CROWN PUBLICATIONS

# MODERN QUARRYING

QUARTER 4 | 2024



## EXPANDING THE BABCOCK 'VALUE' OFFERING

babcock™

DANOHER

*unearthing natural potential*


## CUSTOMER FOCUSED MINING SOLUTIONS

Drilling | Blasting | Crushing | Material Handling


Supplying the African **mining** and **construction** industries with **quality** and **reliable** drilling, blasting material handling and processing **solutions**

Highly skilled and experienced people with **technical knowledge** accumulating for nearly **5 decades**

**Large fleet** of **advanced equipment technology** capable of delivering **bespoke solutions**

**www.danoher.com**

**Johannesburg +27 10 312 6050**
**Gaborone +267 316 1381**
**Francistown +267 247 0056**
**Bloemfontein +27 51 012 5003**

# CONTENTS

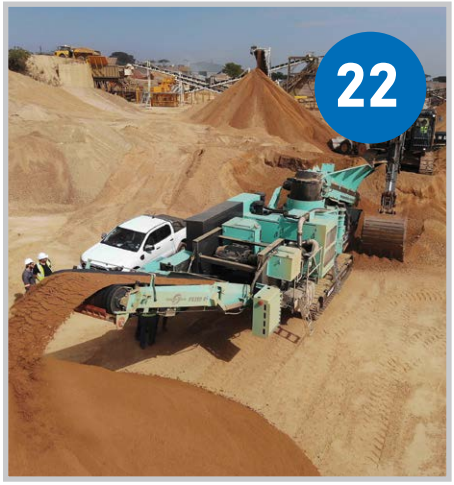











COMMENT

# INNOVATION LEADS THE WAY **IN QUARRYING**

Even though the quarrying industry has been slower in the uptake of new innovations, the increasingly cut-throat nature of the construction industry has necessitated necessitated that this industry maximise productivity – and by implication, employ new technology and change existing approaches to how it operates.

Innovation is said to be the ability to see change as an opportunity and not a threat. It is the introduction of new products, machines, methods and ideas that have the aim of improving existing outcomes.

Despite the slower tempo of innovation in the quarrying industry, in recent years it has started embracing new technology and especially its approach to sustainability. The quarrying industry supplies raw materials for construction, infrastructure and manufacturing and these changes will enable it to stay profitable and meet the challenges it faces in a fast-developing world.

## Drones: a technological innovation

There has been a marked increase in the use of digital technologies in quarrying. Automation and data analytics are now widely used in quarry operations – from weighing to monitoring the performance of equipment to more effective geological surveys. Technological innovation enables quarry operators to increase productivity, reduce costs and improve safety.

At this year's Institute of Quarrying conference in Durban, there was a detailed session on the use of drones in quarrying. These are increasingly employed to survey quarries as the aerial photography that is generated is used to create 3D maps of the quarry's geology for improved blasting, excavation and the reduction of waste. All of these contribute to improving the quarry's overall productivity.

## The rise of ESG

Quarries have the legal obligation of investing in principles that prioritise environmental and social issues, and corporate governance. As such, operators work towards reducing the quarry's environmental impact by using or recycling water, reducing emissions and increasingly using more renewable energy sources.

## Lower total cost of ownership

The use of innovation always has an eye on the bottom line though. Achieving the best return on their plant investment is a primary goal for mines, and partnering with OEMs like Weir is a strategic way to enhance equipment performance while reducing the total cost of ownership. The company is at the forefront of helping mines transition from reactive to prescriptive maintenance approaches, ensuring sustainable and safe operations through the optimisation of technology and equipment. Read this article on page 18.

Innovative advancements are also present on the mainstay of the quarry operations: production ouput. Following worrying discrepancies in the monitoring of production output, sales and inventory, a belt scale from Tru-Trac is winning the day for KwaZulu-Natal-based AfriSam Coedmore Quarry. With groundbreaking static calibration accuracy error levels as low as 0,06%, the belt scale provides reliable data for sound decision-making. Turn to page 32. ●

**PUBLISHED QUARTERLY BY:**
Crown Publications
P O Box 140
Bedfordview, 2008
Tel: +27 11 622 4770
**www.crown.co.za**

TOTAL CIRCULATION

**Q2 2024: 7 034**



**PUBLISHER:** Karen Grant

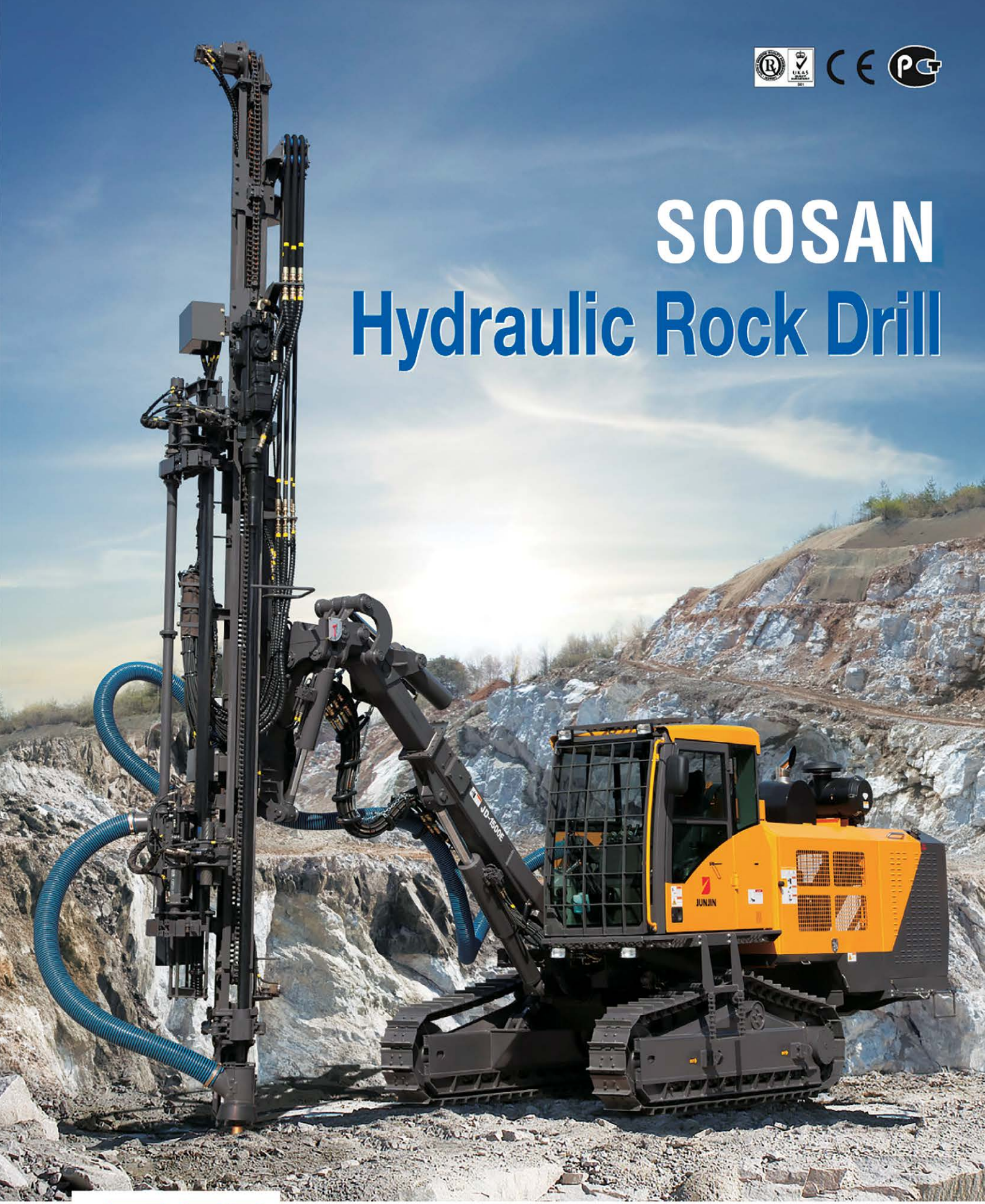
**EDITOR:** Wilhelm du Plessis
quarrying@crown.co.za

**PRINTED BY:** Tandym Print

**ADVERTISING:** Erna Oosthuizen
ernao@crown.co.za

**DESIGN:** Ano Shumba

**CIRCULATION:** Karen Smith



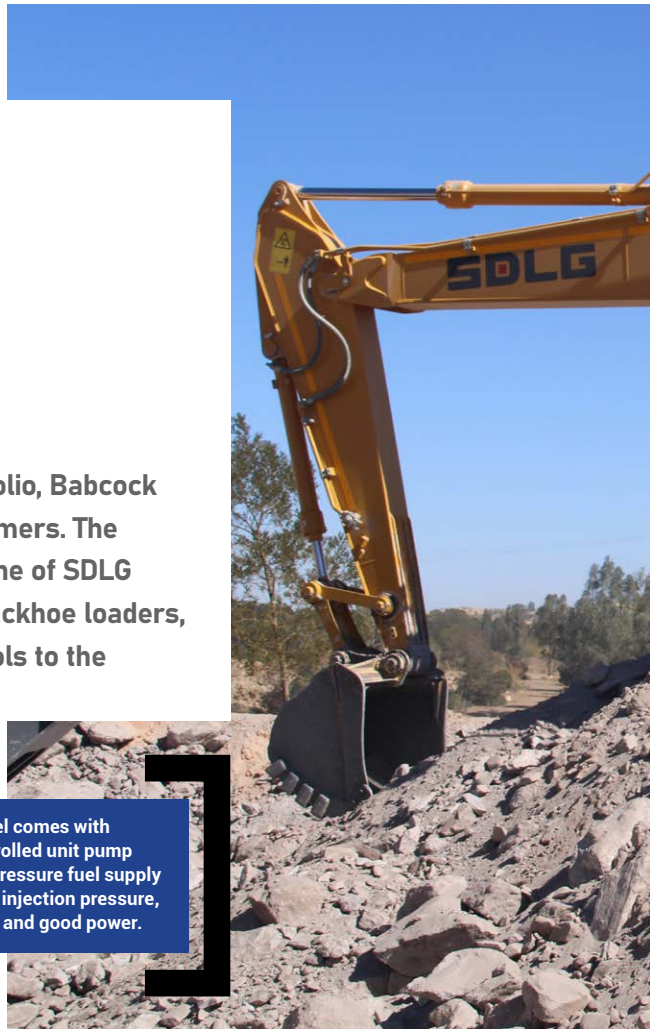

JMH EQUIPMENT
(PTY) LTD

Office: +27 87 135 1097
E-Mail: mholtzhausen@gmail.com
+27 82 448 8002

SOOSAN
Creative Breakthrough

# EXPANDING THE BABCOCK 'VALUE' OFFERING

**With the recent addition of SDLG excavators to its portfolio, Babcock now offers a comprehensive 'value' offering to its customers. The new range of excavators joins an already established line of SDLG wheel loaders and the recently added range of BULL backhoe loaders, allowing Babcock to offer a full 'value' line of loading tools to the construction and quarrying industries.**




The 21-t E6215H model comes with an electronically controlled unit pump which adopts a high-pressure fuel supply system to deliver high injection pressure, sufficient combustion and good power.

Traditionally known for its Volvo premium offering, Babcock has over the years steadily grown its 'value' offering to meet the needs of fleet owners who emphasise price competitiveness, coupled with quality, sufficient functionality, reliability and sound backup support. One of the major trends in the global construction equipment market is customers wanting machinery that costs less and which has the capability of undertaking less rugged jobs where premium machines are not essential.

Babcock's 'value' journey began as far back as early 2012 when the company was appointed the authorised distributor for SDLG wheel loaders, motor graders and vibratory rollers in Southern Africa. Over the years, Babcock has achieved huge success with the SDLG wheel loader range, with several customers running large fleets. To provide context, a quarrying customer, Firmabuild Aggregates, is currently running over 20 SDLG wheel loaders at its Gauteng operations, underlining the growing popularity of these machines in the quarrying and the mining value chain at large.

## Enter excavators

Following just over a decade of success with the wheel loaders and motor graders, Babcock has now expanded its 'value' offering with the addition of SDLG excavators. Although SDLG launched its first ever line of excavators back in 2010, the range was initially only available for markets such as China, the Middle East and Brazil. Having already proven its mettle for nearly 15 years in these markets, the SDLG range of excavators is now available in South Africa through Babcock, SDLG's existing distribution partner in southern Africa.

"We are excited to add the range of SDLG excavators to our line of products," says David Vaughan, MD – Equipment at Babcock. "In our view, this is a good quality, cost-effective, value product with a 'premium' touch to it. Given that Volvo Construction Equipment, our major principal, owns 70% of SDLG, one can easily recognise the

> **We are really excited about the E6335H, not only because of its favourable price point against some of the competition in the 34-t size class, but also due to its performance.**


David Vaughan Managing Director – Equipment for Babcock.

premium Volvo design heritage in this line of excavators. Customers who have already taken delivery of these units locally have expressed great satisfaction with the range in terms of build quality, efficiency, performance and productivity."

Babcock is initially bringing four models to the local market. These include the 6-tonne E660FL, the 13-t E6135H, the 21-t E6215H and the 34-t class E6335H. The 21-t and 34-t models are ideally suited for the quarrying sector. Mark Senyard, Product Manager – BULL Equipment and SDLG at Babcock, says the 21-t class machine has proven to be the most popular machine in the range to date.

"We took delivery of our first batch of 30 units across all four models in February this year. The 21-t machine has so far proved to be the most popular, all of the first ten units brought into the country having been sold," says Senyard.

The 34-t has also gained quick traction, with several units already operational at customer sites. "We are really excited about the E6335H, not only because of its favourable price point against some of the competition in the 34-t size class, but also due to its performance. To provide context, one of the customers operating this machine has deployed it in a very tough application for its size, but the feedback is that the machine is punching well above its size and performing beyond expectations," says Senyard, adding that the SDLG team from China has been heavily involved during the rollout of the first machines in the country, working closely with Babcock to ensure smooth operations for customers.

The 21-t E6215H model comes with an electronically controlled unit pump which

## SNAPSHOT

**Babcock's 'value' journey began as far back as early 2012 when the company was appointed the authorised distributor for SDLG wheel loaders, motor graders and vibratory rollers in Southern Africa**

**One of the major trends in the global construction equipment market is customers wanting machinery that costs less and which has the capability of undertaking less rugged jobs where premium machines are not essential.**

**Babcock is initially bringing four models to the local market. These include the 6-tonne (t) E660FL, the 13-t E6135H, the 21-t E6215H and the 34-t class E6335H.**

**Since the announcement of the dealership last year, Babcock has already put a sizeable number of BULL backhoe loaders to work across applications.**



adopts a high-pressure fuel supply system to deliver high injection pressure, sufficient combustion and good power. The engine electric control unit (EECU) controls the fuel supply throughout the process and matches the relationship between the load and the output of the main pump, ensuring both sound performance and fuel consumption. This contributes to a 10% reduction in fuel consumption compared with the previous generation.

"The E6215H excavator adopts the most advanced electronically controlled positive full flow control system. This system allows for a perfect fit between the engine and the hydraulic system, as well as giving higher efficiency and performance. The electronically controlled main valve, which replaces the traditional hydraulically controlled main valve, generates fast response speed and, compared with the previous generation, results in a 10% increase in operating efficiency," explains Senyard.

With a 34 800 kg operating weight, the E6335F is equipped with a standard 1,9 m³ bucket. The 215-kW Deutz engine provides high power and high productivity. The E6335F is ideally suited for quarrying, small-scale mining, large infrastructure projects and earthworks.

## Plugging the hole

With the July 2023 addition of BULL backhoe loaders and skid steers to its stable, Babcock has plugged a crucial gap in its product line-up. The range provides Babcock customers in the mining and quarrying value chain with a proven utility tool for housekeeping and other small-scale support functions.

"The addition of BULL machines has not only given us a proven tool to compete in the important backhoe loader market, but, more importantly, complements our existing offering to become a true one-stop shop for our customers' equipment needs," says Senyard. "We are now better equipped to offer a comprehensive solution across applications, including construction, plant hire, agriculture and waste management, among others."

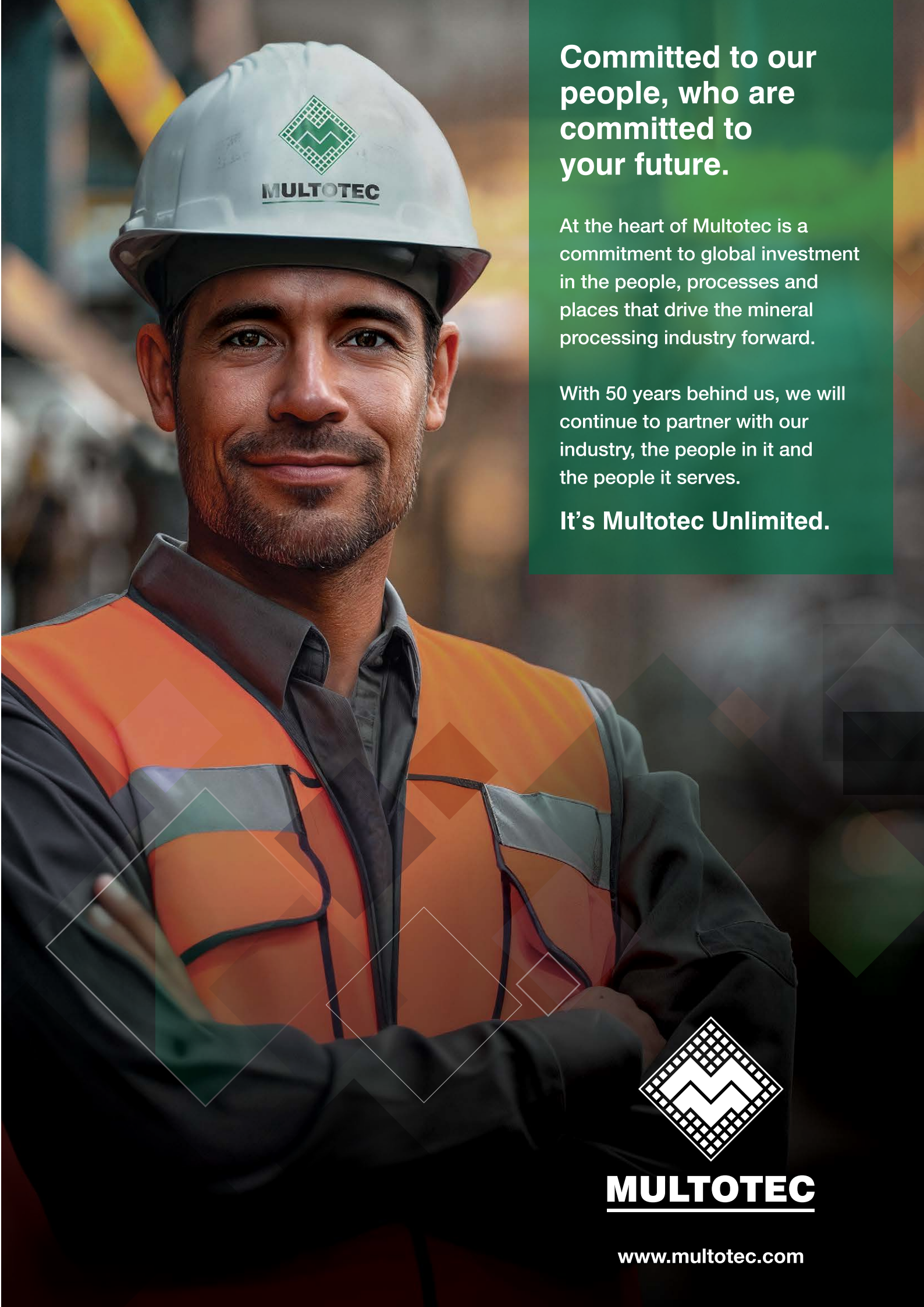
While backhoes and skid steers are the ultimate tools of choice for construction and plant hire markets, Senyard says the BULL range has also found application in quarrying and mining environments. "While these are not production machines, they are an important utility tool for crucial jobs on mine and quarry sites, such as housekeeping, small-scale trenching, cleaning around processing plants and under space-constrained areas such as conveyors," explains Senyard.

Babcock offers three BULL backhoe loader models – the HD76, the HD96 and the larger HD100 – in five different variants. The HD76 is available in a General Purpose (GP) configuration only. The HD96 and HD100 are offered in two different versions – GP and Multi-Purpose (MP). In an MP configuration, the machine comes with a clamshell bucket, fold-over forks and an extended dipper.

Since the announcement of the dealership last year, Babcock has already put a sizeable number of BULL backhoe loaders to work across applications. Amatshe Mining is one of the customers that has taken delivery of two HD96 units for one of its Gauteng operations. Here, the company extracts gold and processes aggregates from legacy gold dumps. The initial HD96, the first ever backhoe loader in Amatshe Mining's fleet, was acquired in January this year, with the second machine delivered in July.

One of the machines has been deployed in a taxing reef picking exercise, where it is selectively mining previously left behind reef at old gold operations. The machine is then deployed to load the material it mines onto tipper trucks. The other machine is used for general duties such as lifting buckets and moving things around the engineering workshop. It is also used for any other utility work such as small-scale trenching on site.

"We have established a dedicated sales team to look after our SDLG and BULL ranges. However, the brands still benefit from the same Babcock aftermarket support that our customers have become accustomed to, across all our branches," concludes Senyard. ●




# 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.

With 50 years behind us, we will continue to partner with our industry, the people in it and the people it serves.

**It's Multotec Unlimited.**

MULTOTEC

www.multotec.com

# A RELIABLE AND HIGHLY EFFICIENT NEW DRILL RIG **MAKES ITS DEBUT LOCALLY**

**There is a new addition to the offering of drill rigs available to the mining and quarrying industry in South Africa. ZEGA Drill Rigs which have been manufactured since 2003 in Zhejiang, China and known for its advanced manufacturing processes and commitment to producing high-quality and innovative solutions tailored for the mining and quarrying industries, are now available in the Southern African market. ZEGA SA is represented locally by MAS Power Group which serves as an umbrella company for machinery brands in these industries. This company operates in the mining, quarrying and construction industries. Modern Quarrying's Wilhelm du Plessis spoke to Mathew Henderson, Founder and CEO of MAS Power Group and Eric Xi, ZEGA SA's Africa Regional Manager about this exciting new offering.**

"ZEGA SA aims to provide innovative and reliable drilling solutions that enhance operational efficiency while meeting the unique demands of the local quarrying industry," says Henderson. "ZEGA drill rigs offer a compelling choice for operators and provide a combination of performance, reliability, safety and support that enhance operational success."

### Aligning perfectly

The decision to add ZEGA SA to MAS Power Group's offering was driven by a combination of market analysis and strategic opportunity. "We identified a significant increase in the demand for reliable, high quality drilling solutions in the Southern African mining and quarrying sectors," Henderson elaborates. "We recognised a gap in the market for high-performance drilling rigs offered at competitive prices. Many local operators are looking for alternatives without compromising on quality and at the same time maintaining operational efficiency."

Given ZEGA's established 21-year reputation in

**Mathew Henderson (left), Founder and CEO of MAS Power Group and Eric Xi, ZEGA SA's Africa Regional Manager.**

China for producing innovative and robust drilling solutions, integrating this brand into MAS Power Group allowed the leveraging of ZEGA's advanced technology and experience.

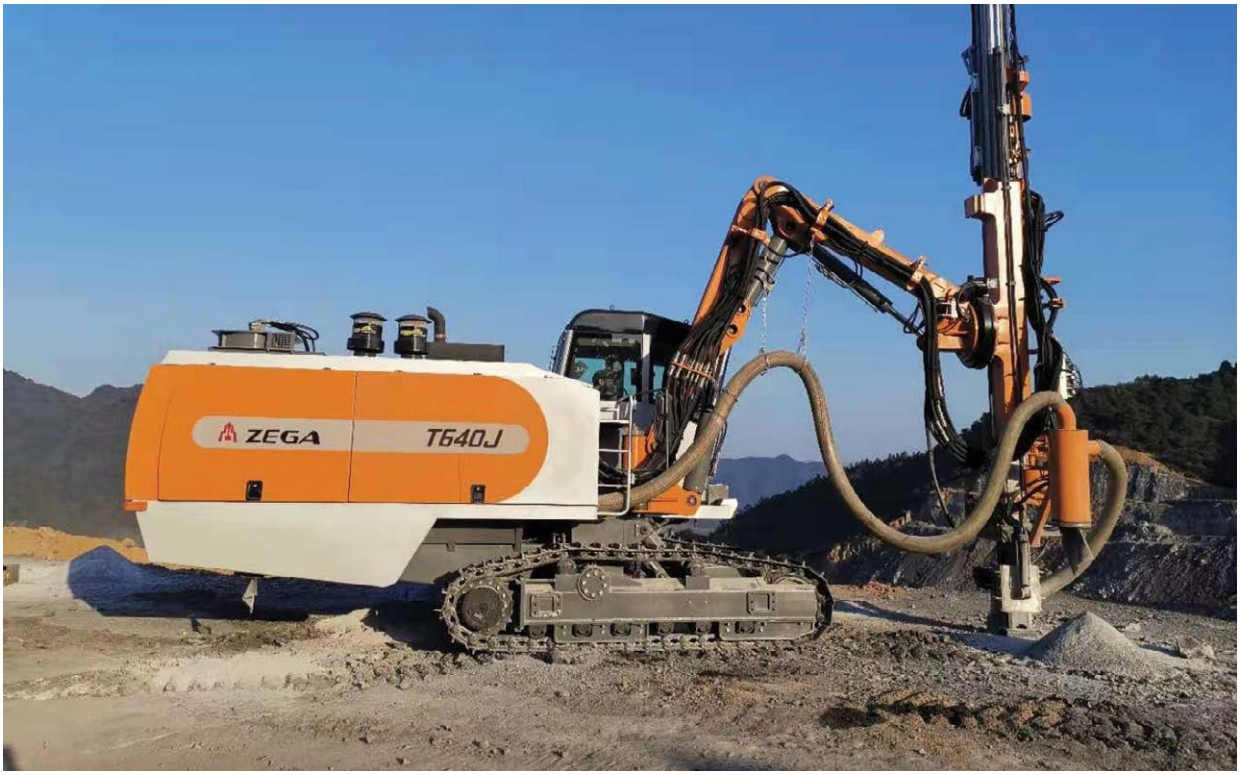
"ZEGA's commitment to quality aligns perfectly with our vision of providing superior products and services," Henderson explains.

"We wanted to ensure that our clients not only receive top-notch equipment, but also benefitted from comprehensive after-sales support," says Henderson. ZEGA's proven commitment to maintenance, training and parts availability is a good fit for MAS Power Group's dedication to customer service. "This strategic alignment enables the company to provide a more diverse range of solutions tailored to the specific needs of our customers in the region," he says.

"The South African region has a robust demand for efficient and reliable drilling solutions that are driven by ongoing mining projects and infrastructure development," Henderson explains. "Our analysis indicated a gap for high-performance rigs at competitive pricing," says Henderson. "We believe that ZEGA's advanced technology and robust product lineup can provide local operators with better options, enhancing their operational efficiency."

MAS Power Group, which now includes ZEGA South Africa, has established a significant footprint across multiple countries in Southern Africa. It operates in South Africa, Zimbabwe, Zambia, Mozambique and Namibia. In addition to its regional presence, ZEGA also has a global footprint with products and operations available in various markets that include Europe, Middle East, Asia, Russia, Australia and the Americas.

"This extensive footprint not only highlights ZEGA's commitment to delivering reliable drilling solutions worldwide in diverse environments from the cold in Russia to the heat of Saudi Arabia, but also reinforces MAS





Power Group's position as a significant player in mining and quarrying industries across diverse geographical markets," Henderson explains.

## Robust and durable for the local market

ZEGA drill rigs are manufactured using premium-grade material designed to withstand extreme conditions," says Xi. This ensures that they can endure the wear and tear associated with demanding mining and quarrying environments.

"The rigs feature robust engineering that incorporates structural reinforcement and smart design choices, making them resilient to shocks, vibrations and other mechanical stresses encountered during operations," Xi further elaborates.

ZEGA drill rigs are designed to perform reliably in diverse weather conditions, from high temperatures, humid conditions and dust.

"The rigs include protective components such as ROPs (Roll-Over Protective Structure) and FOPS (Falling Object Protective Structure) to enhance operator safety and to protect the machine itself in case of accidents," Xi elaborates.

ZEGA offers customisable options, such as extreme cold kits, and high-altitude kits. These allow the rigs to be tailored to specific environmental challenges. The cooling systems for the rigs are designed to prevent overheating during prolonged operation. "This extends the lifespan of critical components," says Xi.

"Features that facilitate easier operation and maintenance, such as the hydraulic tank and fuel tank filling pumps are integrated into the design. This reduces downtime and encourages proper upkeep, contributing to the rigs' longevity," Xi explains.

## After-sales support

ZEGA South Africa places a strong emphasis on providing comprehensive after-sales service to ensures that customers get the most of their drill rigs. "This commitment to support is crucial for maintaining equipment performance and minimising downtime," says Xi.

"ZEGA South Africa ensure that spare parts for its drill rigs are readily available," says Henderson. "The company stocks a wide range of genuine parts, allowing customers quick access to essential components for maintenance and repairs. This availability is crucial for minimising downtime and ensuring that the drill rigs operate

at peak performance," he says.

In addition to the stocked parts, ZEGA can source components quickly. This comprehensive after-sales service is aimed at providing clients with a seamless experience and keeping their operations running smoothly.

"We provide on-site training and comprehensive support to ensure optimal performance," adds Henderson This on-site training is for two personnel from the client's team to ensure effective operators with the skill needed to maximise the equipment's capabilities. "Continuous support is available to address any operational queries and ensure that customers are fully proficient in using their rigs," he says.

Each ZEGA drill rig comes with a warranty covering 3 000 hours or one year of operation, whichever comes first. This warranty provides customers with peace of mind regarding the quality and reliability of their equipment.

### ZEGA's ROI

"Our discussions around the return on investment (ROI) for ZEGA drill rigs centres around the inherent nature of the machines as well as what ZEGA South Africa can provide," says Henderson. "The drill rigs are designed for higher efficiency and faster cycles which can boost overall productivity. In addition, the drill rigs are competitively priced and offer low operating costs, are fuel efficient and offer reduced maintenance needs," Henderson explains.

The durability and reliability of the machines enable them to withstand harsh conditions with fewer breakdowns and repairs, and therefore ensure maximum uptime.

"Our robust after-sales service reduces the risk of extended downtime," Henderson adds. "ZEGA is engineered for long-term performance which means that they are not machines that frequently need to be replaced. In addition, its compliance to safety and the fact that the rigs can be customised for different environmental conditions, maximises its utility and the customer's investment," concludes Henderson. ●

### Product offering

ZEGA South Africa provides a variety of drill rigs tailored to meet market needs, enhancing operational efficiency and productivity:

Top Hammer Drill Rig T640J:

- **Hole Diameter:** 76 mm – 102 mm
- **Drilling Depth:** 20 metres
- **Engine:** Cummins 152 kW/RPM 2100
- **Drifter:** 20 kW
- **Working Pressure (max.):** 8 bar

**Top Hammer Drill Rig T640H:**

- **Hole Diameter:** 76 mm – 115 mm
- **Drilling Depth:** 20 metres
- **Engine:** Cummins 179 kW/RPM 2 200
- **Drifter:** 20 kW
- **Working Pressure (max.):** 10 bar

**DTH Drill Rig D460A:**

- **Hole Diameter:** 115 mm – 152 mm
- **Drilling Depth:** 35 metres
- **Engine:** Cummins 264 kW/RPM 1 900
- **Working Pressure (max.):** 22,5 bar

**DTH Drill Rig D470D:**

- **Hole Diameter:** 138 mm – 165 mm
- **Drilling Depth:** 30 metres
- **Engine:** Cummins 306 kW/RPM 1 800
- **Working Pressure (max.):** 24 bar

### In a nutshell

ZEGA drill rigs offer several advantages for the quarry industry.

**High productivity**
Designed for efficiency and increased overall productivity.

**Precision and accuracy**
Provides precise drilling capabilities – ensuring holes are exactly when they should be.

**Versatility**
ZEGA offers a range of models for various drilling requirements, including different hole diameters and depths.

**Durability and reliability**
Built with high-quality materials and designed to withstand harsh quarrying conditions.

**Safety features**
ROPS and FOPS approved cabs, guardrails and remote-control capabilities.

**Cost effectiveness**
Provides high-performance equipment at competitive prices and so assists operators to reduce operational costs while maintaining performance.

**Compliance to industry standards**
Engineered to adhere to industry regulations, including environmental standards.

**Customisable solutions**
Rigs can be customised with specific kits to meet various environmental conditions.

**After-sales support**
The after-sales service includes maintenance, training and readily available spare parts.


The Sandvik Leopard™ DI650i is an intelligent down-the-hole (DTH) drill rig built for high-capacity production drilling applications.

# **RISING POPULARITY** FOR SANDVIK LEOPARD DI650i IN SOUTHERN AFRICA

**On the back of its global debut at the 2018 edition of Electra Mining Africa, the Sandvik Leopard™ DI650i down-the-hole (DTH) drill rig has earned its stripes in the Southern African surface mining sector, particularly in high-capacity production drilling applications.**

When Sandvik Mining and Rock Solutions first brought the Leopard™ DI650i to market, the message was clear – the company had ushered in a tool that would constitute a strong challenger for a market leadership position in the larger than 6" segment, which was previously dominated by a competitor. Some six years later, the Leopard™ DI650i has surpassed expectations with a high uptake in markets across southern Africa and the world at large.

"In Southern Africa alone, we have over 60 machines operating in the field, which is remarkable," says Trinity Nkosi, Sales Engineer, Surface Drills Department at Sandvik Mining and Rock Technology. "Over the years, we have had a positive uptake, especially in South Africa, with coal, platinum group metals (PGMs) and iron ore among the key recipient commodity markets to date."

Scalable automation, ease of maintenance and efficient operation are some of the drill's value propositions that have made it popular in the market.

The Leopard™ DI650i features scalable automation packages to fully automate systems and increase overall productivity. iDrill onboard automatics cover all steps of the automated drilling cycle, ensuring consistent high-quality drilled holes. It is also compatible with AutoMine® Surface


**The Leopard DI650i is a DTH machine that can drill up to a maximum depth of 53,6 m.**


**The Sandvik Leopard™ DI650i has recorded significant success, not only in southern Africa, but across the globe.**

Drilling to enable fully autonomous fleet operation from a control room.

"The machine's ground-level access for daily service and maintenance tasks has led to up to 20% more availability compared with conventional DTH rigs at a similar technology level. The modular design of the machine further allows for easier repair or replacement of components," says Nkosi.

To provide context, an Australian lithium operation has seen an improvement in availability, largely due to ease of maintenance, resulting in 1 900 hours of drilling in four months. Despite the tough 400 MPa rock, the mine achieved a penetration rate of about 23 m/hour – completing close to 400 m per day – drilling 203mm holes.

Increased efficiency is yet another principal design benefit that has propelled the Leopard™ DI650i to the summit of the DTH market. Thanks to the intelligent control technology applied in both the compressor and the hydraulic system's cooler fan, customers can expect to reduce their fuel consumption significantly compared with conventional DTH rigs.

"Up to 15% less fuel consumption per hour is achievable largely due to our efficiency-driven design of minimising recirculation of hot air to coolers and having an energy-on-demand principle across the entire machine," says Nkosi. "In addition, the compressor management system reduces compressor load for non-drilling activities, thus reducing fuel consumption."

The intelligent control system of the machine contributes to high levels of operational precision and efficiency. For example, Sandvik's aligning system guarantees parallel direction holes while the GPS technology allows for pinpoint accurate hole placement. The one-hole full cycle drilling automatics with auto collaring and rock detection minimise hole losses and maximise drill bit life.

"Based on these capabilities, the machine has proven its performance clout at several mines in southern Africa. For example, a coal mine in South Africa has seen an improvement in average penetration rate of 60 m/hour in a sandstone rock formation where hardness is between 60 and 80 MPa, drilling 165-mm diameter holes. In fact, the mine drills close to 1 000 m of holes per day," concludes Nkosi. ●

# BME RELEASES INNOVEX™ 300D EMULSION **TO DEAL WITH DYNAMIC WATER**

**In line with its continuous innovation of blasting solutions, BME has developed Innovex™ 300D – a high-strength bulk emulsion explosive for challenging surface mining conditions including dynamic water.**

According to Dr Rakhi Pathak, BME's Global Manager – Strategic Partnerships, dynamic water is a common issue for surface mines, and leads to various operational and environmental challenges.

"When there is excessive water flow in and around blast holes, emulsion 'run-off' often occurs due to cracks or fissures in fractured geology," Dr Pathak explained. "This is particularly problematic in conditions such as damaged ground, fractured or weathered rocks, sensitive geology and acidic mine conditions."

She noted that these conditions exacerbate operational difficulties and environmental hazards. They can lead to misfires and incomplete detonation, for instance, as well as the possible leaching of nitrates into the environment.

"Dynamic water can also lead to higher levels of nitrous oxide (NOx) fumes being generated," she said. "This results from the dampening of explosives – which can cause incomplete detonation – as well as from the oxygen balance and chemical reaction being affected by the presence of water."

To counter these challenges,

**When there is excessive water flow in and around blast holes, emulsion 'run-off' often occurs due to cracks or fissures in fractured geology," Dr Pathak explained. "This is particularly problematic in conditions such as damaged ground, fractured or weathered rocks, sensitive geology and acidic mine conditions.**

BME's Innovex™ 300D offers enhanced resistance to dynamic water, reducing the likelihood of misfires. The product features an adjustable rheology, making it suitable for highly friable and fractured geological conditions.

"Our solution allows the viscosity and flow behaviour of the emulsion to be adjusted to meet any blasting requirements," she said. "This ability to adjust the rheology makes a valuable contribution to optimising the material performance – improving handling, ensuring safety and achieving the desired blasting outcome."

BME's blasting system includes a mobile manufacturing unit equipped with an in-line monitoring device for real-time viscosity adjustments and monitoring. Innovex™ 300D is also highly resistant to free ammonia, which is commonly found in mine water and tailing dams; it also resists acidic sulphate soil conditions, such as rocks containing pyrite that can produce sulphuric acid.

Nishen Hariparsad, BME's General Manager Technology and Marketing, highlighted that Innovex™ 300D supports the company's commitment to the environment, and enhances the sustainability efforts of BME customers.

"Preventing environmental contamination is non-negotiable among responsible mining companies, and our solutions support the industry's ongoing progress in this regard," said Hariparsad. "Minimising nitrate


leaching is an important aspect of this imperative."

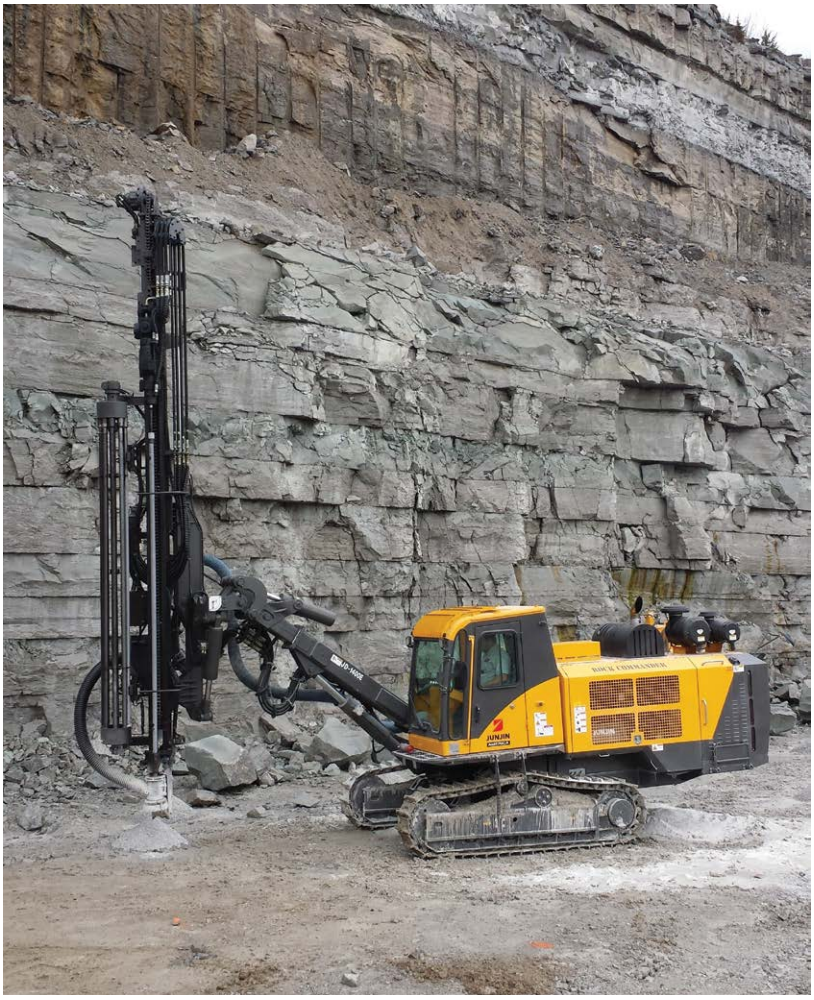
He noted that BME is well known as an innovator in emulsion explosives, and invests heavily in ongoing research and development (R&D). The company has developed considerable in-house expertise and capability to conduct the various stages of R&D to commercialise its advanced technologies.

"We have built a strong technical foundation from which to optimise our formulations, including the necessary testing, regulatory compliance, customer feedback and new application requirements," he said. "We respond to market needs and trends by developing continuous improvements – as we enhance the performance, safety and efficiency of our emulsions and other solutions."

Dr Pathak concluded Innovex™ 300D has been formulated with an advanced emulsion matrix, delivering superior strength to ensure optimal blast outcomes.

"The system comprises a high-strength bulk emulsion matrix specifically formulated with rheology modifiers, surface-active agents, and a unique blend of diluent oils and emulsifiers," she said. "This formulation is the basis for us to provide customers with an adjustable and instantaneous bulk emulsion rheology suited for their toughest blasting conditions." ●





# ROCK-SOLID PERFORMANCE WITH THE SOOSAN JD 1300 E

**Modern Quarrying** recently spoke with Maurits Holtzhausen, Managing Director of JMH Equipment, a company dedicated to supplying and supporting reliable drilling equipment across Southern Africa. With a focus on distributing Soosan drilling rigs, JMH Equipment has built a solid reputation by providing machines that meet the rigorous demands of local mining, quarrying, and construction environments.

### JMH Equipment: Built on strength and simplicity

Founded in 2006, JMH Equipment has specialised in drilling equipment tailored for the Southern African market. The company prides itself on distributing machines that are both accessible and user-friendly, qualities that have strengthened its standing across several Southern African countries. Holtzhausen explains, "We are a drilling-specific company that deals with all drilling-related products for civil, quarrying, and mining environments." Based in Rustenburg, South Africa, JMH Equipment's footprint extends into Namibia, Botswana, and Angola, ensuring reliable support across the region.

Holtzhausen emphasises the suitability of Soosan drills for the local market, highlighting their simplicity and ease of maintenance, both of which allow for maximum uptime. "These machines are built for Africa, strong and reliable with minimal electronics," he says, adding that JMH's substantial stock of spare parts further reduces downtime. This reliability is crucial for clients operating in remote or challenging environments where specialist service is not always accessible.

### The Soosan JD 1300 E: Power and practicality in one

The Soosan JD 1300 E hydraulic crawler drill is JMH Equipment's flagship model, ideal for quarrying and civil construction applications. With a drilling hole range of up to 115 mm and a depth capacity exceeding 20 metres, the JD 1300 E is well-suited to heavy-duty tasks. Holtzhausen describes it as "perfect for civil and quarrying job sites," providing dependable perfor-


mance even in rugged conditions.

The JD 1300 E's Cummins CTAA 8.3 engine is a powerhouse, generating up to 205 hp at 2 200 rpm, ensuring more than enough strength for demanding drilling operations. The engine, backed by a Cummins warranty, is renowned for its durability and fuel efficiency, which translates to lower operational costs for owners. According to Holtzhausen, "Our strong point is that the total cost of ownership is very competitive," with JMH carrying a wide range of spare parts to ensure continuous productivity.

## Built for African terrain

The JD 1300 E is engineered with features tailored for African work sites. Its high ground clearance of 510 mm, combined with a track oscillation of ±10°, allows it to tackle uneven terrain without risk to the undercarriage. The drill also includes a powerful JET-9 hydraulic drifter that optimises drilling speed and precision. The durable alloy chuck and special seals add to the drifter's longevity, while the anti-jamming system and collaring function make it easy for operators of all skill levels to maintain accuracy and control.

In terms of mobility, the JD 1300 E can reach a maximum travelling speed of 3,3 km/h and has a gradeability of 28°, making it adaptable to hilly work environments. These design aspects contribute to its robustness, ensuring it is ready for the harshest conditions without sacrificing stability or performance.

## Comprehensive safety and operator comfort

Safety is a priority in the JD 1300 E's design, with several standard features included to safeguard both operators and machinery. The rig is equipped with emergency stops, fire extinguishers, and temperature cut-off systems that monitor engine, hydraulic, and compressor temperatures to prevent overheating. Additionally, the dust collector, fitted with four filters, limits dust exposure by trapping particulates and keeping the worksite cleaner, a feature especially valuable for reducing health risks.

The JD 1300 E's cabin is a standout in terms of comfort and protection. "Strong framing and safety glass provide a secure, broad view of the job site," Holtzhausen explains, adding that the cabin includes a floating seat with air bellows to minimise vibration, ensuring a comfortable experience during extended shifts. The cabin also comes with built-in air conditioning, heating, and radio, creating an environment where operators can remain alert and focused.

## Maintenance and aftermarket support

Ease of maintenance is a cornerstone of the JD 1300 E 's design. A panel-typed bonnet and a vertical fuel tank allow for straightforward access to engine components, while strategically placed drain cocks facilitate efficient oil changes. The machine also boasts an automatic lubrication system that refuels the drifter, reducing the need for frequent manual oiling and protecting the machine from potential damage due to lubrication shortages.

JMH Equipment's commitment to keeping clients' operations running smoothly is reflected in their aftermarket support. "We have a fully equipped workshop and parts department that ensures your drill is running at optimum performance at all times," says Holtzhausen. This emphasis on support ensures that JMH's customers are never left without assistance when they need it most.

## Built for the future

The Soosan JD 1300 E is a machine built to endure the tough demands of African sites, offering both power and practicality. As Holtzhausen aptly puts it, "This machine's unique selling point is its strength and reliability in the field—no matter the job site, you can depend on it." With a blend of durability, ease of maintenance, and comprehensive support from JMH Equipment, the JD 1300 E continues to deliver unmatched value to quarrying and mining operators throughout Southern Africa. ●


# LOWER TCO **FROM OEM MAINTENANCE**

**Achieving the best return on their plant investment is a primary goal for mines, and partnering with OEMs like Weir is a strategic way to enhance equipment performance while reducing the total cost of ownership. The company is at the forefront of helping mines transition from reactive to prescriptive maintenance approaches, ensuring sustainable and safe operations through the optimisation of technology and equipment.**

"We have an extensive footprint of equipment around Africa and focus on adding further value to these assets through the correct maintenance strategy," says Grant Potgieter, Strategic Services Manager at Weir. "This means a constant monitoring process, where we can track performance while looking for opportunities to raise our customers' plant availability for greater productivity."

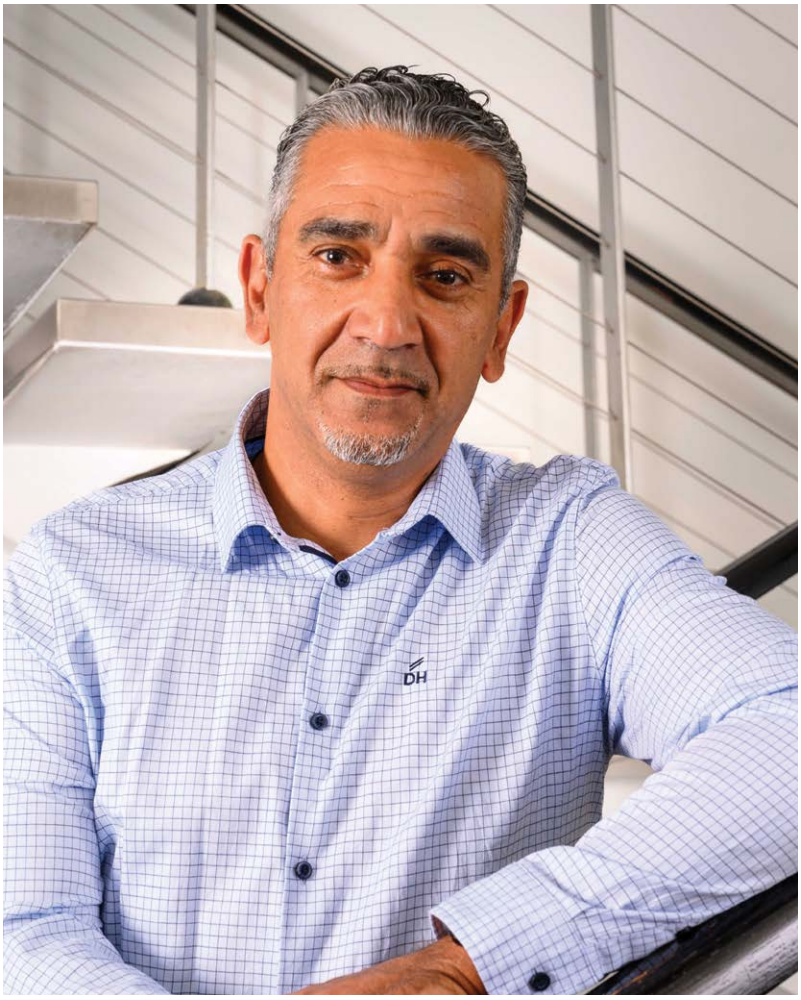
Plant monitoring will invariably include a regular wear analysis of components, to monitor whether such wear is in line with expectations, explains Potgieter, as well as to predict future wear and component life. Analysing this wear, however, involves a considerable amount of data from the plant operation itself, such as ore characteristics and throughput.

"Here is it important to remember that each site will have its own variables, so it is not possible to apply a standard template without understanding the specific plant," he says. "Operating conditions may also change over time, so the assessment requires close collaboration between our team and the plant personnel on the mine."

This allows a foundation of data to be established, on which to base the relevant corrective action, whether this is through technology, training or other interventions. Such action may be initially prompted by data that Weir picks up in its procurement process.

"Our years of experience in this market, and our careful documentation of component wear life, including historical and process information, allows us to

Weir collaborates with their customers to optimise their maintenance strategies.



Grant Potgieter, Strategic Services Manager at Weir.

estimate how long a certain component will last under predefined conditions," he says. "By generating strategic reports from our procurement system, we can see if a customer is ordering components more frequently than they should be – suggesting that there is wear taking place."

Technicians from Weir can then visit the site and examine the conditions more closely as part of a root cause analysis. This is most effectively done with a multidisciplinary team including process engineers and mechanical experts, to identify first-hand what the challenge is, and how best to address it.

Potgieter highlights the role of accurate measurement of equipment performance and condition, pointing to the fact that this is not always constant when conducted manually. To provide a platform that would overcome human error, Weir offers its own digital platform to harvest data continuously,

## SNAPSHOT

**Plant monitoring includes a regular wear analysis of components, to monitor whether such wear is in line with expectations.**

**If a sensor transmits a certain vibration signature from an item of equipment, a trained Weir Minerals condition monitoring expert will be able to verify system notifications.**

**Analysing this wear involves a considerable amount of data from the plant operation itself, such as ore characteristics and throughput.**

**Weir looks holistically at safety, value and technology to ensure that whatever is spent on an intervention helps to lower the total cost of ownership.**


**Strategic partnering with Weir can help customers enhance equipment and reduce total cost of ownership.**


**Weir's condition monitoring technology shows the value of real-time monitoring to enhance plant performance.**

accurately and objectively.

"It is significant that we developed our own system to do this, as we understand our equipment solutions better than anyone," he explains. "Our digital platform allows us not only to gather and process the data from our equipment, but also generates recommendations which identify the actual cause of anomalies."

As an example, if a sensor transmits a certain vibration signature from an item of equipment, a trained Weir Minerals condition monitoring expert will be able to verify system notifications.

While technology could be one part of the solution, he says, good communication is also crucial. To avoid any lack of communication through people working in silos, Weir arranges monthly quality meetings with customers – to ensure that all stakeholders are on board.

"This has proved to be a valuable way of getting all players involved and committed to the solutions that are agreed," he says. "In this round table environment, everybody can be allocated a clear role, with tasks and responsibilities agreed in a transparent and accountable manner."

This format also brings in all the necessary disciplines – from electrical and instrumentation through to mechanical and process – to reflect on the proposed solutions and ensure that the one selected is optimal.

"The key performance indicator that is shared by everyone in these meetings is cost optimisation, so this is really our focus with our discussion and solution," he says. "We look holistically at safety, value and technology to ensure that whatever is spent on an intervention helps to lower the total cost of ownership."

This often involves considerable change management, says Potgieter, as long term maintenance strategies may require mine personnel to adjust their procedures. Recognised for its expertise in its aftermarket services, Weir is frequently engaged by its customers to work on strategic shifts in their operating practices to optimise aspects such as equipment turnaround time and costs of refurbishment.

"We collaborate with customers as they adjust their own maintenance strategies," he says. "To optimise the maintenance of rotables, for instance, we are able to provide service exchange units at regular intervals, as the customer removes a unit from service after a predetermined time."

This avoids the higher cost of running a unit to failure before repairing, and reduces the risk of any unscheduled maintenance for breakdowns. As the OEM, Weir is then also able to refurbish equipment to their original standard, and offer the appropriate warranty. ●


SANY
SOUTH AFRICA

**Sany Southern Africa (Pty) Ltd**
Tel: +27 69 426 9101
enquiries@sanysouthafrica.com
www.sanysouthafrica.com

FOLLOW US ON

| | | | |
|---|---|---|---|
| **GAUTENG** | 2 Saligna St, Witfield, Boksburg, 1459 | **DURBAN** | 2 Hillclimb Rd, Pinetown, 3608 |
| **RUSTENBURG** | 20A Mangaan street, Ziniaville, 2999 | **RICHARDS BAY** | Unit 4, Elephant Park, 62 Ceramic Curve, Alton |
| **MIDDELBURG** | 1 Celsuis St, Industria, Middelburg, 1050 | **KIMBERLEY** | 36 Landbou Rd, South Ridge, 8300 |

# STAGE V POWERED TWISTERTRAC **UNLOCKS NEW EXPORT MARKETS**

**Pilot Crushtec International is introducing its new generation TwisterTrac mobile vertical shaft impact (VSI) crusher powered by a Stage V diesel engine. The move to a motor that complies with EU Stage V regulations unlocks new export prospects in highly regulated markets such as Europe and North America.**

Designed and manufactured in South Africa by Pilot Crushtec, the TwisterTrac VS350E VSI has over the years gained popularity in export destinations such as Australia and New Zealand. To provide context, since 2013, Pilot Crushtec has sold in excess of 50 units with almost 90% of these deployed into export markets.

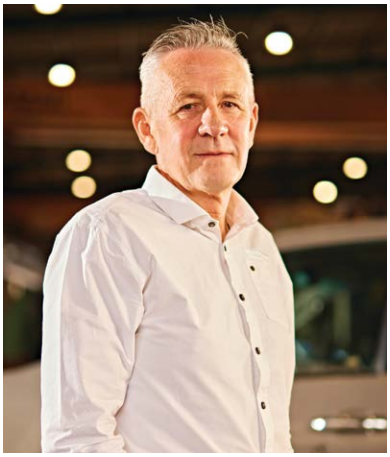
To further grow its export sales, the company has become one of the first South African original equipment manufacturers to build a Stage V engine powered machine. Previously driven by a Tier 3 Volvo TAD1651GE engine, the new TwisterTrac VS350E VSI now comes with a Stage V Volvo TAD1382GE motor, allowing Pilot Crushtec to offer the legendary tracked VSI in emissions-regulated markets, in particular Europe and North America, as mentioned above.

> **The weight of the parts, the required running speed plus amplitude are all taken into consideration when balancing the screen. If an operation chooses to fabricate a side plate and the weight is wrong, for example, it could impact the machine's balance.**

"The Stage V project has been in the pipeline for a while as part of our export focus. Our machine development strategy has always placed greater emphasis on offering exportable products and this move allows us to unlock new markets and grow our export sales. We are excited by the prospects of growth in emission-controlled markets such as Europe and North America. In addition, this project speaks to customers in some of our traditional markets such as Australia, where there is a strong focus on adopting high emissions standards," explains Sandro Scherf, CEO of Pilot Crushtec.

Jorge Abelho, Director Technical Support at Pilot Crushtec, says the company opted for the 13 litre TAD1382GE from Volvo because it is a powerful, reliable and economical motor built on the dependable in-line six

The TwisterTrac VS350E is fully guarded with all the latest safety features.



Sandro Scherf, CEO of Pilot Crushtec.

Jorge Abelho, Director Technical Support at Pilot Crushtec.

## SNAPSHOT

Designed and manufactured in South Africa by Pilot Crushtec, the TwisterTrac VS350E VSI has over the years gained popularity in export destinations such as Australia and New Zealand.

Since 2013, Pilot Crushtec has sold in excess of 50 units with almost 90% of these deployed into export markets.

The company has become one of the first South African original equipment manufacturers to build a Stage V engine powered machine.

Designed for tertiary and quaternary crushing applications, the TwisterTrac VS350E is renowned for its versatility, reliability and efficiency.

design. The engine incorporates a suite of advanced technologies that work together to not only reduce emissions but also deliver significant improvements in power density, performance and operating efficiency. Designed for easy, fast and most economical installation, the engine's high-tech injection and charging system with low internal losses contributes to excellent combustion and low fuel consumption.

"Volvo has been our preferred engine partner for a while, largely because of the efficiency of their engine technology. In addition, we find them easy to deal with in terms of information sharing and guidance on the technology. To provide context, we had a technical representative from Volvo at our Jet Park workshop for a week-long factory testing, before deploying the machine for field testing in a tough crushing application with great success," says Abelho.

The new generation TwisterTrac VS350E with a Stage V diesel engine.


The TwisterTrac is fully site mobile with a quick set-up time.

In addition to the transition to new engine technology, Pilot Crushtec took the opportunity to redesign some areas of the machine. For example, says Abelho, the machine now comes with an integrated cooling pack and the whole power pack base has become much smaller.

"We have also re-arranged some of the key components to make the cabling and piping shorter and simpler. For instance, we have moved the operator panel from the left-hand side to the right-hand side of the machine. This reduces the number of cables required on the machine by bringing panels closer together. We have also made the operator panel easier to use," explains Abelho.

In addition, the size of the hydraulic tank has been reduced and the tank has been moved closer to the pumps. These refinements were informed by knowledge and feedback gained over the last ten years of operating the TwisterTrac VS350E in the field.

Scherf is confident that the latest developments will further entrench the TwisterTrac VS350E's dominance in the global marketplace. Designed for tertiary and quaternary crushing applications, the TwisterTrac VS350E is renowned for its versatility, reliability and efficiency. A fully mobile track mounted VSI crusher, the machine can be easily moved between sites or within a site. Its compact design and robust construction make it suitable for a wide range of applications, including road construction, quarrying, mining and recycling.

"One of the standout features which has made this machine popular is the unique crushing concept. This uses rock-on-rock crushing principles, making it the perfect choice for producing cubical material for road and concrete aggregates. Another big advantage, which we believe will make it popular in new export markets, is that it is a diesel-electric machine, which results in increased operational efficiency, while at the same time reduces carbon emissions," concludes Scherf. ●

# FUCHS SHOWCASES **ITS COMPLETE MINING LUBRICANTS RANGE**

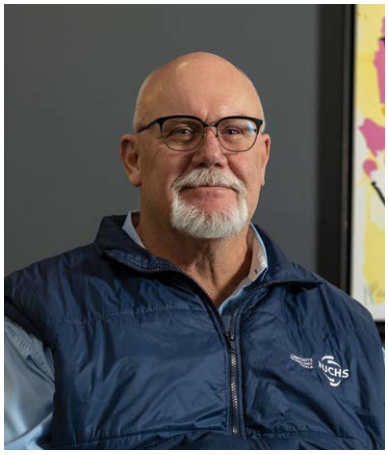
Ongoing pressure on commodity prices and reduced output has seen the global mining industry focus increasingly on energy efficiency and optimising production. "There is a major emphasis on cutting costs, especially in terms of proactive maintenance, which is where our products play a key role," comments Dave Gons, National Manager Mining | Regional Mining Manager Sub-Saharan Africa at FUCHS LUBRICANTS SOUTH AFRICA.

"Regardless of market conditions, we focus on helping our mining customers become more efficient. By using superior products, they can actually save money through improved maintenance regimes and longer component life. Even when the market is down, we believe we have a role in supporting our customers. Unfortunately, some businesses cut costs in areas like lubrication, which might offer short-term savings but lead to long-term costs," explains Sales Director Andrew Cowling.

FUCHS had a presence at Electra Mining Africa 2024. "We showcased our niche or speciality products as well as having our complete offering for all types of mining operations and mining clients. We have everything they need," asserts Cowling.

Gons points out that specific products like CEPLATTYN GT 10 and TITAN UTTO PRO 102 have critical Original Equipment Manufacturer (OEM) approvals. The latter is a premium performance multifunctional oil for gears, axles, and hydraulic systems with improved wear protection and a range of application temperatures. It has been especially developed and approved for Volvo axles with built-in wet brakes in construction machinery.

The former is a high-viscosity adhesive lubricant for heavy-duty open gears, such as on kilns, mills, and driers in the raw materials industry. A synthetic base oil, it has new types of additives and a combination of white, reaction-effective solid lubricants. This guarantees extraordinarily good wear protection and an extremely high lubricant film stability.



Dave Gons, National Manager Mining | Regional Mining Manager Sub-Saharan Africa at FUCHS LUBRICANTS SOUTH AFRICA.

Sales Director, Andrew Cowling.

Gons points out that certification is increasingly important in the mining industry, both for on and off-highway equipment. "The fact that TITAN UTTO PRO 102 has specific approval for Volvo fills a gap in our portfolio. CEPLATTYN GT 10 is our flagship open gear product and is used by some major mines."

Cowling expands: "It is about offering a complete product range and showing that we are on top of certifications and accreditations for leading OEMs. Having such niche products on display will attract interest in our broader portfolio.

"That has been our strength – offering products that some competitors might not have. Often, that is our entry point with mining customers, and then we can expand the conversation to include our services, support, and other products."

FUCHS experts were on hand at Electra Mining to engage with visitors about the latest trends and developments, such as calcium sulphate greases. "It is a future-proof product, especially as lithium costs fluctuate, with incredible development underpinning it."

Calcium sulphonate is a much more natural lubricant compared to others and is more efficient and cost-effective as less product is required for improved results. This is because the calcium itself acts as a lubricant, unlike lithium, which requires additives. ●

**About FUCHS**

FUCHS develops, produces, and markets high-grade lubricants and related specialties for virtually all industries. Founded in 1931 as a family business in Mannheim, FUCHS is now the world's largest independent supplier of innovative lubricant solutions, covering almost every industry and application. Today, the company's 6 000 employees in over 50 countries still share the same goal: To keep the world moving both sustainably and efficiently.

# SANDVIK ELEVATES THE SCREENING MEDIA GAME IN AFRICA

**Sandvik Rock Processing has always taken great pride in its innovation and developing products that last longer and provide greater efficiency to customers. A case in point is its grand entrance into the screening media market in Africa, where the mining sector has long yearned for a supplier that places value on specific customer needs and tailored solutions to help operations meet their production targets.**

Although screening media is a minor cost when compared to larger capital equipment on a mine, Phumelele Motsamai, Regional Manager: Screening Media & Wear Protection – Africa at Sandvik Rock Processing, stresses that it is a crucial part of any mining operation's profit engine.

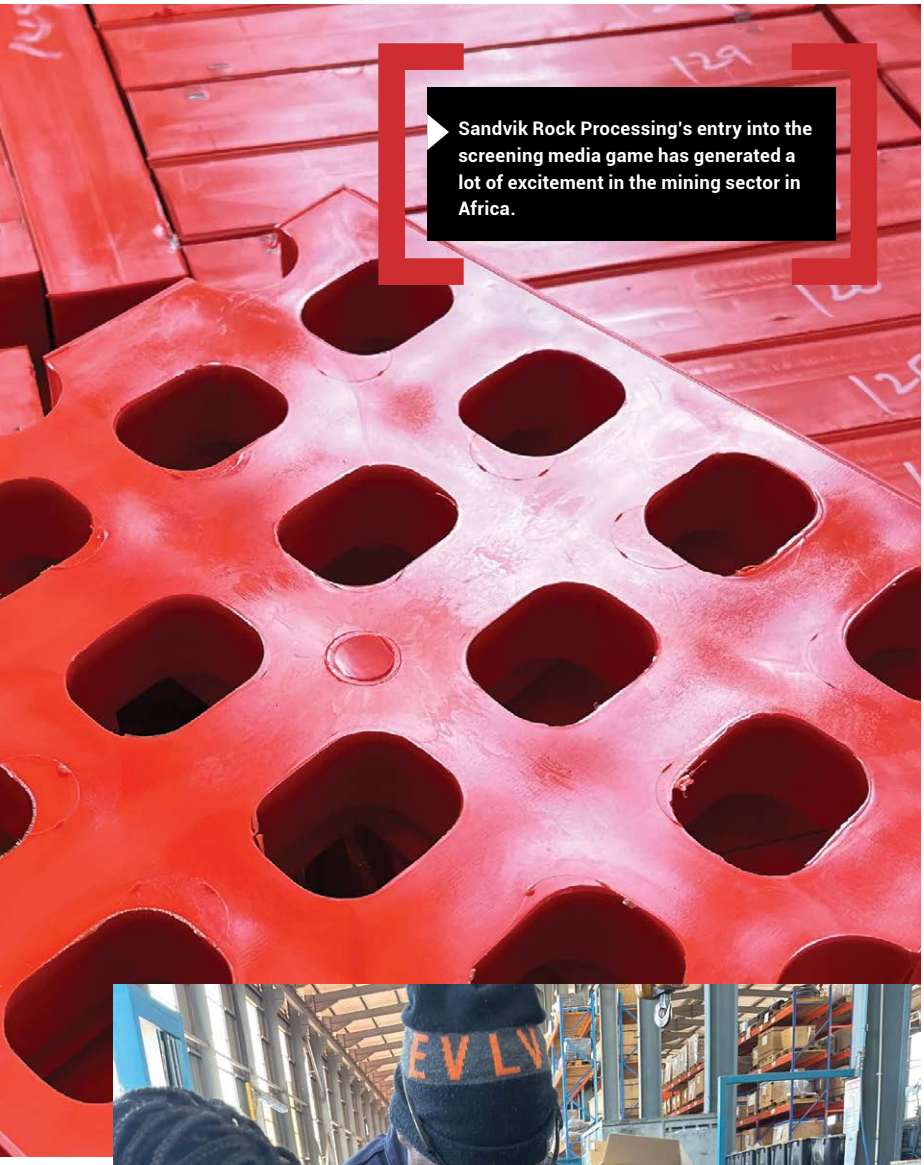
"Screen media plays a critical role in optimising productivity and material quality in mining and quarrying. Sandvik Rock Processing recognises the uniqueness of each operation and always seeks to address the specific requirements to ensure improvement of operations," says Motsamai.

These efforts have not gone unnoticed, with the market responding positively to Sandvik Rock Processing's innovative approach, recognising the value of the integrated offering and the drive to provide tailored solutions. By combining advanced technology with a deep understanding of customer needs, Sandvik Rock Processing is setting a new standard in the screening media industry.

"Our entry into the screening media market has generated a lot of excitement in the mining sector in Africa. Traditionally, customers have been concerned about the lack of screen media accessibility and the

**Our entry into the screening media market has generated a lot of excitement in the mining sector in Africa. Traditionally, customers have been concerned about the lack of screen media accessibility and the ultimate lack of support in some of the regions. With four Sandvik entities across southern Africa and a total of 11 across Africa, Sandvik Rock Processing has the necessary touchpoints across the continent to keep stock close to our customers which reduces lead times and maximises uptime.**

Phumelele Motsamai, Regional Manager: Screening Media & Wear Protection – Africa at Sandvik Rock Processing.



Sandvik Rock Processing's entry into the screening media game has generated a lot of excitement in the mining sector in Africa.

The African mining market has embraced Sandvik Rock Processing's steadfast efforts to elevate screening media standards.

ultimate lack of support in some of the regions. With four Sandvik entities across southern Africa and a total of 11 across Africa, Sandvik Rock Processing has the necessary touchpoints across the continent to keep stock close to our customers which reduces lead times and maximises uptime," adds Motsamai.

Sandvik Rock Processing manufactures a variety of screening media including polyurethane, rubber and wedgewire panels. Each type of panel is designed to address specific challenges within the mining industry, ensuring operations can maximise efficiency and productivity.

In addition to its screen media range, Sandvik Rock Processing offers a broad range of wear protection solutions. Through its long history of materials expertise and research, the company has developed materials that meet the highest quality standards and offer advantages such as long wear life, less maintenance, reduced noise levels and a better working environment.

A case in point is the new Sandvik HX900 cast-in carbide, a unique wear material that combines the wear resistance of cemented carbide with the shock resistance, malleability and forming capability of nodular cast iron. This ideal combination provides a wear-resistant material that withstands tough environments and has a long wear life in many extreme applications.

In line with Sandvik's commitment to sustainability, the tungsten carbides used in the Sandvik HX900 wear plates are 100% in-house recycled. Using recycled materials consumes 70% less energy and cuts overall carbon emissions by 40%.

"Based on the trials conducted to date, the Sandvik HX900 outlasts any other wear protection solution currently available on the market. It is the shining star of our range, and we are excited about its commercial rollout," concludes Motsamai. ●

# CONTROLLING BELT CONVEYOR DUST AT THE SOURCE

**The conveyor technology experts at Martin Engineering are responding to the U.S. Mining Safety and Health Administration's (MSHA) new dust emissions final rule by offering simple, make-sense solutions for staying compliant. By R. Todd Swinderman, P.E./CEO Emeritus/Martin Engineering**

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

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

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

## Conveyor loading zones

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

- Fully enclosed transfers – Completely enclosing the loading, stilling and settling zones contain the dust. Items like dust curtains and dust bags control airflow and capture dust.
- Shorter or sloped loading – Transfer chutes that minimi se the impact of cargo on the belt reduce the amount of turbulence and volume of dust within the loading zone.
- Belt training – Belt training when entering and leaving the loading zone ensures centered belt loading and minimises material shifting. It also controls belt drift for less spillage and dust along the run.
- Preventing belt sag between idlers – The belt can dip slightly between idlers, creating gaps that release dust and fines. Using an impact cradle with shock-absorbent polyurethane bars reduces strain on the belt and creates an even belt plane. Cradles can extend along the entire length of the stilling zone.

## Lower belt speeds

Many sources suggest belt speeds of 2 m/s (394 fpm) or less for reducing dust generation. However, with lower belt speeds, the belt width must increase to convey the same tons-per-hour creating a capital cost vs operating cost dilemma. The Conveyor Equipment


Manufacturers Association (CEMA) Classification and Definitions of Bulk Materials (ANSI/CEMA 550-2003) lists miscellaneous properties of bulk materials that benefit from lower belt speeds:

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

**Idler spacing and belt tension**

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

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

**Recommended Idler Spacing for Applications Outside the Loading Zone as Published by CEMA**

| Return Idler Spacing | Belt Width | Carrying Side Idler Spacing Outside the Loading Zone | | | | | |
|---|---|---|---|---|---|---|---|
| | | Weight of Material Handled in Kilograms per Cubic Meter ($lb_m/ft^3$) | | | | | |
| | | 480 (30) | 800 (50) | 1200 (75) | 1600 (100) | 2400 (150) | 3200 (200) |
| m (ft) | m (in.) | m (ft) | m (ft) | m (ft) | m (ft) | m (ft) | m (ft) |
| 3,0 (10.0) | 457 (18) | 1,7 (5.5) | 1,5 (5.0) | 1,5 (5.0) | 1,5 (5.0) | 1,4 (4.5) | 1,4 (4.5) |
| 3,0 (10.0) | 610 (24) | 1,5 (5.0) | 1,4 (4.5) | 1,4 (4.5) | 1,2 (4.0) | 1,2 (4.0) | 1,2 (4.0) |
| 3,0 (10.0) | 762 (30) | 1,5 (5.0) | 1,4 (4.5) | 1,4 (4.5) | 1,2 (4.0) | 1,2 (4.0) | 1,2 (4.0) |
| 3,0 (10.0) | 914 (36) | 1,5 (5.0) | 1,4 (4.5) | 1,2 (4.0) | 1,2 (4.0) | 1,1 (3.5) | 1,1 (3.5) |
| 3,0 (10.0) | 1067 (42) | 1,4 (4.5) | 1,4 (4.5) | 1,2 (4.0) | 1,1 (3.5) | 0,9 (3.0) | 0,9 (3.0) |
| 3,0 (10.0) | 1219 (48) | 1,4 (4.5) | 1,2 (4.0) | 1,2 (4.0) | 1,1 (3.5) | 0,9 (3.0) | 0,9 (3.0) |
| 3,0 (10.0) | 1372 (54) | 1,4 (4.5) | 1,2 (4.0) | 1,1 (3.5) | 1,1 (3.5) | 0,9 (3.0) | 0,9 (3.0) |
| 3,0 (10.0) | 1524 (60) | 1,2 (4.0) | 1,2 (4.0) | 1,1 (3.5) | 0,9 (3.0) | 0,9 (3.0) | 0,9 (3.0) |
| 2,4 (8.0) | 1829 (72) | 1,2 (4.0) | 1,1 (3.5) | 1,1 (3.5) | 0,9 (3.0) | 0,8 (2.5) | 0,8 (2.5) |
| 2,4 (8.0) | 2134 (84) | 1,1 (3.5) | 1,1 (3.5) | 0,9 (3.0) | 0,8 (2.5) | 0,8 (2.5) | 0,6 (2.0) |
| 2,4 (8.0) | 2438 (96) | 1,1 (3.5) | 1,1 (3.5) | 0,9 (3.0) | 0,8 (2.5) | 0,6 (2.0) | 0,6 (2.0) |

*Metric conversions added by Martin Engineering; belt widths may not be actual metric belt sizes.*


specification.

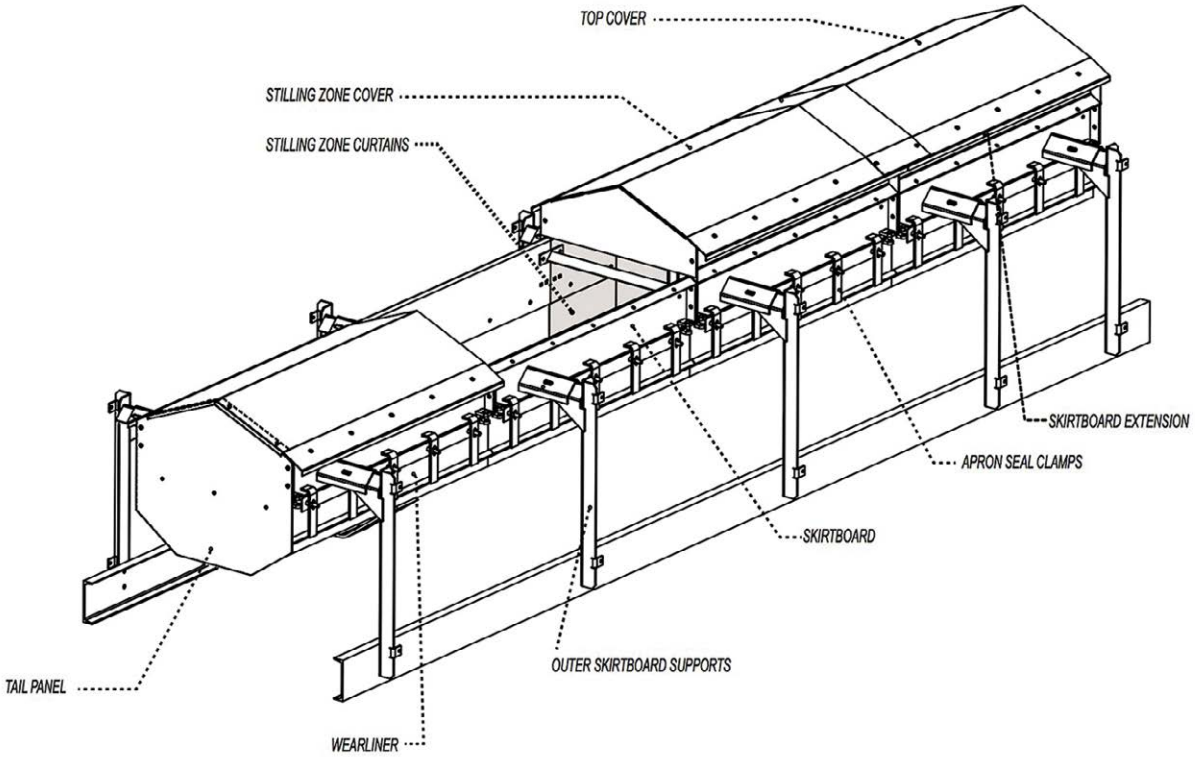
Idler spacing is critical to controlling belt sag. To reduce gaps where spillage and emissions can escape and retain an even belt profile in the loading zone, idlers should be placed as closely together as possible. Outside of the loading zone, CEMA has some recommendations based on volume and belt width.

## Best practice: enclose the system

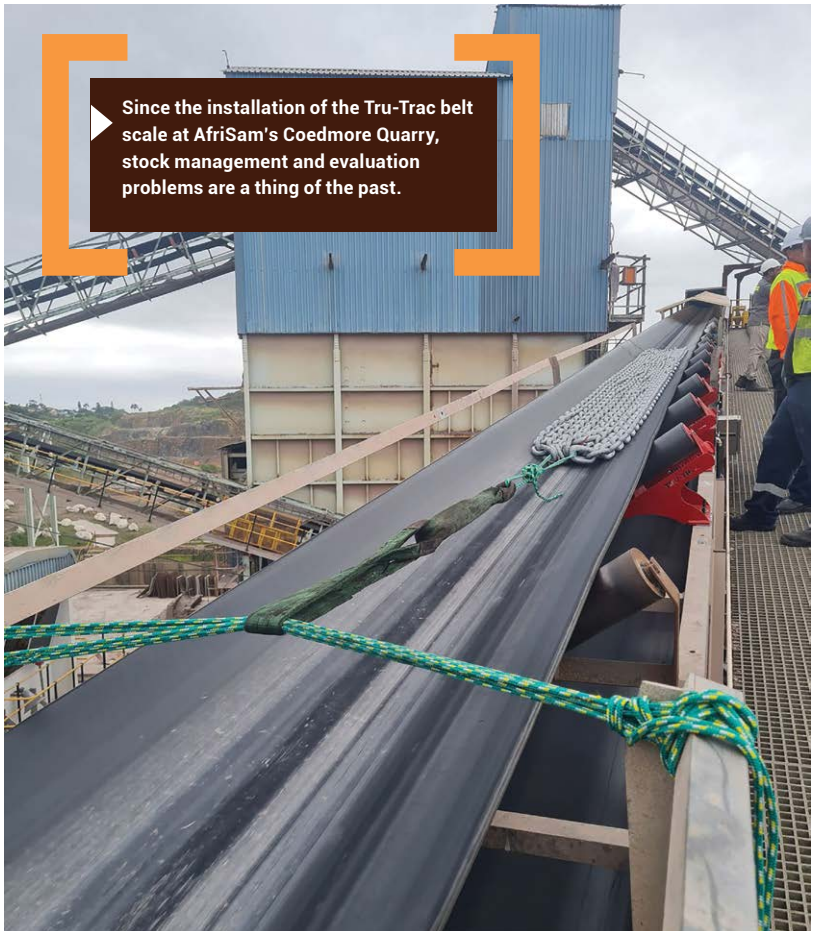
The amount of dust that can become airborne is directly proportional to the volume and speed of the airflow through the transfer point. If the openings in the chute work are restricted to the practical minimum, the inward airflow is restricted. A useful dust control strategy is to capture the material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

## Conclusion

Conveyor transfer points have a




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



Since the installation of the Tru-Trac belt scale at AfriSam's Coedmore Quarry, stock management and evaluation problems are a thing of the past.

# ACCURATE MEASURING AT AFRISAM'S **COEDMORE QUARRY**

**Following worrying discrepancies in the monitoring of production output, sales and inventory, a belt scale from Tru-Trac is winning the day for KwaZulu-Natal-based AfriSam Coedmore Quarry. With groundbreaking static calibration accuracy error levels as low as 0,06%, the belt scale provides reliable data for sound decision-making.**

Over the years, AfriSam Coedmore Quarry has had issues with stock capturing and evaluation. "Accurately measuring production, sales and stock levels is critical for effective management and efficient operations," says Lloyd Maringa, Works Manager at AfriSam Coedmore Quarry.

"Traditionally, we conduct quarterly stockpile surveys though an independent third-party to gauge the levels of stock on the ground. It was during these surveys that we would always encounter huge discrepancies between what we had produced, what would have been sold and what should have been on the floor."

In some instances, the variations were as high as 70 000 tonnes (t). In the quest to resolve the problem, the operation resorted to monthly surveys instead of the usual quarterly routines. The more frequent surveys, however, did not yield different results. Further investigations eventually pinpointed issues with the existing belt scale between the intermediate stockpile and the secondary crusher. Despite several interventions, including regular calibrations by the supplier and even the installation of a second belt scale, the challenge persisted.

"We therefore went into the market for a new belt scale supplier," explains Dustin Naidoo, Maintenance Superintendent at AfriSam Coedmore Quarry. "Tru-Trac proposed a proof-of-concept approach, whereby they installed a belt scale on a trial basis for a month. Upon evaluation of the results, we were impressed by the high levels of accuracy."

Since the installation of the Tru-Trac belt scale, the stock management and evaluation


KwaZulu-Natal-based AfriSam Coedmore Quarry has found a fitting solution in Tru-Tracs' belt scale.

Installation of the Tru-Trac belt scale at AfriSam's Coedmore Quarry in KZN.

> **Tru-Trac proposed a proof-of-concept approach, whereby they installed a belt scale on a trial basis for a month. Upon evaluation of the results, we were impressed by the high levels of accuracy.**

Tru-Trac's flagship TTR FI-4 belt scale system installed at AfriSam Coedmore uses a fully floating pivotless weigh frame supported by four load cells.

problems are a thing of the past. "We have now reverted to the usual quarterly stockpile surveys, which saves us both time and money," says Maringa.

Tru-Trac's flagship TTR FI-4 belt scale system installed at AfriSam Coedmore uses a fully floating pivotless weigh frame supported by four load cells, making it ideal for high-precision applications. It is a simple and extremely accurate system engineered to produce precise data. With a proven accuracy margin under 0,1%, the belt scale sets industry standards in metallurgical accounting.

"In addition to the accuracy of the technology, we are equally impressed by the service provided by Tru-Trac. Although they taught us to do in-house calibrations, a technician visits our site every month. Choosing Tru-Trac has proven to be one of the best business decisions we have made in recent times," concludes Naidoo. ●

# NETSTAR CELEBRATES **30 YEARS IN THE SA TELEMATICS INDUSTRY**

**Netstar, South Africa's leading telematics and car security solutions provider is celebrating its 30th anniversary. Modern Quarrying spoke to Grant Fraser, Netstar Group's Managing Director. He provided insight into how the group meets the unique needs of the South African freight, logistics, and transport market.**

Speaking on the significance of Netstar's service offering to the South African market, Fraser notes: "Netstar moves rapidly in the South African market and solving the unique combination of security and value-added services". He continues to add, "We are exceptionally proud that our products and services are in high demand globally, delivering them in Southeast Asia, Australia, and now Italy".

Over the past 30 years, Netstar's technology has evolved from basic location tracking to near real-time video using the latest mobile satellite networks. These advances have enabled more proactive services, allowing customers to operate more efficiently and securely, supported by data insights and global bureau services.

Netstar's extensive use of data analytics and innovative solutions provides significant benefits to companies in the transport, freight, and logistics sectors. By improving fleet management, enhancing driver behaviour, reducing downtime, strengthening security, and promoting driver safety, Netstar helps companies navigate the challenges of today's dynamic environment. As the need for these features continues to evolve, Netstar remains at the forefront, delivering cutting-edge solutions that drive efficiency and security in the industry.

### Netstar's offering to the transport and logistics sectors

Data analytics have become a crucial tool for companies in the transport, freight, and logistics sectors. This is particularly true for the South African market. Netstar, a leader in telematics and fleet management solutions, utilises extensive data analytics to optimise its own operations and provide valuable insights to its

customers about theirs.

Netstar employs two primary types of data when it comes to the transport and logistics sector. Video data is gathered from cameras mounted on and in the vehicles with additional information being collected from GPS and various other sensors.

These telematics data are instrumental in helping transporters manage their business. The data assists companies in pinpointing their fleet's location, optimising routes with the traffic-aware routing feature, and gaining visual insights into situations through video surveillance.

By leveraging these data streams, companies can make informed decisions that enhance operational efficiency, reduce costs, and improve the safety of drivers, vehicles, and cargo.

In terms of safety and security, Netstar has introduced innovative solutions such as battery-operated devices that have a three-year battery life. The company's Nb-IoT devices track vehicles,

**Grant Fraser, Netstar Group's Managing Director.**

trailers, and other high value assets.

The recently launched StarTag device is designed for lower value assets. With specialised sensors like temperature sensors, these devices can monitor the location and state of an asset.

Additionally, motion sensors in the StarTag devices notify customers of unauthorised movements, activating world-class technology to recover the assets should the need arise.

Camera services monitor fuel usage, track potential incidents of fuel theft, and ensure the safety and security of drivers, vehicles, and cargo.

## Monitoring driver behaviour

Driver behaviour is a critical factor in the transport and logistics sectors, impacting both safety and efficiency. Netstar's combination of video telematics and data analytics provides deep insights into driver behaviour. The company's services monitor driver behaviour such as speeding, lane changing, acceleration, and cornering. The integration of advanced Artificial Intelligence with camera systems allows for real-time monitoring, enabling proactive intervention.

Driver Status Monitoring alarms (DSM) record driver behaviour. AI programmes identify specific visual cues that are associated with risky driver behaviour. These visual cues include driver behaviour like driving while drowsy or distracted driving situations.

Once this behaviour is identified, an alarm will sound. The driver is then informed and instructed to cease their distracted driving behaviour or to pull over if they are tired. If the driver fails to do so, feedback is sent to the Global Fleet Bureau. A team member from the Global Fleet Bureau will then phone the driver to advise them of their behaviour and let them know of safe rest stops nearby.

Netstar's Global Fleet Bureau plays a crucial role in the company's service offering, shifting the focus from reactive analysis to incident prevention. This proactive approach has proven to be a game-changer, improving overall driver behaviour and reducing the likelihood of incidents occurring.

Netstar's quick adaptation to the South African environment underscores its commitment to innovation. The high demand for Netstar's products and services globally reflects their effectiveness and versatility.

## Netstar in construction and quarrying

Some aggregate producers currently use a number of Netstar's highly specialised mining products and solutions in the more robust environments in which they operate.

Netstar's 360-degree proximity detection system, for example, can be installed on Heavy Mining Equipment (HME) or Light-Duty Vehicles (LDV) operating in open mines or complex construction sites.

According to Fraser, "The Netstar CAPS unit allows mines to digitally monitor their vehicle to vehicle and vehicle to personnel interactions that can be displayed on a map, thus allowing for informed decision making, strategic changes to traffic management or training of their personnel to alleviate dangerous operation of their HME".

Other Netstar products like the Collision Avoidance System, CAPS LDV Unit, and CAPS Personal Unit can be used to improve safety and efficiency on complex construction sites. ●

# POWERBIT ROCKTOOLS: THE TRUTH ABOUT TRICONE

**Africa's resources yield a wealth of revenue for enterprising businesses equipped to go beneath the surface and extract vital raw materials for manufacturing, export and more.**

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

### The Tricone difference

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

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

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

### Customisation for precision and staying power

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

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

### Efficiency redefined

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

### Directional stability and control

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

### Ease of maintenance for longevity

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

### Powerbit – the drilling partner of choice

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

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

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

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

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

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


JOHN DEERE

AFGRI EQUIPMENT

Eric XI: +27 72 712 0957
eric@zegadrillrig.co.za

Mathew Henderson: +27 83 973 1378
mathew@zegadrillrig.co.za

11 Voyager Street,
Linbro Park, Gauteng, RSA, 2065

www.zegadrillrig.co.za

## ZEGA T640J

- Range of Hole Diameter: 76mm – 102mm
- Drilling Depth: 20 meters
- Engine: Cummins 152Kw / RPM 2100
- Boom: Folding
- Comprehensive Warranty: 2000 Hours or 1 Year
- Weight: 14100kg
- Dimensions: (L) 11300m x (W) 2450mm x (H) 3100mm
- Rated FAD: 7m³/min
- Working Pressure(Max.): 8bar

ZEGA
SOUTH AFRICA

www.zegadrillrig.co.za


**26-29 November 2024**
**Shanghai New International Expo Centre**
**Visit our Booth E5.511**

bauma CHINA