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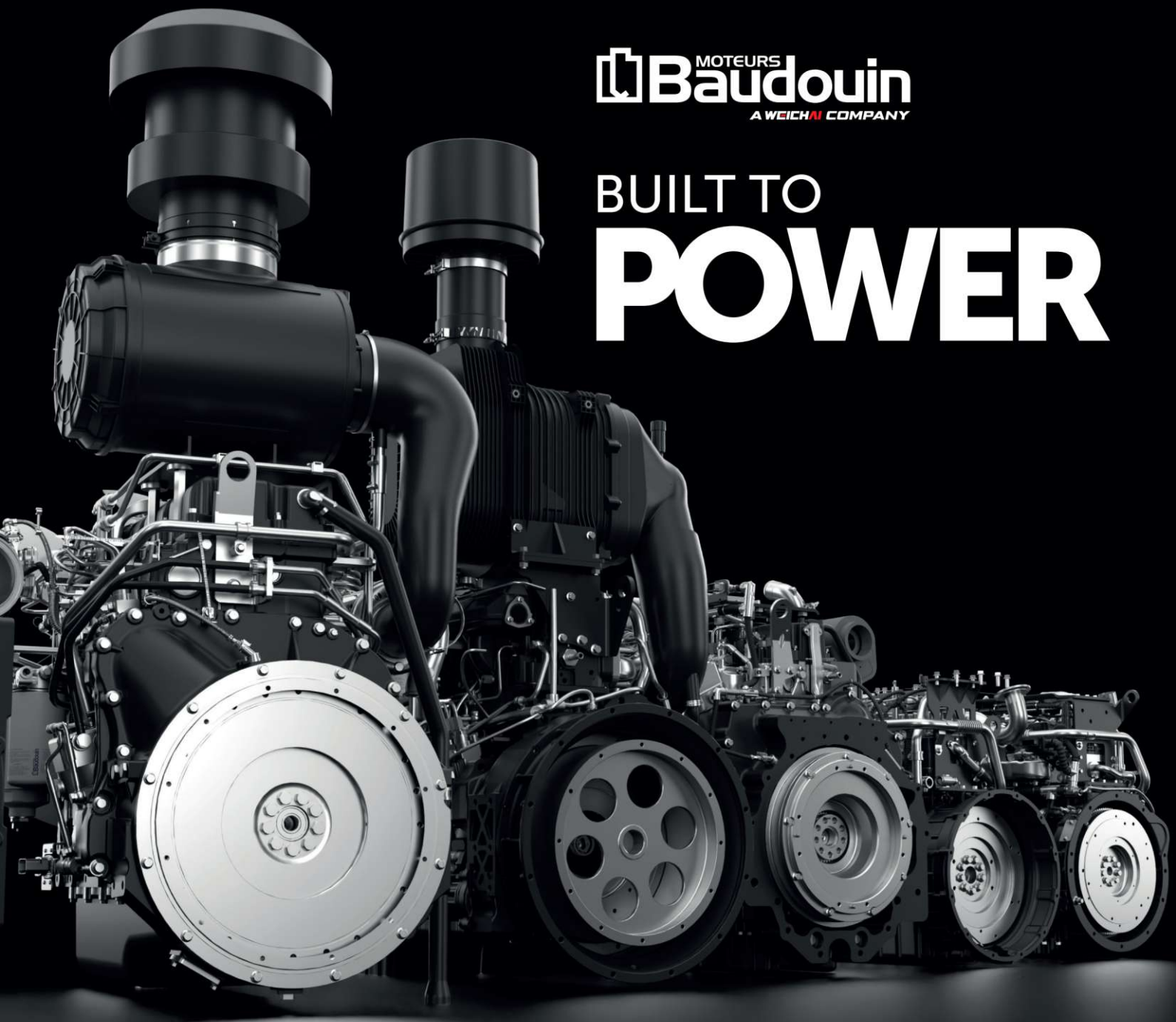

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Editor's Note

Mining Africa Magazine is the home to the very best news, features and comprehensive overview of products suitable for both rental and user. It focuses also on technological developments across the spectrum of targeted equipment and machinery through in-depth technical articles derived from all product suppliers. Taking in everything from the latest products and techniques, to up-to-the-minute design trends and industry moulding regulations, Mining Africa should be the first port of call for any professional looking to remain on the cutting edge when it comes to their or related industries.

This issue of Mining Africa Magazine tries to bring together this wide range of perspectives in mining on the continent. It is my sincere hope that you will appreciate the insights given. Our publication focuses on the developments and activities taking place in the mining sector throughout Africa. As you are aware the continent is a haven of minerals which are in demand worldwide. The diamonds of Botswana, the South African gold, Zambia is renowned for its copper and the oil of Angola, to mention just a few. Unfortunately despite its mineral wealth, Africa still lags behind in development as compared to the rest of the world.

A robust mining sector is broadly understood as a fundamental path to economic growth and development. The key boon of mining is that it absorbs large swaths of workers and places them into productive and decent paying jobs. Throughout history, this exact recipe has transformed the United States, United Kingdom, France, Japan, and Germany into some of the world's wealthiest nations.

However, this narrative seems to exclude many African nations. Despite their manufacturing potential and promising trajectories, most African countries have remained relatively dearth of factories. This limited industrial development represents a missed opportunity for economic transformation and quality employment generation that alleviates poverty. Today, leaders are increasingly realizing that the mining industry is a major factor in helping Africa to achieve its goals and successfully reaching the next stage of economic development.

We hope to contribute more to the development of our mining industry by consistently presenting interesting and pertinent articles to our readers. We continue to solicit and publish contributions from different mining companies to enable them to present their side of the story.

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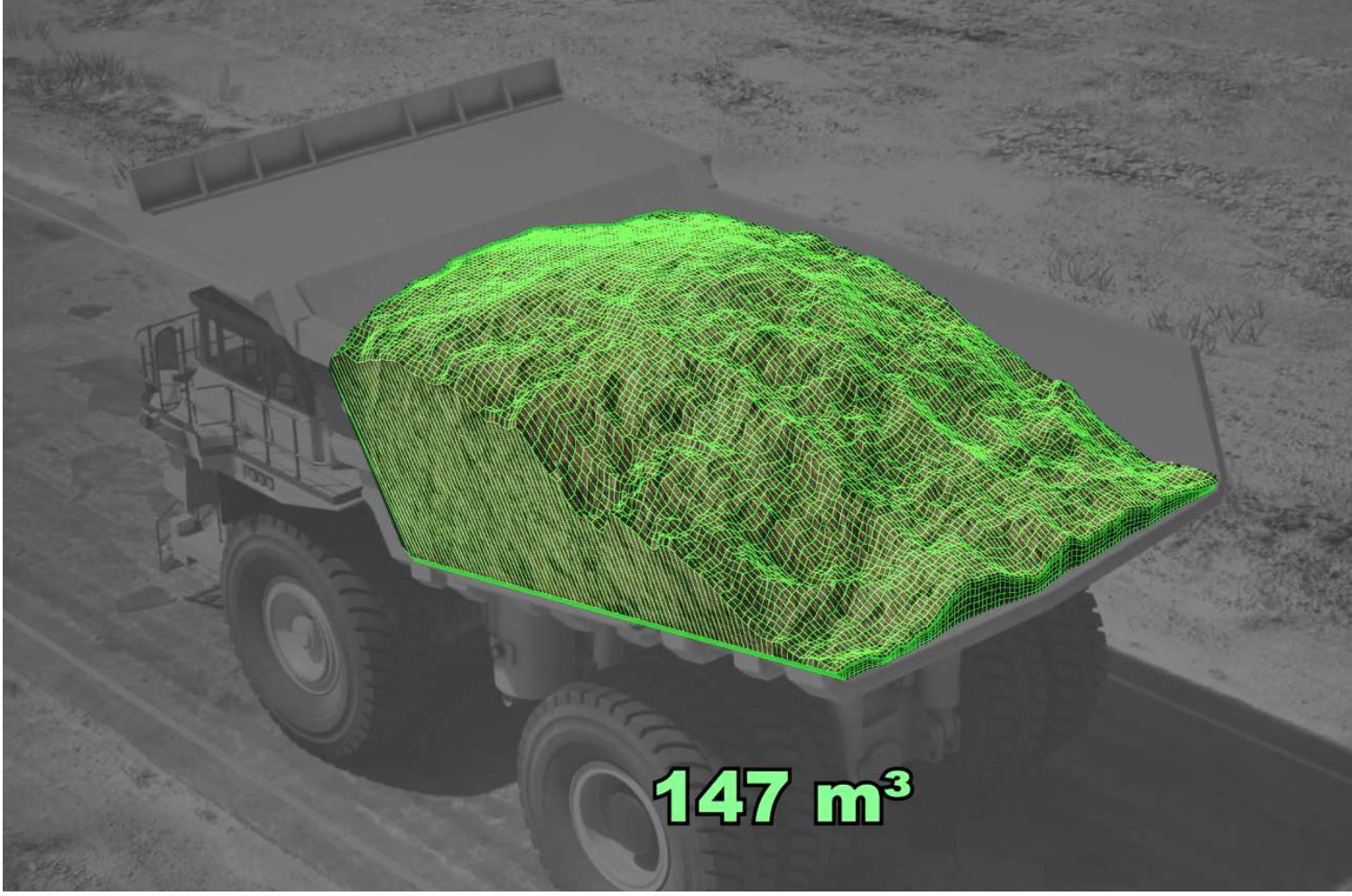


Enhance Your Mining Operations with LASE's Precision Measurement Systems

Accurate measurement of bulk materials is crucial in the mining and construction industries, directly impacting operational efficiency and profitability. LaseTVM offers state-of-the-art volumetric measurement systems designed to meet these demands.

Introducing the LaseTVM Product Family

The LaseTVM series comprises two primary models:

- **LaseTVM-S (Static):** Ideal for scenarios where trucks can pause for measurement. In this setup, the truck positions itself beneath the sensor, and a 3D laser scanner generates a precise load profile while the vehicle remains stationary.
- **LaseTVM-M (Motion):** Designed for dynamic operations, this model allows trucks to be measured in transit without stopping. It employs two 2D laser scanners, arranged perpendicularly, to capture the truck's position and cross-sectional profile. The system constructs a comprehensive 3D profile of the load by integrating data from both scanners.

Key Features and Advantages

Both LaseTVM systems offer a range of benefits tailored to the rigorous demands of the mining and construction sectors:

- **Automatic Load Volume Measurement:** Eliminates manual errors and enhances data accuracy.
- **Web Portal for Remote Access:** Facilitates real-time monitoring and data retrieval from any location.
- **Immediate Volume Calculation:** Provides instant results without the need for conversion factors.
- **Effortless Installation:** Designed for quick setup, minimizing operational downtime.
- **Surface and Underground Capability:** Success can be achieved with both surface and underground bulk material volumetric scanning with established use cases in Africa.
- **Reduced Queuing:** Streamlines the measurement process, allowing for continuous workflow.
- **Prevention of Weight and Volume Manipulation:** Ensures data integrity by mitigating potential tampering.
- **Independence from Moisture Variations:** Traditional weight measurements can be affected by moisture content, leading to inaccuracies of up to 20%. LaseTVM's

laser-based approach remains unaffected by such variables, ensuring consistent precision.

- **High Accuracy:** Delivers measurement precision with a typical accuracy of around 2%, ensuring reliable data for operational decisions.
- **Load Profile:**Real time fragmentation and condition monitoring solutions now available for additional load detail, compliance monitoring and intelligence.

Versatility Across Material Types

LaseTVM systems are engineered to handle a diverse array of materials, including:

- **Rocks &Stones**
- **Sand& Aggregates**
- **Ore& Waste**
- **Wood Products**

This versatility makes them indispensable tools across various sectors within the mining and construction industries. With the added benefit of making the scanner head mobile with new trailer feature the LaseTVM is now mobile. Reach out to Dwyka Mining Services to arrange a LaseTVM Green Mamba demo at your site – sales@dwykamining.com

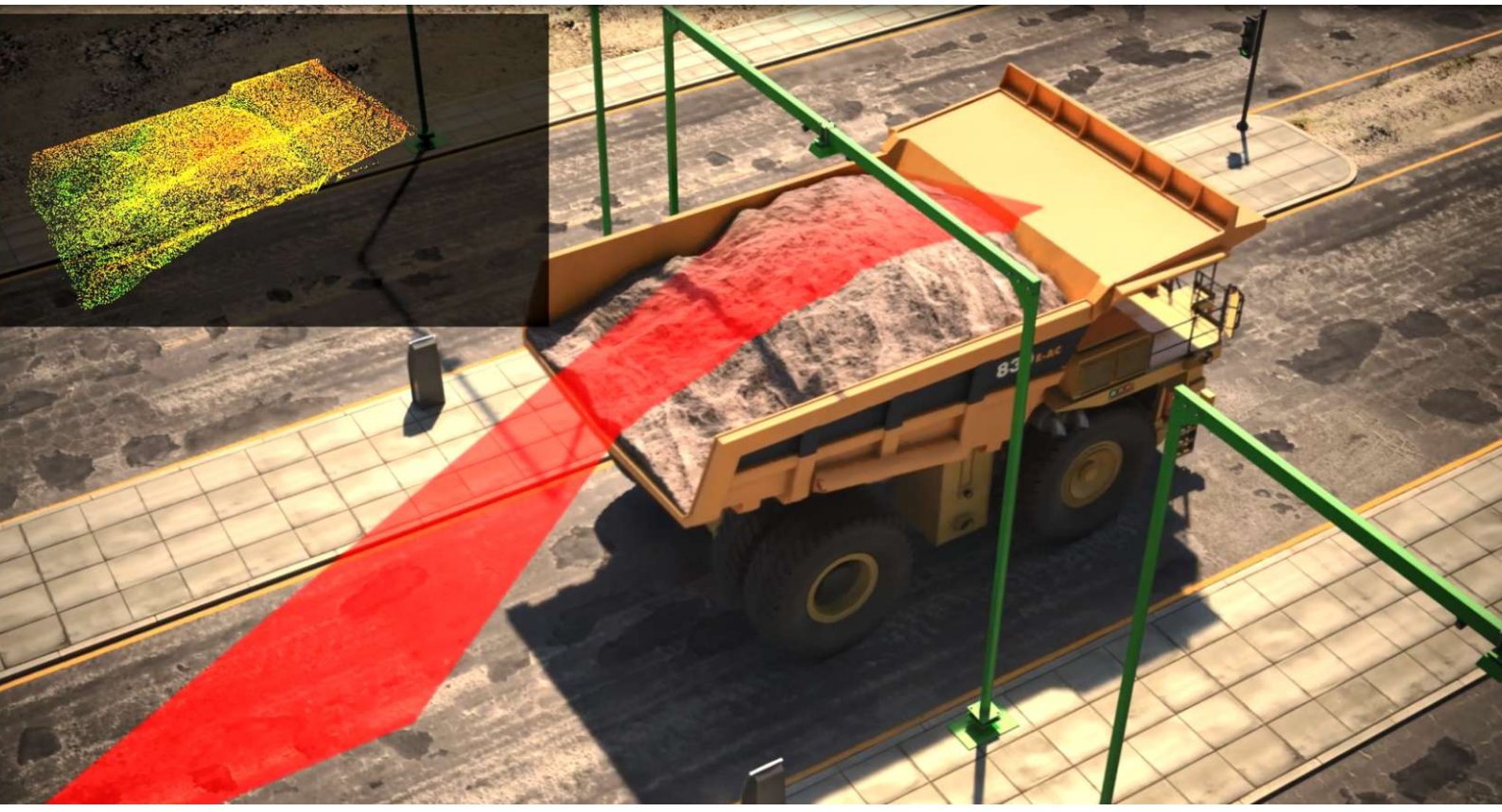
Conclusion

Incorporating LaseTVM's advanced volumetric measurement systems into your operations can significantly improve efficiency, accuracy, and data integrity. Whether dealing with stationary or moving vehicles, LaseTVM provides a reliable solution to meet your bulk material measurement needs.

With Dwyka Mining Services as authorised resellers active across Africa, reach out to our team to make the technology tangible and review active case studies on surface and underground applications at Dwyka Mining Services official website.

For more information and detailed specifications, visit LaseTVM's official website.

Download Case Study - Tharisa Minerals LASE TVM-3D-M



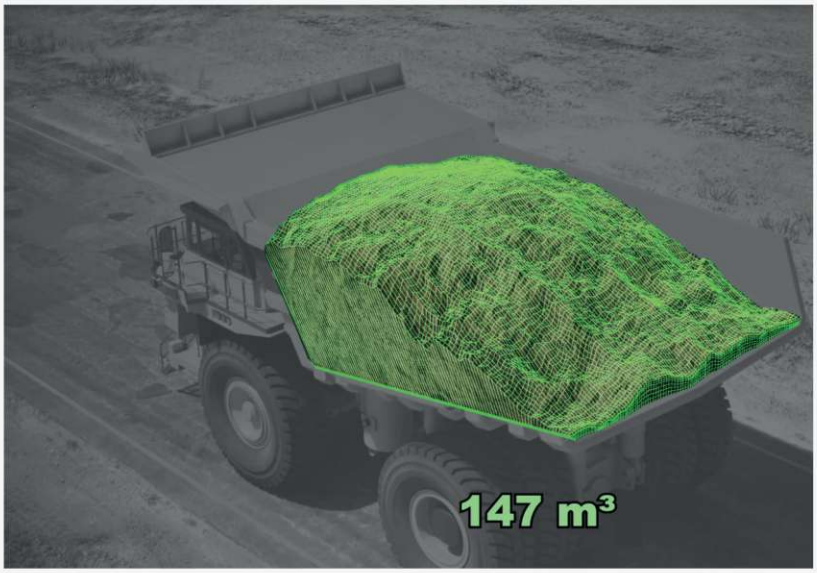
LaseTVM-3D-M

TRUCK VOLUME MEASUREMENT

A highly accurate 3D laser measurement system for automatic and dynamic measurement of truck-load volumes during a passage for various materials such as stones, sand, ore or wood products.

- » no conversion factors
- » exclusion of manipulation
- » high accuracy
- » underground option
- » fragmentation analysis
- » easy and fast installation

The weather-resistant laser scanners are mounted on a frame or boom in a central position above the truck lane.



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Every Minute Counts: How Short-Interval Control Maximises Copper Output

Zambia has set an ambitious course for its copper industry, positioning itself as a global powerhouse in the years ahead. Through the National Three Million Metric Tonnes Copper Production Strategy (2031) and the Critical Minerals Strategy (2024–2028), the government aims to increase annual copper output from 820,000 tonnes in 2024 to one million tonnes in 2025, with a long-term target of three million tonnes by 2031.

Achieving this scale will demand more than just deeper pits and larger fleets. As operations grow, so does the complexity of managing them. Without the right systems in place, inefficiencies such as idle trucks, queuing delays, and untracked variances can quietly erode performance—turning ambitious production targets into missed opportunities.

Where Mines Lose Value in Real Time Production losses in open-pit mining often aren't driven by geology. They stem from operational "time leaks" - for example:
**Trucks standing idle in queues.*
**Shovels waiting for blast clearance.*
**Payload variances only discovered after the shift.*
By the time managers see the reports and step in, the tonnes are already lost.

The Case for Short-Interval Control (SIC)
Short-interval control (SIC) breaks each shift into smaller review windows of 15 to 60 minutes, giving supervisors live, real-time visibility into what's happening across the pit. This timing allows operational teams to spot deviations - like truck queues, underloading, or shovel delays - and act immediately before small inefficiencies snowball into lost production.

Traditionally, production reviews happen at the end of a shift when reports are compiled, and problems analysed. By then, the tonnes are already lost. SIC changes this dynamic by creating a continuous feedback loop, where managers and operators solve issues in-shift, while material is still moving and changes can be most effective.

For example, if dispatch data shows a buildup of idle trucks at a particular loading point, fleet allocations can be adjusted within minutes rather than hours. Similarly, cycle-time spikes can trigger rapid investigations, helping to keep operations aligned with the plan and production targets on track. SIC turns production management into a continuous feedback loop, where every decision protects tonnes while they're still moving.

How Mineware Consulting Enables SIC Mineware Consulting is a South-African based company writing operational mine management software for international deep-level and open-pit mines. Their flagship Syncromine Production module turns control room logs into actionable, same-shift

decisions. Here are the highlights:
** Dispatch and payload data feed automatically into SIC dashboards.*
**Variances in cycle time, payload, or queuing are flagged in real time.*Supervisors receive in-shift alerts to optimize fleets or adjust truck allocations.*
**Digital shift change data ensures accountability and a smooth shift changeover.*
The result? Fewer idle minutes per truck, more tonnes per operating hour, and tighter plan-versus-actual reconciliation by bench, fleet, and cycle.

Why It Matters for Zambia For Zambia, where national output targets depend on ambitious expansion programmes, every marginal tonne counts. SIC ensures that production growth translates into real, measurable output - not just theoretical targets.

South African mining companies already using Syncromine have reported significant efficiency gains. The same discipline can now support Zambia's copper expansion drive, ensuring scale does not come at the cost of control. For those mines looking to scale smarter, not just bigger, Mineware Consulting is the answer.

mineware
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The lube kitchen series part 11: Friction Modifiers – the smooth operators in your oil

By Steven Lumleyk

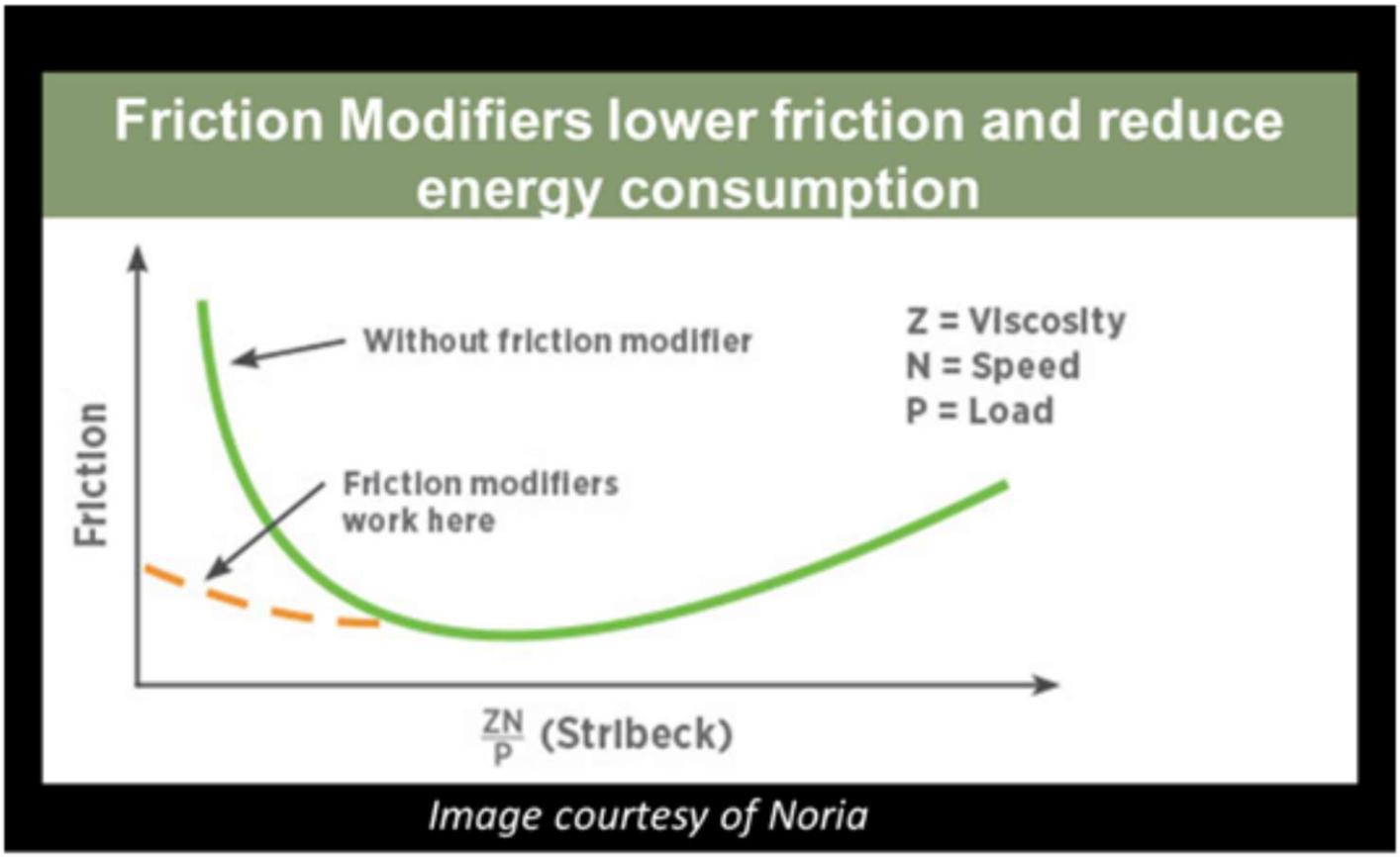

Image courtesy of Noria

Continuing the dialogue around oil additives with condition monitoring specialist company, WearCheck, this time the focus turns to friction modifiers.

One of the most important features of a lubricant is the reduction of friction between two surfaces. Besides the base oil, additives, like friction modifiers, are added to perform this function.
So, what is a friction modifier?

Put simply, friction is the force of resistance to motion that is present between two bodies in contact. To modify an entity is to make a partial or minor change to it, so, in a nutshell, friction modifier additives modify or partially alter the coefficient of friction between metal surfaces.

The development of friction modifier additives traces its origins back to the early 1900s, but it was only from mid-century, thanks to advancements in chemistry and materials science, that the use of this additive became more common in lubricant formulations.

Friction modifiers were originally used to formulate limited slip-gear oils, automatic transmission and multipurpose tractor fluids. Their use, however, escalated in the late 1970s due to the oil embargo, which thrusted fuel economy into the limelight and led to the introduction of friction modifiers in engine oils.

Friction modifier additives can be classified into different categories based on their chemical composition and mechanism of action but are generally grouped into two categories: organic and inorganic friction modifiers.

Organic Friction Modifiers (OFMs) are compounds that contain carbon-hydrogen bonds that are often derived from organic molecules such as fatty acids, esters, or amides. OFMs typically have a polar head-group which enables the OFM to adsorb onto the metal surface, and a non-polar hydrocarbon backbone which maintains oil solubility and to enable film formation between contacting surfaces.

Inorganic Friction Modifiers are typically derived from minerals or metals and may include solid lubricants like molybdenum disulfide, graphite, or other metallic compounds. These modifiers undergo chemical reactions with the metal surfaces with which they come into contact, leading to the formation of chemical bonds between the modifier and the metal. This process, known as chemisorption, can result in the formation of low shear-strength films that provide effective lubrication and reduce friction between the surfaces.

OFMs are most widely used in lubricant formulations primarily due to their versatility, compatibility with various base oils and additives, and effectiveness in reducing friction and wear. Additionally, because they

are based primarily on hydrogen, carbon, nitrogen and oxygen, they also present a more environmentally friendly alternative - especially in the face of rising emission-control standards.

OFM molecules consist of two parts: a polar end (head) and an oil-soluble end (tail). The head attaches itself to the metal surface to create a cushion for the metal surface against another metal surface. The tail part of the modifier stands up like carpet strands; vertically stacked besides each other in a nano-sized sheet covering the metal surface. These molecules hold up when cushioned surfaces come into light contact with each other. This forms a thick boundary film that is softer than metal surfaces. These films are difficult to compress, good for boundary and mixed lubrication regimes, easy to shear and good for smooth, easy startup from static to dynamic conditions.

While their primary function is to reduce friction between moving surfaces, they can also contribute to the anti-wear properties of lubricating oils, as these protective layers act as barriers, reducing direct metal-to-metal contact and minimising wear, specifically in boundary lubrication conditions, which ultimately helps extend the lifespan of mechanical components. It is for this reason that they are often referred to as boundary lubrication additives.

These days friction modifiers are commonly found in automotive engine oils, transmission fluids, and industrial lubricants. In transmission fluids, friction modifiers are used to improve engagement on clutches. In engine oils, friction modifiers are used to improve fuel economy by reducing friction, which is crucial for increased efficiency and durability.

The need for energy efficiency is leading to the growing use of additives that reduce friction in thin film boundary and mixed lubrication conditions. As such, friction modifier additives play a crucial role in the development of lubricating oils in that they offer improved performance, efficiency, and durability for a wide range of automotive and industrial applications. As technology continues to advance, these additives will continue to evolve to meet the changing needs of the industry.

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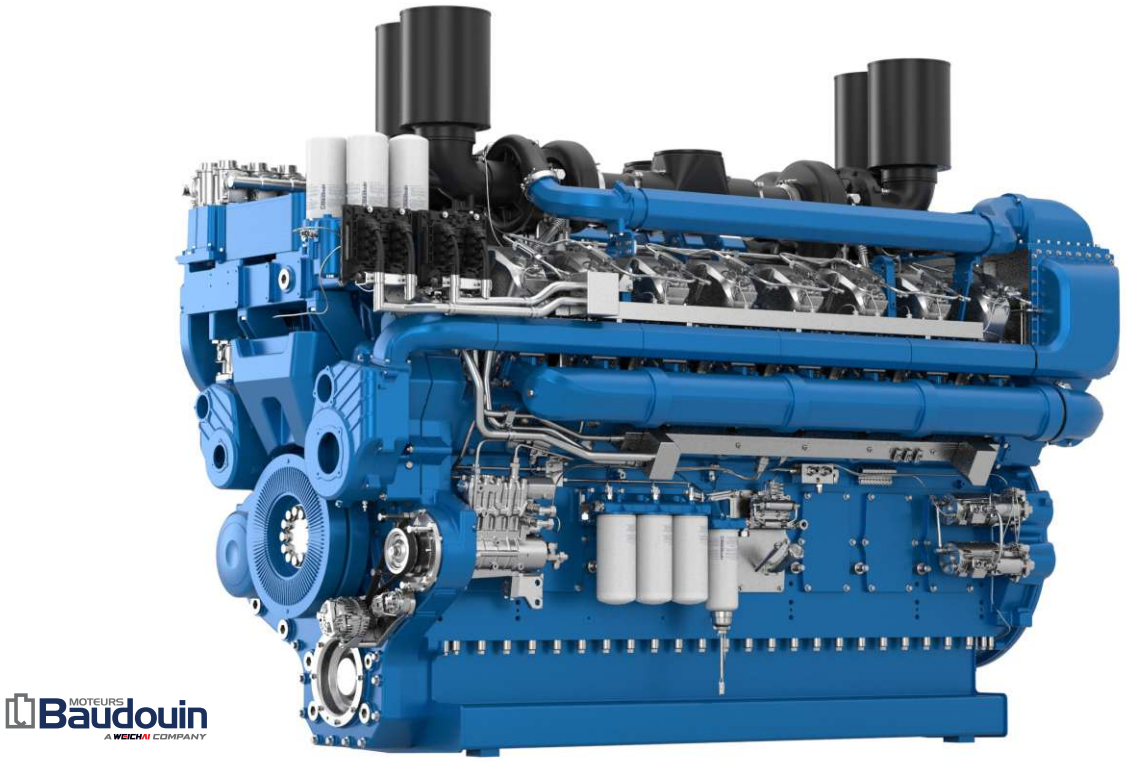

Baudouin PowerKit: Engineered Prime Power for the Mining Sector

In mining, the question is never *if* power is needed, but *how* it can be delivered, reliably, continuously, and in the toughest conditions imaginable. Can your equipment keep running when the dust is thick, the temperature soars, or the site is hundreds of kilometres from the nearest grid?

Baudouin is reinforcing its position in the mining industry with its PowerKit range, purpose built to deliver continuous prime power in the most demanding environments. With outputs reaching up to 2400 kWe, the range includes the M11, M16, M26, M33 and M55 platforms, each adapted to meet the unique operational challenges of remote and high load mining sites. From supporting crushers, conveyors and dewatering pumps to powering ventilation systems and processing plants, these engines ensure uninterrupted performance where uptime is essential.

The 12M26 is a compact 31.8 litre V12 platform that delivers strong mid range power in a footprint suited for modular plants and mobile applications. Need more muscle but still want to save space? The 20M33 combines high displacement with an optimized package size, offering an ideal balance of output and space efficiency for large scale mining facilities. And for the most demanding applications, the 16M55 delivers exceptional power density and mechanical strength, producing up to 2400 kWe for continuous base load operations in the largest mining complexes.

What gives these engines the edge? All the COP models feature heavy duty air filtration as standard, with high airflow capacity, low initial restriction, and exceptional filtration efficiency (>99.7% initially, >99.9% at full life), plus a large dust holding capacity. Operating in -30°C to 110°C, and tested to ISO 5011 and ISO 12131-1 A4 standards, this system is designed to thrive in the harshest off road conditions.

Flexibility is built in. Baudouin engines for mining can be supplied with either mechanical or ECU controlled fuel systems. Cooling packages? Choose between mechanical or electric motor driven radiators. And with a wide range of accessories available, each unit can be tailored to match specific site and application needs.

And what about downtime? PowerKit COP is engineered for maximum uptime, with a 12 month unlimited hours warranty to keep operations moving. Plus, Baudouin's global service network and reliable spare parts supply ensure expert technical support is always close at hand.

By delivering high performance, durable engines tailored for mining applications, Baudouin proves it is more than a supplier: it is a trusted partner when continuous operation is non-negotiable. The PowerKit M11, M16, M26, M33 and M55 give mining operators resilience, adaptability and cost efficiency to meet production targets, even in the world's toughest environments.If you need expert support for your COP applications project, our PowerKit Engineering team is here to help, contact pktae@baudouin.com.

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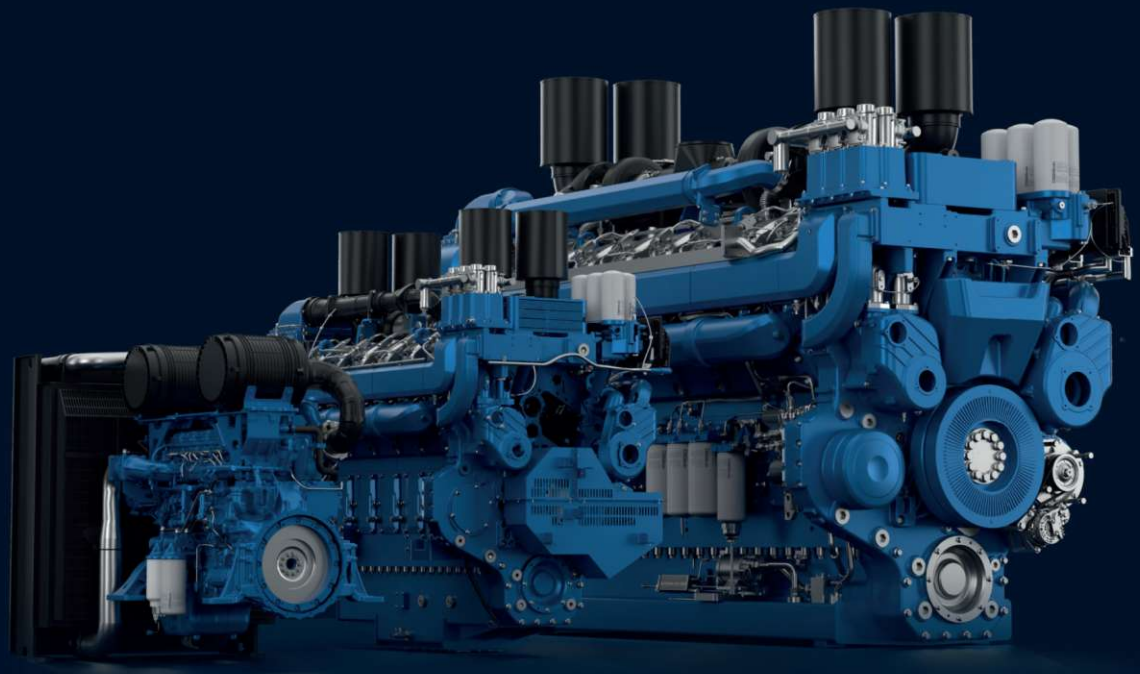

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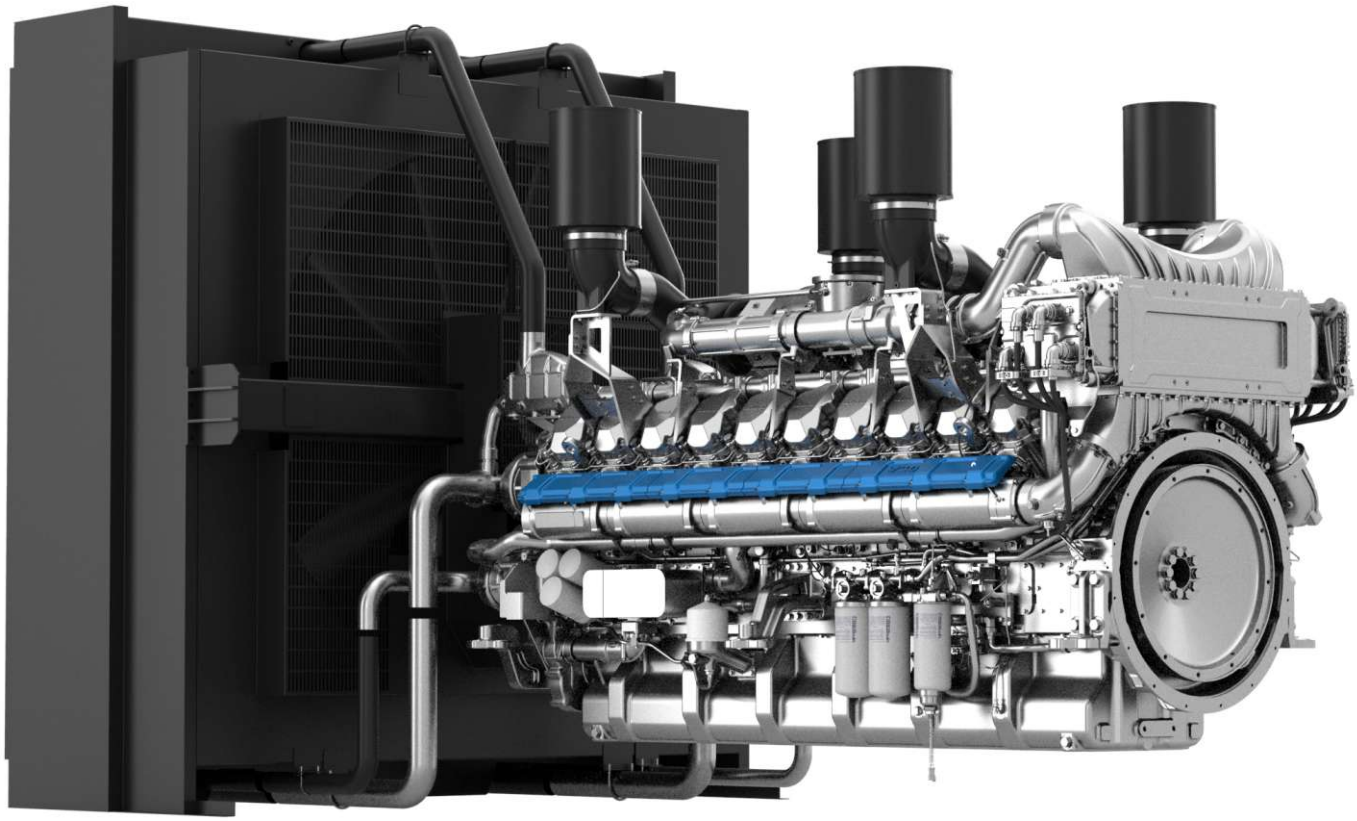

Power You Can Count On in the World's Harshest Mining Environments

In mining, reliable power is not optional, it is mission critical. From remote desert pits to high altitude operations, equipment must perform flawlessly when dust clouds the air, temperatures swing from extreme cold to searing heat, and the nearest power grid is hundreds of kilometres away.

Baudouin's PowerKit range is engineered for exactly these conditions. Delivering continuous prime power up to 2400 kWe, the M11, M16, M26, M33 and M55 platforms are purpose built to handle the heavy demands of crushers, conveyors, dewatering pumps, ventilation systems, and processing plants.

Performance Across the Range

- **12M26** – A compact 31.8 litre V12, ideal for modular plants and mobile installations, combining strong mid range power with a small footprint.
- **20M33** – High displacement in an optimised package, providing an excellent balance between power output and space efficiency for large scale facilities.
- **16M55** – Exceptional power density and mechanical robustness, delivering up to 2400 kWe for continuous base load in the largest mining complexes.

Engineered for Extreme Conditions

Every COP model comes with heavy duty air filtration as standard. This advanced system offers high airflow capacity, minimal restriction, and exceptional filtration efficiency (>99.7% initially, >99.9% at full life), alongside impressive dust holding capacity. Certified to ISO 5011 and ISO 12131 1 A4 standards, it operates reliably from **-30°C to +110°C**, ensuring maximum protection in severe off road environments.

Tailored to Your Operation

Flexibility is built into every PowerKit. Choose between mechanical or ECU controlled fuel systems, mechanical or electric motor driven radiators, and a wide range of accessories to configure each engine to your site's exact requirements.

Maximum Uptime, Minimal Downtime

With a 12 month unlimited hours warranty and the backing of Baudouin's global service network, mining operators can depend on rapid spare parts supply and expert technical support wherever their site may be.

More Than a Supplier, A True Partner

By combining high performance, durability, and application specific flexibility, Baudouin ensures mining operations stay productive, cost efficient, and resilient in the toughest environments on earth.

If you need expert support for your COP applications project, our PowerKit Engineering team is here to help, contact **pktae@baudouin.com**.

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Sound exploration – the bedrock of every mining project

Whether the purpose is to assess the value of an acquisition target or to decide on advancing a project to its next stage, a due diligence study on the exploration work conducted is a vital risk mitigation measure.

"The orebody and its geologicalsetting form the foundation of a mineral project's value, so the project champions and other stakeholders need to have the utmost confidence in the reliability of the exploration results," says Marcin Wertz, partner and principal mining engineer at SRK Consulting (South Africa). "It might be possible to 'engineer out' many of the later challenges in a mining project, but the geological value inherent in the orebody is fixed and can't be improved; the exploration process therefore needs to be systematically and professionally conducted in line with the highest standards."

Such a due diligence is essentially an audit of how the prospecting and exploration has been done, and the procedures for extracting geological data that forms the basis for valuation. However, there are many factors to consider, says Wertz, and so a due diligence usually has to cover the same ground as the initial feasibility study.

Codes and standards

For the exploration aspects, a key focus of the due diligence is how well the project developers have aligned with the selected reporting codes for mineral resources and reserves, explains Alan Page, principal geologist at SRK Consulting (South Africa). These codes – such as SAMREC for South Africa and JORC for Australasia –set out the minimum standards for public reporting of exploration results. This aims to enhance confidence in these results among stakeholders like stock exchanges, lenders, investors and regulators.

"To effectively apply these codes, the exploration process must follow certain standard operating procedures (SOPs)," said Page. "These SOPs cover multiple aspects, including the method and standard of the actual exploration drilling, and the protocols that drive quality assurance and quality control."

Drillhole spacing, positioning

Among the areas where quality concerns can arise is in topographic and drillhole surveys, which need to form part of the due diligence checklist. Requirements might vary between commodities, and the professional practitioners conducting the study would need to take these into account. A commodity such as gold, for instance, has strict guidelines relating to the spacing of drillholes (SANS 10320:2016), according to Nicolaas Steenkamp, principal geologist at SRK Consulting (South Africa).

"Drillhole spacing for most mineralswould be recommended by a Competent/Qualified Person with experience of the deposit type or orebody in question, but they would still tend to specify narrower spacing for complex or alluvial deposits – as opposed to tabular bodies which could manage a wider spacing,"

said Steenkamp.

There can also be issues with historical exploration results where there are inaccuracies, for example, in actual drillhole positions – which may cast doubt on the validity of the models developed from this data, saidIvan Doku, partner, resource geologist and country manager of SRK Consulting (Ghana).

“In a recent case where we experienced this challenge, we recommended to a client that we conduct a light detection and ranging (LIDAR) survey to check the accuracy of the elevation model,” said Doku. “Without this correction, the geological model would have led to unsuitable mine plans.”

No short cuts

He highlighted that mineral exploration is usually capital intensive and costly, but it is inadvisable to cut corners at this critical stage. His experience of the challenges that clients face when their exploration standards are below par, is that it costs much more to rectify deficiencies later – and could easily put the entire future of a project at risk.

“Conducting a due diligence on exploration at an early enough stage can flag issues that need attention – so that they do not threaten the project after it begins to gather momentum,” said Doku.

Samples and testing

The guidelines contained in the mineral reporting codes are intended to mitigate against issues like sample loss before it reaches the laboratory, or incorrect labelling which can lead to samples having to be discarded. Page noted that if the correct amount of material recovered per hole is not acceptable, the analysis results can end up being unrepresentative.

“Another issue is the analysis itself. Has the analysis been done by an accredited laboratory? And was sample preparation properly conducted?” he said. “This is closely linked to the quality controls on the drilling itself; if theprocess is not fully standardised and controlled, there can be inconsistencies arising from a change of staff.”

He emphasised that the lack of independent quality assurance and quality control (QAQC) programmes can be a fatal flaw in exploration projects, as it would allow sub-standard procedures by those undertaking the work to go unnoticed.

Grade, density and tonnage

Density measurement during the exploration phase is another area where there is often insufficient attention, he explained. As the density variableis a key determinant in calculating tonnage, any inaccuracies in density data will lead to incorrect estimates and hence tonnage forecasts. This is likely to create serious flaws during mine planning.

“When reporting a resource, we report on both grades and density; while there is a heavy focus on grades, there is often too little attention paid to density,” said Page. “Metal content is a function of tonnage and grade, so if your tonnage estimate is wrong then your metal content forecast will be wrong.”

Geological mapping to delineate the size and extent of the orebody, as well as structural mapping to find underground faults that will affect modelling, are among the other elements that are critical to the final resource estimations. So too is the lithology, which reflects the different ore zones and geological domains with varying characteristics.

“Leaving out just one aspect of a long and complex exploration process – such as the systematic surveying of drillhole columns – can put all the exploration results at risk,” said Page. “Through a due diligence study, we can review clients' procedures to assess the level of compliance, and monitor to check that any recommended adjustments are implemented.”

Through a due diligence study, consultants can review clients' procedures to assess the level of compliance and monitor to check that any recommended adjustments are implemented. Image supplied by SRK Consulting.

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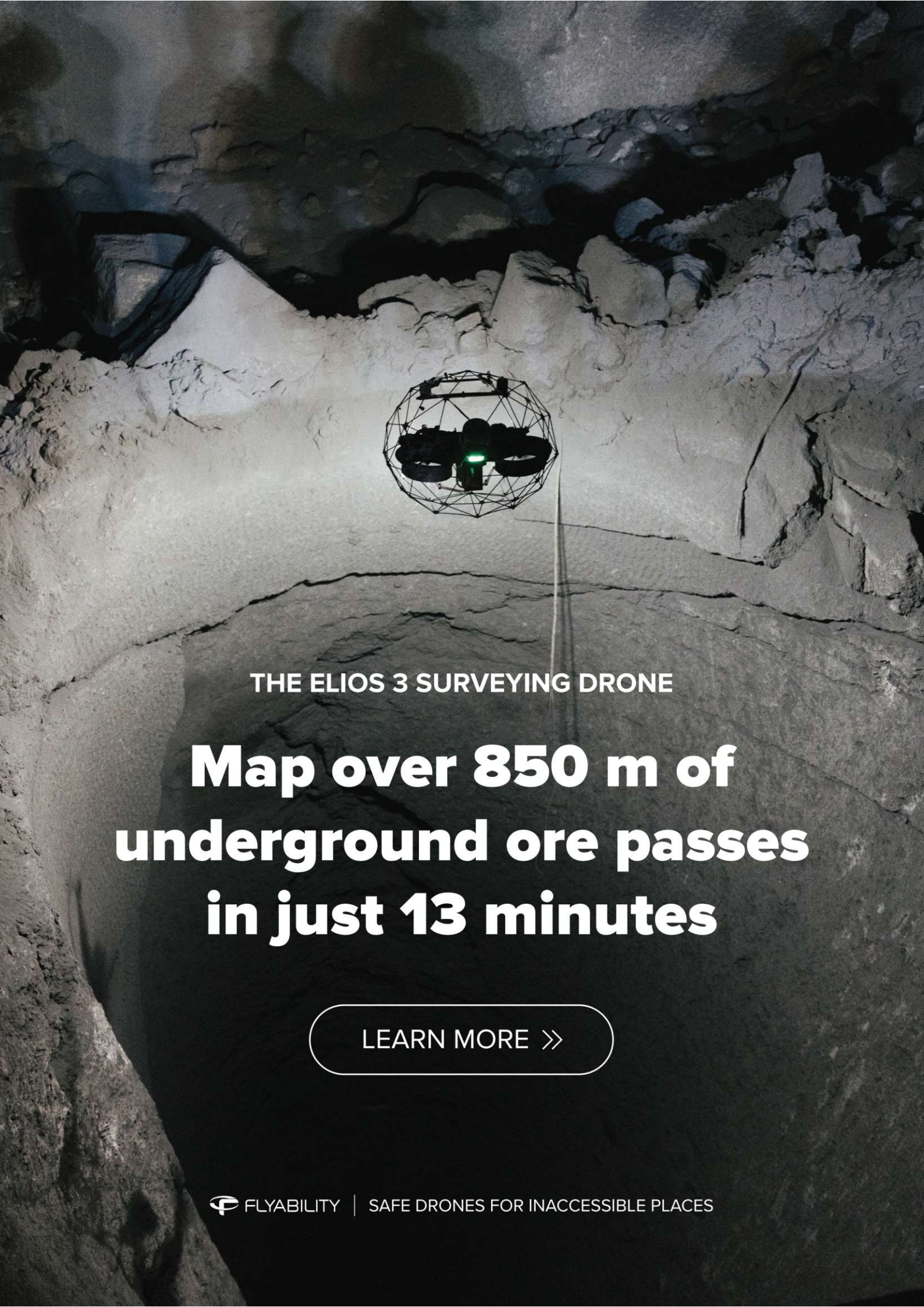
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The Evolution of KSB's self-priming pump for South Africa's wastewater solutions

KSB Pumps has a proud global legacy in the development of self-priming pump technology which reflects decades of engineering innovation and application expertise. Originating in Germany KSB's ETAPrime range has long been recognised as a benchmark in dewatering applications with reliable and efficient designs for demanding site conditions.

Building on this foundation, KSB's AU series which are manufactured in Spain has extended the company's self-priming expertise into screened wastewater handling which meets the growing needs of municipal and industrial sectors worldwide. This global manufacturing network which also includes facilities in Germany, Spain, India, China, and locally has contributed to the continuous evolution and localisation of self-priming pump designs with adaptations on proven European technology to regional requirements. This global collaboration ensures that KSB's self-priming solutions consistently deliver solid performance and contributes to the company's leadership in wastewater and dewatering pump technology.

Locally, KSB Pumps and Valves South Africa continues to strengthen its presence in the country's wastewater sector where it draws on decades of engineering expertise and performance in self-priming pump technology. According to Hugo du Plessis, product manager for Wastewater at KSB Pumps and Valves, the company's local journey began in 2005 with the design and manufacture of its own range of self-priming pumps. “We have been building self-priming pumps since 2005 during which time we have demonstrated our understanding of wastewater pumping based on our solid engineering principals to deliver solutions that are suited to Southern African conditions,” he explains.

KSB's locally produced self-priming pumps including the ELB, ELK and ELS models have become trusted choices in dewatering, sludge transfer and screened sewage applications. These pumps are designed to handle grey and black water systemsaccommodating screened solids of up to 50–75 mm with dependable performance and easy maintenance.

KSB's Global History of Self Priming Pumps

- **ELB Series (launched 2005):** The first locally built self-priming unit developed for light sludge and general dewatering duties. Its compact frame and simple priming system made it ideal for portable and municipal service work.
- **ELK Series (2005 onwards):** An evolution of the ELB, this model offered higher flow capacities and improved bearing support for continuous wastewater operation in treatment plants and construction sites.

- **ELS Series (late 2000s):** Designed for heavier screened sewage the ELS features an enlarged solids passage of up to 75 mm corrosion-resistant internals and easy-clean access coverswell suited to wastewater sumps and return-sludge pumping.
- **ETAPrime (global KSB range):** Complementing the local designs ETAPrime showcases KSB's international expertise in dewatering and drainage applications across industrial and municipal sectors. Engineered for rapid priming in challenging site conditions the ETAPrime range has become popular in construction, mining and flood-control dewatering. Many of its proven design principles re incorporated into KSB South Africa's ongoing development of robust locally optimised dewatering pump solutions.
- **AU Range (Spain):** Manufactured at KSB's Spanish facility the AU range represents KSB's global expertise in screened wastewater and sludge-handling applications. Designed for reliable performance in municipal and industrial treatment plantsthese self-priming pumps efficiently manage liquids containing screened solids such as grey water, return sludge and light effluent. The AU range combines durable construction, ease of maintenance and high solids-handling capabilityin demanding wastewater environments. Its proven design features have also provided valuable insight and technical inspiration for KSB South Africa's continued advancement of locally engineered self-priming pump solutions.

While KSB's existing self-priming units have demonstrated exceptional reliability across wastewater and dewatering applications, the company has identified a rising local and global need for solutions capable of handling raw, unscreened sewage containing solids of 76 mm and larger. This demanding application represents one of the most challenging environments for pump design and KSB's ongoing research and engineering efforts are increasingly focused on meeting these heavy-duty solids-handling requirements with the same durability and higher efficiency hydraulics that define its current product range.

“It's part of our ongoing strategy to strengthen KSB's position in the wastewater industry and to demonstrate that we have both the local expertise and global backing to lead in this market,” says du Plessis. KSB's commitment to local engineering and manufacturing remains central to this approach. Unlike many competitors who rely primarily on imported products, KSB produces its wastewater pumps locally, ensuring shorter lead times, greater flexibility and seamless adaptation to South Africa's unique operating conditions.

Darren Ward, KSB's Western Cape branch manager, emphasises the importance of local manufacture and support infrastructure.“Many of our competitors have shifted to an import-only model and reduced their local presence. KSB has gone the other way. We have invested in South African manufacturingexpertise and nationwide support through our SupremeServ service network. That means our customers are getting lifetime support from people who understand local wastewater challenges.”

The KSB SupremeServ network extends across South Africa offering field service, maintenance and pump refurbishment through a network of regional branches and certified technicians. The company also runs the SupremeServ Academy which provides on-site and off-site training for customers and operators.“It is important to note that when companies and utilities choose KSB they are supporting a company that invests back into the local industry,” adds Ward.

Du Plessis concludes that the local wastewater segment presents a significant growth opportunity for KSB as the self-priming pump market in South Africa is still largely dominated by imported brands. “We want to capture that market with a locally built product developed with local conditions in mind,” he says. He notes that KSB's ongoing focus on engineering excellence and continuous improvement will ensure that its self-priming technology remains relevant and resilient, with plans in the near future to develop an improved version of the current design to better meet evolving industry demands.

How sensor-based sorting is extending the life of critical mineral deposits

As ore grades decline, global demand for critical minerals rises, and ESG expectations intensify, mining economics are being reshaped. TOMRA Mining's sensor-based sorting technologies are redefining how minerals are recovered,transforming once-discarded material into a valuable resource, extending mine life, and strengthening supply security for the energy transition.

Global demand for lithium, copper, rare earth elements, tin, tungsten, nickel, and cobaltis accelerating, driven toward clean energy and electrification. At the same time, mining operators face mounting pressures from declining ore grades, rising costs for energy, water, chemicals and labor, alongside increasing scrutiny of their environmental performance. Against this backdrop, sensor-based sorting is emerging as a transformative approach, enabling more efficient recovery of minerals while reducing environmental impact.

Maximizing recovery from previously discarded ore

Sensor-based sorting is redefining efficiency in mineral processing by addressing one of the industry's long-standing challenges: how to extract more metal from every ton of ore while using fewer resources.

By separating barren material early in the process, miners can significantly reduce energy, water and chemicals required for downstream treatment, unlocking value from ore that was previously uneconomic. This shift enables operations to recover more from what they already mine, turning lower-grade and marginal deposits into viable resources.

As ore grades continue to decline and operational costs rise, it has become increasingly important for mining companies to extract maximum value from every tonne of material. TOMRA Mining applies cutting-edge X-Ray Transmission (XRT), Near-infrared (NIR) and Laser sorting technologies to selectively separate valuable minerals from waste rock before processing. This early intervention reduces the need to crush, mill and chemically treat all mined material, lowering the use of energy and inputs, increasing recovery rates, and substantially reducing tailings volumes. The result is a more efficient, sustainable and economically resilient operation.

“At its core, sensor-based sorting addresses one of mining's greatest inefficiencies: we are able to recover more metal from the same amount of material,” explains Rasoul Rezai, Global Segment Manager Metals at TOMRA Mining. “By rejecting waste early, operators feed higher-grade material into their mills, reduce operational expenditure, and improve overall efficiency. This is particularly crucial for critical minerals, where supply tensions are increasing worldwide.”

This approach has delivered tangible results in mines across the world. At **Eloro Resources' IskaIskaPolymetallic project** in southern Bolivia, TOMRA's XRT ore sorting tests demonstrated the potential to reject significant quantitiesof sub-cut-off-grade waste, which dramatically reduces the capital and operating costs, permitting lower-grade ore blocks to be processed.

In Europe, TOMRA Mining is contributing its expertise to the EU-funded **Li4Life project**, which aims to develop technologies that enable access to lithium from existing mining deposits and tailings, reducing pressure on primary supply. This collaboration highlights the growing recognition of sensor-based sorting as a vital technology for ensuring the long-term security of critical minerals supply chains.

-Technology that redefines resource recovery

With decades of pioneering innovation of sensor-based sorting, TOMRA Mining is redefining how the industry approaches mineral recovery. Its XRT, NIR and Laser sorting technologies enable operators to identify and separate valuable minerals with precision, even in complex or lower-grade deposits.

Recent Ai-powered advancements have expanded the capabilities of TOMRA's XRT sorters. OBTAIN™ can double sorting capacity without changing the machine's size and mechanical design, while CONTAIN™ detects inclusion-type ores such as tin, tungsten, nickel, copper and sulfides, revealing even the smallest inclusions. Together, they form what

Rezai describes as “a new set of wings” for XRT technology.

Field trials at **Wolfram Bergbau in Mittersill, Austria**, demonstrated the transformative potential of these innovations. “It immediately changed the way we think about sorting and processing,” said David Comtesse, Production Manager. “This isn't just an upgrade – it's a completely new level of performance."

Another breakthrough, the TS100 precision ejection system, reduces air consumption by up to 70%, lowering operational costs and increasing recovery even further. TOMRA's portfolio of technologies allows operators to tailor solutions to the specific characteristics of each ore and deposit.

Beyond the technology, TOMRA takes a collaborative approach to ensure that every solution is optimized for the unique needs of a customer's mine and business case. Testing is conducted at TOMRA's global network of Test Centers in Germany, Australia and South Africa, and the company's experts work closely with operators on site to fine-tune performance and maximize efficiency.

Extending mine life and unlocking marginal deposits

TOMRA Mining's sensor-based sorting is also helping operators unlock value from ore that was previously considered uneconomic. By removing waste early in the process, blocks once classified as marginal can be incorporated into mine plans, expanding recoverable ore and extending mine life without requiring additional capital-intensive infrastructure.“Sensor-based sorting doesn't just improve processing, it reshapes mining strategy,” explains Rezai. “By increasing the grade of feed to the mill and rejecting waste early, operators can extract more value from the same deposit, increasing both the size and longevity of the mine.”

Supporting ESG goals and a circular mining economy

Sensor-based sorting is not only economically transformative; it directly advances mining companies' ESG objectives. By removing barren material before energy-intensive processing, TOMRA Mining's solutions help operators reduce energy use by up to 50%, cut water consumption, and lower greenhouse gas emissions, contributing to decarbonization and net-zero targets. Tailings volumes are reduced, less land is disturbed, and coarse, untreated waste can often be repurposed in other industries such as aggregates or road construction, supporting circular economy principles.

The technology also improves social outcomes by prolonging the life of mines and safeguards local jobs and economic contributionsin a sustainable way. On the governance side, data-rich insights enable operators to quantify environmental benefits and demonstrate responsible sourcing in line with ESG reporting frameworks.

Driving the future of critical mineral supply

The role of sensor-based sorting in critical mineral production is gaining recognition across the mining industry. Pioneering projects such as the Pilbara lithium plant in Australia have consolidated sensor-based sorting as a game changer in critical mineral processing, demonstrating both reliability and measurable economic and environmental benefits.

“Efficiency and recovery are paramount in an era of declining ore grades and rising demand,” Rezai concludes. Through its combination of advanced technology, operational expertise and collaboration with operators worldwide, TOMRA Mining is helping to shape a more sustainable and strategic future for critical mineral supply.

JOIN ZIMEC 2026,ZAMBIA'S PREMIER CONFERENCE FOR MINING AND ENERGY INVESTMENTS, PROJECTS AND PARTNERSHIPS

The annual Zambia International Mining and Energy Conference and Exhibition (ZIMEC) returns to the Copperbelt mining city of Kitwe for its 13th edition hosted at the Garden Court Hotel from 25 to 26 March 2026. Over 400 government leaders, corporate executives, investors, thought leaders and exhibitors from across the globe are expected to converge for two days of engaging debate and high-level networking at Zambia's largest and most established mining and energy industry event.

ZIMEC 2026 is proudly organised with the support of the Ministry of Mines and Minerals Development and the Ministry of Energy whose Ministers both officially opened the 2025 edition.

The event has enjoyed the firm support of key strategic and industry partners including the Association of Zambian Mineral Exploration Companies, Zambia Development Agency, Industrial Development Corporation and the Kitwe and District Chamber of Commerce and Industry that have all actively participated in previous editions.

The 2026 theme "Promoting Responsible Investment and Partnerships to Sustainably Grow Zambia's Mining and Energy Sectors", will highlight the Zambian government's strategy in the mining and energy sectors underpinned by progressive policy reforms and good governance to foster mutually beneficial investments and collaboration in the mining and energy sectors.Key Conference Topics at ZIMEC 2026 will include:**INVESTING RESPONSIBLY**:Upholding Transparency and Accountability Towards a Sustainable Social Licence to Operate.

ENSURING AFFORDABLE ACCESS: Creating a Competitive Local Energy Market to Expand Clean Energy Generation, Transmission and Distribution.

ACCELERATING MINERAL DISCOVERY: De-Risking Exploration and Leveraging Technology to Advance the Search for Minerals.

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PUMP MANUFACTURER APPOINTS FIRST FEMALE FIELD SERVICE SPECIALIST

From the shop floor to the global arena has been a sharp learning curve for KSB Pumps and Valves'Osedza Tshifhangowho recently became the first female field service specialist within the entire global footprint of KSB's giant operation employing more than 16 000 employees across the globe.

Field service has traditionally been a male-dominated environment demanding long shifts, extensive travel and the physical and technical stamina to repair complex pumpsystemsin operational conditions and often under severe pressure. Yet, these were exactly the challenges that initially drew the lightly built and feminine bench technician to the position.

Having joined KSB as a qualified artisanOsedzahad been working on both standard and engineered pump assemblies where she had gained a reputation for handling complex builds and delivering reliable results before being singled out for the field services position.

Hard work

“From the beginning I wanted to prove myself through my work and to me it doesn't really matter that I am a woman because if men can do it there is no reason why I wouldn't be able to do it either. Although it is not an easy role, especially with a family,I know if I want to grow I have to take the challenges in my stride,” Osedza says.

KSB Pumps and Valves veteran and the previous field service manager, CraigHawkins, says despite her quiet and reserved nature she showed all the hallmarks of being a good field services specialist. As a result, he actively encouraged her to move onto the road. “I saw true value in Osedza's abilities and she was always a step ahead, dedicated and not afraid to ask questions. Knowledge is power and she wanted to keep learning and moving forward.”

With all the hard work and the acquired skills during her time in the workshop Osedza was offered the position and made aware that the transition would require careful consideration considering that a KSB Field service specialist job involves hands on labour at times with heavy lifting and strenuous tasks. In addition there would be technical and overnight work, extensive travel and direct responsibility for equipment uptime among other equally demanding duties. Shortly after the offer was made, having mulled the decision over and after consulting her family,Osedzawas keen to begin and accepted the offer.

Happy clients

“Now a year into the new role Osedza is performing well. She has more than proven her ability under demanding conditions and is unflinching when confronted with any task including 24-hour shifts and even working over Christmas to bring critical pumps back online.This is also reflected in our clients'responses where some were initially surprised to see a woman arrive on site they were soon put at ease once they realised how adept she is at doing her work under any conditions. She knowswhat she is doing and the respect soon follows. In fact, feedback from customers has been incredible. They are gobsmacked to see a woman matching the guysskill for skill in what has thus far been a male dominated job,” says Craig.

Osedza balances her career with raising two childrenwho are also supported by her family. “My children are proud of what I do and that motivates mea lot,” she says.Her appointment opens the way for more women to join the ranks of field service specialists within KSB Pumps and Valves in South Africa, as well as for the global group and proves that the toughest jobs in pump maintenance demand skill not stereotypes.

Osedza holds an N6 certificate in electrical engineering, N4 mechanical engineering and boiler making qualifications and is actively building her expertise through the KSB Academy which offers more than 400 modules across mechanical, electrical and instrumentation fields relating to pumps, valves and pumping systems.

Future plans

Looking ahead, she has her sights set higher. “In future I would like to be a manager and possibly run a department or a depot. People like Craig within the organisation, as well as on the job learning and formal courses through our own Academy have helped my career tremendously and I believe that the more you learn the more confident you are on site.There are days when you're exhaustedbut when the equipment runs again and the customer is satisfied it's worth it,” she says.

Craig believes that her goals are realistic. “She's already shown the ethic and leadership that is required and with her quiet determination and willingness to work hard, she definitely has what it takes.

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Seeing beyond

Enhancing Mining Operations in Africa Through Intelligent Fleet and Asset Management

In recent years, mining operations across Africa have expanded into more remote and challenging environments. Companies are under pressure to maximize productivity, control operational costs, and, above all, ensure the safety of their workers. From our experience in field operations, implementing intelligent monitoring systems has become a vital step toward achieving these goals.

Challenges in African Mining Operations

Mining fleets face extreme conditions: long distances, unpredictable road conditions, fuel logistics issues, tyre wear, and security risks such as equipment theft. These factors not only increase costs but also cause operational downtime, impacting output targets.

How Intelligent Monitoring Addresses These Challenges

Drawing from on-site implementation, we found that adopting Totemtek's integrated GPS tracking, fuel monitoring, tyre pressure management, and video surveillance systems significantly improves operational stability.

1. Real-Time Visibility on Fleet Movements

With GPS systems, we can monitor vehicle locations in real-time, set geofences around high-risk areas, and track route deviations. This not only prevents unauthorized use but also supports faster decision-making during emergencies.

2. Tightened Control Over Fuel Usage

Fuel sensors allow real-time monitoring of tank levels and consumption patterns. After implementation, many sites saw fuel losses drop significantly, highlighting an immediate cost saving.

3. Extended Tyre Lifespan

The TPMS solutions gave early warnings of abnormal pressure or temperature, enabling preventive maintenance and significantly reducing tyre blowouts on rough mining roads.

4. Visual Oversight and Safety Enhancement

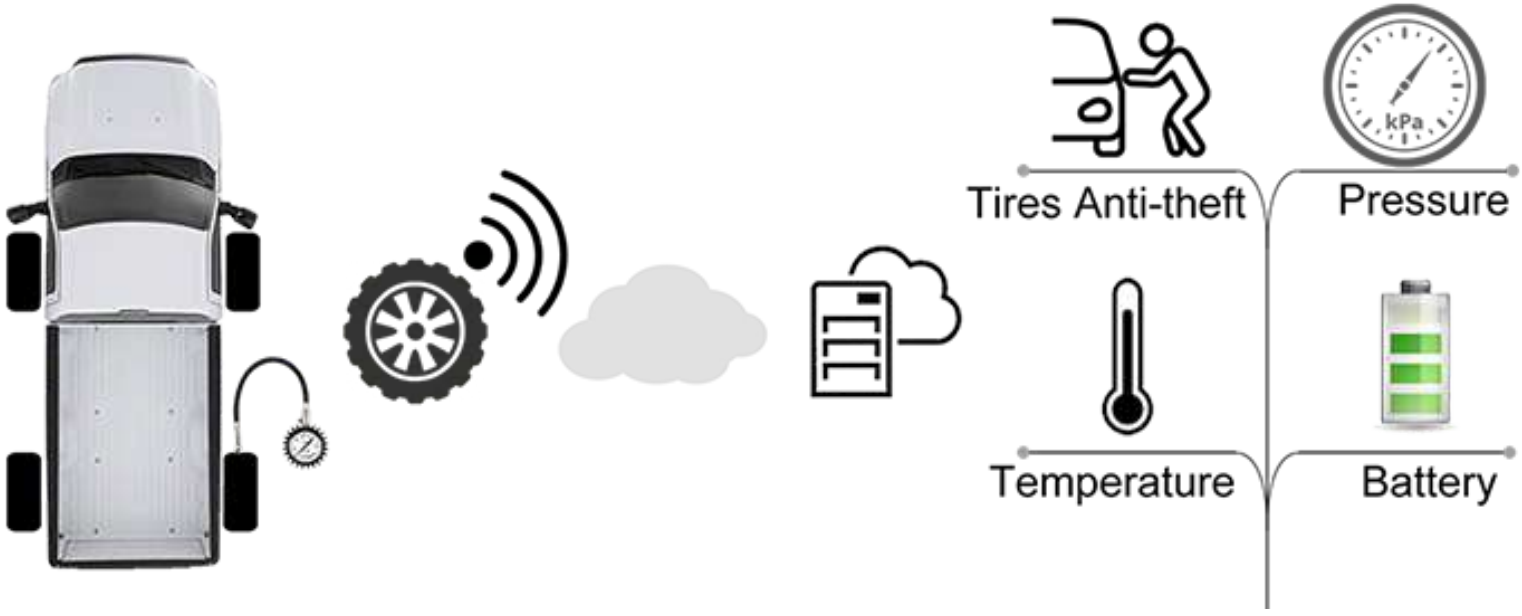
Integrating video monitoring with GPS data allowed management teams to oversee

vehicle behavior and site conditions remotely, strengthening overall site safety protocols.

5. Centralized, Remote Management
Using a unified cloud platform, all monitoring data could be reviewed on a single dashboard, accessible from any device. This eliminated the need for complex local infrastructure.

Deploying Totemtek's intelligent systems brought measurable benefits to mining operations — reducing costs, enhancing safety, and improving transparency. For African mining companies seeking sustainable growth under increasingly challenging conditions, adopting such smart technologies is no longer optional but necessary.

Totemtek offers businesses across Africa and the Middle East a flexible, open-platform fleet management solution, designed to promote safer driving practices and maximize the productivity of mobile assets and teams. Through "Intelligent Monitoring for Smarter Fleets," we deliver premium tracking solutions at competitive prices. With a strong presence across the region, Totemtek enables seamless fleet monitoring and management from anywhere in the world. Our solutions are fully customizable for your current operational needs and easily scalable to meet the demands of future growth.



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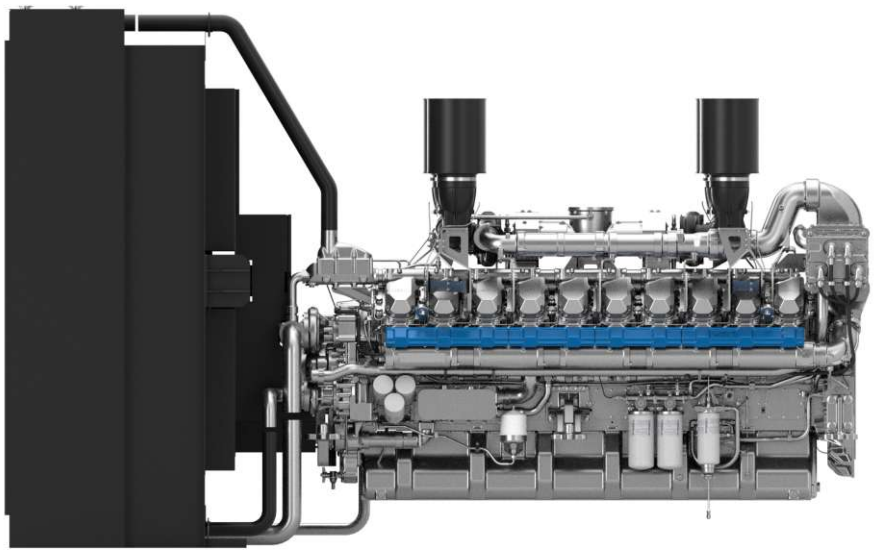

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