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For people who are serious about mining

IN THIS ISSUE

EMPOWERING MINING & MANUFACTURING WITH DATA-DRIVEN SOLUTIONS

FOR SUSTAINABILITY AND OPERATIONAL EXCELLENCE

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Supplier of drilling consumables, Beowolf Mining, is targeting exponential growth over the next few years. **Pg 8.**

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Heading towards the world's number one city – Cape Town

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As the mining industry and its related sectors gear up to attend the African Mining Indaba, the good news is that Time Out has voted Cape Town as the best city in the world for 2025, beating Bangkok, Thailand (in second place), New York, USA (third), Melbourne, Australia (fourth) and London, England (fifth).

The British-based publication's survey took into account aspects including food, nightlife and culture, affordability, happiness and overall city vibe. A contingent of more than 7000 visitors, both local and international, are expected to attend the Mining Indaba taking place from 3-6 February at the Cape Town International Convention Centre. It is a premier mining event dedicated to fostering successful capitalisation and development of mining interests in Africa.

Illegal mining

On a more sombre topic, the mining industry continues to deal with illegal mining. More recently, news related to the rescue of illegal miners known as Zama Zamas from an underground mine in Stilfontein - some 145km (90 miles) south-west of Johannesburg - was at the forefront. The miners had been underground since November last year, when police launched nationwide operations targeting illicit mining. Following the rescue of the illegal miners, South Africa's police initiated a manhunt for the alleged "kingpin", who was accused of controlling operations at the abandoned gold mine.

Illegal mining not only occurs in South Africa – in recent news the Democratic Republic of Congo sentenced three Chinese citizens to seven years in prison for possession of gold bars, after they were found guilty of illegal activities linked to the artisanal mining sector.

The robust demand for gold has been linked to the surge in illegal gold mining – last year gold prices reached record highs. Some analysts are forecasting that the precious metal will reach $3000 an ounce by the end of 2025. In South Africa, the cost of illegal mining is estimated to be over R60 billion annually, resulting in huge losses of revenue for both government and the mining sector. The country has more than 6000 abandoned mines, which are the responsibility of government. Under Operation Vala Umgodi, South African authorities have, since December 2023, been trying to disrupt the illicit gold mining economy by cutting off water, food and other supplies to the miners working underground. *Modern Mining* recently spoke to the FSE's Mariette Liefferink on the issue of illegal mining and whether government was making headway in tackling the situation – for more on this story, keep an eye out for our March edition.

“The robust demand for gold has been linked to the surge in illegal gold mining – last year gold prices reached record highs.”

In this edition

Our cover story, Beowolf, has several irons in the fire as it targets exponential growth over the next few years. Among the initiatives underway, is a game changing innovation for the drilling industry - a robust high tensile drill bit (pg 8).

Our commodities focus highlights PGMs, which have been on the backfoot for the past few years. So, is there light at the end of the tunnel for this precious metal? (pg 10).

Also of note is an interview with the Minerals Council South Africa, in which we asked whether 2025 is earmarked to be a transformative year for the industry given the key initiatives outlined by government to provide the impetus for future growth? (pg 16).

Critical minerals miner, Andrada Mining, chats about its recent restructuring activities and consolidating ownership of its Uis and Lithium Ridge licences as it targets its next phase of growth (pg 12).

Further to this, mining company Menar, which is busy expanding its Mpumalanga-based Kangra Colliery, believes that training and skills development are crucial to maintaining safety at mines, and is in the process of advancing its cadet programme for underground mining (pg 18).

Also of note, is our Energy solution feature, which shares insights from SEW-EURODRIVE, WEG and Trafo Power Solutions.

WORLDWIDE

THESE MACHINES HAVE BEEN ENGINEERED TO ENDURE

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Harmony Gold to commence Phase 2A PV renewable energy project

Gold miner, Harmony Gold, recently received all required environmental authorisations and permits to commence construction of the Harmony photovoltaic (PV) renewable energy phase 2a project, which is currently underway. The project will consist of three solar PV plants, with a combined peak capacity of 100 MW and an anticipated total capacity of approximately 84 MVA (Megavolt Amperes). The plants will be situated at the Harmony Moab Khotsong Operations in the North-West province near Orkney.

The plants will be funded largely through the R1.5 billion green loan facility that was secured in June 2022. Harmony anticipates these plants will supply approximately 20% of the South African operations peak daytime demand once completed. Construction is expected to be completed in F26.

"Harmony has expanded its renewable energy programme as we continue investing in our South African assets. As we extend the life of our mines, it is critical we continue to decarbonise whilst lowering our energy supply risk and exposure to above-inflation tariff increases. Our comprehensive renewable energy programme will improve our energy mix, as we aim towards becoming carbon net-zero by 2045. The allocation of capital towards such sustainable projects benefits all our stakeholders and will create jobs and sustain economic activity for our host communities. This demonstrates our commitment towards achieving our goal of being net-carbon zero by 2045 as we continue Mining with Purpose," said Peter Steenkamp, Harmony CEO.

Following an extensive procurement process, the engineering, procurement, and construction (EPC) contract for the solar PV Plants and associated infrastructure has been awarded to a Joint Venture (JV) between OptiPower and the Cox Group. The awarded contract will create numerous employment and procurement opportunities for local host communities within the Matlosana and Moqhaka (Ramolutsi) local municipalities and surrounding areas. ■

Harmony Gold to commence construction of the Harmony photovoltaic (PV) renewable energy phase 2a project.

SRK appoints three new partners

Linda Spies

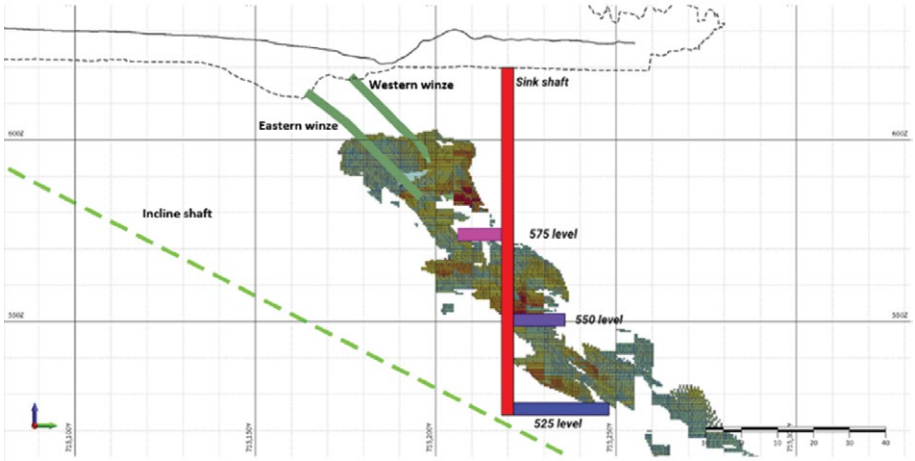
Malcolm Maber

Lindsay Shand

Three professional engineers and scientists have achieved the status of partner at SRK Consulting: principal environmental geologist Lindsay Shand and principal geotechnical engineers Malcolm Maber and Linda Spies.

Shand has been in the environmental sciences since 2000 and has published several contributions on sustainability, climate change and water management. Based in SRK's Cape Town office, her expertise also includes water stewardship, land contamination assessment, waste management, water quality assessment and environmental impact assessment. With extensive experience in the field of mine residue deposits (MRD), Maber has over 21 years of industry experience. He has been a part of SRK since 2002, when he joined the Johannesburg office as a technician. Spies, meanwhile, has more than 15 years of experience in the field of geotechnical engineering and includes tailings operations, geotechnical investigations, and design of foundations and earthworks. Since joining SRK in 2017, she has been an integral part of SRK's tailings department, where her role sees her undertaking detail design, construction technical support and monitoring of tailing dam construction projects. ■

Akobo Minerals unveils accelerated mine development plan



Gold miner, Akobo Minerals, has unveiled an accelerated mine development plan.

Gold miner, Akobo Minerals AB, has introduced a new mine development plan designed to accelerate production. The company has developed a three-phased mine development plan in collaboration with Sutton Global. This plan is designed to substantially increase ore production and enhance operational efficiency.

Phase 1: Increase production from existing winzes while optimising operations.

Phase 2: Construct a vertical shaft to enable substantial increases in ore tonnage and production capacity. During this phase, the full CIL plant will also be commissioned, targeting gold recovery rates above 90%. The vertical shaft will provide access to the Indicated Resource of 41,000 ounces at an average grade of 40.6 g/t.

Phase 3: Resume incline shaft development to access deeper sections of the ore body and facilitate underground drilling for further exploration once the vertical shaft is operational.

Vertical shaft construction

Civil work on the vertical shaft commenced in January, with completion anticipated within 3-5 months. The shaft will be located close to the ore body, allowing phased development to efficiently and safely access different levels of the deposit. Vertical shaft sinking is a globally recognized, cost-effective, and reliable method that will significantly enhance production capacity, enabling the processing of several thousand tons of ore per month compared to the current capacity of several hundred tons per month. ■

Rosond appoints Glen McGavigan as new CEO

Drilling and exploration specialist, Rosond, has appointed Glen McGavigan as Chief Executive Officer, with effect from 13 January 2025. This marks a pivotal moment in Rosond's history as it welcomes an industry leader with over 25 years of diverse experience in the mining value chain into the business, the company said. Rosond's roots are proudly South African. McGavigan, having spent 26 years working in-country, is bullish about the potential of the region. "South and southern Africa remains one of the most attractive junctions for mining on the globe. We look forward to continuing to be a key player in this region." Looking ahead to Rosond's strategic expansion into the Middle East through its Rosond Arabia operation, McGavigan highlights the region's potential: "Saudi Arabia is an underexplored market with significant opportunities, particularly for future-facing minerals. The Kingdom's focus on diversifying its economy beyond oil and gas aligns perfectly with Rosond's expertise in exploration and innovation. It is an exciting geography for growth." ■

$5.4 trillion in mineral investment needed for energy transition by 2035

Asia Pacific, India, Latin America, and Sub-Saharan Africa will require over 40% of total investment, reflecting a shift in capital flows to emerging markets. The Future Minerals Forum (FMF) has released its latest Report in partnership with leading industry think tanks. The FMF2024 Report: "Shaping the Future of Minerals", offers critical insights into creating shared value across the mining ecosystem. According to Ali Al-Mutairi, Executive Director of FMF, "The report provides authoritative content that tackles the tough issues facing the supply of minerals and aims to spark debate on the way forward at FMF in January 2025." "The Super Region has significant untapped potential in minerals that can drive the global energy transition. However, the report shows that capital investment of $5.4 trillion will be required to sustain and expand global mining and processing facilities – nearly the equivalent to the combined GDP of Japan and Spain," Ali Al-Mutairi added.

The report features insights from internationally recognised advocates for the minerals sector including Mark Cutifani, Chairman of Vale Base Metals and Dr Michelle Foss, Fellow of Energy at the Baker Institute, as well as leading experts from CRU, Wood Mackenzie, Global AI, and Clareo-DPI. In the report they explore:

- The contribution of minerals to society
- The value proposition of the sector for supplier countries
- Resource depletion and the need for significant investment to achieve development and the energy transition
- The need for new forms of partnership to unlock funding
- How the benefits of mining can be equitably shared with host countries and communities
- Addressing perceptions of mining that can reduce societal acceptance and hamper investment

Battery cells and battery recycling could produce significant annual revenue by 2040.

Key insights include:

- Capital investment of $5.4 trillion will be required to sustain and expand mining and processing facilities – $500 billion more than the previous decade (2012-2023 vs. 2024-2035)
- More than 90% of the mass moved involves coal, iron ore, copper, and gold:
  1. Over 70% of total capital will be needed for these four commodities, with roughly 75% of it dedicated to sustaining existing assets.
  2. The steel value chain alone is estimated to require about US$1.6 trillion in sustaining capital expenditure
- For some critical minerals the mining phase is where most value is generated for countries: 70% of the value generated from cobalt is in mining; 68% for graphite; 54% for lithium.
- Regions like Asia Pacific, India, Latin America, and sub-Saharan Africa will require over 40% of total capital investment, reflecting a shift in capital flows to emerging markets.
- Production of cathode materials, battery cells, and battery recycling could produce around US$800 billion in annual revenue by 2040.

On building shared value propositions in the mining industries, Mark Cutifani says, "In the end, partnerships for shared, durable value creation and commitment to supporting commercial frameworks can go a long way toward meeting and exceeding key stakeholder expectations". ■

Coaltech partners with Mpumalanga Green Cluster Agency

Coaltech, a leader in innovative coal research and development, has signed a landmark Memorandum of Agreement (MoA) with the Mpumalanga Green Cluster Agency (MGCA) to undertake research and development activities to support the formulation of innovative solutions and technologies to support the Just Energy Transition (JET) work in Mpumalanga. This strategic collaboration seeks to unlock green economy opportunities while addressing the socio-economic and environmental challenges associated with South Africa's coal mining sector which include remediating and repurposing of land, Biofuel/biogas production, Industrial hemp production, mine water reticulation, repurposing of decommissioned coal fired power stations to renewable sources and Ash beneficiation. The regional concentration underscores the need for targeted and collaborative strategies to ensure an inclusive process to create alternative economic pathways.

Coaltech partners with Mpumalanga Green Cluster Agency.

"Our partnership with MGCA aligns with Coaltech's mandate to drive innovation and sustainability within the coal sector," said Avhurengwi Nengovhela, CEO of Coaltech.

"By leveraging Mpumalanga's unique position within the coal industry, we aim to harness green economy opportunities that contribute to environmental sustainability while creating meaningful economic and social value for the region and its communities." ■

Caterpillar kicks off its next 100 years of innovation and industry leadership

NYSE-listed Caterpillar Inc. marked its 100th anniversary with celebrations throughout the U.S. that commemorate a monumental moment in the company's history. The iconic manufacturing company officially turns 100 on April 15, marking a century of customer-centric innovation and industry-leading transformation. The Holt Manufacturing Company and the C.L. Best Tractor Co. merged to form what was then known as the Caterpillar Tractor Co. in 1925. From the company's first track-type tractor designed to pull combine harvesters in Northern California to autonomous construction and mining equipment and engines that power the world today, Caterpillar products and services have helped its customers complete infrastructure projects that have shaped the modern world.

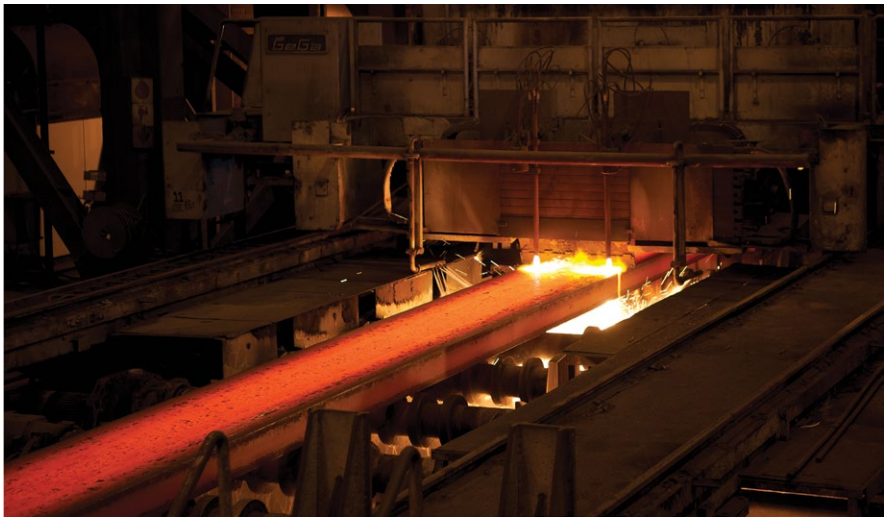
Caterpillar celebrates 100 years of innovation and industry leadership.

"Our success over the last 100 years is a testament to the hard work and dedication of our employees, the continued trust of our customers and the support of our dealers and business partners," said Caterpillar Chairman and CEO Jim Umpleby. "I am proud to lead such a strong team, and I'm confident Caterpillar will continue to help our customers build a better, more sustainable world over the next 100 years." ■

ArcelorMittal decides finally on long steel's fate

Africa's largest steel producer, ArcelorMittal (SA), has made a final decision on mothballing its long-steel operations at its Newcastle Works, Vereeniging Works, and the rail and structural subsidiary, AMRAS. The announcement will have a devastating impact on a number of fronts, surrounding communities, suppliers, contractors and the broader metals and engineering sector.

SEIFSA have repeatedly warned of a socio-economic catastrophe should ArcelorMittal shutter its plants. Some of the most alarming estimates over and above the reported 3 500 direct jobs on the line are the medium-term impact of second round effects in the order of 20 000 to 25 000 jobs and in the longer-term multiples of more than this. The effect of this latest development will reverberate throughout the economy and the continent, impacting the auto, motor, construction and mining sub-sector of the economy and all who work in it.


ArceArcelorMittal (SA) has made a final decision on mothballing its long-steel operations.

According to SEIFSA, this development presents a major setback to the base of the industrial sector and industrialisation more broadly. "The tragic reality is that the lofty goals set by the Steel Master Plan (SMP) to charter a roadmap to re-energise the sector, expand production and increase demand across the steel and fabrication industry value chain and introduce an industrialisation programme have failed dismally. The SMP was meant to deliver a comprehensive industrial policy framework, where a total, inclusive, industry perspective would be taken and complementarities across the value chain enhanced. Sadly, what we are witnessing is the opposite, wherein policy is implemented in a fragmented manner, with a short-term view and with pockets of industry being pit against one another."

For South Africa's economy, ArcelorMittal's decision means that there will be fewer players in the country producing long-steel products such as fencing material, reinforcing bars, beams, rails and profiles that are used in the construction, mining and manufacturing sectors. ■

Beowolf **makes big moves**

Supplier of drilling consumables to the quarrying and mining sector, Beowolf Mining, which celebrates a milestone 22 years in industry, has several irons in the fire as it targets exponential growth over the next few years. Among the initiatives underway, the South African-based entity recently piloted a game changing innovation for the drilling industry, Director of sales, Riaan Theron, tells *Modern Mining*.

Beowolf designs and develops customised products for industry specific needs, including its recently launched high strength drill bit suitable for hard rock mining, including manganese, chrome and iron-ore.

According to Theron, some drill bits are not equipped to withstand the tough hard rock environment, often breaking during the drilling process, which is why it developed a robust high tensile drill bit.

"Hard rock mining is a challenging business; however, it is an environment wherein Beowolf excels, having cut our teeth in hard rock mining 22 years ago. Since then, we have invested heavily in technology developments and have been developing customised solutions for our clients in the chrome, iron-ore and manganese business."

The new drill bit, applicable to open pit and underground mining, is compatible with existing drill rods used in the industry. The game-changing innovation is currently being tested at two different sites and the results look "extremely promising".

"The benefits of this high strength innovation is two-fold – firstly, it minimises the risk of losing the expensive drill bit during the drilling process, and secondly, it is compatible with existing top hammer drilling equipment currently available in the market."

The prototype is earmarked for use in drilling applications for chrome and platinum mines in the Northwest Province.

Reaping the rewards of showcasing products at Electra Mining Africa

Beowolf showcased its range of products at Electra Mining Africa 2024. According to Theron, the event was extremely successful for the company, which received several inquiries related to its specialised products, including self-drilling anchors and repair to hydraulic drafters.

Having made contact with potential partners at Electra Mining Africa 2022, 2024 saw Beowolf ink a partnership with an established company that focuses, on self-drilling anchors, used in roof stabilisation at mines.

The partnership is of particular relevance to Beowolf, which is aligned with industry's drive towards zero harm. The mining sector's focus on achieving zero harm has led to a 35% decline between 2014 and 2023 in the number of fatalities related to safety incidents.

Most fatalities in the South African mining industry were historically caused by falls of ground, transport and general accidents. Since 2021, falls of ground were no longer the major cause, with more fatalities being in the transport and mining and general categories.

The agreement sees Beowolf adding self-drilling anchors to its product range.

Theron explains that the partnership offers a 'win-win' opportunity for both entities; including a springboard into new markets in different geographies, entry into commodities, such as gold, and new products such as self-drilling anchors for Beowolf.

Hydraulic Drifters

The hydraulic drifter industry is a niche market dominated by two-to-three players. A few years ago, Beowolf took a strategic decision to enter the market as a stockist of hydraulic drifter parts and repairer of the highly specialised equipment.

At the Electra Mining Africa 2024 event, Beowolf showcased its range of abilities, including repairing and refurbishing hydraulic drifters, used on underground and open pit drill rigs.

The company is in the process of negotiating new agreements for the repair of hydraulic drifter equipment - one for a project in the Northern Cape and the other for a mine in the North West Province.

"To repair and refurbish hydraulic drifters requires specialised equipment and a workshop, which we have at our offices in Rustenburg."

Beowolf beds down in West Africa

Beowolf established its head office in Rustenburg, in the North West province, to service the chrome and platinum mines, and 10 years ago, expanded its footprint into the Northern Cape to service iron-ore, manganese and zinc mines.

Beowolf has recently made a foray into the West African market, where it continues to consolidate its position in the mineral rich destination.

Apart from being an important source of gold, iron-ore, uranium and diamonds, West Africa is also rich in aluminium, nickel, phosphate, manganese and zinc.

With most of the mineral wealth in this region currently undeveloped, the region's importance in the global mineral economy is set to increase in the future.

According to Theron, with Beowolf's sights set firmly on leveraging its local presence in West Africa, the company will focus more in expanding its market share in this area.

"We sell our products directly to the main end-user, however, given our aspiration to grow our business in the region, we noted the need to seek established local distributors for our products. We believe exclusive distributor partnerships with local entities encourages the entities to also invest in their brands. Mineral rich West Africa offers Beowolf a great opportunity for growth."

Beowolf has been doing business in West Africa since 2022 and over the past two years has experienced a "steep learning curve" in relation to transport and logistics.

"Given the remoteness of projects and inadequate infrastructure development in West Africa, customers invest in high volume materials, stocking product upwards of six months to a year. Although the majority of Beowolf's products are manufactured in China, local manufacture also takes place in Gauteng. This means that shipments from China have to be timed to coincide with delivery of local products to ensure that all equipment is packaged together and shipped to West Africa. A miscalculation on the part of the company or product delays can incur daily fees and penalties at the port, something to be avoided at all costs."

According to Theron, Beowolf prides itself on having sufficient stockholding to ensure that customers have stock when required.

"Having rolling stock and additional inventory remains one of Beowolf's competitive advantages, especially given local port congestions. Further to this, the cost of containers continue to skyrocket, which means that businesses have to be extremely innovative in how they manage transport and logistics."

Theron adds that in order to succeed as a supplier in the region, one needs to have a good risk management programme related to payments – a key challenge experienced by many doing business in the region.

Aside from West Africa, Beowolf has a presence in Botswana, Burkina Faso and more recently, Namibia.

Locally, the company has branches in the Northern Cape and distributor agreements to service the Gauteng, Northwest, and Mpumalanga provinces.

Looking ahead, Theron says that future aspirations include making a play for the East African region, including Tanzania and Kenya.

"Although we would like to enter the East African market, our immediate focus, however, is on taking advantage of the West African market," he concludes. ■

Sylvania Dump Operations, located in the Bushveld Igneous Complex, South Africa

Stunted PGMs: Miners adapt to stay profitable

Innovation, adaptation and new end uses signal a light at the end of the tunnel for PGM producers

Platinum Group Metal (PGM) prices have plummeted in recent times, falling by as much as 84% from their peak in 2021, straining balance sheets and leaving miners and investors with a headache. PGMs consist of six metals with similar properties, the most significant of which are platinum, palladium, and rhodium. They are highly durable and recyclable, possess fantastic catalytic properties, and are corrosion and tarnish resistant. These properties lend themselves to a wide range of industrial uses, including in components of mobile phones, computers and aircraft turbines, and they are also used in the glass making process.

The main application of PGMs, however, is in catalytic converters, with automotives accounting for over 60% of all demand according to a 2022 survey by the Canadian government. Herein lies the problem for producers; electric vehicles (EVs) do not require catalytic converters and therefore use significantly fewer PGMs. With internal combustion vehicles planned to be slowly phased out and EVs coming to the fore, PGM demand is suffering. However, PGMs are also used in plug-in hybrid vehicles as well as hydrogen-powered fuel cell EVs, which could provide a growing source of demand in the future.

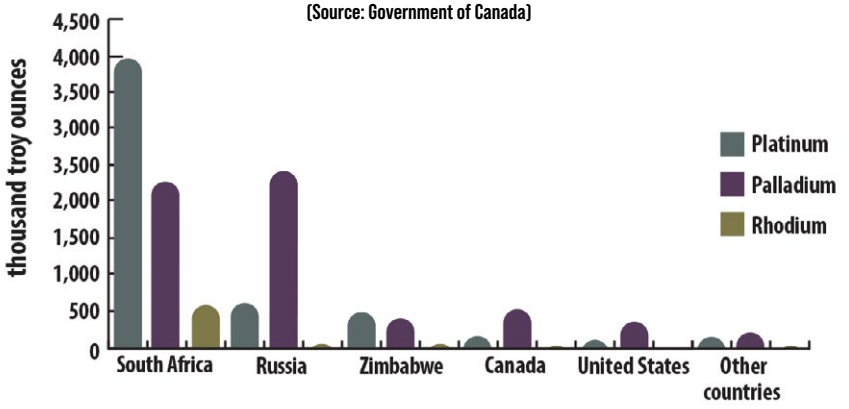
PGMs are predominantly produced in South Africa, with the nation accounting for 55% of global production, and a massive 88% of global reserves, according to a Statista survey from 2023. Companies such as Impala Platinum, Sibanye-Stillwater, Northam Platinum, and Anglo-American, through its subsidiary Anglo-American Platinum, have significant PGM operations in South Africa, each producing close to, or in excess of, one million ounces a year. Russia is the world's second most significant producer, accounting for 27% of global supply and 8% of reserves. Russia's largest mining company, Norilsk Nickel, is also the world's foremost palladium producer.

The average PGM basket price, between the start of July 2023 and the end of June 2024, was 36% lower than the same period in 2022-23, driven primarily by the decline in rhodium and palladium prices, which fell 51% and 38% respectively.

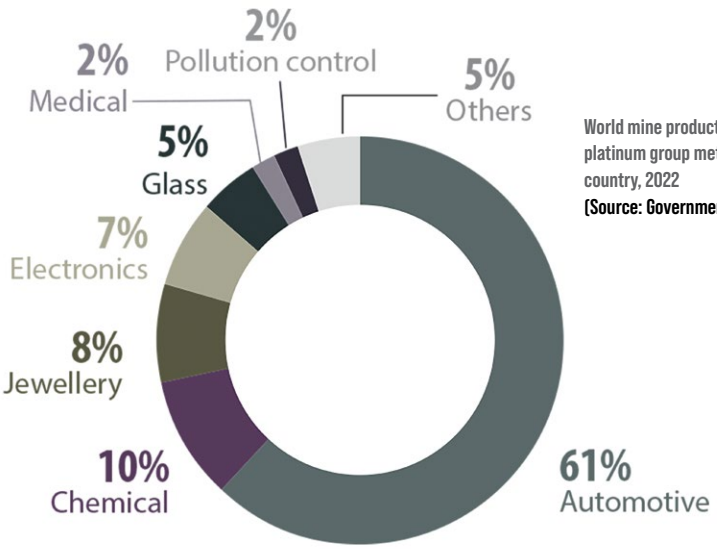
PGMs are predominantly produced in South Africa, with the nation accounting for 55% of global production, and a massive 88% of global reserves, according to a Statista survey from 2023.

However, there is hope amongst producers of a PGM price recovery in the medium to long-term. It has been reported that an embargo from the West on Russian palladium in retaliation to its aggression in Ukraine might be considered, which would undoubtedly help push prices back towards their previous levels. In addition, Sibanye-Stillwater has suggested that prices are reaching an inflection point, and will naturally rise soon, with CEO Neal Froneman stating: "I think we are very close to a turn in the palladium market". Berenberg has also lifted its price deck to reflect its "upbeat" position on platinum.

As mentioned, another potential lifeline for PGMs is the plug-in hybrid market because, unlike fully electric vehicles, hybrids often require significant quantities of platinum and palladium. EV sales have somewhat tapered recently, declining by 11% year-on-year



World mine production of platinum group metals, by country, 2022
(Source: Government of Canada)



World mine production of platinum group metals, by country, 2022
(Source: Government of Canada)

in the first half of 2024, whilst demand for hybrids has soared by 44%. These vehicles, in contrast to their fully electric counterparts, use catalytic converters, which aid in keeping pollution levels down. It seems that PGMs will, at the very least, be needed to bridge the transition between internal combustion and fully fledged EVs.

Even if a price recovery is forecast, current market conditions have necessitated that PGM miners adapt to stay profitable. Sylvania Platinum, a lower-cost producer of platinum, palladium and rhodium operating in South Africa's Bushveld Igneous Complex, is – arguably – one of the best examples of this. The AIM-listed company produces PGMs by re-treating the chrome tailings leftover from the host mines on which they operate. In return for treating these tailings and returning the chrome they recover to the host mines, Sylvania retains the PGMs also recovered in the process. After reprocessing the existing material, the company then constructs new tailings facilities. With six sites, Sylvania remains the largest operation of this type.

Between 2019 and September 2024, total operating costs for South African miners increased by 69%, but by making use of waste material and not incurring any of the underground mining-related costs, Sylvania has been able to operate in the lowest third of the industry cost curve, remaining cash-generative and profitable in the process.

Despite weathering the challenges of the current price environment, Sylvania, like many others in the PGM sector, has also looked to growth and diversification opportunities to maintain its profitability. The firm believes that a diversified revenue stream can reduce the impact from PGM price volatility; it has made the strategic decision to form a 50/50 joint-venture partnership with Limberg Mining Company to extract both chrome and PGMs from a mine in the western Bushveld. Commissioning of the Thaba JV, as it's known, is anticipated in the coming months, and the company estimates that they will treat about 2 million tonnes of historic tailings, along with new tailings, over the next 10 years. The Thaba JV is the first project that gives Sylvania direct exposure to chrome revenue, rather than returning the material to the host mine. It is being labelled as a 'transformational' deal and a 'significant step' for the company.

The chrome market, unlike the PGM market, is currently buoyed by stainless steel demand. This has seen chrome ore prices hit all-time highs in the past year, and it is therefore expected that chrome will account for three-quarters of the revenue generated by the Thaba JV. In total, the venture is expected to add $15-16 million to Sylvania's annual EBITDA, representing a significant revenue stream. Historically, it is rare for both PGM and chrome prices to be in a down-cycle at the same time, de-risking Sylvania by ensuring that it's not solely reliant on the performance of the former.

Whereas PGM demand largely hangs on the necessity for catalytic converters, chrome applications are not dominated by one single use. The aeronautical industry, gas turbines, welding, and aluminium production, all rely upon chrome, affording it more protection against price shocks. Intriguingly, chrome has grown into a significant revenue source for South Africa's PGM miners, now ranking as the fourth-largest contributor to their earnings.

Beyond the addition of chrome from the Thaba JV, there is potential for even further diversification. Whilst its speciality remains in PGMs and chrome, Sylvania's method of production – re-treating tailings leftover by host mines – could, in theory, also be applied to a range of other metals, including copper, nickel, cobalt and tin, which will have an extensive role to play in the green transition over the coming years.

Sylvania Platinum is an intriguing case study, demonstrating the measures that PGM miners have intuitively taken to optimise and develop their operations in market circumstances that aren't always accommodating of innovation. As a whole, the South African PGM industry presents a compelling case for the importance of weathering a storm. Those that have developed a strong platform from which to overcome these conditions could experience bountiful opportunities once the anticipated calmer waters return. ■

Andrada targets next phase of growth

AIM-listed critical metals miner, Andrada Mining's recent restructuring activities and emphasis on consolidating ownership of its Uis and Lithium Ridge licences underpin a focus targeting its next phase of growth.

Andrada's fully permitted assets, endowed with deposits containing base, critical and precious metals, are in the Erongo region, in northwest Namibia. The company owns two mining licences namely Uis (ML134) and Lithium Ridge (ML133) and an exploration licence, Brandberg West (EPL 5445).

The Uis Tin Mining Company, the operational entity that holds the company's licenses, was restructured in June 2024 as part of a broader portfolio enhancement strategy: in this restructuring, Andrada effectively relinquished its Spodumene Hill mining license (now 100% owned by Small Miners of Uis) and increased its holding in the Lithium Ridge and Uis mining licenses to 100%. This ensures a more efficient corporate structure and streamlines operations to accelerate development across the portfolio.

"Owning 100% of our producing Uis tin mine is a particularly favorable development and, full ownership of Lithium Ridge expedited our partnership with SQM," the company said.

More recently, Andrada announced a partnership with *Sociedad Química y Minera de Chile* SA through its subsidiary SQM Australia (SQM), a leader in the global lithium market, to develop its Lithium Ridge asset.

"This partnership is not only an endorsement of our asset, and of Namibia as a tier one mining jurisdiction but, with the three stage earn-in agreement, it will expedite Lithium Ridge's development and bring it to feasibility study. Aside from capital, SQM brings a wealth of technical and market expertise,

Bulk sampling processing facility.

Andrada Mining remains focused on consolidating ownership of its Uis and Lithium Ridge licences as it targets its next phase of growth.

complementing our experts on the ground and accelerating our strategy to bring lithium to market," the company said.

Uis Mine

The Uis licence covers an area of some 19 700 hectares and hosts numerous pegmatites with mineralisation including lithium, tin, tantalum and rubidium. Given that the flagship Uis tin and tantalum mine is highly scalable, plans are in place to integrate a lithium production circuit. Ultimately, Uis has the potential to become a global lithium supplier.

Discussing production from the Uis Mine for the period ended 31 August 2024 (FY 2025), the company advised that ore processed in Q2 increased by 5% to 243 528 and by 8% for the six months from March 2024 to 481 504 year-on-year.

The plant processing rate in Q2 was slightly lower at 130 tonnes per hour (tph), compared to 138 tph in Q2 of the 2024 financial year (FY2024) and 134 tph in Q1 FY2025, mainly due to enhanced maintenance implemented on the crushing circuit during the quarter.

"Consequently, the combination of the lower feed grade and processing rate resulted in the marginal decrease in tin concentrate production to 388 tonnes (Q2 FY2024: 398 tonnes) with contained tin tonnage, which was essentially flat YoY at 239 tonnes (Q2 FY2024: 238 tonnes), the tonnage for the six-month period was 2% higher than the comparative period at 462 tonnes (H1 FY2024: 454 tonnes)," the company said in a statement.

> Owning 100% of our producing Uis tin mine is a particularly favorable development and, full ownership of Lithium Ridge expedited our partnership with SQM.

Andrada Mining remains focused on consolidating ownership of its Uis and Lithium Ridge licences as it targets its next phase of growth.

Importantly, some 16 tonnes of tantalum concentrate were produced during Q2 – an increase of 78% from around nine tonnes produced during Q1 FY2025. The company supplied AfriMet with 15 tonnes of tantalum concentrate and received a 90% provisional payment for the full supply.

Meanwhile, following the completion of Phase 1 expansion of the Uis processing plant, the company is moving onto the next growth phase, which entails increased tin concentrate output, the integration of a petalite production circuit and implementing studies to finalise the magnitude of the expansion. Moreover, the company anticipates that the earn-in agreement with SQM for Lithium Ridge will expedite the development of spodumene – rich asset.

Tin market outlook

Andrada expects the tin price to continue its rally, as demand increases in line with the energy transition (solar panels and other renewable energy sources) and steadily improving demand for consumer goods, including EVs and consumer electronics such as smartphones.

Tin is a key contact in electronic circuits (solder), printed circuit boards and semi-conductors. It is the electric glue connecting key components. Recent tin price recovery is attributed to the strong return of tin metal demand for electronics and green infrastructure including solar, circuit boards combined with significant supply issues in Myanmar (second largest miner) and Indonesia (largest exporter of tin ingots).

"There is a general depleting inventory supply and discerning lack of new supply coming online," Andrada said.

Tin is 2024's strongest performing base metal, driven by robust fundamentals in both the short- and long-term. Indonesia and Myanmar are large suppliers that face supply uncertainty, with Myanmar being a key supplier to China.

"Indonesian exports picked up in September. However, because they have exhausted the prior limits, some major producers must renegotiate their quotas before exports can resume. In Myanmar's Wa region there is no evidence of progress towards a mining restart at Man Maw, while export volumes continue to decline as concentrate inventories deplete and China's feedstock squeeze tightens. Sentiment on tin by investors is positive, with market participants anticipating an overall demand recovery in 2024. The market is expected to be in supply deficit, driven by Indonesia and Myanmar dynamics. We are particularly excited by the tin trajectory as we are poised to benefit from the continued ramp-up of our tin production."

Recent tin price recovery is attributed to the strong return of tin metal demand for electronics and green infrastructure.

Lithium and tantalum business

Andrada produces tantalum and has an offtake agreement with AfriMet. To date, the company has shipped 15 tonnes of saleable tantalum.

In the last quarter, the company produced 16 tonnes, "which was up 78% from the previous quarter, so we are continuing to progress this stream", Andrada said.

"We sold our maiden petalite concentrate during the first half of the financial year and we are highly encouraged by the performance of our lithium pilot plant so far."

To date, the plant has been used for production of bulk-samples for testing campaigns with potential off-take partners. According to Andrada, these campaigns will contribute to the modelling of the integrated lithium circuit, thus derisking the

Uis tin mine in Namibia

mine operated by Gold Fields.

The project area is about 100 km from the Uis Mine, Andrada Mining's flagship asset. The results from Andrada's inaugural drilling campaign showed significant high-grade intersections, including grades of up to 10% for tin, over 2% for tungsten and typically 0.5% - 2% for copper.

"The continuation of significant high-grade tin, tungsten and copper intersections at the Brandberg West project endorses our strategic outlook for this area and is demonstrative of the untapped value at this asset. These results support our conviction that Namibia is an underexplored, mineral-rich region, offering high potential for further regional exploration and organic growth. We are also implementing confirmatory drilling for tin and lithium at the Uis Mining Licence in the central and northern clusters of pegmatites," the company said. ■

project and accelerating the lithium to market ambition. The company envisages a 40-50 ktpa production rate from the fully integrated lithium circuit.

Andrada remains optimistic about the long-term outlook for all the metals in its portfolio, particularly lithium, tin and tantalum with its SQM partnership testament to this optimism, as it is expected to allow the company to expedite its lithium operations to benefit from the upturn when it arrives.

"Through our current tin and tantalum operations, we are generating revenue, which is what distinguishes us from other junior miners and firmly positions us as an emerging producer of critical raw materials. This free cash flow, combined with excellent funding facilities from our partners Orion Minerals, Bank Windhoek and the Development Bank of Namibia, means we are well positioned to continue expanding our operations and our exploration programme. Furthermore, our partnership with SQM will now accelerate our ambition to produce lithium for the global market in line with increasing global demand," the company said.

Brandberg West asset

The company's most recent development has been a particularly exciting set of drill results from its Brandberg West asset – historically, an open pit

Grant Mitchell, Minerals Council South Africa's Junior and Emerging Miners Desk (JEMD) lead.

Gold was a key commodity in 2023, attracting the largest share of exploration spending.

2025 - a transformative year for mining?

With the promise that the cadastral system and amendments to the MPRDA will be shared with industry later in the year and the positive sentiment following the GNU, 2025 is expected to be a change-making year for the long-suffering mining industry.

But, will this positive turn of events be enough to entice international investors to the sector? *Modern Mining* recently spoke with Minerals Council South Africa's Junior and Emerging Miners Desk (JEMD) lead, Grant Mitchell, about some of the developments scheduled to influence the junior and emerging mining sector in 2025.

Like its peers, the sector remains cautiously upbeat, anticipating that key initiatives outlined by government will invigorate the sector and provide the impetus for future growth.

These include the Minister of Mineral Resources and Energy, Gwede Mantashe's announcement that the much-anticipated cadastral system will be launched by July, 2025.

Being an integral component of the mining sector, the Minerals Council South Africa continues to work closely with government on policy related needs for the sector, including providing insight on aspects, such as the publication of the Artisanal and Small-S cale Mining Policy of 2022 (ASM), which is expected to be addressed in the amended MPRDA.

> The transition from illegal to legal mining is an important component and we look forward to seeing how this will be addressed in the amended MPRDA.

"The transition from illegal to legal mining is an important component and we look forward to seeing how this will be addressed in the amended MPRDA," says Mitchell.

Junior and emerging miner's contribution

The junior mining sector plays an integral part in its economic contribution to the overall industry, with Mitchell citing national statistical service of South Africa, Stats SA's Quarterly Financial Statistics (QFS), which says the sector showed significant growth, with income rising by some 23% in 2023 compared to the same period in 2022.

According to Stats SA, this increase highlights a strong improvement over 2022 and signals promising profitability for the sector moving forward. "While data for the second half of 2024 is still pending, early results indicate a promising trend for junior and emerging miners based on first-half performance."

Based on QFS data, this sector represented around 11% of total industry income in the first half of the year compared to

2023," he says.

This translated to revenue from the sector of R88,2 billion in 2022 rising to R95,9 billion in 2023.

This growth is in spite of the headwinds the sector faces, including the slow pace of regulatory compliance - it takes months and even years for a company that applied for a mining or prospecting right, to be awarded one. This stymies the pace at which the sector grows.

"When an applicant applies for a prospecting or mining right, the DMRE, the Department of Water and Sanitation and the Department of Forestry, Fisheries and the Environment interact to grant the mining/prospecting right. Offering an efficient one-stop shop for mineral rights processing without the usual delays will go a long way in growing the exploration arm of mining. The Junior and Emerging Miners Desk (JEMD) continues to have robust conversations with government, flagging the challenges that junior and emerging miners face as well as highlighting what we would like to see in the MPRDA."

Despite these challenges, the sector remains robust and continues to grow each year, with the JEMD adding new members annually.

"We work closely with our 35 members (and three associations) and a few contracting companies that are part of the mix, with the rest of our members predominantly small to mid-tier producers and to a lesser extent, explorers."

Commodities tracking growth

With the junior and emerging miners' segment of business posting robust growth, the question arises, which commodities have attracted the most development over the past few years?

According to Mitchell, the sector follows trends in commodity prices and unsurprisingly, gold, as a key commodity in 2023, attracted the largest share of exploration spending, with commodities, such as copper, also drawing significant interest with developments in the Northern Cape by junior miners, including Copper 360 and Orion Minerals, being progressed.

"South Africa has incredible mineralogy with much of it still unexplored and several early-stage exploration initiatives, that were previously abandoned, are still an option for development. The junior and emerging mining sector closely follows trends in commodity prices, and in 2023, gold attracted the largest share of exploration spend, likely benefiting the junior sector as well. In terms of our membership, our junior and emerging miner members are highly diverse, spanning commodities such as gold, chrome, platinum, coal, andalusite, and diamonds. South Africa has amongst the largest platinum group metals deposits in the world and with the country's long history of mining, there exist a host of brownfields opportunities available for development."

Junior and emerging miners are also looking at developing critical minerals, used in rapidly growing clean energy technologies, such as lithium, nickel and cobalt – used in the development of wind turbines, solar panels and electric vehicles, amongst others.

"The DMRE is working on publishing a list of critical minerals, which we expect to be released before Indaba 2025. There have been extensive consultations in this process and the Minerals Council has assisted the DMRE and Mintek in compiling the list," says Mitchell.

Funding focus

Following the slew of applications for funding from the Junior Mining Exploration Fund (JMEF), a fund established by the Industrial Development Corporation (IDC) in partnership with the Department of Mineral Resources and Energy (DMRE), Mitchell advises that this has been narrowed down to priority projects considered viable and in line with global growth trends.

"There was an unexpectedly high number of applicants interested in accessing the fund, and, to date, the selection process has narrowed down the number of projects to about six. The process is expected to be finalised within the next few months, after which legal agreements will be signed with the IDC. The fact that there has been such massive interest illustrates the groundswell of small companies keen to enter into exploration."

> Based on QFS data, this sector represented around 11% of total industry income in the first half of the year compared to 2023.

The first round of funding was restricted to minerals in the critical metals/energy metals space, including copper, nickel, graphite, lithium and rare earths elements.

Expectations are that once the first round has been successfully completed, a second round will be tabled, with the funding partners expected to consider a new set of commodities to promote.

"We would ideally like more funding institutions to follow the lead set out by the IDC and remain hopeful that other institutions will consider funding exploration initiatives. As the Minerals Council, we have been proactive, engaging with several potential funders."

"Success breeds success and when investors see projects getting off the ground and into the starting blocks, it encourages further investment into the country."

According to Mitchell, the Minerals Council South Africa remains committed to growing the exploration pipeline, with CEO, Mzila Mthenjane, vocal about driving growth initiatives in mining.

The Minerals Council has been engaging with government on the adoption of tax incentives for the junior and emerging miner's sector.

"South Africa should consider incentives embraced by countries, such as Australia and Canada, which have adopted the highly successful flow through shares model for junior miners. To date, we have presented Treasury with a suitable tax incentive model."

The Minerals Council continues to provide platforms, in the form of workshops, to enable junior and emerging miners to interact with regulators (government) and fund managers.

"It is imperative that we promote a culture of exploration in South Africa and grow the exploration pipeline – without which this sector will die," concludes Mitchell. ■

Menar advances cadet programme for underground mining

Mining company Menar, which has two underground operations, believes that training and skills development are crucial to maintaining safety at mines. The company has a diversified portfolio that includes anthracite, coal, and manganese.

Paul Redelinghuys, General Manager at Kangra.

Menar is expanding its Mpumalanga-based Kangra Colliery.

Menar is expanding its Mpumalanga-based Kangra Colliery, an underground asset that produces about 1.4 million tonnes of high-quality coal annually. The company invested in developing the Udumo and Uthingo adits, which lie approximately 37 kilometres from each other. This allows it to mine the 41.9 million tonnes of Kusipongo resources.

Acquired in 2018 from Madrid-listed Gas Natural Fenosa for $ 28 million, Kangra operates three underground coal sections.

The mine employs 352 direct employees and 432 contractors.

As part of its Social and Labour Plan (SLP), Kangra intends to continue its cadet programme, which has proven successful in previous years. The programme aims to equip personnel and those keen on entering the industry with basic underground mining skills. The recruitment process for 2025 is still in progress, and the company aims to train between 20 to 30 people.

"Upon joining the programme, cadets will be assigned various general tasks, including training in roof bolting, underground machinery operation, and electrical work, among other skills. The programme will ensure that trainees are empowered with the necessary skills needed to succeed," Paul Redelinghuys, General Manager at Kangra, tells Modern Mining.

Internships and learnerships are also included in Kangra's skills development programme. In addition, the mine's Human Resources Department has implemented robust career planning systems, ensuring ample professional growth and advancement opportunities.

Kangra – underground expansion on the cards

Kangra is a key part of Menar's growth plans. The company looks to develop the T4 project, a resource earmarked for future mining using the board and pillar method. The project will expand the current mining right, enabling access to a total underground ROM reserve of 15.69 million tonnes. The life of mine for T4 is estimated to exceed 15 years.

"The intention is to finalise the mining rights and required licenses before we begin developing the project."

Mitigating the challenges associated with underground mining

Although Kangra is a shallow resource, usually mined at a depth of between 40 and 250 meters, the mine still encounters difficulties associated with mining at depth.

Highlighting some of the difficulties encountered with underground mining, Redelinghuys mentions health and safety

A group of Kangra employees underground.

hazards, ground control, gas emissions, and ventilation as key challenges.

"Kangra's Uthingo shaft, for instance, has challenging ground conditions. This is due to the weathered sandstone rock, which tends to crack and break. As such, we conduct regular road maintenance to ensure that the ground remains in good condition," he explains.

As a precaution, Kangra has strengthened and reinforced the sidewalls to ensure that the pillars are stable enough to sustain the shaft in the future. These adjustments, made by rock engineering specialists, ensure that the infrastructure is solid and workers remain safe from harm.

"Moreover, the mine uses gas detection devices to identify the presence of dangerous gases like methane and applies stone dust to the walls of the pillars to prevent coal dust explosions. Further to this, we employ measures to prevent injuries and ill health among employees and ensure that we take swift action to address conditions that may impede workers well-being," Redelinghuys says.

In December 2022, government implemented new regulations to prevent collisions between machines and pedestrians, as well as other trackless mobile machinery (TMM). These regulations require employers to provide anti-collision systems or devices to automatically retard or stop diesel-powered TMMs.

"Kangra regards the new regulations as crucial for the mining industry as they encourage improved safety standards," says Redelinghuys.

Even before government regulations were announced, Kangra, like other operations under the Menar Group, took proactive steps to implement a Collision Avoidance System (CAS) as part of the mine's safety interventions.

"To guard against collisions and reduce the risk of harm to our employees, we have installed CAS systems on all high risk TMMs."

Kangra Social Labour Plan (SLP)

Kangra remains strongly focused on delivering on its CSI/SLP initiatives. Its Social Licensing Department is responsible for developing SLPs that address the developmental needs of the mine's host communities.

According to Redelinghuys, Kangra's SLP team collaborates with community representatives, traditional leaders, and local government officials to identify the essential requirements of surrounding communities.

"Access to clean water is a crucial need identified by the stakeholders, which has led to the launch of a project to provide tap water to eight farms in Donkerhoek, located in Ward 2."

With an average of about 30 households per farm, the project will ultimately benefit roughly 240 households by ensuring they have tap water directly in their yards. The first phase of the project, which involved installing taps for 30 households under the Yende Farmers Trust, was completed and handed over to the community in December 2023. Kangra is currently in the process of rolling out the second phase of the project at three farms: Jagdrift, Witbank, and Thuthukani.

In addition to enabling communities to access clean, drinkable water, the project also has other positive knock-on impacts.

"A local business from Donkerhoek is among the stakeholders involved in the project and has created at least ten jobs in the local community. Skills development is another positive impact associated with the project. Eight individuals have since received training in plumbing through the Cooperative Governance & Traditional Affairs (CoGTA) and Community Work Programme (CWP), ensuring skills transfer and local capacity building." Once complete, the project will be maintained through the CWP.

Apart from this, Kangra has also initiated social upliftment projects for the Yende community in Donkerhoek. This includes a refurbished community hall, and new houses for two families.

In 2024, Kangra participated in Mandela Day where employees spent part of their 67 minutes at the Driefontein Old Age Service Centre. Along with Komatsu Mining, Kangra presented the centre with a cheque for R30 000 and donated blankets, electric heaters, and a deep freezer for the residents.

"Kangra has also collaborated with the Mkhondo Local Municipality on a road restoration project in Saul Mkhizeville. This R2.9 million project involves resurfacing and repairing potholes on Mlotshwa Road, which connects Driefontein to the N2 road. The mine is also collaborating with the municipality to upgrade internal access roads around the Driefontein area," concludes Redelinghuys. ■

Underground Mining

Although underground mining is challenging, hazardous and expensive, it is often undertaken when the ore body is too deep to mine profitably by open pit and the grades or quality of the orebody is high enough to cover costs.

SEW-EURODRIVE offers complimentary on-site energy assessments providing a valuable starting point for decision making in energy efficiency.

SEW-EURODRIVE well ahead of curve

as SA adopts new motor efficiency standards

Minimum Energy Performance standards (MEPS) have been adopted by South Africa, but SEW-EURODRIVE has long since standardised on premium efficiency motors – and the mining sector has been moving actively in this direction.

Willem Strydom, Business Development Electronics Manager at SEW-EURODRIVE South Africa.

Earlier this year, South Africa adopted MEPS that require all newly imported electric motors to meet the IE3 premium efficiency level. The policy applies to electric motors with power ratings between 0,75 kW to 375 kW. These regulations follow a global trend of governments striving to meet climate change commitments by improving energy efficiency. The trend has, in fact, been embraced by leading global companies for many years now, according to Willem Strydom, Business Development Electronics Manager at SEW-EURODRIVE South Africa.

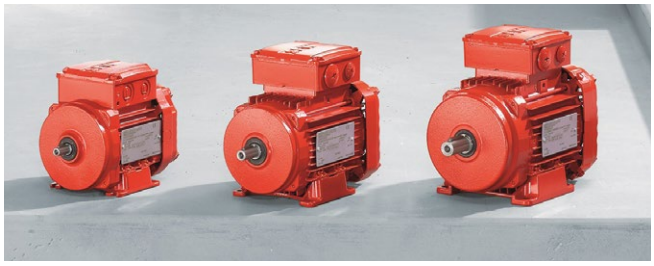
"At SEW-EURODRIVE, we standardised on IE3 motors eight years ago and have not brought any less efficient motors into South Africa since then," says Strydom. "As part of our corporate sustainability commitment, and our service to the market, we even absorbed the cost differential so that our customers would not pay more for the advanced technology."

> At SEW-EURODRIVE, we standardised on IE3 motors eight years ago and have not brought any less efficient motors into South Africa since then.

He notes that the local shift towards higher efficiency motors has been encouraged by rapidly rising electricity prices, providing a strong financial incentive for energy intensive industries like mining to make this transition.

"Most mining operations, with their need to drive a range of equipment from materials handling to processing, have already recognised the value of more energy efficient motors," he says. "Electricity prices have been a major driver of production cost increases, so we have assisted many customers to move in this direction."

While it is difficult to generalise about potential cost savings on different mining sites by replacing IE1 motors with IE3 motors, ongoing monitoring conducted by SEW-EURODRIVE suggests that IE3 units consume 7% to 8% less electricity. With the use of Variable



SEW-EURODRIVE standardised on IE3 premium efficiency motors as a minimum more than eight years ago.

With the combined use of SEW IE3 motors and VSDs such as the MOVITRAC ADVANCED electricity savings can be exponentially increased.

Speed Drives (VSDs), this differential can rise to between 10% to 15% when upgrading from IE1 to IE3 motors. He highlights the direct impact that reduced energy consumption also has on another strategic imperative in mining: to reduce carbon emissions.

"Leading players in our mining sector have committed to ambitious targets for decarbonisation, as part of sustainability efforts to reduce their carbon footprints," he says. "While mines are among the first movers in the market to install renewable energy, most of their consumption still comes from Eskom's coal-fired power stations. This means that any improvement in energy efficiency translates into a lower carbon footprint."

Strydom emphasises that, while most mining operations are enthusiastic about pursuing the path towards better efficiency, they still need to navigate the practicalities of phasing out certain equipment in favour of newer technology. This process is subject to capital availability, and must be carefully planned for best effect.

"We work closely with our mining customers to understand the details of their operations, and take a proactive approach wherever possible," he says. "Among the services we offer at no cost to customers, for instance, is our product population surveys. Here, we spend time on customer sites measuring the energy consumption and performance of every motor – not just ours but also competitor brands."

This monitoring and analysis of critical operational data is useful for a number of reasons. It allows SEW-EURODRIVE to alert customers to any data anomalies which suggest that an item of equipment needs attention. This provides an early warning of a potential issue that could lead to unscheduled downtime and production disruptions.

"The data is also useful as a basis for planning the transition to higher efficiency motors," he explains. "The MEPS will now put even greater impetus behind the shift to IE3 motors in mines, and management will be looking for the most cost effective route to take when upgrading from IE1 units."

On-site energy assessments, conducted with advanced and specialised equipment, provide a valuable starting point for decision making, he says. They can help mines to allocate expenditure so that it has the most positive immediate impact and quickest return on investment.

"The value of these assessments is that the data is specific to the customer's site and applications," he says. "This ensures that our report is directly relevant to their operations and the benefits they can expect from an upgrade to IE3 motors."

A mine could also consider its stock levels, and start upgrading to IE3 in those motor classes where stock is leanest. When budget is available, it can be worth balancing the replacement of larger and smaller motors, to achieve optimal savings in short and longer term.

"Energy monitoring also picks up the demand peaks that motors draw during start-up, giving customers the opportunity to make choices that reduce these peaks," he says. Large energy users like mines are penalised for exceeding their peak limits, so this is a valuable route to controlling costs. In these situations, VSDs are a common solution provided by SEW-EURODRIVE as this technology reduces peak demand and improves motor life.

Strydom notes that MEPS is likely to have another important effect on how the mining industry transitions to greater energy efficiency. Not only will South Africa's new standard encourage the installation of more IE3 motors, but it will also help to pave the way for IE4 and IE5 technologies, he believes.

"SEW-EURODRIVE is well positioned at the forefront of this field, having already taken our offerings beyond asynchronous motors to develop our IE5 synchronous motors with integrated permanent magnet technology," he says. "On these motors, the losses can be up to 50% lower than with a pure IE3 mains motor."

He concludes that SEW-EURODRIVE's 200-strong team of research and development engineers has also been hard at work on pioneering its IE6 offerings. ■

Eduardo Werninghaus, CEO of WEG Africa.

To supplement main grid power, mines can draw on power generation sources such as renewables including wind.

Hybrid power solutions for sustainable, lowest cost energy supply

Electricity reliability, lower operational costs and carbon emissions commitments have opened the door for hybrid power solutions that also meet mining companies' decarbonisation goals.

"The aim of the hybrid approach is to achieve a reliable and continuous energy supply at the best electricity cost," says Eduardo Werninghaus, CEO of WEG Africa.

A hybrid power system which integrates two or more energy sources can be controlled by a WEG dedicated energy management system to achieve improved power system efficiencies as well as lower carbon emissions. At the same time, says Werninghaus, the better availability and cost of energy allow managers more flexibility in optimising mining and processing operations.

"To supplement main grid power, mines can draw on power generation sources such as renewables including solar, wind and hydro as well as traditional sources like diesel and gas," he explains. "Adding to the flexibility and value is the growing availability of Battery Energy Storage Solutions (BESS)."

WEG Africa is ideally placed to develop and execute hybrid power solutions as it has a wide range of technologies in-house – from wind and steam turbines, PV and battery storage systems to generator power plant solutions. Its range of key electrical equipment and accessories also creates a single point of customer contact, helping to mitigate risk and streamline projects.

Werninghaus emphasises that each hybrid system is unique, as each solution needs to be designed to the mine`s requirements. Some critical design factors include the mine's daily load profile, the tariff structure of the energy utility and the site-specific operational requirements.

"By integrating various technologies such as PV, BESS, gas generators and grid power, for instance, mines can enhance performance and provide cheaper and cleaner power supply," he says. "Importantly, a hybrid solution can also address peak power demand, and in this way mines can avoid exceeding their notified maximum demand (NMD)."

With these systems, supported by the addition of battery technology, there is also more scope to reduce power costs by drawing less utility power during periods of peak demand – when tariffs are highest. Utilities' peak demand is often at the beginning and end of each day, whereas solar energy collected in the middle of the day can be stored in batteries and drawn at peak times.

"With rising energy costs locally and globally, mining companies are looking for more control over these costs, so

WEG's solutions are manufactured with world class quality processes, ensuring exceptional performance and reliability.

WEG Africa is ideally placed to develop and execute hybrid power solutions as it has a wide range of technologies in-house including steam turbines.

that they are lower and more predictable," Werninghaus points out. "The appropriate hybrid power system can deliver these benefits, based on a carefully calculated rate of return that allows the system to repay itself."

The secret to success, he says, is to develop a solution that balances the CAPEX and OPEX required. CAPEX for hybrid systems – such as the costs of land acquisition, solar panels, wind turbines, batteries and control systems – tends to be higher than conventional systems, while OPEX will be lower. For example, fuel costs can be reduced by the use of renewables, and there is likely to be less maintenance required due to traditional generators being run less often.

Careful upfront planning allows all the key factors in balancing capex and opex to be considered, he says. This starts with strategic site planning, to assess and understand the conditions on site and the company's strategic needs.

"Apart from the location and the availability of renewables like solar and wind, it's important for the mine to focus on what it wants to achieve," he explains. "Strategically, it might be important to save on energy costs – or perhaps the operation needs to be off-grid altogether."

Site processes and the mine's production plan need to be factored in, along with their energy usage patterns and the prevailing tariff structure. A 'cross-functional' approach is necessary, which means engaging with all the relevant departments on the mine, including finance, operations and technical teams. Their respective input will guide better decision-making towards the most appropriate technology selection, paving the way to selecting the right mix of power sources.

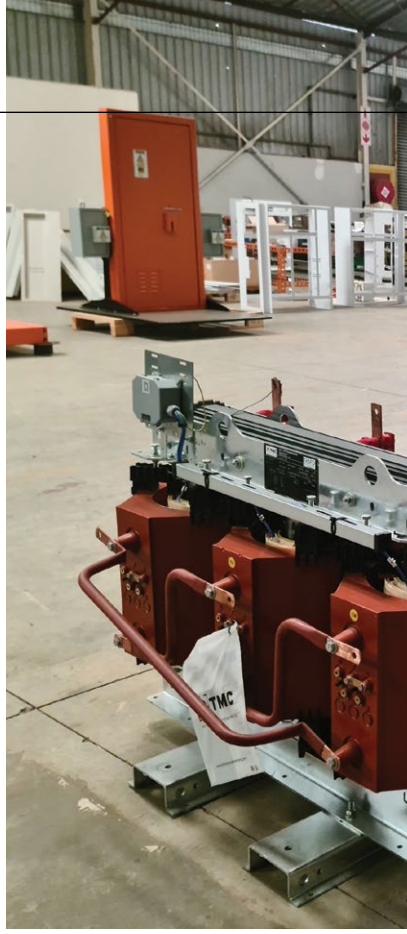
"A crucial aspect will be the financing options, as well as the availability of government incentives and subsidies for renewable energy generation," he says. "To ensure the system is cost effective, it is also necessary to optimise the scale of the system so that wastage is minimised, and efficiencies are enhanced."

To effectively achieve a balance between the capital investment and operational cost, there are a number of key indices that need to be calculated, he explains. The total cost of ownership (TCO) is one of these, which requires knowing the full cost of installing and integrating the hybrid power system to the existing network.

"Then we need to work out the Life Cycle Cost (LCC) which is essentially the lifespan of technology selected and the cost of maintenance over the designed life," he says. "These calculations will reflect the technology efficiencies that the hybrid system will achieve in the customer's application, and the monthly savings they can anticipate."

At the end of the day, the hybrid power systems need to deliver a return on investment (ROI), so that the customer can calculate how long the investment will take to pay for itself – and thereafter deliver real savings. To arrive at the ROI, there are three main factors to consider - energy prices and availability, the lifespan of the technology and its degradation rates and the efficiency of maintenance and operations.

He emphasises that choosing the right partnerships and collaborations for design, implementation and operation makes all the difference, reiterating WEG's extensive range of technologies for hybrid systems and its depth of in-house expertise across the project cycle. ■



Trafo Power Solutions' vision is to become a leader in engineered electrical power solutions and it has already made strides into the modular substation market.

Trafo expands into modular power solutions for mines

Having made its name in the customised design and application of dry-type transformers, Trafo Power Solutions' vision is to become a leader in engineered electrical power solutions – and the company has already made strides into the modular substation market.

David Claassen, Managing Director at Trafo Power Solutions.

"Our philosophy has always been to add value to our offerings by engineering a transformer solution that suits customers' specific needs, and also fits well into the overall project that it serves," says David Claassen, Managing Director of Trafo Power Solutions. "With our strong technical foundation, we've built a good reputation for understanding the background and application context in which our transformers are going to operate."

Claassen notes that this differentiates the company substantially from many other suppliers, who will provide what the customer specifies but will seldom fully understand the application – to ascertain if there are better options. This process often involves close consultation and discussions with customers, which goes beyond the narrow role of the transformer – as there are many aspects to ensuring its optimal performance within any project.

"Mining is well known for its demanding conditions," he says. "Apart from understanding the load characteristics and the operating environment, we also have to consider the kind of roads over which equipment will have to be transported to remote sites. These conditions may call for special enclosures for the equipment, for instance."

As the mining industry has embraced the usefulness of modular substations, Trafo Power Solutions has for many years provided dry-type transformers for these installations – due to the suitability of this technology for modular applications. This has led to a natural progression in which the company has been designing and supplying the full modular solution for customers, he explains.

"The modular approach to substations has proven to be a very productive way of streamlining timelines and costs for mining projects – which are often developed under time pressure and in remote locations," says Claassen. "It is much quicker and more cost effective to build this electrical infrastructure in a dedicated facility with direct access to specialised skills and infrastructure – and then transport the finished product to site."

Among the benefits is that less work needs to be done on the mine's site, so there are time and cost savings on personnel travelling long distances, the bureaucratic nature of securing working visas and the extent of civils infrastructure necessary on the site. It also enhances safety by ensuring that work is conducted under controlled conditions, and there is less need for people to be managed on site when dealing with potentially hazardous equipment.

"In this context, it is counterproductive to then still have to locate a conventional supply

Multiple dry-type transformers in assembly line to be installed in a containerised solution.

This mini-substation is an important part of a mining operation's electrical infrastructure upgrade.

Dry-type transformers in a containerised solution for a mining application.

transformer outside of the modular substation – as is usually necessary due to the hazards associated with the cooling oil in these traditional units," he says. "This is where our dry-type transformers come into their own, as they are air-cooled and rated as Class F1 for fire safety."

This inherent safety of dry-type transformers – and the absence of any risk of oil leakage and environmental contamination – means they can be safely installed indoors, in confined spaces and close to human traffic. By integrating the dry-type transformer within the modular substation structure, it can be cabled in and tested in the assembly workshop before being shipped to site.

"The medium voltage cable can be connected to the transformer and tested, as well as the low voltage connections to the other components," he says. "This adds another layer of convenience and efficiency to the modular substation concept."

While the capability of Trafo Power Solutions has been focused on Africa, the company is also showing its mettle on other continents. The company recently delivered a skid-mounted modular substation to a mining customer in Australia, turning the project around within a timeframe that could not be matched by competitors globally.

"This project showcased not only our ability to design and produce a solution to suit the customer's exact requirements, but also to meet stringent Australian technical standards for this equipment," says Claassen. "We regularly conduct this alignment of standards across borders throughout Africa, and are proud to have done the same for customers outside of the continent."

He highlights that his team has a long track record in dealing with large blue-chip mining customers – often through engineering, procurement and construction (EPC) firms or electrical consultants. This requires a thorough understanding of the processes and protocols that facilitate sound project management. At the same time, the team remains agile and can respond with flexibility to the various changes that typically occur in the execution of large and complex projects.

"We understand that every project has its own challenges, so our style and philosophy is focused on moving quickly to respond wherever the situation demands," he says.

The company continues to grow its footprint across Africa, with emphasis on bringing its solutions and services closer to customers. Its installed base of equipment has grown substantially in recent years, and the infrastructure to support customers from in-country facilities is being strengthened accordingly.

"We are developing strategic partnerships in a number of African countries to facilitate a first line of support that is close to customers' operations," he says. "The plans are based on our customers' requirements in any region, and on building relationships to understand their needs into the future."

He highlights that the mining industry sees constant change across its value chain, and technology partners need to keep up with these changes so that their solutions remain relevant and cutting edge.

"Our focus is always on raising the bar in our service to customers, so we like to communicate regularly with them, to review the solutions we have provided and to explore other opportunities to add value," says Claassen. "We see ourselves first and foremost as engineers of high value solutions, and in engineering there is always a quest for improvement." ■

Conveying, storage, and processing are all activities that generate dust.

Controlling belt conveyor dust at the source

R. Todd Swinderman, P.E. : CEO Emeritus, Martin Engineering

The conveyor technology experts at Martin Engineering are responding to the US Mining Safety and Health Administration's (MSHA) new dust emissions final rule by offering simple, make-sense solutions for staying compliant.

Often, these rule changes cause a ripple effect internationally and serve as a template for similar policies worldwide. Martin Engineering engineers have dedicated years to reducing conveyor-borne dust by designing accessories and engineered solutions that improve workplace safety and production efficiency. In this article, Martin Engineering experts offer field-tested advice and methods that have delivered measurable results for mines and bulk handlers around the world for decades.

On August 1, 2024, the MSHA final rules came into effect. MSHA measures the dust personal exposure level (PEL) in a time weighted average (TWA) by a personal dust monitor carried by trained workers throughout their eight-hour shift. The volume is measured in micrograms (µg) in cubic metres (m^3). The final rule establishes a new PEL of 50 $\mu g/m^3$ for a full-shift exposure, calculated as an 8-hour TWA, and an action level of 25 $\mu g/m^3$. These standards also apply to miners diagnosed with or showing early signs of pneumoconiosis (aka - black lung).

MSHA mandates operators seek to install or repair equipment that offer engineering controls which control or eliminate sources of dust. This is supplemented with administrative controls (signs, policies, etc.). Temporary personal protective equipment (PPE) is also required for exposures above the PEL but is not considered a long-term solution.

Conveyor Loading Zones

Conveyor belt dust is largely generated at the loading and discharge zones. Passive dust reduction means no machinery or electricity such as air cleaners, pumps or HAVC are needed. Passive dust reduction strategies include:

Fully enclosed transfers – Completely enclosing the loading, stilling and settling zones contain the dust. Items like dust curtains and dust bags control airflow and capture dust.

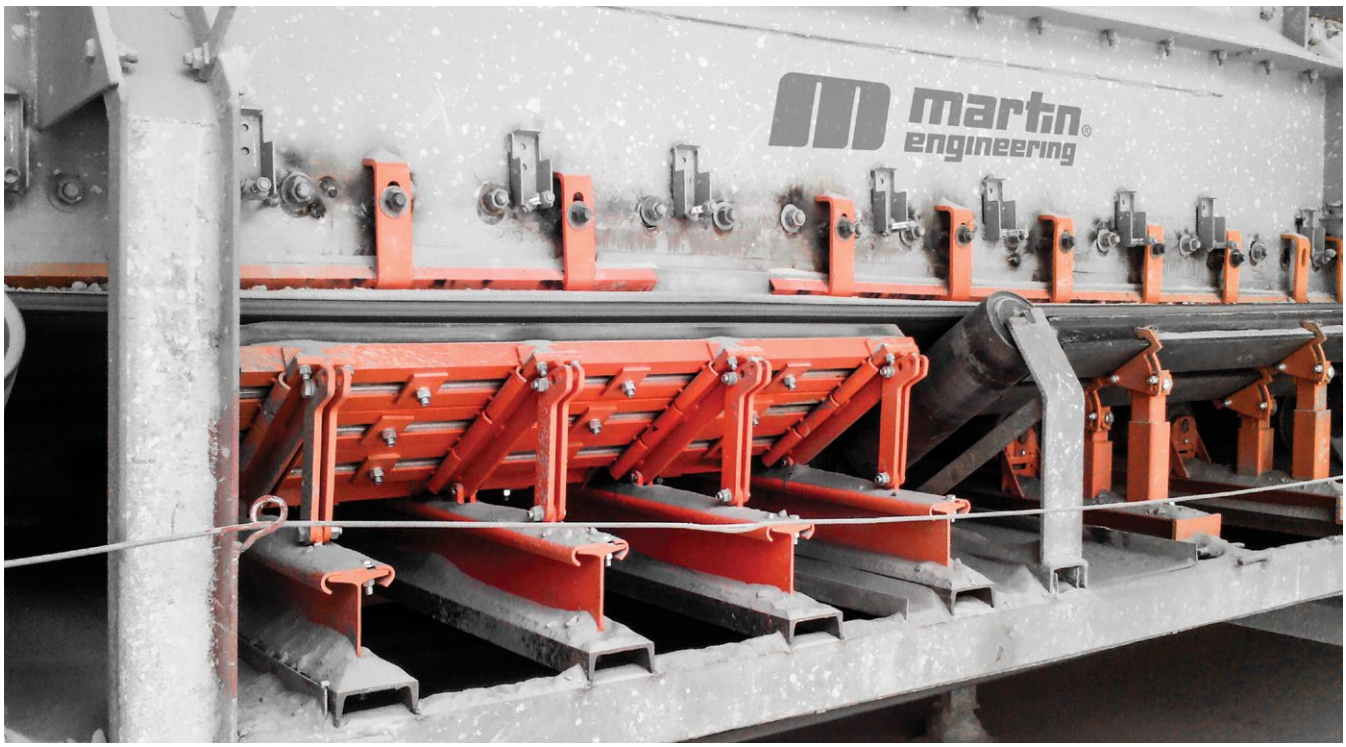
Shorter or sloped loading – Transfer chutes that minimise the impact of cargo on the belt reduce the amount of turbulence and volume of dust within the loading zone.

Belt training – Belt training when entering and leaving the loading zone ensures centered belt loading and minimizes material shifting. It also controls belt drift for less spillage and dust along the run.

Preventing belt sag between idlers – The belt can dip slightly between idlers, creating gaps that release dust and fines. Using an impact cradle with shock-absorbent polyurethane bars reduces strain on the belt and creates an even belt plane. Cradles can extend along the entire length of the stilling zone.

Lower Belt Speeds

Many sources suggest belt speeds of 2 m/s (394 fpm) or less for reducing dust generation. However, with lower belt speeds, the belt width must increase to convey the same tons-per-hour creating a capital cost vs operating cost dilemma. The Conveyor Equipment Manufacturers Association (CEMA) Classification and Definitions of Bulk Materials (ANSI/CEMA 550-2003) lists



Raw material handling will never be 100% dust-free but good transfer point design can make it safe.

miscellaneous properties of bulk materials that benefit from lower belt speeds:

- B-1 Aeration-Fluidity
- B-6 Degradable-Size Breakdown
- B-8 Dusty
- B-20 Very Light and Fluffy

Idler Spacing and Belt Tension

Managing belt tension so the sag between idlers is minimised reduces the number of escape points for fugitive spillage and dust from material trampling and splash. Splash is material spread after impact on the belt during loading. Material trampling is the particle-to-particle movement created by the change in the bulk material profile as it goes over the idlers. The higher the belt tension, the lower the trampling loss.

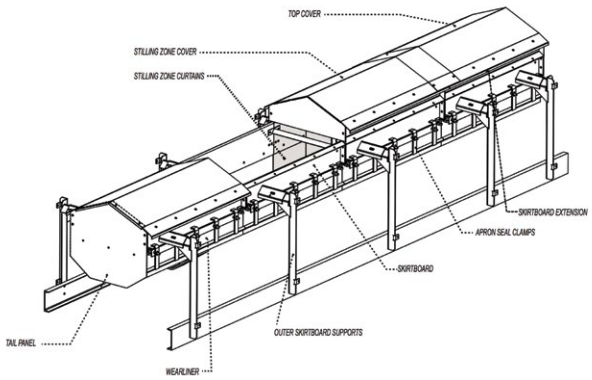
Similar to turbulent air caused by impact, at a critical speed, bulk material moving over idlers loses contact with the belt at the idler and is launched into the air, falling back onto the belt at a slightly lower speed and releasing dust. Keeping the belt sag to 1% between idlers is a frequent specification.

Idler spacing is critical to controlling belt sag. To reduce gaps where spillage and emissions can escape and retain an even belt profile in the loading zone, idlers should be placed as closely together as possible. Outside of the loading zone, CEMA has some recommendations based on volume and belt width.

Best practice: enclose the system

The amount of dust that can become airborne is directly proportional to the volume and speed of the airflow through the transfer point. If the openings in the chute work are restricted to the practical minimum, the inward airflow is restricted. A useful dust control strategy is to capture the material shortly after discharge and keep the stream coalesced as tightly as possible to reduce induced air. Extend enclosures apply dual skirting to seal the enclosure and use dust curtains to control airflow and allow dust to settle back into the material stream.

Cradles reduce dust emissions by creating a sealed environment between the belt and skirting.



Conclusion

Conveyor transfer points have a history of being drafted rather than designed. Design tools and material flow modelling software helps reduce dust emissions in the transfer point design phase. How the conveyor is operated and maintained also has a significant effect on dust generation and release. In initial conveyor system designs, emphasis is commonly placed on maximising production. But experts recommend operators engage in feasibility studies on how the conveyor systems create and emit dust with the goal of improving air quality and workplace safety while still increasing operational efficiency. ■

Responsible Mining Practices: the impact of IRMA on the South African mining industry

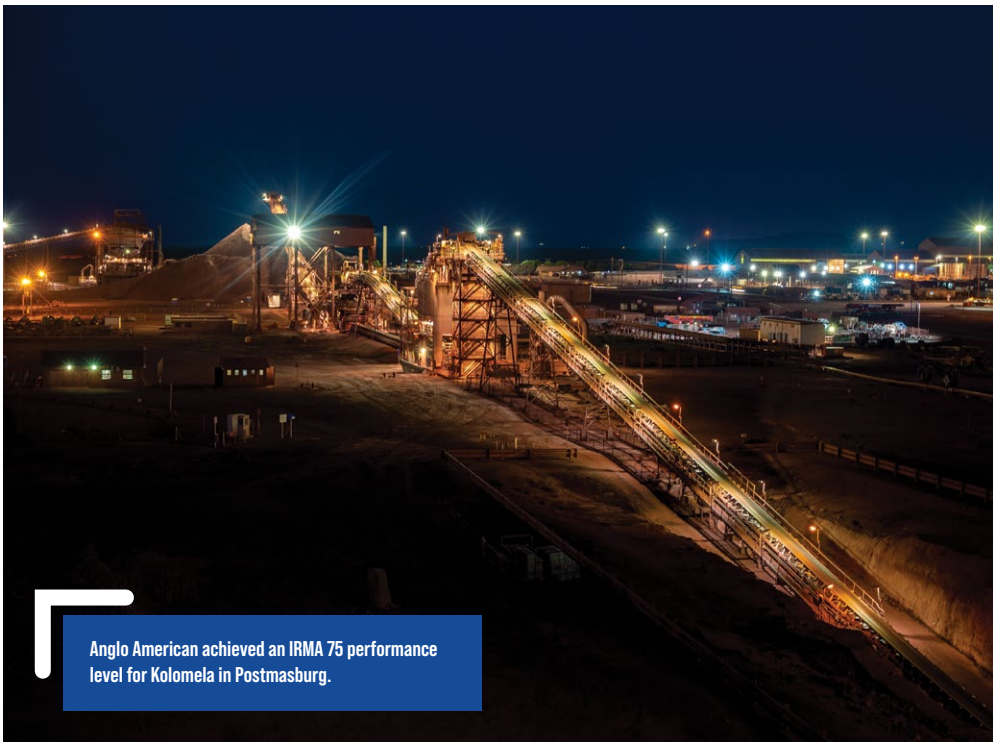
By Alana van Wouw of Crane Ridge.

The mining industry is a cornerstone of South Africa's economy, contributing significantly to employment and export revenues. However, it has long been associated with various environmental and social challenges. In response to these issues, initiatives like the Initiative for Responsible Mining Assurance (IRMA) have emerged, aiming to promote responsible mining practices. This article explores what IRMA entails and its implications for the South African mining sector.

Understanding IRMA

IRMA is a multi-stakeholder initiative that aims to establish a comprehensive framework for responsible mining practices. It focuses on accountability, transparency, and sustainable development throughout the mining lifecycle. The IRMA system consists of three main components: a best practice standard, a process for assessing mines against this standard, and an organization responsible for governance and implementation.

IRMA's standards are crafted through a collaborative effort involving mining companies, NGOs, local communities, and labour organizations. This inclusive approach boosts their credibility and applicability.



Anglo American achieved an IRMA 75 performance level for Kolomela in Postmasburg.

The importance of IRMA for SA

Enhancing reputation and market access: South Africa's mining sector has faced scrutiny over its practices, often affecting its global reputation. Adopting IRMA standards can improve market access, as more consumers and investors are prioritising sustainability and ethical sourcing.

Regulatory compliance: The South African government is increasingly emphasising environmental regulations. IRMA's framework can help companies not only meet these regulations but also exceed them, positioning themselves as leaders in responsible mining.

Community relations: Mining operations often encounter conflicts with local communities. By implementing IRMA practices, companies can foster better relationships, ensuring that communities benefit from mining activities through job creation, infrastructure development, and community investment.

Sustainable Development Goals (SDGs): Sustainable Development Goals (SDGs): By aligning with IRMA, mining companies can significantly contribute to the United Nations' SDGs, notably in areas like poverty alleviation, clean water, and responsible consumption. This alignment not only enhances a company's brand but also attracts socially conscious investors. Out of the 17 SDGs, the IRMA Standard closely aligns with seven, as highlighted in the summary chart below.

Risk management: By adopting responsible practices, companies can mitigate risks associated with environmental damage and social unrest. Proactively addressing

The core objectives of IRMA include:

Environmental Stewardship
Ensuring that mining activities minimise environmental degradation and support biodiversity.

Social Responsibility:
Addressing the rights and needs of local communities, including Indigenous populations, by promoting fair labour practices and community engagement.

Economic Viability:
Encouraging practices that support long-term economic benefits for both the mining companies and the communities they operate in.

these issues can lead to more stable operations and less disruption.

Impact on the Mining Industry in South Africa

South Africa's mining industry has a long history of contributing to the country's economy. However, it has also faced challenges related to environmental degradation, social conflicts, and labour issues. The adoption of IRMA standards can help address these challenges by promoting responsible mining practices and ensuring that mining operations are conducted in a sustainable and ethical manner.

One notable group is Anglo American, which has achieved an IRMA 75 performance level for Kolomela in Postmasburg, Mototolo Complex in Steelport, and Sishen in Kathu.

This demonstrates their dedication to sustainability and transparency in their mining operations. By adhering to IRMA standards, these mines have enhanced their environmental and social performance, identified areas for improvement, and provided stakeholders with independent verification of their sustainability practices.

The implementation of IRMA standards in South Africa can also attract sustainable investors and customers who are increasingly concerned about the environmental and social impacts of their supply chains. This can lead to increased investment in the mining sector and contribute to the country's economic growth.

IRMA standards can help improve the relationship between mining companies and local communities by promoting community engagement and ensuring that the benefits of mining are shared with the local population. This can help reduce social conflicts and create a more positive image of the mining industry in South Africa.

Conclusion

The Initiative for Responsible Mining Assurance (IRMA) represents a significant step towards fostering responsible practices in the mining industry.

For South Africa, embracing these standards could lead to enhanced environmental protection, improved community relations, and better overall sustainability.

As the global demand for ethical sourcing continues to grow, South African mining companies that adopt IRMA practices will not only benefit their operations but also contribute positively to the economy and society at large.

Embracing responsibility mining practices in mining is not just an ethical choice; it is increasingly becoming a business imperative. ■

Challenges in Implementing IRMA

While the benefits of adopting IRMA are clear, there are challenges:

Cost of Implementation
Adapting to IRMA standards may require significant investment, particularly for smaller companies.

Resistance to Change:
Some companies may be reluctant to shift from traditional practices to more sustainable approaches, fearing it could affect profitability in the short term.

Capacity Building:
There may be a lack of awareness or expertise regarding IRMA practices within the industry, necessitating training and education.

At present, the mines listed in the table below are actively engaged with IRMA in South Africa.

Site Name	Operating Company	Parent Company	Assessment Status	Operation Location	Materials Mined
Amandelbult Mining Complex	Rustenburg Platinum Mines	Anglo American	Independent Assessment in Progress – **50-IRMA** achievement level	Northam, South Africa	Iridium, Platinum, Palladium, Rhodium, Ruthenium
Kolomela	Sishen Iron Ore Company	Anglo American	Independent Assessment Completed – **75-IRMA** achievement level	Postmasburg, South Africa	Iron
Marikana (SA PGM operations)	Sibanye-Stillwater	Sibanye-Stillwater	Independent Assessment in progress	Marikana, South Africa	Iridium, Gold, Palladium, Platinum, Rhodium, Ruthenium Nickel, Cobalt Copper, Chromium
Mogalakwena Complex	Anglo American Platinum	Anglo American	Independent Assessment in progress	Mokopane, South Africa	Platinum, Gold, Nickel, Copper, Cobalt
Mototolo Complex	Rustenburg Platinum Mines Ltd	Anglo American	Independent Assessment Completed – **75-IRMA** achievement level	Steelport, South Africa	Gold, Iridium, Nickel, Palladium, Platinum, Rhodium, Ruthenium, Osmium, Chromium, Copper Cobalt, Silver
Sibanye Stillwater SA PGM Rustenburg Operations	Sibanye-Stillwater	Sibanye-Stillwater	Independent Assessment in progress	Rustenburg, South Africa	Gold, Iridium, Palladium, Platinum, Rhodium, Ruthenium
Sishen	Sishen Iron Ore Company	Anglo American	Independent Assessment Completed – **75-IRMA** achievement level	Kathu, South Africa	Iron

RFA CEO Gavin Kelly.

The end of TRANSNET rail monopoly and the beginning of better things?

By RFA CEO Gavin Kelly

The Road Freight Association (RFA) notes that the Minister of Transport, Barbara Creecy has approved the publishing of the Transnet Network Statement for the rail network in South Africa. The Network Statement facilitates open access to South Africa's rail network by third-party operators.

Are we about to see great things – or are we doomed into a circle of arguments and squabbles by various potential third-party operators as recently seen at the Port of Durban?

For years, the RFA has been very vocal about the need for "revolutionary" change in our rail operations. Despite its current challenges, South Africa's rail network, with its extensive reach and some (to this day) state-of-the art infrastructure in certain areas, has the potential to become a cornerstone of the national economy, driving growth and creating numerous jobs.

However, there are some nagging questions: can Transnet really create the required environment for third party operators to operate efficiently on the rail network? Is the rail network (i.e. the signalling, rail mass carrying capacity, points, sidings, warehousing, security and other infrastructure) ready to accommodate a "flood" of trains and a drive from the national logistics chain requirements? Are the train sets adequate - or will these all need to come from the third-party operators? Who will adjudicate and resolve disagreements between these third-party operators or between them and Transnet itself?

Whilst a huge amount of cargo is delivered via road every day, the reality is that the cargo needs to move between the origination and destination and

the challenge will be creating an environment where system failures (or third-party failures) do not have a resultant collapse of the various routes identified for the open access.

The RFA has continually noted that rail needs to "carry its load" – and this has been clearly underwritten by the impact that we have all witnessed, on roads across the country. These roads were never built to take the volumes of vehicles nor the axle massloads (this being before any overloading comes into play) – and both roads and towns along the way have had a Jeckell and Hyde relationship – damage and wear to the infrastructure but increase in local business trading to support the increase in road freight traffic through these regions.

Truly, the publishing of the network statement is an important step.

The RFA encourages all companies that could become a third-party operator, to study the statement and to engage with the Department of Transport in getting rail operations back to a viable and efficient service. There will be many opportunities for road transport and there will be changes in how transport is done (in the long run), but we need to get the foundation pieces running. Reliably. Efficiently. Securely. Affordably.

The Road Freight Association will watch developments with keen interest – 2025 will be a crucial year in ensuring that South Africa (thereby its economy and wealth creation for all its citizens in the form of employment) will turn around and become an invigorated and vibrant logistics hub, chain and developmental node for all modes of transport. Surely, by now, there should be no argument that road and rail can (and must) symbiotically work together. ■

Lucio Trentini CEO SEIFSA

SEIFSA's New year message: An inclusive strategy for the steel industry

By Lucio Trentini CEO SEIFSA

South African business sentiment rose to its highest level during 2024, as constant electricity supply and political stability supported better business conditions. The challenge this year will be to translate sentiment to action. This will hinge on greater collaboration between policy makers, the private sector and key arms of government. The rewards – economic growth, job creation and improved quality of life – will be well worth the effort.

It is generally accepted that the de-industrialisation trajectory that has been observed in the sector can be attributed to the lack of a well-considered and all-encompassing metals sector industrial policy. The South African steel industry is eager to collaborate with government to ensure that policy decisions are made in the best interest of the industry and the nation. A holistic approach that protects the diversity and sustainability of the entire steel value chain is essential for the future success of the South African steel industry.

Looking further afield, the global stage is likely to take the focus at the start of the year when Donald Trump returns to the White House as President of the United States. He has already indicated that global trade is set for some turbulence as he implements policy changes, particularly tariff increases. He has also made it clear that the BRICS nations are in his crosshairs, threatening to impose 100% tariffs on the countries if the bloc chooses to develop a currency to rival the dollar.

Other ongoing geopolitical challenges include intractable conflict in the Middle East, between Hamas and Israel, and Europe, between Russia and Ukraine, resulting in global uncertainty.

The relief felt by the whole country from the suspension of load-shedding in 2024 we hope will flow into 2025. The utility's Generation Operational Recovery Plan appears to have delivered on its promise and we hope this will be seen in robust economic growth. More stable electricity supply and falling rates have allowed the International Monetary Fund to raise its forecast for GDP growth to 1.1% growth for 2024 and 1.5% in 2025, increasing further to 1.8% by 2030, while the South African Reserve Bank expects growth to be 2% by 2027. The concrete steps to get there will be laid out by the president's state of the nation address and the national budget, both in February.

SEIFSA calls on government to prioritise a long-term, inclusive strategy for the steel industry.

Unemployment remains a massive obstacle. The rate decreased by 1.4 % points to 32.1% in the third quarter of 2024, according to the Quarterly Labour Force Survey, with 294 000 more employed people to 16.9-million and a decrease of 373 000 unemployed people to 8-million. While the movement is in the right direction, the rate is still cripplingly high. Until strong growth is achieved and sustained, joblessness will continue to plague the economy. This is one of the many challenges that can be best addressed through private-public partnerships.

The European Union's Carbon Border Adjustment Mechanism (CBAM) programme will be in place by 2026, so 2025 will be the final year of the transitional phase. SEIFSA will keep the M&E Sector informed of any developments and encourage it to adopt a proactive approach to the initiative.

Returning back home, SEIFSA, for and on behalf of its membership and the broader metals, engineering and steel industry, representing both the up and downstream value chain, reiterates it call to government to prioritise a long-term, inclusive strategy for the steel industry. A collaborative approach that considers all stakeholders is essential to securing the future of South Africa's steel industry and its critical role in economic development. ■

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Mining as a **pathway out of poverty?**

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

Welcome to 2025! As I write this column, I am preparing to attend my 12th African Mining Indaba. The theme for 2025 is "Future-Proofing African Mining, Today!" This is built on four pillars, all worth interrogating more fully, but we'll focus predominantly on the first: "Industrialising Africa".

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

Mining needs to do better at serving its local communities.

This is clearly critical to realising broad-based development on the continent. Industrialisation is the most labour-absorbing pathway through which to generate sustained development, as it creates a middle class. A broad middle class in turn builds a wealth base, which sustains a country into the future and helps to consolidate democracy (or even agitate for one, which is why dictators don't like a middle class). Sovereign wealth funds can also be a useful mechanism by which to achieve this, but that requires robust governance institutions as a pre-condition to avoid the pot being looted by unaccountable politicians and officials.

Unfortunately, mining prominence in any given African nation has historically not generated industrialisation. South Africa is a rare exception, and arguably only escaped this trap because the combination of diamonds, coal and gold from the late 1800s onward created a simultaneous demand for finance. This created what scholars have called a minerals-energy-finance complex (MEFC), with a relatively large and robust manufacturing sector, sustained by cheap and reliable electricity.

Even South Africa, though, is likely afflicted by Dutch Disease – the phenomenon whereby a mineral-wealthy country suffers declining manufacturing performance. It works through two complementary mechanisms: First, a mineral or oil-wealthy country's currency appreciates through exports, undermining the cost-competitiveness of exported products in the tradables sector. Second, the extractive industries attract skills and resources away from the manufacturing sector, further jeopardising its competitiveness.

For the sake of comparison, consider briefly Zambia and Rwanda. Zambia is mineral-wealthy – copper-rich to be specific. Mineral rents – the difference between the value of production for a stock of minerals at world prices and their total costs of production – have been wildly volatile for Zambia for the last fifty years. For a host of reasons, copper was unable to provide a firm foundation for manufacturing employment growth in Zambia. Employment in industry (as a share of total employment) was at 7.98% in 1991, around when copper prices plummeted. By 2000, that share had dropped to 5.75%. Mineral rents were at a tiny 0.62% of GDP at the time. By 2021, mineral rents had shot up to 28.25% of GDP, nearing the 1974 high. Manufacturing employment share, to the contrary, grew to 12.23% by 2017 but has since declined. While it is true that much of this growth occurred while mineral rents were declining, the graph shifts substantially from 2015, with mineral rents going sky-high while

manufacturing employment fell. This correlation doesn't prove Dutch Disease, of course, but it's clear that copper production isn't driving sustained industrialisation, despite it being a "critical mineral" for driving low-carbon energy and transport revolutions.

In Rwanda – if the figures can be believed and we temporarily ignore Kagame's plunder of the eastern DRC – has grown from a mere 2.35% in 1991 to a high of 17.21% in 2020. That is a full five percentage points higher than Zambia's peak. Rwanda's mineral rents have never been higher than 1.06% of GDP.

Rwanda's multidimensional poverty headcount ratio (% of population) has declined – on the World Bank's score – from 58.8% in 2013 to 48.8% in 2019. In Zambia, 66.4% of the population were still living in poverty in 2015, and while this figure dropped to below 50% in 2018, it had climbed back to the 2015 level by 2022.

I've seen the benefits, first hand, that mining can bring, especially in places like Zambia, and the local-level benefits (and costs, sometimes). But the national picture often remains grim in countries that have high or volatile mineral rents as a portion of GDP.

I do not believe that this is because of mineral extraction per se, but there are things that tend to happen in mineral-wealthy and weakly institutionalised countries that undermine manufacturing competitiveness and complicate potential pathways out of poverty. Governments receiving mineral rents often have very little incentive to build a broad tax base. Even if they did, it turns out that building a viable manufacturing base (to underpin a broader tax base) just because one has good raw ingredients with which to do so, is not as easy as it seems. Just because one has copper, for instance, it doesn't follow that one should become a solar panel producer.

The 2025 Mining Indaba says it will focus on "Developing strong downstream economies through in-country processing & manufacturing." But this conversation has been going around in circles for as long as I can remember. The truth is that it's very difficult to build a manufacturing industry if you don't have a stable and affordable electricity supply, robust infrastructure, and a clear industrialisation policy based on real global value-chain opportunities instead of wishful thinking.

The other three pillars are "future-proofing our communities"; "delivering effective net zero & Just Energy Transition strategies"; and "maximising on (sic) Africa's critical minerals endowment". These are all great conversations to be having, but there is an understandable cynicism among many long-term observers that this is well-trampled ground. We all know that mining needs to do better at serving its local communities (without becoming substitutes for service delivery that local government should be responsible for), but there remains too large a divergence between boardroom talk and coal-face practice. Similarly, we talk about net zero while calling coal a "critical mineral". And, talking of "critical minerals", we still haven't really decided what counts in this basket, depending on who exactly these minerals are critical for. If they're critical for Europe, for instance, because the EU wants to limit its dependence on China, then where exactly do we think the incentive for local value-addition is going to come from?

The bottom line is that unless leaders of African countries step up to the plate, Africa's minerals (including 'critical' ones) are likely to prove a continued curse. A major difficulty is that several minerals critical to the energy revolution (like cobalt) are lootable and moveable. This creates complex dynamics within and between weakly institutionalised countries. Consider the Rwanda/DRC debacle – a subject for my next column – in which the former is likely sponsoring an armed rebel group in the latter, creating destabilising effects. How to prevent that kind of thing needs to be given more serious attention at forums like the Mining Indaba. ■

The extractive industries attract skills and resources away from the manufacturing sector.

Condra wins Namakwa Sands crane order

Mineral sands miner, Tronox Mineral Sands, has ordered a 35/12,5-ton Condra crane for mill maintenance at the Namakwa Sands East OFS Project, Brand-se-Baai, 385 kilometres north of Cape Town. The company has also ordered two Condra hoists with capacities of 5 and 7,5 tons for the mill discharge and run-of-mine stockpile. East OFS is being developed to allow extraction of orange feldspathic sand (OFS), a mineralised grit, from levels deeper than have been mined at Namakwa Sands before. Extraction will begin this year.

Tronox Mineral Sands has ordered a 35/12,5-ton Condra crane for mill maintenance.

Marc Kleiner, Managing Director at Condra, thinks a reputation for quality, durability and service helped secure the Tronox contract.

"Customer surveys have shown these characteristics to be the 'big three'," he said. "They are uppermost in the customer's mind at the time of purchase.

"We've been working on them for many years now. I think it's fair to say our ability to tailor lifting equipment to the specifics of a particular application is the key to many of our successful tenders."

The drawing office at Condra's Germiston headquarters designed the three Tronox machines, with manufacture taking place in the factory there.

The mill maintenance crane is a double-girder electric overhead travelling machine equipped with a 35 ton main hoist and 12,5 ton auxiliary on a single crab. Span is 23,3 metres, lifting height 30 metres. There is a storm brake to prevent unintended crane movement caused by excessive wind loading. Other features include a full-length walkway, radio control with pendant back-up, and audiovisual safety warnings of crane movement.

Delivery of these machines took place late last year after professional engineering certification.

Blue Cranes of Cape Town, the company already servicing much of the lifting equipment at Namakwa Sands, is to carry out installation and commissioning. The same company will maintain the crane and hoists, in line with Condra's policy of working with companies already possessing knowledge of local conditions. ■

Advanced sorting technology used at Pilangoora Operation

TOMRA Mining's advanced technology and unique experience in designing and installing large-scale ore-sorting plants were key to the successful completion of the world's largest lithium sorting plant. The sorting installation, part of Pilbara Minerals' P680 Expansion Project, has a capacity of more than 1,000 tonnes per hour, and demonstrates the power of TOMRA's cutting-edge technology to improve overall ore recovery and reduce energy consumption through early and effective waste reduction.

TOMRA Mining's sorting technology used in lithium ore sorting plant.

Pilbara Minerals, a major player in the global lithium supply chain, has successfully commissioned the world's largest lithium ore sorting plant at its Pilangoora Operation in Western Australia. Powered by TOMRA Mining's cutting-edge sensor-based sorting technology, the facility breaks new ground in hard-rock lithium processing, improving lithium recovery and increasing final product quality, while significantly reducing energy consumption through the elimination of waste early in the process. The new facility is part of Pilbara Minerals' P680 Expansion Project.

The large-scale project for the design and installation of the new crushing and ore-sorting plant was delivered on schedule, within the deadlines set by Pilbara Minerals.

The successful delivery hinged on the effective collaboration and coordination of the teams from TOMRA Mining, Pilbara Minerals, international companies involved in the manufacturing and shipping of components, and multiple contractors on the work site.

"The success of this project is a testament to TOMRA Mining's collaborative approach and capacity to deliver innovative, large-scale, high-capacity sorting solutions tailored to the unique demands of our clients, providing continuous support from the testing and design phases right through to installation, commissioning, and beyond," says Gavin Rech, Area Sales and Technical Manager Australia at TOMRA Mining. "What's more, the scale and success of this plant have demonstrated to the mining industry the benefits and capacity of sorting." ■

Boost your business with best-in-class drilling

The global rock drill rig market was recently projected to grow at a CAGR (Compound Annual Growth Rate) of 5.5% during the forecast period of 2018-2028. The global water well drilling market size is expected to reach $4.12 billion by 2028 – CAGR of 5.20% from 2021 to 2028. Maintaining leadership in the water or rock drilling market is essential in keeping your company ahead of competitors in these rapidly growing industries and partnering with Powerbit Rocktools can help you maintain your competitive advantage.

The company is renowned for listening intently to its customers and cultivating an in-depth understanding of their challenges, problems and goals. And, with over 20 years of experience, Powerbit drilling products remain at the forefront of technology at affordable prices.

With a singular focus on customer needs and a passion for excellence, Powerbit Rocktools continues to innovate; empowering drilling businesses to conquer even the most challenging drilling operations with ease and efficiency.

As the industry rapidly adopts technological advances and mining and drilling operations expand to new frontiers, the need for robust and reliable rock drilling tools has become even more critical. In the face of extreme and challenging environments, businesses need cost-effective and enduring solutions to conquer the tough terrain they inhabit.

Powerbit has been a prominent player in the southern African mining industry since 1996, addressing the unique demands of drilling-related industries with unwavering dedication and a commitment to excellence.

The company's product range is extensive and purposeful, catering to various drilling needs across industries. The fit-for-purpose line-up includes DTH hammers and bits, RC hammers and bits, tri-cone bits, top hammer bits and rods, casing systems, grinding machines and more. Each tool has a proven history of enhancing drilling operations' efficiency and longevity.

One key factor that sets Powerbit apart is its focus on building long-term partnerships with its clients. Thomas Chao, MD at Powerbit Rocktools, emphasises the value of maintaining a reliable supply chain in the context of African industry, where drilling and geotechnical excavation operations form the backbone of resource extraction and optimisation, driving the continent's survival and progress.

"In the drilling industry, our clients can't afford downtime. We pride ourselves on being a partner who is always on hand to help our clients address their unique challenges. Our team is not just a supplier, we are a valued partner for our clients' businesses. And that makes all the difference.

"We consistently maintain and adapt to new quality standards by collaborating with our facilities offshore and continuously work alongside our clients to understand their needs and provide products that serve their specific requirements."

Powerbit collaborates with its facilities in Taiwan, China and Japan, where they have advanced research centres and applied technology experts in the rock drilling tools field working tirelessly to innovate new products and methods, cultivating a practical understanding of emerging engineering challenges to effectively tailor their products to meet clients' specific needs.

Powerbit Rocktools MD, Thomas Chao.

The value of economical, long-life rock drill bits, hammers and grinding machines in today's drilling operations cannot be overstated. Powerbit recognises these tools' pivotal role in enabling clients' success and driving infrastructure projects that underpin local economies.

The Powerbit Product Roundup is a testament to its commitment to empowering progress in drilling operations. From DTH hammers and bits to top hammer drilling tools and RC hammers and bits, each product is meticulously engineered to ignite the power of remarkable rock drilling. With a versatile range suitable for various working conditions and industries, Powerbit is well-equipped to serve diverse clientele with different drilling requirements.

Each Powerbit product is meticulously engineered for efficiency and longevity.

ABB and Epiroc **advance collaboration on underground trolley solutions for mining**

ABB and Epiroc sign MoU based on underground trolley equipment.

Technology leader in electrification and automation, ABB, and Epiroc have signed a Memorandum of Understanding (MoU) based on underground trolley equipment to collaborate on joint, comprehensive and integrated solutions for the mining industry to increase productivity and safety, and achieve decarbonisation targets. The MoU builds on past technology deployment successes in Swedish mines.

Under the terms of the agreement, the two companies will have teams in collaboration to carry out a comprehensive feasibility assessment of their collective offerings. This review aims to meet the demanding requirements of industrial applications in mining, considering productivity, sustainability, and high-power, automated and safe operations. Any resulting solution would be ruggedised for harsh underground mine environmental conditions and built to approved standards. The recent track record of ABB and Epiroc includes the first battery-electric trolley truck system for underground mines, developed together with Swedish mining company Boliden. According to ABB's Mining's Moment report, 76 percent of global mining companies believe vehicle electrification will bring significant benefits both in terms of sustainability and efficiency. Additionally, 42 percent plan to invest in haulage fleet decarbonisation by 2026. In light of this, ABB and Epiroc believe it is time for action.

As mining customers increasingly seek solutions to support this crucial electrification of their vehicle fleets and move to fully decarbonise their operations under environmental, societal and economic pressures, ABB and Epiroc believe they have complementary, specialised expertise in trolley solutions for underground systems to provide integrated offerings using today's existing technologies. ■

SA experience spurs PDS expansion into Southern Africa

Benefiting from South Africa's role as a global pioneer in Proximity Detection Systems (PDS), other countries in the region are embracing this safety and monitoring technology to great effect.

"South Africa is leading the drive for PDS deployment due to its legislation, but the country is also probably the most experienced in the world on this topic," says Anton Lourens, CEO of Booyco Electronics. "We have seen that most Southern Africa mines are adopting technology and solutions that have been deployed and proven in South Africa." Lourens notes that most of Booyco Electronics' solutions and products are suitable for rollout in neighbouring countries, as they can meet local compliance standards. "The flexibility in our offering – facilitated through firmware optimisation on a universal hardware platform – ensures that we can effectively meet new customer demands without re-inventing the wheel for specific needs," he explains.

This has underpinned the company's expansion strategy that includes Southern Africa, where there has been considerable new development in the region's mining sector. Booyco Electronics' long history in South Africa has fed its success in the rest of the region, as it is regularly contacted by mining decision-makers who were previous customers in South Africa – and are now working in neighbouring countries. In its expansion, Booyco Electronics has adopted the strategy of partnering with in-country providers where a local support base can be established to ensure that the PDS technology is looked after and maintained. ■

The successful implementation of PDS in the mining sector hinges on the effective integration of the human factor.

First crusher for Sandvik-S&R partnership

In a promising start to S&R Enterprises' mandate as a Sandvik Rock Processing distributor, its first Sandvik mobile jaw crusher has been delivered to a mining contractor on a coal operation in South Africa's Mpumalanga coal fields. According to S&R Enterprises' Managing Member, Stephen Smith, the sale highlights not only the demand for Sandvik's high quality equipment, but signals a new era in aftermarket support for the Sandvik range of mobile crushers across the country. The machine is a Sandvik QJ341 mobile jaw crusher with production capacity of 400 tonnes per hour, boasting several differentiators and meeting the customer's demanding targets. "With a large feed opening of 1200 mm by 750 mm, this unit can crush down to a 50 mm closed-side setting," says Smith. "This is a standout feature that positions this mobile crusher very well in the market, allowing the customer to achieve his required output size without having multiple crushing stages." He highlights that the Sandvik QJ341 brings the customer the powerful combination of a large chamber jaw crusher with the lower running costs of a medium sized machine. As a contractor, the customer is also looking for optimal uptime and reliability – which is the focus of S&R Enterprises' strategy to deliver exceptional service.

The Sandvik QJ341 mobile jaw crusher has a production capacity of 400 tonnes per hour.

In close collaboration with Sandvik Rock Processing, S&R Enterprises is also raising its inventory levels in anticipation of the growing demand. Smith says that his business is well known for its agility and quick response times – getting the necessary parts and wear items out to customers when they need them. ■

Atlas Copco TwinPower packs double the punch

Atlas Copco is committed to delivering efficient and sustainable solutions that contribute customer plant optimisation through the development of top-tier products and cutting-edge technologies. Atlas Copco Power Technique's range of generators deliver superior performance, rugged reliability and efficiency over an extended life span.

"Mainstay to our comprehensive generator portfolio is the innovative QAC1100 TwinPower™," says David Stanford, Atlas Copco Power Technique Business Line Manager - Portable Products. "This engineering masterpiece redefines mobile power generation solutions by housing two generators side-by-side in a standard 20-foot container to provide customers with reliable and flexible prime and critical standby power."

The two fully loaded QAC generators deliver up to 1MW of predictable power on a single platform. "We are in effect doubling the power and flexibility for our customers," explains Stanford. "Moreover, the QAC1100 TwinPower adds even more value from a productivity and uptime perspective as the unit also serves as a back-up solution; one generator can essentially run at 50% while the other is being serviced, providing operators with seamless 24/7 power supply."

Atlas Copco TwinPower packs double the punch.

Moreover, owing to a smart configuration and fast-paralleling system, the two generators are able to work independently or in parallel with each other (one unit working at 50Hz and the other at 60Hz), providing multiple solutions and combinations between prime and standby use. Customers are subsequently able to conveniently choose the power solution best suited for those applications with changeable power and current usage requirements.

According to Stanford, the unrivalled load acceptance ability of these generators is due to the engine/alternator performance which, in association with its respective advanced control systems, is able to accept a 100% load step with more than 70% load step acceptance within the ISO 8528-G3 class respectively. ■

Multotec unveils containerised decanter centrifuge demonstration plant

The decanter centrifuge from Multotec comes in a 40-feet container and occupies a small footprint.

Metallurgy and process engineering company, Multotec, has unveiled its latest offering, a containerised demonstration plant, the TS 530L Tailings Decanter Centrifuge from its sister company Siebtechnik Tema. This advanced system is engineered to continuously separate fine solids from a liquid phase by applying centrifugal forces to a slurry stream over a period.

Gerrit du Plessis, Product Specialist: Solid Liquid Separation at Multotec, explains that the containerised demonstration plant is housed in a 40-foot container and mainly consists of a control system, a flocculant make-up and dosing plant and a decanter centrifuge.

"The flocculant make-up and dosing plant is fully automated and prepares flocculant which is dosed into the feed to the centrifuge to precondition the slurry stream. This preconditioning improves the separation of solids from the liquid phase, especially when the solid/liquid separation process is challenging. The control system enables adjustment of the centrifuge speed and residence time to optimise the solid/liquid separation process," says du Plessis.

He explains that the decanter centrifuge is typically used to separate very fine material which is usually found on discards of plants and in waste streams. For example, in gold processing plants, ore is usually milled down to 80% below 75 microns to liberate the metal, which is extremely fine. Other examples include ultrafine coal tailings from coal plants, metal hydroxide sludges from mine water treatment plants, as well as precious and base metal tailings streams, among many others. ■

Invincible Valves on a growth path

Invincible Valves (Pty) Ltd was established in 1982 and has since grown to a medium-sized enterprise located in Knights, Germiston. Invincible Valves prides itself on service excellence and flexibility by striving to enhance its customer's bottom line.

Our 6,500m^2 facility in Knights is made up of 4,500m^2 under roof being our stores and workshop. The facility is fully equipped to offer a one-stop resource for valves and ancillary equipment which we transport globally.

As an approved supplier to all major industries within South Africa, we maintain expertise and experience across a broad spectrum of industries and applications with a wide range of products. We are Africa's largest stockist of Saunders & Insamcor products. We offer a comprehensive range of local and imported valves and accessories for the mining, petro-chemical, power generation, water, sewerage and general industries. We have agents in all major centres around the country and service all four corners of the globe.

We offer an in-house rubber lining service for valves, pipes, fittings and vessels which is utilized by many of the country's major valve manufacturers. In addition, we offer complete service, repair and valve reconditioning services for all types of valves. ■

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