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# CAPITAL EQUIPMENT NEWS

For informed decision-making
OCTOBER 2019

## UPPING EFFICIENCY AND PRODUCTIVITY


**DIGITALISATION:** A step ahead in the cost-control battle

**SCREENING:** Championing screening media innovation

**EXCAVATORS:** Optimising undercarriage life

**TRANSPORT**
PILLARS OF SUSTAINABLE GROWTH
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UPPING EFFICIENCY AND PRODUCTIVITY

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Capital Equipment News is published monthly by Crown Publications

**Editor:**
Munesu Shoko
capnews@crown.co.za

**Advertising manager:**
Elmarie Stonell
elmaries@crown.co.za

**Design:**
Ano Shumba

**Publisher:**
Karen Grant

**Deputy publisher:**
Wilhelm du Plessis

**Circulation:**
Karen Smith

PO Box 140
Bedfordview 2008
Tel: (011) 622-4770
Fax: (011) 615-6108

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# AfCFTA – NEW CHAPTER FOR AFRICA?

I recently attended the Futuroad Expo in Johannesburg late last month. A key takeaway for me was the optimism exhibited by several truck companies at the show. Despite the overtraded nature of the commercial vehicle market, a new truck brand used the show to announce itself to the South African market. Several other established players also made pronouncements on their plans to further grow their footprints, not only in southern Africa, but across the continent, in anticipation of further growth.

The resilient nature of the commercial vehicle market is cause for enthusiasm. To give an idea, despite a tough trading cycle – characterised by currency fluctuations, low business confidence and political uncertainty – the truck market grew 3,1% year-on-year during the first eight months of this year. A total of 17 919 new trucks and buses were sold during that period.

However, one of the executives I met at the show believes that there are even greater prospects of growth for the African truck market following the recently signed African Continental Free Trade agreement (AfCFTA), which came into force on May 30. The agreement is not only creating the biggest trade agreement since the World Trade Organisation was established in 1994, but is also the most significant step towards economic integration across the continent.

AfCFTA is a new chapter for Africa, but its success, like any other initiatives we have seen before, hinges on implementation and speed of execution. It is, however, encouraging that Africa has cast its vote for more and better trade with itself. The agreement commits countries to remove tariffs on 90% of goods, progressively liberalise trade in services and address a host of non-tariff barriers.

Intra-regional trade in Africa currently represents an average of 15% of global trade across both imports and exports. Under AfCFTA, intra-African trade is expected to grow to at least 53% by the mid-2020s', thus effectively contributing US$70-billion to the continent's GDP. If successfully implemented, the agreement will create a single African market of over a billion consumers with a total GDP of over US$3-trillion. This will make Africa the largest free trade area in the world. According to the UN Conference on Trade and Development, regional intra-trade accounts for 59% of Asia's exports and 69% in Europe.

The growth of intra-African trade offers greater opportunity for the logistics industry. In turn, that presents solid opportunities for the truck industry at large. However, the lack of infrastructure, most importantly, modern roads and power networks, threatens to hamper Africa's economic development endeavours. Therefore, closing the infrastructure gap is vital for Africa's future, and governments are well aware of this reality.

Not only does Africa's existing infrastructure fall short of its needs, but is claimed to lag well behind infrastructure development in other poor regions. Available statistics show that Africa has only about 30% of the paved road per kilometre found in other low-income regions and about an eighth of the electricity-generation capacity per person. Bridging this gap can only be achieved through regional and continental cooperation, especially when it comes to transport networks.

African governments seem to be responding to the call with infrastructure projects on the go being testimony to the urgent attention on transport development programmes. In its Africa Construction Trends (ACT) Report 2018, Deloitte quotes a Chinese proverb, "If you want to prosper, build roads", and it certainly holds true for Africa as the transport sector continues to lead the way with almost 40% of the 482 projects tracked by the report being either roads, bridges or rail.

The 2018 edition of Deloitte's ACT Report recorded 482 projects valued at US$50-million or above, that had broken ground by 1 June 2018. In total, the projects amount to US$471-billion. This is a significant increase on the 286 projects with a collective value of $324-billion recorded in 2017, translating into an increase of 59% in terms of the number of projects, and a 53,3% jump in the value of projects.

With a total of 186 projects, the transport sector accounts for the majority of projects currently underway across the continent, representing 38% of the total, with a collective value of US$107-billion. Of the 186 transport projects recorded in the ACT Report of 2018, 72,5% (135) fall within the road and bridge construction.

This is a true indicator of the concerted efforts by African governments to enhance trade and growth-supporting infrastructure across the continent. Projects of this nature are expected to take priority to enable the successful implementation of AfCFTA. This presents massive opportunity for the capital equipment sector at large.

**Munesu Shoko – Editor**

**capnews@crown.co.za**

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# AT THE TOP OF THE FOOD CHAIN

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# UPPING FFICIENCY AND PRODUCTIVITY

**Increasing productivity and reducing cost per tonne can help mines survive the typical boom and bust cycles associated with the sector. With that in mind, Liebherr Africa is launching the new Liebherr R 9150 B excavator with a specific design focus on increased productivity, efficiency and reliability – three key parameters that can provide the mining sector with some insulation against the cold whims of the market. By *Munesu Shoko.***


As an industry whose fate is tied to fluctuations in commodity prices, mining operations often feel the pinch of sustained commodity price dips, and only feel the relief when prospects pick up again. Although mining companies can't entirely disentangle themselves from this cycle of boom and bust, increasing productivity and seeking ways to reduce their cost per tonne can provide some shield against the downward cycles of the market.

Equipment efficiency and reliability are key to productivity in mining. The new Liebherr R 9150 B ticks all the right boxes as far as these key indicators are concerned. Now available from Liebherr Africa, the new excavator is said to set a new loading standard in the 100 t class mining market. As a perfect loading tool for 50 t up to 135 t dump trucks and offering a wide array of uses, the R 9150 B is a radical upgrade of the respected R 9150. The R 9150 B's operating weight ranges between 128 000 kg and 148 000 kg, depending on the type of wear packages and attachment the customer requires.

Abie Kriel, Technical Manager Mining at Liebherr Africa, tells Capital Equipment News that the launch of the new B model fits well into the LEC strategy for this specific market segment of 100-150 t class excavators, which has been identified as one of the major growth drivers for Libherr's Mining Division. As part of that strategy, Liebherr Africa also introduced the 100-t T 236 rigid hauler late last year, which can be perfectly paired with the new R 9150 B.

Tom Munch, Director Mining at Liebherr Africa, said at the time that the contract mining market was a major driver of the 100 t class. "We are working in a contract mining market. If you look at the type of equipment this group of customers requires currently, it's mainly 100 t class excavators and 100 t dump trucks. This is due to the mobility they require, given that their contracts are limited to 3-5 years at most," says Munch.

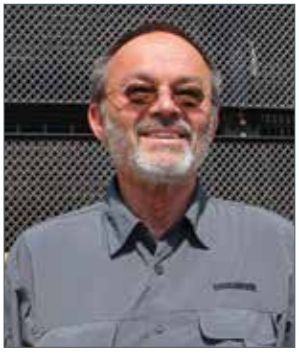
## Productivity increase

The R 9150 B's increased productivity hinges on the machine's fast cycle times, precise machine motions, high digging forces, power-oriented energy management and an exclusive EVO bucket solution.

TALKING POINTS

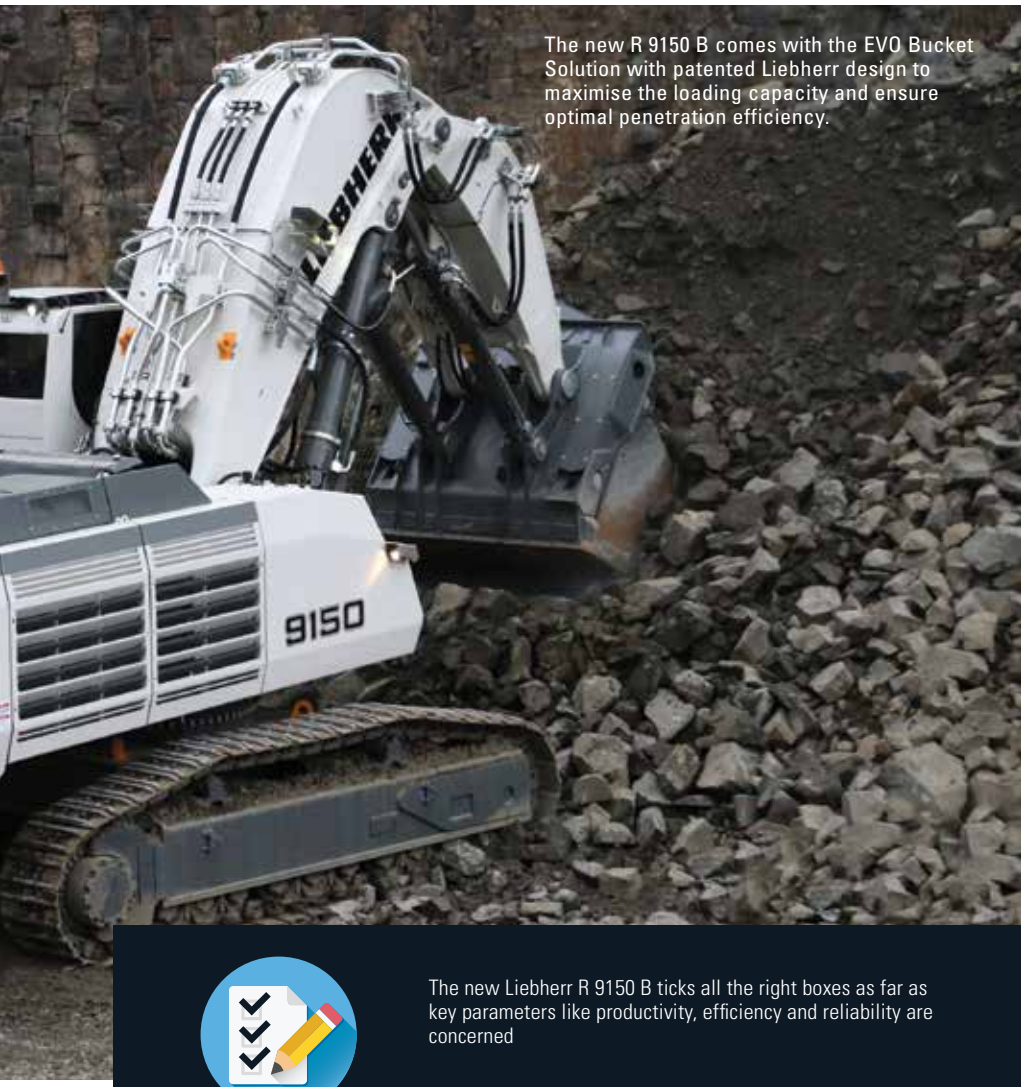
"All Liebherr Mining excavators are equipped with a closed loop swing circuit. Kinematic energy is recovered when the swing motion is used during deceleration, to drive the main and auxiliary pumps, reducing fuel consumption and allowing faster boom lift motion."

Abie Kriel, technical manager Mining at Liebherr Africa



"Liebherr's vertical integration means we design and build components that meet the specific operational requirements of both the customer and the mine site. Genuine Liebherr components ensure the best interaction within the machine to encourage optimal performance and effective machine operation at low costs."

Tom Munch, director Mining at Liebherr Africa




The new R 9150 B comes with the EVO Bucket Solution with patented Liebherr design to maximise the loading capacity and ensure optimal penetration efficiency.

QUICK TAKE

The new Liebherr R 9150 B ticks all the right boxes as far as key parameters like productivity, efficiency and reliability are concerned

**OPERATING WEIGHT RANGES BETWEEN 128 000 KG AND 148 000 KG**

The R 9150 B's operating weight ranges between 128 000 kg and 148 000 kg depending on the type of wear packages and attachment the customer requires

Productivity on the R 9150 B hinges on the machine's fact cycle times, precise machine motions, high digging forces, power-oriented energy management and an exclusive EVO bucket solution

**R 9150 B'S EFFICIENT USE OF ENERGY**

The Liebherr hydraulic technology, in combination with the precision of the electronic control contributes to the R 9150 B's efficient use of energy

At the centre of it all is the proven Liebherr V12 diesel engine specifically designed to withstand extreme outside temperatures and high altitudes with low atmospheric pressure. Integrating the latest engine management system, the R 9150 B is built for extreme conditions.

With fast cycle times in mind, like all other Liebherr mining excavators, the R 9150 B uses a closed-loop swing circuit. The main hydraulic circuit comprises a combination of three main valves fed by three working pumps, providing flexibility of attachment control and force distribution, while allowing full oil flow integration for fast movement and fast cycle times.

The machine integrates the Litronic Plus electronic control system, allowing for easy control even when simultaneous movements are required. The patented Liebherr electronic bucket cylinder damping system provides controlled end-cushioning for smooth attachment motions, thus increasing machine productivity. The integration of the electronic control system also enables maximum machine versatility and the use of various long reach attachments and specific tools.

"The R 9150 B's attachment is equipped with pressure-less boom-down function to enable fast cylinder retraction without the need for pump energy. Intelligent energy management diverts the pump flow during boom lowering, allowing other cylinder motions to operate unimpeded," explains Kriel.

Furthermore, the new R 9150 B comes with the exclusive EVO Bucket Solution with patented Liebherr design to maximise the loading capacity and ensure optimal penetration efficiency. Thanks to the contoured sidewalls and the augmented depth, the EVO Bucket backhoe bucket has a capacity of 8,8-9,6 $m^3$ om this particular model. The bucket takes about four passes to load a 50 t off-highway truck.

"Therefore, the new bucket makes the excavator the perfect working partner, in terms of shovel match, for the Liebherr T 236 truck and all other articulated and rigid trucks in the 50 to 100 t class," says Kriel.

## Efficiency matters

The R 9150 B follows the Liebherr design philosophy of maximising a machine's performance by improving the efficiency of all individual subsystems. Engineered for easy serviceability, the machine is designed to ensure maximum uptime. Several features speak to that effect.

The Liebherr hydraulic technology, in combination with the precision of the electronic control contributes to the


The R 9150 B is a perfect loading tool for 50 t up to 135 t dump trucks.

The R 9150 B follows the Liebherr design philosophy of maximising a machine's performance by improving the efficiency of all individual subsystems.

R 9150 B's efficient use of energy. The high-pressure hydraulic system and the optimised pipe and hose layout maximise usable power transmission. Hydraulic pumps are electronically managed to provide optimal pressure compensation and oil flow management. The hydraulic system is independently regulated over the engine circuit for optimal operational efficiency.

"All Liebherr Mining excavators are equipped with a closed loop swing circuit. Kinematic energy is recovered when the swing motion is used during deceleration, to drive the main and auxiliary pumps, reducing fuel consumption and allowing faster boom lift motion," explains Kriel.

Oil and water cooling fans are independent and electronically managed. The on-demand cooling control enables the machine to maximise available power for the working process. The technology contributes to maintaining sustainable temperature for all hydraulic components, thus extending their life.

The R 9150's high-pressure hydraulic oil filtration systems remove contaminations from the fluid to offer a high rate of hydraulic system efficiency. To maintain oil quality, all return hydraulic oil flow goes through a 15/5 µm fine filtration system, while the grease and fuel tanks are sized to considerably extend the time between service intervals.

"Liebherr's vertical integration means we design and build components that meet the specific operational requirements of both the customer and the mine site. Genuine Liebherr components ensure the best interaction within the machine to encourage optimal performance and effective machine operation at low costs," says Munch.

## Reliability in focus

Kriel explains that Liebherr mining excavators are conceptualised, designed and dedicated to the mining industry. The engineering department uses specific 3D solution in order to meet possible requirements, such as Finite Element and Fatigue Life Analysis. In combination, the manufacturing department uses advanced welding techniques to strategically reinforce the structure.

Specifically designed for tough mining conditions, the R 9150 B undercarriage represents the basis for the stability of the machine. Developed and built for both shovel and backhoe configurations, the enlarged undercarriage offers an efficient ground bearing pressure management providing the necessary stability and reliability. The access to the travel motors and brakes has been designed to provide maximum protection to the components, while providing easy and fast service.

Furthermore, the R 9150 B is equipped with a single line centralised lubrication system for the entire attachment and swing ring. All greasing points are suitably protected against external damages, extending component life and ensuring constant performance over the excavator's operational life.

## Service and comfort

Based on Liebherr's understanding that a comfortable operator is a productive one, the R 9150 B's modern and large cab provides ideal working conditions and operator comfort. Mounted on silent blocks, the optimised cab design reduces vibrations. The new headliner limits noise pollution to provide a quiet working environment: decrease of 2 dB in the cab compared to previous version.

The R 9150 B's upper structure is accessible via a fixed ladder or 45° access stair option and integrates one large central platform equipped with slip resistant surfaces. The new arrangement with wide catwalks facilitates easy maintenance and ensures comfort during all the operations. The excavator is fitted with ergonomic access for fast and safe maintenance. All service points are within reach from one side and at machine level.

The new B-series is serially equipped with GSM data transmission functionalities to collect operating parameters, error codes and machine faults. The data is accessible through the Liebherr-Mining Data platform (LMD) on which the user can generate customised reports to track and analyse machine data.

"The accurate information collected through the Connectivity Kit is recorded in a worldwide database and enters a systematic assessment and resolution process to continuously improve existing and new products and components," concludes Munch. ✪

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Sandvik prefers to partner with its customers to help identify where problem areas are and develop solutions to those specific problems.

# A STEP AHEAD IN THE COST-CONTROL BATTLE

**Knowing what's going on inside their mission-critical equipment puts operations a step ahead in the productivity and cost-control battle. Can digitalisation provide a breakthrough in heading off small problems while they are still small, running machines as efficiently as possible and keeping unplanned downtime to a minimum? By *Munesu Shoko*.**

The mining industry is getting a lot of upgrades, and it is not only through better machinery and equipment. As with most sectors, mining is profiting from the digital revolution. How – with the addition of digital technologies in their practices – can mining companies usher in a new age of efficiency and win the productivity and cost-control battle?

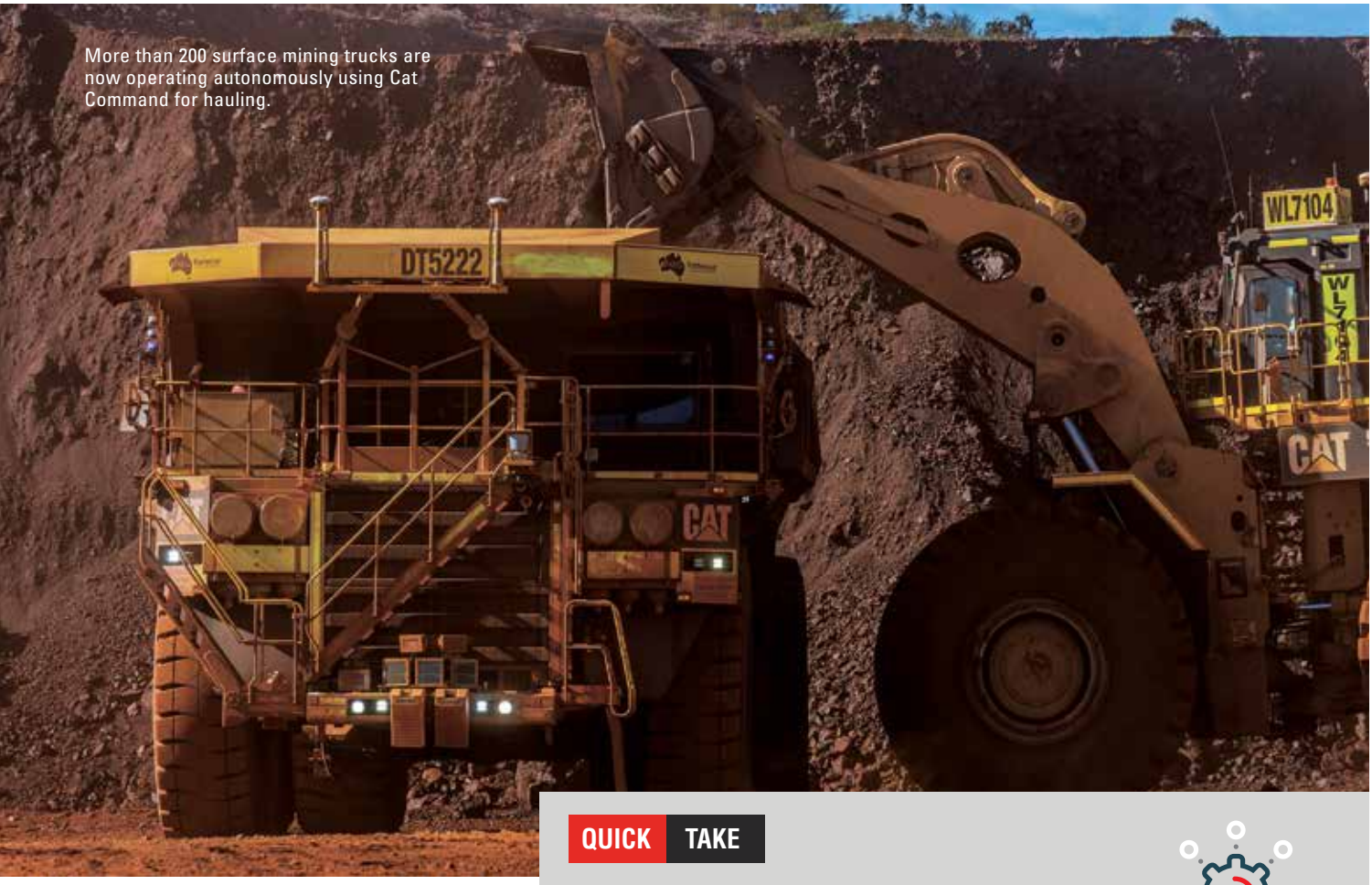
Niel McCoy, business line manager Automation for Sandvik Mining and Rock Technology Southern Africa, says there is no way one can manage or improve what they don't know, adding that any form of operational or business improvement is extremely difficult to quantify without data and direct feedback from the operation as changes occur.

"Digitalisation enables mine operators to take the roof off their mining operations and get feedback on what is happening in real time. This helps to determine exactly where the areas of improvement are. The operational team can then make informed decisions on what areas to focus on and see the results immediately when changes are made. In essence, it takes the guesswork out of operational improvements," says McCoy.

Bill Dears, commercial manager, Mining Technology and Solutions at Caterpillar, says as customers continue to look for consistency across their operations, reductions in costs and maximum output from all of their assets, digitalisation can provide the breakthrough they need.

"At Caterpillar, we are committed to helping our customers use Cat technologies to achieve those goals. All of the technologies within Cat MineStar Solutions help manage costs, and when operations better manage costs, they become more profitable," says Dears.

McCoy says Sandvik prefers to partner with its customers to help identify where problem areas are and develop solutions to those specific problems. "There is




More than 200 surface mining trucks are now operating autonomously using Cat Command for hauling.

no blanket approach to digitalisation. Adopting a phased approach and showing the value each component delivers helps digest the upfront investment required in infrastructure and networks. It also helps facilitate the change management process to entrench digitalisation in the operation," says McCoy.

According to Dears, Cat mobile mining machines incorporate digital technologies that help equipment operators do their jobs more efficiently and safely and help maintenance technicians diagnose machine problems quickly. "Many of the integrated technologies are building blocks for automation – remote control, semi-autonomous and fully autonomous operation, for both surface and underground mining machines," says Dears.

"Digital technologies also enable precise machine tracking, which is the core technology for scheduling and assignment, which in turn is the principal technology for production monitoring and load tracking, and, ultimately, production optimisation," adds Dears.

## Technology clusters

There are several clusters of digital technologies that can help mines in their quest to improve their productivity. What are some of the key ones being

## QUICK TAKE

There is no way one can manage or improve what they don't know; any form of operational or business improvement is extremely difficult to quantify without data and direct feedback from the operation as changes occur

Digitalisation enables mine operators to take the roof off their mining operations and get feedback on what is happening in real time

As mines continue to look for consistency across their operations, reductions in costs and maximum output from all of their assets, digitalisation can provide the breakthrough they need


All of the technologies within Cat MineStar Solutions help manage costs, and when operations better manage costs, they become more profitable


Sandvik is focused on interoperability for seamless integration, Short Interval Control through its OptiMine modules and process optimisation through OptiMine Analytics modules

TALKING POINT

"There is no blanket approach to digitalisation. Adopting a phased approach and showing the value each component delivers helps digest the upfront investment required in infrastructure and networks. It also helps facilitate the change management process to entrench digitalisation in the operation."

Niel McCoy, business line manager Automation for Sandvik Mining and Rock Technology Southern Africa

Command enables remote control and automation. Caterpillar now offers such systems for mining trucks, drills and dozers.

OptiMine is built on an open architecture which allows it to work with any other software solution the mine may have.

championed in the industry?

According to McCoy, Sandvik is specifically focused on Short Interval Control through its OptiMine® Scheduling and Task Management modules and process optimisation through OptiMine Analytics modules. "There are many other fields such as Mine Visulatisation, Augmented Reality, Digital Twins and Real Time Smart Scheduling, among others. Sandvik also has an interoperability policy with implications for a lot of different solutions. OptiMine is built on an open architecture which allows us to work with any other software solution providers the mine may have to help integrate systems. We are also developing an API so mines can use the full power of AutoMine® on non-Sandvik equipment," explains McCoy. "OptiMine is working in more than 50 mines around the globe, and sites are really understanding the value – financial and otherwise – of analytics and process optimisation."

Cat MineStar includes five capability sets that reflect the key technologies being used in the industry for managing mobile equipment. These comprise Fleet, Terrain, Detect, Health and Command.

Fleet gives mine managers a comprehensive overview of all operations with real-time machine tracking, mined material tracking and productivity management. Automated truck assignment in surface mines, for example, has proven to boost productivity significantly over manual dispatching.

"Terrain enables management of drilling, grading and loading operations through the use of advanced guidance technology. For example, drilling blastholes in the right spot and to the right depth every time pays off with improved drill productivity and better fragmentation, which aids loading, hauling and crushing," explains Dears.

Detect enhances operators' awareness of the environment around their equipment, helping avoid collisions and other hazards and increasing operator confidence. Detect includes object detection, proximity awareness and mobile equipment operator fatigue monitoring and reporting.

"Health delivers critical machine condition data for the mobile equipment fleet, helping maintenance managers identify potential equipment problems long before failure and enabling reduced repair costs and greater uptime," says Dears.

Command enables remote control and automation, including semi-autonomous and fully autonomous mobile equipment operation. Caterpillar now offers such systems for mining trucks, drills, dozers and underground loaders (LHDs).

The largest Cat autonomous truck fleet, operated by Fortescue Metals Group in Australia, is delivering productivity gains of more than 30%, compared to the well-operated, manually driven fleet Fortescue

had been operating.

"More than 200 surface mining trucks are now operating autonomously using Cat Command for hauling. In addition to improved productivity and reduced costs, there have been no lost time injuries caused by the trucks since the first such trucks started operating at a commercial mine in 2013," explains Dears.

### Digital transformation

As mines continue on their journey to digitalisation, data and connectivity are two key enablers of the digital transformation agenda. According to McCoy, data and connectivity are at the core of digital transformation.

"For mines to have a view of what is happening in real time, it is essential for connectivity and data to flow. For a start, data will assist in helping with more effective management of operations. In the long term, data flow is essential for tools like analytics. Digitalisation brings the ability to change the way mines work on a day to day basis and the flow of data, through connectivity, is essential for this to happen," says McCoy.

In essence, mines depend on multiple pieces of fixed and mobile equipment. How can digitalisation help improve overall equipment effectiveness (OEE)? According to McCoy, digitalisation takes the roof off the mining operation to allow operations to see what is happening in real time.

"This gives you an accurate view of what is happening in the entire mining process and allows for accountability with all teams. With digitalisation you now have full view of all factors that contribute towards OEE, including operational delays, late starts and early finishes, among others. The data is visual to everyone and with connectivity it is available in real time. Decisions can be made immediately to rectify deviations from the mine's plan in an informed manner. In short, it takes the guesswork out of mining," reasons McCoy.

Data analytics is another term that is doing the rounds as far as digitalisation in the mining sector is concerned. Data analytics is a decision support tool that helps to identify bottlenecks in operations and optimise productivity, says McCoy.

"It is a broad term that is applied to everything from intelligent machine learning through to predictions of failures on a fixed plant. In the Sandvik context, we integrate with many other systems to offer predictive insights into machine health and factors that affect the OEE of a mine site," says McCoy.

He adds that these insights help improve overall production and productivity, as well as drive continuous improvements on maintenance efforts. "With Sandvik's partnership with IBM, as well as Sandvik's interoperability policy, we can interface with any third-party system to provide the customer with tools to drive continuous improvement in their day to day operations," says McCoy.

When it comes to analytics, Cat Equipment Care Advisor is an application that automates the use of analytics and combines it with expert equipment knowledge to enable Cat dealer Condition Monitoring services. "The system automatically reviews mountains of machine health data and flags concerns for action by equipment experts. Predictive analytics identifies emerging problems early and accurately," concludes Dears. ✪


Screening tests play a vital role in Multotec's collaboration with customers to lower their cost per ton.

# CHAMPIONING SCREENING MEDIA INNOVATION

**Screening media plays an important role in water conservation and ensuring the correct particle size distribution envelope is sent to downstream processes. To ensure screen panel efficiency at reduced risk to customer operations, Multotec Manufacturing has developed a screen test rig, located at its Spartan headquarters, to prove screening media efficiencies before physically installing on customer plants. By *Munesu Shoko*.**

Screening is a critical step in mineral processing, and it is imperative that the process be executed in the most efficient manner to ensure profitable processing. With that in mind, Multotec has a dedicated research and testing facility to facilitate internal development and assist mines with the optimisation of their separation and concentration processes. Among the specialised test work facilities at Multotec is the screen test rig, which allows clients to benefit from screening media field trials by proving efficiency in a controlled environment before products are incorporated into their applications.

Capital Equipment News was recently afforded an exclusive tour of the rig, which is located at Multotec Manufacturing's Spartan, South Africa headquarters. PJ Pieters, junior process engineer at Multotec Manufacturing, explains that the screen test rig serves three important purposes: advising internal development; rapid testing of Multotec's

prototypes; and accurate equipment sizing (site, application and client specific).

### Why screening test rig?

Firstly, the screening test rig is meant for Multotec Manufacturing's internal development of screening media. It's like an innovation or idea-generating centre. "The idea is to put our current products to the test and learn from that. The research and development behind our screening media products is aimed at ensuring that we offer the industry products that optimise efficiencies and recoveries," explains Pieters.

Secondly, Multotec also uses 3D prototyping, which ties in with the rapid prototyping exercise. Prototypes are produced at Multotec Manufacturing's 3D printing facility. This allows for physical and visual interaction during concept development, and printed parts are used to produce a mould for prototyping purposes. "The mining market is evolving rapidly and for us to stay relevant as a supplier, we need to continuously develop in line with it. The idea behind rapid prototyping and 3D printing is to be able to fine-tune and make minor adjustments – allowing us to reverse cast or whichever way we choose to get the 3D printed part into a polyurethane (PU) screening media component. Once prototype concept is proven, production prototypes can be tested on our screening test rig," says Pieters.

Thirdly, and most importantly, the screening test rig ensures that all Multotec screening media products are tested to prove efficiency and capabilities before they are physically installed on customer plants. Pieters says changing anything on customer plants without proof of performance brings with it the risk of unexpected downtime if the product does not meet customer expectations or site requirements. Multotec's screening test rig thus reduces operational risks considerably by proving any screening media changes before they are implemented on site.

"We receive samples from customers, which come with certain process parameters and plant operating conditions. We then accurately simulate the plant operating conditions on our screening test rig to get an idea of what the customer can expect from our Multotec product," says Pieters. "The screening test rig is about testing the capabilities of the product before it's installed on customer plants. The site installation will obviously be the final stage of the test work, but we are already assured of between 75-85% accuracy before implementation."

The Multotec screening test rig allows customers to benefit from screening media field trials before products are incorporated into their applications.

**QUICK TAKE**

Multotec has a dedicated research and testing facility to facilitate internal development and assist mines with the optimisation of their separation and concentration processes

The screening test rig ensures that all Multotec screening media products are tested to prove efficiency and capabilities before they are physically installed on customer plants

By removing the risk that mines face in trying new solutions, Multotec's testing capability smooths the way for valuable innovation to improve on-site screening performance

The screening test rig also informs Multotec Manufacturing's internal development of screening media

"We receive samples from customers, which come with certain process parameters and plant operating conditions. We then accurately simulate the plant operating conditions on our screening test rig to get an idea of what the customer can expect from our Multotec product."

PJ Pieters, junior process engineer at Multotec Manufacturing

TALKING POINT

The Multotec screening test rig serves three important purposes: advising internal development, rapid testing of prototypes and accurate equipment sizing.

## What it can do

The screening test rig comprises three separate test platforms. The first is the vibrating screen test platform for slurry drainage tests, wet and dry sizing tests, product development tests and plant screen simulations. The second is the static screen test platform for dewatering and drainage applications, to recover as much water out of the material as possible. The third one is the sieve bend test platform for drainage tests. Sieve bends are used in dense medium separation (DMS) applications, where they are placed before the drain and rinse screens to reduce the size of the screens and the capital expense thereof.

The vibrating screen test platform offers wet and dry processing capabilities. For the dry application, material (customer sample) is fed into the feed hopper, from which it is transferred into the transfer chute via a feed conveyor. From the transfer chute, it goes onto the vibrating screen, where the classification or dewatering, depending on application, happens. The screening media on the screen separates the sample into an underflow and overflow. The underflow and overflow are sampled with Multotec's crosscut samplers, allowing for calculation of efficiency of the screening media over the length of the screen. The overflow and underflow are fed onto the return conveyor belt, which feeds it back into the feed hopper in a closed circuit setup.

"During the test work process, it is critical to take into consideration the repeatability and the relevance of the samples taken. The sample should be representative of actual conditions on site. We, therefore, stick to a triplicate drill (three runs) to ensure a sound scientific basis for the findings," explains Pieters.

The vibrating screen test platform also has a wet circuit, where the customer sample is mixed with water in the wet sump. The slurry material is pumped from the sump by the wet circuit pump to the transfer chute. From here it goes onto the vibrating screen, where the application can be either dewatering or wet classification. Again, the same procedure is followed; sampling the underflow and overflow, before calculating the throughput, cut point and screening efficiency of the screening media along the length of the screen. "Depending on application, we calculate how much fine (under size) material is misplaced to the overflow, and how much over size material is misplaced to the underflow. These are all very important parameters when it comes to screening and determining your screening efficiency" explains Pieters.

On the static screen test platform, there is a crosscut sampler to sample both the overflow and underflow of the sieve bend and the static drain screen. "The sieve bend is very effective in dewatering applications. It has high flow and high drainage capabilities. We sample the underflow and overflow of the sieve bend and linear drain screen to determine the dewatering capability, cut point and screening efficiencies," explains Pieters.

The screening test facility also includes a small Lucotec screen and a small wedgewire trommel screen, both for small-scale verification test work. In terms of commodities, Multotec's screening test rig can test all mineral ore bodies. Sand and aggregates also form a big part of the test work. There is also a focus on some special applications, such as wood chips, among other custom client requests.

## Key benefits

Pieters highlights the special role that the screening test rig plays in Multotec's collaboration with customers to lower cost per ton and achieving their mineral processing goals. "Customers do not need to do the test work on their site. They already know what to expect from the Multotec product before they actually install it on their plants," he says. "By removing the risk that mines face in trying new solutions, our testing capability smooths the way for valuable innovation to improve on-site screening performance."

Pieters explains that the test work provides answers to the questions customers have. He reasons that customers often want to know the increase in throughput when adopting a new screening media, or the influence of the increased accuracy of the cut point. The test work allows Multotec to provide answers upfront. To ensure representative simulation of customer operating conditions, Multotec gathers a range of data from customers on its test work questionnaire. This includes material tonnages, volumes of water, screen sizes in operation and aperture sizes on panels, among other parameters.

"By the time we go the customer plant, we can give them a relatively accurate idea of what they can expect when they do the optimised installation. That also helps inform their decision making," he says. In conclusion, Pieters says it's important that every customer sends their own specific sample of their material. "Different ore bodies of the same ore type and different ore types behave differently. That's why it's important to investigate a specific ore body to actually give the customer an indication of their potential efficiencies." ✪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A properly maintained undercarriage is very important to the overall life of the machine.

# OPTIMISING UNDERCARRIAGE LIFE

**Taking the time to inspect and maintain crawler excavator undercarriages will help you get longer machine life. If the undercarriage is not routinely inspected and maintained, it can easily cost you valuable time, money and potentially decrease the track's lifespan, writes *Munesu Shoko.***

The undercarriage of tracked heavy equipment, such as crawler excavators, comprises many moving components that need to be maintained for them to function properly. Let's take a closer look at why correct machine operation, coupled with regular maintenance, significantly reduces undercarriage wear, improves operating efficiency and reduces running costs of tracked excavators.

In terms of correct machine operation, Vaughan Ellis, MD of Maximum Equipment, the exclusive dealer of the Hidromek range of excavators and backhoe loaders in South Africa, says any undercarriage needs to be treated with respect because it is a fundamental component of the overall machine.

"If you abuse it, it will cost you. You can tell the difference between a good and bad operator through the undercarriage. A bad operator thinks the undercarriage is designed to track over anything including rocks and stockpiles. This is a common scenario, especially in quarries. That's not good for the undercarriage because it will prematurely wear the shoes and snap off track bolts quite quickly. My view is that the secret to a long lifespan of an undercarriage is a good operator," says Ellis.

The same view is shared by Shumani Tshifularo, the recently appointed MD of HPE Africa, who says the operator of a tracked excavator needs to apply different skills from operating a wheeled excavator, and that's why operator training is critical. As far as maintenance is concerned, Tshifularo says because excavators have a strong solid steel construction, maintenance of the undercarriage is often neglected and that is an expensive mistake.


A properly maintained undercarriage will lower operating costs and keep the machine up and running.

"Research shows that repair costs of an undercarriage account for as much as half of all repair costs over the life of the machine. A worn undercarriage increases vibration levels of the excavator, which reduces service life of components, like pumps, motors, electronics and the engine," says Tshifularo.

## Significant component

If the undercarriage is not routinely inspected and maintained, it can easily cost you valuable time, money and potentially decrease the track's lifespan. Just how important is a properly maintained undercarriage to overall efficiency and machine life?

Tim Nenne, senior undercarriage application specialist at Caterpillar, says a properly maintained undercarriage will lower operating costs and keep the machine up and running with no unscheduled downtime resulting from undercarriage problems.

Håkan Karlsson, product manager for ground engaging tools, undercarriage and customer solutions at Volvo CE Sales Region EMEA, says a properly maintained undercarriage is very important to the overall life of the machine. Wear parts in poor condition will shorten the machine's service life and increase the risk of breakdowns and unplanned downtime.

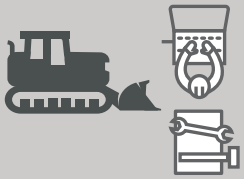
Lionel Hearne, national service manager at Wacker Neuson South Africa, reasons that on any excavator, proper and regular maintenance of the undercarriage is extremely important. "Firstly, undercarriage parts like sprockets, tensioners, rollers and, in particular, the tracks are quite expensive and secondly, if the undercarriage or parts of it fail, the excavator will become immobile until it has been repaired, leading to downtime of the machine and consequently high costs," says Hearne.

Garth Labuschagne, sales manager Africa, Mining Mobile Plant at Bradken, a Hitachi Construction Machinery company, says for many operations, the undercarriage is within the top 10 spend items in the life of an excavator. "A poorly maintained undercarriage will require a significant amount of time and money spent on it, which means reduced efficiency. If a machine can't walk or dig it can have catastrophic consequences for an operation's productivity," says Labuschagne.

## Proper maintenance

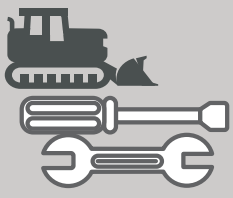
What does a proper maintenance regime of a tracked excavator undercarriage entail? There are several things that should be kept under check in an

**QUICK TAKE**



The undercarriage of a crawler excavator comprises many moving components that need to be maintained for them to function properly


Research shows that repair costs of an undercarriage account for as much as half of all repair costs over the life of the machine



Typical indicators of a poorly maintained undercarriage include stretch in the track (which indicates pin wear), decreased component life, unusual wear patterns and increased failure rates such as roller surface delamination/compression

Operators should avoid travelling long distances in high speed mode. The faster the travel speed, the greater the relative load between components, which increases undercarriage wear

Lionel Hearne, national service manager at Wacker Neuson South Africa

### Hearne's five tips

- Even before maintenance starts, it should be ensured that the excavator is used correctly as laid out in the operator's manual, (for example, no sharp turns) and that checks in and around the machine are carried out on a regular basis to avoid costly breakdowns.
- On the undercarriage, checking track tension, the condition of the tracks themselves, the sprockets, tensioners and support rollers, as well as the undercarriage's functioning and cleanliness are of utmost importance. These should be carried out at the start and the end of every workday.
- Keeping the tracks clear and clean of large stones and debris that may cause damage to the tracks, rollers, sprockets or drive motors is critical.
- Always use the correct tooling when maintenance is carried out.
- Using original parts of high quality and using the correct oil for the drive motors is very important. Servicing needs to be done on time.

Garth Labuschagne, sales manager Africa, Mining Mobile Plant at Bradken

### Labuschagne's five tips

- Find a good supplier with a good reputation – Partnering with a supplier that will work with you to understand your specific site and machine requirements and selecting product that has proven reliability will ultimately improve productivity and lower overall maintenance spend. Good undercarriage maintenance is all about how well you and your chosen product specialists work together and communicate to find the best solutions.
- Don't mix new and worn parts – When possible try to install new parts together rather than mixing new parts with worn ones. This will ensure longer periods of machine uptime in between changeouts.
- Progressive inspections – Regular on-site inspections will make sure any small issues are found and dealt with before they escalate into big problems.
- Follow OEM guidelines –Following machine OEM guidelines for operation and installation will ensure optimum outcomes. It's a little bit like flat-pack furniture, things won't turn out the way they are supposed to if you don't read the instruction booklet!
- Check the effectiveness of lubrication systems – To minimise wear rates and overheating (particularly in rollers).


undercarriage. Bear in mind that it comes with several moving components that need to be maintained for them to function properly. Hearne says proper maintenance starts with regular checks of the undercarriage and its components, as well as checking the track tension, greasing and cleaning.

Nenne says one of the most important points is to keep the tracks properly tensioned. "Many times, the end of life determining factor for an excavator undercarriage is internal wear. Measuring the undercarriage for internal wear will help predict how long the undercarriage will last. If the internal wear rate is high, identifying the cause will help in taking precautions to slow that wear rate down early on," says Nenne. He adds that walk-around inspections to identify early issues like loose hardware, bent track shoes, leaking or failed rollers and improper track tension, are critical.

To ensure long undercarriage life, operators should avoid travelling in high speed mode on rough or hard terrain or inclines.

Sprockets on a Hidromek crawler excavator need to be replaced between 2 000 and 3 000 hours.

The same view is shared by Karlsson, who says it is important to keep in mind that when you replace any part in the track system, such as a chain, you also have to check the wear of the other parts. For example, a worn sprocket may quickly wear down a new chain. "That is why it is wise to contact your local Volvo Construction Equipment dealer and have the undercarriage checked and measured regularly. It will help you determine when to replace components for the lowest operating cost," says Karlsson

According to Labuschagne, a comprehensive maintenance plan for machine undercarriage would include regular monitoring of both the machine's operation and the pit floor conditions by skilled operators who understand the machines they are working on inside out. Following OEM guidelines for operation and undercarriage installation is fundamentally important.

Shumani Tshifularo, MD of HPE Africa

### Tshifularo's five tips

- Daily maintenance – remove packed debris and dry material from the undercarriage at the end of every day, using a shovel, steel bar or water. Dry material increases track tension and prevents rollers from turning freely, which accelerates wear of components.
- As part of daily maintenance check track tension – this takes no more than 10 minutes. A track tension that is too tight puts extra load on the engine, which wastes fuel and can also cause premature undercarriage wear. A track that is too loose may come off and can also cause additional shock loads and side to side wear of components.
- Weekly maintenance – inspect the undercarriage for problems and if necessary, take action. Look out for a loose track shoe, a broken link pin, or chipped sprocket teeth.
- After every 1 000 hours of operation, a specialist undercarriage company should be commissioned to check the undercarriage. Excessive wear on one component causes accelerated wear on other components in the system.
- HPE Africa recommends that track shoes, chains, rollers and sprockets are replaced together, rather than matching new and used components, which results in excessive wear of the new component.

Tim Nenne, senior undercarriage application specialist at Caterpillar

### Nenne's five tips

- Correct track tension: A tight track is one of the top reasons for reduced life and failures in an undercarriage. This is especially true for the greased lubricated tracks on excavators. Tight track increases the internal wear rates by pushing the grease from the joint more quickly.
- Keep it clean: Material build-up in the undercarriage system and on the roller frame can lead to tight track conditions. Such a build-up also increases wear rates as the links drag over it and it circulates through the link/roller system.
- Operate in the correct direction: Many times an excavator is operated in reverse. Operating in the wrong direction increases bushing/sprocket wear rates.
- Limit tramming (walking the machine): Any moving of the machine contributes to the wear on the undercarriage. Keeping the amount of unproductive movement to a minimum will reduce the amount of wear per hour of machine operation. If an excavator is tramming more than 15% of the total operating time, action should be taken to reduce that percentage.
- Inspect: There is more to undercarriage inspection than just determining how worn it is. A regular walk-around inspection to look for broken bolts, bent, broken or loose shoes, missing guides or guards, roller or idler leaks will reduce unplanned downtime and the operating costs by catching issues early.

Håkan Karlsson, product manager for ground engaging tools, undercarriage and customer solutions within Volvo CE Sales Region EMEA.

### Håkan Karlsson's five tips

- Always travel and dig with the sprockets at the rear and the idlers at the front. The idler has springs to protect it from pressure, but operating with it at the back will cause around 30% more wear on the sprocket and chain.
- When using a hydraulic breaker the idlers should always be at the rear. Hydraulic breakers cause a different kind of pressure so always keep the sprocket at the front and the idler at the back to avoid unnecessary wear to the sprocket, chain and gear box.
- Try to use low speed as much as possible when travelling to reduce wear. If you need to travel long distances, load the excavator onto a trailer.
- Always prepare and make the ground flat under the machine before you start digging. This will avoid uneven pressure to the undercarriage.
- Check track tension at least once a week to prevent early wear. Track tension should always be a little slack. If the tension on the track is too tight, the pressure can cause unnecessary wear to the chain and sprockets. This can happen if the distance from the bottom chain to the frame on the undercarriage has been measured incorrectly. It's a different measurement depending on the type of material so anyone carrying out the inspection should always check the operator's manual.

TALKING POINT

"You must turn your pins, probably at 5 000-6 000 hours on a Hidromek crawler excavator. This will allow your undercarriage to give you a good 12 000 hours of life. If you don't turn the pins at the right time, the undercarriage will only give you 9 000 hours at most."

Vaughan Ellis, MD of Maximum Equipment

According to Ellis, leaving the undercarriage dirty for too long is a costly mistake. "Not washing the undercarriage is detrimental to its overall health. If you have been working in clay or muddy conditions, don't leave the mud stuck to the undercarriage for too long. It's important to wash it at the end of the shift. The mud sits in the pins, bushes and rollers and causes excessive wear. A clean undercarriage is a healthy one," says Ellis.

Tshifularo says it's also important to look at parameters of the excavator, like total hours of travelling vs digging and total hours travelled in high speed mode vs low speed mode. Torque setting on all the bolts on the undercarriage should also be checked – including roller and top idler brackets, track shoes, sprockets and final drives.

### Typical indicators

There are several indicators that the undercarriage is not getting the attention it deserves. According to Labuschagne, typical indicators of a poorly maintained undercarriage include stretch in the track (which indicates pin wear), decreased component life, unusual wear patterns and increased failure rates such as roller surface delamination/compression.

Some of the indicators of a poorly maintained undercarriage, according to Hearne, include tracks slipping or sliding off, tracks screeching loudly, loud slapping noises in the case of rubber tracks due to track tension being too low, tracks not moving due to damaged sprockets, tensioners or support rollers.

A key indicator of a poorly maintained undercarriage is the slapping noise in the case of rubber tracks due to low track tension.

"If the chain is worn out it can't be adjusted to the correct tension. If the chain is too tight it will cause wear to the sprocket, idler and can also make noise. If rollers are stuck, both the rollers and the chain will quickly wear out," says Karlsson.

Nenne is of the view that total undercarriage life is a good indicator. "If the undercarriage life is low for the application the excavator works in, it is an indication that more focus is required. Simple things like tracks not being adjusted properly, loose bolts, bent or missing shoes, and missing or bent guides are all indicators that the undercarriage is not receiving enough attention," says Nenne.

### Operator tips

According to Ellis, the key to a healthy undercarriage is the operator. He advises that one of the crucial things for the operator to check is the right tension. "The rule of thumb is to maintain the width of a hand between the bottom roller and the track. It's about a 12 cm gap," says Ellis.

"Operator technique is the most important parameter in keeping a healthy undercarriage. With an excavator or any track, there is need to limit the amount of travelling. The maximum crawling distance should be about 1 km per day and anything more than that will shorten the lifespan


Following OEM guidelines for operation and installation will ensure optimum outcomes.

of the undercarriage. It is not designed to travel over long distances," adds Ellis.

Ellis adds that operators should also check to see if the rollers are turning properly. It is also important to regularly check the wear on the pins. On an undercarriage, pins wear on one side. The pins need to be turned once they have worn on the one side. "You must turn your pins, probably at about 5 000-6 000 hours on a Hidromek crawler excavator. This will allow your undercarriage to give you a good 12 000 hours of life. If you don't turn the pins at the right time, the undercarriage will only last some 9 000 hours at most," argues Ellis.

Ellis adds that the other important thing is to always check sprockets. If they are worn they should be replaced. If they are not replaced in time, they start losing teeth, which results in excessive wear. "Sprockets need to be replaced at about 2 000-3 000 hours," says Ellis.

Tshifularo discusses some seven tips for the operator to reduce undercarriage wear. "Firstly, do not travel long distances in reverse. The excavator is designed to travel with the idler at the front of the machine and the sprocket at the rear. Travelling in reverse causes pin, bushing and sprocket wear," says Tshifularo.

Secondly, Tshifularo says operators should avoid travelling long distances in high speed mode. The faster the travel speed, the greater the relative load between components, which increases wear. Over long distances, friction causes heat build-up within the rollers, idlers and drives and this can damage internal seals.

Thirdly, operators should avoid travelling in high speed mode on rough or hard terrain or inclines. The greater the speed, the higher the impact with the ground. An excavator does not have an independent suspension, which means that both tracks are stressed by an uneven surface. High impact causes damage to track shoes and increases wear on moving components, says Tshifularo.

"Operators should also avoid digging or excavating with the boom over the sprocket. The overhead dig/dump cycle causes stress and wear at the point of sprocket/bushing contact over the sprocket. These forces should be over the idler, where minimal chain rail wear occurs," says Tshifularo. He adds that operators should work up and down a slope rather than along a gradient or slope. Working along a gradient tilts the machine to one side, which increases the load/stress on the lower track and this accelerates overall wear on this track.

"It is also important to balance slew direction under load. Because the dig-slew-dump cycle puts pivot stress on the undercarriage on the dump side of the machine, the operator should balance the slew direction by turning the excavator around in the middle of the shift," says Tshifularo.

He also advises that operators should try to reduce pivot/counter rotation turns on hard ground. Excavators are useful on restricted work areas because they are able to make pivot turns, but the operator should try to make wider turns to prevent grouser corner wear. ✪


An onboard weighing system like those offered by Loadrite can be used to calculate the weight of material in an excavator's bucket.

# PUTTING TOTAL COST OF OWNERSHIP IN YOUR HANDS

**While savvy operators know that total cost of equipment ownership is more important than just the purchase price, what most don't know is that they can actively reduce their total cost of ownership across earthmoving equipment and trucks by using Loadrite's monitoring and alert features to set benchmarks and measure productivity.**

Total cost of ownership includes everything from the original purchase price to the daily running and maintenance costs, depreciation, finance and even 'hidden' costs like insurance and employee wages.

A machine that appears to be competitively priced may end up costing many thousands more than a higher priced machine because it may deliver lower productivity, increased fuel and maintenance costs and a lower resale value.

You can measure total cost of ownership based on the number of hours a machine works, or based on actual productivity in terms of the amount of material moved. By basing total cost of ownership calculations on the amount of material moved, operators can get a clearer picture of the machine's actual cost of ownership, since a machine that moves more material in less time is likely to generate more income, as well as using less fuel per ton of material moved.

While it makes sense to choose a fuel efficient, highly productive machine, it is also possible for smart operators to proactively reduce the machine's total cost of ownership by reducing the running costs, according to Glen Webster of Loadtech.

There are a number of steps that can achieve this, such as improving efficiency to reduce fuel usage, optimising the loading process and improving the maintenance scheduling so that all machines and vehicles are up and running when you need them to be.

### Measuring productivity

"The first step is to understand how productive your machines are, including how much fuel they use and how much material they move,"

Once productivity benchmarks are set, fleet managers can customise the Loadrite system to capture a wide range of other data such as cycle times.

says Webster. "The next step is using that information to make changes where necessary to improve efficiency and reduce costs."

By tracking the amount of material moved per hour to measure productivity and set benchmarks, operators can see underperformance and make appropriate adjustments to ensure all equipment is working at its optimum efficiency.

An onboard weighing system like those offered by Loadrite can be used to calculate the weight of material in an excavator's or loader's bucket, relay this information to the operator and record the weight for later use.

"Being able to track the amount of material moved per hour can then be used internally as part of an overall business analysis to measure productivity and set benchmarks," says Webster.

"Once you know your benchmark productivity rates, it's also easy to identify equipment that is underperforming, which sets off a trigger for an investigation into the underlying causes. These causes can vary widely, from operator error to equipment failure."

Once productivity benchmarks are set, fleet managers can customise the Loadrite system to capture a wide range of other data such as cycle times, which can then be used to identify process bottlenecks and inefficiencies. By resolving these issues, managers can improve productivity and reduce operating costs.

TALKING POINT

"The first step is to understand how productive your machines are, including how much fuel they use and how much material they move. The next step is using that information to make changes where necessary to improve efficiency and reduce costs."

Glen Webster of Loadtech Load Cells

QUICK TAKE

Total cost of ownership includes everything from the original purchase price to the daily running and maintenance costs, depreciation, finance and even 'hidden' costs like insurance and employee wages

By tracking the amount of material moved per hour to measure productivity and set benchmarks, operators can see underperformance and make appropriate adjustments to ensure all equipment is working to its optimum efficiency

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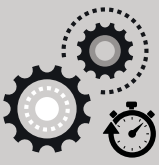

By tracking and monitoring various productivity indicators, managers can see variations and make changes that will result in a more efficient use of resources

Data collected provides real value to increase productivity and profitability.

Reducing the total cost of ownership is a key benefit of the data provided by the Loadrite onboard weighing system.

## Reducing costs

By tracking and monitoring various productivity indicators, managers can see variations and make changes that will result in a more efficient use of resources.

"Being able to track and monitor fuel use, for example, is a major consideration in assessing the cost of ownership, particularly given the high price of fuel. By understanding the amount of fuel used to move each ton of material, you can see how productive each machine is and possibly find ways to reduce fuel usage," says Webster.

The Loadrite system can also measure the cycle times between each loading event, which can show how efficiently the material is being moved. Shorter cycle times generally point to a more efficient and therefore more profitable operation."

The system actively helps reduce fuel use. By using an accurate on board weighing system, operators can ensure trucks are filled correctly the first time, with no productivity lost due to under loading or overloading.

"By loading trucks correctly from the outset, unnecessary truck movement is reduced as there is no need to turn around for either a refill or a removal of material once the trucks get to the weighbridge," adds Webster.

## Setting maintenance parameters

Being able to measure the time between replacing consumable parts, operators can establish the most efficient and convenient maintenance and replacement schedule. This can be done by measuring the amount of work done in terms of material moved, rather than simply by working hours.

"The system can record how much material has been moved since the last time the bucket edge was replaced, for example. This data would allow different brands to be benchmarked on how long they last, another critical factor in calculating the total cost of ownership," says Webster.

"Tyre damage on trucks can also be reduced. Providing accurate and consistent weight measurement from the outset allows operators to set the correct target weight for the loader bucket to accurately load the truck. Because the truck's tyres are inflated correctly to carry a certain weight, they can be damaged when carrying too much weight. So once the loader is set for optimal efficiency, you can potentially prolong the life of the tyres."

Webster says Loadrite's onboard weighing system can be configured to provide the data needed for any operation. "Our expert installers work with project managers to identify the configuration that will give them the information they need. We work with fleet managers individually to ensure the system meets the needs of their business. Our aim is to ensure the data collected provides real value to increase productivity and profitability over the lifecycle of the machine," concludes Webster.

# L3180

## SmartScale for Wheel Loaders

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When the pressure is on and customers are waiting, you need to perform faster without compromising accuracy and precision. The new L3180 SmartScale for loaders adjusts for rough terrain, technique, and movement so new and skilled operators can load with greater accuracy, precision and speed.


## What is a smart scale

A SmartScale is the next generation of onboard scales that uses weighing intelligence for more accurate, precise and faster loading. It also connects machines and devices for the collection and syncing of loading data.

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JBI Industrial Solutions offers weighing solutions for most mobile machines.

# TAKING THE LOAD OFF WEIGHT PROBLEMS

**Given that the precise determination of the weight of products being carried at quarries is a crucial parameter in the daily functions of the industry, it is essential for every operation that carries and transports payloads to adopt efficient and accurate on-board weighing solutions, writes *Munesu Shoko*.**

The quarrying industry has a dynamic operational environment that makes it absolutely essential for the sector to deploy the right tools and systems to raise the bar of performance and efficiency. These tools have the power to directly affect the output and profitability of any quarrying business.

One critical tool that must form part of every quarrying business is the on-board weighing system. There are several instances in quarries where weighing from a specific site becomes purely inefficient and inconvenient. This is where on-board scales come into play. The digital display fitted in the cabin of the vehicle offers easy assessment of weight metrics, which minimises supervisory overhead and human errors.

While it is still possible to get the job done without these technologies, the productivity is sure to suffer significantly. The conventional practices can increase operational expenses over time and workforces may end up spending most of the time doing tasks that are less significant. To get around this whole scenario, it is advisable that quarry owners seriously consider installing on-board scales that can turn all the tedious weighing tasks into a total breeze.

## Highly significant

At a time when the quarrying industry seeks to survive the tide of a tough business cycle, just how important is it for operations to consider on-board load weighing systems for their operations?

Ivan van Heerden, MD of Dynamic Weigh Systems (DWS), the sole agent in southern Africa for the VEI Group's line of onboard weighing and payload management systems, says it is extremely important to install these systems on all load and haul equipment on site. "There can be huge losses in time and money with trucks arriving at the weighbridge either over or under loaded, resulting in bottlenecks or returns to stockpiles," says Van Heerden.

Christiaan Luttig, marketing director at JBI Industrial Solutions, the sole distributor of Pfreundt's range of load weighing solutions in sub-Saharan Africa, says quarries should seriously consider load weighing technology as operations seek to improve operational efficiency and eliminate waste to stay competitive. He believes that load weighing systems with smart technology and cutting-edge software are the best method of controlling these parameters.

"Having a live feed of what is currently taking place in the three main areas of any quarry – extraction, processing and loadout – is

something any quarry can't do without. Apart from basic day-to-day weighing data, the weighing systems give quarry management new insights into exact return on investments on capital equipment, machine utilisation and performance, bottlenecks in operations and more accurate stock control. These are the new parameters our quarrying customers are considering when buying weighing systems," says Luttig.

He adds that quarries have been using weighing equipment in the processing part of the operation for many years, measuring production and productivity with these systems. However, utilising weighing technology to improve operational efficiency in other parts of the operation is a necessity in these economic times.

Commenting on the uptake of the technology in the local market, Van Heerden says the adoption is generally not as fast as it should be. "Many quarries have become over-reliant on the weighbridge and are ignoring the hidden costs incurred through losses in time and money as a result of trucks arriving at the weighbridge with incorrect payloads," says Van Heerden.

However, Luttig notes that the demand for mobile weighing equipment has increased substantially within the past five years. "On a product adoption curve I would say we are entering the late majority stage of this type of technology. However, with regards to full utility of these products, we are in the early adopter stage," he says.

## Technologies abound

The weighing solutions available in the market vary from on-board conveyor belt scales to wheel loader scales, and each system is designed for different applications in quarries. The scales save tremendous time and effort because of their ability to directly weigh materials from any vehicle or equipment. This eliminates redundant efforts invested in the payload process and minimises downtimes.

Most of the scales on the market are compatible for use with most mobile quarrying equipment so they can be easily integrated with a number of vehicles like excavators and haul trucks. They facilitate real-time tracking of loads while vehicles are in transit due to which the time invested in weighing payloads is significantly minimised. Benefits of scale installation abound and include time and money savings, reduce fuel spend, elimination of operational disruptions, productivity improvement and increased safety, among others.

JBI offers a selected range of German-made Pfreundt products, including weighing


Various VEI models from DWS can be fitted on any machine with a lifting piston – from small forklifts to the largest rigid dumpers and excavators.

**QUICK TAKE**

One critical tool that must be a part of every quarrying business is the on-board weighing system

The digital display fitted in the cabin of the vehicle offers easy assessment of weight metrics which minimises supervisory overhead and human errors

VEI systems from DWS offer accuracies of between 99 and 100% on properly calibrated machinery. With the SG of the material being loaded known, you can measure tonnes and volumes moved

Combined with a cloud-based software, JBI'sPfreundt WK60 is ideal for loadout, stockpile management and machine utilisation analysis in real time

TALKING POINTS

"Many quarries have become over-reliant on the weighbridge and are ignoring the hidden costs incurred through losses in time and money as a result of trucks arriving at the weighbridge with wrong payloads."

Ivan van Heerden, MD of Dynamic Weigh Systems

"Having a live feed of what is currently taking place in the three main areas of any quarry – extraction, processing and loadout – is something any quarry can't do without. Apart from basic day-to-day weighing data, weighing systems give quarry management new insights into exact return on investments on capital equipment, machine utilisation and performance, bottlenecks in operations and more accurate stock control."

Christiaan Luttig, marketing director at JBI Industrial Solutions

The Pfreundt systems from JBI are integrated with up-to-date software solutions that assist with production and productivity analysis.

solutions and systems for mobile equipment such as wheeled loaders, conveyor belts, dump trucks and excavators. The systems are integrated with up-to-date software solutions that assist with production and productivity analysis.

"We offer weighing solutions for most mobile machines. These include our most popular WK60 range for wheeled loaders, reach stackers, forklifts, telescopic handlers and skid steers," says Luttig. "Combined with our cloud-based software, the WK60 is ideal for loadout, stockpile management and machine utilisation analysis in real time. Its ability to be integrated with most weighbridges is also a great advantage."

JBI's WK50 is a solution designed specifically for mobile crushers and screens. It can also be used to monitor up to eight conveyor belts, allowing all conveyors on a particular plant to be monitored by one instrument. The WK50 can also be used on rigid and articulated haulers.

Explaining some of the key features of the technology, Luttig says apart from the basic function of weighing loads accurately, monitoring production and productivity live through a cloud-based software platform is a big plus. In a typical quarry application, orders can be sent via the weighbridge, which, in advance, captures key information such as company, truck registration and product to be loaded.

The information is sent directly to the operator of the loader who has to load according to the specifications as captured. The technology allows the operator to identify product type, and loads according to the target weight stipulated by the weighbridge. The data is returned to the weighbridge prior to the truck's arrival, for confirmation and release, thus reducing downtime related to truck loading on site. The technology also allows customers to monitor machine utilisation and performance during a shift.

## High accuracies

VEI systems from DWS are said to offer accuracies of between 99 and 100% on properly calibrated machinery. In fact, the technology has been licensed as "legal for trade" in Europe and has been granted NRCS approval in South Africa for several applications.

The various models can be fitted on any machine with a lifting piston – from small forklifts all the way up to the largest rigid dumpers and excavators. Installation is non-invasive and requires no cutting or welding on the chassis. All telemetry is routed to the in-cab units and there are no external junction boxes.

The systems are robust, with IP65 ratings on the display units and IP68 ratings on the sensors. "The units have been designed with the 'third world' in mind with simple, intuitive controls for the operators. Training usually takes less than an hour with the drivers reaching maximum efficiency within the first several hours of operating the machinery," says Van Heerden.

The accuracy of the units and their ease of use mean that loading efficiency is greatly increased, especially where axle weight loading is important. They can be coupled to VEI's range of high-speed thermal printers, memory sticks and either RF, Wi-Fi or cellular modems. The latter allows for real-time tracking of the clients' production, often important in remote locations where an office may not be present.

DWS also provides VEI's multi-user payload management software which quickly puts information at managers' fingertips. DWS can streamline and improve loading efficiency, leading to rapid return on investment and increased profitability.

## Success stories

As far as case studies go, DWS has worked with Afrimat at Marble Hall where Van Heerden says the company has improved the quarry's truck throughput by almost 80% and reduced the returns from the weighbridge to the stockpile drastically. Midmar Crushers is also one of the notable operations using DWS-supplied technology.

At one of the leading quarries, DWS systems helped detect a problem with the weighbridge on site. There was a 300 kg discrepancy from one end of the deck to the other. "We found the problem because we calibrated the loader on the one end and most of the trucks were weighed near the other end and the weights didn't match up. This allowed them to get the weighbridge supplier out to re-calibrate the deck and saved them from charging for less than what was being loaded," says Van Heerden.

"In one of our recent projects, we managed to assist a client with efficiency gains in their loadout operation. The end results were a reduction in machine hours and diesel usage at the same production output," concludes Luttig. ✪

Mahindra
Rise.

# India's most fuel efficient TLB backhoe loader is here.


Carbon White Investments now operates a total of 17 Scania trucks.

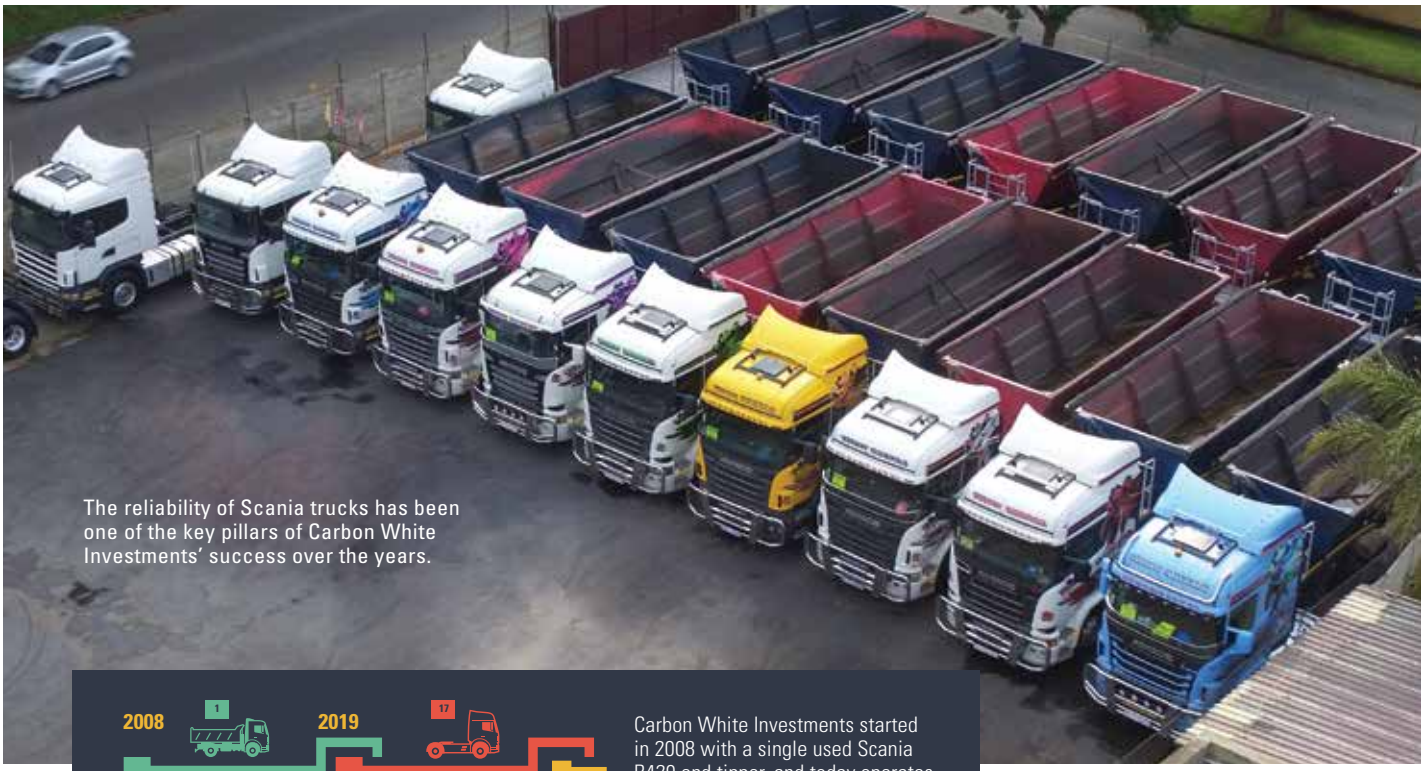
# PILLARS OF SUSTAINABLE GROWTH

**The reliability, fuel efficiency, and above all, the total operating economy of the Scania fleet, have been the major pillars of Carbon White Investments' continued growth over the years. Having started its business back in 2008 with a single used Scania R420 end tipper, the Brakpan-based company today operates a fleet of 17 Scania trucks, with two more on order, writes *Munesu Shoko*.**

With its long history in the transport industry – over 125 years of experience in providing solutions that make mobility safer and more reliable – Scania has provided the basis of success of many transport businesses. Many of them started small, and have gone on to build succesful transport businesses, navigating some of the toughest business cycles in the process.

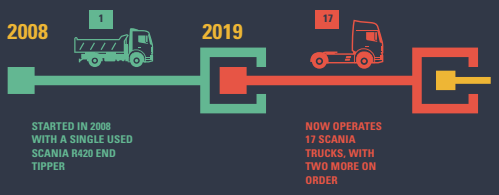
We all dream big, but perhaps starting small is the key to entrepreneurship. As the age-old saying goes "mighty oaks from little acorns grow" – it is true that many successful companies started surprisingly small. The old adage holds true for Brakpan, Gauteng-based transport company, Carbon White Investments. The company introduced itself to the business world in 2008, at the height of the global economic squeeze, with one used Scania R420 end tipper truck deployed to work in the quarrying sector, loading construction material from processing plants to construction sites.

Fast forward to 11 years later, the company now owns a total of 17 Scania trucks, but of note is that the "mother" of the fleet, the Scania R420 that started it all, is still part of the fleet, and going strong. This speaks to the reliability of the Scania offering, as well as Carbon White Investments' uncompromising approach to preventative maintenance – some of the key pillars of its growth over the years. Owned and run by Cindy Naidoo (MD), and her husband, Vishal Ramsunder (operations director), Carbon White Investments expanded into the side tipper business in 2013, initially running used vehicles only, until it purchased its first new Scania truck in 2018. During the early stages of its business, the company tried a couple of other brands in its fleet, but in Ramsunder's experience, Scania proved to be in its own world in terms of performance, fuel consumption and lower maintenance costs. "As a result, we got rid of all the other brands we had in our stable and standardised our fleet on Scania," explains Ramsunder.



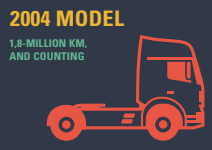
The reliability of Scania trucks has been one of the key pillars of Carbon White Investments' success over the years.

**QUICK TAKE**




Carbon White Investments started in 2008 with a single used Scania R420 end tipper, and today operates a fleet of 17 Scania trucks, with two more on order


The company decided to standardise its fleet on Scania due to the performance, reliability and fuel efficiency of the trucks




Its Scania R420, a 2004 model which started the business in 2008, has already clocked over 1,8-million km, and counting

Carbon White Investments uses a wide range of Scania services, all the way from finance and insurance and repair and maintenance contracts

## Reliable fleet

The current fleet complement is 17 Scania trucks, comprising four end tippers and 13 side tippers. The four end tippers are still running in the quarrying sector. The side tippers are doing long haul, carrying manganese and iron ore from Kuruman to Durban and Port Elizabeth.

"We are currently running six R500 units, seven R460 units, two R420s and two old R480 units. We are adding two more R460 units, one new and one used. We have bought three new trucks thus far, and one of those is the NTG R460 we received in August this year. Our second NTG unit is coming this month, taking our complement of new vehicles to four thus far," explains Ramsunder.

One of the key reasons for standardising the fleet on Scania is the reliability of the truck. A case in point is the R420, a 2004 model which started the business in 2008. It has already clocked over 1,8-million km, and counting. Ramsunder also makes special mention of the R480 in the fleet, which he terms a "never die truck". The particular unit is a 2006 model which was purchased as a second-hand unit back in 2011. It's also still running cost-effectively, with a great deal of uptime and minimal downtime.

Ramsunder is of the view that delivering on the promise is the most important underlying principle of any successful trucking company. "On-time deliveries are a direct result of fleet reliability, which is, therefore, an important parameter in keeping the promise to our own clients," he says. "Top trucking companies carefully track and measure each element of their operations to find ways to continually improve, and reliability is one of the key benchmarks for us in our decision to stick with Scania."

## Maintenance is key

The success of Carbon White Investments' business hinges on truck uptime. "Our trucks spend more time on the road than in the workshop," says Ramsunder. Key to uptime is an uncompromising maintenance regime.

Neil Charles, sales representative at Scania, hails Carbon White Investments as a progressive company that understands

"Top trucking companies carefully track and measure each element of their operations to find ways to continually improve, and reliability is one of the key benchmarks for us in our decision to standardise on Scania."

Vishal Ramsunder, operations director at Carbon White Investments

TALKING POINTS

"Being a one-stop shop gives our customers peace of mind. We sell the truck, finance it, maintain it and insure it. This allows our customers to deal with a single supplier for all their business needs."

Neil Charles, sales representative at Scania South Africa

Carbon White Investments took delivery of its new NTG R460 in August this year.

the importance of the health of its fleet. "They are a hands-on customer as far as preventative maintenance is concerned. Their workshop is fully equipped with spares all the time. At any given time, they, at some stage, hold more spares than what we may hold at any of our dealerships," says Charles. "They also do their own preventative maintenance in between OEM services to keep the trucks in top running condition."

"We also have some vehicles that are out of warranty, like the R500 and R420 units, and these are serviced in-house. That's why we carry enough spares to keep them running at all times with limited downtime," adds Ramsunder.

Coupled with this maintenance regime is a consistent fleet replacement programme, especially on the side tipper fleet side of the business. "Our long haul vehicles are replaced at about 700 000-800 000 km, which translates to about four years of operation. To keep a good track of the replacement cycles, we have started to buy new vehicles for our side tipper operation than used ones," explains Ramsunder.

The end tippers don't necessarily have a stipulated replacement cycle. These are kept in the fleet as long as they are still running cost-effectively. Bear in mind that these units only clock about 5 000 km a month. In terms of travelling distance, they don't haul beyond 70 km distances.

## Fuel consumption

It is common knowledge that fuel is one of the major costs for any transport business. In an environment where prices are continually soaring, Ramsunder says Carbon White Investments does not leave anything to chance when it comes to the fuel tank. This is one of the key reasons why Scania has become the brand of choice for the company.

"We are getting very good fuel consumption figures from our Scania trucks. For example, our R500 range is giving us 2,2-2,3 km per litre of fuel, which is a very good figure for this type of operation. The R460 is giving us even better fuel consumption at 2,6-2,8 km per litre. Meanwhile, on the R420, as old as it is, we are still getting above 2 km per litre. Bear in mind that this model works in a stop-and-go application, which is heavy on fuel by its very nature," says Ramsunder.

## One-stop shop

In recent years, the commercial vehicle industry has not only seen a hastening trend towards consolidation within the supplier community, but also an expansion of the range of products and services offered under one roof. This has created true one-stop shops, such as Scania South Africa, which services a wide range of its customers' needs from one stable. This is one of the reasons why Carbon White Investments believes Scania South Africa is the partner of choice.

The company uses a wide range of Scania services, all the way from finance and insurance to repair and maintenance contracts. "We use Scania Finance to purchase our trucks. We also started using Scania Insurance about two months ago. We buy OEM spares from them, and also have repair and maintenance contracts with Scania. Basically it's a one-stop shop for us," says Ramsunder.

"Being a one-stop shop gives our customers peace of mind. We sell the truck, finance it, maintain it and insure it. This allows our customers to deal with a single supplier for all their business needs," says Charles.

In conclusion, Ramsunder appreciates the overall service from Scania South Africa. "The Scania team is always there to assist, be it on the used truck or new sales side. They always go out of their way to meet our needs. We are one happy customer," concludes Ramsunder. ✪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# AT THE TRANSPORT EDGE

**Latest on UD Trucks' arrival court is the all-new Quon, its most technologically advanced truck for the local market to date. Powered by a Euro 5 engine as standard across all derivatives, the new truck represents innovation in five essential areas to better meet today's diverse transport business needs, writes *Munesu Shoko*.**

UD Trucks used the recently-ended Futuroad Expo to unveil its latest offering, the all-new Quon, said to be an innovation for both people and the business. With the new launch, UD Trucks has fully adapted its flagship Quon extra heavy commercial vehicle for the first time since 2004. The all-new Quon comes hard on the heels of this year's introduction of the New Quester and the UD Kuzer.

Featuring eight derivatives – four 6x4 freight carriers and four 6x4 truck tractors – the all-new Quon is driven by a Euro 5 engine, and is said to be the first truck to offer it as a standard in the local market. The new Quon is ideally suited for distribution, petrochemical and FMCG market segments.

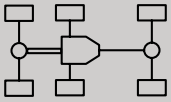
Jacques Michel, President of UD Trucks International Sales, says the pace at which change is happening in the logistics industry is rapid and truck manufacturers need to adapt accordingly. He declares that UD Trucks is in transformation mode as the company moves to fulfil its responsibilities to support the logistics change.

"We have identified three global challenges the logistics industry is

UD Trucks Southern Africa has launched the all-new Quon in the local market.

The new Quon made its grand debut at Futuroad 2019.

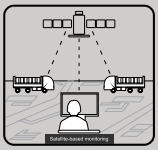
**QUICK TAKE**



The new Quon features eight derivatives – four 6x4 freight carriers and four 6x4 truck tractors

At the centre of the vehicle's fuel efficiency is the new powertrain, a combination of the Euro 5 11-litre GH 11 engine delivering 346 kW/2 240 Nm and the new 12-speed ESCOT-VI, an electronically controlled automatic transmission with a retarder

Quon utilises a range of basic, passive and active safety features to keep the driver, the cargo, as well as other road users as safe as possible



Telematics enable fleet owners to keep track of their vehicle's productivity and fuel efficiency through various functions like geofencing, driver reports and manual navigation

facing, namely, growing volumes of deliveries, the need to reduce carbon emissions and the acute shortage of drivers. With the new Quon, we have addressed these challenges to allow our customers to run sustainable businesses. For us, innovation is a commitment to deliver trucks that the world needs today, adding value to our customers' businesses and society at large," says Michel.

Gert Swanepoel, MD of UD Trucks Southern Africa, says with the all-new Quon, UD Trucks has gone the extra mile to develop new truck technologies with an eye on today and the future to meet the needs of the times.

He reasons that the new offering addresses both the people and the business aspects.

"On the business front, the current economic environment has brought about the need to reduce operating costs, improve transport quality and efficiency. We also have a people-first approach to technological innovation, and the development of products that have the environment and safety of people takes priority," says Swanepoel. "With the new

"We have identified three global challenges the logistics industry is facing, namely, growing volumes of deliveries, the need to reduce carbon emissions and the acute shortage of drivers. With the new Quon, we have addressed these challenges to allow our customers to run sustainable businesses."

Jacques Michel, President of UD Trucks International Sales

"On the business front, the current economic environment has brought about the need to reduce operating costs, improve transport quality and efficiency. With the new Quon, we have delivered on these needs through five key pillars: driveability, fuel efficiency, safety, productivity and uptime."

Gert Swanepoel, MD of UD Trucks Southern Africa

"Adaptive Cruise Control is an extension of standard cruise control as it adapts the distance to the target vehicle in accordance to a selected time-gap and the speed of the subject vehicle by controlling the engine, powertrain and brakes of the Quon."

Rory Schulz, marketing director at UD Trucks Southern Africa

TALKING POINTS

Quon, we have addressed these needs by focusing our technological innovations on five key pillars: driveability, fuel efficiency, safety, productivity and uptime."

## Fuel efficiency

In an environment where fuel prices continue to soar, the new Quon gives transport companies some relief with a range of features that speak directly to fuel efficiency. Rory Schulz, marketing director at UD Trucks Southern Africa, explains that at the centre of the vehicle's fuel efficiency is the new powertrain, a combination of the 11-litre GH 11 engine delivering 346 kW/2 240 Nm and the new 12-speed ESCOT-VI, an electronically controlled automatic transmission with a retarder.

"The engine generates powerful torque from low revs through a wide RPM range, making the Quon a pleasure to drive. To further support fuel efficient driving, the Quon also features UD Trucks' Nenpi Fuel Coach – a system that displays driving advice to help drivers achieve fuel-efficient driving," says Schulz. This is complemented by UD Truck's green band, a sweet spot for the engine at 800-1 600 rpm, ensuring fuel-efficient running at all times.

Additional contributors to fuel efficiency are weight reduction, which improves the vehicle's performance and fuel economy, as well as low air resistance due to the aerodynamic shape of the truck, which has been optimised in every single detail. The Euro 5 technology – available as standard in all new Quon models – also contributes to better fuel efficiency with higher torque at lower engine speeds, while simultaneously reducing carbon emissions through the SRC technology.

## Driveability

For years, the driver's influence on the overall efficiency and productivity of a vehicle has been underrated. With UD's clear understanding of the significance of the driver in the overall profitability of a transport business, the cockpit has been redesigned, with operability and visibility ergonomically reengineered from the ground up. It features conveniently placed steering wheel switches, new meter panel, improved visibility and a 12 V power socket.

The new ESCOT-VI electronically controlled automatic transmission adopts a simple, easy-to-use straight shift pattern, further advancing the Quon's operability while also enhancing its ability to navigate muddy conditions. All models feature disc brakes as standard.

The disc brakes provide a swift, smooth response and outstanding braking performance. Through these features, the all-new Quon provides a comfortable driving environment, allowing drivers to concentrate on the road ahead.

## Safety matters

Quon utilises a range of basic, passive and active safety features to keep the driver, the cargo, as well as other road users as safe as possible. The UD Trucks Traffic Eye Brake system (collision mitigation braking), uses high-precision radar and a cabin-mounted camera for dual-monitoring of the road ahead.

The Lane Departure Warning System alerts the driver when they are straying across lanes and is especially intended to keep drivers from falling asleep at the wheel. An additional Driver Alert Support alerts the driver by sound and a message in the display, if the system detects any symptoms of inattentive driving or drowsy driving.

"Adaptive Cruise Control is an extension of standard cruise control as it adapts the distance to the target vehicle in accordance to a selected time-gap and the speed of the subject vehicle by controlling the engine, powertrain and brakes of the Quon," explains Schulz.

UD stability control, or UDSC sensor, detects conditions in which the truck could become unstable, such as curves or slippery road surfaces, and the system applies control appropriate to engine output and braking power to each tyre to maintain stability.

The new Quon is also fitted with


Quon utilises a range of basic, passive and active safety features to keep the driver, the cargo, as well as other road users as safe as possible.

disc brakes featuring heat-release properties for sound anti-fade performance. In combination, these advanced systems deliver enhancements on both active and passive safety.

### Driving productivity

In the new Quon, every component has been refined to realise an overall lighter vehicle, while achieving gains in load-carrying capacity of up to 200 kg, depending on the model.

Improved ease of loading, bodybuilding efficiency and smoothness at creeping speed for approaching loading docks also reflect UD Trucks' commitment to boosting productivity for fleet owners.

"The all-new Quon offers a highly productive range of vehicles optimised for our customers' business needs," explains Swanepoel. "Our customers' definition of the essentials needed in a truck, has changed. Our focus, therefore, has changed accordingly, putting more attention on reduced operating costs through parameters such as fuel efficiency, payload ability and uptime. Secondly, we are concentrating on the people factor within the transport business, making our trucks even safer and environmentally friendly."

### More uptime

The all-new Quon represents a further upgrade in vehicle reliability and durability. It is easier to maintain, with a reduced number of parts requiring regular replacement and longer service intervals on genuine parts.

Advanced features like LED lights, disc brakes, rust prevention and sealed hub bearings all contribute to Quon's uptime. Moreover, comprehensive UD Extra Mile Support – including UD Genuine Parts and Service, the UD Trust service agreement, and UD Telematics utilising the latest in connectivity – keeps customers' vehicles in the best possible condition to maximise uptime.

"Telematics enable fleet owners to keep track of their vehicle's productivity and fuel efficiency through various functions like geofencing, driver reports and manual navigation," concludes Schulz.

## Ctrack Logistics Barometer gauges industry performance

Leading vehicle tracking and telematics provider, Ctrack, has joined forces with economists.co.za to create the Ctrack Logistics Barometer, an economic indicator and performance gauge of the South African logistics and supply chain industries.

Said to be an industry first, the monthly Ctrack Logistics Barometer is an accurate co-incident indicator of the state of the South African economy, particularly in terms of the goods economy. The Ctrack Logistics Barometer should help logistics and supply chain players and relevant trade media to better understand the factors that impact logistics volumes.

Creating the Ctrack Logistics Barometer was a natural step for Ctrack, which provides a number of industry solutions to government (local authorities, municipalities and public transport operators); airports; the transport and logistics industry; the mining and yellow equipment sector; the agri industry; small businesses and consumers. Furthermore, it provides camera surveillance and mobile asset tracking and fixed plant monitoring solutions.

The company takes a focused approach to its solution offerings and provides lifecycle insights to its customers. Ctrack customers rely on data to optimise their businesses and need quality management information to make better decisions. Better decision making drives down costs and improves productivity, efficiency, utilisation and performance.

"The Ctrack Logistics Barometer is our way of providing the transport and related sectors with quality, updated information about the state of the logistics industry in South Africa," says Hein Jordt, MD of Ctrack South Africa.

"The barometer allows the business community and media to better understand how the logistics industry in South Africa is performing. With this information, businesses involved in the sector are able to make better strategic decisions. As thought leaders, we are delighted to be able to share our vast industry knowledge with the business community," concludes Jordt. ✪

Hein Jordt, MD of Ctrack South Africa.

## Daewoo Trucks launches new extra-heavy vehicle

Daewoo Trucks, the Korean commercial vehicle manufacturer wholly-owned by Indian multinational conglomerate Tata Group, recently used the Futuroad Expo to launch its new extra-heavy truck, the Maximus KL3TX.

Daewoo Trucks has been in South Africa for 15 years, but for now will concentrate only on the extra-heavy segment of the market so there is no conflict between Daewoo Trucks and TATA commercial vehicle models. The current vehicle population of Daewoo Trucks in South Africa is estimated at about 6 000 units.

The Maximus uses the tried and trusted combination of a 480 hp Cummins engine which produces 2 509 Nm of torque with either an Eaton or ZF AMT transmission, as well as an Eaton rear axle.

Len Brand, CEO of Tata Africa Holdings, says he is satisfied that having Daewoo Trucks concentrate on the top end of the local market will contribute to further growth for Tata International in Africa. Market share was 3,5% last year and it should improve to 5% this year and Brand says he now has the product and model mix to grow sales despite the tough market conditions which currently prevail in South Africa.

Sales floors are split between Tata Trucks and Buses and Daewoo Trucks, as are the service technicians at the dealerships. Daewoo Trucks sales in South Africa are expected to reach approximately 200 in 2019, with a target of 500-600 units a year in the future. These trucks are sold in 11 other African countries and are locally assembled in South Africa and Kenya.


The new truck made its South African debut at Futuroad 2019.

Brand, who has been instrumental in the turnaround of Tata in southern Africa for the past three years, says his team is now focusing on aftersales backup through the company's 91 2S (service and spare parts) outlets in South Africa and a further 60 in Africa.

He adds that the company is well advanced in setting up its own financial arm to assist customers buying Tata and Daewoo commercial vehicles. A pilot operation in Tanzania is already proving successful.

There are currently 30 3S (sales, service and spare parts) dealerships in South Africa. The Tata Africa CEO says the company presently operates the dealership in Samrand, Polokwane and Nelspruit, and is working to assist these operations become partnerships with local involvement in each of them.

"We have made good progress in growing Daewoo Trucks sales over the past couple of years and I am confident that the new models and a big push on brand awareness will bear fruit in the near future," concludes Brand. ✪

## The rise of value in concrete equipment

Staying true to its 'Affordable Innovation' mantra, in the nine years since its decision to enter the construction machinery industry, Revaro has become a one-stop shop for concrete equipment. It has also successfully bridged the gap for a value product in this market segment to cater for both small and established companies.

Revaro started in 2000. The original start-up was an IT company which evolved into a business management consultancy, specialising in business turnarounds, before long, MD Reyno van Rooyen saw that there was a gap in the market for affordable equipment, to assist not only smaller start-up companies, but also the consumables needed to run the more established businesses.

In a short space of time, the company infiltrated the market and began collaborating with several local engineering companies that manufacture brick-making machinery. Revaro has grown in many aspects since then, and now sources machinery from over five countries including India, China, Germany and Spain.

The mantra/slogan 'affordable innovation' has a very unique meaning, and the company does not only aim to give clients the best pricing, but also the best service and product. The company has grown 8 000% from 2010 and it has now become a substantial player in the brick-making machinery supply chain in southern Africa. Eight years later since its inception, it now exports to over 20 countries.

Its pricing, on average, is 50% of some premium suppliers' cost, but for the same machine output. There is a huge price difference and it is part of the reasons for its exceptional growth since it started. The company feels that the market was waiting for value-for-money products of this nature.

Its product range has expanded to the point where it offers over 100 individual products, as well as the relevant spare parts, training and aftersales support on each of these products. In order to service this diverse product range, Revaro has been divided into six independent companies namely, Revaro Equipment (forklifts, front wheel loaders, generators, tlbs and utvs); Revaro Concrete Equipment; Revaro brick Pallets; Revaro Engineering; Revaro Logistics; and Revaro Plant Hire.

The company also has such a big focus on its aftermarket support capabilities. As it expands its market, it is busy setting up a dealer base throughout southern Africa and it is close to reaching its goal of 70 dealers across the region, along with qualified service technicians in each province. ✪

## New Cat D3 series skid steer and compact track loaders

Caterpillar has launched 16 new Cat D3 Series skid steer loader (SSL) and compact track loader (CTL) models. The new machines advance the D and D2 Series' reputation for quality, comfort, and performance and deliver improvements in operator experience and track loader stability.

Said to be an industry first, the D3 Series models also support a line of new Smart Attachments. The advanced machine technology recognises certain attachments and tailors the controls and operator information to match the tool and the task.

The D3 Series Cat SSL and CTL models deliver Smart Technology that ushers in a higher level of integration between the machine and new Smart Attachments. The advanced attachment technology will allow the D3 Series Cat SSL and CTL models to automatically recognise Smart Attachments and convert machine controls to align with the operational and informational needs of that attachment.

Entering and exiting the new D3 Series loaders equipped with an enclosed cab is now easier thanks to a wider opening cab door. Additionally, the distance between joystick pods has increased by 76 mm, offering extra space for the operator inside the cab to deliver a more comfortable experience.

New Cat D3 Series CTLs deliver improved operating stability while handling heavy loads, grading or truck loading. Changes to the undercarriage frame and torsion axles reduce machine pitching and rocking, while still offering superior ride comfort.

All Cat D3 Series CTLs feature standard two-speed travel to improve performance at the jobsite. The machines are geared to deliver high torque digging performance as well as high top-end speed for travel. The powerful Cat 279D3 and 289D3 loaders boast a 13,6 kph top-end ground speed, a 20% increase over their D Series counterparts.

The Cat 239D3 and 249D3 models are now built with 2-speed transmission as standard, versus the previous single speed, increasing travel speed by 9% and aligning these models with the rest of the two-speed equipped CTL model range. ✪


## Yanmar completes acquisition of ASV Holdings

Yanmar Group has announced the completion of its acquisition of ASV Holdings, a designer and manufacturer of compact tracked loaders and skid-steer loaders. The announcement is the final step in the acquisition, following on from the June disclosure of a definitive agreement to acquire the company through the mechanism of a statutory merger.

Yanmar has acquired 100% of ASV's outstanding shares of common stock for total consideration of US$70,7-million, or US$7,05 per share.

ASV's independent dealer network throughout North America, Australia and New Zealand will join Yanmar's existing global construction equipment operations. The company also sells OEM equipment and aftermarket parts, and owns and operates a production facility in Grand Rapids, MN.

"We expect ASV to realise significant, channel and product synergies after joining the Yanmar Group," states Giuliano Parodi, executive officer of Yanmar Holdings. "In addition, the ASV Grand Rapids facility will continue as a centre of excellence for compact tracked loaders and skid steer loaders, while benefiting from the global capacity and resources of the Yanmar Group." ✪

# FIVE WAYS TO IMPROVE EXCAVATOR FUEL EFFICIENCY

**Volvo Construction Equipment (Volvo CE) offers many new technologies and services to help companies reduce spending on fuel and become more environmentally friendly in the process.**

Using data from the CareTrack telematics system, Volvo Fuel Efficiency Reports are a valuable tool to help customers maximise the fuel efficiency of their machines.


The auto engine shutdown feature operates much in the same way as the auto-idle feature.

Fuel is one of the largest expenses for most construction companies. Volvo CE has fitted its machines with fuel saving technology and offers many different fuel saving services. Reducing fuel consumption by improving efficiency not only saves money for companies but also helps reduce their impact on the environment. Every litre of diesel fuel saved means there is 2,6 kg less carbon dioxide released into the atmosphere.

**1. Auto idling**

The auto idle feature on Volvo machines reduces fuel consumption by automatically switching the engine to the high idle setting after five seconds of inactivity. This lowers the engine's RPM, which saves fuel. Five seconds is the default setting for the auto idle feature, but it can be changed to activate from three seconds of idle time up to 20 seconds. The operator needs only touch a joystick or foot pedal to return the engine to its normal mode and get it back up to full power. This feature improves fuel efficiency without reducing machine productivity.

**2. Auto engine shutdown**

The auto engine shutdown feature operates much in the same way as the auto-idle feature. Instead of switching to idle mode, the machine's engine will shut down after five minutes of inactivity. After four minutes of inactivity the machine will give a 60-second warning that the engine will shut down. After the 60-second period is up, the machine's engine will switch off. This feature helps to cut down on emissions when the machine is idle. A machine can be left idle 40-60% of operating time which contributes significantly to fuel consumption.

**3. Eco mode**

Many brands offer an eco mode on their machines, however, this usually only lowers the engine's rpm by 10%. Volvo CE's eco mode works by controlling the pump flow to avoid inertia overflowing the overload relief valves while maintaining maximum digging and swing efficiency. It reduces flow and pressure loss and improves pump flow control, resulting in a 5% improvement to efficiency. Unlike the eco mode offered by other brands, efficiency is increased without a reduction to the power of the machine.

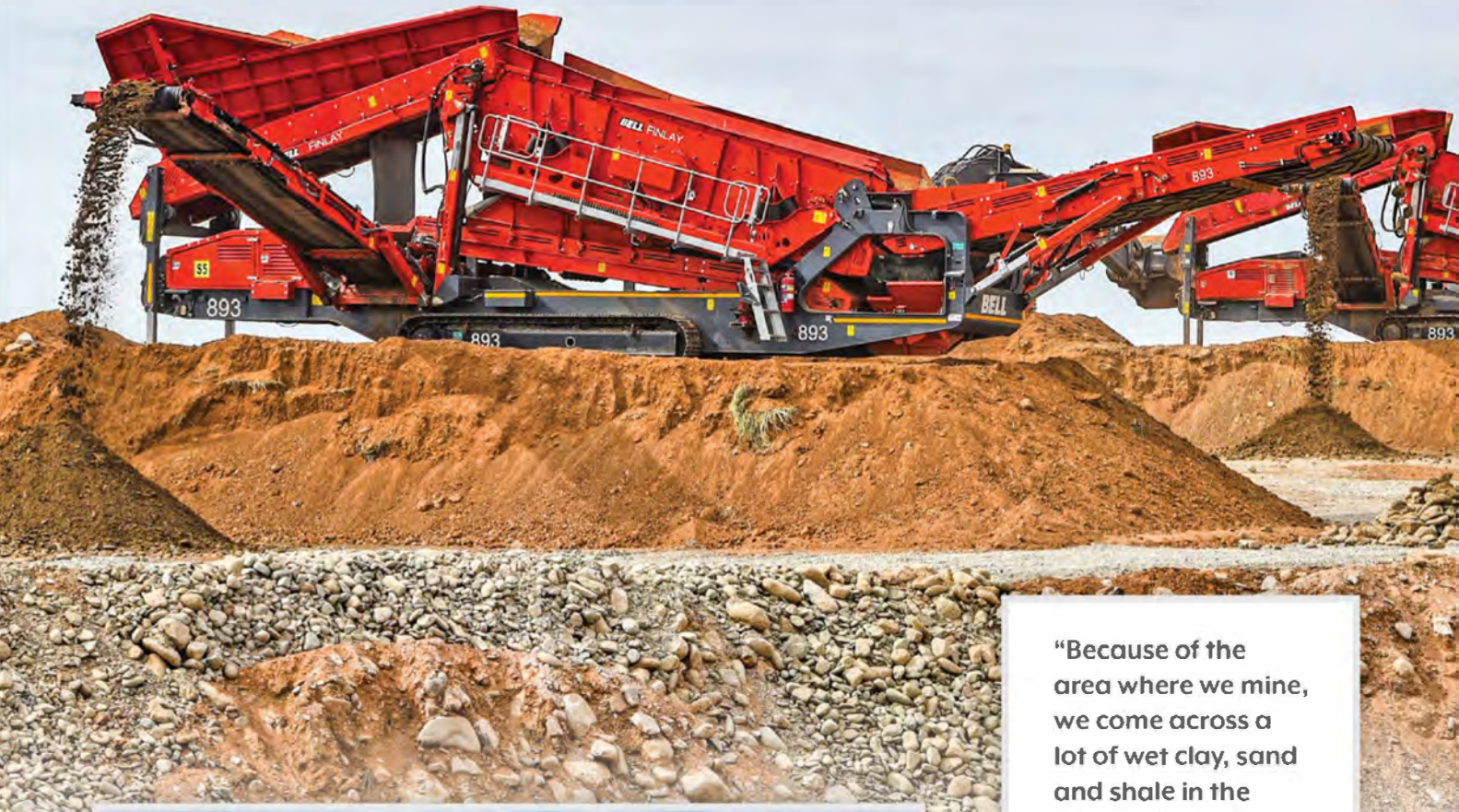
**4. Fuel efficiency report**

Using data from the CareTrack telematics system, Volvo Fuel Efficiency Reports are a valuable tool to help customers maximise the fuel efficiency of their machines. Sensors on the machine monitor fuel consumption and reports are automatically compiled by Volvo's pre-defined algorithms, presented in an easy to read PDF. The customer doesn't need to waste time analysing confusing data but can instead quickly and clearly identify areas where fuel efficiency can be improved, set targets and monitor progress.

**5. Eco Operator training**

The Volvo Eco Operator training helps experienced operators to understand ways in which they can operate the machine more efficiently. The programme focuses on fuel consumption while idling, planning the most effective ways to work and correct machine operating and manoeuvring. Eco operator training can reduce companies' fuel consumption by up to 50%.

# Finlay, the benchmark in screening




"Because of the area where we mine, we come across a lot of wet clay, sand and shale in the diamond-bearing gravels, but we can throw anything at these Finlays and they separate what we don't want from that which goes to the plant – they are simply amazing,"
*Schalk Steyn, owner of Steyn Diamante.*

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