opportunities for employment in connected spheres.

Could de-regulation be the answer to the zama-zama crisis?

By Dominic Varrie: Candidate Attorney at NSDV

Dominic Varrie: Candidate Attorney at NSDV.

- The primary victims of South Africa's stringent one size fits all mining regulatory system are the local artisanal and small-scale mining entities.
- Mineral and petroleum resources are the common heritage of all the people of South Africa and the State is the custodian thereof.
- The process takes at least 300 days to obtain a mining right and 180 days to obtain a prospecting right, the process is too hard and costly for juniors.
- Minerals Council South Africa estimates that the annual commercial value of illegal mining and illicit dealings in precious metals and diamonds is about R7 billion.
- There are between 8 000 and 30 000 illegal miners reported to work in South Africa, including common reports of child labour and other human rights abuses.
- Illegal gold mining operations have become a major challenge for legitimate companies, with as much as 5% of South Africa's annual gold production lost to illicit activities.
- Estimates place the illegal mining and export of chrome ore at nearly 1 million tonnes per year – more than 10% of South Africa's legal chrome output.
- 2018 junior mining contributed R54 billion to the mining sector, which increased by 63% to R88 billion in 2022.
- Ghana has demonstrated the potential of the ASM sector, having legalised small-scale mining in 1989.

South Africa is hailed the world over for its mineral wealth.

As much as 5% of South Africa's annual gold production is lost to illicit activities.

In 2021, the sector employed 60% of Ghana's mining work force, about 12% of the country's population. In 2018, small-scale miners accounted for more 43,1% of total gold production in the country.

South Africa is hailed the world over for its mineral wealth and has hosted a thriving large-scale mining industry since the mid-1800s.

As a result, the legislation governing mining in South Africa has been meticulously developed and the current framework is undeniably world class, but one could say that over-regulation of the mining sector, particularly in regard to the smaller players, may have given rise to some unfavourable consequences for the juniors. Let's face it, the primary victims of South Africa's one size fits all stringent mining regulatory system are the local artisanal and small-scale mining (ASM) operations.

Section 3(1) of the Mineral and Petroleum Resources Development Act, No. 28 of 2002 (MPRDA) states that *"Mineral and petroleum resources are the common heritage of all the people of South Africa and the State is the custodian thereof for the benefit of all South Africans"*. This lofty principle is unfortunately not reflected in the operation of the prevailing legislative framework.

The process of becoming lawfully entitled to mine in a particular area is long and burdensome.

At present, it takes at least 300 days to obtain a mining right and 180 days to obtain a prospecting right. These waiting periods represent the best-case scenario and assume that everything goes according to plan, which is seldom the case. The preliminary stages can be incredibly costly, with the intricate prospecting processes, the need for an environmental impact assessment, onboarding of multiple technical specialists, a menagerie of documents, a social and labour plan, water use licence, waste management licence, environmental authorisation and mining works programme, to name just a few of the obligatory regulatory requirements that come at considerable cost. The regulatory burden and associated costs continue to accumulate once a mining right has been secured and mining activities commence. The variety of mine health and safety requirements, various reporting obligations, regular audits and financial provisioning requirements that could run far into the millions, mean that smaller mining companies are never free of the financial burdens of the mining regulatory system.

To the mining giants of the world, listed companies and mid-tier miners, these administratively and financially weighty procedures are at most, a minor inconvenience when the prize is the potentially handsome profits the mining industry has historically produced. In fact, for the most part, the strict regulation of larger players to some extent is beneficial for a sustainable environment and climate, and the protection of local host communities.

However, for ASMs who, likely, do not have the funding necessary to traverse these strict procedures and commence with profit producing mining operations, the regulatory and financial burden is too heavy to bear. The uniform application of the current regulatory framework creates barriers to entry for ASMs and allows large scale operators to maintain a stranglehold on the industry.

Let's look at illegal mining in South Africa

The regulatory barriers to entry are discouraging for ASMs and disincentivise their engagement with the formal sector, only adding fuel to the fire that is the informal or rather, illegal mining sector in South Africa.

Illegal miners, known locally as 'Zama Zamas', have long been a nightmare for the South African mining industry and, recently, the criminality that surrounds these illegal mining formations means they are a bane for communities in general. Not only do Zama Zamas place themselves at substantial risk while conducting illicit mining activities, they also pose a threat to the safety of legal mining workers, the environment, and urban and rural communities in general.

A report by the Transnational Alliance to Combat Illicit Trade (TRACIT) demonstrates the scale of the damage caused by illegal mining in South Africa:

- A 2017 report by the Minerals Council South Africa estimates that the annual commercial value of illegal mining and illicit dealings in precious metals and diamonds is about R7 billion, including heightened security costs to protect mines from incursions by syndicates.
- There are between 8 000 and 30 000 illegal miners reported to work in South Africa, including common reports of child labour and other human rights abuses.
- Illegal gold mining operations have become a major challenge for legitimate companies, with as much as 5% of South Africa's annual gold production lost to illicit activities.
- Estimates place the illegal mining and export of chrome ore at nearly 1 million tonnes per year – more than 10% of South Africa's legal chrome output.

Ghana has demonstrated the potential of the ASM sector, having legalised small-scale mining in 1989.

This underground industry has been robbing South Africa of important tax revenue, royalties and foreign exchange earnings, while costing legitimate mining companies billions in production loss and increased security expenditure, as well as creating a burgeoning organised criminal enterprise that law enforcement is increasingly struggling to reign in.

There's a huge economical upside to artisanal mining

ASMs will often exploit smaller mineral deposits that are uneconomical for large-scale mining operations, utilising basic equipment and simple technology.

Freeing ASMs from the regulatory constraints of the current regime could create an avenue for illegal miners to lawfully participate in the mining industry, allow the government to regulate and benefit from the increased activity in the sector, create much needed jobs in the country, combat urban migration and alleviate the strain on local police forces.

This change will not require a total revision of the current regulatory framework, rather a targeted reform, consisting of a relaxation of the legislative requirements. This will facilitate access to the

ASMs often exploit smaller mineral deposits using basic equipment and simple technology.

industry within reasonable limitations, and consequently divert many illegal miners toward the formal sector.

Another crucial intervention for ASMs would be to improve access to funding. This can be achieved in a number of ways. A good start would be to amend the Regulations promulgated in terms of the MPRDA to include and recognise junior mining and its specific requirements.

Investors have historically been apprehensive about ASMs owing to less experience, legislative and permitting challenges, the geopolitical climate of South Africa, and the lack of adequate infrastructure. However, according to statistics released by the Minerals Council of South Africa, in 2018 junior mining contributed R54 billion to the mining sector, which increased by 63% to R88 billion in 2022, demonstrating the incredible potential of the sector.

Junior mining contributed R88 billion to the economy in 2022.

Proactive effort is needed to encourage investment in the junior mining space. The successful model of the Victoria Falls Stock Exchange in Zimbabwe offers some innovative solutions, such as offering tax incentives for shareholders and an exemption from capital gains withholding tax for investors.

What is Zimbabwe doing?

African mining powerhouse, Zimbabwe, has recently taken steps to open up access to the mining industry for ASMs. The currently enforced legislation in Zimbabwe is the Mines and Minerals Act [Chapter 21:05], an antiquated piece of legislation that has been in force since 1961. The old Act is set to be repealed by the more modern Mines and Minerals Bill, H.B. 10, 2022.

Artisanal and small-scale miners in Zimbabwe have long made a significant contribution to Zimbabwe's economy, despite not being mentioned in the prior regulatory framework. The new Bill has expressly recognised and defined artisanal and small-scale miners. In an attempt to protect and bolster the local industry, the Bill has limited artisanal and small-scale miners to "Zimbabwean citizens or permanent residents".

How is Ghana doing it?

Ghana has demonstrated the potential of the ASM sector, having legalised small-scale mining in 1989. In 2021, the sector employed 60% of Ghana's mining work force, about 12% of the country's population. In 2018, small-scale miners accounted for more 43,1% of total gold production in the country. The socio-economic benefit of the ASM sector is clear. However, while ASM is legal in Ghana, formalisation and regulation of the sector remains a challenge.

Unlocking the potential of ASMs in South Africa can have significant wide-reaching benefits for the country. Targeted relaxation of regulatory constraints in the mining industry that specifically impact ASMs can allow significant formalisation of the current informal sector, enabling improved regulatory control and protection.

The formalisation of ASMs has the potential to produce many new jobs in the country and, with recently announced labour statistics showing South Africa's unemployment rate of 32.6% in the second quarter of 2023, surely we should be trying to create jobs in any way we can, and the formalisation of ASMs is a viable option. An accessible, fairly regulated, and formal ASM sector could encourage many illegal miners to migrate over to the safety of the formal sector and, who knows, it may even encourage funding to the sector as well. ■

Powerbit Rocktools: The truth about Tricone

Africa – a landscape where rugged terrain and challenging conditions are the norm – is a global epicentre for the oil and gas, mining and construction industries. The continent's resources yield a wealth of revenue for enterprising businesses equipped to go beneath the surface and extract vital raw materials for manufacturing, export and more.

Powerbit Rocktools – an established partner to several companies in drilling, mineral extraction, and other digging pursuits – shares insights on its versatile Tricone Bit range. These remarkably flexible bits maximise efficiency and output, making them the go-to choice for a wide range of drilling needs.

An image of a Tricone bit.

The Tricone difference

Since the emergence of Tricone Bits during the Great Depression, they have become the preferred choice for everything from well excavation projects to large-scale oil extraction operations, and mining.

Tricone Bits are renowned for their versatility and ability to conquer the most challenging rock formations. This adaptability, with several variants tailored to varying terrain, sets these bits apart.

Typically, Tricone Bits are categorised as either Mill Tooth bits or TCI bits (TCI representing Tungsten Carbide Insert), each suited for soft, medium or hard rock types. Selecting the right Tricone Bit varies based on a thorough understanding of the specific rock formation at hand.

Customisation for precision and staying power

Tricone Bits from Powerbit can be customised with different types of teeth and materials to suit specific drilling requirements. Durability is a hallmark of Powerbit's Tricone Bits. Designed to withstand high temperatures, abrasion and impact, these bits are built to last.

When drilling conditions are harsh and demands relentless, Powerbit Tricone Bits rise to the occasion, ensuring downtime is minimised and productivity soars.

Efficiency redefined

The Tricone Bit range is distinguished by a unique design that allows for faster drilling rates compared to many other varieties of drill bits. This translates to significant time and cost savings on drilling projects, and when time is money, Powerbit's Tricone Bits deliver the advantage you need to outdo the competition.

Directional stability and control

In directional drilling applications, control and accuracy are paramount. Powerbit Tricone Bits offer proven directional stability thanks to their three-cone design. For example, with more contact points with the borehole wall, they deliver superior control, ensuring that drilling proceeds precisely as planned.

Ease of maintenance for longevity

Maintaining Tricone Bits is a breeze, and Powerbit ensures that the one-on-one support you need is always on call. The bits can be disassembled with relative ease, then quickly cleaned and reassembled with new components as required. This not only extends their lifespan but also saves on replacement costs. Powerbit's commitment to longevity doesn't stop at the purchase; it extends through the product's life.

Powerbit – the drilling partner of choice

Powerbit Rocktools has cemented its position as an industry leader by focusing consistently on quality, reliability and personalised after-sales service. Its dedication to customisation, durability, efficiency and ongoing innovation makes Powerbit a partner of choice for drilling professionals worldwide. Even when faced with the most challenging drilling operations, Powerbit Rocktools delivers the tools that empower success.

What sets Powerbit apart is its firm commitment to understanding its customers' unique challenges, goals and needs. With over two decades of experience, Powerbit remains at the forefront of drilling technology, delivering cutting-edge products at affordable prices.

With a proven dedication to customer satisfaction and a relentless pursuit of excellence, Powerbit Rocktools continues to push the boundaries of innovation. Its mission is clear: equip drilling businesses with the tools they need to conquer even the most formidable drilling operations efficiently and effectively.

As the industry embraces rapid technological advancements and drilling ventures into uncharted territories, the demand for robust and dependable rock drilling tools has never been greater. In the face of extreme and challenging environments, businesses need cost-effective and reliable solutions they can trust.

Since 1996, Powerbit has been a prominent figure in the southern African mining industry, known for servicing the unique demands of drilling-related sectors with an unyielding commitment to excellence.

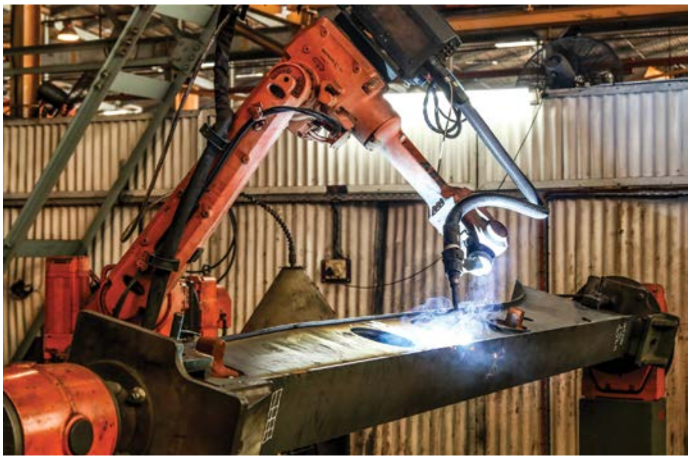
Powerbit's product range is extensive and meticulously designed to cater to diverse drilling requirements across various industries. From DTH hammers and bits to RC hammers and bits, Tricone bits, top hammer bits and rods, casing systems, grinding machines and more, each tool has a solid track record of enhancing drilling efficiency and longevity. ■

Bell launches new Bell Heavy Industries division

With almost seventy years of demonstrated expertise in complex engineering, heavy fabrication, and machining for its own range of material handling equipment, Bell Equipment is now offering these specialist services to all industries in the country through its newly formed division, Bell Heavy Industries (BHI).

Bell Equipment's Group Business Development Director, Stephen Jones emphasises the current scarcity of companies providing these vital services locally. "South Africa has seen a huge reduction in engineering companies, and, in response, we have strategically positioned our South African manufacturing facility to fill this void by providing project engineering and contract manufacturing through BHI. The growth of Bell as a well-established mining, earthmoving, and agriculture equipment manufacturer, both domestically and in terms of exports around the world, is testament to the skills available and the quality of products that we make in Richards Bay. We're confident in our ability to expand into other industries and believe this will benefit not only the manufacturing sector but the whole country."

The 45 000 m^2 undercover manufacturing area in Richards Bay complies with the ISO 9001:2015 Quality Management System and welds to the internationally recognised ISO 3834-2 Appendix 10 standards. It is well equipped with specialist machines including horizontal and vertical CNC (computerised numerical control) machining centres, 5-axis boring machines, laser cutters, high-definition oxyfuel and plasma cutters, bending brakes, and advanced welding technology. A blasting plant, phosphating tanks, sealed spray booth, galvanising bath and an automated powder coating installation are available to take care of surface treatments. ■



Bell launches new Bell Heavy Industries division.

Astec's GT205 screening 'beast' exceeds expectations of Lizarox

The first Astec mobile track unit supplied in South Africa, an Astec GT205 three-deck mobile screen, has been successfully commissioned by Astec Industries for long-standing customer Lizarox. Installed at a quarry in Ladysmith, KwaZulu-Natal, the Astec Global Track machine boasts a capacity of 600 tph. It has proved itself more than up to the task since it was delivered, says Lizarox director Michael Crackett, who describes the massive unit as "a beast". The screen is operating in line with an Osborn mobile jaw and cone crusher that were supplied to Lizarox six years ago. The three-deck mobile unit is fitted with a 5 x 20 screen and a Caterpillar C4.4 129 HP Tier III diesel engine. Crackett says Lizarox chose the Astec GT205 because the screen is robust and its operation is straightforward. "Certain competitor products are unnecessarily complicated. The maintenance of some equipment is difficult as a result of the logistics challenges experienced globally since the Covid-19 crisis. With the Astec GT205, we felt we had a degree of independence if we needed to run repairs amid any supply challenges as we are familiar with the major components used to drive the machine." ■

Astec's GT205 screening 'beast' exceeds expectations of Lizarox.

Sandvik Rock Processing drives manufacturing agility

To respond to rising demand and sustain subsequent record growth levels, vibrating screen and feeder OEM, Sandvik Rock Processing has placed agility at the centre of its local manufacturing activities in South Africa.

Director Operations for the EMEA (Europe, the Middle East and Africa) Region, Riaan Steinmann, says the goal of agile manufacturing is to respond quickly to customer and market demands, while maintaining production output and quality. "We have recorded a solid growth in the past three years in our screen's product range. As a result, Sandvik Rock Processing Solutions South Africa is now well positioned as one of the leading vibrating equipment suppliers not only in South Africa, but in Africa at large," he says. "We have also made strong inroads in other regions such as Europe and the Middle East."

Sandvik Rock Processing is focused on manufacturing agility to meet rising demand.

To meet the rising demand for its equipment, which has seen Sandvik Rock Processing South Africa producing about 60 machines a month in recent times, the company is driving agility within its manufacturing environment.

"On the back of the significant growth of our screening offering in recent years, we have seen the need to continuously review and optimise our internal processes," says Steinmann. "For example, our workshop layouts are based on job-shop lean manufacturing processes to cater for any customised components. We make use of in-house designed precision engineered jigs and fixtures to increase our production efficiencies and secure quality of these components." ■

BJD Crushers supplies major order to African copper mine

BJD Crushers, the UK-based manufacturer of crushing and size reduction equipment, recently supplied a major order of its market-leading crushing machinery to a new copper mine and smelting plant in the Democratic Republic of the Congo. The order includes the manufacture of two BJD 24 x 30 Hammermills with 90 kW drives, both running at 40 TPH. The machines will be used for processing copper concentrate from Rotary Dryers. Used worldwide in the reduction of friable and fibrous materials, BJD's Hammermill crushers can be supplied with adjustable breaker plates, produce high reduction ratios and feature capacities of up to 500 TPH, depending on duty. The whole project at the plant is due for completion in 2024/25. ■

BJD Crushers supplies major order to African copper mine.

Northern Cape mine smooths flow with Weba Chutes

A rendered image of the jaw crusher feed chute.

Specialist transfer point company, Weba Chute Systems is working with a mine in the Northern Cape to improve material flow. The mine ordered two custom engineered chutes from Weba Chute Systems, which are expected to improve efficiency at the transfer points.

According to Arnold Archer, Weba Chute Systems' Regional Manager for the Northern Cape, the contracts are for an apron feeder discharge chute and a jaw crusher feed chute.

Archer says the company had previously supplied the mine with a SAG mill feed chute, and had collaborated successfully to improve performance within that application. With run-of-mine material at the mine including large lump sizes of 800 mm to 1,2 m, there is a high risk of blockages if the chutes are not purpose-designed, he argues.

The high velocity of the material can also cause considerable damage to chutes as well as create excessive dust. To inform Weba Chute Systems' designs, the company's team uses technical questionnaires to help gather information from the customer on a range of variables. "On the apron feeder discharge chute, for instance, we designed a swing door that will absorb most of the impact of big lumps moving at high velocities," he says. "This also helps to protect the wear plates on the jaw crusher."

The aim of the design will be to assist the mine reduce the incidences of chute blockages, spillage and excess dust – making the process more streamlined and less labour intensive.

ACTOM turns 120 and remains upbeat about African prospects

ACTOM recently celebrated its 120th anniversary.

ACTOM, an electro-mechanical manufacturing company in Africa, recently celebrated its 120th anniversary with a ceremony held at the Royal Johannesburg Golf Club. Since its inception in 1903, ACTOM has become a key supplier of electrical equipment and services to a wide range of industries, including energy, mining, and utilities. The company is a major contender in the renewable energy sector and has played a pivotal role in advancing the development of solar and wind power projects in South Africa.

"This event was a celebration of a legacy company that is over a century old, and the fact that we have managed to navigate multiple industrial revolutions, technology changes, a pandemic, economic cycles, and survived by way of reinventing the company, is testimony to our strength. This event aimed to celebrate what we've achieved, as well as the people who have been involved in helping us reach this achievement," said Mervyn Naidoo, Group CEO at ACTOM.

SANY expands its reach with new Richard's Bay branch

SANY, a leader in southern Africa's heavy-duty earthmoving machinery market, has opened a new branch in Richard's Bay to better serve its customers in the region. The branch is the global leader's third in South Africa and forms part of the company's expansion plans for the region. The expansion into KwaZulu-Natal is motivated by the province's vast scope of industries. The branch will serve the construction, materials handling, mining and forestry industries and will supply front-end loaders, excavators, graders and dump trucks. Backhoe loaders will be available in 2024. The Richard's Bay branch offers full customer support and after-sales services with the aim of maximising optimal uptime for customers. Support for after-sales services will come from the company's state-of-the-art Johannesburg warehouse, which houses over R170 million in spare parts. The 500 m^2 premises is in the city's industrial hub in Richards Bay. SANY Sales General Manager, Jay Moodley said, "SANY is committed to growth, and we view this new branch as a strategic move towards growing our presence in local industrial activities. Through customer prioritisation, we aim to grow our visibility and expand our overall footprint".

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