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For people who are serious about mining

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AZTEC Mining's flagship technology, the AZTEC Upflow Reactor, extracts additional gold from slurry. **Pg 8.**

COMMENT

Stronger together: Progress through partnerships

China just delivered a masterclass in *How to Win Friends* with its announcement that starting May 1, 2026, it will implement a zero-tariff policy on 100% of tariff lines for imports from 53 African nations. This major initiative expands previous limited duty-free access, aiming to balance trade deficits, boost African exports, and enhance economic partnerships.

The key takeaways from Dale Carnegie's book: *How to Win Friends and Influence People* is that aggressive, unilateral trade actions (tariffs) destroy long-term relationships and trust, whereas sustainable influence requires negotiation and mutual respect.

US President Donald Trump's aggressive tariffs on trading partners aimed at advancing an "America First" agenda., has, in many instances, not delivered the desired results with nations announcing reciprocal tariffs, withholding key minerals (China), boycotting US products (Canada) or actively seeking other trading partners.

The US is in dire need of critical minerals used to develop its cache of military and defence armament and technology sectors – key commodities widely available on the African continent.

Africa possesses a significant portion of the world's critical mineral reserves-estimated at approximately 30%- which includes cobalt, rare earth elements, titanium, coltan/tantalum, platinum group metals, manganese, chromium, bauxite/aluminium, lithium, uranium and vanadium.

Nelendhre Moodley.

> Mobilising capital at the scale required for exploration, responsible mining, and value-addition closer to the point of production cannot be achieved by governments or the private sector operating in isolation

Mining Indaba 2026

On the topic of Stronger together: *Progress through partnerships* – the theme for this year's Mining Indaba permeated much of the keynote addresses delivered at Africa's largest and most influential mining event, held annually in Cape Town.

The 2026 Mining Indaba reaffirmed that while Africa has significant mineral wealth, unlocking it requires moving from extractive, siloed operations to collaborative, sustainable partnerships.

Hakainde Hichilema, President of Zambia, opened the conference by highlighting Zambia's role as a major copper producer and advocating for strategic partnerships to unlock Africa's resources. He said the countries of Africa needed to build regional value chains around logistics as well as beneficiation. "Whether it's the Tazara Railway or the Lobito Corridor, we need to focus not just on transport, but on what we are transporting," he said. "We need a shared vision for beneficiation that moves beyond the port-to-pit approach."

Gwede Mantashe, Minister of Mineral and Petroleum Resources, South Africa, echoed the theme of the symposium, "Banking on Africa: Mobilising capital through partnership," encouraging collaboration between the public and private sectors, investors, and communities to unlock the full potential of Africa's critical minerals for its people. "Mobilising capital at the scale required for exploration, responsible mining, and value-addition closer to the point of production cannot be achieved by governments or the private sector operating in isolation," he said. "It requires partnership."

Duncan Wanblad (CEO, Anglo American), focused on the responsibility of the mining sector to act as a driver for human progress, not just a supplier of materials. The key takeaway from his speech was that mining success relies on connecting production, infrastructure, and people. He noted that being a champion means taking shared responsibility and working in partnership. It means translating the value beneath the ground into opportunity above it through infrastructure, skills, jobs and stronger economies.

In this edition

Our cover story for this edition, AZMET Technology & Projects, is focused on redefining gold processing economics. In partnership with AZTEC Mining, it is delivering innovative gold recovery products and technologies (pg 8). With gold trading at record highs of $5000 /oz, extracting every ounce from gold processing is a sharp focus for miners.

On the topic of precious metals, Southern Palladium is targeting first concentrate production from its Bengwenyama project in 2028 (pg 14).

Also of note, is insight from Tom Price of Panmure Liberum on the thermal coal market. "Right now, the outlook for South Africa's US$5bn, 60 mtpa thermal coal export industry – source of 5% of the global trade – depends heavily on the outcome of an evolving point of mostly supply-side conflict between Indonesia and China."

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SOOSAN
Creative Breakthrough

Seriti Green appoints first COO to drive operational excellence

Seriti Green, a renewable energy IPP (independent power producer), has appointed Chabisi Motloung as its first Chief Operating Officer. This strategic appointment underscores Seriti Green's growing focus on operational delivery as the company advances South Africa's Just Energy Transition (JET). Motloung brings over 25 years of leadership experience across mining and metals, including senior operational roles at Glencore, Jubilee Metals Group, Samancor, Kumba and the Afarak Group. In his new role, Motloung will oversee the day-to-day of the operating facilities, manage recurring electricity revenue and ensure compliance with evolving regulatory frameworks. He will work closely with Seriti Green's CEO, CFO and CTO to integrate strategy with operational execution, enabling the company to deliver sustainable energy solutions and strengthen South Africa's energy security. With Motloung at the helm of operations, the company is positioned to accelerate renewable energy delivery, scale operations efficiently and ensure operational reliability – hallmarks of a mature, forward-looking energy business committed to the JET. ■

Chabisi Motloung - Seriti Green COO.

Completion of conditions with BWCAM to develop Brandberg West

Andrada is gearing to unlock broader exploration opportunities at Brandberg West.

AIM-listed Andrada Mining, a tin producer with a portfolio of critical minerals mining and exploration assets in Namibia, has confirmed that following the announcement of 21 January 2026, the two key conditions that trigger the initial investment by BWCAM, an affiliate of ACAM LP as part of its staged earn-in partnership, have now been satisfied.

Highlights

- Andrada will receive the $10 million towards the initial development of Brandberg West in the next few days.
- BWCAM will attain 30% shareholding in AIML a soon as the funds are received.
- The proceeds will expedite investigation of tailings recovery potential

CEO, Anthony Viljoen, commented: "The receipt of the initial investment from BWCAM represents an important milestone for Andrada and marks the successful transition of the Brandberg West partnership from agreement to execution. This investment provides immediate momentum to advance the assessment of tailings recovery potential and broader exploration opportunities at Brandberg West. The concurrent equity subscription further aligns interests and reinforces ACAM's confidence in our team, our assets and our disciplined approach to value creation. We look forward to progressing the agreed work programmes over the coming months as we continue to build Andrada into a diversified critical metals producer positioned to benefit from the potentially long-term structural demand." ■

Orezone Gold in transformational expansion into Canada

TSX-listed Orezone Gold has entered into a definitive agreement to acquire Hecla Quebec, a wholly owned subsidiary of Hecla Mining Company.

Through this transaction, Orezone will acquire 100% ownership of the operating Casa Berardi gold mine and a portfolio of exploration properties, all located in Quebec. Consideration for the acquisition consists of upfront and deferred consideration of $352 million and contingent consideration of up to $241 million. Patrick Downey, CEO, Orezone Gold said, “This transaction marks a significant inflection point for Orezone as it adds a proven, cash-flow-generating asset to our portfolio, and provides asset diversification in a Tier 1 jurisdiction. The combination of Casa Berardi and Bomboré creates a multi-asset platform with strong production and free cash flow, positioning Orezone for near-term growth and long-term value creation. Casa Berardi’s established operating history, robust resource and reserve base, and substantial exploration upside across a 37 km mineralised corridor, provide a foundation for sustained growth.” ■

Rand Refinery partners with Ghana’s Gold Coast Refinery

Local refiner, Rand Refinery, recently partnered with Ghana’s Gold Coast Refinery (GCR) to support the Ghana Gold Board (Goldbod) to locally refine artisanal and small scale (ASM) gold and Elevate Responsible Sourcing Standards in West Africa. The agreement between Rand Refinery and GRC, will see Rand Refinery provide Technical, Operational and Commercial (TOC) supervision to GCR, enabling local refining of ASM material and achieve internationally recognised assaying and refining standards. GCR, established in 2016, is a gold refinery based in Accra Ghana with a refining capacity of more than 80 tpa and a potential to grow in the future. GCR signed an agreement with the Ghana Goldbod to refine up to 1000 kgs of ASM gold dore per week, meeting responsibly mined and sourcing standards. “The signing of the agreement is a momentous occasion, and Rand Refinery, being the leading LBMA Good Delivery accredited Refiner on the continent, stands ready to support the aspirations of the Ghana government for local refining, through our partnership with Gold Coast Refinery.

Rand Refinery partners with Ghana’s Gold Coast Refinery.

We are committed to work with GCR and Goldbod to implement the necessary framework to ensure that the material sourced meets international responsible sourcing requirements,” says Rand Refinery CEO, Dean Subramanian. Through these strategic partnerships, Rand Refinery will further strengthen its footprint on the African continent, as the preferred refining partner - supporting and enabling local ASM refining while ensuring ethical sourcing and transparency. We are committed to supporting and developing Africa’s ASM sector as a key enabler of country economic growth. ■

Zimele empowers 45 entrepreneurs with R1.5m in seed capital

Anglo American's Zimele programme and its partner Sigma have awarded R1.5 million in seed capital to 45 rural entrepreneurs in the Northern Cape, following a 12-week business development initiative that culminated in pitching sessions. The programme saw 93 businesses from rural communities pitch to a panel of judges, with winners receiving prizes worth between R50 000 and R150 000 to help launch or grow their enterprises. Women make up 56% of the winners, and about 68% are youth, demonstrating the programme's commitment to inclusive economic development.

Participants received training in business model canvas methodology, design thinking and artificial intelligence tools. The University of KwaZulu-Natal partnered on the programme, providing quality assurance and academic rigour to ensure alignment with best practice in enterprise development.

"This demonstrates what's possible when we invest in people's potential and equip them with the right tools to succeed," says Larisha Naidoo, Vice President: Anglo American Zimele. "These entrepreneurs represent the future of economic participation in the Northern Cape – they're building sustainable businesses that will create jobs and strengthen their communities for years to come." ■

Larisha Naidoo, Vice President: Anglo American Zimele.

New partners appointed at SRK

Principal environmental scientist, Kirsten King.

Principal engineering geologist James Dutchman.

Engineering and scientific consultancy SRK Consulting (South Africa) has promoted principal environmental scientist Kirsten King and principal engineering geologist James Dutchman to partnership positions. Based at the company's Durban office, King has more than 30 years of experience in areas including environmental management, impact assessments, management programmes, monitoring and auditing. King has conducted her work in the mining, industrial and infrastructure sectors across many African countries including South Africa, the DRC, Namibia, Mozambique, Nigeria and Madagascar. Dutchman has almost 15 years of experience in geo-environmental and geotechnical engineering – and engineering geology and tailings expertise – focused on the mining and energy sectors. Based at the company's Johannesburg office, he has also been extensively involved in tailings management, including the application of digital monitoring and surveillance methods. ■

Ivanhoe, Gécamines and Mercuria eye critical minerals supply to the US

TSX-listed Ivanhoe Mines Executive Co-Chairman Robert Friedland joined US President Donald Trump for the launch of Project Vault, a $12 billion domestic critical minerals stockpile. Ivanhoe Mines is in advanced discussions with Gécamines, the Democratic Republic of the Congo state-owned mining company, and metals and energy trading firm, Mercuria, to supply the US with critical minerals contained within the concentrate produced by the ultra-high-grade Kipushi zinc-copper-lead-germanium-gallium mine located in the DRC.

Project Vault is a US supply chain security initiative set up to build a reserve of strategic critical minerals. The initiative is set to combine $1.67 billion in private capital with a $10 billion loan from the Export-Import Bank of the United States that will procure and store critical minerals in the US for civilian use. Project Vault was officially launched on 2 February 2026, in Washington DC. ■

Orion Minerals selected for BHP Xplor's 2026 Accelerator Programme

Orion Minerals selected for BHP Xplor's 2026 Accelerator Programme.

ASX-listed Orion Minerals has announced that several of its South African exploration project companies have been selected to join the 2026 BHP Xplor accelerator programme. This year's cohort includes the largest number of exploration and technology projects since the programme began in 2023, reflecting strong global interest in progressing early-stage concepts for future-facing commodities.

As part of the programme, several of Orion's South African exploration project companies will receive an aggregate equity-free grant of $500 000, access to BHP's technical specialists and structured support to advance geological concepts at its Northern Cape Exploration projects in South Africa.

Tony Lennox, Orion CEO said: "This is a significant milestone for Orion and a strong endorsement of the potential of our Northern Cape exploration portfolio. Being selected for the 2026 BHP Xplor Programme provides access to technical expertise, experienced mentors and industry perspectives that will help us strengthen our geological understanding and progress our current programme of work. The structure and support available through the programme will assist us in refining our approach, assessing key uncertainties and building capability within our team in pursuit of new discoveries." ■

Entsha-led acquisition marks Barloworld's next chapter

Barloworld has entered a new phase in the Group's evolution as a privately held, South African-led industrial business, following the successful Entsha-led consortium acquisition and Barloworld Limited's subsequent delisting from the JSE and A2X.

The consortium is majority owned (51%) by Entsha, a 100% black-owned South African investment company associated with the Sewela family, with Zahid Group holding a 49% minority interest as a long-term financial partner.

The transaction is operator led and anchored by Dominic Sewela, whose leadership journey within Barloworld spans nearly two decades.

"Operating in the unlisted space gives us the strategic agility to focus on the core of our business — serving our customers in all market conditions and supporting the wellbeing of our employees. This transition allows us to move beyond the short term and adopt the long term perspective required to drive sustainable growth and create intrinsic value for all our stakeholders," said Dominic Sewela.

Barloworld will remain headquartered in South Africa, continuing to anchor its operations across Southern Africa and retaining the strong local identity that has defined the Group for more than a century. ■

Barloworld's Dominic Sewela.

Marenica resource **update doubles grade**

ASX-listed Elevate Uranium has announced a significant milestone for its Marenica Uranium Project in Namibia. Following a comprehensive re-analysis of over 5 000 historical drill holes throughout 2025, the JORC Mineral Resource Estimate (MRE) has been updated to JORC 2012 standards.

Elevate Uranium MD, Murray Hill, commented: "The new resource of 40.2 Mlb U308 at a grade of 185 ppm U308 is essentially double the previous resource grade. This resource update is a transformative milestone for the Marenica Uranium Project in Namibia. A significant reanalysis and rework of the underlying data from over 5 000 historical drill holes during 2025, enabled estimation of this more robust mineral resource which materially enhances the development potential of the Marenica Project. With this significant increase in grade and a robust, re-validated database in place, Marenica now offers a reduced risk foundation to accelerate our strategy of becoming a leading uranium developer." ■

Redefining **gold processing economics**

Across the global gold industry, processing plants are finely tuned circuits. Leaching circuits are designed to strike a careful balance between recovery efficiency, throughput, reagent consumption, capital intensity, and operational stability. Under these constraints, they perform remarkably well. Yet even in the most optimised operations, a reality remains: a measurable portion of gold exits the plant in as-arising tailings.

AZTEC Upflow Reactor Plant in Operation.

Across the global gold industry, processing plants are finely tuned circuits. Leaching circuits are designed to strike a careful balance between recovery efficiency, throughput, reagent consumption, capital intensity, and operational stability. Under these constraints, they perform remarkably well. Yet even in the most optimised operations, a reality remains: a measurable portion of gold exits the plant in as-arising tailings.

This is not a flaw in design or performance. It is the natural metallurgical limit of conventional leaching systems. What has traditionally been accepted as unavoidable loss is now being re-evaluated. The gold left in the tails represents a steady stream of unrealised value. Today, a new generation of intensified recovery technology is challenging long-held assumptions about what constitutes “final” recovery.

The hidden gold stream

Modern gold plants are engineered for efficiency. Tank volumes, agitation, cyanide dosage, carbon management and residence time are all optimised within economic and physical constraints.

As a result, tailings typically retain residual gold values — not because the gold is unrecoverable, but because conventional systems have reached their practical threshold.

For many operations, the cumulative value contained in as-arising tailings can equate to a meaningful percentage of annual production. Unlike historical tailings retreatment projects, this material is already within the active process stream. It requires no additional mining, no new crushing circuits, and minimal incremental materials handling. The opportunity lies in completing the leaching and adsorption process, rather than restarting it.

Completing the circuit

AZTEC Mining, a technology-driven engineering company, has positioned itself at the forefront of this shift with its flagship technology: the AZTEC Upflow Reactor (AZ-UFR).

Rather than replacing conventional leach circuits, the AZ-UFRs are installed downstream as a scavenging circuit. The AZ-UFR’s purpose is simple in concept but sophisticated in execution — to create an intensified reaction environment that extracts additional gold from slurry that would otherwise report to final tailings.

Inside the reactor, slurry flows upward through a controlled reaction zone engineered to optimise solid–solution–carbon interaction. This intensified environment promotes additional gold dissolution beyond what is achievable in standard circuits.

The result is incremental recovery without altering the upstream plant configuration.

Because the AZ-UFR operates as a scavenging circuit, integration is typically straightforward. Existing plant performance is maintained while overall recovery improves — an attractive proposition for operating mines.

Recovery without expanding the mine

By recovering additional gold from material already being

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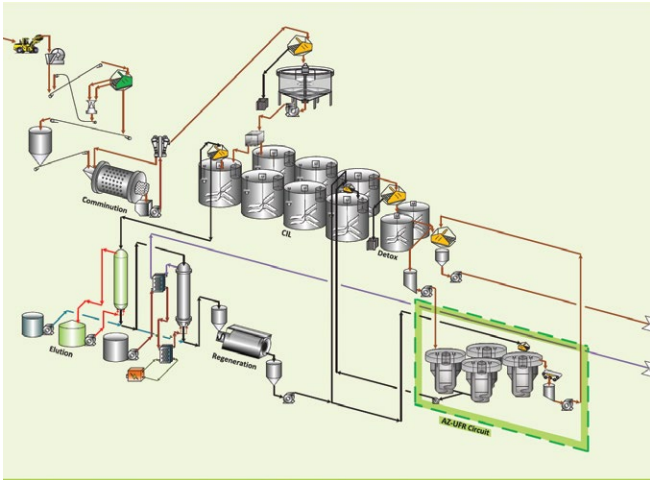
AZTEC Upflow Reactor Bolted Design.

AZTEC Upflow Reactors.

processed, intensified recovery effectively creates a secondary gold stream. The incremental ounces contribute directly to revenue, often delivering short capital payback periods.

Once capital investment is recovered, the system continues generating additional production. Over the life of the operation, this can significantly strengthen net present value (NPV), improve internal rate of return (IRR), and enhance reserve conversion metrics.

For marginal orebodies operating near economic thresholds, even modest improvements in overall recovery can shift project viability.



Typical Gold Process Flowsheet with Added AZTEC Upflow Reactor Circuit.

ESG peformance meets economic performance

While higher recovery drives profitability, environmental performance is becoming equally central to project success.

Lower residual cyanide translates to improved regulatory compliance, reduced detoxification requirements, and lower long-term environmental risk exposure.

In an industry where ESG metrics influence investment decisions as strongly as production metrics, technologies that simultaneously enhance recovery and reduce environmental impact carry increasing strategic weight.

A shift in mindset

Historically, tailings were viewed as the inevitable endpoint of the processing cycle. Today, that perception is evolving.

As gold prices increase, operating costs rise, and investors demand stronger returns with lower environmental risk, the industry is reassessing every stage of the value chain.

Rather than expanding plant footprints or increasing mining intensity, producers can achieve stronger outcomes through smarter process integration with the AZ-UFR.

Redefining what “final” means

Conventional leaching circuits will always recover the majority of economically accessible gold. But the notion that tailings represent the absolute limit of extraction has been changed with the AZ-UFR.

By installing the AZ-UFR, producers can economically capture a significant portion of residual gold, strengthen project economics, reduce environmental impact, and extend the productive life of existing assets.

In doing so, tailings are no longer viewed solely as waste — but as an opportunity.

And in a sector where incremental improvements can translate into millions of dollars in value, this shift will prove transformative. ■

South Africa's thermal coal export industry is estimated at US$5bn.

Thermal Coal's 'face-off': Indonesia vs China

By Tom Price Managing Director, Research Analyst, Resources at Panmure Liberum

Right now, the outlook for South Africa's long-US$5bn, 60 mtpa thermal coal export industry – source of 5% of the global trade – depends heavily on the outcome of an evolving point of mostly supply-side conflict between Indonesia and China.

What's going on? Indonesia – source of 45% of the 1 btpa globally traded thermal coal – continues to dramatically 'chop and change' its core strategy to boost the prices and tax returns of its massive 0.5 btpa export industry. Meanwhile, China – biggest buyer of Indonesia's coal – is pushing back on these price-hiking strategies, by periodically marginalising the trade flow with its own locally mined coal, source of a staggeringly large 4.8 btpa raw coal.

This odd coal market 'face-off' has effectively dragged on global product prices for over a year now – to the frustration of Indonesia's rent-seeking government. Here, we explain the state-of-play for the Indonesia-China coal trade, and list possible outcomes for global thermal coal supply and prices.

A massive cut

Last December, the head of Indonesia's Ministry of Energy and Mineral Resources, Bahlil Lahadalia, announced a general plan to cut the national coal output target rate for 2026 to below 2025's rate. The policy's objective? To support product prices across the industry; stabilise government revenues; improve industry's environmental standards.

In this New Year, Lahadalia provided the market with some numbers too: 2026's maximum total coal output would be set at 600 mt, 25% below 2025's total of 790 mt. Note, of 2025's 790 mt of total production, we estimate that 488 mt was exported as thermal coal; 23 mt was exported as metallurgical coal. As this article was being written, there had still been no details shared by the government on how this cut was to be applied (e.g. by mine, province, grade, exports, etc.). Unsurprisingly, various industry entities of Indonesia have begun lobbying the government for policy exemptions.

Potential impact, measured

Pre-cut, for 2026, we forecast Indonesia's thermal coal exports at 493 mt (+1%YoY), 45% of the corresponding forecast global total – making Indonesia the largest source of exported thermal coal. Assuming the Ministry's 25% cut to Indonesia's total coal output rate reports entirely to the industry's exports too, then this policy would reduce our 2026 forecast total for the country from 493 mt to just 370 mt (assumes too, that all else in industry and markets remains unchanged) – removing 123 mt, or 11%, from 2026's 1 091 mt global thermal coal trade. A cut of this size

would take our forecast global trade balance deep into deficit, driving up our short-term price outlook.

salto ke belakang = 'backflip'

An 11% cut to our thermal coal export forecast should make us big price bulls, yes? While we certainly do recognise new upside risk to all trade prices we're also waiting for more evidence of policy 'follow through'. Why? Because we've been here before, with Lahadalia's policy roll-outs. In early 2025, he sought to influence export prices, by directing local traders to strictly adhere to government-set price floors (HBAs). By mid-2025, this government backflipped, by removing these floors – to offset the collapse in exports. Why? It turned out, China – biggest buyer of Indo-coals – responded to Lahadalia's price floors with a hike to its domestic coal production rate.

Price floor vs. Output cut

Does Indonesia's replacement of a price floor policy with a production cut policy deliver a different outcome? Absolutely, yes. We believe that the only effective way to lift prices – and tax returns – on Indonesia's >500 mtpa coal industry is to control supply. For it is far easier to track and control activity at the mines, than to dictate prices in the market. Output controls also avoid supply chain gluts that emerge with price floors.

In Indonesia's case, output controls should target the lowest grades, particularly lignite. If lignite is cut, the prices and values of all superior products will lift. If he seeks to boost prices, then Lahadalia's policy switch here should work. He just needs to stick to it.

What's going on in China?

Of course, that fact that China can at least partly substitute 0.2 btpa of Indonesian imports with locally mined coal prompts at least two questions: 1. What exactly is China's domestic coal production capability? 2. If it is large, then why import at all?

China is by far the largest national producer and consumer of coal. For 2025, it mined 4.8 btpa of raw coal (+1.2%YoY), 56% of the global total. Of this total, 3.7 btpa (78% of total) was used for local power generation; 0.6 btpa (12%) for coke-steel production; the remaining 0.5 btpa (10%), in cement clinkering.

Supplementing China's local coal output in 2025 was 359 mt of thermal coal imports versus 2.4 mt thermal coal exports, for 357 mt net-imports. Of the imports, 190 mt was imported from Indonesia – 55% of China's total thermal coal imports – its largest source. China's other key import sources are Australia (66 mt, 2025), Russia (28 mt) and Mongolia (18 mt). Note, less than 1 mt was imported from South Africa.

Why would China need to import coal, if it mines almost 5 btpa of its own supply? Two key reasons: 1. To boost the calorific value of China's typically low-grade local coals, via blending with imports; 2. Because some coal-poor regions of China, particularly in the south, can access seaborne sources more cost-effectively than local ones.

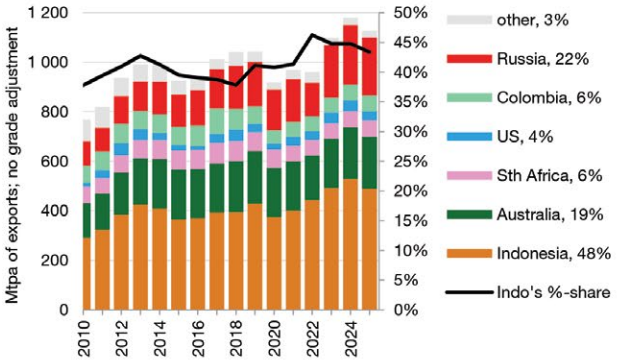
Useful conclusions

Outwardly, of course the government of Indonesia's plan to cut 2026's national coal output to just 600 mt, 25% below 2025's rate, is bullish for globally traded prices. For if we assume demand is unchanged and the cut is applied universally, resulting in a 25% cut to our forecast Indonesia exports of 493 mt too – the policy it removes 11% from our global supply forecast, massively lifting both the forecast deficit and the upside price risk.

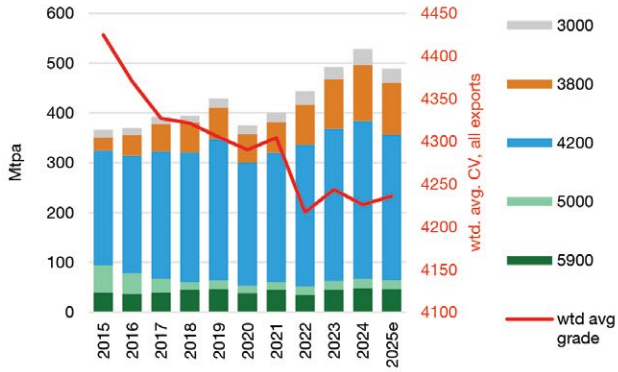
If the government seeks to support prices, then cutting and enforcing industry output controls can work – particularly if lignite is targeted by this policy. Compared to imposition of price floors, production cuts are more effective, easier to apply, deliver fewer unintended outcomes (gluts).

We see five policy risks: 1. China has a history of penalising sources that alter trade terms/conditions (Indonesia's 2025 price floors; 2020-22 bans on imported Australian coal); 2. Indonesia may have difficulty securing coal supply for local coal-fired utilities (25% universal cut may see some miners failing to deliver on 'domestic market obligations' – which secures supply for local utilities); 3. A general 25% cut may prompt a short-term collapse in industry royalties and export tax revenues, before the policy objective of higher prices is achieved; 4. Another policy backflip will undermine the Ministry's market credibility; 5. China secures long-term substitutes (boosts local coal supply + imports from Russia-Australia-Mongolia). ■

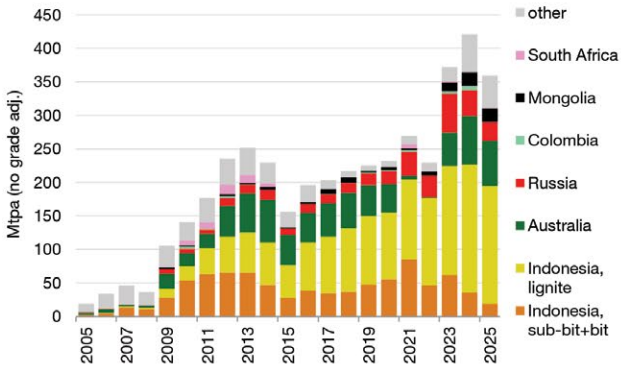
Thermal coal exporters (Mtpa)



Indonesia's thermal coal exports, by calorific value



China's total thermal coal imports, by source (Mtpa)



Speakers at the McCloskey Steel and Ferroalloys Conference.

Menar on track to start its rail-to-port logistics business

Plans to expand Menar's operations into the logistics sector are moving ahead with the establishment of Menar Ports and Rail (MPR), a Train Operating Company (TOC) that will deliver integrated transport solutions for mineral exporters.

Menar's Chief Commercial Officer, Ruan Nothnagel.

The company intends to use its conditional access to national rail networks to transport mineral commodities from pit to port, for its own products and other mining operations. Menar is one of 11 private companies granted access through the Transnet Rail Infrastructure Manager (TRIM) scheme, launched by Transnet to boost the country's rail capacity and support exports. Speaking at the McCloskey Steel and Ferroalloys Conference this week, Menar's Chief Commercial Officer, Ruan Nothnagel, mentioned that the company is looking to secure billions of Rands worth of investments to purchase locomotives and wagons.

Nothnagel said plans were also afoot to create employment opportunities and train its own locomotive drivers as the business progresses. "We intend to use this as an opportunity to do our part in helping the South African economy to reindustrialise and create sustainable employment," he stated. A member of the African Rail Industry Association, MPR will offer a range of services from managing strategic sidings, train loading infrastructure, port-side stockpiling facilities and bulk material handling systems, amongst other things.

> "MPR will offer a range of services from managing strategic sidings, train loading infrastructure, port-side stockpiling facilities and bulk material handling systems, amongst other things."

MPR will have access to major export corridors and terminals, including Richards Bay Coal Terminal, Richards Bay Dry Bulk Terminal, Richards Bay Grindrod Terminal, and the Maputo Corridor (TCM), enabling access to global markets.

Nothnagel said Menar decided to apply for conditional access because it was facing constraints in moving volumes like other mineral commodities producers in the country.

In addition, the company has experience in the space. "We are experienced, we have a very good logistics team, and we can guarantee the volumes, so it makes sense for us," he said.

Menar's entry into the logistics business is not only strategic to its coal, anthracite and manganese mining operations, but it will also contribute to its Khwelamet ferromanganese complex based in Meyerton, Gauteng.

Khwelamet, which is managed through a joint venture with Khwela Capital, is in the process of gradually restarting its operations after it was acquired from Samancor Manganese in 2025. The company will be able to seamlessly transport manganese ore from the Northern Cape to the Meyerton smelter facility, and to rail the ferromanganese product to the port, allowing it to be exported to customers. ■

Gold Investment rockets in 2025, setting a new high as uncertainty bites

The World Gold Council's Full-Year 2025 Gold Demand Trends report reveals that total gold demand hit a new all-time high of 5 002 t last year. A record fourth quarter set the seal on a stellar year as continued geopolitical and economic uncertainty propelled hefty investment in gold with an annual value of US $555 bn.

Total gold demand hit a new all-time high of 5 002 t last year.

Global jewellery demand softened throughout the year, declining 18% compared to 2024.

Global investment demand reached a landmark level of 2 175 t and was the main driver behind gold's remarkable and record-breaking year. Across the world, investors seeking safe haven and diversification, piled into gold ETFs, adding 801 t throughout the year. Investors also bought bullion with global bar and coin demand reaching 1 374 t or US $154 bn in value terms. The two major markets China (+28% y/y) and India (+17% y/y) recorded significant gains, making up more than 50% of demand in the category.

Central bank demand remained elevated in 2025, with the official sector adding 863 t of gold. While annual demand was below the 1 000 t mark surpassed in the previous three years, central bank buying remained a prominent and additive factor in the global gold demand picture.

Amidst a spate of price highs, global jewellery demand softened as expected throughout the year, declining 18% compared to 2024. However, the total value of gold jewellery demand increased 18% year-on-year to $172 bn, highlighting the relevance of gold for consumers in the long term.

Louise Street, Senior Markets Analyst from the World Gold Council.

Total supply also reached a new record, as mine production rose to 3 672 t and recycling increased by a modest 3%, remaining subdued despite high prices.

Louise Street, Senior Markets Analyst from the World Gold Council, commented: "2025 saw surging demand for gold and rocketing prices. Consumers and investors alike bought and held gold in an environment where economic and geopolitical risks have become the new normal. Investment demand stole the show as investors raced to access gold through all available routes, but other segments played a supporting role. Jewellery demand dipped by only 18% year on-year against a 67% price increase – highlighting continued consumer willingness to buy at elevated prices, and central banks remained firmly committed to bolstering reserves. With economic and geopolitical uncertainty showing little sign of retreat in 2026, momentum from last year's strong gold demand is likely to persist. Price rallies so far this year are inching gold towards $5 000 /oz, suggesting that investors will continue to turn to gold as a long-term store of value and source of diversification." ■

The Syama Sulphide Conversion Project (SSCP) will increase sulphide processing capacity from 2.4 mtpa to 4 mtpa.

Bengwenyama targets first concentrate production in 2028

Strong demand and rising prices for platinum group metals (PGMs)—which have more than doubled over the past year—are prompting miners across the sector to realign strategies and fast-track production growth. Project developers such as Southern Palladium are advancing greenfields projects at pace to capitalise on improving market fundamentals.

Dual-listed Southern Palladium is targeting first PGM concentrate production from its Bengwenyama project by as early as February 2028 contingent on the granting of the Mining Right, Managing Director Johan Odendaal tells *Modern Mining*.

Southern Palladium holds a 70% interest in the Bengwenyama PGM project, located on the Eastern Limb of South Africa's Bushveld Complex, home to the world's largest known PGM reserves.

A top-tier undeveloped PGM asset

Bengwenyama is regarded as a highly attractive, top-tier undeveloped PGM deposit, underpinned by high-grade resources, low-cost operating potential, and a disciplined, staged development strategy.

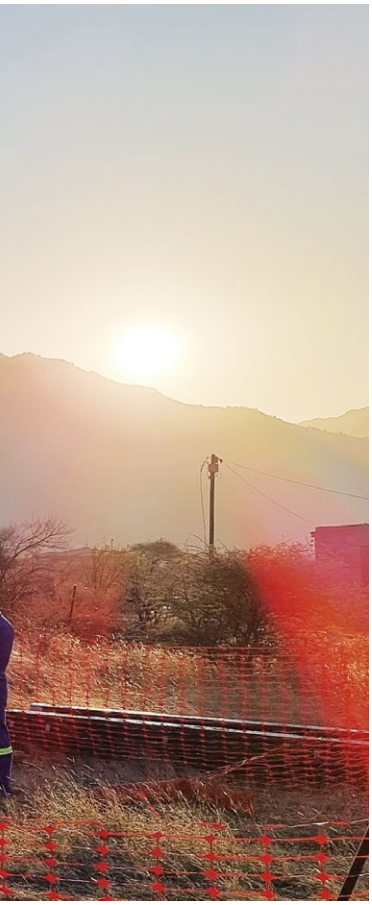
"The project is located in a premier PGM district, surrounded by existing operations and well-established infrastructure," says Odendaal. "We were fortunate to secure the last piece of shallow real estate on the Eastern Limb of the Bushveld Complex. The project hosts the Merensky outcrop and provides shallow access to the UG2 reef, characterised by a shallow-dipping, tabular orebody. Importantly, South Africa's PGM industry is mature, with existing smelters and both base and precious metal refineries."

Bengwenyama development progress

Southern Palladium completed a pre-feasibility study (PFS) in 2024 and declared a maiden JORC Probable Ore Reserve of 6.29 million ounces at a grade of 6.17 g/t PGM (6E). The company is now progressing an optimised pre-feasibility study (OPFS) and its definitive feasibility study (DFS), both scheduled for completion later this year.

With PGM markets experiencing a strong upturn, the company is focused on unlocking production as early as possible.

"Our drilling programme between 2022 and 2024 gave us an in-depth understanding of the Bengwenyama resource," Odendaal explains. "This work underpinned our initial



development programme in 2025, which was completed significantly under budget."

Key development milestones:

- 2022–2024: Resource definition drilling and completion of the PFS
- 2025: Optimised PFS and advancement of the DFS
- 2026: Completion of the DFS and final investment decision (FID)

The year 2025 marked a pivotal transition for Southern Palladium, as it evolved from an exploration company into a development-focused entity.

"During 2025, we submitted all key regulatory documentation, including environmental guarantees, and progressed early-stage DFS and FID work," says Odendaal. The DFS is targeted for completion by the third quarter of this year, with the FID expected by year-end.

Given improved PGM fundamentals and robust prices, Odendaal believes the timing is ideal to advance Bengwenyama into development. "Our optimised pre-feasibility study supports a staged approach, allowing us to de-risk the project while managing capital efficiently."

Staged, lower-risk development approach

Southern Palladium plans a two-stage development strategy.

Stage 1 focuses on establishing essential infrastructure and achieving initial production, funded by a peak capital investment of approximately US$279 million. This will be followed by a Stage 2 expansion, funded largely from early cash flow.

Stage 1 mine planning has been accelerated, with detailed optimisation of decline designs to access the shallow UG2 reef and enable early de-risking.

Near-term development includes establishing the South Site, constructing the South box-cut, and developing the South decline to the first UG2 reef intersection. Once operational, Stage 1 is expected to produce more than 200 000 oz of PGMs in concentrate per year.

Funds raised recently will be used to develop the box-cut and decline, as well as install provisional infrastructure required for early operations. Requests for quotations have already been issued, with contractor shortlisting expected before mid-year, followed by commencement of box-cut development shortly thereafter.

"Box-cut development should take around three months, with the decline requiring approximately five months," says Odendaal. "We expect to intersect the reef around February 2027, after which we will begin stockpiling ore."

During Stage 1, the processing plant will initially treat 20 000 t per month from the South decline, ramping up to 100 000 t per month. Ore stockpiling is expected to continue for approximately one year, with the processing plant scheduled to be operational in early 2028.

Stage 2 is earmarked to commence around year four, if not sooner, increasing production to over 400 000 oz per year and extending total mine life beyond 30 years.

Mining method and processing options

The Bengwenyama project targets the high-grade UG2 reef and employs a staged development strategy to reduce peak funding requirements.

Key mining considerations include:

- A hybrid underground mining approach, combining mechanised development with conventional stoping.
- Fast-tracked access via a Southern decline, enabling early ore access at depths of approximately 80m.
- Optimised decline design, initially utilising a single decline to minimise capital, with a second decline added in later stages.

Southern Palladium is also evaluating two processing pathways:

- **Toll treatment,** partnering with neighbouring or third-party concentrators with spare capacity.
- **On-site processing,** involving construction of a two-stage mill-and-float (MF2) plant with optimised chrome recovery.

"In our push to become an early PGM producer, we are actively evaluating partnerships with local producers whose plants have available capacity," says Odendaal.

Chrome recovery is emerging as a meaningful revenue contributor. According to the Bengwenyama PFS, chrome could account for up to 12% of total revenue.

"Chrome has the potential to materially enhance margins and add a valuable revenue stream to the operation," Odendaal notes.

Southern Palladium will oversee development operations in partnership with the contractor. The company has initiated recruitment for key roles, including a project manager and underground operations manager.

In its Quarterly Activities Report for the period ended 31 December 2025, executive chairman Roger Baxter commented:

"The successful A$20 million capital raising has materially strengthened our balance sheet and ensures we are fully funded to unlock the next phase of development, including

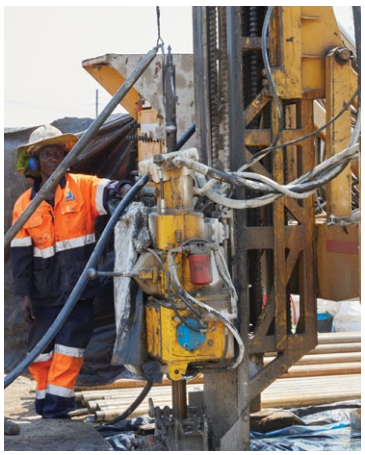
Ariel view of site.

Ariel view of the drilling on site.

Drilling on site.

Platinum Group Metals

- PGMs—platinum, palladium, rhodium, ruthenium, iridium, and osmium—are prized for their catalytic, chemical, and physical properties
- They are critical to emissions reduction, hydrogen fuel cells, electronics, medical devices, and advanced manufacturing
- South Africa supplies approximately 70% of global platinum, 35% of palladium, and 81% of rhodium



accelerating DFS activities and preparing for a final investment decision. This momentum, combined with supportive PGM market fundamentals, has been reflected in our share price performance and growing institutional interest."

Baxter added that strong global appetite for high-quality, responsibly developed critical mineral projects was evident during recent engagements, including the Future Minerals Forum in Saudi Arabia.

PGM market drivers

PGMs have experienced a dramatic reversal in fortunes, rebounding strongly from the 2023–2024 price slump. Platinum has outperformed most other metals in 2025, rising more than 100% year-on-year and reaching record highs in early 2026, frequently exceeding US$2 000–US$2 800 /oz.

Palladium has also staged a strong recovery, increasing by more than 50%, while rhodium continues to support higher basket prices for producers.

Demand for PGMs remains anchored in the automotive sector, where catalytic converters account for more than 80% of palladium and rhodium demand and approximately 40% of platinum consumption. Additional demand drivers include stricter emissions regulations, growth in hybrid vehicles, industrial applications, and expanding hydrogen fuel cell technologies.

Emerging demand from data centres, electronics, AI infrastructure, and hydrogen power is tightening supply and providing longer-term price support.

"With gold prices at record highs, investors are increasingly turning to platinum jewellery, particularly in China and India," says Odendaal. "Looking ahead, demand from data storage and AI-related technologies is expected to grow significantly. Platinum and ruthenium are used in hard disk drives, while hydrogen applications will continue to expand."

He adds that the automotive industry's shift toward hybrid vehicles is positive for PGM demand, as hybrids require higher PGM loadings than traditional ICE vehicles.

Supply constraints and outlook

Despite strong demand, South Africa's PGM industry—which accounts for 70–90% of global platinum reserves—faces significant structural, economic, and logistical challenges that have constrained production.

"Looking ahead, we expect further tightening in the PGM market, particularly given the deferral of ICE phase-out timelines," Odendaal says. "Major producers such as Valterra Platinum, Impala Platinum, Sibanye-Stillwater, Northam Platinum, and Ivanplats are well positioned, and Southern Palladium looks forward to joining their ranks." ■

Platinum watch designs are on the uptick

Platinum jewellery fabrication in Europe grew by an estimated 6% in 2025, recording its fifth consecutive year of growth, with the price differential between platinum and gold providing a tailwind. A further boost came from watchmakers, with Swiss watch hallmarking increasing by 28% year-on-year and 3% year-on-year in the second and third quarters, respectively.

Chronométrie Ferdinand Berthoud selected platinum as its metal of choice for a new watch to celebrate the 75th anniversary.

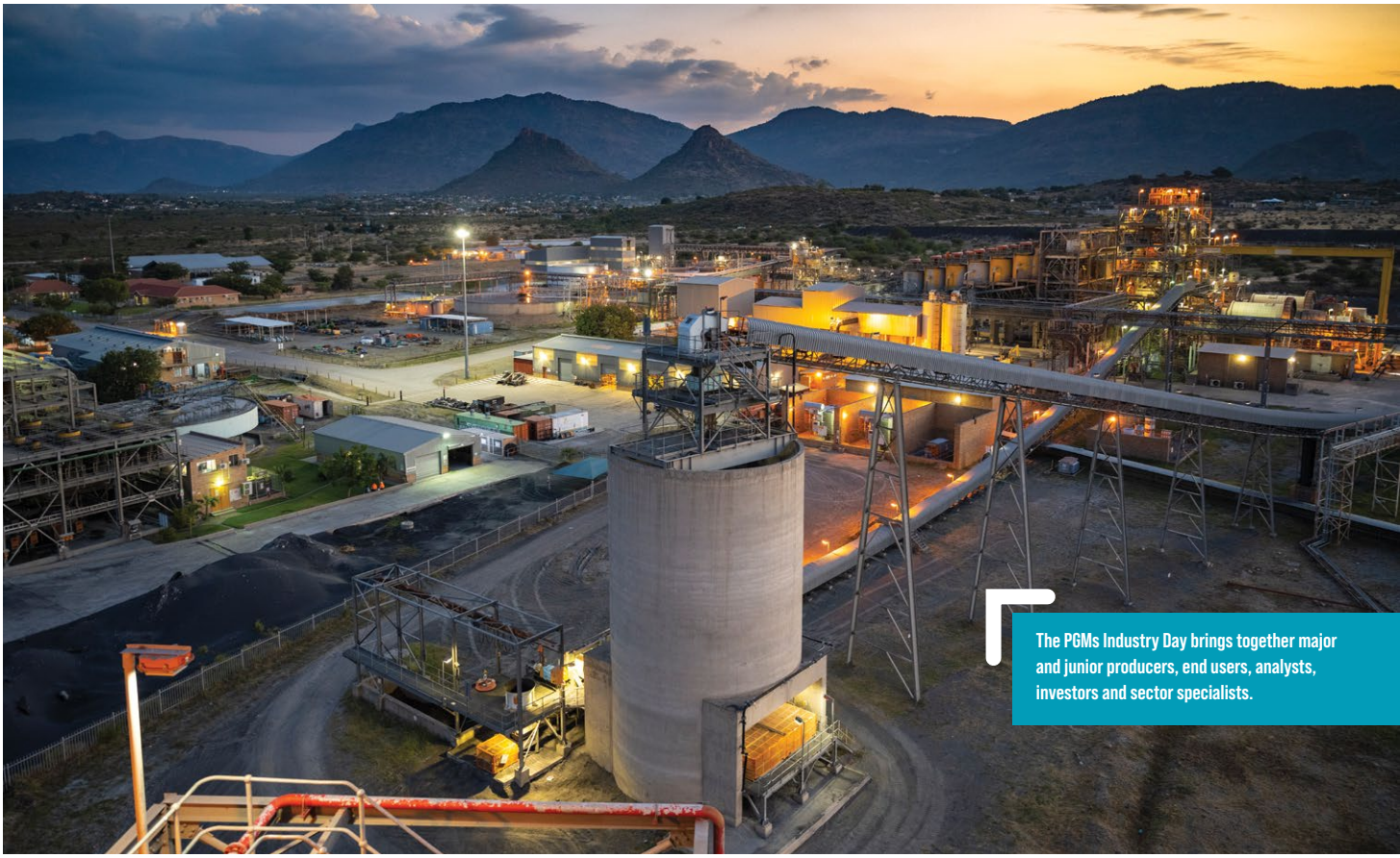
Increasingly, European luxury watch houses have been turning to platinum, and last year saw a plethora of new designs incorporating platinum, which is widely-regarded as the pre-eminent metal for fine jewellery. In watchmaking, platinum is valued due to its purity, density and because it does not oxidise. Rolex, Chopard, A. Lange & Söhne, Vacheron Constantin, Chronométrie Ferdinand Berthoud, Cartier, and Parmigiani are among the brands that have recently introduced new platinum watches.

Rolex included a platinum watch when it unveiled its new Oyster Perpetual Land-Dweller collection. Crafted from 950 platinum, it is offered in two sizes, 36 mm and 40 mm, incorporating a platinum case and bracelet with a dial in ice blue – a colour that Rolex reserves for watches made of this prestigious metal.

> **Platinum jewellery fabrication in Europe grew by an estimated 6% in 2025, recording its fifth consecutive year of growth, with the price differential between platinum and gold providing a tailwind.**

Meanwhile, Chronométrie Ferdinand Berthoud selected platinum as its metal of choice when launching a new watch to celebrate the 75th anniversary of its partnership with Ahmed Seddiqi, a renowned watch retailer in the Middle East. Its Chronomètre FB 3SPC.3-4 features a 42 mm platinum case.

Seven-year high: Global jewellery demand for platinum increased by 7% year-on-year in 2025 to 2 157 koz, its highest level since 2018, with platinum's price discount to gold being a key driver. Growth was experienced across most markets, especially China, although the market in India faced weakness as US tariffs negatively impacted demand from platinum jewellery exports. ■



The PGMs Industry Day brings together major and junior producers, end users, analysts, investors and sector specialists.

PGMs Industry Day returns with sharper focus on dialogue and decision-making

As platinum group metals (PGMs) navigate a period of price volatility and renewed strategic importance, the quality of industry conversation has never mattered more. Against this backdrop, the 9th edition of the PGMs Industry Day, hosted by Resources 4 Africa, takes place on Thursday 19 March 2026, at the Johannesburg Country Club, Auckland Park.

The PGMs Industry Day will be chaired by industry veteran Bernard Swanepoel.

Widely regarded as one of the most credible and high-value gatherings on the South African mining calendar, the PGMs Industry Day brings together major and junior producers, end users, analysts, investors and sector specialists for a day of informed, candid discussion. Rather than broad commentary, the event is known for its depth, offering delegates direct access to the people shaping decisions across the PGMs value chain.

Chaired by industry veteran Bernard Swanepoel, the 2026 programme will tackle the issues currently influencing sentiment and strategy in the sector. Discussions will explore the outlook for PGMs over the next 12 months, CEO-level perspectives on industry direction, insights from emerging and junior producers, and how investors are assessing basket prices in a changing global market.

Importantly, the agenda will also examine future demand drivers, from the evolving role of PGMs in automotive applications to growth in industrial uses linked to energy transition technologies, emissions control and hydrogen-related solutions. The status of South Africa's chrome and ferrochrome sector will also be unpacked, recognising its close operational and economic link to PGMs mining.

What sets the PGMs Industry Day apart is its emphasis on meaningful engagement. Both in-person and virtual platforms are designed to facilitate focused networking, informed debate and practical insight, making it a must-attend event for decision-makers looking for substance.

Sponsors and Mining Industry Partners for the 2026 PGMs Industry Day include Accenture, DRA Global (Lead Sponsors); African Rainbow Minerals, Implats, Minerals Council South Africa, Valterra Platinum (Mining Industry Partners); Enaex Africa and Hatch, with Auramet International as Sponsor. ■

Council for Geoscience & BHP enter MoU

The Council for Geoscience (CGS) and BHP recently entered a Memorandum of Understanding (MoU) that seeks to advance South Africa's economic development through collaborative geoscientific research and exploration.

The MoU outlines and establishes a framework for impactful collaboration as it pertains to joint exploration initiatives, research projects and publications. Through this collaboration, CGS and BHP will explore opportunities to work together in areas including geoscientific research, data processing, and the modernisation and management of geoscience data.

The agreement has potential to deliver significant value to the sector by transforming geoscientific data into actionable insights. This will enable more informed decision-making, derisked exploration, improved sustainability outcomes and increased discovery efficiency. Furthermore, the MoU will enable both parties to contribute important geoscientific data to the Open Subsurface Data Universe (OSDU), traditionally known for its oil and gas data hub, and strengthen its mining and mineral data repository. Once the data is digitised through this partnership, CGS will make the data available to the public.

The collaboration aligns with CGS's goal to accelerate digital exploration through data, information and knowledge sharing, which will democratise access to geological data on a large scale, unlocking opportunities for aspiring miners, researchers and industry stakeholders.

Commenting on the signing of the MoU, Chief Executive Officer of CGS, Mosa Mabuza said: "We are pleased to have signed an MoU with BHP, a global mining company that has a proven track record in investing in critical minerals such as copper. This agreement will enable us to collaborate closely with BHP's Generative Exploration team in identifying potential new mineral opportunities worldwide. The extensive geological data held by CGS is central to this partnership and creates a rare opportunity to unlock new insights and advance exploration efforts both locally and internationally".

BHP Group Exploration Officer, Tim O'Connor added: "With the advent of advanced computing, leveraging legacy data stands as one of the largest areas of latent value in the search for new mineral deposits. Ultimately, new discoveries need new ideas, and new ideas come from the combination of capability and the integration of existing and new data. South Africa has an incredibly rich mining history with a wealth of knowledge and data that we can seek to make available to new technologies in the service of discovery both here in South Africa and across the broader region".

The MoU represents a shared commitment for collaboration that advances digital exploration, knowledge sharing and the responsible use of geoscientific data to support South Africa's mining and economic development objectives. ■

BHP Group Exploration Officer, Tim O'Connor and Chief Executive Officer of CGS, Mosa Mabuza signing the MoU.

The MoU establishes a framework for impactful collaboration as it pertains to joint exploration initiatives, research projects and publications.

> "The extensive geological data held by CGS is central to this partnership and creates a rare opportunity to unlock new insights and advance exploration efforts both locally and internationally."

Sean Wade, CEO of Power Metal Resources, the cornerstone investor in Minestarters.

Minestarters founder, Marcel Nally, led Moxico Resources to a billion-dollar valuation.

Power Metal Resources, listed in London, is a project incubator that targets 12 commodities across four continents.

How tokenisation could unlock billions for early-stage mining

Over $200 billion is invested in mining each year, but less than 2% of that reaches early-stage exploration projects, despite this being the phase that potentially offers the greatest return on investment. This is partially an issue of access, with junior explorers increasingly turning to royalties, streaming rights and off-take partnerships in the absence of traditional financing options like equity markets, leaving capital trapped in slow, illiquid channels.

These alternatives, although viable, are not particularly accessible to a wide base of investors and are often reserved for large institutions and specialist funds, leaving the industry with a fundamental problem. Demand for critical minerals is expected to more than double by 2030, requiring a substantial number of new mines to come into production across commodities, and yet, in 2024, capital raised by junior and intermediate miners dropped to its lowest point in five years, according to BDO. Therefore, the big question is how can the industry close this deficit whilst funds for finding the next major deposit are shrinking?

That's where a new, innovative startup is stepping in with a potentially game changing solution. Minestarters, and cornerstone investor Power Metal Resources, are bringing decentralised finance to the mining industry with an institutional-grade, blockchain-enabled tokenisation platform that provides an efficient and transparent funding model for natural resources exploration and development, bridging the gap to capital.

By acquiring Minestarters tokens, investors will be able to obtain access to an institutionally curated portfolio of projects. As these projects advance, the Minestarters platform captures and distributes their real-world value growth, directing essential funding to a pipeline of prospective assets not limited by commodity or jurisdiction. This is known as Real-World Asset (RWA) tokenisation, linking digital liquidity directly to tangible mining assets.

Funds are collected in vaults on the Minestarters platform, each vault containing a diversified 'basket' of exploration and development investment opportunities. If the vault target capital raise is achieved by the cut-off date, the funds are off-ramped and deployed by a custodian entity into the opportunities detailed in the vault. Investors receive vault tokens representing proportional economic rights in each basket. All proceeds: royalties, revenue share, exits, or other cash flows, are routed through a Revenue Participation Agreement (RPA) and distributed on-chain back to the vault. Put simply, the vault token price increases with the value of

the asset base. ‘Smart contracts’ – to which each transaction is executed through - create a level of capital discipline that does not exist in traditional early-stage mining project finance.

This is both innovative and significant because it opens early-stage mining investment to a global investor base, with lower minimum commitments, and a fully liquid market. Anyone, anywhere, can invest or cash out whenever they like, meaning that soon, early-stage mining finance will be accessible to all. What’s more, rather than backing a single project or being tied down to specific commodities, vault tokens are tied to a portfolio of mining ventures across geographies and commodities, whilst transparent smart contracts remove uncertainty and ambiguity. This de-risks an investor’s portfolio by diluting the impact of an individual commodity down cycle.

Power Metal Resources is itself a project ‘incubator’ that develops a diverse portfolio of early-stage projects internally and through strategic joint ventures, creating value through the sale or IPO of projects when advanced. The company has a strong, proven track-record of crystallisation success, recently selling its remaining stake in Guardian Metal Resources, realising 11.8 times return on its original investment. Power Metal Resources has also showcased its ability to deliver value through its joint venture agreement with UCAM, known as Fermi Exploration, progressing key exploration work across a portfolio of uranium licences.

Founded by Marcel Nally – co-founder of Moxico Resources, now a billion-dollar copper producer in Zambia – Minestarters brings the operational credibility of a proven mine builder. Combined with Power Metal Resources’ expertise in project incubation, Minestarters is well placed to instigate and grow its project portfolio. Sharing a distinct synergy in project incubator business models, the two companies are well positioned as strategic partners, connecting Power Metal’s proven project pipeline with Minestarters’ digital capital engine, aligning traditional exploration success with new investor access.

Power Metal Resources has made an initial investment of £1 million for 35% with the option to increase to 49% for a further £2 million, should certain milestones be hit. Commenting on the partnership, Power Metal Resources’ CEO, Sean Wade, reinforced that “this investment will provide greater opportunities for existing shareholders and potential token-holders to share in our crystallisation success, whilst giving us exposure to a more extensive pipeline of prospective assets than available through traditional financing methods.”

The projects that are most likely to see benefits from this model are those that sit in overlooked or underexplored regions, where the right funding framework could help realise the full potential of the assets. Africa has seen a disproportionate amount of divestment and underinvestment due to factors such as wars, coups, political instability, and resource nationalism, diverting investment away from the continent even as evolving global demand trends have redirected capital towards previously underexplored regions. Over the past decade, exploration has fallen across Africa whilst historic exploration efforts have yielded some of the world’s best resource deposits, according to the Centre for Strategic & International Studies. And between 2012 and 2024, gold exploration in Africa’s top exploration destinations – Ghana, Burkina Faso, Mali, Tanzania, and South Africa – fell by an average of 72.76%. This is not an isolated fact for gold exploration – diamond and other mineral exploration have also seen a similar decline across African jurisdictions.

Minestarters is looking to reshape mining finance through RWA tokenisation.

From an African perspective, a shift in how mining projects are financed, moving towards a more liquid tokenisation system, poses several potential advantages. As alluded to, traditional financiers have tended to overlook certain African regions, preferring jurisdictions that are determined to be more ‘stable’. By aggregating projects through a single, diversified treasury, Minestarters reduces jurisdictional concentration risks and attracts global investors back into frontier regions. Increased investment in early-stage projects should allow Africa, and indeed other parts of the world, to unlock a greater proportion of its abundant natural resources, which for years have remained underutilised, contributing to economic growth.

“Minestarters is bringing liquidity to one of the last illiquid asset classes – mining exploration.” – Marcel Nally, Founder of Minestarters.

The global RWA tokenisation market expanded from $8.6 billion at the start of 2025 to over $25 billion by mid-year – a 260% surge in six months. Standard Chartered forecasts that the market could reach $30 trillion by 2034. Minestarters and Power Metal Resources, as the first to bring this method of funding to the mining industry, are gaining a first-mover advantage to establish themselves at the forefront of this new financing frontier. It is their goal to target at least 1% of the $200 billion mining investment market within five years.

Exploration remains the lifeblood of the mining industry. By merging real assets with digital liquidity, Minestarters and Power Metal Resources are redefining how capital flows into discovery. ■

In surface mining operations, tyres represent one of the highest operating costs after fuel.

Leveraging mining tyre management to reduce costs and emissions

Leading tyre service provider, Kal Tire, and tyre manufacturer, Michelin, recently released a joint white paper outlining how improved mining tyre management can deliver both cost savings and measurable emissions reductions.

The white paper, Unlocking Hidden Synergies: How to Leverage Mining Tyre Management to Deliver Cost Savings and Emission Reductions, explores practical, data-driven strategies that enable mining operators to reduce Scope 1 and Scope 3 emissions while lowering operating costs. These gains can be achieved through extended tyre life, reduced fuel consumption and improved productivity—without the need for major capital investment.

According to the authors, mining companies worldwide are facing increasing pressure to meet production targets while contending with rising fuel costs, equipment downtime, and growing regulatory, stakeholder and environmental expectations. Tyre management, they argue, remains a largely untapped opportunity for improvement.

In surface mining operations, tyres represent one of the highest operating costs after fuel. They also play a significant role in a mine's carbon footprint through vehicle fuel consumption (Scope 1 emissions) and value-chain impacts (Scope 3 emissions).

"When tyre management is reactive or inconsistent, it often results in premature wear, higher fuel consumption and unnecessary emissions," the paper notes. "By contrast, proactive and predictive tyre strategies—developed collaboratively with OEMs, tyre manufacturers and service providers—are increasingly using advanced technologies to deliver measurable improvements in cost efficiency, productivity and sustainability."

Cutting operating costs while lowering carbon emissions

In open-pit mines, loading and haulage activities account for as much as 50–60% of total operating costs, making tyre preservation and lifecycle management critical to profitability.

After fuel, tyres are one of the most expensive consumables. A large mine can use around 900 mining tyres annually, representing millions of dollars in operating expenditure.

Poor tyre management practices—such as underinflation, incorrect tyre selection and inadequate maintenance—can trigger a cascade of inefficiencies, increasing fuel consumption and, in turn, Scope 1 emissions.

Michelin's Life Cycle Assessments show that 70–90% of a mining tyre's environmental impact occurs during its use phase, largely due to the fuel required to move heavy haul trucks. Crucially, because tyre design and condition directly influence performance, operators have significant control over this emissions source.

Kal Tire's Maple Program, validated by SCS Global Services, enables mine sites to quantify tyre-related emissions and demonstrates how lifecycle strategies—such as tyre repair and retreading—can reduce demand for new tyres and minimise waste and emissions.

Miles Rigney, Senior Vice President of Kal Tire's Mining Tire Group, said: "Smart tyre management delivers dual benefits: reduced operating costs and progress toward emissions and sustainability goals. Mines don't need to choose one over the other—they can achieve both. As stakeholders

RETREADS	ULTRA TREAD	CONVENTIONAL REPAIR	ULTRA REPAIR
			
10 x 40-TON WHEEL LOADERS	**10 x 200-TON HAULTRUCKS**	**10 x 100-TON HAUL TRUCKS**	**10 x 400-TON HAUL TRUCKS**
FITTED WITH 20 x 29.5R25 KAL TIRE REMOULDS	**FITTED WITH 20 x 3700R57 ULTRA TREADS**	**FITTED WITH 20 x 2700R49 REPAIRED TIRES**	**USING 20 x 59/80R63 ULTRA REPAIRED TIRES**
TYPICAL CARBON SAVINGS VS. NEW: **102 TONS CO2 (66%)**	TYPICAL CARBON SAVINGS VS. NEW: **136 TONS CO2 (62%)**	TYPICAL CARBON SAVINGS VS. NEW: **155 TONS CO2 (92%)**	TYPICAL CARBON SAVINGS VS. NEW: **373 TONS CO2 (87%)**
OIL SAVINGS VS. NEW: **1677 LITRES (10 BARRELS)**	OIL SAVINGS VS. NEW: **5216 LITRES (32 BARRELS)**	OIL SAVINGS VS. NEW: **2731 LITRES (17 BARRELS)**	OIL SAVINGS VS. NEW: **8050 LITRES (50 BARRELS)**

increasingly demand cleaner operations, tyre strategies represent a high impact but underutilised opportunity."

Selecting the right tyre for site conditions

Tyre selection plays a critical role in maximising tyre life and reducing total cost of ownership. Matching tyre compounds to operating conditions is essential.

For example, long-distance hauls on smooth roads in hot environments typically benefit from heat-resistant compounds. In contrast, cut-resistant compounds are better suited to shorter hauls in abrasive, rocky conditions where damage risk is higher. Other compounds are designed to improve traction in wet or soft ground.

"In extreme mining environments, tyre design and quality are paramount," said Adam Murphy, Senior Vice President of Michelin's Mining Tire Business Line. "By analysing data on tyre performance and site conditions, manufacturers can continuously optimise innovations that influence tyre life, load capacity, speed, heat resistance and energy efficiency. Energy-efficient rubber compounds allow tyres to run cooler, reducing rolling resistance and improving fuel efficiency."

An example is the Michelin XDR 4 SPEED ENERGY™ tyre, expected to launch commercially in 2026. Compared with the Michelin XDR 250 C, it delivers 3.6% better fuel efficiency—equating to savings of around 5 300 gallons of fuel, or around US$24000 per haul truck annually.

Technology-driven improvements in tyre performance

Beyond tyre pressure monitoring systems (TPMS) like MICHELIN MEMS 4, emerging technologies such as haul road analysis, fleet diagnostics and smart loading systems are enabling real-time tyre monitoring and management.

Autonomous tyre inspections using thermal imaging, AI-powered recognition software and advanced analytics can identify issues without removing trucks from production unless intervention is required. This approach supports targeted maintenance and extends tyre life. At a copper mine in Chile, Kal Tire's TireSight autonomous inspection system reduced inspection-related downtime by 20%.

Haul road design and maintenance also have a significant impact on tyre life and fuel efficiency. Services such as MICHELIN Better Haul Road, along with GPS- and satellite-based tools like VBOX, assess road quality and driver behaviour to identify areas where poor conditions or aggressive driving increase tyre wear and fuel consumption. These insights allow operators to make targeted improvements that optimise routes, reduce tyre damage and lower fuel use.

Site severity studies provide further insight into how road conditions, loading zones and operational practices affect tyre performance. In one technical analysis at a North American iron ore mine, Michelin identified a mismatch between tyre specifications and operating conditions after the site experienced an 18% drop in productivity. The analysis revealed slower cycle times and increased tyre-related downtime, underscoring the importance of data-driven tyre selection.

Together, these technologies support predictive maintenance, autonomous haulage readiness and lower-emission fleet performance—key pillars of the mine sites of the future.

"Operational adjustments—such as choosing the right tyre compounds, maintaining proper inflation and optimising haul road design—can deliver substantial environmental and financial benefits, while also improving site safety," Murphy added.

Reducing Scope 3 emissions through repair and retreading

Leading manufacturers such as Michelin design mining tyres to be durable, repairable and retreadable, allowing for significant lifecycle extensions without compromising safety or performance. This approach reduces total cost of ownership and lowers Scope 3 emissions associated with manufacturing and raw material use.

Kal Tire estimates that repairing ten ultra-class haul truck tyres using its KalPRO™ Ultra Repair service, rather than purchasing new tyres, can reduce costs by up to 87%, save 373 tonnes of CO_2 emissions and eliminate the need for approximately 8 050 litres (50 barrels) of oil.

"Tyres are strategic assets," Rigney concluded. "With the right management, they contribute to both financial performance and environmental resilience. Strong collaboration between mine operators, tyre manufacturers and service providers is key to unlocking these next-level benefits." ■

Ilya Epikhin.

Amer Hage Chahine.

Calls for a moratorium on commercial seabed mining have gained significant traction.

Seabed mining at a crossroads: Balancing opportunity and environmental risk

By Ilya Epikhin and A mer Hage Chahine, Arthur D. Little

The global seabed mining industry is at a crossroads. Despite decades of research, exploration missions, trial harvesting tests, and technological innovation, commercial exploitation has yet to officially begin. After the most recent International Seabed Authority (ISA) summit in Kingston, Jamaica, in July, the sector remains in a state of uncertainty, caught between the promise of deep-sea resources for the green energy transition and concerns over potential environmental damage to fragile ocean ecosystems.

Regulatory uncertainty

The framework required for large-scale extraction — known as the Mining Code — is still incomplete. Earlier optimism, especially following political signals from key countries, including a US presidential decree in April expressing support for resource exploitation, has yet to translate into regulatory approval. While the United States has not ratified the Law of the Sea and is not part of the ISA, it remains a major player in global discussions.

The ISA has not yet adopted exploitation regulations, with environmental safeguards forming the core of the debate. Negotiations continue to reflect a divide between states prioritizing commercial opportunity and those advocating for precautionary pauses or moratoria.

The moratorium debate

Calls for a moratorium on commercial seabed mining have gained significant traction, with support from more than 35 countries worldwide. These governments argue that, until the scientific understanding of deep-sea ecosystems improves, mining could cause widespread and potentially irreversible ecological harm. Key concerns include sediment plumes, biodiversity loss, ecosystem disruption, and carbon release from the seabed.

Data on deep-ocean environments are largely collected by exploration companies under ISA contracts. Scientists onboard these expeditions conduct environmental assessments, often publishing research derived from company-provided resources. While this collaboration has increased baseline knowledge, critics highlight potential conflicts of interest and gaps in independent verification. Consequently, the role of independent scientists and environmental organisations remains central to the debate.

Nations driving seabed mining

Despite environmental concerns, several countries remain committed to advancing seabed mining. These include China, Russia, India, Japan, and South Korea — nations with significant financial and technological investments in the sector.

Japan and South Korea are particularly notable for combining upstream exploration with downstream processing investments. Industrial groups in these countries are developing technologies to convert polymetallic nodules into metals critical for electric vehicles and battery production,

securing long-term supply of nickel, cobalt, manganese, and copper.

Countries taking a cautious approach

In contrast, countries such as the United Kingdom, Mexico, Peru, and New Zealand have expressed skepticism or opposition. While environmental protection is the stated concern, these positions also reflect economic realities: nations without advanced technological capabilities are more inclined to advocate caution.

The debate, therefore, is not solely environmental. It also reflects strategic positioning in a future resource economy: technologically advanced nations push for regulatory progress, while others use environmental caution as leverage to maintain influence.

ISA exploration contracts and resource targets

Currently, 30 out of 31 ISA contracts remain active, though overall momentum has slowed. India submitted two new applications in 2024, both pending approval. Some nations, including Russia, have scaled back ambitions due to cost and feasibility concerns, relinquishing parts of their exploration areas.

Interest is expanding beyond polymetallic nodules to cobalt-rich ferromanganese crusts and seafloor massive sulfides (SMS), which contain gold, silver, zinc, and copper. While these resources are more technically challenging and environmentally sensitive to extract, they offer significant potential value.

Middle Eastern interest is also emerging. For example, Impossible Metals is partnering with Bahrain to secure nodule supply, potentially aligning with US strategic interests despite the country not being an ISA member.

Economic potential

Seabed resources, particularly polymetallic nodules, represent a gross metals value exceeding $20 trillion. Nickel alone accounts for approximately 40% of this figure, followed by copper, cobalt, and manganese. Nodules are widespread across the Clarion-Clipperton Zone (CCZ) in the Pacific, covering 2.8 million square kilometers, with 0.9 million square kilometers currently unoccupied. Abundance ranges from 8 to 15 kilograms per square meter in different sub-zones.

For license holders, profitability depends on identifying high-density areas to minimise collection costs. Exploration drilling and sampling are essential to determining economically viable pockets.

Geopolitical implications

Seabed mining is increasingly intertwined with geopolitical considerations. A recent example involves a US-based telecommunications company proposing a submarine data cable through the CCZ, overlapping areas licensed to China and Russia. As the US is not an ISA member, legal and diplomatic ramifications remain uncertain, highlighting potential international disputes over seabed resources.

Technological progress

Technological advances have been significant in recent years. The Metals Company (TMC) is testing large-scale pilot systems, including nodule collectors and riser-and-lifting systems (RALS) that transport nodules to production vessels. Impossible Metals is developing autonomous robots to harvest nodules selectively, minimizing sediment disturbance.

Demand for critical minerals is set to grow rapidly with the transition to electric vehicles, renewable energy, and high-density storage.

Much of the industry's expertise comes from offshore oil and gas engineering, with several exploration vessels converted from former drill ships. Unlike oil, however, the industry must lift solid ore, requiring specialised risers and handling systems. Consequently, many engineering solutions are adapted rather than directly inherited from terrestrial mining.

Processing and refining

Extraction is only half the value chain; processing poses further challenges. Nodules are rich in metals but have complex metallurgy. Current approaches include:

- Pyrometallurgical RKEF processes producing manganese and nickel-cobalt-copper matte.
- Hydrometallurgical high-pressure acid leach (HPAL) with selective flotation to refine battery-grade nickel and cobalt.
- Hybrid approaches combining smelting and hydrometallurgical methods.

These processes are established in terrestrial mining contexts, such as Indonesia's laterite nickel operations, but require adaptation for nodules.

Strategic partnerships

A notable partnership between TMC and Korea Zinc, valued at $85.2 million, exemplifies the sector's strategic development. Korea Zinc, a leading non-ferrous metal refiner and battery-material innovator, provides refining capabilities for TMC's nodule-derived metals. This vertically integrated approach strengthens supply chain resilience, particularly for Western markets seeking reduced dependence on China.

Looking ahead

The future of seabed mining is uncertain. Demand for critical minerals is set to grow rapidly with the transition to electric vehicles, renewable energy, and high-density storage. Yet environmental concerns and regulatory uncertainty persist, leaving the industry in limbo.

For now, the "treasure at the bottom of the sea" remains largely inaccessible. The industry balances immense economic potential, technical innovation, and geopolitical significance against unresolved environmental and governance challenges. Once the ISA approves exploitation regulations, commercial activity is expected to accelerate rapidly. Until then, seabed mining sits between ambition and caution, conservation and commercial opportunity, science and policy. ■

Yannik Baurain, FlowGen Head of Technology.

What a scaled Green Centre could look like.

Energy resilience reimagined : Microgrids as strategic risk infrastructure for mining with FlowGen

By Dirk Küster, CEO of FlowGen

In Africa's high-stakes mining sector, operational downtime is more than an inconvenience; it's a significant financial and safety risk. From gold operations in West Africa to copper and cobalt mines in the DRC and Zambia, sites are often located in remote, logistically challenging, or politically unstable regions. Despite their drawbacks, diesel generators remain ubiquitous, exposing operators to supply chain disruptions, price volatility, and high carbon emissions. With national grids across much of the continent frequently unstable or unavailable, uninterrupted, resilient power becomes a competitive imperative.

FlowGen's technology is designed to withstand the realities of mining in Africa—whether it's erratic wind conditions in Southern Africa, long rainy seasons in West Africa, or extreme remoteness in Central Africa. Developed from motorsport aerodynamic engineering expertise, FlowGen's small-format turbines maximise output per kW even in low-wind environments. Their lightweight, low-noise construction and durability ensure performance in harsh climates, while containerised packaging allows for rapid deployment and redeployment between exploration, development, and production phases.

Our Mobile Green Centre and military compact microgrid packages embody this resilience-first philosophy, featuring rapidly deployable, containerised energy hubs that provide silent, off-grid power for critical functions such as drone operations, EV charging, and mission-critical equipment, without reliance on diesel refuelling.

Microgrids as downtime insurance

In mining, the consequences of power outages are significant:

- **Lost production:** Every hour the mine is idle, it incurs fuel costs, lost throughput, and a financial penalty.
- **Restart costs:** Shutting down heavy equipment is operationally risky and costly to bring back online.
- **Safety hazards:** Reliable power is essential for ventilation, communications, and emergency systems.

A FlowGen Green Centre.

Mega Watt output.

- **Diesel vulnerability:** supplies are logistics-dependent and susceptible to political instability or environmental disruption. Microgrids mitigate these by:
- **Ensuring continuity:** Whether autonomous or grid-connected, microgrids equipped with flow-diverse power sources keep operations running.
- **Eliminating fuel constraints:** By blending wind, solar, and storage, FlowGen microgrids reduce, if not eliminate, dependence on fuel deliveries.
- **Scaling with operations:** Modular design means additional capacity can be added as mines expand. FlowGen's resilience advantage in remote and risky environments

Mobile deployability

FlowGen's containerised systems can be swiftly transported and commissioned with minimal civil works—critical for remote sites undergoing exploration or requiring interim power during fuel-supply disruptions.

Scalable and modular

Whether powering a single shaft or entire site complexes, FlowGen systems scale from kilowatts to multiple megawatts. Integrating wind, solar, and storage, along with sophisticated energy management, enables tuning to site-specific conditions and risk tolerance.

Robust design

Lightweight materials, an aerodynamic rotor design, and automotive-grade manufacturing ensure durability in remote and harsh environments. FlowGen's turbines maximise energy in low-wind environments while minimising footprint and noise.

Rationale: mining in remote, politically unstable regions. Imagine a copper mine in the DRC, where national grids are unreliable and fuel convoys are targets of disruption. The mine has historically relied on diesel generators, experiencing costly outages and high emissions.

By deploying FlowGen container microgrids:

- **Zero outage downtime:** Critical systems run seamlessly, even during grid or supply disruption.
- **Operational autonomy:** Energy independence reduces exposure to supply chain risks.
- **Modular expansion:** Additional containers can be added as the mine scales.
- **Strong ROI:** Savings derive from uninterrupted output, not just fuel cost reductions.

1. Diesel Generator: ~60 €c/kWh
2. Smart renewable microgrid for mining offgrid (Mobile Green Center): ~12 €c/kWh
3. Smart renewable microgrid for offshore oil platforms: ~7–8 €c/kWh.

Here, FlowGen's solution transitions energy from a reactive dependency to proactive resilience infrastructure.

Strategic implications for mining executives

- **Quantify outage impact:** Assign direct financial metrics to downtime and compare against the cost-benefit of resilient microgrid deployment.
- **Holistic risk evaluation:** Factor in political, climatic, and logistical risks. FlowGen's autonomous, hybrid microgrids respond to diverse disruption vectors.
- **Phased implementation:** Begin with mobile container systems for pilot and expansion—Leverage FlowGen's modularity to scale alongside production phases.
- **Regulatory and logistics coordination:** Engage early with local permitting and logistics, FlowGen's compact design simplifies installation and helps navigate local hurdles.

From sustainability to strategic imperative

FlowGen reframes microgrids from green concepts to critical infrastructure for mining operations under pressure.

- **Operational resilience** outweighs environmental branding in high-risk settings.
- **Modularity and deployability** align with the dynamic, rugged realities of mining projects.
- **Autonomous infrastructure** reduces reliance on vulnerable systems and enables continuity in the face of disasters, unrest, or logistical failures.

In this landscape, microgrids are more than energy—they are mission assurance.

Conclusion

For African miners, power is no longer just an input; in volatile mining contexts, it serves as a safeguard. Compact, mobile, hybrid microgrid systems offer a powerful blueprint for mining operators who cannot afford interruption. We deliver resilience, reliability, and a tangible competitive advantage.

The real question for mining executives is: can you afford the risk of power failure when you could deploy autonomy with a secure microgrid energy supply instead? ■

Mini booster from AECI debuts at Mining Indaba 2026

AECI, a mining solutions partner focused on practical integration across explosives and electronic initiation unveiled the Mini Booster, a compact booster designed to deliver reliable initiation in smalldiameter holes, particularly in underground and constrained blasting environments, at Mining Indaba 2026.

"Underground headings across the region are tight and timebound," says Jaco Human, Vice President: International at AECI. "The mini booster gives crews dependable pickup sensitivity and simple coupling so preparation stays swift and outcomes remain consistent."

The operating challenge

Underground mining often requires blasting in narrow headings, development ends and smalldiameter boreholes where space and access are limited. In these conditions, inconsistent initiation can compromise fragmentation, delay cycles and increase rework. Crews need a compact booster that integrates with existing initiation systems and delivers dependable detonation without adding complexity. The mini booster is positioned to meet this requirement.

What the mini booster is and how it works

The mini booster is a compact, highenergy Pentolite cast booster developed for use with noncap sensitive bulk explosives in smalldiameter holes. Its design focuses on reliability and ease of handling in constrained environments. The mini booster:

- Delivers strong pickup sensitivity to support consistent initiation.
- Allows quick, straightforward coupling during charging.
- Is compatible with nonelectric, electric and electronic fullstrength detonators.
- Is sized for underground use where borehole diameters are limited.

"We designed it to support safe, repeatable initiation without adding steps," adds Morne Stiglingh, Vice President: Strategic Marketing and Technology, Mining Explosives at AECI. "The aim is simple. Keep the device compact, the coupling intuitive and the results consistent in confined headings."

Intended performance and use cases

The mini booster has been developed to support:

- Dependable initiation in small diameter boreholes used in underground mining.
- Improved consistency in development ends and constrained headings.
- Compatibility across initiation systems already in use on site.
- Faster, more predictable preparation in spacelimited environments.

Key attributes at a glance

- Compact booster designed for smalldiameter boreholes in underground applications.
- Highenergy Pentolite cast formulation for reliable pickup sensitivity.
- Compatible with nonelectric, electric and electronic fullstrength detonators.
- Simple coupling to support efficient preparation in confined spaces.

AECI

- AECI is a specialty product and services Group of companies that provides value-adding solutions to customers through science, technology and industry knowledge. The focus is on serving the mining and manufacturing sectors.

Onsite discussions and product access at Mining Indaba

AECI teams engaged with customers at Mining Indaba 2026 to discuss mini booster applications in underground and constrained blasting environments. Detailed product information, application guidance and technical support were available on request at the AECI stand and through postevent followups.

"AECI unveiled the Mini Booster, a compact booster designed to deliver reliable initiation in smalldiameter holes, particularly in underground and constrained blasting environments, at Mining Indaba 2026."

"Reliability at initiation is what keeps the cycle moving. The Mini Booster is a practical answer for smalldiameter work because it fits the workflow, supports predictable results and helps teams keep development on plan," concludes Human. ■

Rosond expands Saudi industrial footprint through strategic manufacturing agreement with Bin Harkil

Rosond South Africa, Rosond Arabia and Bin Harkil Co. have signed a strategic agreement to localise the manufacturing and assembly of at least 30% of Rosond exploration drill rig structures and components within the Kingdom of Saudi Arabia.

The rigs manufactured through this initiative will be deployed for operational use by Rosond Arabia within the Kingdom, directly supporting Saudi Arabia's localisation and industrial development objectives under Vision 2030.

The agreement, signed on 3 February 2026 at the Heavy Equipment Connect Forum & Expo in Saudi Arabia, will be executed in partnership with Bin Harkil Metal Industries, which will serve as Rosond Arabia's local industrial partner for fabrication, assembly, integration and technical support. The initiative supports Saudi Arabia's long-term localisation ambitions by strengthening domestic capital equipment manufacturing capability within the mining services sector.

The parties anticipate the first locally manufactured drill rig to be completed and operational within Saudi Arabia during the current calendar year, marking a significant milestone in the localisation of advanced exploration drilling infrastructure in the Kingdom.

Central to the agreement is Rosond South Africa's role as the technical and innovation centre supporting the localisation programme. With more than six decades of global drilling excellence, Rosond South Africa brings deep engineering capability, specialised drilling technology development, and internationally recognised operational methodologies that will be progressively transferred to support manufacturing, assembly, training and operational optimisation within the Kingdom. This knowledge transfer programme will ensure that Rosond Arabia benefits from world-class standards while supporting the long-term development of advanced industrial capability in Saudi Arabia.

Ricardo Ribeiro, Executive Chairman of Rosond, says: "This agreement represents a major step forward in Rosond's localisation strategy within Saudi Arabia. By enabling the local manufacturing and assembly of drilling rigs for deployment within the Kingdom, we are transferring world-class engineering expertise, technology and operational knowledge into the Saudi industrial ecosystem.

Dignitaries at the signing ceremony at the Heavy Equipment Connect Forum & Expo in Saudi Arabia on 3 February 2026.


Modern rigs are operated from air-conditioned command cabins.

Rosond South Africa's decades of innovation and drilling excellence form the foundation of this programme, supporting the Kingdom's Vision 2030 ambitions while strengthening Rosond Arabia's long-term operational capability."

Nasser Al Sagour, Chairman of Bin Harkil, comments: "This collaboration reflects our shared commitment to developing Saudi Arabia's industrial capacity in specialised mining services infrastructure. Through local fabrication and assembly of drilling rigs, we are proud to contribute directly to the Kingdom's localisation and industrial growth objectives while supporting Rosond Arabia's operational expansion."

By advancing domestic drill rig manufacturing capability, the initiative supports Saudi Arabia's transition toward a self-sustaining mining services ecosystem. The programme will enable advanced engineering skills development, technology transfer, and local workforce training, while strengthening Rosond Arabia's operational readiness and supporting the Kingdom's ambition to become a global mining investment hub. ■

The case for crane refurbishment

Condra, a leading South African manufacturer of cranes and hoists, offers a comprehensive crane refurbishment service, as well as the design and manufacture of new cranes. Recent refurbishments have included machines as old as 40 years, installed and recommissioned with the same warranty as a new crane.

The familiarity factor, not as obvious as cost savings and improved crane performance, cannot be overemphasised as a leading advantage of refurbishment. The continued use of an as-new machine already familiar to operators avoids any need for retraining. Production can continue as before, with no change to established procedures.

If tempted to buy new, the buyer should ask what the cost might be of lost production in the case of breakdown. Always high, this figure can become unimaginably so if long shipping times are needed for component parts to arrive from a foreign manufacturer. How much production will be lost, and at what cost?

Condra, a South African manufacturer, needs about three weeks to refurbish to top standard, and will incorporate any kind of modern technology the customer might specify to upgrade the crane's capabilities.

The overall cost is almost always less than buying a new crane. Usually, Condra refurbishes only its own cranes, because spare parts from rival firms are not always available. They are also expensive to import, whereas Condra manufactures all spares locally.

"If the crane is one of ours, then refurbishment is usually worthwhile," said the spokesman. "We encourage it because new crane prices are about 60% higher today than they were ten years ago. If needed, we can change crane capacity and span. Even cranes twenty years old or more can usually be improved by installing variable frequency drives for smoother acceleration and deceleration. We can also fit enhancements such as remote control, and a digital read-out on the load.

Condra, a leading South African manufacturer of cranes and hoists, offers a comprehensive crane refurbishment service.

"So, by refurbishing we deliver back to the customer a crane much faster and lighter than before, and we can automate it, too, upgrading the mechanicals to work with new electrical equipment.

"These options are offered during any refurbishment, from standard 2M workshop cranes to the higher performing machines such as Class 3 and Class 4," the spokesman added.

> **By refurbishing we deliver back to the customer a crane much faster and lighter than before, and we can automate it, too, upgrading the mechanicals to work with new electrical equipment.**

Condra claims advanced levels of design flexibility and staff availability for all refurbished cranes.

"There are examples of Condra cranes being sold second-hand for their original purchase price, so crane refurbishment makes a lot of sense," the spokesman said. "But we're not doing as many refurbishments as might be expected because our products last a long time, and because we very quickly repair existing crane installations. For a refurbishment we need a little more time, usually two to three weeks."

Refurbishments carry a two year warranty if authorised Condra agents service the crane, or one year if not.

Condra has a long pedigree. 2026 marks sixty years since formation as a general engineering company offering a range of locally made competitively priced hoists. Crane manufacture began in 1971. Today, Germiston is home to headquarters and the 22 000m^2 primary factory site, with a second factory in Cape Town. There are subsidiary companies in Bulgaria and Chile.

In sub-Saharan Africa, Condra is the acknowledged leader in overhead and high-lift cranes, portal cranes and jib cranes, manufacturing from some 250 components and modular sub-assemblies such as hoists, drives, end-carriages, brakes, gearboxes and motors. Condra makes all 250 except for the motors, hooks and ropes, which are imported. The complete hoist range – from 1 to 500 tons in capacity – is locally manufactured, and readily available as part of any refurbishment. ■

Caterpillar launches the new Cat® 707 wide body truck

With its 66-tonne maximum payload, the versatile new wide body truck design offers the option of standard or heavy-duty configurations and the choice of 40- or 42-m³ sizes to match the material and jobsite conditions.

- Rugged durability with integrated Cat® powertrain that is built to be rebuilt
- Ideal pass match with Cat large excavators and wheel loaders
- First model in new product family that broadens Caterpillar's hauling portfolio

Built for long life and high uptime availability, the durable new Cat® 707 wide body truck features a fully integrated Cat powertrain, including a Cat C13 engine, Cat automatic transmission and proprietary Cat axle. With its 66-tonne maximum payload, the versatile new wide body truck design offers the option of standard or heavy-duty configurations and the choice of 40- or 42-m³ sizes to match the material and jobsite conditions.

"We have engineered our new wide body truck with a unique philosophy – it's built to be rebuilt, offering consistent mechanical availability and longevity through a second lifecycle, which can help lower operating costs. With its foundation of reliable operation and a cost-effective rebuild option, the new 707 wide body has been engineered, manufactured and field-tested using the latest technologies to ensure the truck is ready for work. This is the first Cat wide body truck model in a new product family that broadens the Cat hauling systems portfolio," said Angel Gonzalez, Global Product Specialist at Caterpillar.

The new Cat® 707 wide body truck.

Durable performance

The 707 can be configured with the 400-kW Cat C13B engine to meet China Nonroad Stage IV emissions standards or the 358-kW C13, which emits equivalent to U.S. EPA Tier 3 regulations. Both options include a standard engine brake set at a high rating. The truck's six-speed automatic transmission can be equipped with an optional integrated hydraulic retarder. For reliability, the 707 features proprietary Cat axles, integrated Cat powertrain controllers, and Cat wiring and electric harnesses.

Three brake and retardation levels – integrated Cat engine brake, optional Cat hydraulic retarder, and parking and service brakes – provide superior downhill loaded control for enhanced safety and faster hauling cycles. The new 707 offers ideal pass matches with Cat 986, 988 and 988 XE loaders and Cat 350, 374 and 395 excavators for improved productivity.

The new wide body truck's left-side operator seat placement and optional right-side instructor seat provide easier operation and comfort for the operator and trainer. The cab features sturdy, four-point mounting and protection is provided by a standard falling object protective structure (FOPS) and optional rollover protective structure (ROPS) for enhanced safety. An available reversing camera helps improve manoeuvring safety. Automatic shifting with simple gear selection transmission controls helps to increase efficiency, and the truck's hoist system offers fast, 20-second raise and lower cycle times to quickly unload material.

> "We have engineered our new wide body truck with a unique philosophy – it's built to be rebuilt, offering consistent mechanical availability and longevity through a second lifecycle, which can help lower operating costs."

Low lifecycle costs

The fully integrated Cat powertrain components are mounted to a durable, reinforced chassis. When coupled with flexible Cat Customer Value Agreements (CVAs), customers can achieve higher uptime during the new truck's service life, while maintaining reliable mechanical performance and longevity through a second lifecycle.

Shutting down the truck safely, a ground-level engine shut-off switch stops fuel to the engine when activated. Grouped service points help customers spend less time and money on maintenance. The new 707 wide body truck offers parts commonality with other Cat machines with common C13 engine, CX31RT transmission and common cab. LED lights provide longer life and brighter illumination with less power consumption and are more resistant to vibration and water damage.

The new Cat 707 wide body truck is available for select regions with US EPA Tier 3 equivalent and China Nonroad Stage IV emissions standards. ■

Multotec's fine material spiral concentrators strengthen manganese value chains

Manganese continues to play a pivotal role in modern industrial economies, with metallurgical-grade material underpinning global steel production and high-purity manganese becoming increasingly vital for next-generation battery chemistries.

Multotec Spirals.

Wilna Hofffmann- General Manager Business Development.

Menzi Xulu - Senior Process Engineer.

Although around 90% of global manganese still goes into steelmaking, demand for battery-grade manganese is projected to grow steadily as EV manufacturing and energy-storage systems expand. This rising dual demand is driving producers to seek beneficiation solutions that reduce fine manganese tailings by producing an additional saleable product from previously discarded material.

Drawing on its extensive global experience in gravity concentration, Multotec has supplied a modular heavy mineral beneficiation solution to a manganese producer in West Africa. Engineered from the outset as a fit-for-purpose system, it is designed to recover high-grade manganese from fines material to maintain profitability through downward commodity cycles.

The processing opportunity

Miners traditionally target the attractive

Manganese concentrate quality achieved through Multotec's advanced spiral separation solutions.

lumpy manganese fraction, which is easier to beneficiate and readily saleable into the export market. The finer -1 mm fraction, however, has often been discarded or stockpiled. Yet during periods of high demand or commodity price volatility, this fine material represents a substantial opportunity to unlock additional value from the resource, particularly because the material has already been mined and crushed, meaning most of the cost has already been absorbed.

By adopting the correct gravity separation technology based on feed properties of the ore, such as particle size, particle shape and feed density, miners can benefit from fine and ultra-fine manganese ore into a saleable product that meets offtake requirements.

Spiral technology as a strategic solution

Spirals remain one of the most efficient and cost-effective methods for beneficiating manganese ore, particularly when dealing with fine, high-density material. Spirals offer a low-energy, low-maintenance solution that can be configured to target both recovery and product quality, making them well suited to the variable ore characteristics common in African manganese deposits.

Menzi Xulu, Senior Process Engineer at Multotec, explains: "Multotec's SC range of spiral concentrators are suited to fine, high-density mineral separation, which is a key requirement in manganese beneficiation. Our SC20 spirals are typically used in the roughing and scavenging stages, where the focus is on maximizing recovery from the feed. The SC21 spiral is then applied in the cleaning stage to upgrade the manganese and achieve the required product specification." Over and above Multotec's SC20 and SC21 fines spirals, an UX7 spiral was developed for the beneficiation of ultra-fine heavy minerals that have traditionally been lost to tailings. The UX7 is efficient in the recovery of ultra fine heavy minerals including Manganese roughing and scavenging.

This combination of roughing, scavenging, and cleaning spirals allows producers to recover more manganese from the entire orebody, including fines.

A fit-for-purpose, cost-effective modular fines processing solution

To recover fine manganese cost-effectively, even during low commodity prices, Multotec deploys its modular and mobile heavy mineral test plants. The system combines several of Multotec technologies.

Wilna Hoffmann, General Manager for Business Development at Multotec says: "Fitted with Multotec cyclones, spirals, and pumps, the unit can treat 40 tons/hour of fine material in just three stages to produce a saleable manganese product. It is also operator-friendly and designed as a basic but cost-effective solution that can easily be transported and commissioned quickly."

A manganese producer in West Africa turned to Multotec to maximise recovery from its -1 mm fine tailings, which had previously been overlooked. Although the client had purchased a Multotec heavy-minerals unit years earlier, it remained idle for nearly three years. Multotec recommissioned and optimised the unit in just four days. Following this, the unit ran at full capacity, efficiently recovering a 47% high-grade manganese super-concentrate from the 26% manganese in the feed, unlocking significant additional value.

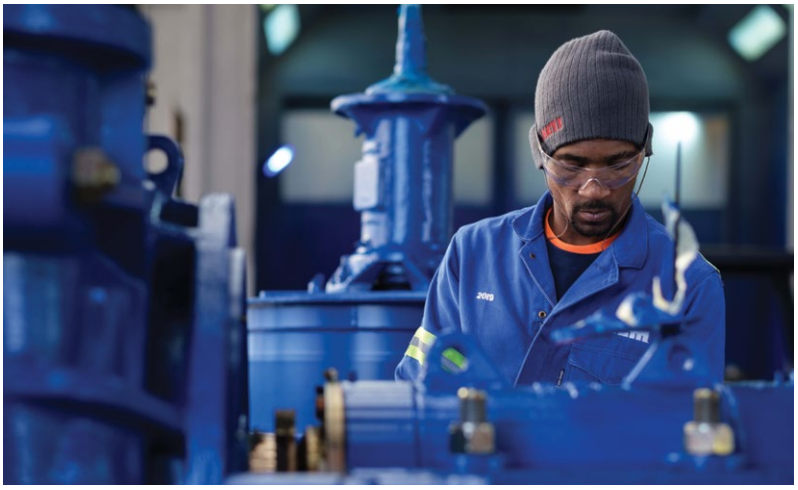
> "Spirals remain one of the most efficient and cost-effective methods for beneficiating manganese ore, particularly when dealing with fine, high-density material."

Across Africa, the potential for deploying these modular test units continues to grow, thanks to their low capital and operating cost, ease of use and ability to recover value from fines, offering a practical way to unlock the continent's mineral resources and strengthen mineral value chains. ■

Local capability embeds Weir solutions in West Africa

With West Africa's mining industry evolving rapidly, Weir has built a solid footprint of local expertise, capability and capacity in the region - to serve customers' increasing demand for efficiency, sustainability and technological integration.

GEHO® positive displacement pumps from Weir minimise energy consumption when transporting slurry over long distances.



Weir develops local technical capacity and expertise to ensure meaningful support for surrounding communities.

Andrew Ayirebi, Regional Manager for West Africa at Weir.

"Weir has proactively invested in training and skills development to build talent to meet operational demands in the region," Andrew Ayirebi, Weir's Regional Manager for West Africa, explains. "This commitment ensures seamless service delivery, regardless of where our customers are located."

The development of local technical capability has become crucial as the region's mining sector embraces the need for local economic development while increasingly expecting OEMs to operate near their operations.

"In line with Weir's philosophy of thinking globally and acting locally, we prioritise developing our people - who are key to delivering sustainable value," Ayirebi says. "Our operations in Ghana and Senegal are fully managed by local teams, with an active presence in Mali, Côte d'Ivoire and Nigeria."

With its focus on customised solutions, Weir supports a wide range of commodities mined in West Africa including gold, bauxite, iron ore and lithium. The company is strategically transitioning to configured-to-order (CTO) systems to further reduce lead times while improving efficiency and stability of supply chains.

"We partner with customers throughout the mining lifecycle, supporting our sustainable mining and processing solutions with on-site services and fast response times," he says. He points to the wide range of operational areas where Weir adds value which includes comminution, classification, slurry handling and dewatering.

"In terms of comminution, grinding is one of the most energy intensive steps in mining," he explains. "Our ENDURON high-pressure grinding roll (HPGR) technology reduces energy consumption in comminution applications, saving up to 40% in energy consumption compared to traditional SAG mill technology."

At Endeavour's Lafigué open pit gold mine in north-central Côte d'Ivoire, for instance, Weir provided its HPGR technology to save energy and reduce the carbon footprint – alongside consuming less grinding media – to achieve lower operating costs and ensure a more consistent throughput. The ENDURON® HPGR has delivered an operating availability of over 97% and will enable the mine to achieve US$2,6 million in energy savings each year. This equates to avoiding the emission of 18 500 tonnes of CO_2 emissions per year.

Investing heavily in R&D, Weir also enhances equipment with its WRT® which reduces energy usage in its WARMAN® pumping systems, for instance. The GEHO® range of positive displacement pumps, which transport high density slurries over long distances, also minimise energy consumption.

Weir's classification solutions ensure optimal particle size distribution to maximise the efficiency of downstream processes. Weir also leverages digital technology to further enhance the value of its equipment, by applying its NEXT intelligent solutions.

"This gives mining operators real-time insights into equipment condition and performance," says Ayirebi. "Our acquisition of digital mining solutions leader Micromine earlier this year further strengthens our ability to optimise customers' operations."

He highlights Weir's vision that mining must go beyond mineral extraction - to embrace safe, responsible and environmentally sustainable practices. This is as relevant in West Africa, he says, where the focus is on helping customers to deliver natural resources efficiently and sustainably. ■

Pilot Crushtec accelerates European expansion with distributor drive

Pilot Crushtec is working towards building a strong network of European distributors as it consolidates its position as a world class specialist supplier of crushing and screening solutions.

According to Sales and Marketing Director Francois Marais, this drive follows the launch last year of the TwisterTrac VS350E Stage V which was specifically developed to comply with the European Union's stringent Stage V emissions regulations. Significantly, the first Stage V unit was sold into the UK, underlining both the relevance of the machine to the European market and the opportunity for further expansion.

"The TwisterTrac VS350E is a well-proven range with over 100 units in operation globally," Marais says. "We have now evolved that robust platform to make it accessible to markets where Stage V compliance is a requirement."

More than 70% of the installed TwisterTrac units are already operating outside South Africa, with a growing population in the UK and Europe in particular. This expanding footprint is now a key driver behind the company's search for distribution partners who can provide local sales coverage, technical support and aftermarket service.

"With an established machine population in those territories, there are customers who can be serviced by local distributors," he explains. "Potential distributors can also speak to existing users about the quality of the equipment and the level of support they already receive from us."

The search for the most suitable distributors is under way, and Pilot Crushtec will use its presence at the UK's Hillhead exhibition in June to continue engaging with potential candidates.

"We are specialist manufacturers of vertical shaft impact (VSI) crushers and compact modular plants," Marais says. "Our strategy is to be exceptional in selected product areas and we are looking for distributors whose portfolios and market focus align with that approach."

In practical terms, this means Pilot Crushtec is seeking distributors with solid technical expertise, proven service capability and a meaningful local or regional footprint.

"Ideally, we are looking for distributors who are active not only in mobile crushing and screening, but also in stationary and fixed operations," he says. "Equally important are their reputation in the market, the strength of their support teams and their ability to support customers to our standards."

Pilot Crushtec's TwisterTrac VS350E Stage V, engineered to meet stringent European emissions regulations, supports the company's expanding footprint across the UK and Europe.

A TwisterTrac VS350E in operation, part of a globally proven VSI range with more than 100 units installed worldwide, now evolved to meet EU Stage V compliance.

> We are specialist manufacturers of vertical shaft impact (VSI) crushers and compact modular plants.

Marais adds that the company's approach is flexible and tailored to each market. In some countries, separate partners handle mobile and fixed equipment, while in others a single distributor covers both. Support and partnership remain central to Pilot Crushtec's distribution strategy with the company playing an active role in backing its partners.

"We are very proactive in our partnerships," he notes. "We regularly conduct remote training, join customer calls and support sales enquiries. We also provide technical guidance, advice and case studies, so our distributors know they are not on their own." ■

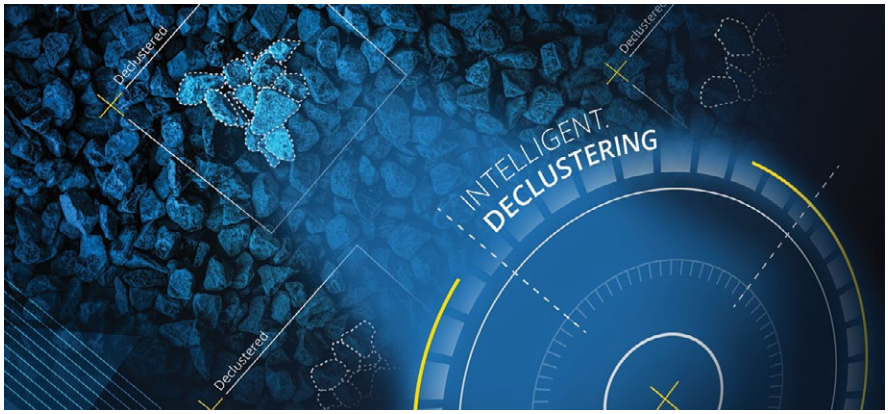
Francois Marais, Sales and Marketing Director at Pilot Crushtec.

Navachab Gold Mine boosts recovery with STEINERT's technology

Navachab Gold Mine, a low-grade gold ore operation, upgrades its low-grade ore resources using STEINERT's suite of innovative dry sorting processes. At Navachab it has been possible to double the gold grade. As the STEINERT machines require a minimum of water the technology is environmentally friendly. The low operating costs and modularity make the machine very easy to integrate into existing circuits.

Navachab has been using STEINERT XSS T sorters since 2016. Over the last decade, these sorters have preconcentrated over 10 million tons of low-grade stockpiles and turned it into valuable ore, which were previously considered uneconomical to process. Navachab Gold Mine has now installed the next generation of STEINERT's sorting systems: STEINERT KSS EVO 6.0.

Hildebrand Wilhelm states: "The more of a holistic view you have, the better you can decide what technologies can work, as long as you understand these technologies." The next evolution being considered is a doubling of current treatment capability. Compared to previous processes using Dense Media Separation (DMS), dry, sensor-based sorting now runs at 1/4 of the overall operational costs, while doubling throughput. For these reasons, and because this process does not require water, it plays a key role in the future.



From single sensor to multi-sensor sorting

The metallurgist is amazed by the detection rate per second – and the fact that the dry sorting plant sorts 200 tons per hour to detect material falling below the CIP plant cut-off grade. "That is where the value is generated because then – with the doubled grade – the material can be profitably treated by the downstream processes," he emphasises. The former sorting systems were robust, reliable and withstood 10 years of harsh and dusty mining conditions.

Sensor-based sorting combined with Intelligent.Declustering for more throughput

STEINERT has a new solution in the field of data interpretation. Particle sorting technology typically analyses and makes decisions regarding individual defined particles on the conveyor belt. With STEINERT's Intelligent.Declustering, the software extracts the individual rock from the cluster, even if the particles are close together, and analyses it. ■

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