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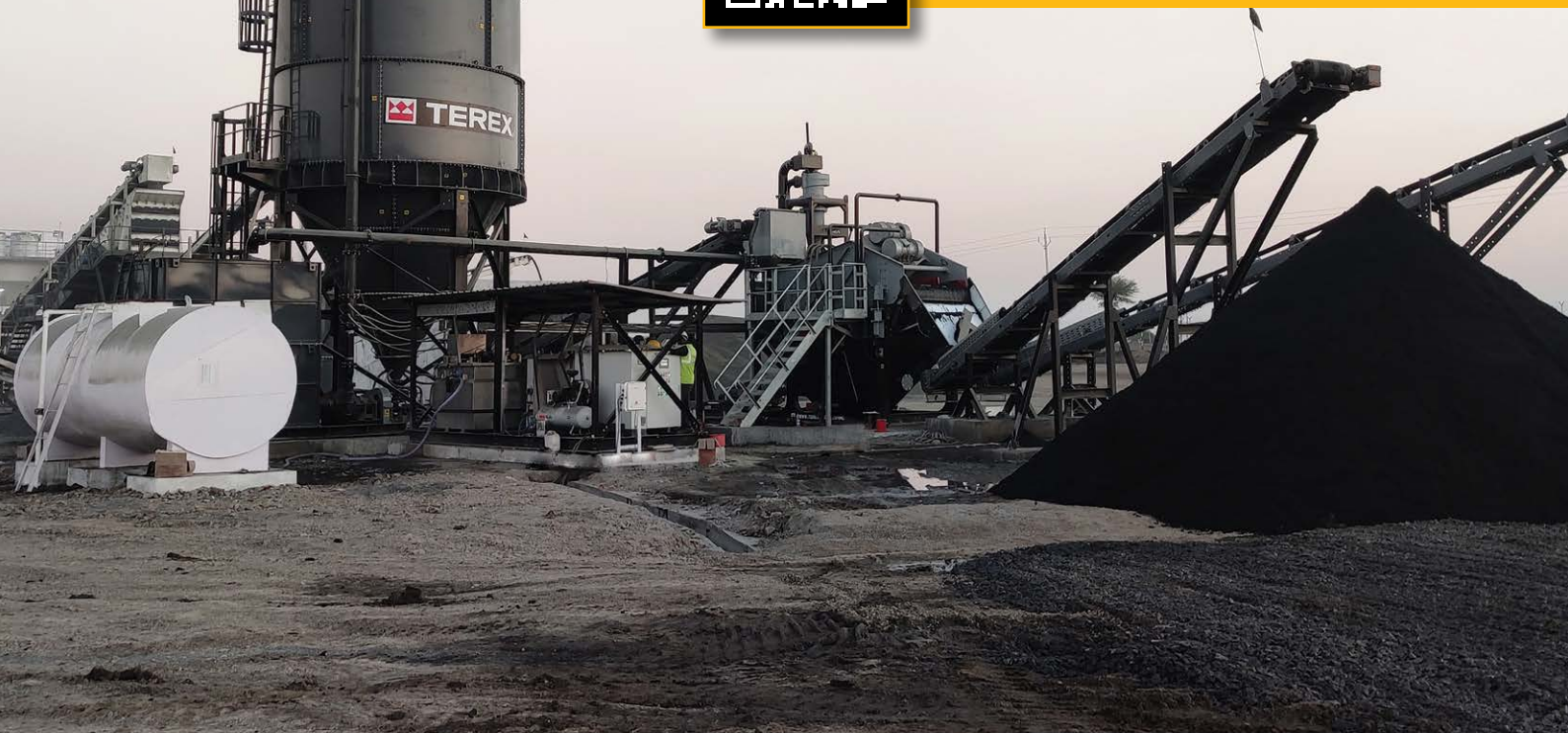
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IMPROVING UPTIME AND INCREASING PROFITABILITY IN THE MINING SECTOR

By Jaco du Plooy and Devan Reddy, Eaton

Given the business climate recently, it is understandable why many companies have had to cut back. However, cutting corners on crucial maintenance won't pay off in the long-run – vehicle and equipment failures and malfunctions can slow and even completely stall operations by far longer for mines than routine maintenance operations would require. It's for this reason that routine maintenance, along with several other crucial factors, is key to improving uptime and increasing profitability for mines.

Maintenance – working smart, not hard

Mining operations and machines, including drills, trucks and processing equipment, vary in nature and complexity, and each part has its own wear points, any of which could fail if unmaintained and cause significant periods of downtime.

While hesitation around frequent maintenance is understandable from a cost and productivity standpoint, technological advances in preventative maintenance

have made these processes a lot more streamlined, efficient and cost-effective.

Preventative and corrective maintenance are the two traditional maintenance approaches that the global mining industry has long relied on. However, predictive maintenance strategies have shown up as a far more efficient solution.

Devan Reddy, field product manager – Power Management and Control Components at Eaton, says that with digital transformation creating new possibilities for the mining industry, predictive maintenance has become a crucial part of the maintenance conversation too.

“And the benefits of predictive maintenance for mines are two-fold – not only does it help prevent catastrophic failure that can cause injury to personnel and damage to equipment, but it also allows maintenance staff to plan correctly and put in place alternate processes to try and keep the plant operating.”

Examples of predictive maintenance and predictive maintenance sensors include vibration analysis, oil analysis, thermal imaging and equipment observation. These innovations are increasingly being used in mines to ensure increased uptime by optimising how maintenance gets done.

“Ultimately, maintenance is a manual intervention, but the process of understanding when to perform maintenance can be automated. This is where the Industrial Internet of Things (IIOT) can come in to play,” says Reddy. “IIOT fundamentally is all about getting information via sensors or equipment with intelligence built in. This information can be used to automatically raise alarms when pre-determined conditions, for example operating temperatures, are exceeded.

The growing need for alternative energy

Ageing machinery and normal wear and tear are not the only factors affecting uptime and necessitating maintenance.

Mining operators at some of the largest mines in the country have reported operations and processes being severely affected by load-shedding. In fact, mines were forced to halt operations entirely in 2019 as a result of stage 6 loadshedding being implemented and requests from the national utility to reduce consumption.

Power interruptions cause loss in production output and, as a result, revenue. It also has implications for the safety and wellbeing of workers in mines, often requiring that personnel be evacuated and operations come to a standstill. From a life safety point of view, many mines are opting to install emergency lighting that is energy efficient and powered from off-grid sources to not only ensure the safety of workers but help prevent unnecessary downtime where possible.

Grid instability has also brought the topic of alternative energy sources such as solar, hydro and wind power to the fore, as well as replacing equipment with more energy-efficient models and installing uninterrupted power supply (UPS) systems to help reduce overall power consumption.

“UPS setups are crucial in mining settings for safeguarding critical devices, hardware and machinery from damage and arc flash incidents. Essentially, they allow mining operators to safely shut down and back up data in emergency situations, and before a power cut occurs,” explains Jaco du Plooy, product manager at Eaton.

From poor maintenance protocols to power instability, there are many factors that can have an enormously negative impact on production and profit, not to mention the possible risk to human life and the environment. For this reason, the mining industry should be focused on implementing new strategies that also employ digital technology to reduce unplanned downtime while still saving money with a positive bottom-line impact. 🌱



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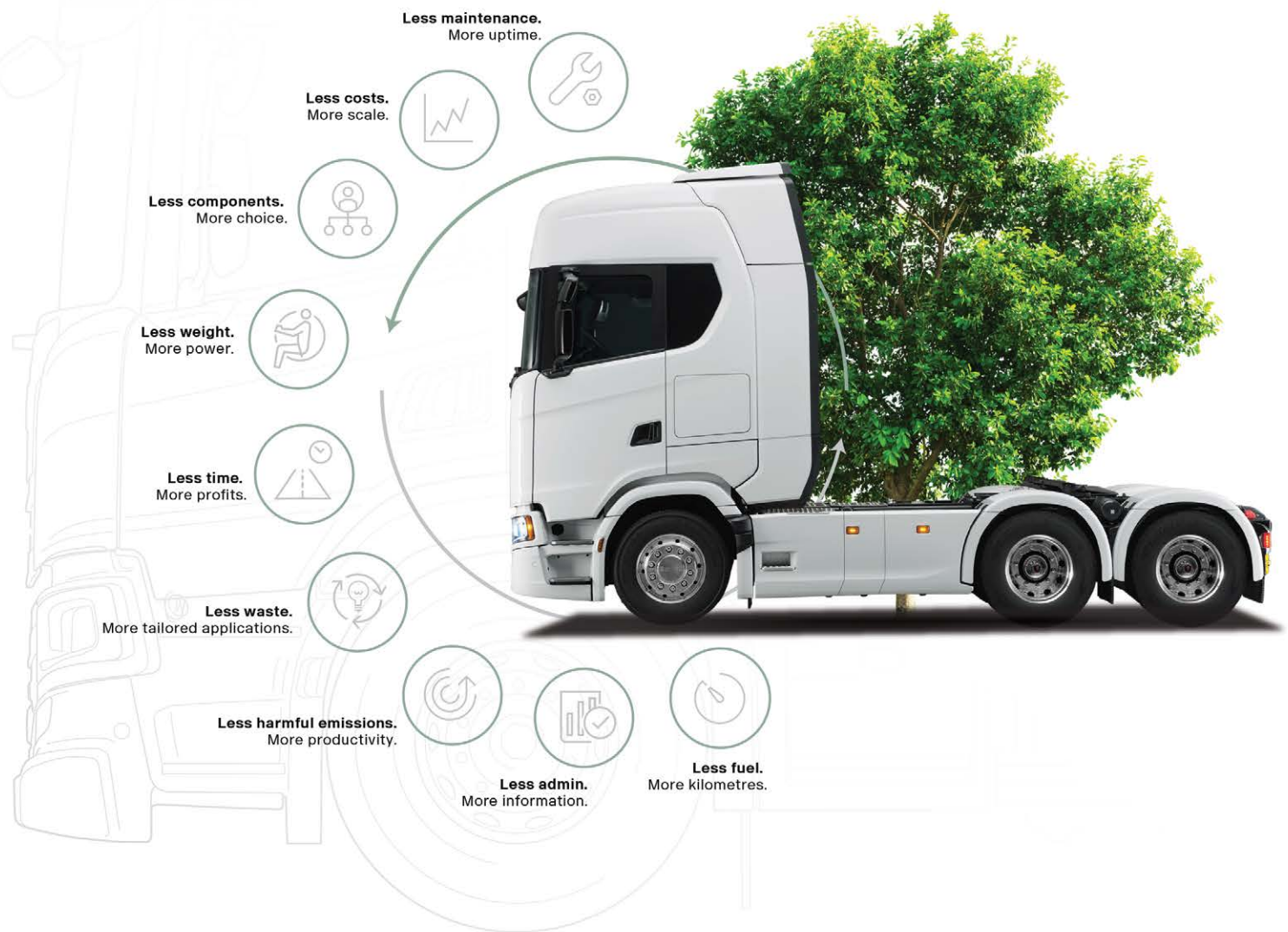


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A typical Terex washing system.

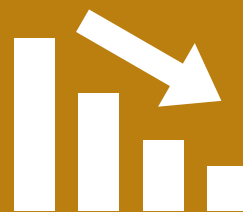


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TEREX WASHING SYSTEMS FOR AFRICA

A thirty-year partnership between Terex Washing Systems and multi-franchise distributor, ELB Equipment, has led to customers in southern Africa delivering some of the highest quality washed sand and aggregates for use in many of the country's flagship infrastructure projects wherever speciality and higher strength concretes are preferred.



Centuries of mining South Africa's rich resources has led to the depletion of many of the reserves, especially those that are close to the surface and easy to obtain

TALKING POINT



"Most other wash plants battle to recover fines smaller than 500 microns which means aggregate suppliers can lose up to 30% of their saleable sand extracted."

Heath Dickson, minerals processing specialist and product manager for Terex Washing Systems at ELB Equipment.

The advanced nature of Terex washing systems provides quarry and mine operators with the ability to efficiently separate waste products from saleable products and offer their customers a range of options to suit their construction



The Terex FM 120 BW.

10 – 15%
Removal of water following dewatering operation to 10 – 15% of residual water content, and major reduction in saleable material discharging to the pond, so reducing pond maintenance and saving money.



Most other wash plants battle to recover fines smaller than 500 microns which means aggregate suppliers can lose up to 30% of their saleable sand extracted



Different systems are available for each application including washing, aggregate rinsing, scrubbing and wastewater management systems from 20 to 200 tonnes per hour



ELB Equipment's Terex machines have found favour locally due to their small footprints and high technology manufacture that enables higher efficiency and recovery of more useable sand



Even the best equipment needs to be properly specified and set up correctly with current and future plans and substrates considered

requirements in all conditions and considering the regions' varying geologies.

This has made Terex solutions the first choice for sand and aggregate providers seeking to maximise quality without sacrificing quality. ELB Equipment's extensive branch and dealer network

through the southern African sub-region has also led to the proliferation of the plants across all corners wherever quality construction is a prerequisite.

Saving sands

Minerals processing specialist and

product manager for Terex Washing Systems at ELB Equipment, Heath Dickson, says centuries of mining South Africa's rich resources has led to the depletion of many of the reserves, especially those that are close to the surface and easy to obtain.



Silt removed to the water treatment plant.

Stalwart of the quarrying industry

Terex Washing Systems' ever-popular bucket wheel range, including the FM 120 BW, is a popular choice on quarries in the region.

Due to water scarcity through much of the region and due to overall efficiency of the plant, the Terex FM Bucket Wheel range of sand classification systems are highly efficient dewatering units that remove silts, slimes and clays from sand to produce up to two saleable products in applications including concrete, mortar and asphalt sands, quarry dust/crushed fines, lake and beach sands, silica sand, golf course sands, filter bed sands, recycled materials and iron ore.

The range combines a dewatering bucket wheel(s), a centrifugal slurry pump, hydrocyclone(s), a collection tank and a dewatering screen on a single chassis.

Some features and benefits

Features and benefits include underflow rubber lined slurry pump; bucket wheel(s) with variable speed control; rubber lined hydrocyclone(s); self-regulating cyclone tank; high frequency dewatering screen fitted with polyurethane modular mats; two grades of sand; weir discharge system which reduces the volume of fines entering the cyclone collection tank; collapsible bucket wheel tank for easy transport (mobile only); bucket wheel performs 80 – 90% of the work, helping reduce the pump and cyclone size and wear; reduced pump and cyclone wear; reduced overall power requirements; reduced running costs; maximum recovery of material above 75µm (200 mesh); removal of silt, slimes and clays below 75µm (200 mesh); removal of water following dewatering operation to 10 – 15% of residual water content, and major reduction in saleable material discharging to the pond, so reducing pond maintenance and saving money.

FM120 C Specifications

Length:	6,5 m
Width (including walkway):	3,5 m
Height:	6,2 m
Feed height:	1,90 m
Product discharge height:	1,7 m
Wastewater discharge height:	971 mm
Total weight (empty):	8 000 kg
Total weight (working):	14 800 kg



For concrete construction purposes, sand should have minimal fines smaller than 75 microns as these require more cement to bind. Above this threshold sand mixes can be optimised to customers' requirements depending on the application. Most other wash plants battle to recover fines smaller than 500 microns which means aggregate suppliers can lose up to 30% of their saleable sand extracted. It also burdens water treatment plants that need to carry 30% more silt.

For those in the sand and aggregates quarrying business this is especially true and experienced miners are quick to point out that there are few free dig areas left in the region. Aggregates and sands are mostly contaminated with fines, clay and or organic matter that require further processing before they can be brought to market.

20 to 200 t

Different systems are available for each application including washing, aggregate rinsing, scrubbing and wastewater management systems from 20 to 200 tonnes per hour.

"For concrete construction purposes, sand should have minimal fines smaller than 75 microns as these require more cement to bind. Above this threshold sand mixes can be optimised to customers' requirements depending on the application. Most other wash plants battle to recover fines smaller than 500 microns which means aggregate suppliers can lose up to 30% of their saleable sand extracted. It also burdens water treatment plants that need to carry 30% more silt."

Wide range

Heath says Terex Washing Systems has a large range of products which are suitable for South African and African conditions. These are available in a wide range that can fulfil the requirements of all types of sands while producing two different grades of sand from 0 – 2 mm and 0 – 8 mm simultaneously. This enables the supplier to process two streams simultaneously on the same machine.

Different systems are available for each application including washing, aggregate rinsing, scrubbing and wastewater management systems from 20 to 200 tonnes per hour. These can produce high-grade sand for large scale construction projects such as plaster sand, manufactured sand, concrete sand, paving sand, glass manufacturing sand and even sand used in tile adhesives. Many golf courses also benefit from our machine's ability to produce some of the best bunkers and drainage sand available. Specialised fracking sands can also be produced.

"Even the best equipment needs to be properly specified and set up correctly with current and future plans and substrates considered. This is where ELB Equipment's expert staff play a critical role in working with, understanding and meeting the requirements for each of our customers' plants."

ELB Equipment's Terex machines have found favour locally due to their small footprints and high technology manufacture that enables higher efficiency and recovery of more useable sand. Highly specialised processes require technical skills and that is where the ELB team of specialists work to find the right solution. Every site is different as substrates differ from region to region and mine to mine. In certain instances existing plants can be optimised utilising Terex washing equipment.

Choosing right

"Even the best equipment needs to be properly specified and set up correctly with current and future plans and substrates considered. This is where ELB Equipment's expert staff play a critical role in working with, understanding and meeting the requirements for each of our customers' plants. There are simply too many variables to provide a single solution that fits all.

"Issues like substrates, geology, water availability, location and, most importantly, the final product and tonnages required, will determine the types of equipment needed. Beyond that it is a matter of securing the required finance and planning for the transport, delivery and commissioning of the equipment on site.

"That's why it pays to partner with ELB Equipment which has the required resources, including the largest branch network countrywide, as well as a substantial dealer network across the borders." 🌐



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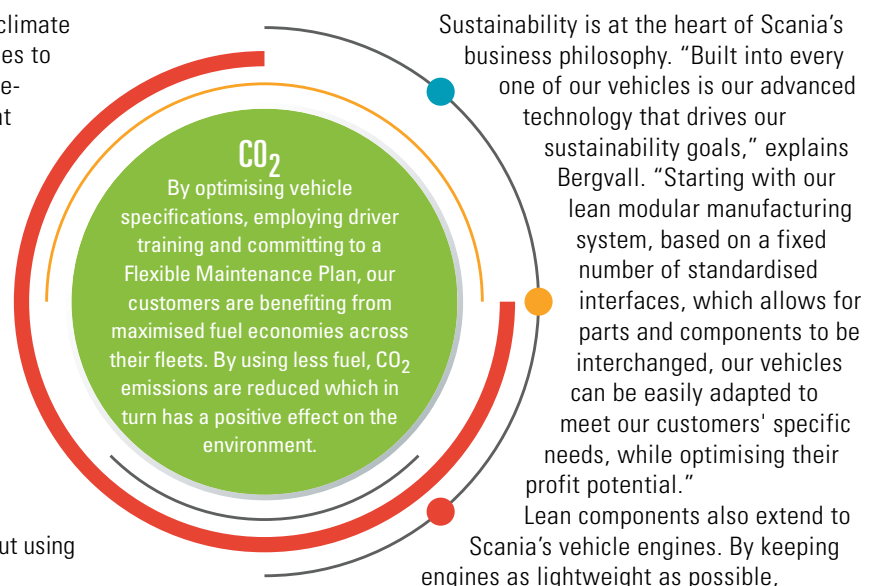
By using less fuel, CO₂ emissions are reduced which in turn has a positive effect on the environment.

PIONEERING A NEW ERA IN SUSTAINABLE TRANSPORT SOLUTIONS

Over the next two decades, transport technology will change faster than any time since the industrial revolution. In place of trucks and buses powered by fossil fuels and internal combustion engines, transport technology will ultimately shift to electric vehicles.

It's a transition driven by climate change, regulatory changes to emission controls and a renewed understanding that transport mobility plays a crucial role in inclusive economic prosperity.

For decades, Scania has been leading this shift. "We've set new standards for the transport industry through our advanced transport solutions that eliminate waste, while maximising the use of our advanced technological leadership," says Erik Bergvall, managing director, Scania Southern Africa. "It's about using less to deliver more".





Built into every Scania vehicle is the company's advanced technology that drives its sustainability goals.

QUICK TAKE

Sustainability is at the heart of Scania's business philosophy



By keeping engines as lightweight as possible, customers benefit from optimised payload potentials, while never having to compromise on Scania's legendary power outputs



Scania Southern Africa's new standard for maintenance is based on estimated maintenance requirements, using several operational factors and vehicle specifications



By using less fuel, CO₂ emissions are reduced which in turn has a positive effect on the environment



By keeping operational costs as low as possible Scania customers can achieve business growth faster.



We've set new standards for the transport industry through our advanced transport solutions that eliminate waste, while maximising the use of our advanced technological leadership

customers benefit from optimised payload potentials, while never having to compromise on Scania's legendary power outputs.

Scania Southern Africa's new standard for maintenance is based on estimated maintenance requirements, using several operational factors and vehicle specifications. The result is continuously updated flexible maintenance that minimises downtime to the lowest possible cost.

All these advancements contribute



to industry-leading fuel efficiencies, a key factor in maintaining sustainable operating profitability. "In our quest to deliver unrivalled fuel efficiency, we leave no stone unturned," says Bergvall. "By optimising vehicle specifications, employing driver training and committing to a Flexible Maintenance Plan, our customers are benefiting from maximised fuel economies across their fleets. By using less fuel, CO₂ emissions are reduced which in turn has a positive effect on the environment."

It's a circular system that is boosted by data captured from over 500 000 connected vehicles.

It's been used to developed products

and services that allow for every vehicle to be treated as its own business with individual targets set for fuel efficiency, maintenance and productivity. "This ensures every vehicle is delivering on its maximum potential," says Bergvall.

By keeping operational costs as low as possible Scania customers can achieve business growth faster. "This is good for our customers' long-term ambitions while also supporting sustainable job creation and broader economic prosperity," explains Bergvall.

True to Scania's values, sustainable solutions are also being applied to Scania Southern Africa's internal supply chains, while a focus on diversity is ensuring

Starting with our lean modular manufacturing system, based on a fixed number of standardised interfaces, which allows for parts and components to be interchanged, our vehicles can be easily adapted to meet our customers' specific needs, while optimising their profit potential.

that the Scania team has the skills required to drive a sustainable future. By leading the shift, Scania is making sustainability just that: Sustainable. 🌱

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ELECTRA MINING AFRICA 2022 PREVIEW

With over 25 000 m² floor space already sold and more than 550 confirmed exhibitors, this year's Electra Mining Africa exhibition, which celebrates 50 years this year, having launched in 1972, is gearing up to welcome a host of local and international visitors. By *Nelendhre Moodley*.

Trade show organiser and portfolio director Charlene Hefer from Specialised Exhibitions says that there is much anticipation and excitement around the restart of exhibitions and an eagerness to return to in-person, face-to-face business events.

Hefer cites Kai Hattendorf, CEO at UFI, the global association of the exhibition industry, who recently noted that this year is seeing the exhibition and business events industry busier than ever – “shows are back and calendars are tight.” He added that as business events drive the recovery and re-connection of industries, sectors, and economies, their importance cannot be underestimated.

“We are anticipating a well-attended event from both an exhibitor and visitor perspective. At our recent Electra Mining Africa exhibitor briefing, we were thrilled to see so many exhibitors – both seasoned exhibitors and first-timers – in attendance,” she says.

The theme for this year's show is: Make Connections That Matter.

Hefer notes that while networking is a great way to interact and exchange information, making a real connection offers much more.

“It's the first step to building the enduring and beneficial

relationships that will matter to your business, and your future. Electra Mining Africa offers the opportunity to build long-lasting connections that matter for buyers and sellers, and all industry stakeholders.”

Meanwhile, government's recent announcement that face masks are no longer required to be worn and that there are no further limits on the size of gatherings, is likely to have a positive effect on attendance.

Electra Mining Africa 2018 attracted close to 30 000 visitors, but trends emerging across this year's shows to-date indicate that visitor numbers are generally lower than pre-Covid events. But the quality of visitor is much higher and Specialised Exhibitions is still expecting thousands of senior level decision-makers at this year's event. An exhilarating programme is lined up to ensure that it attracts as many visitors as possible.

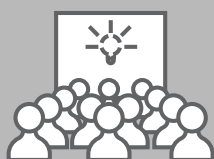
“Electra Mining Africa is a much-needed platform for buyers and sellers to connect face-to-face again. It presents an opportunity for industry networking to take place, to build business partnerships and new connections, and for new products and services to be launched.”

Electra Mining Africa 2022

Apart from the old favourites, Electra Mining Africa is



Ground-breaking machinery and equipment can be seen throughout the exhibition.



"We are anticipating a well-attended event from both an exhibitor and visitor perspective."



Apart from the old favourites, Electra Mining Africa is offering an exciting showcase of new technologies, ground-breaking machinery and equipment, and cutting-edge products, systems and services



Exhibitors will be invited to enter their new products and innovations to be assessed by independent adjudicator SACEEC CEO Eric Bruggeman. New Products and Innovation Awards will be presented by the South African Capital Equipment Export Council (SACEEC)



The Lifting Equipment Engineering Association of SA (LEEASA) and Women in Mining South Africa (WiMSA) will be running conferences alongside Electra Mining Africa



The 'every day a theme day' experience will again be part of this year's event with Automation Day, Innovation Day, Safety Day, Future Skills Day and South Africa Day confirmed

offering an exciting showcase of new technologies, ground-breaking machinery and equipment, and cutting-edge products, systems and services.

"We anticipate many of our exhibitors will use Electra Mining Africa to launch new products, innovations and technologies and as we have allocated theme days (Day 2's theme is Innovation Day which talks to new machinery, products and technology), we anticipate that a number of exhibitors will take this as an opportunity to launch new products on Day 2," says Hefer.

In line with the theme of innovation, exhibitors will be invited by the organisers to enter their new products and innovations to be assessed by independent adjudicator SACEEC CEO, Eric Bruggeman. New Products and Innovation Awards will be presented by the South African Capital Equipment Export Council (SACEEC).

The event will also host seminars, conferences, visitor activations, live demonstrations, theme days, business matchmaking, a brand new Syspro sponsored Exhibitor Lounge, and more. "We're pulling out all the stops to create a great exhibitor and visitor experience."

Electra Mining Africa and co-located shows Elenex Africa, Powerex, Transport Expo and Automation Expo will be supported by a programme of content-rich conferences and free-to-attend seminars with industry experts speaking on a range of topical and important issues.

The Lifting Equipment Engineering Association of SA (LEEASA) and Women in Mining South Africa (WiMSA) will be running conferences alongside Electra Mining Africa. The Society for Automation Instrumentation Mechatronics and Control (SAIMC) and the SA Institution of Mechanical Engineering (SAIMechE) will also be hosting free-to-attend seminars.

"The new 'Theme Days' concept launched at Electra Mining Africa 2018 was enjoyed by both exhibitors and visitors. The 'every day a theme day' experience will again be part of this year's event with Automation Day, Innovation Day, Safety Day, Future Skills Day and South Africa Day confirmed. The topics for the free-to-attend seminars will align with the theme days. A business matchmaking programme will be available to enhance the event through pre-matching of visitors and exhibitors and the making and management of business meetings on site at the event."

In an effort to promote the importance of Forklift Operation and operators in the Supply Chain & Logistics industry, Lifting Africa and LEEASA (Lifting Equipment Engineering Association of SA) will be hosting a forklift driver competition at the trade show. The event will provide forklift

TAKE

QUICK



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The event presents live demos across exhibition halls and outside areas.



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operators with an opportunity to prove their driving skills, compete with others around Johannesburg, win prize money, as well as achieving recognition as a champion.

Entries are open for all operators who have a valid Forklift license and can drive either a reach truck or a counterbalance forklift truck in racking. The focus of the competition is on accurate, safe driving skills and knowledge, not on speed. The first round of heats for counterbalanced forklift operation will be an online test to assess entrants' practical skills, theoretical knowledge, attitude and efficiency. Lifting Africa and LEEASA want to assist in promoting the importance of inspection, safety and training and to reward the safest forklift drivers at Electra Mining Africa.

There will also be a Premier Visitor element where exhibitors can elevate the status of their top customers to Premier Visitor with access to premier parking and the premier visitor lounge. These invitations will also be extended to key government and industry participants, both local and international.

"We are looking forward to hosting an Inward Buying Mission, organised by the South African Capital Equipment Export Council (SACEEC). Details are still to be confirmed."

In 2018 the event organisers added roadshows to its marketing campaign prior to the event and will be incorporating roadshows again this year. The Electra Mining Africa team will travel to different industry relevant visitor focus areas in South Africa and southern Africa to promote the show and share the benefits of visiting. 🌐

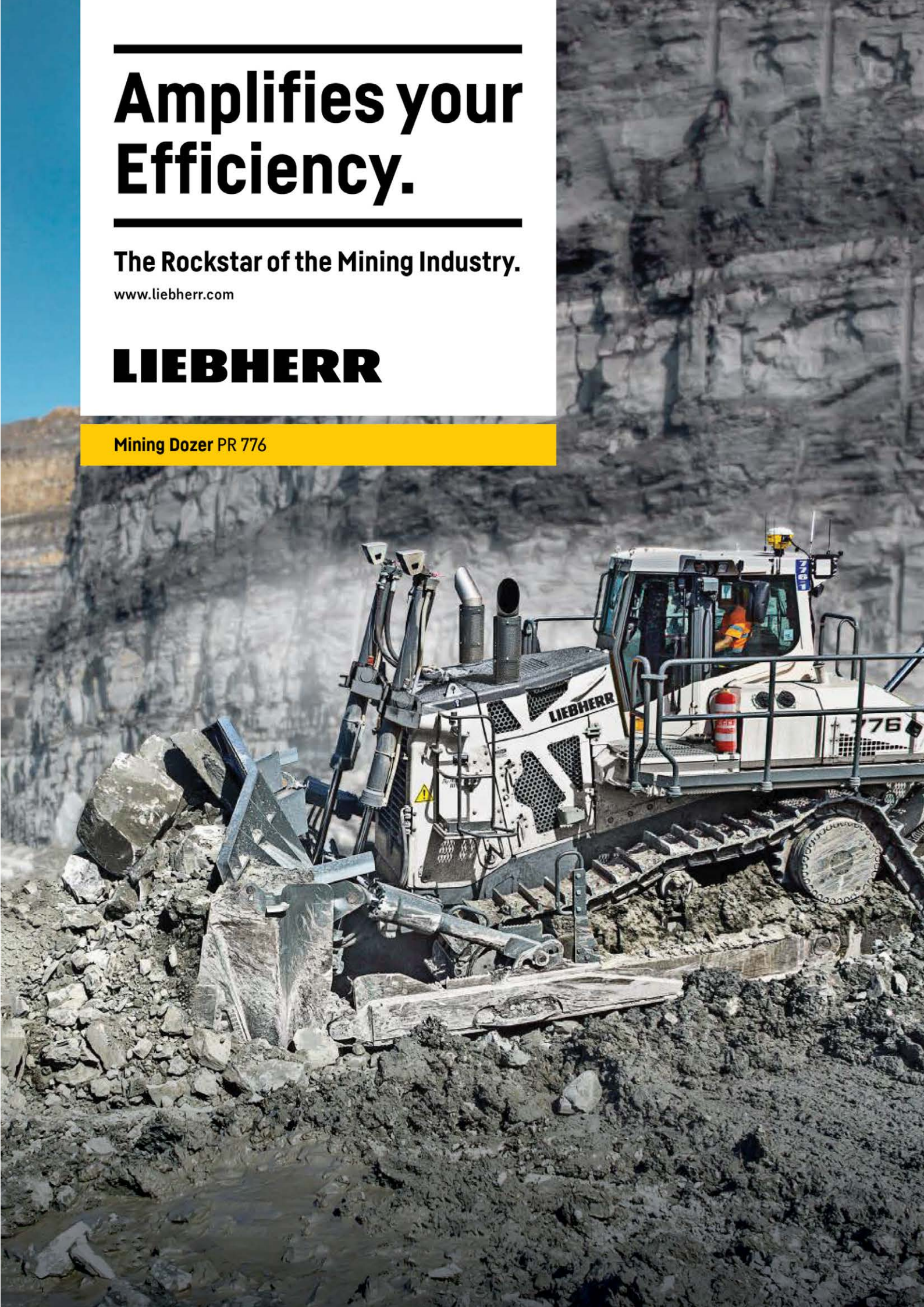
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MAXIMISING CRUSHER EFFICIENCY

Knowing factors that affect a crusher's efficiency can help operations improve their production rate. Speaking to *Capital Equipment News*, Theo Hendricks, product manager – comminution at Weir Minerals Africa, unpacks some of the key factors that affect the production efficiency of a crusher. By Munesu Shoko.

Crushing efficiency is key to production. Crushers, says Hendricks, form a vital part of the process flowsheet and are key to unlocking the valuable or sellable end product in the ore. Crushing is carried out to make the ore easier to handle between the different stages of the plant's flow sheet. An inefficient crusher will therefore lead to an unbalanced plant.

"Crushing progressively reduces the particle size of the ore until the valuable mineral can be successfully extracted by the relevant beneficiation methods. Not getting the specific particle sizes within specification – especially in the quarrying industry – results in revenue loss," he says.

Factors that affect crusher efficiency

There are several factors that affect crusher efficiency. Firstly, says Hendricks, it's important to consider ore properties such as hardness/bondwork index, abrasion index, crushability and clay content. Based on these properties, one will be able to select the right type of crusher

and the relevant wear components that need to be installed in that particular crusher and application. For crushers, the most important wear item are the liners.

"Moisture content is another important factor to consider. Higher moisture content in the ore may cause stickiness, which in turn results in pegging. The more the material sticks on the liners, the less efficient the crushing process becomes," he says.

The feed size range is another key factor that determines crushing efficiency. Jaw crushers, for example, operate efficiently with a correct feed size range. Bigger particles than what the crusher is designed to handle result in bridging in the crushing cavity, which reduces crushing efficiency.

Unnecessary fines in the material also reduce the productivity of the crusher. More than 15% of fines in the cone crusher feed, for example, can cause ring bounce. Ideally, a cone crusher is preceded by a screen to ensure that the top and bottom sizes of the material to the crusher are correct. The crusher is also operated in



The Trio® jaw crushers can efficiently crush large rocks at high production rates.



Selecting the right type of crusher ensures the correct particle size is achieved for sellable end product.

	Crushers form a vital part of the process flowsheet and are key to unlocking the valuable or sellable end product in the ore
	Moisture content is an important factor to consider. Higher moisture content in the ore may cause stickiness, which in turn results in pegging
	Unnecessary fines in the material reduce the productivity of the crusher. More than 15% of fines in the cone crusher feed, for example, can cause ring bounce
	Wear part selection is also a critical factor in crusher efficiency. Liners should be selected based on either impact or abrasion

QUICK TAKE

Moisture content is another important factor to consider. Higher moisture content in the ore may cause stickiness, which in turn results in pegging. The more the material sticks on the liners, the less efficient the crushing process becomes.

closed circuit with the screen, so the crusher product is recycled back to the same screen. This ensures all material is crushed to the required size as demanded by the process.

“Feed conditions are also important in achieving high crushing efficiency. Cone crushers require choke feed conditions and a controlled, regulated feed rate, mostly through a surge bin or pan feeder. It is critical that a cone-type crusher be choke fed to produce the best product shape and quality,” explains Hendricks.

Because the cone is part of the secondary and tertiary stations, he adds, particle shape assisted by a choke-fed chamber is important because finished products are created in these stages. For a jaw crusher, the requirement for choke feeding is not equally as important as in a cone crusher because material is generally not stockpiled after the

TALKING POINTS



“It is very important to operate within the operational parameters of the crusher – don’t overfeed it, maintain the correct feed size and remove fines where necessary. Pushing the limits can cause premature wear and tear on the crusher. This can lead to unplanned breakdowns and downtime. It is also important to stick to the reduction ratio – 4:1 for a jaw crusher and 3:1 for a cone crusher.”

Theo Hendricks, product manager – comminution at Weir Minerals Africa



Enduron® high pressure grinding rolls can decrease energy consumption and significantly reduce water consumption.

jaw crusher as finished product.

"Wear part selection is also a critical factor in crusher efficiency. Liners should be selected based on either impact or abrasion. The closed side setting (CSS) also needs to be regularly monitored to ensure consistent liner wear," adds Hendricks.

Maximising crusher efficiency

When it comes to some important tips that can help operators maximise crusher efficiency, Hendricks says there are three important things to consider: always know the crusher's operating parameters, feed the crusher properly and maintain the crusher.

"It is very important to operate within the operational parameters of the crusher – don't overfeed it, maintain the correct feed size and remove fines where necessary. Pushing the limits can cause premature wear and tear on the crusher. This can lead to unplanned breakdowns and downtime. It is also important to stick to the reduction ratio – 4:1 for a jaw crusher and 3:1 for a cone crusher," he says.

Regular maintenance, comprising scheduled checks and services, is key to maximising crusher efficiency. It is also important to practise predictive maintenance. Crushers come with sensors such as temperature sensors, thermometers and oil pressure gauges, that allow plant operators to monitor the health of their machines. Through these devices, you can determine the crusher's normal operating conditions and use as a baseline to spot abnormal operating conditions.

"It is also important to remove tramp in your feed material. This is mostly done by installing a magnet on the crusher feed conveyor. Metal, especially in a cone crusher, can cause significant damage, which in turn affects crusher efficiency and productivity," Hendricks concludes. ⚙️



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AFTERMARKET KEY TO OPTIMISING EQUIPMENT UPTIME

As cost pressures continue to bite, capital equipment owners have become more sensitive to the cost of downtime and low productivity. Consequently, one of the noticeable trends is the greater emphasis on reliable aftermarket support. To meet this growing demand, original equipment manufacturers (OEMs) and their dealer partners have in recent times scaled up their aftermarket regimes to help optimise equipment uptime and ensure successful customer operations. *By Munesu Shoko.*



"Kwatani invests heavily in aftermarket tools and human capital. Our well-qualified service team is growing, and customers speak directly to engineers – not to a call centre – when they need us."

Jan Schoepflin, general manager sales and service at Kwatani



"We measure key indicators such as gearbox temperatures and stroke to gauge the health of the screen and pick up early warning signals. Data from sensors is quickly analysed, and remedial action is recommended. This avoids premature failure and ensure optimal equipment life."

Gavin McIlaggan, group service manager at Kwatani

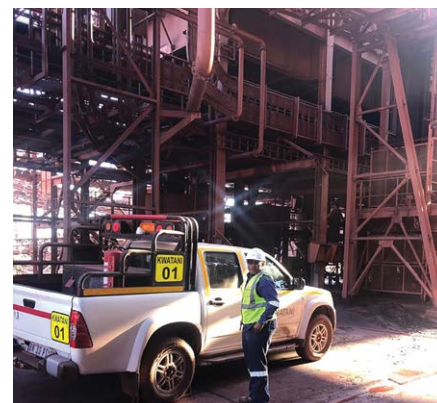
Of greater significance to capital equipment owners is the service delivered after the product has been supplied. Service ahead of product is not a new concept, but as the industry continues to evolve, its importance is gaining more focus.

According to Mark Baller, MD of Weba Chute Systems, plant efficiency and uptime are today more than ever the watchwords of modern industry. As equipment performance is reduced by age and wear, it can undermine smooth operations. Effective aftermarket services by OEMs, he says, are therefore vital to maintain the output and reliability of equipment.

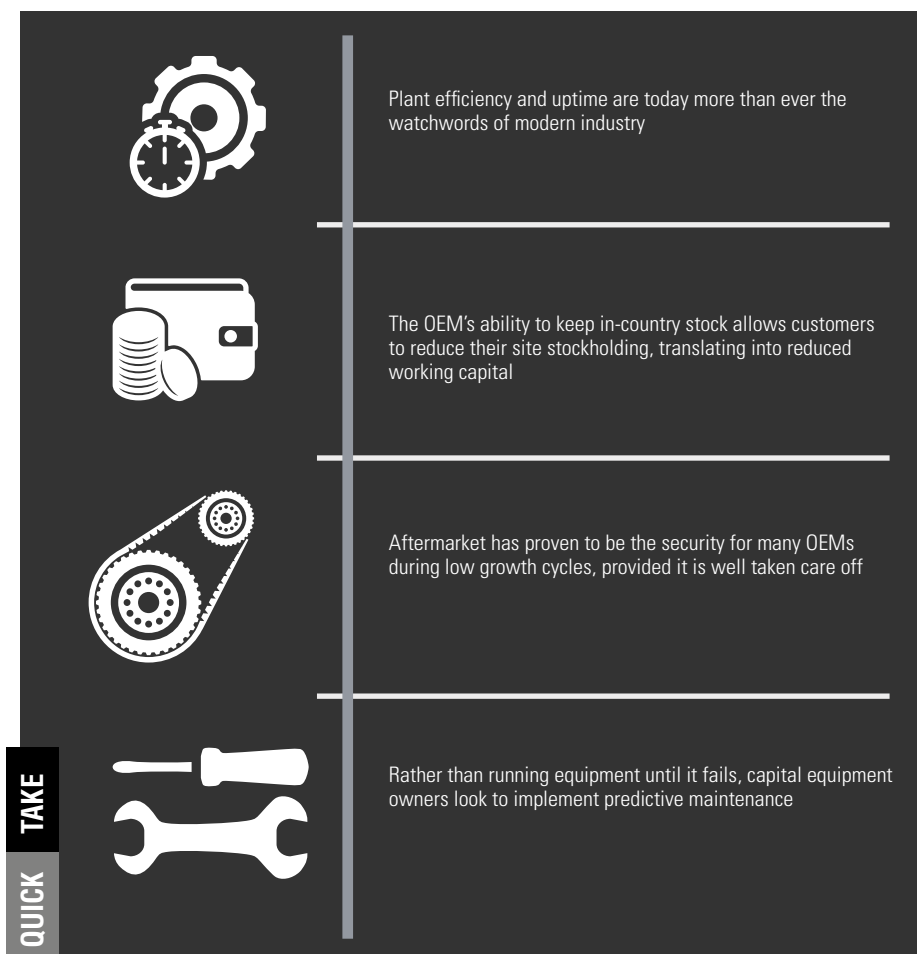
"Indeed, these services are the cornerstone of the relationship between OEMs and their customers. At Weba Chute Systems, we see our aftermarket service as another opportunity to enhance the return on investment that the customer achieves from our technology. At the same time, our quality spares and professional services reinforce our business model, so that we are sustainable and always there



Pilot Crushtec's SupportLink division provides equipped, qualified and experienced personnel to professionally service and repair their equipment.



Kwatani service team assisting on a customer site



for customers," says Baller.

Marnus Koorts, GM pump products at Weir Minerals Africa, says aftermarket support is what drives value on site. The OEM's ability to keep in-country stock allows customers to reduce their site stockholding, translating into reduced working capital.

"It also shields a mine from the detrimental effects of potential breakdowns due to poor stock levels. Aftermarket is the life-blood for continued operations. To provide context, the cost per hour of downtime at some mining plants can run into millions of dollars," says Koorts.

Jan Schoepflin, GM sales and service at Kwatani, says aftermarket has always been

a cornerstone of the company's business model. This is because customers invest in uptime, performance and peace of mind – not only products.

"In our market, customers want to focus on their core business of mining and processing – rather than on equipment maintenance. An indicator of this is the number of service level agreements we sign with customers, tailored to the level of aftermarket attention their operation needs for maximum uptime," he says.

Mannam John Michael, head of Customer Services, Mining, South Asia at FLSmidth, says OEMs and technology providers are keen to engage with customers on a long-

term basis. The objective is to offer a full life cycle service and support customers with the expertise needed to achieve their production targets consistently with the highest overall equipment efficiency.

For Pilot Crushtec, aftermarket services have always been of critical importance. As equipment improves, says sales and marketing director Francois Marais, product quality also gets better and warranty periods are extended. However, the life expectancy of machinery increases with correct maintenance and aftermarket support.

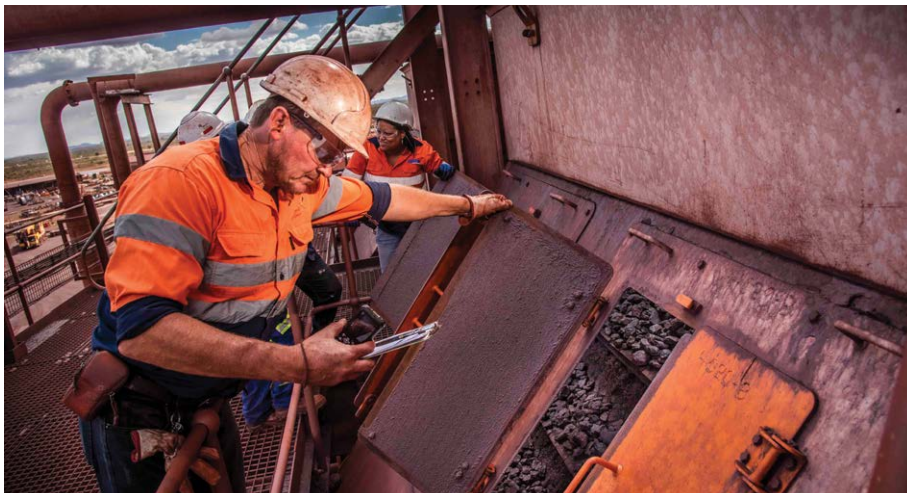
Extending the life span of a unit can generate large returns for clients. This bodes well for capital equipment owners, especially those in the crushing space, where a large capital outlay is typically required.

"That is why brands such as Metso stand out in the market," says Marais. "A greater focus on product quality and reliability, complemented by sound backup support, translate into high returns that outweigh the perceived benefits of purchasing a 'less-expensive' product. Machinery sold without proper backup support does not get the opportunity to prove whether future purchases of the same brand are worthwhile."

Garth Jones, MD Multotec Services, believes that the success and sustainability of an OEM lies in the proven total cost of ownership (TCO) of the product compared to other competitor offerings. TCO, he says, is strongly dependent on a deliberate and robust programme of product care and maintenance.

Joseph Appiah-Kubi, GM at FLSmidth, Ghana, has in recent years seen an increased focus on aftermarket by OEMs than ever before. Aftermarket, he adds, is now a business unit in most businesses and in some companies generates more revenue than product or capital sales.

Commenting on why aftermarket has become such a big focus for OEMs, Appiah-Kubi says during tough business spells with low project activity, most OEMs survived because they had a decent aftermarket business.



Field advisor doing an inspection on a chute.



"The move towards mobile scalping screens has shown that clients want to do more with less. Instead of investing in two machines, they only need a single unit which they can deploy across applications."

Francois Marais, director sales and marketing at Pilot Crushtec



"The shortage of skills will make the use of real-time diagnostic systems and analytic capabilities an integral part of plant operation and maintenance. With the use of adaptive learning, these systems will play a bigger part in this process going forward."

Garth Jones, MD Multotec Services

"Aftermarket has proven to be the security for many OEMs during low growth cycles, provided it is executed well. In addition, to win the next capital projects you need a strong aftermarket regime to be able to attract the project teams. Customers buy from those who can provide the full life cycle service after the purchase," he adds.

Customer requirements

As the capital equipment market evolves, so are customer needs. Previously, says Koorts, customers relied on equipment suppliers to simply replace worn items on site. Recently, innovation and optimisation have become a major focus. Equipment suppliers are required to identify optimisation opportunities and propose

innovative solutions to improve wear life, reduce inventory and increase the efficiency of customer operations.

"In other words, customers are moving from equipment suppliers to OEM partners. They want to work with their partners to find solutions to their challenges. That is why it is so important for us to be close to our customers. We have therefore continued to invest in our in-country branches across Africa and the Middle East over the years," says Koorts.

FLSmidth's Michael agrees, saying that capital equipment owners are increasingly seeking reliable OEMs to become their business partners. They want OEMs to take full ownership of the entire operation and maintenance of their plants and help them

achieve targeted production, provide innovative technologies and solutions to enhance productivity and at the same time reduce the cost of operation.

Gavin Mclaggan, group service manager at Kwatani, says customers are looking for more than just a product that delivers the required duty. "For us as Kwatani, for instance, mines are well aware of the quality and performance our screens deliver. Now they are looking for technology-based value enhancements. To apply Pareto's principle, you might say that customers are looking for the final 20% of improvements, which will take 80% of the effort," explains Mclaggan.

Buks Roodt, Director of Mining Site Sales, Sub-Saharan Africa at FLSmidth, says customers want to reduce costs, emissions and recover more product with less effort.

"At FLSmidth, we have seen significant growth of our Sampling, Preparation and Analysis (SPA) business, which allows the customer to have early knowledge of the quality of the ore, enabling them to enhance and influence the processes. When capital projects are completed, the ramp up project time is essential, and the need for OEMs to be involved is growing for a more stable and reliable operation," explains Roodt.

Appiah-Kubi believes that the Covid-19 pandemic has reinforced the need for local, in-country support structures. Customers are now looking for more local support and are not ready to wait for days and weeks before their backup needs are met. "OEMs with no local support structures struggled to support their customers during lockdowns, while others lost decent aftermarket businesses to those with strong local support structures," he says.

Customers today, says Jones, are competing in a sophisticated market against very competent competitors. Reliable and readily available information is therefore key to making decisions. "Customers want to be informed of the changing performance parameters in their plants and possible maintenance issues that might arise, which allows them to make critical decisions to improve production and reduce unplanned stoppages," he says.

According to Weba's Baller, customers are becoming more aware of the performance of each equipment item, and its impact on the way their whole plant runs. They look for more feedback on operational indicators, so they can better measure this performance – and improve it where possible.

"This calls for monitoring of the condition of equipment, so that maintenance can be planned in advance. Rather than running equipment until it fails, capital equipment owners look to implement predictive maintenance. This, of course, is good for plant ef-



"Rather than running equipment until it fails, capital equipment owners look to implement predictive maintenance. This, of course, is good for plant efficiency – as there is nothing more disruptive and expensive than unplanned downtime."

Mark Baller, managing director of Weba Chute Systems



"At Weir Minerals, we believe that the economic operation of a mineral process plant hinges on the overall efficiency of all pieces of equipment deployed across the entire system."

Marnus Koorts, general manager pump products at Weir Minerals Africa

efficiency – as there is nothing more disruptive and expensive than unplanned downtime," says Baller.

Some of the prominent requirements for customers, explains Pilot Crushtec's Marais, are greater fuel and power efficiency as well as the ability for equipment to work in multiple applications. Within the screening environment, for example, Pilot Crushtec has seen a move towards mobile scalping screens as opposed to traditional finishing screens for sizing products.

"Clients want to be able to move into various applications with the same machine and achieve the same results. The move towards mobile scalping screens has shown that clients want to do more with less. Instead of investing in two machines, they only need a single unit which they can deploy across applications. This also translates into reduced maintenance costs as they have to service one machine instead of two," explains Marais.

In terms of power supply, Pilot Crushtec has seen increased requests for dual power solutions, which allow crushing and screening customers to use electrical power supply where possible, instead of just diesel. The impact on operating costs and the environment can be significant. While this technology is not new globally, it is not as prevalent in the local market, says Marais.

OEM initiatives

To meet the everchanging customer requirements, Pilot Crushtec is constantly

engaging with its clients on their evolving needs and works closely with its global OEMs in order to stay up to date with global trends. New products are being introduced to market to close any potential gaps in the product line-up, while the older models are discontinued to make room for newer technologies to meet emerging requirements.

"Having a robust aftermarket department has always been a core function of our operations, and we have therefore made significant investments into our aftermarket departments," says Marais. "We carry one of the largest stock holdings of genuine OEM spare and wear parts in southern Africa for our supported brands. Our warehouse facility carries in the region of R150-million worth of genuine OEM spare parts, including complete engines, head and shaft assemblies and other critical components which are difficult to attain and have long lead times."

Baller says Weba Chute Systems has always been able to provide customers with technical feedback and reports on the operation and condition of their chutes. Information gathered by its technicians during inspection visits is provided to customers with recommendations and solutions.

"We also accumulate large amounts of data over time on each chute. This paves the way to predicting when maintenance should be done. More recently we have leveraged the power of technology to make these reports more valuable and acces-

sible. This allows data to be uploaded through our Weba app for quick analysis," explains Baller.

Weba Chute Systems has invested in its own in-house app to make better use of the data it collects on each chute. The app captures data in real time and can generate reports that are useful to customers' decision-making. For instance, it tracks wear patterns alongside other factors, so that the OEM can predict when maintenance will be required. The company has also invested in more human resources, with more service technicians on hand to meet customer needs.

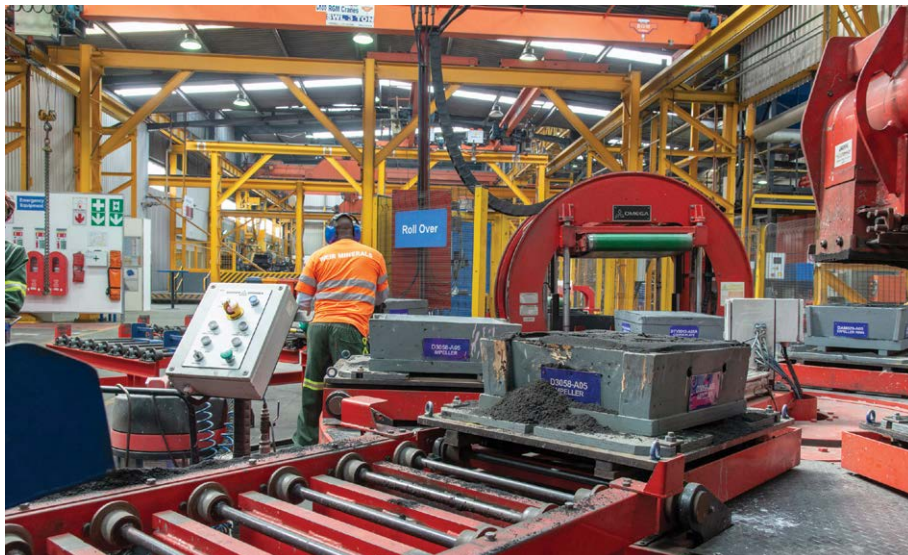
Multotec has invested in developing systems and technologies, both in-house and in partnership with specialists, to help put intelligent online data and information at the fingertips of the customer, explains Jones. The data can also be incorporated into customers' own management systems and assist with their decision-making processes.

Weir Minerals invests between 1 and 2% of its turnover in research and development (R&D) to address these burning issues, says Koorts. Some of the developments that have come out of this strategic focus on R&D include our Warman® WRT® technology, which reduces energy consumption and wear for the iconic Warman® AH® and Envirotech® brands, as well as the Warman® MC® pump, the world's most robust and efficient mill circuit pump.

"Aftermarket support today is also about the ability to measure. Traditionally, customers have struggled to optimise their plants because they could not measure wear rates, efficiencies and power. With effective digital solutions such as Synertrex®, we can measure these metrics, and quantify the operational savings for the customer. We can now let customers know when something is about to go wrong and can solve a problem before it starts," explains Koorts.

With its Integrated Solutions approach, Weir Minerals looks at problems holistically, using process knowledge as opposed to the traditional equipment knowledge approach. OEM partners, adds Koorts, must have a holistic understanding of every part of the system, given that it is impractical to optimise a single process or component in isolation. "At Weir Minerals, we believe that the economic operation of a mineral process plant hinges on the overall efficiency of all pieces of equipment deployed across the entire system."

Additionally, Weir Minerals Africa and Middle East has invested significantly in operational capabilities (such as the replicast and carousel) to improve the speed at which products and components



The carousel at Weir Minerals Isando foundry improved the speed at which components are manufactured.

are manufactured. The company has also recently signed an agreement to install a solar system as part of the sustainable approach to the production of its products, as well as shield the business against the incessant energy disruptions in South Africa.

"We have also invested heavily in our stockholding and branches around the continent to ensure their capabilities remain in sync with customer requirements," says Koorts.

McLaggan says by embracing the Fourth Industrial Revolution (4IR), Kwatani has developed its own in-house condition monitoring system which delivers real-time feedback. "We measure key indicators like gearbox temperatures and stroke to gauge the health of the screen and pick up early warning signals. Data from sensors is quickly analysed, and remedial action is recommended. This avoids premature failure and ensure optimal equipment life," he says.

Schoepflin adds that Kwatani's in-house laboratory and R&D facilities are now augmented by Sandvik's world leading research capacity and developments in 4IR technology.

"Kwatani invests heavily in aftermarket tools and human capital. Our well-qualified service team is growing, and customers speak directly to engineers – not to a call centre – when they need us. As part of the global Sandvik group, we also benefit from their extensive presence in 160 countries – as well as complementing our footprint in South Africa," says Schoepflin.

Appiah-Kubi says the focus in Ghana has been on providing a high level of life cycle services locally, leveraging FLSmidth's global expertise. The company has employed a competent local team with a high level of expertise.

"We continue to make key investments

in training of our engineers and employees across all departments at large and are also focused on investments in inventory (warehousing) to reduce delivery times," says Appiah-Kubi.

FLSmidth's Michael adds that the company is visiting potential sites to understand customers' operations more deeply and is in constant discussions with them to gain insights into their everchanging requirements. "We have invested in developing the talent and skills of our employees and we have forged external collaborations to address customers' needs," he says.

According to Roodt, FLSmidth has a fully operational R&D programme that is constantly looking for improvements of products and services. The company has introduced smart products that are able to improve the operation of equipment. Some of these products can be fitted to existing equipment and assist with the operational excellence.

"We have introduced a service product called CheckProof, that enables us to inspect equipment and produce fast reports. These reports lead into faster action and reaction to enhance equipment performance. We are also constantly investing in our people through training, to ensure we know our equipment," says Roodt.

[Subhead] Future aftermarket trends

Commenting on some of the future aftermarket trends, Jones says the shortage of skills will make the use of real-time diagnostic systems and analytic capabilities an integral part of plant operation and maintenance. With the use of adaptive learning, he says, these systems will play a bigger part in this process going forward.

Michael believes that the mining industry is trending towards total outsourcing of operation and maintenance of mines and plants and this provides a huge opportunity

for OEMs to frame a strategy to engage with customers and become key stakeholders in their long-term business plans.

"Localisation of services is most talked about in every country we travel," says Appiah-Kubi. "We see customers in every country pushing for procurement and services to be provided locally by locals. OEMs should be thinking of either looking for local partners or set up locally with local resources."

With Covid-19's disruption of the global supply chain, Schoepflin believes that planning is even more crucial in the maintenance space. Kwatani's aftermarket specialists therefore work closely with customers to predict what maintenance and spares will be needed – and then plan for that. This means recognising the risk of longer lead times and keeping certain stock aside for specific customers.

Schoepflin says that prediction and planning have become the pillars of quality aftermarket support. More than ever, OEMs must support customers with systems and services that pinpoint future needs. Those resources must then be in place for when the customer needs them. Only in this way can the equipment sold be kept in the best condition to perform reliably and improve uptime levels.

"OEMs that excel in their aftermarket services will attract return business, making them more sustainable over time. This in turn is a comfort to customers, who know the OEM will be there in future to support the equipment they sell," says Schoepflin.

According to Baller, technology is changing the aftermarket space, with sensors and probes conveying data from remote locations to centralised databases. "In our field, we can now easily and accurately measure the thickness of chute liners using a special probe. Over time, this can be integrated with data on mine throughput to forecast wear rates. All this adds up to better predictability and less unplanned downtime," he says.

Marais believes that remote monitoring will continue taking centre stage in the aftermarket environment. Allowing the client to have greater access to their machines' technical data gives them the ability to predict when maintenance and support is required.

In conclusion, Koorts says customers are showing an increased interest in the "rand per ton" model. This model is designed to allow the OEM to operate and maintain the equipment and customers are billed according to the tonnages achieved. This way, the OEM takes ownership of the equipment, and the site can focus on doing what they do best, production. 🌱



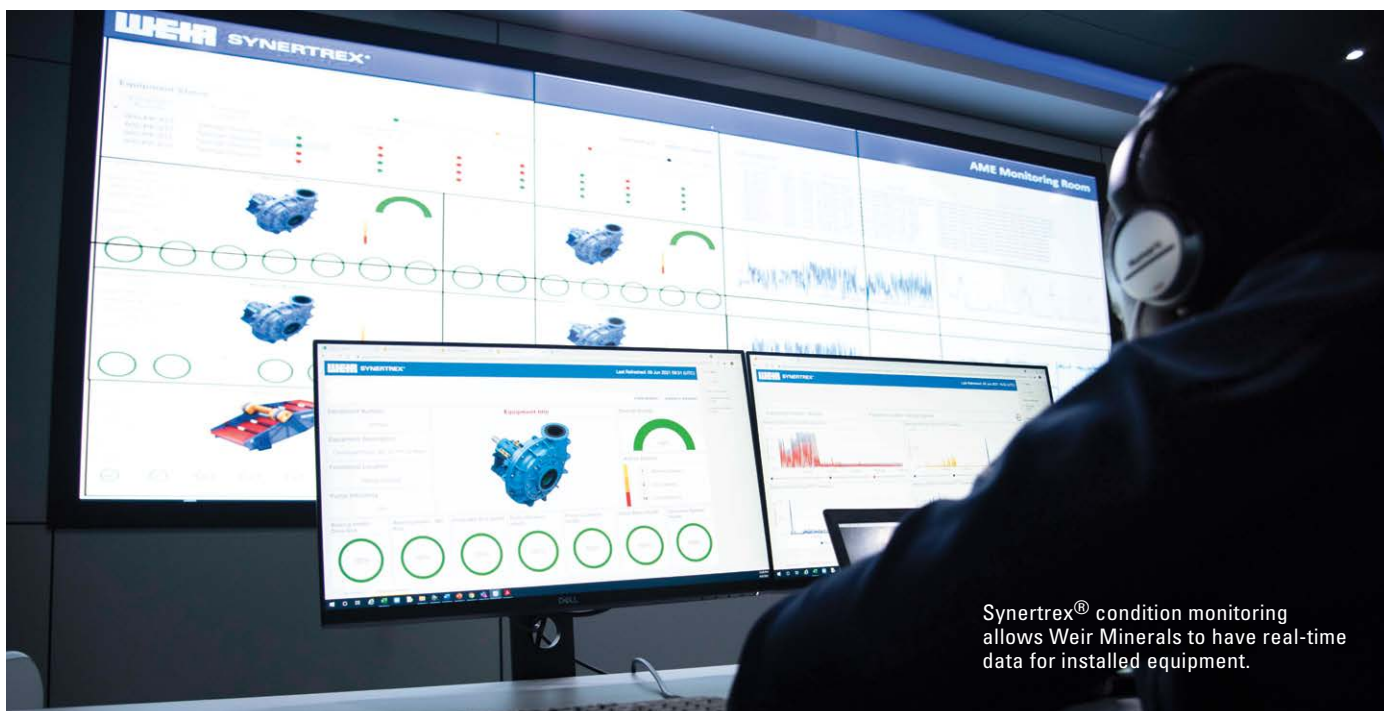
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Synertrex® condition monitoring allows Weir Minerals to have real-time data for installed equipment.

TAKING A TCO APPROACH TO CAPITAL EQUIPMENT PURCHASES

As businesses continue to grapple with the effects of the COVID-19 pandemic, the importance of considering total cost of ownership (TCO) in all procurement decisions cannot be emphasised enough. By *Munesu Shoko*.



"TCO is a key formula to any successful operation as it looks at what it will cost an operator to successfully complete a job and charge a rate which covers expenses and maximises profits."

Charl Marais, sales manager at Pilot Crushtec



"We encourage customers to consider the return on investment (ROI), and the savings in terms of reduced downtime, over the life cycle of a Weba chute. The savings achieved by some customers, for instance, have paid off the chutes in three months. For others, the ROI is six to 24 months. Thereafter, the equipment is effectively free."

Mark Baller, managing director of Weba Chute Systems

TCO is a well-established concept in many industries, but what does it really mean for capital equipment owners? According to Marnus Koorts, general manager pump products at Weir Minerals Africa, TCO is a true measure of the quality and performance of a part or a piece of equipment.

"Traditionally, the focus has always been on the capital cost of a product," he says. "The TCO concept takes a holistic view of the costs associated with the product, and for pumps typically includes cost of product, wear life of the product, energy consumption, downtime required (ease of maintenance) and water consumption."

Koorts warns that mines that don't apply this model could actually be costing their businesses a lot of money. It's really important, he says, to have a holistic understanding of the buying decision. In the pump sector, for example, the cost of spares is always a big topic.

"Taking only product cost into account, one could fail to realise that Warman® impellers have a 2 to 3% lower energy consumption benefit compared to replicated components. If you take a 1 MW motor, for example, it can consume close to R10-million worth of power per year, translating to almost R300 000 power saving a year when opting for our offering. This does not even consider the cost of downtime and other maintenance related activities," adds Koorts.



FLSmidth's service set up is positioned to support clients digitally.

QUICK	TAKE
Traditionally, the focus has always been on the capital cost of a product. However, the TCO concept takes a holistic view of the costs associated with the product	
With ever increasing pressure to optimise processes, the difference between profitability and running at a loss comes down to effective quantitative analysis of the total costs involved in purchasing, operating and disposing of capital equipment	
Digital connectivity is transforming how OEMs interface with their clients' asset management systems	
By adopting a TCO approach, a user can see the bigger picture and will consider reliability and performance	

Charl Marais, sales manager at Pilot Crushtec International, believes that TCO should be one of the principal considerations for capital equipment owners when making capital purchase decisions or during a feasibility study for a contract proposal. It is an estimation of all the expenses related to owning and operating capital equipment in a specific application; adding a safety factor for unforeseen expenses and then

attempting to determine a fair rate which makes jobs and operations profitable while covering costs.

"This is a key formula to any successful operation as it looks at what it will cost an operator to successfully complete a job and charge a rate which covers expenses and maximise profits," explains Marais. "This can be the key to ensuring that rates are considered carefully, and should

a project be awarded, then the operator should theoretically make profits and have the ability to fund the costs of the job without any 'hidden' costs creeping into the operations."

While TCO is a central pillar of Weba Chute Systems' business, MD Mark Baller says many clients in the company's target market cannot quantify the cost of ownership of their chutes. This is mainly because their budgeting and costing models are not set up for this.

"We encourage customers to consider the return on investment (ROI), and the savings in terms of reduced downtime, over the life cycle of a Weba chute. The savings achieved by some customers, for instance, have paid off the chutes in three months. For others, the ROI is six to 24 months. Thereafter, the equipment is effectively free," says Baller.

Rebecca Siwale, director productivity & digital service solutions at FLSmidth, says when evaluating the purchase of a piece of equipment, a client needs to consider the total life cycle cost. In some cases, she says, this can be quite complex and nuanced.

"With the appropriate software, experience and analytical techniques, FLSmidth analysts can quantitatively evaluate the best course of action. This will allow for obtaining of the highest ROI of the assets, ensuring the fulfilment of the client's objectives such as high productivity and optimisation of operating costs (\$/ton), making them more competitive," says Siwale.

Marc Richards, reliability engineering, service execution, O&M operations at FLSmidth, adds that it is often quite hard to effectively determine whether spending more on maintenance or longer lasting equipment will actually result in higher profits. "Without the correct analysis, an equipment owner could misevaluate this and end up with an inefficient budget or incorrect equipment choice," says Richards.

Garth Jones, MD Multotec Services, says the TCO of a piece of capital equipment for a user is a measurement of how well the business as a whole is being managed, as it is a true reflection of how well equipment management principles are being applied with a long-term view of the business operations, versus short-term gains that could destroy value in the operations.

Jan Schoepflin, GM sales and service, Kwatani, says working with a reliable OEM, equipment owners can use TCO as the basis for de-risking their operation. If an OEM claims a certain TCO for their equipment, owners should be able to hold them to this promise, by delivering both reliability and performance at a given cost.

"One way that Kwatani does this is by offering extended warranties to customers



The Lokotrack® LT106™ mobile jaw crusher is often used as a primary crusher in a multistage crushing process or as a stand-alone unit and is ideal for medium-sized aggregates production, as well as recycling demolition waste such as crushing concrete.



"The TCO principle is gaining momentum and has been adopted by most larger mining houses. Their view on this concept is not only informed by the financial benefit, which they understand very well, but also their special consideration of their ESG targets."

Marnus Koorts, general manager pump products at Weir Minerals Africa



"The indirect, and often overlooked benefits of TCO, include a higher level of customer satisfaction through the reduction of unplanned stoppages and reduced production costs as equipment utilisation is maximised."

Garth Jones, MD Multotec Services

TALKING POINTS

who apply the necessary maintenance programmes with genuine spares. The key benefits for owners are cost certainty and operational uptime," says Schoepflin.

Better understanding

Most local customers, says Baller, are developing a much better understanding of TCO, especially when they can compare the performance of an engineered product to an off-the-shelf equivalent. The job of an OEM, he says, is to demonstrate to customers the cost savings over the equipment life.

"Sub-standard chutes regularly cause considerable damage to conveyors, screens and crushers. These costs need to be built into the equation as part of the procurement process. A complication is that the plant

manager who sees the real costs is not always the decision-maker on capital purchases," says Baller.

Richards has also seen more customers showing interest in not only purchase costs but also the cost to keep the equipment running, such as spares, labour, consumables and energy costs, among others. "Unfortunately, customers are slow to adopt change, but we are sensitising them through the vision of asset management as time goes by," he says.

Jones is of the view that equipment users generally understand the principles of extending equipment life and operating and maintaining it to achieve set cost per ton values. However, the techniques that could be deployed to move those targets to the

next level are not always known to some of the end users as they have not been exposed and trained to apply those techniques.

"The practice of employing experts to scrutinise and drive these practices has also been scaled down over time to a point where the in-house expertise has all but disappeared within some companies," says Jones.

According to Gavin Mclaggan, group service manager, Kwatani, customers are increasingly realising that the capital cost is only a small portion of TCO. It only requires one breakdown of critical equipment to incur substantial losses well in excess of the equipment's value.

"Customers are now looking to achieve that final 20% more value that quality equipment can generate, having been satisfied in the past with just 80%," says Mclaggan.

Schoepflin adds that TCO is a valuable tool for equipment owners, but demands regular and intensive measurement of costs and output. "It is true that you can't manage costs unless you measure them properly," he says.

Pilot Crushtec's Marais believes that local customers are certainly grasping the importance of looking beyond the upfront price and look at all costs associated with procuring, deploying and operating a piece of equipment. As more and more customers become aware of the importance of a detailed TCO study and how it has a knock-on affect down the line when operations commence, Pilot Crushtec has seen more and more requests to assist with the TCO exercise.

"If you visualise an iceberg, you have an idea of the costs involved when doing a TCO study. The section above the water represents the capital purchase price. Everything below the water represents the deployment costs of the capital equipment, maintenance costs, fuel or electricity costs, wearing items and other parts associated with the daily operation of the equipment. On top of that customers need to consider insurance, depreciation costs, rising fuel and or electricity costs and possible upgrades," says Marais.

Failing to do a comprehensive TCO, warns Marais, can have a negative effect on an operation and it can take the business a long time to recover from the losses. Pilot Crushtec, he adds, always tries to be transparent by sharing realistic equipment information and production and operations knowledge, which adds value to customers' comprehensive TCO case studies before they proceed with the purchase of capital equipment.

"We often see competitor cost of



"TCO allows users to plan better, by knowing what financing and maintenance will cost – and how long service intervals will be. This means more accurate proposals and reporting to management and at board level. It is also possible to outsource some business risk to supply partners."

Gavin McIlaggan, group service manager,
Kwatani



"Companies like Kwatani are able to stand behind their TCO predictions, through instruments such as extended warranties and tonnage contracts. In this way, TCO can be used as a tool for reputable OEMs to effectively share risk with customers."

Jan Schoepflin, general manager sales
and service at Kwatani

ownerships that ignore obvious realities for operations such as wear costs. While the topic is viewed as an unknown variable, it's a reality that has to be factored in upfront, or risk being caught by excessive wear costs during operations that deplete profits," says Marais.

Koorts believes that the TCO principle is gaining momentum and has been adopted by most larger mining houses. Mines' view on this concept is not only informed by the financial benefit, which they understand very well, but also the special consideration of their ESG (Environmental, Social and Governance) targets. For example, a pump that consumes less energy speaks directly to the mining sector's quest to reduce carbon emissions.

"There are however some late adopters, who have a very narrow view of the costs associated with the equipment they buy. This results in the omission of the total costs associated to operate the equipment and is often to the detriment of the business," says Koorts.

Evolving TCO concept

Over the past few years, the TCO concept has evolved and matured. FLSmith's Siwale says digital connectivity is transforming how OEMs interface with their client's asset management systems. Real-time interface to maintenance data and integration with online asset condition monitoring provide for accurate spare parts change-out intervals

forecast, she says.

Baller says TCO is no longer just about financial costs. Companies are also concerned about their employees and the local communities close to their operations. This means that there are health, safety, environmental and social considerations in procurement. Where excessive dust is caused by a chute that is not well designed, for instance, that could become a costly risk.

For Marais, TCO is all about profitability and peace of mind through managing risk. While it can be risky to speculate too much when doing a TCO study, unforeseen issues do arise and need to be provisioned for upfront, to try and manage the cost implications as accurately as possible.

"The first step we consider when proposing new Metso capital equipment for a contract is not only the fuel consumption, maintenance and service costs, but also the impact of our Metso EPS warranty, which extends the standard warranty from 1 year/2 000 hours to 2 years/4 000 hours and then all major components are covered from year 3 to year 5," explains Marais.

This, he adds, ensures that if a major failure occurs during the period and a serious breakdown occurs, Pilot Crushtec is equipped to react quickly and get the equipment back and in production without holding up the process. This is difficult to quantify in terms of TCO, but it is an underlying value add that helps to manage the risk. The EPS cycle automatically improves the equipment's

longevity and reduces the TCO by limiting the scope of potentially unknown costs during operations.

"An additional factor which is often ignored but plays a major role for operations is the wear costs for crushers and screens," says Marais. "While these can be variable and application dependant, wear parts costs are a reality for operations which we try to factor in as best as possible to ensure that we are covering all of the areas within our scope. The cost of labour is generally determined by the end user and we rely on them to give as much accurate information as possible to produce a relatively accurate TCO study."

According to Jones, the use of Reliability Centered Maintenance (RCM) techniques has become paramount in any TCO programme. "CRM can be enhanced with the addition of reliability and life expectancy techniques such as the Weibull analysis and real-time data gathering and analysis to aid predictive maintenance and repair practices. In any event where reactive practices are employed, one can be assured that the repair bill will be high by the time that the failure can be seen or heard," says Jones.

Koorts says although the concept has remained the same to a large extent, there have been major advances in the measurement and interpretation of the actual costs associated with a piece of equipment.

"One of the biggest game changers for us has been the introduction of the Synertrex® condition monitoring system. This smart analytics platform allows on-site measurements to identify equipment deterioration, preventing unplanned shutdowns. Suppliers that have their own in-house monitoring systems have of course been at the forefront of accurately predicting costs associated with various equipment," he says.

There is a complete mindset shift, adds Koorts, especially in the mining sector. Previously, the knowledge of plants was very limited. Today, mines invest in digital technologies to enable them to make informed decisions, which empowers the TCO concept even more. Mines are moving from guesswork to putting actual numbers to every part of their operations.

Schoepflin agrees, saying that customer behaviour is changing from being capex-driven towards a longer-term approach. In the vibrating screens space, for instance, Kwatani has seen increased uptake of its protection solutions for screens – to give them longer life.

McIlaggan says mines are increasingly looking to OEMs for lower-maintenance



A bifurcated chute which has been in operation for the past 23 years at a coal mine in South Africa.

equipment, and for ease of maintenance. This is expected to reduce TCO, while also extending maintenance intervals that in turn will reduce downtime.

Key benefits

There are several benefits of adopting the TCO approach. Baller says in the chute business, the worst outcome of equipment failure is plant downtime. The lost revenue on just one stoppage will invariably be greater than the cost of a chute.

"By adopting a TCO approach, a user can see the bigger picture and will consider reliability and performance. If a low-priced chute causes millions of rands of production to be foregone, then it is far from being an economical purchase," says Baller.

Schoepflin says adopting TCO should lead to cost savings and smoother operations with less disruption through unplanned stoppages. "This approach should also extend the life of equipment, making it not only more cost-effective but more environmentally sustainable. As the name suggests, capital equipment is a significant investment and should last as long as possible," he says.

McLaggan believes that TCO allows users to plan better by knowing what financing and maintenance will cost – and how long service intervals will be. This means more accurate proposals and reporting to management and the board. It is also possible to outsource some business risk to supply partners.

Koorts is of the view that those who apply the TCO concept can optimise every part of their plants, because there are opportunities everywhere. By adopting this concept, mines open themselves up to the latest products, which are designed to operate more efficiently than the older generation solutions. He reiterates that Weir Minerals invests 1 to 2% of its turnover in research

and development to ensure that every product it brings to the market is better than our previous offering.

"Customers who take the TCO approach to their decisions are seeing value in digital solutions such as Syntrex®, which gives them the visibility to actual costs to operate a piece of equipment, data to develop strategic improvements to their operations and the opportunity to performance benchmark every part of their operations," says Koorts.

Richards says digitally provided support is now a fundamental element of running successful mining operations. FLSmidth's service setup is positioned to support its clients with a focus on strong relationships, from initial equipment purchase through the ultimate decommissioning or replacement.

"By using our service expertise, digital offerings such as the TCO tool, we can not only fault find our equipment but also advise on maintenance strategies, spare parts optimisation, ensure better reliability and lower overall operational costs," he says.

Richards says the benefits of taking a TCO approach to procurement abound. More importantly, it improves OPEX, through optimised forecasting and inventory levels of spares parts. It also reduces downtime by proactively increasing asset availability and reduce the risk of unplanned stops.

Siwale says a TCO approach to equipment purchases also impacts safety. A good maintenance plan leads to a good risk prevention plan, which in turn increases the safety of the workers and assets on site. It also positively influences the bottom line; with ever increasing pressure to optimise processes, the difference between profitability and running at a loss comes down to effective quantitative analysis of the total costs involved in purchasing, operating and



Condition monitoring on a scalper screen being tested at Kwatani.

disposing of capital equipment.

For Marais, producing an accurate TCO study during purchasing means a more accurate calculation of the client's ROI. Ultimately, he says, any customer who does an accurate TCO analysis should theoretically be able to run and operate a profitable operation.

Procurement decisions should move away from being subjective and adopt a more scientific/fact-based approach, he says. "Many clients have clear favourites in terms of specific products for certain applications due to their personal experiences in the past. While subjective decisions such as these are taken all the time, taking the time to run through an accurate TCO when purchasing can bring to light new innovations, parts availability and supply, improved efficiencies on fuel consumption for new products and other unknown variables which are often excluded when making a subjective purchasing decision," explains Marais.

Jones says the direct benefit of implementing and managing a sound programme of TCO is financial – both in terms of operating costs and capital deployed. "The indirect, and often overlooked benefits, include a higher level of customer satisfaction through the reduction of unplanned stoppages and reduced production costs as equipment utilisation is maximised," says Jones.

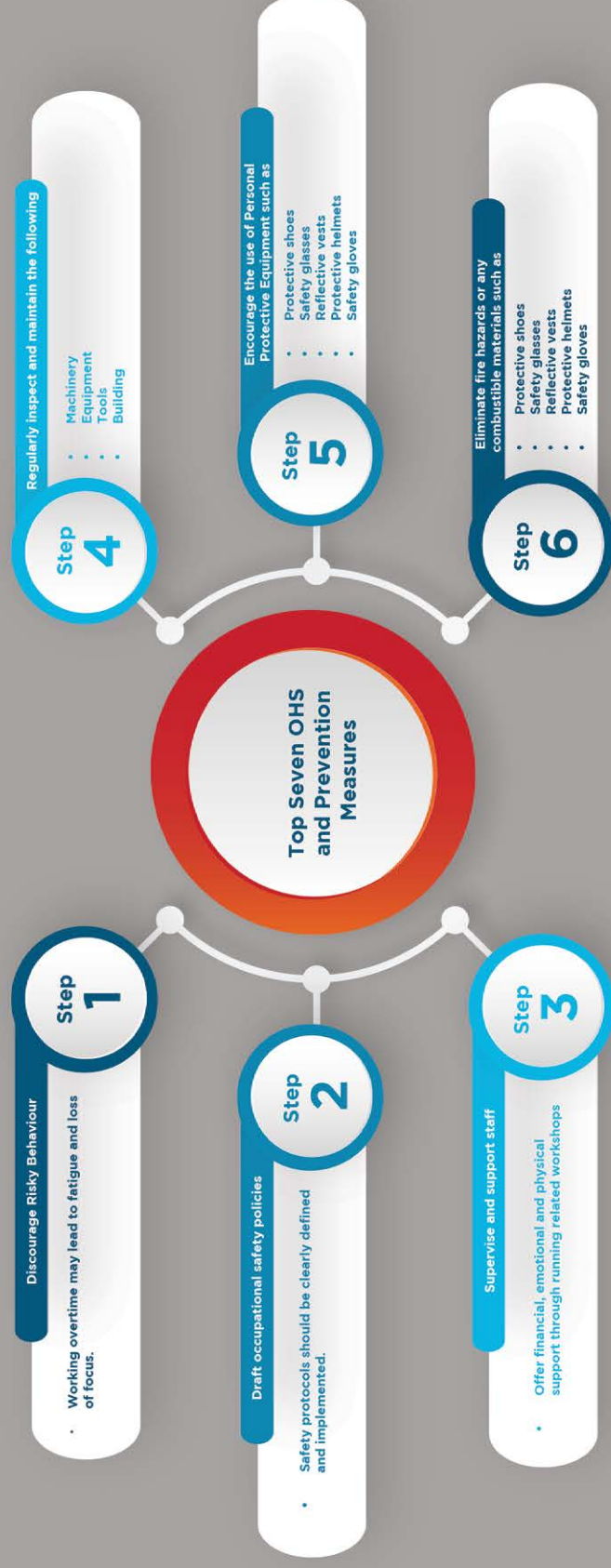
To be sure that a forecast TCO can be relied upon, users still need to trust the OEM's track record. "So, choosing a partner with a proven reputation is critical. Companies like Kwatani are able to stand behind their TCO predictions, through instruments such as extended warranties and tonnage contracts. In this way, TCO can be used as a tool for reputable OEMs to effectively share risk with customers," concludes Schoepflin. 🌐



Top seven OHS and prevention measures to implement today to protect your business and staff.

Rand Mutual Assurance (RMA) is a leading insurance provider and administrator of work-related injuries and health-related benefits in the Mining, Metals and allied industries, RMA is an important stakeholder in driving the conversation about health and wellness issues in the workplace, as well as raising awareness about the need for and benefits of prevention programmes. To complement existing employer safety programmes that are already in place, RMA has designed a prevention and rehabilitation programme in accordance with top Occupational Health and Safety (OHS). The prevention campaign is a public awareness campaign aimed at drawing attention to the scope of the problem and how encouraging and fostering a safety and health culture can help minimize the number of workplace deaths and injuries.

Occupational accidents not only affect individuals physically and mentally, but they also cost businesses money. This is how employees can create a safe working environment for their staff:



Truck loading or load-and-carry operations might favour the wheel loader due to typically higher travel speeds and a longer wheelbase to smooth the ride.



THE APPLICATIONS, FEATURES AND EVOLUTION OF THE WHEEL LOADER

The wheel loader remains a trusted workhorse on the jobsite thanks to its heavy loading ability. These machines are, however, constantly evolving and becoming more versatile with new onboard technologies. This feature takes a closer look at these machines, their advantages and applications, as well as at some of the technologies they feature. By **Mark Botha**



"Volvo CE's range of attachments makes it possible to tailor the wheel loader exactly for the application and conditions on a particular work site and to switch seamlessly between jobs."

Anteneh Gebremeskel, product manager for wheel loaders at Volvo CE Region International.



"Skid steer loaders and compact track loaders are designed essentially as a platform for handling attachments."

Michael Helm, General Manager: Construction Division & Marketing at Komatsu Africa Holdings.

Discussing how the development of attachments has affected the versatility of the wheel loader, Anteneh Gebremeskel, product manager for wheel loaders at Volvo CE Region International, says Volvo Construction Equipment's broad range of attachments makes it possible to tailor the wheel loader exactly for the application and conditions on a particular work site and to switch seamlessly between jobs.

He says Volvo CE offers buckets for all types of jobs and materials including log grapples, material handling arms, and a long line of different fork attachments.

"Each attachment is of the same quality as the rest of the wheel loader and is designed as an integrated part of the machine. Their functions and properties are precisely matched to parameters such as link arm geometry and breakout, rim-pull, and lifting force," he says.

Gebremeskel adds that the majority of Volvo wheel loaders feature TP-linkage, which combines high breakout torque and excellent parallel movement throughout the entire lifting range.

"This makes them a great all-rounder, suitable for pairing with a wide range of attachments such as buckets, forks, grapples and others.

"However, for customers who do not need that versatility and want their wheel loader for bucket applications only, Volvo CE also offers five Z-bar linkage models – L60Gz; L90Gz; L120Gz; L260H and L350H."

Ross Collard, managing director of HPE Africa, says wheel loaders, for example, can be fitted with log grabs for the forestry industry and forks for the material handling industry, "making these units highly versatile."

Michael Helm, General Manager: Construction Division & Marketing at Komatsu Africa Holdings says the basis of the wheel loader is excavation and loading.

"By preparing an attachment, the wheel loader's versatility can be further expanded, leading to the expansion of the market," he says.

Articulated, all-wheel steer loaders: applications

Collard says the Hyundai 9S wheel loader range from HPE Africa has a four-wheel drive system with a rigid front axle and oscillating rear axle.

"Wheel loaders can be used for various applications, including moving soil, loading aggregate materials and use at feedlots," he says.

Helm says Komatsu doesn't stock all-wheel steer wheel loaders, but he lists as the features of articulated steering a






A W480 wheel loader from Komatsu.



HPE Africa offers a wide range of Hyundai wheel loaders ranging from the 10 t HL630L model to the high strength 29,5 t HL780-9S model.

QUICK TAKE

	<p>The majority of Volvo wheel loaders feature TP-linkage, which combines high breakout torque and excellent parallel movement throughout the entire lifting range</p>
	<p>The Hyundai 9S wheel loader range from HPE Africa has a four-wheel drive system with a rigid front axle and oscillating rear axle</p>
	<p>The features of articulated steering include a small turning radius; low running resistance because the front and rear wheels follow the same track, and ease of escaping muddy areas as the loader is able to meander</p>
	<p>In terms of rehandling, Volvo CE offers several options to achieve outstanding productivity in truck loading, hopper charging, stockpiling or load and carry tasks</p>
	<p>Skid steer loaders and compact track loaders feature compactness and maneuverability for when loading in tight spaces, as well as an attachment power unit with a wide selection of options</p>



"Features on the Hyundai HL770-9S wheel loader include a fully automatic transmission designed for maximum durability, minimum power loss and improved travel speed."

Ross Collard, managing director of HPE Africa.

small turning radius; low running resistance because the front and rear wheels follow the same track, and ease of escaping muddy areas as the loader is able to meander.

The wheel loader, says Helm, excavates soil and other materials with the bucket in front, and loads it into a dump truck, for example.

"If the front wheels are steered, sufficient traction will not be transmitted during excavation," he says.

Gebremeskel says Volvo wheel loaders can be used for a wide variety of applications. He says the two largest Volvo wheel loaders, the L260H and L350H, are suited to rock handling.

"These wheel loaders have been built to achieve optimum results in the vast, dusty and often hot environments these machines need to work in. Meeting the strictest safety standards, the L260H and L350H provide the stability, strength, traction and tyre durability needed for maximum productivity and efficiency when loading from the pile."

For block handling, he recommends the L150H, L180H, L220H, and L350H.

"These models have been configured for optimum results in the quarry, whether these be the rigors of lifting and carrying heavyweight blocks all day, or navigating wet, steep and rocky ground," he says.

He says that, in terms of rehandling, Volvo CE offers several options to achieve outstanding productivity in truck loading, hopper charging, stockpiling or load and carry tasks.

"The L110F; L120F; L150H; L180H; L220H; L260H and L350H wheel loaders are designed to move more material per loading cycle, which means tasks can be completed in few cycles at a lower cost per tonne."

He says a large selection of wheel loaders is also suitable for waste handling.

"The L70F; L90F; L110F; L120F; L150H; L180H and L220H are all tough enough to take on the many challenges of waste and recycling applications, including dust, dirt, and the risk of damage from debris."



Volvo Co-Pilot with Load Assist is an umbrella for the products and services available to help wheel loader operators become more efficient.

Volvo CE also offers purpose-built L150H, L180H, L220H, and L350H slag handlers to provide the reliability, heat proofing and thermal protection needed to handle the heat and succeed in slag handling.

Skid steer, compact track and wheel loader: applications

Collard says skid steers can be used for landscaping, site development, general construction and job site applications. These machines, he says, can be fitted with various attachments such as trenchers, augers, grapple attachments and sweepers to enhancing their versatility.

According to Helm, skid steer loaders and compact track loaders feature compactness and maneuverability for when loading in tight spaces, as well as an attachment power unit with a wide selection of options.

"Both machines are not only used for bucket work but also for a variety of other work with attachments. Skid steer loaders and compact track loaders are designed essentially as a platform for handling attachments. So, they are typically equipped with piping and quick couplers as standard."

He says frequent attachment use might favour skid steer loaders and compact track loaders with their generally higher hydraulic flows.

"Truck loading or load-and-carry operations might favour the wheel loader due to typically higher travel speeds and a longer wheelbase to smooth the ride."

Helm says the wheel loader would have a "definite edge" if flotation, increased ground clearance or minimising ground disturbance is important. Where space constraints are a concern, then skid steer loaders' and compact track loaders' innate agility (the ability to turn within its own radius) is tough

to beat. On the other hand, he says, four-wheel-steer wheel loaders are surprisingly maneuverable.

"If finish grading is an important consideration, then the rigid frame of skid steer loaders and compact track loaders provides a more stable platform for this task than the articulated wheel loader which allows oscillation at the center hinge or rear axle.

"Regarding visibility, compact wheel loaders usually provide a more commanding view of the work site in all directions. If the operator would benefit during long intervals in the machine from a generally roomier cabin, more comfortable steering, and easier cab access, then the compact wheel loader gets the nod."

Ranges

Volvo CE supplies wheel loaders ranging in size from the L60F (1,6 – 5 m³ bucket capacity, 11 000 – 12 300 kg operating weight, and 7 150 kg static tipping load at full turn) to the L350H (6,2 – 12,7 m³ bucket capacity, 50 000 – 56 000 kg operating weight, and 34 780 kg static tipping load at full turn).

"The features vary among them so I would like to highlight the recent upgrades to the L350H," says Gebremeskel. "Volvo CE has just launched a new Tier 3 version of this wheel loader with a new transmission and new set of axles, which together with the central hinge bearings, give a longer service life and durability that promotes uptime.

"Meanwhile, the new converter provides up to 22% improved tractive force, which we have combined with new lift and tilt cylinders to give faster time for the hydraulic system and an improved shift strategy in the transmission. All this gives improved productivity and fuel efficiency."

Gebremeskel also highlights Volvo Co-Pilot

with Load Assist, which is an umbrella for the products and services available to help wheel loader operators become more efficient.

"For example, On-Board Weighing, which is available for H-Series wheel loaders in Africa, provides real-time insights into the bucket's load to eliminate overloading, underloading, reweighing, and waiting times."

Meanwhile, Operator Coaching provides operators with real-time guidance and helps them understand how their actions influence machine productivity and efficiency while identifying areas for improvement or changes in technique. With this app, operators can gauge their own performance in terms of parameters such as brake usage and idling, and set targets of their own.

Other features of Load Assist include a Tyre Pressure Monitoring system, which allows the operator to monitor tyre condition from the cab in real time, and the Map app, which enables operators to orient themselves on site and adjust their driving behaviour according to traffic conditions.

Collard says HPE Africa offers a wide range of Hyundai wheel loaders ranging from the 10 t HL630L model to the high strength 29,5 t HL780-9S model.

He says the Hyundai HL780-9S Wheel Loader features a long-life cooling system, designed for additional durability while being resistant to thermal shock, impulse and vibration; a reversible swing-out cooling fan for easy access for maintenance, and ground level access to critical service points, filters and sight gauges for easy maintenance.

These loaders also feature an enhanced axle which improves driving over variable ground conditions, and a three-mode engine power selection allowing the operator to choose between Power, Standard and Economy modes.

The Cummins engine offers a perfect combination of improved airflow and evenly dispersed fuel, resulting in increased power, improved transient response and reduced fuel consumption.

Features on the Hyundai HL770-9S wheel loader include a fully automatic transmission designed for maximum durability, minimum power loss and improved travel speed. The combination of a high-pressure common rail system and advanced in-cylinder combustion technology results in increased power, improved transient response and reduced fuel consumption. Improved clutch control and minimised shifting shock contribute to a smoother ride, says Collard.

Helm says Komatsu currently supplies wheel loaders from 7 t to 216 t. The latest models have some features such as the essential max traction switch, reversible fans, auto shift transmission and others. 🌟



BULLDOZER SD22W

One of Shantui's top sellers, the SD22W Bulldozer has a reinforced undercarriage, arms and blade for the toughest of large obstacle jobs. The blade is thicker and the arms plated for greater strength and durability and is well-suited for heavy mining applications.



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Daimler Truck Southern Africa celebrates Litsamaiso's Fleet Owners Workplace programme

Daimler Truck Southern Africa (DTSA) continues to make strides in the commercial vehicle industry with its commitment to the well-being of drivers, to ensure sustainable growth and economic success. Through its Fleet Owners Workplace Wellness Programme available to its key account customers, driven by its DTSA Trucking Wellness project, DTSA has expanded its services to Mercedes-Benz Buses key account customers. It is for this reason that DTSA and its stakeholders gathered at one of Litsamaiso's operating stations in Soweto, Johannesburg, to celebrate the successful completion of its Workplace Wellness Programme. Litsamaiso prides itself as the first Mercedes-Benz Buses key account customer to pioneer the Fleet Owners Workplace Wellness Programme in the country.

Litsamaiso is a Propriety Limited company established to provide safe and reliable Rea Vaya Bus Rapid Transit (BRT) service on dedicated routes and schedules as determined by the City of Johannesburg. It has been a long-standing key account customer for Mercedes-Benz Buses, boasting a fleet of almost 150 buses. The company officially launched the DTSA Fleet Owners Workplace Programme in 2019 and has since achieved notable milestones which include a Workplace Wellness Programme Management Workshop; Employee Wellness Committee Training; Employee Wellness Policy Training; Wellness Day; an Employee Wellness Planning Workshop, and Driver Trainer Training.

Nelson Rikhotso, CEO Litsamaiso, comments on the successful implementation of



the programme: "Litsamaiso is passionate about the safety, health and well-being of its employees. Our partnership with DTSA was cultivated by a desire to be in a position to proactively manage health and wellness issues in the organisation. Out of the 310 employees in our employ, bus drivers comprise 67% of our workforce, and this has influenced our strategic position when dealing with health and wellness especially since safety is one of our core values."

Weighing in on strong partnerships to move the industry forward, was Jason Brunner, GM Mercedes-Benz Buses: "As DTSA, we are heartened to witness this day come to fruition. For this, I would like to express my deepest gratitude to our long-term partner Trucking Wellness for their incredible efforts in successfully rolling out this programme to our very first Mercedes-Benz Buses key account custom-

er. This sends a very strong message about Litsamaiso's commitment to its drivers and their wellbeing. As one of the key players in the industry, we cannot overlook the vital role commercial vehicle drivers play in keeping Africa moving and the economic success of our country. Partnerships such as the one we have formed with Litsamaiso and Trucking Wellness signal the value of this programme and allow DTSA to continue to prioritise the health and wellness of drivers."

Trucking Wellness MD Tertius Wessels said "transporting people requires drivers to be healthy so that they can apply both their technical skills and customer service simultaneously. The DTSA Trucking Wellness Project is excited to expand the Fleet Owner Workplace Wellness Programme to bus operating companies with Litsamaiso paving the way." 🌱

Liebherr supplies second LHM 800 crane to the Port of Esbjerg



The Port of Esbjerg is a long-standing partner of Liebherr and has recently ordered a second LHM 800. The new crane is already the seventh Liebherr mobile harbour crane to be used at Denmark's largest port. Next-generation offshore wind turbines will be lifted with the new heavy-duty crane. Liebherr will deliver a further crane of the type LHM 600 to Port Esbjerg before the end of the year.

Port Esbjerg is the leading port in Europe when it comes to handling and shipping wind energy components. The port played a key role in the rise of Denmark's offshore wind industry – 80% of the offshore wind capacity installed in Europe was shipped out from the Port of Esbjerg. Their record for breakbulk is notable, as the port handles more than 500 000 t of major wind turbine components each year. Therefore, it is decisive that the port is

Time Link Cargo leading the way with first Volvo Truck FH16 750 in SA

Time Link Cargo has taken ownership of the first new Volvo Trucks FH16 750 Euro 5 delivered in South Africa. The company already has 40 Volvo Trucks in its fleet.

The new vehicle was presented to Time Link Cargo in Durban by the visiting president of Volvo Trucks, Roger Alm, and Per-Erik Lindström, senior vice-president of Volvo Trucks International.

"South Africa is important for Volvo Trucks for many reasons. We have been here for more than 20 years and have built a strong position in South Africa," says Alm. "During our visit, we have been talking to our people, our customers, and our dealers. The feedback we are receiving from our customers regarding our performance and our trucks is very positive, which is great to hear."

Time Link Cargo, established in 2003 and headquartered in Cape Town, employs more than 500 staff, and specialises in the transport of FMCG and related materials across the country.

"We have chosen Volvo Trucks for several reasons, ranging from the cost of ownership and cost per kilometre of the operation, as well as driver and fleet safety," says Kamal Mitoo, managing director of Time Link Cargo. "Our relationship with Volvo Trucks is seamless, which allows us to focus on the growth of our business. Open and honest communication with the OEM and its dealers is a top priority for us when choosing a transport partner."

Mitoo attributes Time Link Cargo's success to its ability to adapt to the requirements of its clients, and not just being a supplier but a true partner in business.

"Time Link Cargo is also one of the few



transport companies that utilise two drivers per vehicle, allowing us to deal with urgent long-distant deliveries safely and efficiently," says Mitoo. "Over the years we have continuously adapted during the numerous shifts in the economy, as well as the recent pandemic, by being open-minded to modern technology and innovative opportunities to reduce costs."

One of the key factors that clinched the deal for Time Link was the passion and dedication shown by the Volvo Financial Services (VFS) team.

"Without trucks we don't have a business. However, it is imperative to have a partner who not just finances a truck but rather understands your business and then structures the finance around this intel. This is exactly what VFS has done for us," says Mitoo.

Paul Uys, managing director of Volvo Financial Services South Africa said that "as Volvo Financial Services, we found that operating leases were not sufficient for customers in the market who have seasonality needs. The Flexi Gold Lease is an alternative for customers who have ups and downs in their mileages. This assists customers to manage and plan their cashflow more efficiently."

The Volvo FH16 has a 16 litre engine that puts out up to 750 hp and can pull combination weights up to 325 tonnes with ease. This makes it the most powerful production truck in SA. With enhanced manoeuvrability, the latest safety technology and interactive driver support, the FH16 gives ultimate productivity for the most demanding transport tasks and local operating conditions. 🌟

equipped with state-of-the-art equipment. The first LHM 800 for Port Esbjerg was delivered in 2019. The upcoming delivery in 2023 of the recently ordered second LHM 800 marks the seventh Liebherr mobile harbour crane purchased by Denmark's largest port.

With the second LHM 800, Port Esbjerg will also be able to carry out tandem lifts of up to 616 t. This means that components of the next generation of offshore wind turbines can be handled. Dennis Jul Pedersen, CEO at Port Esbjerg, says: "Our competency lies in breakbulk and in having the capacity for tandem lifts above 600 tonnes, which is necessary not only in the on- and offshore wind market but also in supporting production in the hinterland."

According to Roman Chopyk, sales man-

ager for Liebherr mobile harbour cranes, "the Port of Esbjerg has been pursuing major expansion plans for decades. Our company supports the port's development by delivering a high-quality product, reliable service and innovative technology. We are grateful for the opportunity to succeed together and continue our partnership."

Offshore wind power activities are expected to increase significantly over the next decade and, as wind turbines get bigger, powerful equipment is needed to handle these components. The ability to handle heavy components with mobile harbour cranes is essential for efficient and flexible harbour operations.

The LHM 800 is the largest and most powerful mobile harbour crane in the Liebherr LHM portfolio. The machine meets

the ever-increasing demand for mobile heavy-duty cranes in the maritime sector. A key driver of this development is clearly the wind industry. In a special heavy-lift version, the LHM 800 is capable of lifting weights of up to 308 t and up to 616 t in tandem mode with the intelligent Liebherr system Sycratronic.

Sycratronic is a computerised assistance system for operating two cranes with one crane operator. This makes the system not only suitable for tandem lifts of turbines over 600 t, but also ideal for handling rotor blades, which in the offshore sector can be over 90 metres long. Sycratronic speeds up turnover time and increases safety as the computer monitors operation to avoid overloads and compensates for the displacement of components being loaded. 🌟

Wacker Neuson RD7 machines to help roll out sustainable community growth

Wacker Neuson, recently delivered 90 RD7 pedestrian dual-vibration rollers to a state-owned enterprise based in Pretoria. The machines will be distributed at the customer's discretion to selected members within society in a bid to empower them to be able to grow economically and promote sustainable community growth.

"Wacker Neuson is renowned for quality and reliability, making us a preferred supplier with our customers who can rely on us to deliver on our brand promise," says company sales representative Dennis Zuma. "It is this reputation of trust and professionalism that made us the supplier of choice for this particular project too."

"Furthermore, owing to the value-adding features of the Wacker Neuson RD7 walk-behind roller, this compact machine will undeniably offer the most simple and economic solution for the end-user," says Zuma. The roller delivers best-in-class performance in the compaction of soil, gravel, concrete and asphalt in the construction of roads and foundations. The RD7 is easy to operate, manoeuvre and service. For enhanced operator safety and comfort, all control elements are located directly on the guide handle, giving

the operator complete control of the machine from his operating position, so removing any need to move around the machine.

"We also accredit the choice of the machines to our excellent partnership with KT Squared who is the premium agent for large OEMs in South Africa," says Zuma, who adds that KT Squared facilitated this order and ensured a smooth deal.

This project is a proud accomplishment for Wacker Neuson, given the large number of compacting machines ordered, the tight time frame as well as the challenging logistics. "As a customer-service oriented company, we are particularly proud of the fact that we successfully completed this project in five months, meeting our customer's deadline," states Dennis Vietze, MD of Wacker Neuson Sub-Saharan Africa.

Full support in terms of service, maintenance, repairs, and spare parts will be available to the end-users at Wacker Neuson's fully equipped workshop at its West Rand, Johannesburg, headquarters, as well as through its strategic network of 36 dealer partners across South Africa. The end-users will be able to have their RD7 rollers serviced, maintained, and repaired at a Wacker Neuson dealer closest to them.



Zuma also confirms that Wacker Neuson will be providing practical and theoretical training to the RD7 operators upon the rollout of the project.

"Training will be provided both at our brand new Training Academy based at our South African offices, as well as off-site as required, with training certificates awarded to successful delegates. The advanced facility, which was officially opened on 1 July 2022, can accommodate up to 80 delegates. An external demonstration area adjacent to the Academy further enhances the customer experience, offering them a unique opportunity to operate a range of Wacker Neuson machines, including skid-steers, excavators, wheel loaders and dump trucks. 🌟

Criterion Equipment's TCM forklift trucks comprise machines for handling goods in all sectors

TCM heavy-duty FD160-2, FD180-2, FD200-2 and FD230-2 machines, with capacities up to 23 t, have been designed for high power, easy maneuverability and enhanced safety.

"We have many heavy-duty TCM forklifts currently in use in various industries around the country, that cope safely and efficiently with loads between 16 and 18 t," says Brenton Kemp, MD of Criterion Equipment, exclusive distributors in southern Africa of the TCM range. "Typical applications of our heavy-duty range are mostly in mining and related functions, as well as in general port yards and for moving heavy equipment and tooling during manufacturing. These flexible machines have also been well received locally for use in heavy-duty logistics applications, container yards and in warehousing and storage facilities."

"Advantages of using a heavy-duty forklift to handle heavy loads, rather than the investment in overhead or mobile cranes, include the efficient total cost of ownership over the economic useful life of the forklift and greater flexibility in terms of application and ease of mobility. An important benefit of using forklifts over other equipment is that these machines are easily transportable to

other locations."

The most popular units in the TCM heavy-duty forklift range (FD160-2, FD180-2) have a 900 mm load centre, a maximum fork height of 3 000 mm and a mast tilt angle of 6° forward and 12° backward.

The high power, internal combustion 6BG1T diesel engine (125 kW at 2 200 rpm) meets emission levels required in Tier 2 emission control standards.

FD180-2 machines have a drawbar pull of 119 kN (12 100 kgf) at full load and gradeability with load at 1,6 km/h of 20% (11,3°) slope. TCM heavy-duty-forklifts have a three-speed automatic powershift transmission for easy control of the machine. Features include a finger touch shift lever, interchangeable easy drive selections between power modes, a dial switch to control, the safest travel speed and a combined type switch lever for turning and light signals. Fully hydrostatic power steering enables precise control of the machine.

Notable features for improved visibility include a cabin with a newly designed counterweight and no front or rear pillars, as well as a soft touch electric parking brake for added security.



Other features include a newly designed fuel tank with increased capacity from 300 litres to 400 litres, which extends operating time without the need for re-fueling.

Apart from Criterion Equipment's technical advisory and support service, the company also offers a refurbishment service. This comprises cosmetic overhauls and general maintenance and repairs to ensure optimum performance, enhanced safety, low maintenance and extended service life of every machine.

The company's national workshops are able to completely refurbish an existing machine according to OEM specifications and also adhere to industry specific customisations for standards in heavy-duty applications, including mining, refineries and furnace installations. 🌟

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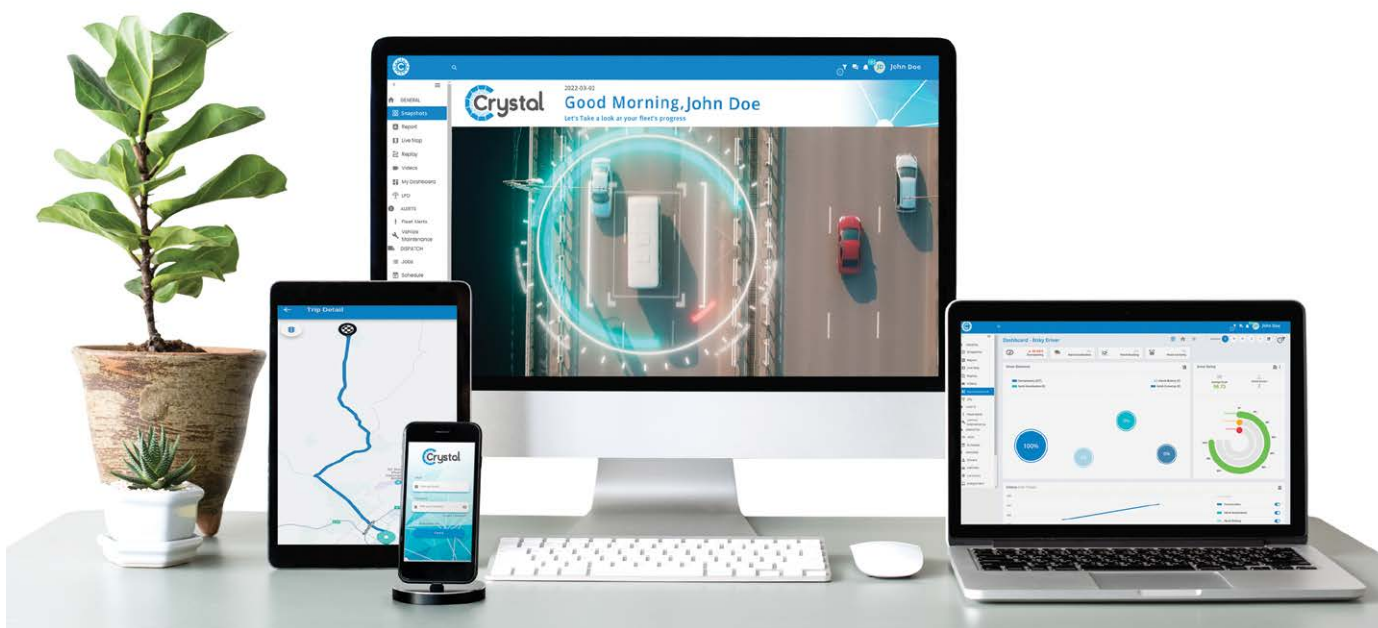


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SAVE FUEL WITH CTRACK CRYSTAL

Ctrack recently launched Crystal, a fully customisable platform that combines all the existing functionality and a variety of new features into a new cloud-based platform that is easy to use, and allows fleet managers to react more effectively.

The ever-increasing fuel price continues to put pressure on motorists and businesses. Unfortunately, as end-users, we are at the mercy of government and global oil prices.

For many businesses that operate fleets, driving less is not an option. The most apparent solution is finding ways to use vehicles more efficiently.

Ctrack recently launched Crystal, a fully customisable platform that combines all the existing functionality and a variety of new features into a new cloud-based platform that is easy to use, and allows fleet managers to react more effectively.

A new driver app launched alongside Ctrack Crystal features a comprehensive host of intuitive functionality, including the ability to monitor fuel usage and efficient driving easily.

"The way vehicles are used can have a significant impact on the running costs of a business, and Ctrack is able to equip customers with the tools to easily and efficiently monitor a variety of factors that have a direct impact on fuel consumption," says Hein Jordt, CEO of Ctrack Africa.

The most significant contributor to inflated fuel usage is excessive speed. With Ctrack hardware and the Crystal platform, managers and business owners can monitor speed and reduce speed violations,

positively impacting fleet and driver safety and reducing fuel consumption significantly. Further measures can be implemented by adding speed limiters that can prevent drivers from speeding entirely or according to pre-determined geo zones.

Adopting a smooth driving technique is the most economical way to drive, as is maintaining a constant speed on the open road and sticking to the speed limit.

Through monitoring and reporting, drivers can be coached on factors such as avoiding speeding up between intersections and excessively revving a vehicle.

Underinflated tyres are a huge contributor to unnecessary fuel consumption. Tyres should be checked regularly and inflated according to the manufacturer's specifications for the load being carried. This practice can be included in the pre-trip inspection functionality that forms part of the new Ctrack Crystal driver app.

One of the best ways to save fuel is to drive less, and this can be done by better route planning. The driver app includes a built-in navigation system that will ensure that vehicles are always travelling on the optimal route while incorporating multiple stops in the most efficient manner.

While the time of day that vehicles travel might be unavoidable in many cases, planning routes around peak hours will mean spending less time in traffic, shorter

travelling time and less fuel used.

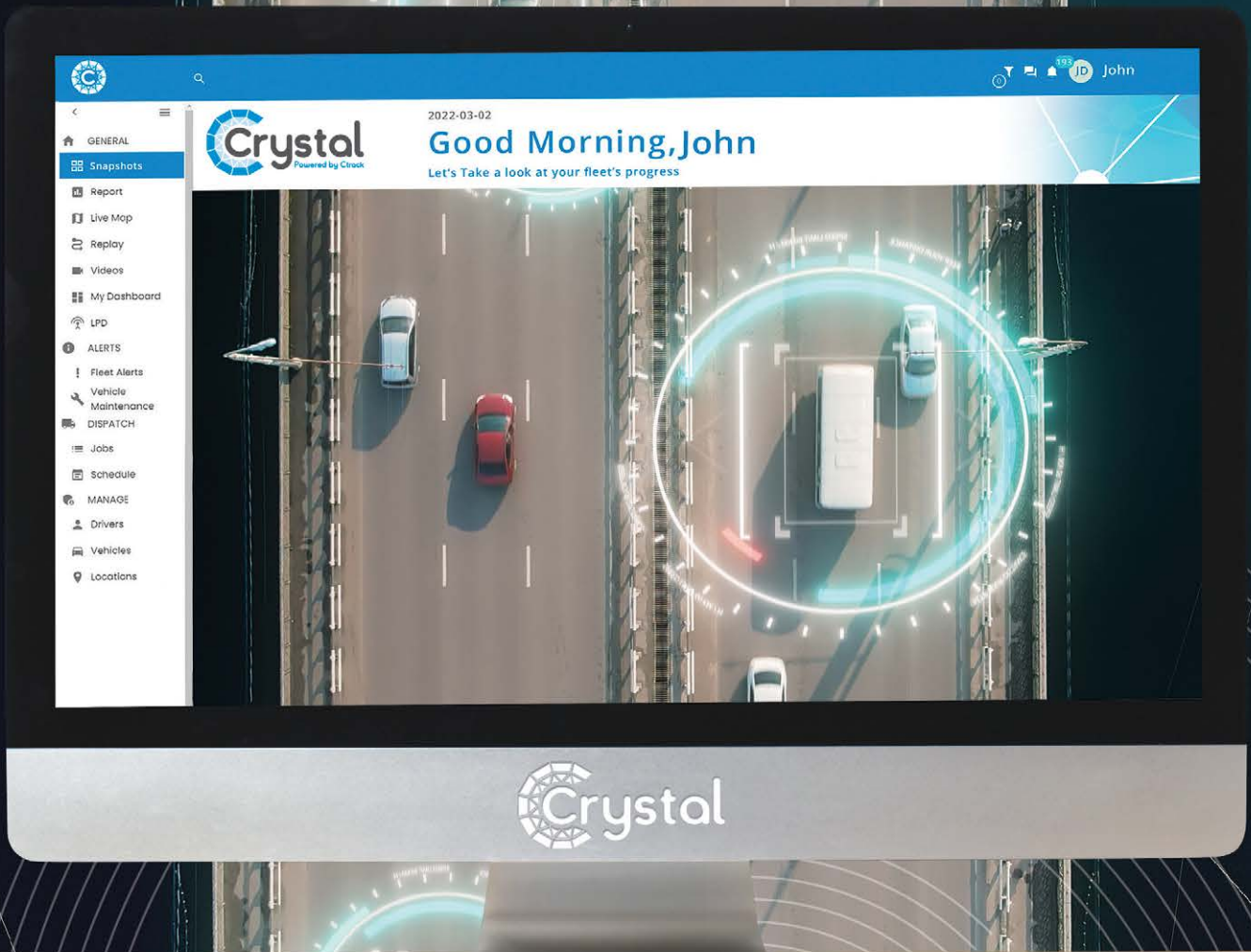
Ctrack Crystal allows fleet managers to easily populate reports on various parameters according to their needs. This reporting can be used to up-skill drivers by highlighting where they need to improve.

Fleet managers can support positive driving behaviour by monitoring driver skills, driver training and scoring models that result in a reduction of CPK cost. This all-new app gives fleet managers enhanced communication features such as voice commands, two-way messaging, job-listing, navigation and post-trip coaching, which can be shared with drivers to encourage efficient driving.

The app also allows drivers to manage themselves and see their own scores. Drivers who continually achieve good scores can be incentivised and rewarded, and a culture of good, efficient driving fostered.

Vehicle maintenance can also have a substantial effect on fuel consumption. Crystal's improved asset control allows fleet managers to stay ahead of service and maintenance schedules, licensing, and vehicle usage.

"Cost and inflationary pressure remains top of mind for any business, and at Ctrack we create solutions for fleet managers and business owners to be more productive, efficient, and ultimately to save cost" says Jordt. 🌟



Ctrack Crystal

Clear and precise fleet data in the palm of your hand.



Crystal's Innovative Solutions supports managers with

-  **Intelligence on Safety and Risk Mitigation**
-  **Advanced Driver Assistance**
-  **Vehicle Safety Inspection**
-  **Daily Jobs & On-Route Tasks**
-  **Camera AI Data Intelligence**
-  **Efficient Planning with tailored Data Summaries**
-  **Inventory & EPOD* Integration**
-  **Asset Efficiency and Replacement Planning**
-  **Identify Fleet Risk with Heatmaps***
-  **Voice Commands via Mobile Device***

* Some product functions not immediately available in Africa. Image for illustration purposes only.



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