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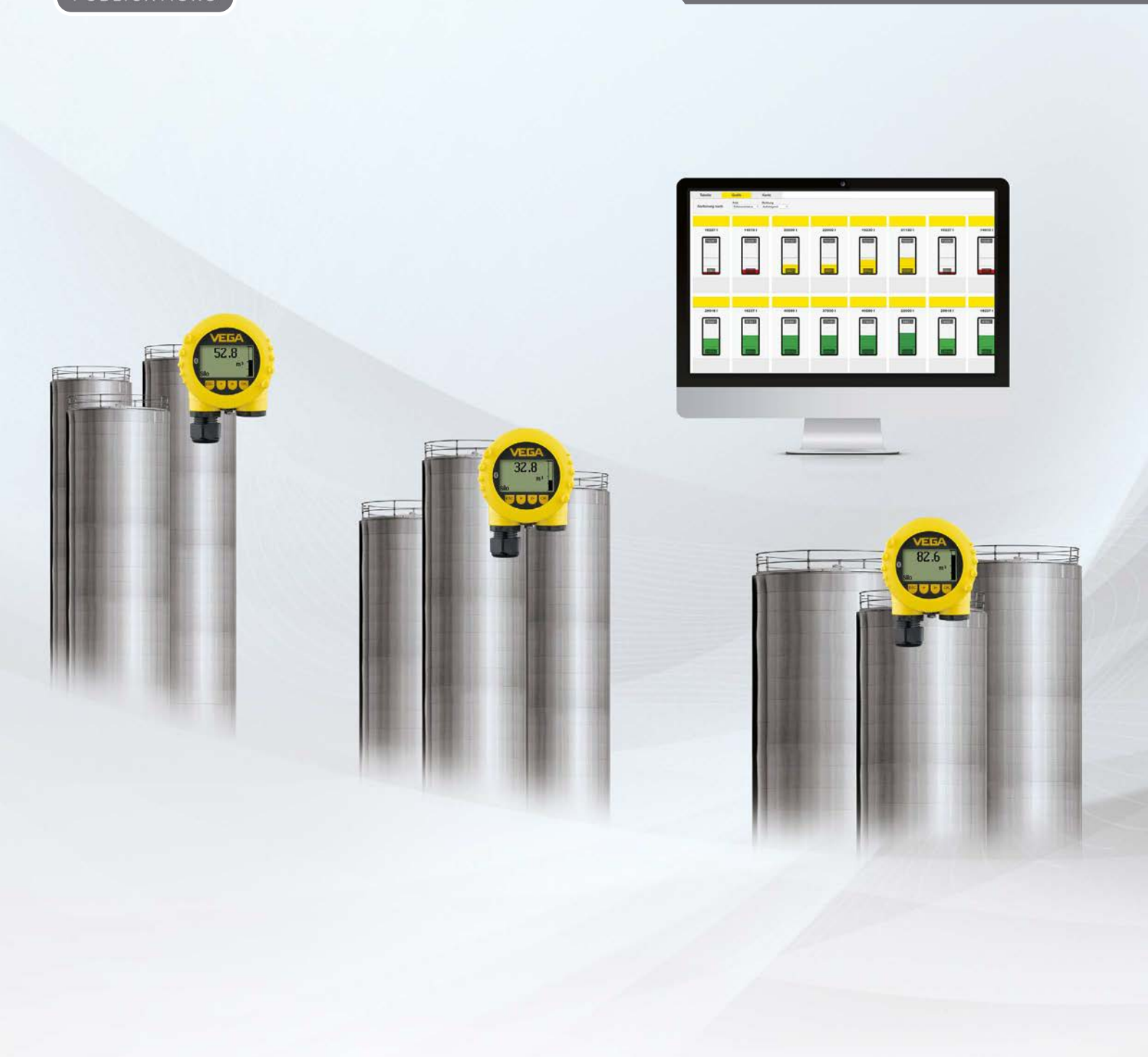

VIS: optimal inventory management for bulk materials

This month:

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Sustainable Industrial Spaces Programme

A partnership that is enabling the advancement of greener, low-carbon industrial spaces in South Africa

Industrial spaces are catalysts for economic growth and vital enablers of sustainable industrial development.

The National Cleaner Production Centre (NCPC) is leading national efforts to catalyse sustainable industrial development within SA's industrial spaces. Together with the Department of Trade, Industry and Competition (**the dtic**), and the United Nations Industrial Development Organization (UNIDO) the NCPC supports these economic hubs to reduce environmental impact, develop sustainable energy models and support the national vision of a low-carbon economy.

The four high-impact, donor-funded projects implemented by the NCPC and UNIDO, at varying stages of implementation.

Visit: www.ncpc.co.za to view Sustainable Industries 2025 conference sessions

- Global Eco-Industrial Parks Programme (GEIPP)
- Sustainable Energy Systems for Industrial Development Project (SESID)
- Global Clean Hydrogen Programme
- Low Carbon and Positive Energy in Industrial Spaces (TBC)

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Peter Middleton

COMMENT

2026: reasons for optimism

Addressing the Joburg Mining Indaba in October last year, when gold first surged above US$4 000 per ounce, the South African mining veteran Duncan Wanblad lamented missed investment opportunities in the mining sector. He pointed out that South Africa's mining potential has not been fully explored due to unsupportive exploration policies over the past 20 years.

Exploration is a critical part of the mining life cycle, he explained, and it typically takes 17 years to get a deposit permitted, ramped up and into full production. A generation has been sacrificed through these restrictive exploration policies.

Today, South Africa's deeper, older shafts cost more to operate than those of competitors in Africa, Australia and Canada, he noted, while policy uncertainty, infrastructure problems and labour unrest continue to prevent investment in exploration and mine development.

It is hard to believe our economy or the South African mining industry is in a good place, but there are some positive signs.

Unit 6 of the Kusile Power Station entered commercial operation in September last year, marking the conclusion of Eskom's 'new-build' programme, albeit more than a decade later than planned. The Eskom grid has begun 2026 with an additional 4 400 MW of available capacity compared to this time last year. Eskom says the current resilience of the power system reflects significant improvements in its generation fleet and the success of its Generation Recovery Plan, which is driving stronger operations and securing the country's energy future.

The year-to-date availability factor (EAF) has further increased to 64.66%, and the fleet has now achieved or exceeded the 70% EAF mark on 55 occasions, "…reinforcing energy security and grid stability," according to Eskom's Media Statement of Friday, 16 January 2026.

On the mining side, gold and platinum continue to set price records, following an easier 2025 year for the mining sector. PWC's SA mining report for 2025, entitled 'South African mining sector shows resilience and recalibrates for sustainable future', revealed that the mining industry recorded a 28% increase in market capitalisation, driven by record gold prices and a rebound in platinum group metals (PGMs). Although revenue remained flat, free cash flow improved on higher operating cash flow and lower capital investment.

The 2025 year was characterised as a dynamic mix of challenges and progress for South Africa's mining sector. Despite infrastructure constraints, policy uncertainty and rising operational costs, the industry maintained its contribution to GDP at approximately 6%, reaffirming its critical role in the national economy.

The World Bank, in its Global Economic Prospects report for Sub-Saharan Africa, said that the region's growth picked up to an estimated 4.0% during 2025, up from 3.7% in 2024, driven by moderating inflation and higher-than-expected commodity prices, particularly for gold, other precious metals and coffee. Among the region's three largest economies, Nigeria's growth edged up to 4.2%; Ethiopia's eased to a still-robust 7.1%; while South Africa's economy strengthened to just 1.3 %.

For 2026, the World Bank projects that Ethiopia and Nigeria are likely to achieve growth rates of 7.2% and 4.4%, respectively. South African growth will increase to 1.4% in 2026 and 1.5% in 2027, driven by continued reform momentum, particularly in the energy and logistics sectors, and rising public investment.

In response to the World Bank's outlook, the South African Government said it affirms that "sustained reforms are beginning to yield positive results," and that "Government will continue to work with social partners, the private sector and international development institutions to strengthen reforms, unlock investment and build a resilient, inclusive and sustainable economy."

The lead HVAC feature in this issue of *MCA* highlights the role of advanced ventilation-on-demand in helping realise the Venetia Underground Project expansion, which aims to extend the life of this De Beers Group diamond mining operation by 25 years.

Construction began on this project in 2013, with the first production being achieved 10 years later, in October 2023. The full production capacity of up to 4.5 million carats of diamonds per year from this highly mechanised, modern mine is expected to be realised between 2026 and 2028.

And this development has been achieved despite a difficult decade in South Africa.

Looking forward from an energy perspective, the Integrated Resource Plan 2025 (IRP 2025) signals a shift to cleaner solar, wind and nuclear energy sources, for the first time displacing fossil fuels as our primary energy source. In addition, the highly successful Renewable Energy Independent Procurement Programme remains central to addressing energy security issues.

There is no doubt that deep-seated challenges remain unresolved. But the outlook seems better. We are on a gradual recovery path. If we remain resilient, keep up the pressure for meaningful reforms, take the opportunities available to us, and focus on true economic and environmental sustainability, we may yet emerge as an investment-friendly, modern and prosperous African country.

Committed to our people, who are committed to your future.

At the heart of Multotec is a commitment to global investment in the people, processes and places that drive the mineral processing industry forward.

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VEGA Inventory System transforms supply chains

This article highlights the role of the VEGA Inventory System (VIS), which seamlessly integrates VEGA's advanced instrumentation with secure, cloud-based inventory management software to transform material-flow operations in the process industries.

Developed by VEGA as a holistic solution for inventory monitoring and control, VIS integrates three pillars: precise measurement technology, cloud-based software and streamlined logistics planning.

In modern process industries, the consequences of poor inventory management are significant. Excess inventory consumes valuable capital and storage space, while shortages can bring operations to a grinding halt and lead to costly last-minute deliveries. For efficient and safe manufacturing and logistics in Africa, having real-time visibility and the ability to anticipate material needs are non-negotiable. This is precisely the advantage offered by the VEGA Inventory System (VIS).

Developed by VEGA as a holistic solution for inventory monitoring and control, VIS brings together three pillars: precise measurement technology, cloud-based software and streamlined logistics planning. On paper, this may read as 'just another automation tool', but in practice, it represents a paradigm shift: operators and suppliers shift from reacting to stock events to anticipating them. At VEGA, data acquisition, precise visualisation and efficient logistics are considered core elements of successful automated inventory control.

Why visibility matters

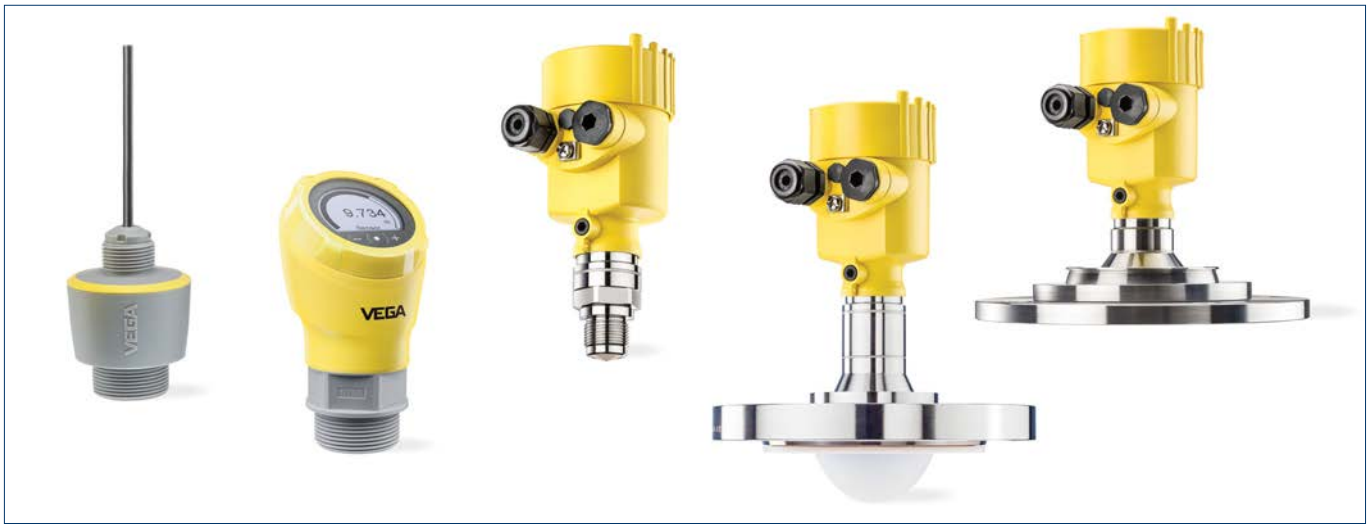
In chemical plants where raw material silos are manually inspected once a day, late deliveries, inaccurate readings and unsynchronised transport are realities. Each one of these creates risk. But with VIS, the inventory status of tanks and silos is captured and visualised in real time. The system allows users to monitor live levels, detect deviations immediately and trace their causes. This kind of transparency minimises the financial impact and ensures that the cause of the discrepancies is quickly identified and avoided in future.

The architecture of modern inventory control

The architecture of the VEGA Inventory System is built around the seamless integration of VEGA's advanced instrumentation with secure cloud-based software. At its core, the process unfolds in a straightforward sequence: sensors collect data, gateways transmit it, the data is securely hosted, and users can visualise the results.

First, VEGA level transmitters, designed for both liquids and bulk solids, measure levels in vessels, silos or storage tanks. These readings are then transmitted to the VIS portal at regular intervals via gateways or wireless instruments. Once received, the data is securely stored on VEGA's servers in dedicated installations or on client premises, using end-to-end encryption and robust authorisation management.

Users can access this information via a web browser or mobile app and view their inventory data in several real-time modes. The system offers four distinct viewing options, each tailored for specific monitoring needs. The chart view displays key numerical data, such as stock levels, available space, timestamps, and, for many liquid inventories, daily consumption and coverage. The graphic view provides an at-a-glance visual representation, using colour-coded



VEGA level transmitters, designed for both liquids and bulk solids, measure levels in vessels, silos or storage tanks.

The AIR line of VEGS instruments offers self-powered, wireless measurement solutions ideally suited to hard-to-reach or off-grid environments.

Users can access VIS information via a web browser or mobile app and view their inventory data in several real-time modes.

indicators to show stock status, ranging from 'Reorder' to 'Safety stock', and includes alarm thresholds for immediate awareness.

For organisations with operations across multiple sites, the map view provides a geographical overview, showing facility and storage container locations and their colour-coded inventory statuses. This feature is particularly valuable for managing plants, depots or remote silos. The trend view enables users to review both historical and current data in a chart format, making it easier to identify usage patterns, forecast consumption and plan deliveries accordingly.

A familiar traffic-light colour scheme underpins the user interface: green for healthy levels, yellow for caution, and red to highlight the need for replenishment. Users can further refine their view by applying filters based on location, product type, inventory level status, alarm levels, and more, ensuring the system remains intuitive and adaptable to a wide range of operational requirements.

VIS goes beyond just 'visibility' and includes logistics planning tools. With the dispatcher module, users can plan delivery schedules: which driver will take which product, from which tank, to what location and when. The system also draws on historical consumption data to forecast future usage and support optimised delivery routes. The "dynamic web map" gives a current overview of tank locations and statuses.

Two application scenarios: internal and supplier-managed

VIS offers two principal deployment models, each delivering distinct advantages. In the internal inventory monitoring approach, a company utilises VIS to track its stock levels across various locations, including production plants, external manufacturing sites and storage depots. This model provides immediate access to up-to-date and historical consumption data, which supports economic production planning and supply chain management. As a result, companies benefit from greater operational efficiency and achieve cost savings by optimising their logistics processes.

The second model is Vendor-Managed Inventory (VMI), in which the supplier is responsible for monitoring and replenishing stock. Through the VIS portal, suppliers receive real-time visibility into tank or silo levels at the customer's site, enabling proactive planning. This arrangement gives suppliers swift access to customer consumption data, thereby enhancing production planning, improving logistics efficiency, and increasing client retention.

Customers, on the other hand, gain assurance of a consistent supply, experience fewer urgent orders and production interruptions, reduce administrative workload, and can focus more on their core business with increased confidence in their inventory levels.

Practical considerations for implementation

VEGA has designed the VEGA Inventory System (VIS) to be highly compatible, enabling integration of measuring instruments from other manufacturers, provided they can connect to VEGA's signal-conditioning instruments. This means that up to 15 sensors can be linked via HART multidrop to a single VEGASCAN controller, making upgrading existing systems straightforward and efficient.

Data security is treated with the utmost importance, with cybersecurity requirements considered non-negotiable. For example, in South Africa, the VIS portal has undergone thorough auditing. It is certified to the IDW DS 951 SOC 2 standard, providing users with confidence in the system's integrity and compliance.

Connectivity is also a key consideration, particularly for remote sites where traditional network infrastructure may not be available. To work around this, VIS supports mobile network options such as NB-IoT and LTE-M, as well as satellite connections, ensuring reliable data transmission regardless of location. The AIR line of instruments further enhances this flexibility, offering self-powered, wireless measurement solutions ideally suited to hard-to-reach or off-grid environments.

Transitioning from manual stock checks to a fully digital inventory management system requires more than just new technology; it demands organisational change. This shift involves comprehensive training, process adjustments and buy-in from all stakeholders. To support users through this transformation, VEGA provides consultancy services, training sessions and ongoing technical support to ensure smooth implementation and adoption.

When considering return on investment, the cost of installing the VIS, including hardware and hosting, is modest, especially given the substantial savings it delivers. By reducing the need for urgent deliveries, enabling more efficient route planning, minimising excess inventory and decreasing the likelihood of production stoppages, companies benefit from rapid investment returns. Local users have reported that these benefits are realised quickly, underscoring the system's effectiveness and value.

The future is NOW!

Industrial operations are becoming increasingly interconnected, and data-driven systems like VIS represent the next generation of inventory management. The term 'inventory' no longer means static stock in boxes in a warehouse or bulk solids in a silo; it means dynamic, predictive, and networked resources, especially in the African manufacturing and supply chain environment, where disruption, logistics complexity and cost pressures are daily realities. A shift towards a digital inventory system is not just beneficial; it's becoming essential.

For industrial players seeking to transform their material-flow operations, the VEGA Inventory System offers more than technology; it provides a mindset: see everything, act before the alarm and optimise continuously.

The move from reactive to proactive supply-chain insight is no longer optional; it is the competitive edge. VIS brings together instrumentation, IoT, analytics and logistics into a single platform.

As the saying goes, 'what gets measured gets managed'. With Vega's VIS, what gets measured is visible, actionable and optimised.

www.vega.com/en-za

MATO's high-performance belt cleaners

Benjamin Sibanda, managing director of MATO, a Multotec Group and MATO International Group company with operations in South Africa since 1987, highlights the expanding range of high-performance belt cleaners, ideally suited to coal, diamond, copper and platinum conveying operations.

MATO, South Africa's only manufacturer of lacing clips for mechanical conveyor belt fastening systems, supplies an extensive, high-quality range of belt products and services to large-scale mining and materials-handling operations in Africa.

"We have recently introduced new designs of our belt cleaners, including primary, secondary, and diagonal cleaners that are splice-friendly and offer improved performance," begins the company's MD, Benjamin Sibanda.

"When I first joined the company in 2005, we were predominantly known for belt fasteners and lacing equipment, mainly for underground collieries. Mechanical fasteners are generally not preferred in process plants because belt joints are not fully sealed. Fast forwarding to 2015, 2016, with the world starting to worry more about coal's impact on the environment, we were asked to start looking at other applications and products that we could add to our basket," Sibanda explains.

In addition to its core lacing system offering, MATO manufactures and designs belt cleaners, also known as belt scrapers. "We don't scrape a customer's conveyor belts, though. We remove carryover material to improve belt performance and extend wear life. And we can now offer a complete range of conveyor belt cleaners that are designed to suit the conveyors for a broad range of minerals processing plants," he tells *MCA*, adding that the new range is suitable for all types of belts, rubber belts with vulcanised joints and textile belts, broadening the scope of MATO's product offering to include diamond, copper, iron ore and platinum mining operations.

"All conveyor belts carrying any mineral product need to be continuously cleaned, for underground and surface operations," he says.

For all belt types, Sibanda continues, industry has been seeking a conveyor cleaning system that is splice-friendly. "Belt cleaner blades must always be kept just on or above the belt surface to prevent damage. So, in developing MATO blades for primary, secondary or diagonal belt cleaners, we always had to keep our mechanical splice in mind to avoid damaging the blades or ripping the belt joint. With that in mind, our Australian team began investigating designs suitable for any belt joint.

"They came up with solutions for all three commonly used belt cleaners, primary cleaners, secondary cleaners and diagonal cleaners," says Sibanda.

MATO's diagonal tail pulley cleaner

To protect the tail pulley lagging, it is crucial to avoid entrapment of spilt material on the underside of the belt. "Here, we can deploy a V-plough or a diagonal belt cleaner, based on considerations, such as how much space is available; how the mine wants to capture the material that comes off, and how to minimise the amount of material that remains under the belt and the tail pulley.

"The traditional plough arrangement tends to be better known and more popular, and

The primary cleaner on a conveyor belt sits on the drive pulley beneath the discharge stream and handles about 90% of carry-back material.

Left: ***The first and most significant advantage of Mato's diagonal tail pulley cleaner is that it is easy to install.*** *Right:* ***MATO Unique (MU) secondary cleaners are located beneath the belt, behind the primary, to remove stubborn material from the underside of the belt.***

these are a part of our offering. But we believe our new diagonal design is often a better solution," advises Sibanda.

The first and most significant advantage of our diagonal tail pulley cleaner is that it is easy to install. "It is mounted on the channel beams. An installer uses a hydraulic punch to drill two holes on either side of the channel sections of the structure before bolting the cleaner into place. The diagonal blade then rests on the belt under its own weight. The blade floats up and down to accommodate a splice or mechanical belt joint, allowing the cleaner's diagonal blade to continuously remove material from the underside of the belt, channelling it to one side of the conveyor," explains Benjamin Sibanda.

The system does not require tensioning; it is corrosion-resistant; provides even wear when correctly sized; and includes adjustable limits that engage when the polyurethane blade material reaches 85-90% of its wear life, preventing belt damage from direct contact with the blade's mounting plate.

Primary cleaners

The primary cleaner on a conveyor belt, which sits on the drive pulley beneath the discharge stream, handles about 90% of carry-back material. Correct positioning of this belt cleaner is critical. It must sit against the pulley below the main material flow to redirect any carry-back material into the discharge stream.

"A primary belt cleaner is typically mounted at 15 degrees below the centre on the drive pulley, to protect the blade and to ensure optimal angle of attack is achieved, but we have developed templates to ensure that installers can position them optimally," says Sibanda, adding that on an enclosed transfer chute, a cut out hole on both sides may be required to pass the cleaner shaft through for positioning, installation and inspection purposes. An installation manual with templates makes it very clear where the chute needs to be cut, where the blade must be and the required angle of attack. The blade is made from polyurethane material with proprietary additives that are self-lubricating and outperform any other cleaner blades on the market, in both wet and dry conditions," says Sibanda.

"For underground conveyors, we supply these as overlapping segmented blades 150 wide with a range of different heights, making it easy to install a blade to match any pulley diameter. In addition, for primary cleaners on surface conveyors, we manufacture solid blades in lengths from 450 to 2 100 mm.

"The other nice thing about our MATO blades for primary cleaners is the slide-on, slide-off replacement feature, which significantly reduces downtime. By removing one pin, the blade can be slid off, and a new one slid into its place," he says, adding that the blade-shape design offers high performance, particularly for belts with mechanical connectors or splices.

Self-adjusting contact with the belt is achieved using either a tension or a compression spring, depending on the client's needs. Compression springs offer longer life, though, because repeated blade contact with joints can subject tension springs to cyclic fatigue.

MATO Unique (MU) secondary cleaners

Secondary cleaners are located beneath the belt, behind the primary, to remove stubborn material from the underside of the belt. "There is a lot of vibration in these areas; the conveyors can be huge, typically running at very high speeds. Our secondary cleaners are designed to handle these conditions due to their heavy-duty construction, providing an extremely high level of cleaning," notes Sibanda.

Most notably, the blade shape, even with a hard-metal blade, is belt connector-friendly for all types of splices, thanks to a secondary cleaner design that prevents hard contact with raised connections. "Our MUS series has a slide-on cushioned blade for easy installation and maintenance to minimise downtime, while ensuring that all blade alignments are 100% true across the entire conveyor belt width," he adds.

While Mato can offer all traditional bolt-on blade types, from MCS 2 to MCS 6, Sibanda is particularly proud of two unique types: the MATO Unique Secondary 2 and 3 (MUS2 and MUS3).

"The MUS2 secondary cleaner, for example, has a unique parallelogram designed into the cushion that gives the cleaner flexibility to float just above the belt while maintaining a constant blade attack angle. This gives automatic adjustability for when the belt thickness varies and for belts with mechanical fasteners, particularly when a tungsten impact blade is used," he explains, adding that the MU2 with a tungsten blade offers excellent performance on vulcanised belts.

Additionally, MATO's patented M-Track mounting system offers the same simple slide-on, slide-off method for replacing the one-piece cushioned blade on the crossbeam.

"Belt cleaners enhance safety, reduce belt maintenance requirements, and extend equipment life. Drawing on our experience with mechanical fasteners, we have now designed a high-performance range that outperforms traditional solutions. We also offer comprehensive on-site assessment services for conveyor belts of any kind, which we call MATO CAALC, to make the benefits of our solutions clear to operators," concludes Benjamin Sibanda.

www.multotec.com/en/mato-conveyor-belt-cleaners

Click here to watch a video that shows how Mato belt cleaners work.

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Chute systems delivers at Palabora

More than a decade after installation, Weba Chute Systems' custom-engineered transfer chutes at the Palabora Copper Mine continue to perform reliably with minimal maintenance, thanks to an innovative design tailored to high-impact underground conditions.

Highlighting the company's dominance in engineered flow control solutions that prioritise durability, efficiency and operational sustainability, the custom-engineered transfer chutes supplied by Weba Chute Systems for Palabora Mining Company's (PMC) Copper Mine continue to operate with virtually no maintenance.

Located in Limpopo Province, South Africa, PMC's underground block-cave operation required a specialised approach to materials handling. The original scope of supply needed Weba Chute Systems to design and install transfer chute systems capable of handling coarse copper ore up to 220 mm after crushing within a high-capacity conveyor network operating at belt speeds of 3 to 4 m/s. The systems were specified for a throughput of around 5 000 t/h, servicing 20 production cross-cuts and 320 drawpoints in a compact mining footprint 650 m below surface.

The Weba Chute Systems solution was unique due to its alignment with the site's operating realities. "We didn't just supply chutes," Mark Baller, Managing Director at Weba Chute Systems, says. "We delivered an engineered flow control solution. We carefully analysed the fragmentation profile, belt speeds, spatial constraints and impact zones, and designed systems that optimised flow while protecting infrastructure," he explains.

At the heart of Weba Chute Systems' success is its patented 'super tube' design, which controls the direction, velocity and impact of material as it flows through the chute. Unlike conventional chutes, so often generic in design and prone to wear, blockages and dust, Weba's transfer point solutions are engineered using Discrete Element Method (DEM) simulations to model and optimise flow behaviour. This reduces turbulence, prevents build-up and dramatically limits wear on liner surfaces.

Durability was further ensured through strategic material selection. High-impact zones were lined with high-chromium cast iron and ceramics, while structural components were fabricated from high-strength steel using precision welding and advanced surface treatments. The result, Baller says, is a system that has withstood over a decade of harsh underground operation with only minor spares required.

"Our 2025 site inspection confirmed the Weba Chutes at PMC are still in excellent condition," he says. "The customer feedback has been outstanding, and they have reported significantly reduced spillage and dust, improved flow control and no unplanned downtime from chute failure."

This performance has not gone unnoticed in the mining sector. Weba Chute Systems is actively leveraging the PMC success story to support new underground projects, especially in block-cave mines, where controlled material flow and long-term reliability are critical. Through technical presentations, case studies, and field demonstrations, Weba Chute Systems continues to expand its footprint across commodity industries, including gold, platinum and iron ore.

"PMC is a notable benchmark project for us," Baller notes. "It proves that when you engineer for the application, performance and longevity follow. We are proud to be helping mines around the world shift from reactive maintenance to engineered reliability."

https://webachutes.com/

A conveyor-on-conveyor transfer chute installed by Weba Chute Systems at Palabora Copper Mine (PMC), which is still operating efficiently more than a decade after installation.

A Weba Chute Systems field advisor inspects a conveyor transfer point in operation, underpinning the company's ongoing commitment to ensuring optimal material flow and performance across all installations.

Multotec redefines screening media attachment

To help address risk and remove potential safety hazards, Multotec has developed a range of hammer-less screening media attachment systems that significantly reduce the amount of hammer blows traditionally required when installing or removing screen media.

Designed for faster, easier changeouts while lowering the number of hammer blows needed, these systems not only make the process quicker and easier for maintenance, but also significantly improve operator safety, reducing the risk of injuries, fatigue and unplanned downtime in demanding mining environments.

"Safety is at the heart of every innovative solution we design," says Denzyl Macauley, Screening Support Manager at Multotec. "By reducing hammer use during panel changeouts, we are directly addressing one of mining's most common safety hazards and helping reduce the number of hand injuries on site," he adds.

Conventional attachment systems require repeated hammer blows to fasten modular screen panels to support frames on mineral processing equipment such as trommels and vibratory screens. Each panel typically requires multiple hammer blows per pin, along with additional tools such as screwdrivers and crowbars. The removal process is also a two-step process, which increases both time and risk. These tasks are often carried out in confined and ergonomically challenging spaces.

For maintenance personnel, this creates multiple safety hazards: from hand and finger injuries caused by missed hammer blows, to pinch points when holding pins in place during hammering and repetitive strain from repeated, forceful exertion. In some cases, hot work such as flame cutting is required, which introduces additional burn and spark risks.

In today's mining industry, where safety is non-negotiable, such risks not only endanger personnel but also lead to unplanned stoppages and productivity losses due to extended installation times.

Delivering safety and productivity simultaneously

As an alternative, Multotec's hammer-less attachment systems for screen media simplify static and vibrating screen media changeouts, making them faster, safer and more efficient. Instead of repeated hammering, panels can be clipped or snapped into place using just a few light hammer blows or simple hand leverage. This minimises the force required, reduces the number of moving parts compared to conventional systems, and lowers overall maintenance effort and cost.

"By simplifying the process and reducing hammer blows, our latest attachment systems make screen panel changeouts faster, easier and safer," explains Jean Laurens, Screening Support Engineer at Multotec. "That means fewer injuries, greater efficiency and less disruption to production," he adds.

Multotec's Adaptable, Cost-effective, Ergonomic (ACE) fixing solution is engineered for unparalleled security and features a robust dual locking mechanism that ensures maximum reliability.

Furthermore, Multotec offers several latest-generation hammer-less systems for use on modular runner-type screens that accommodate interlocking, standardised screen panels. These can also be retrofitted to any existing screen decks or systems currently in operation.

The ERX system, designed for extremely heavy-duty applications, secures modular interlocking polyurethane or rubber panels using fixed clamping strips and a top locking strip. This eliminates the need for multiple bolts and nuts and eliminates hot work, such as grinding or cutting, during changeouts.

The Y-LOK system is specifically tailored for Multotec trommel screens, where modular polyurethane or rubber screen panels attach via a snap-on mechanism along a Y-shaped groove rail system, enabling quick and secure installation with minimal hammering.

For general screen attachment needs, the CCX and HALO systems provide versatile clip-in and snap-on solutions suitable for applications ranging from sizing and dewatering to media recovery. These systems reduce reliance on tools, enabling single-person changeouts by hand while remaining compatible with all screen media materials.

Derived from the ERX series, Multotec's Adaptable, Cost-effective, Ergonomic (ACE) fixing solution requires zero hammer blows, eliminating the risk of impact injuries during screen panel changeouts. The ACE panels lock in place with just hand pressure, so there is no impact risk and no pinch points.

Once in place, ACE is engineered for unparalleled security and features a robust dual locking mechanism that ensures maximum reliability. When paired with the top locking strip, it becomes virtually fail-proof, staying securely in place even where other fastening solutions have failed, making the system the most reliable solution on the market.

When the time comes for removal, ACE requires no screwdrivers or pry bars. Multotec's engineered, battery-powered tool makes panel removal simple, fast and safe.

These advanced attachment systems demonstrate Multotec's focus on putting personnel safety first while streamlining changeouts. Reducing risks and simplifying installation, decreasing operator fatigue, and improving alertness and morale result in a safer working environment, faster maintenance, greater plant availability and improved productivity.

Available through Multotec's global branch network, these attachment systems reflect the company's strong commitment to innovation and safety, helping reduce injuries, improve working conditions, and increase productivity.

https://www.multotec.com

Sandvik Rock Processing strengthens footprint

In support of West Africa's growing mining sector and Sandvik Rock Processing's equipment offering, the company is strengthening its footprint with a robust multi-tiered service offering that includes on-site engineering, parts warehousing, training and condition monitoring.

With a strong focus on uptime, safety and productivity, Sandvik Rock Processing continues to invest in local resources to ensure rapid responsive support for its crushing, feeding, screening and rock-breaking solutions.

West Africa has long established itself as one of the continent's most exciting regions for exploration and mining, and Sandvik Rock Processing continues to build on a strong technical support footprint for its product offering, which includes stationary crushers, screens and feeders, mobile crushers and screens and rockbreakers.

From on-site engineering services to parts warehousing, training and condition monitoring, the company has built a responsive multi-tiered support system designed to ensure smooth, reliable operations for its customers.

"We understand the pressure in the mining sector for increased operational uptime, safety and productivity," says Michael Okunola, Service Manager for Sandvik Rock Processing West Africa. "As supply partners to the industry, this can only be achieved through our continued investment in human and material resources on the ground: close to customers for rapid response."

As part of the company's suite of support services, Okunola highlights the various levels of its on-site engineering support programme. Customers can select from a range of offerings, including having Sandvik Rock Processing engineers on-site at the mine 365 days a year. Depending on how remote the mine's location is, management may prefer an engineer to visit the site monthly, bi-monthly, quarterly or annually.

"Our services are completely tailored to customers' needs," he emphasises, "but the primary focus is generally the same: to closely monitor the condition and operation of equipment on site, to ensure proactive maintenance and to optimise performance."

He explains that the company's local service technicians are the first responders to customers' needs, providing on-site diagnostics and troubleshooting, as well as emergency work and routine maintenance. Sandvik Rock Processing also has after-market engineers who can commission equipment and conduct visits in line with customer preferences.

Parts availability

Effective maintenance means having the necessary parts available when needed, he points out. Sandvik Rock Processing therefore offers support to mines through customised inventory management. Under a parts management agreement, the company's team even visit mines to assess which inventory items have been used and which need replenishment.

Service support for Sandvik Rock Processing's mobile crushing and screening equipment forms a key component of the company's comprehensive localised support offering for rock processing operations across West Africa.

"Under our vendor-managed inventory (VMI) system, for instance, we monitor stock levels on behalf of the customer and ensure timely replenishment," he explains. "We try as far as possible to help the customer to avoid running out of parts, which can lead to delays and downtime."

This may require moving critical spares onto customer sites as consignment stock so that they can be stored for immediate access. Okunola highlights that Sandvik's SAM digital service plays a valuable role in facilitating operational excellence in the region's crushing and screening plants.

"Our SAM platform helps our technical personnel. and even the customer, to monitor the consumption of parts and facilitate procurement," he explains. "Our technical teams use SAM to track the daily operation of our equipment, analysing data to diagnose issues before they become critical. We can then advise the customer what actions are required to ensure that machines are always running efficiently and at the lowest lifecycle costs."

Regional presence

Underpinning its commitment to parts availability is Sandvik Rock Processing's strategically located regional facilities, with a West African hub in Kumasi, Ghana. This includes a warehouse and workshop facility to support customers throughout the region.

"We also have a facility with a warehouse in Bamako in Mali, and in Ouagadougou in Burkina Faso," he says. "A recent addition to our footprint in the region is our warehouse in Abidjan in Côte d'Ivoire. Each of these sites has its own team to provide technical support and logistical coordination to customers."

The workshop facilities provide refurbishment services for key equipment, component rebuilds and routine preventive maintenance. He highlights that the company's presence in these locations enables rapid response times, reduces delivery lead times, and generally enhances customers' operational uptime.

Building local capacity

Recognising the importance of skilled operators and technicians in West Africa, Sandvik Rock Processing invests heavily in skills development and training initiatives. These can be conducted on-site or remotely and include tailored modules based on specific types of equipment, as well as technical refresher training to keep customers up to date with the latest technologies and best practices.

Among the most critical capacity-building offerings is operator maintenance training, which is most useful when conducted in a real-life, practical environment. When customised for specific mines, this training can focus on the actual equipment installed on the site.

"We also run 'train-the-trainer' programmes which empower supervisors to share knowledge internally," he says. "Trainees receive certificates of competence, strengthening their career development and enhancing local skills in the process."

Sandvik Rock Processing also supports apprenticeships as part of its local talent development initiatives. This includes internships and partnerships with technical schools. The company's e-learning platform further expands its reach, allowing customers to access training on topics such as equipment operation, preventative maintenance and safety procedures.

"Our local technicians are well-trained, and benefit from continuous upskilling through regular visits to the company's facilities," says Okunola. "Our growth plans in West Africa are a clear signal of our commitment to the market in the region, ensuring that technical support is close at hand and fully resourced," he concludes.

https://www.rockprocessing.sandvik

WEG Turbine Services: the long-term service offering

MCA visits the Benoni facilities of WEG Turbine Services to meet Alastair Gerrard, Executive for Energy systems, for an introduction to WEG's comprehensive steam turbine-related supply, installation and long-term service offering now available to operators across Africa.

Following the February 2024 acquisition by WEG of the Benoni-based service facilities of RTS, Rotating Technologies and Services, a leading provider of engineering, maintenance and repair services for steam turbines, centrifugal and reciprocal compressors, gearboxes and other related equipment, WEG has established itself as an OEM and servicing provider for steam-turbine and generator solutions across the lifecycle of its own and other brands.

"Before the acquisition, RTS was a local partner for servicing our WEG steam turbines for the sub-Saharan African region, and we worked closely with them to install, manage and service WEG turbine installations. Incorporating RTS into WEG's thermal energy business enables us to offer an expanded set of solutions for operators of steam turbine generator sets and mechanical drives across sub-Saharan Africa, from installation to long-term preventative maintenance and remote monitoring, followed by plant upgrades and replacements," he adds.

"What we've done here in Benoni is to consolidate our steam turbine solutions offering, from supplying new WEG turbines, gearboxes and generators, to a comprehensive range of aftersales services, which are all now managed from this facility," says Alastair Gerrard.

Explaining the strategy underpinning the RTS acquisition, he says that WEG's thermal energy business is made up of a solutions team, which deals with supplying new equipment designed according to a customer's specification or need; and the turbine services side, which looks after the installation of new equipment, as well as the after sales servicing, either through service level agreements signed with customers, or on a quote, receive and order basis.

"WEG in Brazil has a strong servicing background. What we lacked here in Africa was the ability to do our own installations and our own servicing. We were offering the equipment and then working with third parties to deliver these services. But whoever manages servicing, not only controls the supply of spares, but also stands a far better chance of securing new orders for machines," Gerrard argues.

WEG's turbine facility in Benoni consolidates the company's steam turbine solutions, from managing the supply of new WEG turbines, gearboxes and generators to offering a comprehensive range of after-sales services.

"By servicing steam turbines from any OEM, we develop knowledge of the client's machines and applications. We can understand the environment and the challenges, and collect a history of machines across the market. When a turbine is no longer economical to repair, service and usage data enable us to quickly put together a custom replacement solution that meets the client's specific needs.

"This is why we decided to get into services: to access the market at a different level, to understand what's out there over time, and eventually, to look at replacing existing machines with WEG solutions. When we sell a WEG solution, we have the resources to offer industry-leading value-added services. We don't just dump and run; we reassure the client that we'll walk the road with them throughout the machine's lifecycle and beyond," he tells MCA.

Lifecycles and turbine service needs

Typical steam turbines, says Gerrard, are designed to operate continuously for 24 hours a day and 365 days a year. At least once every 10 000 operating hours (or 12-14 months), they need to be brought down for a service intervention, though.

"The first service, at about 12 months, is a simple inspection service, where we look at the emergency stop valve (ESV) at the front of the turbine where the steam comes in. We clean the ESV to ensure it's operating correctly, conduct an overall health check of the machine, and review the operator logs for incidents that may suggest further work is needed.

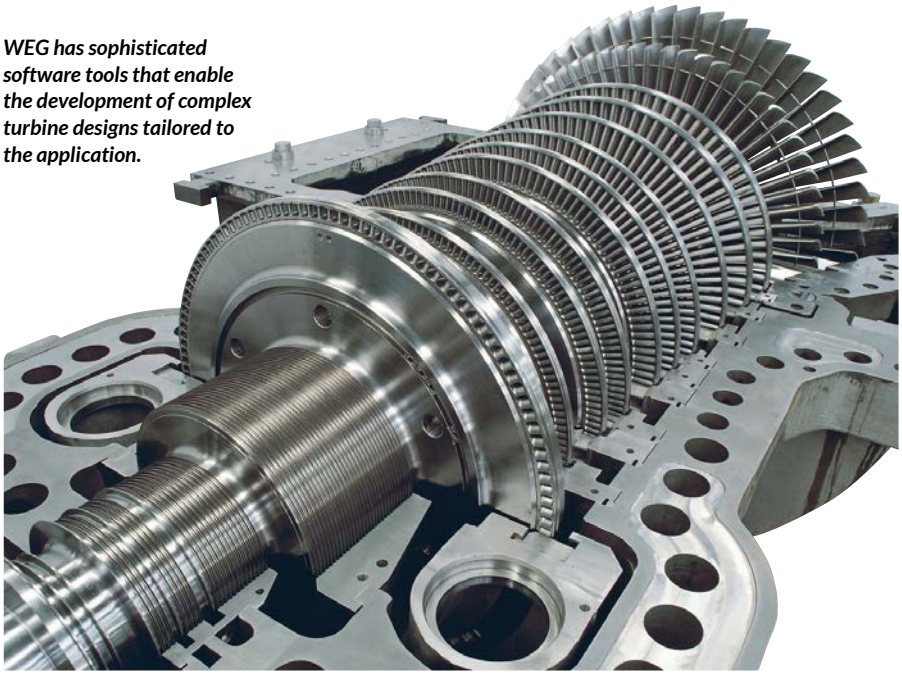
"Then, after another 10 000 hours of operation, we do a minor overhaul that involves a little bit more. We use borescopes to inspect the turbine casing, the condition of the blades, rotors, and other internal components without opening the machine. This cycle repeats in years three and four, but in the fifth or sixth year, after about 40 000 hours of operation, we perform a major overhaul that involves opening the casing.

"The timing of interventions depends on several factors, such as the quality of the steam that's been put through the turbine. If poor, then the period between interventions needs to be shortened. And if any problems are picked up, then we obviously need to intervene early to avoid potential catastrophic

failures," he advises.

He says the advantage of a turbine is that it runs continuously without needing to be stopped and restarted. It takes two days for a typical turbine to cool before any work can be done on it, and several hours to return it to temperature before it can be reloaded. "While turbines are a continuous power solution designed for minimum intervention, they still need to be properly and regularly maintained to guarantee maximum efficiency, reliability and life," Gerrard points out.

"We have turbines in the power generation industry that have been producing power for over 40 years. What we supply are smaller, industrial versions of these turbines, which puts us in the market for sugar, pulp and paper and petrochemical applications," he says.



WEG has sophisticated software tools that enable the development of complex turbine designs tailored to the application.

Waste-to-energy applications

Waste-to-energy applications have become very exciting for us in recent times. Here, WEG targets the 200-800 kW range for plants with access to a waste stream that can be burned to generate energy.

Some operations generate leftover wood from furniture manufacturing, medical waste from hospitals, or food waste from hotels, all of which can be used to create steam and, via a turbine, generate power. "Furthermore, we are also active in the sugar industry, where sugar plants have long been using bagasse, and paper mills that use biomass to create power," he notes. WEG has a comprehensive market presence and extensive experience in both the sugar and pulp and paper industries, which we can leverage to develop the sub-Saharan African market," says Gerrard.

The changing market

Gerrard is seeing significant shifts in the market. "When we started this business, it was acceptable for OEMs to have a third party doing installations and services, with the OEM only responsible for the supervision. Now, clients want the OEM to take full responsibility for an installation and the after-market servicing of the assets."

This makes sense, he says. Steam turbine systems are high-value, technically complex systems. Turbine engineering is a precise science with a specialised skill set required for servicing, and it isn't easy to find specialist turbine engineers.

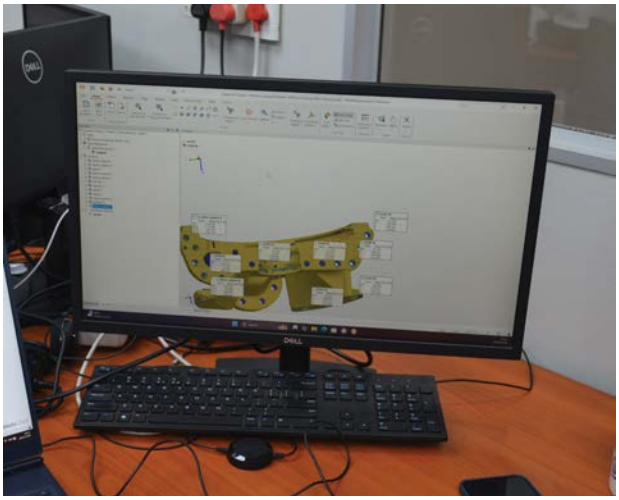
While turbines are simple in that they turn the rotor using steam, he continues, the intricacy of sealing, blade designs and steam quality makes them highly complex. WEG has sophisticated software tools that enable the development of turbine designs that best fit the application. "We have experience in a wide range of client processes, including the use of waste process steam, optimising the performance of the machines clients already have, and upgrading and optimising fuel efficiency," he notes.

"And now, we can also offer long-term services for these turbine systems, whether the client is using a WEG system or any other brand, no matter how old. Many of the machines in Africa have been running without proper support. OEMs, ownership, and personnel have changed, and operators often don't even have drawings for their machines.

"We can scan all the parts of a machine to create the CAD manufacturing drawings, which enables us to remanufacture OEM-quality spares for anyone's machines, facilitating proper after-market support and promoting increased machine operational life-cycles.

"We are planning further capital investments in modern machinery and tooling to improve our local servicing capabilities. And anything we can't do here yet can be done by WEG in Brazil," concludes Gerrard.

https://www.weg.net/institutional/ZA/en/



Left: ***Fully equipped mobile turbine workshops enable WEG Turbine Services to service steam turnbines and generators on site.*** *Right:* ***Using laser scanning technology, WEG Turbine Services can scan all parts of a machine to create CAD manufacturing drawings required to remanufacture OEM-quality spares for any machine.***

Unlocking Investment to close Africa's energy gap

This year's Africa Energy Indaba is mobilising development finance institutions (DFIs), private capital and governments to accelerate bankable energy projects.

Africa stands at a critical crossroads in its energy journey. Despite being home to some of the world's fastest-growing economies and richest energy resources, more than 600 million people across the continent still lack access to reliable electricity. At the same time, constrained grids, ageing infrastructure and limited access to affordable finance continue to hold back industrialisation, job creation and economic growth.

Closing Africa's energy gap will require more than ambition and policy commitments: it will require capital mobilisation at scale, effective risk mitigation, and platforms that can convert projects into bankable, investable opportunities. This is where Africa Energy Indaba plays a pivotal role.As a leading energy investment and deal-making platform for the continent, Africa Energy Indaba brings together governments, development finance institutions (DFIs), private equity, commercial banks, project developers, EPCs and technology providers with a shared objective: to unlock capital and accelerate the delivery of energy infrastructure across Africa.

Mobilising capital for Africa's energy future

Africa's annual energy and infrastructure funding gap is estimated to run into the hundreds of billions of dollars. While global capital is available, investors continue to face challenges related to project preparation, regulatory uncertainty, currency risk, and limited creditworthiness of off-takers. Africa Energy Indaba directly addresses these challenges by creating a focused environment where policy, capital and projects intersect.

The Indaba's programme is deliberately structured around investment readiness and bankability, featuring high-level ministerial dialogues, investor forums, project showcases and closed-door meetings. This enables stakeholders to engage meaningfully on project structuring, blended finance, guarantees, and risk-sharing mechanisms that are critical to unlocking funding.

Rather than being a purely theoretical discussion forum, Africa Energy Indaba is designed to support the entire project lifecycle — from early-stage development and regulatory engagement, through to financing, construction and implementation.

A platform designed for deal-making

What differentiates Africa Energy Indaba is its strong emphasis on outcomes. The event has evolved into a trusted space where serious investors and credible project sponsors meet with decision-makers who have the authority to advance projects.

Through curated investor engagement, the Indaba facilitates introductions between developers and DFIs, private equity funds and commercial lenders, while also enabling governments to present national project pipelines and reform initiatives. This approach ensures discussions are grounded in real opportunities rather than abstract concepts.

Energy sectors featured at the Indaba span the whole value chain, including grid-scale power generation, transmission and distribution, gas-to-power, renewables, energy storage, grid modernisation, industrial power solutions and emerging energy technologies.

By reflecting Africa's diverse energy realities, the Indaba supports pragmatic solutions that balance energy security, affordability and sustainability.

Aligning policy, capital and infrastructure

Governments play a central role in creating the conditions necessary for investment, and Africa Energy Indaba provides a neutral platform for transparent dialogue between public and private stakeholders. Ministers and senior officials use the Indaba to outline policy reforms, regulatory frameworks and national energy strategies. At the same time, investors and financiers provide feedback on what is required to unlock capital at scale.

This two-way engagement is critical in closing the disconnect that often exists between policy intent and investor expectations. By fostering open, solution-oriented discussions, Africa Energy Indaba helps bridge this gap and accelerate project development timelines.

The co-location of Infrastructure Africa alongside Africa Energy Indaba further strengthens this value proposition, recognising that energy investment does not exist in isolation. Power generation and grid development are intrinsically linked to transport, logistics, water, digital and industrial infrastructure. Together, the two platforms create a single convening point for cross-sector investment and integrated infrastructure planning.

Delivering impact beyond the event

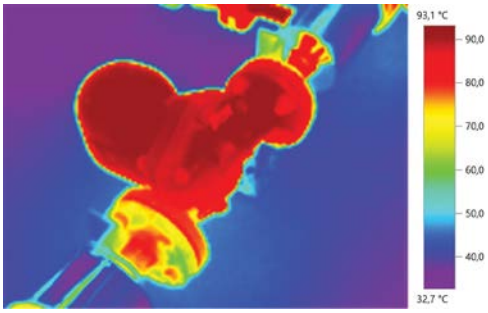
Africa Energy Indaba's influence extends beyond the conference floor. Relationships formed, projects introduced, and deals initiated at the Indaba continue to progress long after the event concludes. This sustained engagement has positioned the Indaba as a trusted annual meeting point for Africa's energy investment community. As Africa accelerates efforts to expand access, modernise grids and transition towards more sustainable energy systems, the need for effective investment platforms has never been greater. Africa Energy Indaba stands at the centre of this effort — unlocking capital, enabling partnerships and turning Africa's energy ambitions into bankable realities.

Africa Energy Indaba is where Africa's energy investment future takes shape — and where the work of closing the continent's energy gap truly begins.

https://africaenergyindaba.com

Condensate return and waste heat recovery

Dennis Williams, Commercial Director of steam and boiler operations and maintenance service provider, Associated Energy Services (AES), highlights the opportunities available to thermal energy users to optimise condensate return (CR) and waste heat recovery, while preventing system contamination.



Left: ***Steam line offtake design is critical to ensure no condensate pickup.*** *Middle:* ***Wasted condensate from the steam trap is discharging to the ground.*** *Right:* ***Thermal images of steam traps are used to assess their functionality.***

"Steam quality is the responsibility of AES on sites it manages, and this includes protecting the boiler assets and the quality of steam supply to ensure optimised plant and boiler operations.

Although managing condensate return is officially outside AES's remit, Williams says the company often provides its own and specialist third-party insights: "Our limit is receipt of condensate at the hot well in the boiler house. The client must manage the collection and return of condensate because this is integral to the use of steam and should, therefore, be controlled by production personnel as it impacts plant operation," he advises.

The client's steam usage system determines both the quality and amount of condensate available. If steam is used via direct injection, no condensate can be recovered; if it is an indirect heat source, in coils or heating jackets, for example, condensate can be extracted.

Key factors such as conductivity, hardness and temperature all determine quality, Williams explains: "Total Dissolved Solids (TDS) and hardness stem from the contamination of steam/condensate circuits in the client's facility, such as leaking heat exchangers or coils. This results in product ingress into the steam/condensate circuit. It can also come from heating and cooling plenums, where there is no rinse cycle after the cooling cycle. Condensate is then contaminated with cooling water that is high in TDS and hardness."

The higher return rates of hot, high-quality condensate assist in optimising steam generation as follows:

- All sensible heat (temperature) returned saves on fuel inputs, as the energy input is related to the difference between the condensate temperature and the steam temperature (including phase change energy). More heat returned means less fuel used.
- The higher percentage of CR requires less make-up water to account for the CR losses, as well as the use of less fuel to heat the make-up water from ambient temperature to boiler steam temperature (including phase change energy)
- A higher percentage of CR also means lower TDS compared to make-up water, and therefore less blow-down to maintain boiler TDS, less fuel input energy, less water costs and less water treatment

However, if TDS is out of specification, the condensate cannot be used and must be dumped, as it will foul the boiler heat exchange surfaces, increase fuel consumption, and potentially damage the boiler pressure parts, Williams warns.

Partnering with clients to optimise condensate return

AES works closely with clients to optimise CR systems. Williams uses an AES food sector client as an example: "As our client has no fundamental technical understanding of the heat exchange systems within its facility, it cannot determine the percentage condensate return that can be achieved. AES and third-party-assisted plant tours provided technical guidance and isolated sections to determine condensate return flows, revealing potential condensate contamination. The client identified several process units as requiring attention. This is an ongoing process."

Economics of condensate return

At another industrial manufacturing site, AES identified process issues in heating and cooling cycles that are resulting in high TDS and hardness in the condensate returned, making it unusable at the boiler house: "We proposed a control system designed to allow for a post-cooling cycle flush. This will ensure that high TDS and hardness are flushed before steam is introduced, thereby providing a clean CR. The expected savings are approximately R6 000 per month for every 1% improvement in the CR to the hot well. With a potential upper limit of 80%, significant savings can be achieved.

In short, the higher the temperature at which condensate is received, the better the energy saving. This justifies investment in the recovery process.

Williams recommends analysing where and how energy is used, and identifying best-matched applications: "Where energy benefits are low, lower-grade energy uses, such as cleaning water, typically at 60 °C, should be substituted. By using the recovered low-temperature CR, less water is needed, together with less steam to heat the cleaning water," he explains.

'Return' to solutions

Williams observes that while some challenges are transitory, others can be severe and costly, such as introducing contaminated or high TDS CR into the boiler steam system: "If left unattended, this causes boiler fouling and plant failure. Contamination can lead to boiler control issues – fluctuating water-level and boiler trips – and even carry-over of water slugs into the steam range, which can potentially cause water hammer and line damage."

The solution is proper design, layout and planning of condensate recovery systems: "Designs differ between plants. For example, a high-speed paper machine versus a heating coil on a cooker vessel. Regular maintenance of heat-exchange equipment and testing of both CR and product for signs of leaks between the steam and product spaces are also critical. This is why, at AES, we prioritise preventing system deterioration and managing feedwater chemistry.

"Clear and timely communication between AES and our clients is critical in managing expectations and in achieving the best results. It is a partnership," Williams concludes.

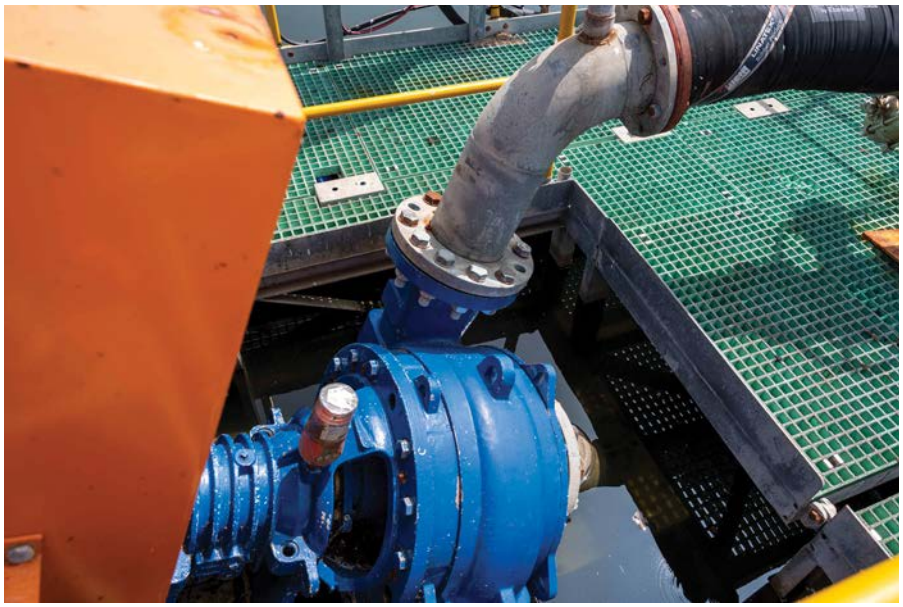
https://www.aes-africa.com

Weir's WARMAN® DWU: the dirty water workhorse

The WARMAN® DWU (dirty water unit) is a high-head hybrid pump for mine dewatering applications that combines the efficiency of a clear-water pump with the robustness of a WARMAN® slurry pump. Marnus Koorts, General Manager for OEM Products at Weir in Africa, highlights the features and niche uses of this locally manufactured workhorse.

Manufactured in South Africa for global mine dewatering applications, the WARMAN® DWU pump is noted for its high efficiency, with high-chrome components that provide excellent wear characteristics and solids handling of dirty water with specific gravities (SGs) up to 1.05.

"The WARMAN DWU pump serves a market that is under-serviced, in my view," says Marnus Koorts, General Manager for OEM Products at Weir in Africa. "It fits into a niche between high-efficiency clear-water pumps and wear-resistant mill circuit slurry pumps, and I don't believe there is another product that fits this niche quite as well," he says, adding that it is particularly well-suited to the harsh mining environment.



The WARMAN DWU pump's high-chrome components provide excellent wear characteristics and performance in dirty water.

The WARMAN DWU pumps can be interfaced with diesel engines on trailer or skid-mounted pontoon barges.

In general, he says there is a significant divide between slurry-pump and clear-water pump providers. Slurry pumps generally focus on wear life and maximising solids-handling capacity, while clear-water pump providers concentrate on energy efficiency and discharge head. "Our DWU sits between this divide, designed for mining environments where the water is not clean, but neither is it slurry. Clear-water pumps have tighter tolerances and a wider range of materials of construction because they don't have to resist abrasive wear. On the other end of the spectrum, slurry pumps are generally less efficient, primarily because wider tolerances are needed to reduce wear rates.

"Clear-water pumps are machined to achieve the tolerances necessary for efficiency, while slurry pumps are cast and skimmed to get the material composition needed for abrasive resistance," he explains, adding that this leads to an inherently rougher finish, which leads to lower comparative efficiencies.

Additionally, while slurry pumps are more robust, they are not generally required to pump high heads: a cyclone feed pump typically operates with a pressure head of 30 m or less. "But for dewatering from a deep mineshaft or pit, water may have to be lifted hundreds of metres in a single stage to transfer it away from where it has settled. Minimising the number of pumps installed to achieve the high discharge heads required is where the WARMAN DWU unit shines," Koorts points out.

Underground water is generally quite clean at the source, but as it flows into a mine or pit workings, fine dust particles or solid residue from mining activities can contaminate the fluid. The water used to cool the drill bits, for example, is often sourced from open underground dams, so it is not clean; it contains small but significant levels of suspended solids. Mineshafts also experience ongoing water seepage, so there is a need to

continuously drain water from access and production areas.

"Some of our deep mines are 3 000 m deep, so high-head or multistage pumps are needed to get that water out. Traditionally, high-head clear-water pumps have been used to remove this water, but suspended solids and raised SGs cause these pumps to wear out very quickly. This leads to high refurbishment or replacement costs. So Weir has designed a hybrid, the WARMAN DWU pump, that delivers the efficiency and high head benefits of a clear-water pump, but with the additional wear benefits of our slurry pumps," says Koorts.

At the start of the WARMAN® DWU pump design, Weir's range of high-chrome, corrosion- and wear-resistant alloys, most notably AO5 and A11, is used. Well proven in the WARMAN® range of slurry pumps, these materials are also ideal for extending the life of WARMAN® DWU pumps. From a reliability and extended-life perspective, WARMAN® DWU pumps also feature a robust 'bulked-out' bearing assembly design that delivers the harsh-environment benefits embedded in WARMAN® slurry pumps: substantial radial and axial force handling, abrasive slurry handling, and reduced maintenance downtime for bearing replacements.

"This gives the WARMAN DWU pump the longer wear life, but these pumps also offer efficiency performance that is far closer to that of clear-water pumps. This is a fantastic product for a wide range of dewatering applications, most notably underground," Koorts adds.

In addition, the WARMAN DWU pump competes with traditional clearwater pumps in high-head pumping applications. It can accommodate heads of around 140 m in a single stage while achieving flow rates of 100-1 000 m^3/h, depending on the pump size chosen.

The DWU pump features a high-pressure casing capable of withstanding up to 7 000 kPa (1,000 psi). This enables pumps to be connected in series in a multistage arrangement, allowing a much higher total discharge lift to be achieved, potentially up to 480 m of head from a multistage configuration.

"The benefit is that we can install WARMAN DWU pumps in one pump station on one level, minimising installation, management and maintenance requirements.

"We can also place pumps on different levels, each pumping directly into the next pump 140 m above, for example," Koorts explains. "Either way, he adds, using a WARMAN DWU pump means that fewer pumps are needed to achieve the necessary dewatering, and they will last longer."

Engineered to order

"While a client might ask us for a solution for moving water from where it shouldn't be to a disposal or reuse location, we at Weir are strong in engineered-to-order solutions, because every mine site is different and every installation has to be customised to suit the need. It's also essential to understand, with the client, not only what the problem is now, but where dewatering will be required in five years. Are the pits going to be deeper? How do we locate the pumping units so that they can be fit for the life of the mine?"

"So many clients have pumping solutions for different stages. And we know that in a year or two, this will change. We prefer to plan the best way forward from the start to minimise the number of changes required as mining progresses," Koorts tells *MCA*.

While land-based, electric motor-driven WARMAN® DWU pumps are most common in underground mines, these pumps can also be interfaced with diesel engines or mounted on pontoon barges. "We can interface to almost anything, underground or above ground. As well as pontoon barges, we can manufacture skid-mounted, trailer-mounted, or any other preferred format," he says.

Maintenance features

As with WARMAN® slurry pumps, a core design principle of the WARMAN® DWU pump is ease of maintenance. "We have applied our learning from slurry pumps to the WARMAN® DWU pump as well, so whenever maintenance is required, which is not often, it has been made easier: the motor can easily be decoupled, the bearings are easier to remove, and we can offer service exchanges, where we can remove a pump and replace it with a standby unit or one we have repaired earlier," Koorts tells *MCA*.

"For anyone still using a clear-water pump for removing dirty water, the WARMAN DWU pump is a fantastic solution. It is sure to deliver a substantially better total cost of ownership than a clear-water pump solution, and these pumps remain efficient for longer, are far easier to maintain, offer a much longer life and use far fewer consumables.

"In comparison, using a clear-water pump for dewatering dirty water is a bad idea," he concludes.

https://www.global.weir

WARMAN® DWU pump features

- A new compact design using common parts, 90% of which are interchangeable with the mechanical end of WARMAN® WBH® slurry pumps.
- A one-piece frame aids the correct alignment of bearings, seals and impeller.
- Rigid bearing frames minimise vibrations and distortions from external piping loads.
- Large capacity bearings are capable of withstanding high loads, ensuring improved bearing life.
- Optional oil or grease lubrication at lower speeds.
- External cooling fans to dissipate heat, thus keeping the bearings cool.
- Impeller release collar to ease impeller removal (larger models).
- Lifting lugs on all major components.
- Improved assembly and disassembly procedures.
- Pump shaft sealing options include packaging, mechanical and expeller seals.

Integrated Pump Technology redefines dewatering

Jordan Marsh, managing director of Integrated Pump Technology, highlights the rapid rise of the company from its founding in 2014 to its official recognition as the world's largest Grindex distributor and a growing force in mine dewatering across sub-Saharan Africa.

As African mines push deeper and face ever-harsher conditions, one challenge remains constant: water. Whether it is groundwater seepage, seasonal flooding or slurry-laden sumps, reliable dewatering is non-negotiable. Rising to meet this need is South Africa-based Integrated Pump Technology, now officially recognised as the world's largest Grindex distributor and a growing force in mine dewatering across sub-Saharan Africa.

Founded in 2014, Integrated Pump Technology has achieved what few could in just over a decade: building a continent-wide reputation for reliability, speed and technical depth. Managing Director Jordan Marsh attributes this success to an unrelenting focus on customer realities.

"From the start, our goal was simple: to provide fit-for-purpose dewatering pump solutions that actually work in African mining environments," Marsh says. "We have built our business around understanding the conditions our customers face, whether that is a deep underground copper mine in Zambia or an open pit in Senegal."

This hands-on philosophy has underpinned Integrated Pump Technology's remarkable rise. Its longstanding partnership with Grindex, the Swedish manufacturer of robust electric submersible pumps, has enabled the company to deliver consistent performance where other solutions falter.

A pump built for Africa

The Grindex range is engineered for the world's most demanding jobs, and Africa's mining sector has put that claim to the test. Known for their rugged construction, high efficiency and ease of service, these submersible pumps handle flow rates up to 100 litres per second and heads of 200 metres. Mines across the Democratic Republic of Congo (DRC) and Zambia have come to rely on them as groundwater levels rise with deepening operations.

At one major DRC copper mine, a fleet of Grindex submersibles ranging from 5.5 kW to 90 kW has been running continuously since 2022, providing critical water control with minimal downtime. "When you are hundreds of metres underground, reliability is everything," Marsh explains. "These pumps have proven their ability to perform under extreme conditions, ensuring both productivity and safety."

To maintain that reliability, Integrated

Pump Technology's teams work closely with mine operators and its in-country partners to assess dewatering applications, recommend the right solutions and provide spare parts and technical support. "You can't sell pumps into Africa from a distance," Marsh adds. "You need people on the ground who understand what customers are facing every day."

Dual Strength: Electric and Diesel Solutions

Integrated Pump Technology's strength lies not only in its products but also in its versatility. The company represents two of the world's most respected brands, Grindex and Godwin, offering both electric submersible and diesel-driven dewatering solutions.

"In some regions, grid power is simply

Integrated Pump Technology's hands-on support model helps mining operations correctly specify and optimise Grindex pumps, ensuring reliable water control in both underground sumps and expanding open pits.

Integrated Pump Technology continues to strengthen mine dewatering performance across Africa with its rugged Grindex submersible pumps engineered for deep, abrasive underground conditions.

With Godwin diesel-driven units proven in remote and high-head applications, Integrated Pump Technology ensures that mines maintain reliable dewatering even when electrical supply is unstable or unavailable.

unavailable or unreliable," Marsh notes. "That is where our Godwin range comes in. With these diesel-driven pumps, we can support high head, high volume or remote applications where mobility and endurance are critical."

The Godwin HL160, for example, is already in operation in Zambia, delivering dependable high-head dewatering performance in open-pit operations. Higher up the range, the HL160 and HL270 deliver heads up to 300 metres and flows of around 300 m^3/h for deep-pit or long-distance pumping applications.

Together, Grindex and Godwin provide Integrated Pump Technology with a full-spectrum dewatering capability unmatched in the African market, from underground sumps to open pits, for permanent installations or emergency flood control.

West Africa: the next frontier

The company's latest milestone came in July 2025, when it was officially appointed as a Grindex distributor for West Africa. The move reflects Integrated Pump Technology's sustained growth and the trust it has earned within the global Grindex network. "We see significant opportunity in West Africa," Marsh says. "The region experiences high rainfall and hosts numerous wet mining operations. Reliable energy-efficient dewatering isn't optional – it is essential."

To support this expanded footprint, Integrated Pump Technology has established a bonded warehouse in Ghana, stocked with a range of Grindex units, including the 37 kW Maxi and 90 kW Mega models. The facility drastically reduces lead times and ensures customers can access critical equipment and spares quickly,

Integrated Pump Technology's expanding African footprint ensures that both Grindex and Godwin pumps are supported by rapid response, local stockholding and technical expertise.

a decisive advantage in a sector where every hour of downtime counts.

"This isn't just about logistics," Marsh emphasises. "It is about service continuity. We have replicated the same support model that has worked so well in Southern and Central Africa: local stockholding, technical backup and training for our distributors."

Engineering trust across the continent

In markets such as the DRC and Zambia, Integrated Pump Technology's customer-centric model has already proven its value. Mines operating at greater depths require not only high head pumping capacity but also assurance that systems will continue to operate despite voltage fluctuations, abrasive materials and limited maintenance windows.

At the same time, Integrated Pump Technology's technical teams regularly travel to site to conduct audits and optimise pump configurations. "A properly specified pump saves money and prevents failure," Marsh says. "It is not just about selling a pump but about ensuring the whole dewatering system performs as it should."

What also makes Integrated Pump Technology's success noteworthy is its consistency. The company has steadily extended its footprint from South Africa into Central, East and now West Africa without losing its agility or customer focus. Its strategy is built on three pillars: technical expertise, local presence and rapid response.

"Each market has unique challenges, but the fundamentals remain the same for our team: understand the application, deliver the right technology and back it up with support," Marsh concludes.

https://www.pump-technology.com/

Maximising dewatering efficiency at extreme depths

Offering a maximum head of 235 m and a maximum flow of 2 000 m³/h, the new Atlas Copco PAC SH self-priming centrifugal single-stage pump range, now available from IPR, provides a suitable dewatering solution for deep mining environments without the need for complex, costly multistage pumping systems.

The latest from IPR is the Atlas Copco PAC SH self-priming centrifugal single-stage pump range. With a maximum head of 235 m and a maximum flow of 2 000 m³/h, the range – the largest in IPR's expansive dewatering portfolio – is the answer to efficient pumping needs at extreme mining depths.

Amid growing global demand for minerals, deep opencast mines have become an industry reality as near-surface deposits deplete rapidly. These operations often contend with significant water ingress, which, if not properly managed, can result in flooding, equipment damage and safety hazards.

Steve du Toit, Sales Manager at IPR, says that, traditionally, mines have resorted to multi-stage centrifugal dewatering systems to pump water from extreme depths. However, the complexity of these systems increases with mining depth. The addition of piping and pumping stations in multi-stage set-ups not only requires more equipment but also increases maintenance needs.

With their high lift capability, Du Toit says, PAC SH pumps can move water directly from deeper levels of the pit without requiring multiple stages. This translates into easier installations, less equipment to maintain, and more efficient dewatering, allowing deepening mines to cut costs and increase efficiency.

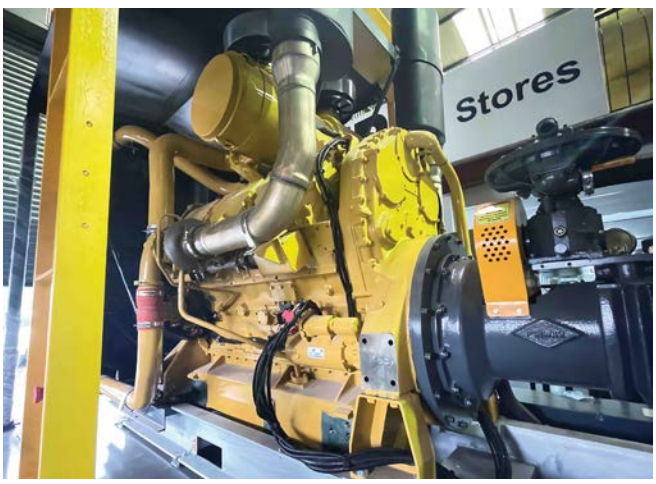
"The PAC SH self-priming centrifugal single-stage pump range stands out due to its ability to deliver greater lift and efficiency than conventional multi-stage centrifugal dewatering systems often used at extreme depths. The advanced design and capabilities mean that fewer pumps are needed, set-up is simpler, and performance is more consistent in deep pit dewatering applications," Du Toit says.

The PAC SH complements an existing broad portfolio that already includes the VAR, PAS and PAC ranges, allowing IPR to offer mines a full suite of dewatering solutions for each stage of pit development, from breaking ground to deep levels.

"The extended PAC range means mines can now match the right pump to each stage of pit development – from medium depth to very deep pits. This flexibility ensures efficiency at every stage and provides operational teams with the confidence that the right solution is always available," Du Toit concludes.

https://www.pumprental.co.za/

The PAC SH pump streamlines deep pit dewatering by reducing the number of pumps required and simplifying the overall setup.



Left: ***The PAC SH high-head pump is built to handle high concentrations of solids and abrasive materials, making it well-suited to demanding site conditions.***
Right: ***The PAC SH pump's lower fuel consumption and longer service intervals help reduce overall operating costs.***

Osmotic Engineering's landmark year

Infrastructure advisory company Osmotic Engineering Group (OEG) has marked 2025 as a defining year of growth, influence and international expansion, following its role in one of South Africa's most significant national energy studies, the delivery of large-scale African water infrastructure projects, and the strengthening of its position as a specialist infrastructure advisory firm.

At the core of 2025 was OEG's collaboration with PwC South Africa on the landmark national study, 'South Africa's Energy Sector Investment Requirements to Achieve Energy Security and Net Zero by 2050'. Commissioned through a partnership with the Development Bank of Southern Africa (DBSA), the Presidential Climate Commission (PCC), the National Planning Commission (NPC) and National Treasury through the SA-TIED Programme, the study has laid out a long-term investment and infrastructure roadmap for South Africa's electricity sector. Technical and expert inputs from SANEDI, Eskom Holdings and the University of Cape Town further strengthened the study.

Andrew Johnson, Energy Director at OEG, says the project represented a significant national contribution. "This was effectively a new generation of long-term energy modelling for South Africa. We developed detailed energy system models using open-source software that tested multiple future pathways to 2050, balancing energy security with emissions reduction. Our role was to build and validate the technical foundation for quantifying generation, transmission and distribution investment needs. It was a complex, multi-year process, but one that has real value for long-term planning and infrastructure funding."

The collaboration with PwC has extended beyond national modelling. In 2025, OEG and PwC were appointed by Eskom to support the establishment of Eskom Green, a new ring-fenced renewable energy business designed to accelerate the utility's participation in South Africa's clean energy transition. The work includes strategic and technical advisory on project pipelines, risk management, operational structuring and market positioning.

Johnson adds: "With Eskom Green, we are helping shape what a modern, competitive renewable energy business looks like inside a public utility. The focus is on making projects bankable, understanding risks early, and aligning technical delivery with commercial and market realities. This builds directly on the national level work we have done through the PwC partnership."

OEG's energy advisory credentials were further strengthened through its ongoing role as technical advisor to Discovery Green, one of South Africa's leading private energy traders. During 2025, key milestones were achieved on large-scale wind and solar projects, including financial close on significant utility-scale developments in the Western Cape and Limpopo.

Johnson says: "Our work with modelling the national electricity system allows us to apply the same modelling and advisory tools to major private energy offtakers. We help clients understand how to decarbonise at the lowest system cost, where to invest and how to structure projects so they can reach financial close."

Beyond energy, OEG's water infrastructure portfolio expanded significantly in 2025. In Cameroon, the company was appointed as the owner's engineer for what is now one of the country's most ambitious water infrastructure projects. Located in Douala, the ultrafiltration water treatment project is aligned with the directives of President Paul Biya and Cameroon's Five-Year Priority Investment Programme for 2023-2027, as well as the country's Strategic Development Plan for 2026-2030.

The project will expand plant capacity from 55 to 123 megalitres of water per day, supporting the national objective of achieving 85% urban and peri-urban drinking water coverage by 2032. Funded by international development finance institutions, the project has positioned OEG firmly on the continental infrastructure stage.

Tony Igboamalu, CEO of OEG, says the project reflects the company's long-term vision. "This project in Cameroon is not just about a treatment plant; it is about resilience, dignity and long-term national development. We are honoured to serve as owner's engineer on a presidentially mandated programme that will fundamentally change access to potable water for thousands of people. It reflects the kind of high-impact, advisory-led infrastructure work that defines OEG."

OEG also supported South African water-sector innovation in 2025 by participating in the launch of the Emfuleni Special Purpose Vehicle (SPV) for water and sanitation infrastructure, alongside Rand Water, government stakeholders and private-sector partners. The SPV is designed to unlock long-term financing for high-impact water and sanitation projects through structured public–private partnerships.

Igboamalu comments: "The creation of the Emfuleni SPV represents a shift in how we finance and deliver water infrastructure in South Africa. At OEG, we believe that strong technical advisory combined with innovative funding mechanisms is the only way to close the infrastructure gap."

Further strengthening its water and sanitation leadership, OEG secured official approval in Lesotho to implement Biopipe, a decentralised wastewater management system. The technology is designed to deliver zero-sludge, odourless wastewater treatment for urban, rural, and off-grid communities, supporting scalable, climate-resilient sanitation.

"OEG is deeply committed to decentralised, smart and resilient water systems for Africa," highlights Igboamalu. "Technologies such as Biopipe and advanced filtration enable us to deliver sustainable sanitation solutions that are affordable, scalable and fit for the realities of African cities."

At the national level, OEG was appointed in 2025 to the Department of Water and Sanitation's strategic advisory panel to support long-term infrastructure planning. The company also advanced projects with Dipula, advising on water efficiency strategies across a national property portfolio, and supported infrastructure planning in Buffalo City Metropolitan Municipality and Amathole District Municipality through advisory work linked to institutional funding and public–private partnership readiness.

The group has also expanded its telecommunications capability into a broader information and communications technology (ICT) offering, reflecting the growing importance of data, digital infrastructure and intelligent systems in large infrastructure programmes.

Geographically, OEG made strategic advances by formally establishing OEG Lesotho to target significant cross-border infrastructure opportunities and registering an OEG entity in the United States as part of a long-term global growth strategy. Looking ahead, OEG has positioned 2026 as a year of consolidation and international growth, with a sharpened focus on advisory-led delivery.

"Our strategy is clear," says Igboamalu. "We are building OEG into a global infrastructure advisory business. We are moving deliberately beyond traditional design engineering into high-value, strategic advisory, owner's engineering and project anchoring. We bring together technical, financial, legal and environmental expertise to make projects bankable, fundable and sustainable. That is how infrastructure should be built."

As South Africa and the wider African continent confront increasing energy demand, climate pressures, and water scarcity, OEG believes the role of integrated, technically led advisory firms will become increasingly critical.

"With collaboration, innovation and purpose, we are helping shape infrastructure that lasts," concludes Tony Igboamalu.

https://osmoticengineeringgroup.com

Ceramat retractable sensor fittings: the solution for extreme conditions

Process measurement and control specialist Henning Springer of Mecosa presents the key advantages of using Knick Ceramat fittings to protect and manage process control sensors in harsh, corrosive, abrasive, toxic, sticky or fibrous processing applications.

Ideal for accurate continuous monitoring of pH, dissolved oxygen and conductivity in harsh environments, the Ceramat retractable fitting from Knick features advanced flushing, calibration and cleaning functionality for the built-in sensors used for process management.

"Ceramat retractable systems are used in several processing plants in South Africa, including minerals processing, petrochemical, food and biotechnology facilities. Most notably, the system uses a ceramic-on-ceramic rotating seal between the measured medium and the outside environment, which delivers resistance to acids and abrasives," begins Henning Springer, MD of Mecosa, South Africa's niche process variable specialist.

According to Springer, one of the early success stories of the Ceramat system comes from the chocolate industry, where it is used for particle-size measurement and control. "With chocolate, the finer the grind of the cocoa, the better the quality and taste of the chocolate. The problem, though, is that cocoa grinding accounts for 40-50% of production costs. So, a smooth chocolate that melts on your tongue is typically more expensive," he points out.

Today, SOPAT optical sensor systems, utilising the Knick Ceramat, are used to measure and control the grind size of cocoa used in chocolate production. However, with chocolate and other food products, optical sensors tend to foul quickly, so automatic sensor cleaning is required, with the sensor having to be removed from the process chamber.

This separation and subsequent sensor cleaning are performed using the Ceramat solution, which eliminates O-ring sealing issues associated with traditional sensor retraction systems. Instead, two planar ceramic discs that rotate towards each other are used to withdraw the optical sensor from the process fluid into a separate, sealed cleaning and calibration chamber with built-in flushing and recalibration systems tailored to the sensors in use.

Particle size is also a critical process-control parameter in the mining industry. The electricity cost of grinding ore in mills before it passes into the metallurgical plant for recovery and liberation of the high-value product accounts for the largest share of the processing circuit's cost. Oversized material must be returned for further grinding, while overground material consumes unnecessary energy and may even be lost as ultra-fines in the downstream process.

Ceramat retractable fittings have found a niche in applications where pH, redox, dissolved oxygen, and conductivity measurements are critical for managing production processes or reactions.

Knick Ceramat fittings protect and manage process control sensors in harsh, corrosive, abrasive, toxic, sticky or fibrous processing applications.

"So we measure the grind size by putting a sensor on the output to minimise the amount of grinding energy needed to liberate the target mineral," Springer explains, adding that the Ceramat system is not yet used for these applications. Instead, Mecosa offers a purpose-built particle-size probe for the mining industry.

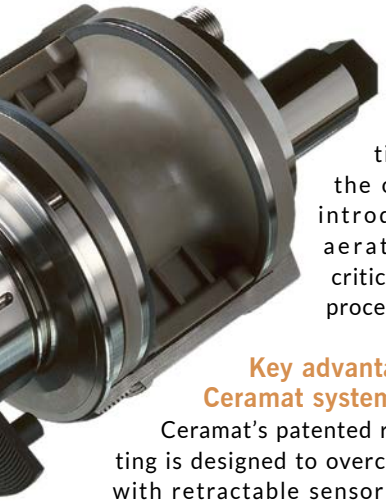
Electrochemical sensing

The Ceramat retractable fitting has found a niche in applications where pH, redox, dissolved oxygen, and conductivity measurements are critical to managing production processes or reactions. These are all electrical-based sensors. A Clark cell, for example, works by diffusing dissolved oxygen across a membrane to a platinum cathode, where it is electrochemically reduced. The current produced from this reaction is proportional to the dissolved oxygen concentration of the process fluid.

Measuring pH also uses the electrochemical cell principle, in which hydrogen ions migrate across a gel-based membrane in the sensing tube. The direction and extent of this transfer are directly related to the pH in the process vessel.

Control of dissolved oxygen and pH is used in fish farming, for example, to optimise healthy growth and survival rates and to promote conditions for beneficial microorganisms. "The typical Knick Ceramat units used for many industries include control and evaluation systems and pond cleaning solutions," says Springer.

They are also used in wastewater treatment due to the chemical processes in-



volved. "For the optimisation of activated sludge, the oxygen levels introduced during aeration become critical to the whole process," he adds.

Key advantages of Ceramat systems

Ceramat's patented retractable fitting is designed to overcome problems with retractable sensor systems that rely on O-rings, which tend to fail quickly under harsh conditions and in corrosive/abrasive media. "Sealing is achieved using a ceramic material, which is harder than steel and highly resistant to chemical, thermal and mechanical influences, which guarantees much greater uptime," notes Springer.

To ensure the best possible resistance to process fluids and external environments, the static outer housing options for Ceramat fittings include PVDF, PEEK, stainless steel, Hastelloy, or titanium, each known for its chemical and UV resistance, strength and thermal stability, depending on the process medium.

The housing also ensures the sensors remain stationary and free of mechanical stress. "The system also offers options for several immersion depths, which are specially developed for measurements in conduits, thick-walled thermally insulated reactors, and large containers where the measurements need to be taken away from the side walls," he tells *MCA*.

Ceramat's design enables easy maintenance by allowing the entire drive unit to be removed under full-process conditions. The process medium, whether corrosive, hot, toxic and/or under pressure, remains reliably isolated. If a sensor is broken, it can be removed, replaced, recalibrated and cleaned, without stopping the process.

"The compact pneumatic rotary-lift motor and its integrated control valves can all be removed and replaced from the unit safely and without interruption," Springer assures.

Systematic process analysis

In addition to the fitting itself, Knick also offers a complete measurement and control solution via its Unical Controller and Protos Process Analysis System. "Knick has developed a fully automated measuring loop with uniquely high levels of safety and reliability. Its immersion fittings can be automatically cleaned and calibrated without contaminating the process medium.

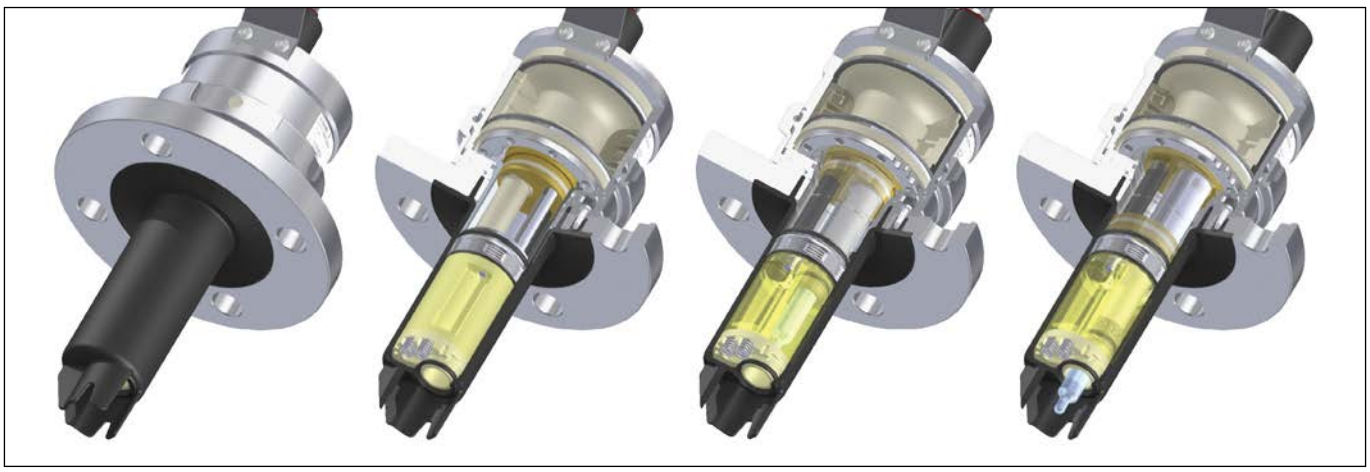
"The controller is compatible with analogue and digital sensors. It is a 4-wire system with two explosion-protected active outputs and a modular structure that enables simple retrofit or conversion.

"Knick Ceramat systems offer the most robust and reliable solution for measuring pH, conductivity and dissolved oxygen, as well as several other process variables, where conditions are unsuitable and unsafe for any alternative option," concludes Henning Springer.

https://www.mecosa.co.za/

Ceramat WA 154 and WA 160 versions have particularly high immersion depths for measurements in conduits, thick-walled thermally insulated reactors and large containers where measurements need to be taken at a distance from the outer wall.

In addition to the fitting itself, Knick also offers a complete measurement and control solution via its Protos Process Analysis System (left), its Unical Controller, and metering pumps with cleaning and calibration solutions.



A unique feature is the easy removal of the entire drive unit under full process conditions. The process medium, whether it's corrosive, hot, toxic and/or under pressure, remains reliably isolated, and ff the sensor is broken, the calibration chamber can be cleaned under process conditions.

AI-led mine shaft scanning takes centre stage

Advancements in automated visual and LiDAR scanning technology for mine shafts were on display at the 'Shaft Inspections 4.0: A New Revolution' event held in Johannesburg on 12 November. ABB attended as part of its ongoing commitment to delivering digital and AI-driven solutions that enhance infrastructure management across the mining sector.

"Shaft scanning is one of the initiatives that we are looking into to expand our services offering to hoisting customers. We see great potential in this technology, and more generally in providing digital and AI-driven solutions to the mining industry," says John Manuell, Global Business Unit Manager at ABB.

The specialist industry event, hosted by Dwyka Mining Services and Point.Laz, brought together mining engineers, hoisting specialists and inspection professionals to explore how traditional manual shaft inspections are being replaced by autonomous, drone-based, and data-driven technologies. These platforms can generate high-resolution structural models while reducing human exposure to hazardous underground environments.

"Our focus is on integrating autonomous inspection data into hoisting, safety and asset management systems, particularly in deep-level mining environments common in South Africa," says Henk Wiedemann. "The industry's key challenge is no longer sensor capability, but the validation and operational use of data."

Alex Grenier, CEO of Point.Laz says the technology was designed around real mining conditions. "Our system was built to create spatially repeatable datasets that allow engineering teams to track deformation, structural fatigue and water ingress over time, enabling a shift from reactive repairs to predictive, engineering-led interventions."

Jamie van Schoor, CEO of Dwyka Mining Services, says the focus is on improving safety and operational efficiency. "By reducing exposure time and improving data quality, we allow highly skilled personnel to focus on diagnostics, planning and execution rather than high-risk, time-limited inspection work."

Point.Laz demonstrated its Lazaruss 3D scanning system, designed to generate repeatable datasets that can be linked to digital maintenance platforms to enable condition-based maintenance and improve long-term asset planning.

John Manuell, Global Business Unit Manager at ABB.

ABB continues to invest in innovative inspection and automation technologies that support safer, more efficient and more sustainable mining operations. With decades of expertise in hoisting systems and electrification, the company aims to enable data-driven decision-making and improved asset performance for customers across the region.

https://new.abb.com/

Practical skills for real opportunities in Africa's automotive sector

Maureen Phiri, Director at Oxyon People Solutions, highlights the role of skills development in transforming and automating the local automotive industry.

South Africa's automotive sector is entering a time of rapid transformation as electric vehicles, hydrogen technologies and automated manufacturing begin reshaping how vehicles are built, serviced and maintained. The skills required in this environment combine engineering, software, diagnostics and human creativity, and they will determine whether the country keeps pace with global change.

Preparing young people for this future cannot start at matric level; it must begin in primary school through early exposure to mechanical systems and technology-driven problem-solving. It then needs to continue in high school through strong maths and science pathways, and to extend into Technical and Vocational Education and Training (TVET) colleges and industry-linked training that translates early interest into practical capability.

With youth unemployment high and many workers trained for roles that no longer align with industry needs, South Africa must build clear pathways that guide learners from their early schooling into technical and engineering careers, shaping the automotive sector's future.

Automation, diagnostics software and renewable energy technologies are already redefining daily work in automotive plants and workshops. Some manufacturers continue building vehicles manually, but many of the sector's global leaders are shifting toward automated factories where machines handle assembly tasks and technicians focus on monitoring systems, interpreting data, and solving advanced engineering problems.

As connected vehicles become the norm, the industry will also require more software developers, data analysts, cybersecurity specialists and coding expertise alongside engineers and artisans.

However, technical skill alone will not be enough. Creativity, leadership and human judgement will remain central, even as technology drives efficiency. South Africa risks falling behind if learners opt out of science and maths before they understand the opportunities these subjects unlock. Without early encouragement and stronger guidance from parents and teachers, the country will continue to see high dropout rates in these subjects and fewer young people prepared for the qualifications demanded by the evolving vehicle production landscape.

Children already navigate technology-rich environments, and this familiarity creates an opportunity to introduce mechanical thinking long before subject choices begin. Simple robotics, basic mechanics and systems thinking in primary school will help learners make sense of how things move and operate. When these ideas are nurtured early, it becomes easier to build technical competence later; upskilling is far less daunting for someone who already understands the basic principles behind technology and mechanical systems.

This early grounding also smooths the transition into high school, where subject choices become pivotal. Grade 10 is a turning point in South African education, when learners decide whether to pursue maths, science and technical subjects, which are the disciplines required for engineering and automotive careers. Schools and parents play an essential role here, guiding learners towards subjects that align with future opportunities rather than steering them away from perceived difficulty. At the same time, more visible engagement from TVET colleges and technical training providers can help shift perceptions that universities are the only credible study route.

TVET colleges are essential to building a workforce capable of supporting the production of electric, hydrogen and hybrid vehicles, yet universities still overshadow them. These colleges offer practical, industry-aligned training that can place young people directly into engineering, manufacturing and automotive environments. As South Africa prepares for new automotive manufacturers to set up local operations and for production to shift toward renewable energy technologies, colleges will become even more critical in equipping learners with the skills they will need for automated factories, advanced diagnostics and emerging fuel systems.

However, the sector also faces a significant challenge: skills mismatches, with workers trained only in traditional mechanical methods at risk of being left behind as factories modernise. The solution lies in coordinated action between government, industry and educational institutions. Partnerships are already being discussed to align training programmes with the demands of modern automotive production, expand apprenticeships and strengthen learnerships.

This includes the Youth Employment Service (YES) programme, which is designed to create work experience opportunities for young people who are unemployed and have limited or no prior job exposure. However, the most important shift is ensuring that preparation begins early and continues through each stage of education, so learners move steadily towards the technical careers that the future automotive sector will depend on.

South Africa has the ideas, the ambition and a generation already fluent in technology. What is needed now is a unified education-to-industry pipeline that nurtures early mechanical curiosity, strengthens science, technology, engineering and mathematics (STEM) pathways, elevates TVET colleges, and ensures that training aligns with the demands of new-energy vehicle production.

By building these foundations from the earliest years of schooling, South Africa can develop a workforce with the practical and technical skills needed to create, support and advance the vehicles and technologies that will shape the country's automotive future.

https://oxyon.co.za/

SEW-EURODRIVE's expanding gearbox repair and refurbishment services

By offering comprehensive gearbox repair and refurbishment services, including reverse-engineered and remanufactured gearboxes for reputable brands, SEW-EURODRIVE is addressing the lack of OEM support in the South African market. MD Raymond Obermeyer takes MCA on a tour of the existing capabilities and highlights what is to come after the 2026 move to the new 17 000 m² service and repair facility.

"OEMs in South Africa are becoming overfocused on sales. Very few can service their gearboxes anymore. We are getting more and more inquiries, and on our current repair-shop floor, 50% to 60% of the work we are doing is for non-SEW-EURODRIVE gearboxes," begins Raymond Obermeyer, MD of SEW-EURODRIVE, South Africa.

"Many don't even stock parts," he continues. "This is why we are expanding our after-sales service offering, not only to offer comprehensive support for our SEW-EURODRIVE solutions, but also to support the other equipment brands being used on our customers' mines, factories and industrial sites," he tells *MCA*.

SEW-EURODRIVE has been repairing gearboxes from its South African assembly facilities for many years. "We are already using reverse engineering techniques to repair and refurbish gearboxes from several OEMs. Our process is now very well established, and we have gathered an excellent team of specialists with considerable combined experience," he says.

The process starts at the wash bay, where client gearboxes, "which tend to be filthy when they arrive", are cleaned. Non-SEW-EURODRIVE gearboxes are then scanned using one of SEW-EURODRIVE's handheld laser scanners to produce a point cloud mapping of the unit's dimensions. "The gearbox is then carefully stripped, and after shot blasting, every component is scanned to build up a complete picture of the repairs needed. A detailed assessment of each component's condition follows, repair needs are identified, and a quotation is prepared for the client to help them decide whether to purchase a new unit or have the existing unit repaired.

"If the repair quote is accepted and an order comes in, then we begin the process of getting gears manufactured, sourcing the bearings and replacing or remanufacturing worn or damaged shafts, housings and any other compromised components," Obermeyer explains.

From a dimensional perspective, laser scanners enable SEW-EURODRIVE to determine the original surface form and dimensions of any worn part, enabling drawings to be generated. "We currently send these drawings to Germany for use to manufacture new gear sets to OEM specifications," he says. "We will never try to replace one or two gear wheels in a set, though, as many local repair shops will try to do. We replace the complete matching set of gears, so they all start in the same condition with the same OEM quality," he assures.

Citing a current repair on the shop floor, he says that, in some cases, SEW-EURODRIVE service engineers can make design changes to gearboxes to improve their reliability. One large gearbox for a mine in Limpopo had experienced

Laser scanning technology enables SEW-EURODRIVE to accurately map worn components and reverse-engineer complete gearsets to OEM specifications.

SEW-EURODRIVE's advanced gearbox repair and refurbishment service provides OEM-quality support for both its own units and those from other leading global brands.

repeated breakdowns. An experienced SEW-EURODRIVE engineer pinpointed the problem. In cold weather, the oil thickened and, at startup, could not flow through the OEM-designed channels. "By redesigning these oil flow channels, the problem was overcome, making our repaired gearboxes even better than the OEM units. As a result, we are now busy re-engineering the whole fleet of these units," Obermeyer tells *MCA*.

In the New Year, a new 17 000 m² service and repair facility, across the road from the assembly facility and head office in Aeroton, will become the new home for all SEW-EURODRIVE's OEM-quality gearbox servicing and refurbishing activities. The facility will have new wash, shot-blasting, and stripping bays, along with a new 3D-scanning station mounted on a robotic arm to complement the two handheld scanners already in operation. "When we move over to the new service facility, we will have a scanning station in a room of its own, with a robot to manipulate the laser head and rotators to move the parts, similar to the ones that the automotive industry uses to scan chassis to look for imperfections," he says.

Gear-set replacement and assembly

"While most of the gear-set manufacturing, particularly for the SEW-EURODRIVE gearboxes, will still be done in Germany, we are also investing in two small gear-grinding machines to enable us to start doing some of the gear grinding, as an alternative to the five-axis CNC machines that we can use for cutting standard helical and bevel helical gear wheels," Obermeyer continues.

"All gearsets for non-SEW-EURODRIVE OEMs are manufactured according to SEW-EURODRIVE's rigorous standards, using the same quality steel, heat treatment and shot peening processes. This ensures that our aftermarket offering is underpinned by the same quality standards as our new product ranges," he assures.

Currently, SEW-EURODRIVE is using its SEW Assembly Plant lines to reassemble remanufactured gearboxes. These assembly facilities are being replicated at the Service Centre to do this work. "We use the same procedures and processes for assembling repaired gearboxes as we do for new product assembly to ensure that refurbished or remanufactured units are delivered in a genuinely as-new condition," Obermeyer tells *MCA*.

Housing repair and fabrication

While used gearbox housings can often be cleaned up and machined, they can also pose problems. "Every time a housing is machined, the tolerances get larger, a bush or a sleeve may have been welded in, affecting the meshing precision of the gears. Additionally, we have brought in two sand blasting machines

Dedicated assembly lines at the new Service Centre will enable SEW-EURODRIVE to deliver fully remanufactured gearboxes in as-new condition, with improved turnaround times.

of different sizes to handle housing up to 10×10 m or 90 t.

So after sandblasting, we can perform a more accurate scan of the housing. Then, if necessary, we can have a new one manufactured, initially from one of our local foundries, or in some cases, we can fabricate a new housing," he tells *MCA*. The new facility will include a fabrication workshop, primarily for custom base plates and frames, and potentially for housing fabrication as well.

"We have already had replacement housings manufactured for big underground conveyors in the coal mining industry, purely as a favour to our client. These were cast locally, and we then did the machining before rebuilding the gearboxes," he says, adding that the OEM for these gearbox housings no longer had stock anywhere in the world.

Delivery times and capacity

In terms of delivery times for refurbishments involving gearsets, he says that, as soon as the scanning is done and uploaded, it gets sent to the machine shop in Germany, which can produce a set of gears within three to four weeks. "Meanwhile, we will get everything else ready for assembly, which we can complete within a few days of receiving the new components from Germany," he says.

With all repair and refurbishment activity moving to the new SEW-EURODRIVE Service Centre, capacity for new assembly will be freed up. "New assembly will be faster and easier to schedule, and in the space currently being used for repairs, we also intend to start assembling our large SEW-EURODRIVE P-series planetary gearboxes. This will help improve lead times for imports to between two and three weeks and, in doing so, offer customers in the sugar and pulp & paper sectors a better all-round service."

While the supply of new equipment is still the core business of SEW-EURODRIVE's business, the service side is becoming increasingly important. "With the dedicated service facility and the extended service offering, which includes field services, training and a new range of service level agreements (SLAs), we expect servicing to contribute up to 40% to our turnover when we are fully up and running.

"This is another new state-of-the-art facility designed to address the real needs we already know exist, both locally and across Africa. We are sure it is going to make 2026 a very successful year for us," Raymond Obermeyer concludes.

https://www.sew-eurodrive.co.za/home.html

In the workshop, specialist technicians strip, assess, and rebuild gearboxes using high-precision processes identical to those used to assemble new SEW-EURODRIVE units.

KSB SupremeServ: SA's comprehensive aftermarket pump service

MCA meets with KSB Pumps and Valves' SupremeServ team members, who offer industry-leading pump services, including repairs, spares, refurbishments, upgrades, and engineering solutions for in-service pumps from KSB and other brands.

KSB SupremeServ Manager in South Africa, Friedrich Görgens, says SupremeServ is responsible for after-sales care of all KSB pumps. This includes installation, testing, and commissioning from the concrete level up, including the valves, piping, and electrical connections.

The services provided offer customers a flexible solution, allowing them to choose assistance from a SupremeServ Field Service Specialist to oversee installations, alignments and commissioning, or to handle the complete installation. Once operational, SupremeServ offers lifetime repair and refurbishment services for its pumps and valves, either as part of a long-term contract or on an ad hoc basis. The service also extends to non-KSB equipment brands.

The SupremeServ management team includes Stephen Bale, the Sales Manager; Johan Mey, the Field Service Manager responsible for the local team of field service specialists; and David Mathonsi, the Operations Manager, responsible for the company's Service facility in Germiston, where pumps and valves can be serviced in their entirety.

Wesley Bartholemew is the manager of KSB's Spartan Distribution Centre, which stores spares for delivery wherever they are needed. "Our Distribution Centre supplies replacement parts to the whole of sub-Saharan Africa as well as exports across the globe. Our local manufacturing plant is still producing replacement parts for pumps installed in the 60s and 70s, and like all of our products, they can still be upgraded. KSB's online platform also enables registered clients to order the parts they need and have them delivered directly to their premises."

SupremeServ sales

Bale says the heart of SupremeServ is ensuring that all the pumps sold by KSB Pumps and Valves perform at their best efficiency throughout the life of the pumping system. This can only be achieved if the equipment is correctly and regularly serviced, timeously repaired to minimise downtime, and refurbished as soon as wear starts to reduce efficiency and increase pumping costs.

"This is best achieved by developing a long-term service contract with customers and users where we have nurtured relationships with users, big and small. A good example is the energy sector, where we have serviced ongoing pump refurbishment needs for units that are often old or no longer supported by the original suppliers. This is particularly important on critical pumps for which the industry cannot afford unscheduled stoppages."

"For other critical applications in the mining, agricultural and water sectors, our services are also used on an ad-hoc basis, in addition to regular assistance to support the petrochemical and chemical (PCC) sectors,

KSB's SupremeServ is an industry-leading pump services offering that includes repairs, spares, refurbishments, upgrades and engineering solutions for any in-service pumps from KSB and other brands.

the pulp and paper sector and the critical water and wastewater sectors.

We are also able to develop industry-specific customised service contracts at any level of service to help pump users manage their assets better," says Stephen Bale.

He advises that before deciding to replace pumping assets, clients should consult KSB's SupremeServ team. "We can often refurbish and upgrade existing pumping systems more cost-effectively, which can result in significantly extended life and ongoing cost savings. This approach is operationally smart, cost-effective and environmentally responsible. It also improves asset availability, making this service well-suited to our ageing water infrastructure."

Görgens notes that new pumps may not fit existing infrastructure, potentially requiring a new plant. By comparison, KSB SupremeServ's team can upgrade the capacity of existing pumps on the same footprint, extending the life of a water or wastewater plant at a fraction of the cost of a new plant.

KSB's Jet Park Workshop comprises 4 400 m² of under-roof space, eight fully equipped work centres for refurbishing the KSB pump range, and three dedicated work centres for refurbishing boiler-water recirculating pumps used during boiler start-up or shutdown.

The SupremeServ Jet Park Workshop

Operations Manager, David Mathonsi, says the Jet Park Workshop is about to be extended due to additional work volumes coming in. "This speaks to the quality of the repair and refurbishing support we offer our customers, which all stems from the technical skills of our shopfloor and supporting staff."

The current plant comprises 4 400 m² of under-roof space, eight fully equipped work centres for refurbishing the KSB pump range, and three dedicated work centres for refurbishing boiler-water recirculating pumps used during boiler start-up or shutdown. These are large KSB pumps that operate at high pressure and temperature.

The SupremeServ workshop is also set up to refurbish the flue-gas desulphurisation pumps for a large power plant. "These pumps have 900 mm suction and discharge piping, which draw about 1.2 MW of power. They spray an abrasive limestone slurry into the flue-gas stream to remove sulphur dioxide (SO2). We also refurbish other critical pumps like API pumps for the chemical industry, replacing the mechanical seals and restoring pumps to their as-new specifications."

Mathonsi explains that SupremeServ's own machine shop, with additional support from the KSB Pump and Valves manufacturing plant in Activia Park, can also manufacture replacement and re-engineered components for pumps and valves, including impellers and impeller wear rings, case wear rings, throat bushes, liners, and more.

"To further improve our lead times, we are turning to automation through new Field Service Management (FSM) software. This system will completely replace paperwork, accelerate recording and communication of progress and ensure accountability for every job that comes into the workshop," he proudly tells *MCA*.

SupremeServ Field Services

Johan Mey, the newly appointed SupremeServ Field Service Manager, manages a team of 16 Field Service Specialists as well as technical, administrative and management staff. "We take great pride in having the first female Field Service Specialist within KSB globally, a milestone that reflects our commitment to diversity and inclusion within this traditionally male-dominated field," he tells *MCA*.

The team's qualifications and experience enable them to deliver a comprehensive portfolio of field services, including electrical installations, assembly and connection of electrical panels for pump systems, and detailed fault-finding and diagnostics. "We also perform pump data capturing and analysis; base and motor installations in accordance with OEM specifications and best engineering practices; as well as in-situ repairs of pumps and valves. Every pump service is supported by a detailed post-completion report that includes our findings, recommendations and performance data to support continuous improvement," Mey adds.

The team repeatedly serves a broad spectrum of industries, including clients ranging from individual farmers with irrigation challenges to operators of supercritical pumps at South African power stations, chemical plants, mines and water utilities, among others. "Our work also extends to municipalities and industrial clients across the region and beyond South Africa's borders into sub–Saharan Africa. Our specialists have even supported projects as far afield as Sri Lanka and Vietnam.

To meet service contract commitments, KSB's SupremeServ Field Services crews are strategically positioned across the country, supported by seven branch workshops, enabling rapid response even after hours. "We pride ourselves on delivering a highly professional and technically sound service. Our wide range of capabilities ensures clients receive the kind of support they need, when they need it, wherever they need it," says Mey.

Another essential part of KSB's SupremeServ offering is System Optimisation Services (SOS). "Our studies show that over 90% of in-service pumps operate outside their intended design point, leading to unnecessary energy consumption and reduced equipment life. Through our data-driven analysis, we are now able to identify and implement targeted efficiency improvements and perform structured root cause analyses of pump failures to deliver measurable gains in performance, energy savings and operational reliability for our clients, worldwide."

In conclusion, Görgens adds that SupremeServ is on a growth path and ready to meet existing and future users' long-term maintenance needs. "We are increasingly aiming at assisting our customers and users to develop long-term maintenance contracts where we take the responsibility for servicing and maintaining systems at their facilities. This can help them overcome expenditure constraints and ensure essential maintenance is completed when needed," he says.

https://www.ksb.com/en-za

Scan the QR code to watch a video outlining SupremeServ's reverse-engineering capabilities.

Ventilation-on-demand and the Venetia Underground Project

The ongoing evolution of the Venetia diamond mine from a surface to an underground operation is preserving one of the country's most prominent sites while setting new benchmarks for sustainable mining. *MCA* talks to Russell Hattingh, MD of BBE Consulting, about the role of advanced ventilation-on-demand in helping Venetia to deliver the mine's enhanced air quality and operational efficiency.

"Ventilation-on-demand (VoD) is more about airflow management than instantaneous optimisation of the ventilation system's performance. That does not diminish the role of real-time control. Rather, effective VoD relies on a well-designed ventilation system that can be dynamically adjusted within safe and efficient operating limits. First and foremost, it's about right-sizing and ensuring proper airflow distribution. Ventilation systems need to be properly integrated into each mine's specific infrastructure, with the capability to meet immediate needs, with built-in expansion plans to meet the needs of the mine's future progress," begins Russell Hattingh, managing director of BBE Consulting.

For the development of the new underground mine at Venetia, BBE was involved from the initial pre-feasibility phase. A new primary air-cooling and ventilation system comprising two water-chilling refrigeration machines and multiple air coolers was designed and commissioned by BBE in August 2022. "Venetia is now looking at incorporating a ventilation-on-demand capability to manage air quality for all underground workers, ventilating specific working areas according to their needs," notes Hattingh.

VoD isn't usual in a conventional mine, he says, but ventilation always needs to be managed. "It's a bit of a buzzword that always comes down to ventilation management. You might call saving money optimisation, but the whole purpose behind a VoD-type system is to manage the mines' ventilation system properly," he argues.

Ventilation-on-demand, he continues, can be as simple as opening and closing dampers and manually switching fans on and off. "But its purpose must be ventilation management so that the air is being sent to where it is needed and not to dormant areas that don't need it," he continues.

To manage a ventilation system properly, however, one needs to know what to do and what the effects will be. There are two aspects of this knowledge: the first is safety, which is the most important, as the underground ventilation system exists to keep miners safe and working in conditions that promote productivity.

Also important is knowing the required air volumes in each area and how opening a damper serving one area will affect the supply to another. "This is where a more complex control system sets itself apart. Modern digital control systems ensure the specified airflow reaches its destination, such as the new ore drive. Manual adjustments can't deliver the certainty that a control system can. Oversupplying one production drive might mean under-delivering to another," he points out, adding that proper ventilation management means getting the right amounts of air to wherever people are working.

Primary and secondary ventilation

Regarding ventilation design, he notes two critical aspects: primary and secondary ventilation. Secondary ventilation is where it starts.

For the Venetia diamond mine, BBE designed and commissioned a new primary air-cooling (BAC) and ventilation system comprising two water-chilling refrigeration machines and multiple air coolers in August 2022.

Venetia is using a progressive sublevel caving operation, where multiple drives will be developed, but only a few will be mined at any one time.

Mining occurs at multiple levels and across different time periods. Before mining begins, a level needs to be developed. And depending on the chosen method, one level could be mined while the level below is prepared.

At each level, secondary fans channel air from the primary ventilation system into the level being developed or mined. The secondary ventilation system also returns the 'stale' air to the primary return system, says Hattingh.

"So, the primary system needs to get enough air down to the level in question, while the secondary system distributes the air on each working level," he adds.

When designing a system, because there isn't an infinite supply of primary air, a fixed quantity is allocated to each level. With ventilation-on-demand, there is a perception that the primary fan is continuously adjusting up and down to match demand. "That's not true. It may be necessary during a brief period if the mine needs to enforce load clipping, for example. In general, however, any disruption in the primary air supply means that mining must stop in some areas because not enough air is available," Russell Hattingh points out.

"So, we design each level for a fixed amount of available flow, using ventilation-on-demand to make sure that each drive, be it a rim drive, an ore drive or just an inspection, receives the necessary pre-allocated air. Ventilation-on-demand must start with mine design, typically with a minimum supply in mind to avoid oversizing the primary fans. We right-size the secondary ventilation systems to match the mine planning sequence, so that the primary can always meet the secondary demand of all active drives," he explains.

Ventilation-on-demand at Venetia

This managed approach is well-suited to mining applications with multiple levels that are not all being worked simultaneously. "We are currently implementing a ventilation-on-demand system at Venetia and going through the process of putting the design together, finalising the control philosophy and how the ventilation system will fit into the way the mine is going to operate," Hattingh says.

The mine is using a progressive sublevel caving operation, where multiple drives will be developed, but only a few will be mined at any one time. "The new on-demand system we are implementing will help them manage the air they are already using by applying a more effective ventilation control system to secondary circuits being fed by the existing primary system installed a few years back," he explains.

The new ventilation strategy aims to support Venetia's health, safety, and sustainability objectives, so a fully automated, digitised approach has been chosen.

"Instrumentation is key. It is the backbone of any successful control solution. Dampers or duty-controlled fans are used to regulate flow, and sensors monitor the impact of each adjustment. The instrumentation collects flow, temperature and air quality data from each area to ensure that any change to the system achieves expectations, without over- or undersupply of air, and without causing an unintentional undersupply elsewhere," he says.

"As you can imagine, the infrastructure required to achieve this across a working mine is substantial. Every fan and every area of the mine needs sensors to collect the necessary data. All that data needs to be collected and sent to a central controller via a reliable communication network for real-time analysis, and the controller must then continually manage each fan speed and/or damper position.

"It's an idea that's spoken about a lot, but it's seldom fully automated. At the end of the day, we see it as a way to ensure miners receive the airflow they need, where and when they need it.

"Ventilation-on-demand is about giving mine operators peace of mind that the correct quantity of air is going to the right places, which will result in a healthier workforce, better productivity and fewer unplanned work stoppages due to heat exhaustion, overheating equipment or poor air quality," says Russell Hattingh.

"We are in the early phases of implementing this strategy at the Venetia diamond mine. We are starting on one level, and once we have proved its functionality in one working environment, we will roll it out level by level as mining progresses.

"We are very excited. In South Africa, this will be the first automated ventilation-on-demand system at this level of complexity," he concludes.

https://bbegroup.com

The Venetia diamond mine is transitioning from surface to underground operations, preserving one of the country's most prominent sites while setting new benchmarks for sustainable mining.

HVAC solutions enhance operator safety and compliance

Booyco Engineering's advanced HVAC systems for mining machinery cabs, which include Sy-Klone filtration units, ensure compliance with ISO 23875 by managing air quality, cab pressure and CO_2 levels in harsh environments. These integrated solutions protect operator health, enhance productivity and provide valuable data for mine-wide health and safety compliance.

With over 40 years of specialised expertise, Booyco Engineering continues to lead the way in climate control solutions for South Africa's mining and quarrying sectors, industries where airborne pollutants and extreme thermal conditions pose serious occupational health hazards.

Recognised as a key contributor to the South African economy, the mining sector faces mounting pressure to ensure safer, healthier working environments, especially in the face of stringent legislation. The Mine Health and Safety Act (MHSA), Act 29 of 1996, requires that every mine must be designed, constructed and equipped to facilitate safe and healthy operations.

More recently, industry efforts have shifted from reactive to proactive occupational hazard management, with a growing emphasis on monitoring, controlling, and reporting worker exposure to environmental risks.

"Mobile machinery operators are often confined to enclosed cabs for extended periods in high-risk areas where dust, heat and toxic gases such as CO_2 can quickly compromise their health," Brenton Spies, Managing Director of Booyco Engineering, explains. "Addressing this challenge has been the cornerstone of our business for decades, and today we can offer a fully integrated HVAC solution that aligns with international standards, including ISO 23875, to ensure that operators remain protected at all times."

ISO 23875 specifically governs air quality in enclosed cabs, with key performance criteria including the provision of fresh air into the cab, positive pressurisation to prevent ingress of contaminated air and effective control and management of CO_2 levels.

While these requirements may be straightforward in on-road vehicles, achieving compliance in harsh mining and quarrying environments is far more complex. High levels of airborne particulates, diesel fumes and fluctuating ambient temperatures all add layers of technical difficulty when it comes to implementing effective climate control systems.

Engineered to meet ISO 23875 requirements, Booyco Engineering's cab climate control solutions ensure clean, pressurised air and effective CO_2 management for safer operator conditions.

Booyco Engineering's HVAC systems are engineered to meet these exacting standards. The company's bespoke solutions incorporate Sy-Klone filtration technology to introduce clean filtered air into the system. This air is cooled and distributed into the cab while maintaining the required internal pressure and limiting CO_2 buildup.

"We don't just build air conditioners, we engineer environmental control systems that protect the health of machine operators and provide mines with actionable data," Spies says. "Our integrated system continuously monitors cab air pressure, dust concentrations, CO_2 levels and particulate contaminants, ensuring a controlled internal atmosphere at all times."

Crucially, this real-time data can be downloaded for analysis, enabling mines to track operator exposure levels, demonstrate compliance with health and safety standards and improve overall risk management. This also supports broader ESG (Environmental, Social and Governance) initiatives, which are becoming increasingly important for both investors and regulatory authorities.

Booyco Engineering's approach is not only preventative but also performance-driven, enhancing machine uptime, reducing maintenance downtime due to clogged filters or overheating, and ultimately improving productivity across mine and quarry sites.

"By aligning our engineering capability with global health and safety benchmarks, we are empowering mines and quarries to be both compliant and competitive. It is about going beyond compliance – safeguarding people and performance," Spies concludes.

https://www.booyco.co.za

Liquid cooling in African data centres

Data centre capacity to power AI processes must increase rapidly by expanding and upgrading existing facilities or building new data centres. Leon Kleyn, WSP's technical director, mechanical in Africa, and Floris van der Walt, senior mechanical engineer, highlight the strategic opportunity that liquid cooling offers for Africa's growing digital ecosystem.

The African data centre market is growing quickly. Research estimates the current market value at US$1.94 billion in 2025 and expects it to reach $3.85 billion by 2030. This rapidly increasing demand raises technical challenges in data centre cooling systems. And at the centre of the evolution is liquid cooling, a technology long understood but only now gaining traction in large-scale data centre environments.

The sudden relevance of liquid cooling is a direct result of the explosion of AI workloads. Traditional computing relied on CPUs that processed tasks sequentially. AI, however, depends on GPUs that process multiple tasks in parallel, which significantly increases energy use and, in turn, heat generation.

AI depends on GPUs that process multiple tasks in parallel, which significantly increases energy use and heat generation.

"In terms of performance, we are reaching the limit of what traditional air-cooling systems are capable of," explains Van der Walt. "Liquid has three to four times the cooling capacity of air, so it becomes the next viable option."

Liquid cooling itself is not new, but the industry has historically not used it due to high costs, perceived risks and complexity. Now, rising heat loads have pushed technology providers and data centre operators towards solutions that can safely and efficiently handle greater thermal heat rejection requirements.

Managing risks and technical complexity

The biggest concern is leakage, which can cause liquid to come into contact with expensive electronic equipment. "Leaks are one of the biggest risks," says Van der Walt. "You need strategies to detect and mitigate them."

Another challenge lies in maintaining the quality of the cooling fluid. GPUs use extremely fine cold-plate channels – down to microscopic dimensions – which are highly sensitive to contaminants. Minerals or impurities in potable water can block these channels, rendering the water unsuitable for ordinary use. Kleyn notes: "Liquid cooling systems typically use demineralised water, not just standard filtered water."

Beyond demineralisation, engineers must also prevent scaling and biological growth. This is achieved by introducing a propylene glycol mixture that stabilises the fluid and inhibits biofilm formation. As Van der Walt puts it, fluid treatment forms "a whole new industry on its own," requiring collaboration between water-treatment specialists, cooling-system manufacturers and engineers.

Liquid cooling offers clear efficiency advantages. "It is more efficient than normal cooling," says Kleyn, noting that an engineered liquid can reject heat far more effectively than air, lowering energy use.

In water-scarce regions like South Africa, the question of water consumption and efficiency is unavoidable. "Liquid cooling does not mean significant water use," Kleyn clarifies. "The cooling system has a closed loop, filled once at commissioning and not needing additional water during normal operation. There shouldn't be any water consumption," Van der Walt points out.

Africa's climate, with high ambient temperatures across many regions, does not limit the use of liquid cooling. These systems are more than capable of performing optimally across a variety of ambient temperatures. Instead, the challenges facing liquid cooling adoption on the continent lie in manufacturing capacity, supply chains and specialised skills.

Because Africa does not manufacture coolant distribution units (CDUs), operators are dependent on global supply queues. This can lead to project delays as larger international projects take precedence in supply chains.

In addition, Van der Walt notes that liquid-cooled systems are less forgiving than air-cooled ones. "Performance deviations must be detected and corrected immediately, and this requires specialised skills," he explains. "This creates significant opportunities for upskilling Africa's young workforce. But technical development for operations and maintenance staff is critical to ensure these systems operate optimally."

Where liquid cooling fits

Liquid cooling is implemented only where needed. "Operators will try to use air cooling as much as possible," says Kleyn. "Largely because of the cost and complexity of technical requirements. Demand for liquid cooling is driven by the adoption of GPU-based systems, particularly by AI-focused operators and global service providers expanding into African regions."

When an operator is ready to shift to GPU-based systems, Kleyn and Van der Walt confirm that liquid cooling can be implemented in both new and existing facilities. New builds are easier, but conversions are feasible. Industrial-type buildings with generous volumes and structural flexibility could also offer the adoption of liquid-cooled designs if there is sufficient power at the site.

As AI adoption accelerates across the continent, liquid cooling will increasingly shape the next generation of data centres in Africa. While the technology introduces new layers of complexity, it also offers significant efficiency gains and positions operators to meet the rising demands of a digital, interconnected and latency-sensitive marketplace.

https://www.wsp.com/

Babcock Africa partners with NCPC-SA to unlock sustainable gains

As part of its plans to reduce environmental impacts, Babcock Africa has partnered with the National Cleaner Production Centre South Africa (NCPC-SA) to conduct resource-efficient and cleaner production (RECP) assessments across selected priority sites in South Africa, focusing on energy, water and waste management.

Babcock Africa has partnered with the National Cleaner Production Centre South Africa (NCPC-SA) to conduct resource-efficient and cleaner production (RECP) assessments across selected priority sites in South Africa, focusing on energy, water and waste management.

Following an assessment process by the National Cleaner Production Centre South Africa (NCPC-SA) across selected sites, Babcock Africa has embarked on an implementation programme that begins with low- and no-cost interventions, with notable early successes.

In today's business world, environmental stewardship has shifted from a statutory requirement to a strategic necessity. With this in mind, the Babcock International Group is advancing its 'Plan Zero 40' ambition to transition to a net-zero emissions organisation across all operations by 2040. The company is an inaugural signatory of the UK Defence ESG Charter and has aligned with the Business Ambition for 1.5°C Pledge.

As part of this strategy, responsible resource management is now embedded into products, processes and operations. For Babcock Africa, the immediate priority is to drive sustainable performance across three fronts: energy efficiency, water stewardship and waste reduction.

Through its partnership with NCPC-SA, a national support programme that accelerates South Africa's transition to a green economy through resource efficiency and cleaner production (RECP) interventions, Babcock Africa has adopted a systematic and integrated approach to resource management and long-term environmental performance improvement.

Babcock International recently published a suite of Environmental Commitments that outline the group's intention to reduce environmental impact and carbon emissions across its global footprint. To better understand its current position and develop clear improvement roadmaps, Babcock Africa approached NCPC-SA for technical support.

NCPC-SA, funded by the Department of Trade, Industry and Competition (DTIC) and hosted by the Council for Scientific and Industrial Research (CSIR), supports industrial and selected commercial sectors in adopting sustainable, efficient and competitive operating practices.

Lindani Ncwane, Senior Project Manager at NCPC-SA, explains: "Our goal is to support industry transition toward a green economy through resource efficiency, especially given South Africa's reliance on coal-based energy. Through our collaboration with Babcock Africa, we provided technical expertise and highly subsidised financial support to conduct RECP assessments at priority sites to identify opportunities to save water and energy and reduce waste generation."

Kea Tlhapane, Environmental Lead at Babcock Africa, adds that the partnership was established to address environmental impacts proactively. "Water assessments focused on high-consumption sites exceeding 1 million litres, while waste assessments initially prioritised operations generating more than 100 tonnes of waste. This allowed us to focus on the areas with the highest potential for improvement."

The RECP programme consists of two phases: detailed assessments and the implementation phase, which is currently underway.

The process began with engagement between Babcock Africa's senior leadership and NCPC-SA's executive team to confirm project scope and alignment with NCPC-SA's mandate. Once alignment was confirmed, independent RECP experts, appointed and funded by NCPC-SA, conducted detailed technical assessments.

Working closely with Babcock SHE specialists, these experts observed operations, collected resource-use data, established baselines and identified opportunities across energy, water, material efficiency and waste streams at each priority site.

Draft reports included identified initiatives, action plans, estimated savings, ROI and payback periods. Final reports incorporated Babcock's feedback and included implementation guidance and monitoring recommendations.

The RECP reports identified three categories of opportunities:

- No-cost interventions.
- Low-cost interventions.
- Medium to high investment interventions.

Babcock Africa has begun implementing the no-cost and low-cost initiatives and continues to evaluate medium- to high-investment opportunities. Importantly, NCPC-SA initiated a follow-up meeting after reviewing Babcock's early progress and, impressed by the company's self-funded implementation efforts of more than R500 000, offered additional technical support funding to accelerate further initiatives.

Lindani and the NCPC-SA team expressed strong encouragement during this review, noting the quality and pace of implementation already achieved using internal resources.

Water-related initiatives identified and/or implemented include:

- Retrofitting taps and showerheads with low-flow attachments.
- Installing rainwater harvesting systems.
- Converting toilets from single-flush to dual-flush systems.
- Installing water sub-metering for monitoring and leak detection.
- Reusing wash bay water instead of discharging to municipal systems.
- Transitioning to water-wise landscaping.
- Detailed water audits revealed several critical insights:
- Fabrication site: The RECP assessment identified issues that, once corrected through repairs and system adjustments, resulted in a 63% reduction in monthly water consumption. Historical municipal billing records were found to be outdated or inaccurate, requiring reconciliation.
- Bartlett site: The NCPC-SA assessment highlighted inconsistencies between operational water use and the historically billed volume of 4 775 kl/month. To verify actual consumption, Babcock installed a private water meter. The meter immediately confirmed a significant leak, with actual usage measuring approximately 210 kl/month. Consumption dropped from 4 775 kl to 210 kl within a month, validating the assessment findings and enabling rapid corrective action.

Waste initiatives identified include:

- Enhanced waste-separation systems at source.
- Improved hazardous waste storage through storm-resistant covers.
- Deployment of waste-weighing equipment for accurate tracking.
- Identification of material reuse opportunities.
- Minimising packaging materials and reusing oil containers.
- Designing an oil treatment system to reduce TDS concentrations before discharge.

These waste initiatives were identified during the RECP assessments and will be incorporated into the Waste Management Plan. Implementation has not yet commenced, as the work requires phased planning and operational alignment.

Energy initiatives identified and/or implemented include:

- Replacement of non-LED lighting with LED units.
- Installation of geyser timers and insulation blankets.
- Use of occupancy sensors.
- Replacing kettles with hydro boil systems.
- Installing electricity sub-metering.
- Introducing inverter air-conditioning units.
- Replacing electric water heaters with heat pumps.
- Installing solar PV hybrid systems.

In addition to these measures, several technical opportunities have been identified to enhance energy efficiency across the business further. These include retrofitting the main extractor fan with a variable-speed drive (VSD) to improve energy efficiency and performance.. The assessments also highlighted opportunities to replace the 7.5 kW compressor at the Equipment business and the 22 kW compressor at Transport Solutions with more efficient VSD-equipped units when the existing equipment reaches the end of its operational life.

These energy initiatives remain identified opportunities at this stage and will be implemented as part of the planned equipment replacement cycle.

Thava Govender, CEO of Babcock Ntuthuko Engineering, notes that the assessments were completed at pace and with strong collaboration. Of the 423 energy-related action plans identified so far across Babcock International globally, 380 originated from Africa, demonstrating the region's proactive commitment.

He explains: "The RECP process helped us uncover immediate low-cost opportunities that are already delivering financial and sustainability returns. The technical guidance from NCPC-SA has been invaluable."

Several notable breakthroughs emerged:

- A long-standing water leak, undetected for nearly 20 years, was identified at one site. The leak had been costing approximately R4 million per year. Repairs have now been completed, significantly reducing water consumption and cost.
- A water-bridging incident at another site revealed that a neighbouring property had illegally connected to Babcock's water line, driving up consumption. Once resolved, actual usage returned to normal levels.

During a recent benchmarking visit by Senegal's Bureau de Mise à Niveau (BMN), NCPC-SA selected Babcock as a demonstration site for successful RECP implementation, reinforcing the value of the partnership.

Kea Tlhapane emphasises the importance of collaboration: "Resource efficiency challenges cut across systems, processes and behaviours. Collective effort is essential for sustained impact. NCPC-SA's support, together with our SHE teams and operational leaders, has been central to the progress we've made."

Govender adds: "Executive commitment was strong from the outset. Each business unit received the necessary support to move forward with implementation. ESG is not a compliance exercise for us—it is a strategic lever for long-term value creation."

http://www.babcock.co.za

Torque limiting solutions for drive equipment

BMG's Power Transmission division's Rexnord's Autogard torque limiters protect machinery, enhance reliability and minimise downtime in demanding industrial environments.

BMG's Power Transmission division has extended its range of Rexnord products to include Rexnord's Autogard torque limiters. These devices have been designed to protect machinery, enhance reliability and minimise downtime in demanding industrial environments.

"In local industries – including wineries and breweries, mining, cement, sugar milling and bulk materials handling – where conveyor blockages, crusher jams and process surges are common, torque limiters play an important role in protecting high-value equipment," states Carlo Beukes, Business Unit Manager, BMG's Power Transmission division. "Rexnord Autogard torque limiters efficiently protect drive equipment against overload, thus preventing damage and minimising downtime in industries that depend on continuous operation. Unlike conventional mechanical shear pins or friction devices, the Autogard system delivers optimal performance and repeatable accuracy with minimal maintenance requirements.

"BMG technical experts can specify torque-limiting solutions matched precisely to heavy-load operating conditions, through sizing, alignment and commissioning assistance. The team also provides a dependable back-up support service via the company's extensive branch network."

"Rexnord Autogard torque limiters protect drive systems by mechanically disconnecting the drive when the preset torque limit is reached. Once the overload condition clears, the unit resets automatically, allowing operation to resume without manual intervention. These robust devices prevent mechanical damage to motors, gearboxes and couplings and reduce unplanned downtime in continuous process environments."

The Autogard range covers torque capacities from approximately 3.0 Nm to 45 000 Nm, allowing selection for light, medium and heavy-duty applications, including conveyors, mixers, crushers and process machinery.

These torque limiters have a mechanism that provides precise, repeatable disengagement and consistent performance over many cycles. Units can be installed in standard shaft and coupling configurations and are suitable for both new assemblies and retrofit projects.

BMG's Regal Rexnord power transmission components also include industrial gear units, low-speed backstops, idlers, couplings, bearings and shaft locking assemblies. Other important components include Falk True-Hold low-speed backstops and Rexnord Omega and Viva elastomeric couplings.

As the official Rexnord partner in Southern Africa, BMG offers comprehensive technical support - from product selection and sizing, to installation, commissioning and after-sales service.

This partnership combines Rexnord's advanced products with BMG's technical expertise and a wide branch network, ensuring that customers in diverse industries benefit from reliable system protection, optimised uptime and lower total cost of ownership.

www.bmgworld.net

Polymer bearings contribute to heavy lifting success

REV Designs and Installations founder and chief designer Ricardo Viljoen, and igus polymer bearing specialist Juan-Eric Davidtz at the company's Brakpan manufacturing plant.

Leading dock-levelling and materials-handling specialist REV Designs & Installations has steadily grown into one of South Africa's most innovative engineering firms in the lifting-equipment sector.

Based in Springs, the company designs and manufactures a wide range of loading, docking and lifting equipment, including some of the most significant scissor lifts ever produced in the country. A key factor in the business's success is the careful design and specification of materials and components, which enhance its equipment's performance and result in trouble-free operation for its customers.

A good example is the design and construction of three massive scissor lifts destined for the timber industry several years ago. Each capable of handling up to 40 tonnes per lift, the lifts were engineered for harsh, high-dust sawmilling environments where the equipment is pushed hard, and uptime is critical. It was during this period that founder and chief designer Ricardo Viljoen made a key engineering decision to move away from greased steel bearings and fully adopt igus high-performance polymer bearings across the key pivot points of the new lifts.

According to Ricardo, the switch has exceeded expectations. The original scissor lifts have now been in operation for around five years, and the service history is striking. The machines were designed to be serviced quarterly, with an annual inspection recommended. In practice, REV has been called back only twice in five years: once for light annual service and once for a general inspection. Since that time, not a single bush or bearing has failed.

This small move away from conventional design has saved the customer many hours and costs associated with servicing and maintaining greased steel bearings, as well as the unavoidable failures of these bearings, which would have previously caused several failures per lift per year.

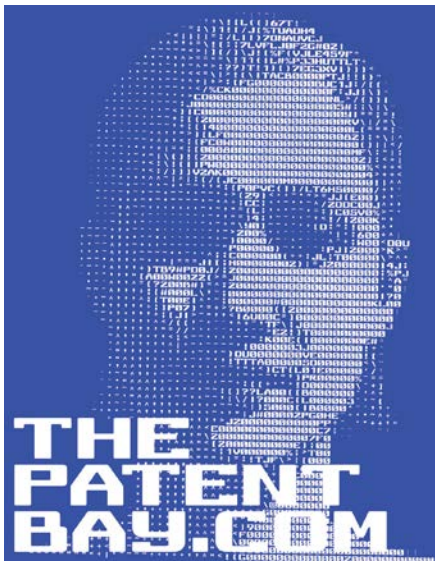
"The igus polymer bearings have operated without lubrication or adjustment and without any sign of wear severe enough to warrant replacement. The scissor lifts themselves have also run trouble-free, reinforcing the success of the bearing choice and overall design. "Our customers' own maintenance teams have confirmed that there has never been a problem with the bushes, nor anything with the scissor lifts.

"This kind of long-term reliability in a demanding environment has had a direct impact on our design philosophy. Today, all new scissor lifts as well as numerous other loading and lifting solutions produced by the company are standardised on igus polymer plain bearings and bushings," says Ricardo.

By partnering with igus and applying the correct polymer materials at every pivot point, the company has created some of the most reliable heavy-duty scissor lifts in South Africa, capable of operating in the harshest industrial environments.

https://revdesign.co.za/

SKF launches Patent Bay platform for sharing technologies that reduce environmental impact



SKF has launched The Patent Bay to unlock potential, creating ripple effects across industries and society.

SKF has launched The Patent Bay, a new platform open to companies that aim to accelerate technologies with the potential to advance sustainability, by making selected patents freely available to others.

Throughout history, progress has been driven by the desire to make knowledge and important inventions accessible to more people. From decisions to release the three-point seatbelt freely and save millions of lives, to the moment when the World Wide Web was opened to everyone. And most recently, when vaccine technology was shared to meet a global crisis.

"Innovation is essential for a sustainable future, and history shows that real breakthroughs happen when we share. The Patent Bay is our way of unlocking that potential, creating ripple effects across industries and society," says Rickard Gustafson, CEO of SKF.

The launch comes at a time when global patent filings are at an all-time high. According to the World Intellectual Property Organisation, 3.55 million patent applications were filed globally in 2023, more than double the number in 1995. While this reflects a strong innovation climate, it also highlights the growing challenge of access and collaboration.

"In today's complex world, openness and collaboration are more important than ever. At SKF, we believe that sharing is part of the solution. Through The Patent Bay, we want to inspire others to do the same, because real change is created together," says Rickard Gustafson.

The first patent released on the platform is a high-performance bearing alloy developed for the aviation industry.

"This new bearing material can handle higher loads in a more compact form, enabling high-performance bearing solutions for new architectures of engines designed to reduce emissions by up to 25%. The same technology opens the door to further innovation, where efficiency and sustainability are key," says Arnaud Ruellan, Technology Innovation Manager at SKF.

The Patent Bay is now live and accessible to companies and innovators committed to technologies with the potential to advance sustainability.

https://www.thepatentbay.com/

Towards greater screening productivity

With more than 30 years of industry experience, Duncan High is the Processing Equipment Technology Manager at Haver & Boecker Niagara.

Duncan High, Processing Equipment Technology Manager for Haver & Boecker Niagara, highlights the advantages of adopting advanced vibrating screening technologies, including double eccentric screening with shear rubber mounts to improve screening performance and productivity.

Global demand for aggregates and mining materials is on the rise, with the industry expected to grow by nearly 4.2-billion tons over the next 15 years. That's a lot of material, which means producers need efficient equipment to meet specifications and turn a meaningful profit.

Every ton of material must pass through at least one vibrating screen, so ensuring the equipment's efficiency is critical to the operation's success. The good news is that technologies are available today to improve screening productivity. Integrating cutting-edge systems such as eccentric screening technology, state-of-the-art screen media, and diagnostic tools can prevent blinding, pegging, carryover and contamination, improving screening performance, productivity and profits.

Double eccentric screening action

Vibrating screens engineered with a double eccentric shaft assembly deliver a constant stroke to maintain g-force during material surging. The double eccentric shaft design forces the screen body to follow the shaft's motion. As the shaft rises, the counterbalance weights move in the opposite direction, creating a force equal to that generated by the body. As a result, the forces cancel each other out, maintaining a consistent positive stroke that handles material volume spikes without losing momentum.

One producer in Western Canada quickly saw the benefits of switching to double eccentric screening technology after replacing two horizontal vibrating screens with one double eccentric, four-bearing inclined vibrating screen. Changing their equipment helped eliminate surging, blinding, pegging, and material contamination while increasing production by 25%.

Reduce damaging vibrations

A vibrating screen's operation can significantly affect its surroundings. The metal springs on a traditional concentric vibrating screen, for example, can be noisy to operate. This metal-to-metal, up-and-down or side-to-side movement can cause excessive noise and vibration.

To resolve this problem, double eccentric technology uses shear rubber mounts strategically designed to minimise lateral movement. The rubber mounts reduce noise while maintaining smoother operation, even under extreme conditions such as overloading, surging and starting or stopping under load.

The use of eccentric technology virtually eliminates vibration in fixed structures or chassis when used with portable equipment, protecting the integrity of the machine. This also enables producers to use multiple eccentric vibrating screens within a single structure, boosting productivity. Operating multiple concentric machines within a structure can generate vibrations that negatively affect quality and increase safety and downtime risks.

A leading phosphate producer in North America, producing nearly 8 million tons per year, increased screening area by 60% percent by transitioning to double eccentric equipment. The mine features a six-story screening plant with multiple vibrating screens operating 24/7. Multi-story screen houses are common in the industry but can pose structural concerns due to the vibrating screens' size, capacity and force. Opting for double eccentric technology eliminated those concerns.

Integrating eccentric screening technology, state-of-the-art screen media, and diagnostic tools can prevent blinding, pegging, carryover, and contamination, thereby improving screening performance, productivity, and profitability.

Improve stratification

Combining advanced eccentric screening technology with the best screen media for the application is a recipe for success. Specifically, polyurethane screen media can be a valuable asset for any operation seeking to prevent blinding and pegging, improve material stratification, and increase wear life.

Polyurethane media offers the best combination of open area and wear life for both wet and dry applications. In particular, open-cast polyurethane screen media can deliver 1.5 to 2 times the wear life of injection-moulded products. Poured, open-cast polyurethane permanently hardens when cured to maintain its chemical properties and improve wear life. Alternatively, injection-moulded screen media can soften as temperatures rise, reducing wear life. Polyurethane screen media also features tapered openings to reduce the risk of blinding and pegging.

The solution to improving material stratification is to select the optimal screen media mix to ensure all screening phases operate correctly. A screen media company that offers a variety of screen media types can help evaluate how material progresses through the three screening phases – layered, basic and sharp – and provide recommendations on the best screen media for an application. Producers can customise the screen deck by selecting screen media that maximises productivity for each phase, blending the best combination of open area and wear life.

Prevent equipment damage

A vibrating screen needs regular checkups to run optimally. Vibration analysis and diagnostic systems designed by OEMs for vibrating screens are reliable tools for maintaining the efficiency and longevity of screening machines. To ensure optimal productivity, operations can partner with an OEM that specialises not only in manufacturing equipment but also in providing additional diagnostic tools, product-specific knowledge, and years of engineering experience.

Utilising vibration analysis software, for example, enables mining and aggregates operations to monitor a vibrating screen's performance in real time, detecting issues before they lead to diminished performance, decreased efficiency, and increased operating costs. The most robust systems incorporate eight wireless sensors that magnetically fasten to key areas of a vibrating screen, measuring orbit, acceleration, deviations, and other key data points related to the machine's condition. The sensors send real-time data wirelessly for analysis, ideally by an OEM-certified service technician who can provide a detailed summary and recommendations.

Some manufacturers use vibration analysis to offer impact testing (a bump test), which helps ensure proper machine calibration and promotes efficient operation. Impact testing involves striking the machine at key points with a dead-blow hammer while it is off. Vibration analysis sensors are installed at key locations on the vibrating screen, and a technician measures the machine's natural frequency.

Based on the results, engineers can adjust machine parameters to avoid resonance, which can reduce productivity, damage vibrating screens, and pose safety risks. It is important to note that the natural frequency can shift over time as components are repaired or replaced, so impact testing should be conducted regularly. By incorporating impact testing into an operation's regular maintenance routine, producers can ensure optimum screening performance and equipment reliability.

Another advanced diagnostic tool is condition monitoring, which uses modern algorithms and artificial intelligence to monitor the health of vibrating screens. The system utilises permanent sensors that monitor the equipment 24/7 to capture real-time information and provide alerts via e-mail immediately upon the first sign of a potential problem. By continuously monitoring the vibrating screen's acceleration, specific systems can forecast the equipment's dynamic condition at intervals of 48 hours, 5 days, and 4 weeks. With consistent use, condition monitoring software will accurately identify and predict critical issues, advise on when to schedule maintenance, and focus on the right areas during planned downtime.

By using diagnostic programs for regular analysis and engaging in predictive and preventative maintenance, operations will see minimised downtime through faster problem-solving, lower repair costs, and greater peace of mind.

Increase profits through advanced technology

The development of the double eccentric screen and other screening technologies provides operations with innovative, cost-effective ways to increase profitability and efficiency. By integrating the right equipment, screen media, and vibration analysis systems, producers can achieve higher uptime, improved quality, increased productivity and greater profits.

https://haverniagara.com/

By analysing application requirements, producers can strategically select a blend of screen media that maximises their vibrating screen's performance across all screening phases, from layered to basic to sharp

Eccentric technology virtually eliminates vibration in the extended structure, which protects the integrity of the screening machines.

140 MW San Kraal wind farm advances Koruson 1 project

On 11 December 2025, EDF Power Solutions announced the achievement of the commercial operation date (COD) of the 140 MW San Kraal wind farm, which forms part of the 420 MW Koruson 1 project cluster.

The San Kraal wind farm, located near Noupoort on the border of the Eastern and Northern Cape provinces, is the first of three 140 MW wind farms in the Koruson 1 cluster to reach COD. The remaining sites, Phezukomoya and Coleskop, are also in the final stages of completion, and the overall project is expected to achieve COD early in 2026.

The Koruson 1 project includes South Africa's largest self-build Main Transmission Substation (MTS), by an Independent Power Producer (IPP), which was completed and energised on 5 April 2025. The Koruson 400/132 kV MTS was designed and constructed to connect 1.5 GW of renewable energy from the adjoining Koruson 1 and Koruson 2 projects to the national grid.

Developed by a consortium led by EDF Power Solutions, together with local South African BEE partners, H1 Holdings, Gibb-Crede, and a local community trust, the Koruson 1 project was awarded under Round 5 of South Africa's Renewable Energy Independent Power Producer Procurement Program (REIPPPP). The consortium has entered into a 20-year Power Purchase Agreement (PPA) with the designated offtaker.

The 26 San Kraal wind turbines have a nominal capacity of 5.4 MW each. They are synchronous turbines that use a generator in which the rotor's rotational speed is directly synchronised with the frequency of the generated electricity. These turbines improve plant reliability and provide grid stability. The concrete turbine towers were manufactured at a local factory near Middelburg, which employed 400 workers during construction. The main contractors are Goldwind, which supplied and installed the 26 wind turbines, and the Consortium of Concor and OptiPower (Murray Roberts Ltd), which provided the balance of plant.

Tristan de Drouas, EDF Power Solutions Southern Africa Vice President, commented: "We are gearing up for commercial operation on Koruson 1. The projects support the achievement of the South African Integrated Resource Plan (IRP 2025). The plan maps out the future of the country's electricity mix, with a long-term goal of achieving a Net Zero Electricity sector by 2050, including the addition of 34 GW of new wind turbines."

EDF Power Solutions is currently constructing 1.5 GW of low-carbon energy across 12 different sites in the country, which contributes significantly towards this goal. The San Kraal WEF alone will generate 616 GWh per year, equivalent to powering 193 000 homes.

"The Koruson 1 consortium, demonstrates the power of partnership in driving South Africa's energy transition. This project not only delivers clean, reliable power to the grid but also creates meaningful opportunities for local communities and businesses. We are committed to ensuring that the benefits of renewable energy development are shared widely, supporting economic growth and empowerment in the regions where we operate," said Reyburn Hendricks, CEO of H1 Holdings.

The San Kraal wind farm, located near Noupoort on the border of the Eastern and Northern Cape provinces, is the first of three 140 MW wind farms in the Koruson 1 cluster to reach COD.

"The successful completion of the San Kraal wind farm is a testament to the dedication and expertise of all the partners involved. Beyond the contribution of the Koruson 1 cluster of projects to South Africa's economic recovery plan and our climate change goals, we are particularly proud of the project's contribution to local content and job creation," said Richard Vries, Chairman of Gibb-Crede.

https://southafrica.edf-powersolutions.com

Hybrid BESS and Solar Plant reaches provisional COD

EDF Power Solutions' Umoyilanga Hybrid project successfully reached Provisional Commercial Operations Date (Provisional COD) with its Dassiesridge Plant in the Eastern Cape, on Friday, 5 December 2025.

The Umoyilanga project combines solar, wind, and battery storage technologies (BESS) to deliver dispatchable, reliable power to the national electrical grid, up to a Contracted Capacity of 75 MW. Once fully complete, this innovative project will operate as a virtual power plant, combining generation from two sites, which are 900 km apart, namely Avondale in the Northern Cape, with 115 MW of solar PV and 30 MW of battery storage, and Dassiesridge in the Eastern Cape, with 63 MW of wind and 45 MW of battery storage. The low-carbon electricity produced will help meet the electricity needs of 120 000 households for 20 years, based on Eskom's residential consumption average of 3 319 kWh/household.

The construction phase of Dassiesridge was completed over two years, thanks to the mobilisation of local workers for close to a million person-hours. This milestone was achieved in partnership with key contractors Power Construction and Adenco (balance of plant), and Vestas (wind turbines). Furthermore, the project has successfully fulfilled its Economic Development commitments, specifically regarding local content and local procurement. Under the terms of the Power Purchase Agreement (PPA) signed with NTCSA, the Dassiesridge facility will now start delivering a Net Dependable Capacity of 55 MW to the grid.

This Provisional Period will continue until Umoyilanga reaches full COD, upon the commissioning of the Avondale Plant. Following full COD, local communities and enterprises surrounding the facilities will benefit from an investment of over R200 million, committed by the project towards supplier, skills, enterprise and socio-economic development initiatives over the 20-year operating period.

"Our focus now shifts fully to optimising dispatched energy with Dassiesridge, and resolving outstanding issues at Avondale, to achieve full COD as early as possible in 2026," said Gregoire de Montgolfier, Umoyilanga Project Director.

Everything You Need – In One Box

When every minute matters, you need a service solution that's ready when you are: ZF transmission kits.

When your equipment is down, your business is on hold. That's why ZF off-highway transmission kits – engineered for Asian-manufactured machines – are designed with one purpose: **maximizing uptime.**

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- Low maintenance wear-free ceramic measuring cell
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