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LIEBHERR PR 776 GAINS A STRONG GLOBAL FOOTHOLD

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www.crown.co.za

Printed by Tandym Print

Total circulation Q2 2020: 6 545

PLACING TOTAL COST OF OWNERSHIP IN YOUR HANDS

When times are this tough, price tends to be the principal determinant of whatever we buy. In a difficult economy, understandably, capital isn't always available, and procurement decisions are forcibly taken based on capital cost, without necessarily factoring the 'hidden' lifecycle ownership costs.

Total cost of ownership is no new term, but what does it mean for cash-strapped capital equipment owners who need to make wise decisions on their capital equipment purchases? Are you looking at the bigger picture, or just the upfront cost?

Ongoing costs after you have written the cheque for that piece of equipment are just as important, if not principal, as the purchase price. However, for certain asset acquisitions, purchase price and ownership cost can be very different.

It is for this reason that a TCO analysis should be done to uncover both the obvious costs and the hidden costs of ownership. TCO highlights the difference between purchase price and long-term costs. There is actually a general school of thought that owning the equipment could cost between five and eight times the purchase price, if not more.

As you will see in this edition of Capital Equipment News, 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 could actively reduce their total cost of ownership across earthmoving equipment and trucks by using modern load weighing technologies 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 tonne 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.

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.

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.

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.

Modern onboard weighing systems 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.

Once productivity benchmarks are set, fleet managers can customise the load weighing 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.

Munesu Shoko – Editor

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LIEBHERR PR 776 GAINS A STRONG GLOBAL FOOTHOLD

Having made its global debut in April 2016, Liebherr's PR 776 – which set a new benchmark four years ago by being the first dozer in the 70 t class to be hydrostatically driven – has established itself as the most efficient mining dozer in its size class. The machine has enjoyed a fast growing global population, with 100 units commissioned to date, eight of which are operating in South Africa, writes *Munesu Shoko*.

When Liebherr launched its PR 776 dozer at bauma Munich 2016, not only did the machine allow the company to compete in the 70 t crawler dozer league for the first time, but also set a new standard with a hydrostatic transmission for a machine in this size class.

Four years on, the machine has established itself as the most efficient mining dozer in the 70 t class, an attribute that is substantiated by a fast growing population of 100 units commissioned across global sites to date, amassing a combined total of 760 000 operating hours in the process. The majority of these units are operating in coal, with all the eight in South Africa deployed at coal mines.

The first prototype unit to arrive in South Africa was put through its paces by multi-disciplinary contractor Liviero at Vanggatfontein Colliery, some 16 km south-east of Delmas in the Mpumalanga region, where Liviero Mining was at the time working in partnership with Keaton Energy. Capital Equipment News attended the official handover of the machine in March 2016.

At this particular site, coal had to be dozed accessibly for the backhoe excavators which fed the haul trucks supplying two coal washing plants. The 100 t washing plant produced duff, peas and nuts. Duff is used for producing charcoal, whereas coal peas and nuts are used for generating thermal energy. The 500 tph plant produced thermal coal for Eskom.

The Liviero management was approached by Liebherr-Africa with regards to having the first Liebherr PR 776 in the country on its mining site, where it was measured against a large fleet of competitor machines. Since then, this particular unit has amassed in excess of 12 000 operating hours, with no issues, at an average rate of 4 500 to 5 000 hours a year.

Fuel consumption figures collected to date indicate that the PR 776 is averaging fuel consumption of around 38 ℓ per hour across global sites, achieved through the infinitely variable hydrostatic travel drive, along with continuous technical upgrades in recent years. This is a huge improvement on the initial consumption figures recorded on the first prototype machine to arrive in South Africa back in 2016, which, according to LiDAT, the comprehensive data collection and

The principal benefit of a hydrostatic transmission on a dozer is the absence of gears, resulting in seamless operation, uninterrupted power flow and infinitely variable speed control.

QUICK TAKE

When Liebherr launched its PR 776 dozer in 2016, not only did the machine allow the company to compete in the 70 t crawler dozer league for the first time, but also set a new benchmark with a hydrostatic transmission for a machine in this size class

PR 776 DOZER LAUNCHED IN 2016

Four years on, the machine has established itself as one of the most efficient mining dozers in the 70 t class, an attribute that is substantiated by a fast growing population of 100 units commissioned across global sites to date

A FAST GROWING POPULATION OF 100 UNITS COMMISSIONED ACROSS GLOBAL SITES TO DATE

2016 — FOUR YEARS ON — 2020

The first PR 776 to arrive in South Africa in 2016 was a prototype unit which was put through its paces by multi-disciplinary contractor Liviero at Vanggatfontein Colliery. The unit has amassed 12 000 operating hours to date, with no real issues, at ana average rate of 4 500 to 5 000 hours a year

Powered by the Liebherr V12 diesel engine delivering 440 kW (598 hp) in forward travel mode, and 565 kW (768 hp) in reverse travel mode to keep cycle times as short as possible, the 73 t dozer is a perfect fit for mining and large-scale quarrying environments

tracking system made by Liebherr, averaged roughly 41 ℓ per hour. This figure was considered very efficient by Liviero at the time, compared with competitor machines that were on site.

Machine in detail

Powered by the Liebherr V12 diesel engine delivering 440 kW (598 hp) in forward travel mode, and 565 kW (768 hp) in reverse travel mode to keep cycle times as short as possible, the 73 t dozer is a perfect fit for mining and large-scale quarrying environments. The large operating weight is complemented by larger blade capacities of 18,5 m³ (semi U-blade) or 22 m³ (U-blade).

The PR 776's 73 t operating weight, says Tendayi Kudumba, GM Earthmoving Technology (EMT) at Liebherr-Africa, is a great improvement on the predecessor model, the PR 764, which weighs in at 52 t.

The machine's competitive edge is its hydrostatic travel drive, which sets it apart in this size class. The same drive concept is already used on all Liebherr's crawler dozers, but generally hydrostatic transmissions are common in the under 130 hp class. For anything above 160 hp, most other OEMs switch to the torque converter or mechanical drives. Liebherr's line-up is 100% hydrostatic right up to its biggest offering, the PR 776.

The principal benefit of a hydrostatic transmission on a dozer is the absence of gears, resulting in seamless operation, uninterrupted power flow and infinitely variable speed control.

In split dozing applications, the benefits of a hydrostatic driven dozer are well documented, states Kudumba. "The hydrostatically driven dozer automatically slows down as the blade loads up and gains momentum as the load sheds off. Because the operator doesn't have to shift gears, there isn't the usual slight loss of momentum due to the shift," he says.

The hydrostatic drive concept also offers the benefit of dynamic braking. By simply easing off the travel joystick deflection, hydraulic pressure within the system brings the machine to a complete halt. The PR 776, adds Kudumba, doesn't come with a braking system to turn. In live power turns, even when pushing a full blade of material, the hydrostatic drive guarantees uninterrupted performance within the turn.

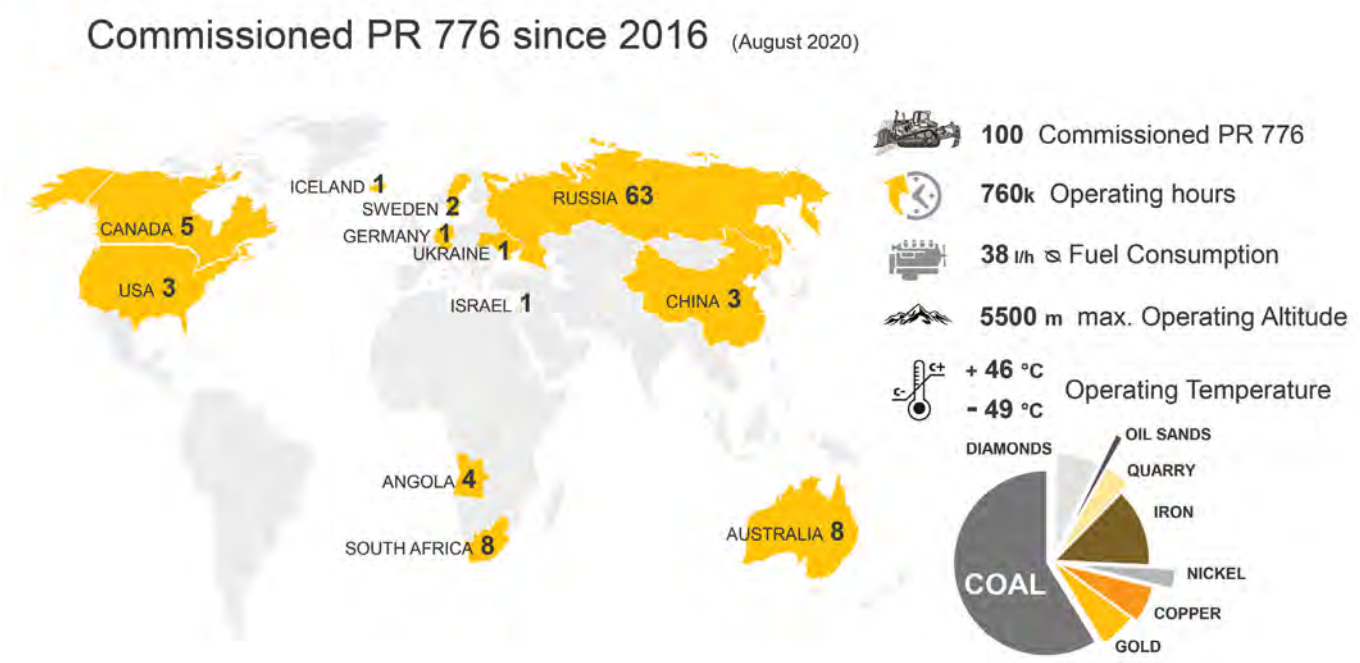
On slopes, the system also ensures that the machine doesn't roll backwards. Unlike torque converter driven counterparts, which not only have a deceleration pedal, but also come with a brake pedal that requires the attention of two feet, the hydrostatically driven PR 776's travel operation is via a joystick and the inching pedal is a safety system which has been built into the machine as well as being a real advantage in push over operations.

Another big plus of the hydrostatic drive concept is the optimisation of pressure flow, says Kudumba, noting that hydraulic servo pressure is based on-demand according to the task at hand. If, for example, the full feed of pressure is not required when operating, it is automatically returned, providing sound fuel savings in the process.

Another key advantage of the hydrostatic drive is that when working in restricted spaces, it offers the crawler dozer sound manoeuvrability with continuous power on both tracks.

The first PR 776 to arrive in South Africa was handed over to Liviero Mining in 2016. Pictured with the machine (from left) are Louis du Plessis (Liviero), Tendayi Kudumba (Liebherr-Africa), Richard Edwards (Liebherr-Africa) and Nehan Deysel (Liviero).

Key advantages offered by the PR 776.



According to the Parkerbay Data Statistics, the PR 776 has acquired a 10% market share average over the above mentioned countries since 2016.

Optimal performance

Like all other Liebherr crawler dozers, the PR 776 also comes with the ECO function as standard, which allows the operator to choose between high performance and maximum efficiency for a particular task, providing greater fuel savings.

An additional fuel saving feature is the proactive power control system, fitted standard on all Liebherr's 6th Generation crawler tractors. Internal engine and external machine parameters are recorded, such as the current deflection of the joystick. If needed, the engine power is automatically increased for a brief moment based on the current requirement. In addition to responding more rapidly, this is said to offer the machine a significant increase in performance potential and pulling power, as well as a higher reverse speed.

The Liebherr engine management system, Liebherr Power Efficiency System and the hydrostatic driveline, work in union to allow for mastering and optimisation of all equipment systems and processes to maintain constant engine speed, increase overall machine efficiency and significantly reduce fuel consumption.

Operator in mind

In the past, dozers had a reputation for being one of the more difficult earthmoving machines to master. However, today with the right technology, the dozer has become one of the easiest machines to steer around. A case in point is the new Liebherr PR 776, which Kudumba notes comes with a host of features aimed at operator comfort. This minimises operator stress and strain, translating into better productivity.

"Traditionally dozers are infamous for being one of the most difficult, if not tedious, earthmoving machines to master. But, the introduction of the hydrostatic drive concept has turned what was previously a bucking mule of a machine into a smooth operator," he says.

One of the focal design points of this machine is simple and safe operation. The single multifunction joystick has all operating and steering functions at the palm of the operator's hand, with only one electronic input element. This operating concept was rigorously tested by Liebherr-Werk Telfs and is a notable innovation for the 70 t size class, especially in mining

applications where long working hours are the order of the day.

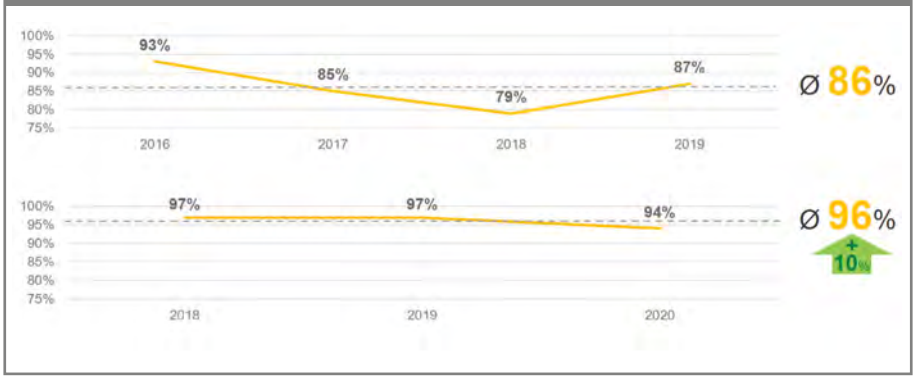
The PR 776 offers a great working environment for the operator as all controls and instruments are carefully arranged for easy access. All key functions and machine settings can be adjusted via the touchscreen display, such as ECO function parameters, automatic engine speed reduction, travel drive response and steering, as well as standard safety functions such as the rear view camera.

For safety reasons, the design of the operator cab offers all-round visibility of the worksite, blade and rear ripper. This is complemented by an optional GPS navigation system which allows for easy visualisation of both work progress and the surrounding. Meanwhile, forward visibility is completely unobstructed as the exhaust system and lifting rams are positioned behind the A-pillars. The side view of the working area is also clear and unobstructed by the extended work platform. ✪

IMPROVED AVAILABILITY

The following diagrams present the availability increase through the implementation of technical upgrades on two PR 776 mining dozers, operating in the same application and at the same customer. Both dozers are pushing on a waste dump, working on average 20 hours per day and featuring an average fuel burn of 40 litres per hour over their lifetime.

The first diagram shows the machine availability (over 4 years) for which the technical upgrades have been retrofitted in 2018. The second diagram shows the machine availability (over 2 ½ years) for which most technical upgrades have already been incorporated prior its commissioning in 2018 resulting in a 10% availability increase.



With the Mercedes-Benz GenH2 Truck Daimler Trucks presents its concept for a fuel cell powered long-haul vehicle for flexible and demanding operations in terms of routes, distances and payload.

DAIMLER'S ROAD TO A CARBON-NEUTRAL TRANSPORT FUTURE

Truck manufacturer Daimler Trucks has presented its technology strategy for the electrification of its vehicles, ranging from urban distribution to long-haul transport, thus reaffirming its commitment to a carbon-neutral transport future, writes *Munesu Shoko*.

Reaffirming its commitment to the goals of the Paris Climate Protection Convention, Daimler Trucks has outlined its plans for the electrification of its trucks. Speaking at the recent premiere of alternative drive concepts from Mercedes-Benz – the GenH2 Truck, the eActros LongHaul and the eActros – Martin Daum, chairman of the board of management of Daimler Truck AG and member of the board of Daimler AG, noted that shaping CO_2-neutral is a task for society as a whole. "It is a task that is close to my heart and one which we at Daimler Trucks & Buses are fully committed," says Daum.

The Mercedes-Benz GenH2 Truck, which on September 16 had its world premiere as a concept vehicle, marks the beginning of fuel-cell drive. With the GenH2 Truck, Daimler Trucks is demonstrating for the first time which specific technologies the manufacturer is driving forward at full speed so that heavy-duty fuel-cell trucks can perform flexible and demanding long-distance haulage operations with ranges of up to 1 000 km and more on a single tank of hydrogen.

Daimler Trucks plans to begin customer trials of the GenH2 Truck in 2023; series production is to start in the second half of the decade. Thanks to the use of liquid instead of gaseous hydrogen with its higher energy density, the vehicle's performance is planned to equal that of a comparable conventional diesel truck.

Daimler Trucks also used the event to present for the first time a preview of a purely battery-powered long-haul truck, the Mercedes-Benz eActros LongHaul, which is designed to cover regular journeys on plannable routes in an energy-efficient manner. Daimler Trucks plans to have the eActros LongHaul ready for series production in 2024. Its range on one battery charge will be approximately 500 km.

Additionally, with the Mercedes-Benz eActros for distribution transport, which was already presented in 2018 and has been tested intensively since then by customers in everyday transport operations, Daimler Trucks will start series production of a purely battery-powered heavy-duty truck next year. The range of the series-produced eActros on one battery charge will significantly exceed that of the prototype's approximately 200 km.

As a new worldwide modular platform architecture, the so-called ePowertrain will be the technological basis of all

For the first time, Daimler Trucks has presented a preview of its purely battery-powered long-haul truck, the Mercedes-Benz eActros LongHaul.

medium- and heavy-duty CO_2-neutral, all-electric series-produced trucks from Daimler Trucks – whether powered purely by batteries or by hydrogen-based fuel cells. It will feature high levels of performance, efficiency and durability. With the ePowertrain, Daimler Trucks plans to achieve synergies and economies of scale for all relevant vehicles and markets.

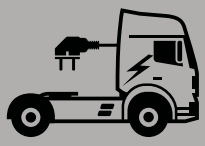
"We are consistently pursuing our vision of CO_2-neutral transport with a focus on the genuinely locally CO_2-neutral technologies battery power and hydrogen-based fuel cells, which have the potential to succeed in the market in the long term. This combination enables us to offer our customers the best vehicle options, depending on the application. Battery power will be rather used for lower cargo weights and for shorter distances. Fuel-cell power will tend to be the preferred option for heavier loads and longer distances," explains Duam.

"Our customers make rational purchasing decisions and are unwilling to compromise on their trucks' suitability for everyday use, tonnage and range. With our alternative drive concepts from Mercedes-Benz – the GenH2 Truck, the eActros LongHaul and the eActros – and our electric trucks of the Freightliner and FUSO brands, we have a clear focus on customer requirements and are creating genuine locally CO_2-neutral alternatives for them," he says.

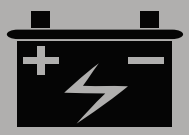
"We have now set out the key technological specifications of our electric trucks so that the requirements are known to everyone involved at an early stage. It is now up to policymakers, other players and society as a whole to provide the right framework conditions. To make CO_2-neutral all-electric vehicles competitive, regulatory and government action is needed, including the necessary infrastructure for charging with green electricity and for the production, storage and transport of green liquid hydrogen," adds Daum.

QUICK TAKE

The Mercedes-Benz GenH2 Truck, which on September 16 had its world premiere as a concept vehicle, is a fuel-cell truck with a range of up to 1 000 km and more for flexible and demanding long-haul transport. Customer trials will start in 2023, and start of series production is expected in second half of this decade



The Mercedes-Benz eActros LongHaul is a battery-electric truck with a range of about 500 km for energy-efficient transport on plannable long-haul routes. It is projected to be ready for series production in 2024



The Mercedes-Benz eActros, a battery-electric truck with a range of well over 200 km for heavy urban distribution, will go into series production in 2021

RANGING OVER 200 KM FOR HEAVY URBAN DISTRIBUTION

As a new worldwide modular platform architecture, the ePowertrain will be the technological basis of all medium-and heavy-duty CO_2-neutral, all-electric series-produced trucks from Daimler Trucks – whether powered purely by batteries or by hydrogen-based fuel cells

The heavy, battery-electric eActros has been in intensive customer testing since 2018.

GenH2 Truck in detail

Development engineers at Daimler Trucks have based the GenH2 Truck on the capabilities of the conventional Mercedes-Benz Actros long-haul truck as far as tractive power, range and performance are concerned. For example, the series-production version of the GenH2 Truck is to have a gross vehicle weight of 40 t and a payload of 25 t.

Two special liquid-hydrogen tanks and a particularly powerful fuel-cell system will make this high payload and long range possible, and therefore form the core of the GenH2 Truck concept. Daimler experts can draw on existing expertise for the development of liquid-hydrogen tanks, and they are also cooperating closely with a partner.

With regards to fuel cells, the manufacturer benefits from its experts' decades of experience, in terms of technology as well as production methods and processes. This represents an enormous advantage. In April this year, Daimler Truck AG concluded a preliminary, non-binding agreement with the Volvo Group to establish a new joint venture for the development to series maturity, production and commercialisation of fuel-cell systems for use in heavy-duty commercial vehicles and other applications.

Joining forces will decrease development costs for both companies and accelerate the market introduction of fuel cell systems. The joint venture is to benefit from the expertise of Daimler Truck AG and the Volvo Group. To facilitate the joint venture with the Volvo Group, Daimler Truck AG has brought together all group-wide fuel-cell activities in the newly founded subsidiary Daimler Truck Fuel Cell GmbH & Co. KG.

Daimler Trucks prefers to use liquid hydrogen (LH2), because in this state, the energy carrier has a far higher energy density in relation to volume than gaseous hydrogen. As a result, the tanks of a fuel-cell truck using liquid hydrogen are much smaller and, due to the lower pressure, significantly lighter. This gives the trucks a larger cargo space and higher payload weight. At the same time, more hydrogen can be carried, which significantly increases the trucks' range. This makes the series GenH2 Truck, like conventional diesel trucks, suitable for multi-day, difficult to plan long-haul transport and where the daily energy throughput is high.

Daimler Trucks is currently pressing ahead with the development of the necessary tank system technologies to make liquid hydrogen usable also in mobile applications as an energy source for series-produced fuel-cell trucks. The storage of cryogenic liquid hydrogen at -253° C is already common practice in stationary applications, for example in industry or at hydrogen filling stations. This also applies to the transport of liquid hydrogen as cargo.

Interaction between battery and fuel-cell systems

The two stainless-steel liquid-hydrogen tanks intended for the series version of the GenH2 Truck will have a particularly high storage capacity of 80 kg (40 kg each) for covering long distances. The stainless-steel tank system consists of two tubes, one within the other, that are connected to each other and vacuum-insulated.

In the series version of the GenH2 Truck, the fuel-cell system is to supply 2 x150 kW and the battery is to provide an additional 400 kW temporarily. At 70 kWh, the storage capacity of the battery is relatively low, as it is not intended to meet energy needs, but mainly to be switched on to provide situational power support for the fuel cell, for example during peak loads while accelerating or while driving uphill fully loaded. At the same time, the relatively light battery allows a higher payload. It is to be recharged in series-production vehicles with braking energy and excess fuel-cell energy.

A core element of the sophisticated operating strategy of the fuel-cell and battery system is a cooling and heating system that keeps all components at the ideal operating temperature, thus ensuring maximum durability. In a pre-series version, the two electric motors are designed for a total of 2 x 230 kW continuous power and 2 x 330 kW maximum power. Torque is 2 x 1577 Nm and 2 x 2071 Nm respectively.

Mercedes-Benz eActros LongHaul

The Mercedes-Benz eActros LongHaul battery-powered long-haul truck will be in the same vehicle class as the GenH2 truck. Its features will be largely identical to those of the series produced GenH2 Truck or a conventional diesel truck. The comparatively short range of the eActros LongHaul on one battery charge is offset by its high energy efficiency, as battery electric drive has the highest efficiency among alternative drive systems.

This offers transport companies significant advantages in the application scenarios envisaged for the eActros LongHaul due to its low energy costs. Many of the long-haul applications in the practical operations of transport companies do not require a range greater than the approximately 500 km that the eActros LongHaul will be able to cover on one charge.

In addition, legal requirements regarding truck drivers' driving times limit the need for longer ranges, depending on the case. In the EU, for example, truck drivers have to take a break of at least 45 minutes at the latest after 4,5 hours of driving. During this time, thanks to the latest charging technology, the battery can be charged with a large proportion of the energy needed for the ongoing journey. The eActros LongHaul will therefore be the right choice for transport companies for regular use on plannable routes and with the appropriate distances and charging possibilities.

With its market launch in the middle of the decade, the eActros LongHaul will be available some time before the GenH2 Truck. The required infrastructure can also be set up sooner – and at comparatively low cost – by the transport companies themselves for charging at their depots. This so-called depot charging is the most important step for the use of the eActros LongHaul, and means that the first areas of application can already be covered.

Another key component is opportunity charging for range extension, for example, while unloading or loading when the electric truck is anyway stationary. In the future, public charging at publicly accessible stations along main transport routes will also become increasingly important

In front of the Mercedes-Benz GenH2 Truck (from left to right): Sven Ennerst, Martin Daum, Andreas Scheuer and Stefan Buchner.

– a nationwide charging infrastructure will maximise the operating range of battery-electric trucks. New, more durable batteries will also contribute to the competitiveness of batteryelectric trucks, reducing total cost of ownership over a vehicle's lifecycle.

Mercedes-Benz eActros

At the International Commercial Vehicles Show in 2016, Daimler Trucks was the first manufacturer worldwide to present a heavy-duty electric truck. In early 2018, Daimler Trucks celebrated the world premiere of the further developed Mercedes-Benz eActros, and intensive practical tests have been taking place with customers since the fall of 2018.

Since then, findings from customer testing have flowed directly into the further development of the prototype into a series-production vehicle. So far, they have shown that the purely battery electric eActros is outstandingly suited for sustainable heavy-duty distribution transport. It is in no way inferior to a conventional diesel truck in terms of availability and performance.

However, the series-production eActros will be significantly superior to the current prototype in some aspects, such as range, drive power and safely. The series-production eActros will be on a par with a conventional Actros also in terms of payload. The eActros will be launched as a two-axle and three-axle truck.

Daimler Trucks will embed the vehicle in a holistic ecosystem that includes consulting services for electric mobility, such as analysing routes, checking possible subsidies, supporting operational fleet integration and developing suitable charging infrastructure solutions.

The 205NXT tracked excavator from JCB.

THE 20 – 25 T EXCAVATOR: A VERSATILE WORKHORSE HERE TO STAY

The 20 to 25 tonne class excavator is one of the most popular size classes. With operating costs a key focus, today's contractors need maximum usage to remain profitable, which means machines are often applied outside their normal application range. This feature explores the advances in design and technology in this size class and looks at what to expect in this market segment in the near future. By *Mark Botha.*

A key aspect of hydraulic excavators in the 20 to 25 tonne (t) range is their ability to be deployed across applications, made possible by recent developments in design and technology such as CAT's 2D CAT Grade; Assist; E-fence and Payload, and Operator ID, designed to offer clients versatility, efficiency and safety, says Hugo van der Walt, GCI product manager at CAT distributor, Barloworld Equipment.

HPE Africa, a reseller of Hyundai excavators, has on offer in this weight class the 21,2 t 210 Smart; the R220LC-9S (21,9 t) and the 25,2 t R260LC-9S, all with 600 mm triple grouser.

According to Ross Collard, the company's MD, the 210 Smart features Hyundai's computer-aided power optimisation (CAPO) technology for improved fuel efficiency, as well as hydraulic flow summation and regeneration to ensure faster cycle times. He says this series is sold with additional bucket link reinforcement to support bucket dig and arm crowd forces. Fuel efficiency is further boosted by an upgraded circuit design, sensor controls and advanced hydraulics for variable load sensing.

The water-cooled, four-cycle, six cylinder in-line, direct-injection turbocharged diesel engine is designed for power, efficiency and reduced emissions. The hydraulics system provides a wide range of flow at various workloads, to optimise productivity.

Collard says the R220LC-9S and R260LC-9S from Hyundai feature a computer-aided power machine-management optimisation system, whereby the operator can set preferences for boom or swing priority, power mode selection and optional work tools.

JCB GM Andrew Boyers says the 205NXT tracked excavator boasts an "array of upgrades" over its predecessor, the JS205. "The 20 t model is available in Africa and the Middle East and, with its electrical and hydraulic upgrades, is perfectly equipped to serve these markets."

He says the 205NXT now features the IntelliControl system which offers improved fuel efficiency and productivity.

"The electrical upgrades associated with IntelliControl have seen the introduction of an optional rear-view camera, helping to make this machine a safe solution on any site, especially when considering the high levels of cab visibility."

A new display and control panel has been added to facilitate the IntelliControl system, which includes an electric throttle to control engine revolutions to suit the application.

"The electric rotary throttle has replaced the outgoing models' cable-controlled throttle, and now offers a Power Plus mode to allow for maximum productivity levels, particularly in heavy-duty cycles."

IntelliControl and the new display provide the 205NXT with a self-diagnosis system with error codes and multi-coloured warning alerts for quick maintenance.

In 2016, Liebherr Africa launched its R 920, R 922 and R 924 crawler excavators at the bauma trade fair. These models are designed specifically for low regulated countries. The company

Liebherr's R920 crawler excavator.

QUICK TAKE

A key aspect of hydraulic excavators in the 20 to 25 t range is their ability to be deployed across applications

While reduced or zero tail-swing can assist customers working in urban areas or operators working in tight spaces, this design approach will only play an increasing role as urbanisation continues apace

The operator plays a huge role when it comes to the total cost of owning an excavator

Any business running large machinery must trust its operators to maximise productivity and minimise fuel consumption where appropriate

proposes a range of tools suitable for every type of application. These tools, says Liebherr-Africa GM for Earthmoving Technology Tendayi Kudumba, are designed for maximum productivity and durability.

"The modular quick-change system by Liebherr is a digging tool suitable for every application. It pays for itself very quickly and your machine becomes a multifunctional tool carrier," he says.

"We also adapt our machines to the application with a large range of sticks, buckets and different pad widths adapted to the ground."

The models feature as standard a 3-point manual lubrication system which allows for daily lubrication of elements and reduction of machine downtime. The optional automatic lubrication system provides only the required amount of grease to the various components and increases their lifetime while avoiding spillage and waste. A rear-view monitoring camera option provides visibility and improved operating safety.

"Maximum digging and break-out forces can be reached thanks to the level of hydraulic pressure without applying temporary overpressure. Maximum forces are therefore guaranteed continuously during the whole working phase to achieve a high level of production," says Kudumba.

He says equipment speed is optimised through an integrated regeneration circuit and the hydraulic cylinders are equipped with a special seal system and shock protection. Bottom protections for stick and boom are optional and safety check valves and an overload warning device are available for lifting operations.

Hydraulics

When asked about new developments in terms of hydraulics, Boyers says that, in principle, JCB's 205NXT has carried over the proven hydraulic system of the JS205, with enhancements to improve productivity and ease of use.

"The new 7-inch display now uses a multi-colour breaker symbol to indicate breaker operation abuse, with green indicating appropriate use and red indicating attachment abuse. This new feature helps to increase the attachment and machine life by mitigating the risks associated with excessive breaker usage."

Barloworld Equipment's Van der Walt says some of the biggest changes that have been made on the next-generation CAT excavators are in the hydraulic system.

"The electro-hydraulic system not only assists with less piping and hoses which are wearable parts, but also assists with accuracy. This system allows the operator to use various attachments with precision while reducing fuel consumption without sacrificing the performance of the machine."

The CAT 320, 320GC and 323 come standard with a hammer return filter and a combined hydraulic system which allows for two-way, high pressure flow – a requirement for the use of most attachments. The hydraulic system, which can be set up specifically with each CAT attachment, provides various functions.

"For example," says Van der Walt, "when using a hammer on our excavators the system will warn the operator on-screen after 15 seconds of hammer activation and will stop automatically when exceeding 30 seconds. This ensures best operating practices and will maximise uptime while preventing the

The CAT 320 and 323 Performance models are sold with the CAT Grade 2D system as standard.

"Inexperience and negligence can cost your company a lot of money, but with the technology in our next generation CAT excavators, you could potentially see an increase of around 45% in operator efficiency, and fuel consumption reduced by up to 20%."

Hugo van der Walt, GCI product manager, Barloworld Equipment

"The 210 Smart features Hyundai's computer-aided power optimisation technology for improved fuel efficiency."

Ross Collard, MD of HPE Africa

"Excavators in the 20 – 25 t range will be available on the market for a long time. We have an ongoing improvement programme to solve any small problems that may appear. We are currently working on the introduction of a new cab and LED headlights."

Tendayi Kudumba, GM: Earthmoving Equipment at Liebherr Africa

TALKING POINTS

hammer from overheating, eliminating work tool deformation, among others."

He says Barloworld Equipment also offers medium pressure systems where customers require advanced attachments such as grapples, multi processors and tilt rotator couplers. All of these attachments are available from Caterpillar.

HPE Africa's Collard says the 210 Smart Hyundai excavator features a variable displacement axial piston type hydraulic pump with an electro-hydraulic control function which provides a wider range of flows at different workloads.

Improvements in the hydraulic systems of the OEM's models R220LC-9S and R260LC-9S are numerous but include a new, patented hydraulic control; an upgraded control valve design; a new auto boom and swing priority system, as well as a new auto power-boost feature for additional power when needed.

Kudumba refers to Liebherr's new positive control hydraulic system as an example of a development on the hydraulics front. He says the system features two working pumps to provide power for maximum excavation, travel or swing efficiency. With the system, the combined movements are optimised for operations ranging from levelling to extraction, loading and lifting, either with or without travel.

He says ergonomic proportional joysticks enable the operator to control the Liebherr hydraulic system "intuitively" and are ideal for machines used in a variety of applications.

Reduced and zero tail-swing

On the subject of reduced or zero tail-swing in excavator designs, Kudumba says that this design was not requested by the market during the development phase of Liebherr's machines.

"The supply and demand for this type of machine is still quite marginal today," he says.

Barloworld Equipment's Van der Walt agrees. He says that, while reduced or zero tail-swing can assist customers working in urban areas or operators doing demolition-type work where space is limited, this design approach will play an increasing role in the future as urbanisation continues.

Boyers from JCB also refers to urbanisation when it comes to the uptake of tail-swing units: "Rapid urbanisation has seen an increase in demand for reduced tail-swing excavators, which is an appropriate solution on congested work sites."

Although these machines can work in more congested areas, he says, reduced or zero tail-swing often comes at the expense of visibility and performance. The company's 205NXT therefore features an optional rear-view camera to improve visibility.

Innovations

The operator plays a huge role when it comes to the total cost of owning an excavator, says Van der Walt. Operator safety is paramount, which is why Caterpillar's next-generation excavators come standard with key safety features such as a roll-over protective structure (ROPS) cab and fully integrated rear-view camera as standard.

"Inexperience and negligence can cost your company a lot of money, but with the technology in our next generation

The Hyundai 210 Smart features computer-aided power optimisation technology for improved fuel efficiency.

CAT excavators, you could potentially see an increase of around 45% in operator efficiency, and fuel consumption reduced by up to 20%."

He says the CAT 320 and 323 Performance models are sold with the CAT Grade 2D system as standard to help the operator reach the desired grade faster.

"The CAT Grade assists with automated boom, stick and bucket movements which will deliver more accurate cuts with less effort. The E-Fence system will assist the operator to set up a safe work zone and allow them to enable a cab collision avoidance function. This prevents the attachment from striking the cab."

The 8-inch, tablet-style display features warnings, alerts, Bluetooth connectivity and multiple operator profiles that can be set up for each operator and their specific needs, among others.

"The new smart mode power setting automatically adjusts engine and hydraulic power for the highest fuel efficiency and performance."

All these features, says Van der Walt, assist the operator to be productive and comfortable at the same time.

Hyundai's 210 Smart excavator available from HPE Africa also considers the operator, with ergonomically placed controls, a spacious, air-conditioned cabin and a fully-adjustable seat. Cabin roof lights provide enhanced visibility and enable the operator to work at night.

The R220LC-9S and R260LC-9S from Hyundai also improve visibility, through a larger right-side window glass. Safety glass windows on all sides is less expensive than polycarbonate and won't scratch or fade. The models also feature a sunshade for operator convenience, and a reduced front window seam for improved operator view.

New steel tube cab construction allows for increased operator safety and the improved control assembly includes ergonomic joysticks with auxiliary control buttons for attachment use.

JCB's Boyers says any business running large machinery must trust their operators to maximise productivity and minimise fuel consumption where appropriate.

"With this in mind," he says, "JCB's 205NXT features the IntelliControl system, which enables operators to experience excellent fuel efficiency and productivity. In fact, the 205NXT offers up to 32% in fuel savings."

He says these savings are achieved by means of the ecoHYDRAULICS system, which minimises hydraulic losses and so results in enhanced fuel efficiency.

"The new auto- and one-touch idler systems reduce engine RPM when the machine is not at work, so contributing to fuel savings. The one-touch idler enables the operator to reduce engine RPM manually to an idle state, at the push of a button."

IntelliControl can also provide service alert and maintenance warnings through a new 7-inch display. As a result, says Boyers, operators can remain aware of any machine health issues and upcoming service intervals.

"Fundamentally, one of key benefits of such alerts is a reduction in total cost of ownership, as the likelihood of operators running the machine in spite of overdue service intervals and damaged parts is significantly reduced."

The R 920, R 922 and R 924 crawler excavators from Liebherr Africa come with a mechanical suspension seat, enlarged space and a "very comfortable working environment", says Kudumba.

"This seat offers comfort thanks to air suspension, several horizontal and vertical settings, and adjustable pneumatic lumbar support.

"The acoustic power inside the operator's cab is one of the lowest on the market to minimise fatigue and increase productivity and the cab is mounted on viscoelastic rivets to minimise vibration." The piping on these machines is also supported by rubber flanges to help reduce external noise.

In terms of visibility, large glazed surface windows provide good visibility from the operator's platform. A wide emergency exit via the rear window provides for operator safety.

"The proportional joysticks on these machines are finely tuned for sensitive, accurate and fluid machine operation."

Future developments

Barloworld Equipment's Van der Walt reiterates that a key requirement from customers working with excavators in the 20 to 25 t rage is to maximise the use of the machines while keeping the operating cost to a minimum.

"Caterpillar works continuously on ways to achieve this. For example, on our next-generation excavators, the service intervals have been extended significantly – in many cases, by 100% – while eliminating parts and components which, on previous models, needed regular maintenance.

He says work is underway on new technologies such as equipment automation and remote operations to make the customer's operations safer, more profitable and sustainable.

"It is possible, today, to operate Cat equipment remotely, from any part of the world. For example, we have had trucks on mining sites hauling completely autonomously for over seven years. Some 65-million km of haulage has been done without any safety incidents and with 30% more productivity, compared to manned operations."

"As we have already seen in the construction machinery and automotive industries," says JCB's Boyers, "there is a push for a zero-emissions future, whether by means of electrification, hydrogen, or some other, unexplored methods."

He says JCB recently previewed the construction industry's first-ever hydrogen powered excavator.

"The 20 t 220X excavator, which is powered by a hydrogen fuel cell, has undergone rigorous testing at JCB's quarry proving grounds over a year ago. Such developments reflect the ever-present changes in market dynamics."

Liebherr's Kudumba has the last word: "Excavators in the 20 – 25 t range will be available on the market for a long time. We have an ongoing improvement programme to solve any small problems that may appear. We are currently working on the introduction of a new cab and LED headlights." ✪

Scania places financial agility at the centre of a repurposed value chain.

KEY ISSUES TO CONSIDER WHEN BUYING PRE-OWNED TRUCKS

In tough economic times, fleet owners often turn to used trucks to service their few contracts. This feature explores the advantages of taking the used route and highlights some of the issues that buyers should be aware of. By *Mark Botha.*

Asked about the effects of the current financial climate on the truck industry, Scania GM Used Vehicles Harold Donachie says fleet managers are feeling the impact of tough trading conditions as "challenging economic realities bite".

Heavy duty truck operators, he says, have always had a cost-saving focus, but many must make this their top priority now, in the midst of a cash-flow crisis.

"South Africa's logistics sector contributed some 48% to total GDP in 2019 and therefore has a direct impact on the growth of the economy. This sector is also integral to business efficiency. With many companies forced to reduce fleet size and staff, business sustainability is under real pressure."

He says increasingly more businesses are taking risks in terms of safety and compliance as they run trucks for longer and defer upgrades while, at the same time, increasing maintenance intervals. This is the result of having to chase short-term revenue as business opportunities shrink and margins tighten.

"During such uncertain economic times, customers may not have confidence in the longevity of contracts or the competitiveness of their businesses, making the purchase of used vehicles attractive. The repayments on used vehicles are lower than those for new vehicles, which alleviates pressure on cash flow at present."

Annelie van Rooyen, head of TruckStore, a division within Daimler Trucks and Buses Southern Africa and part of an international network for used trucks, says

TruckStore is a division of Daimler Trucks and Buses Southern Africa.

the measures implemented to address the COVID-19 health emergency had a severe impact on already-strained businesses in the South African marketplace.

"The impact was felt equally by small and medium-sized enterprises, which are one of the major contributors to the used commercial vehicle market.

"However, we have noticed an increase in sales activities in the used vehicle market space to larger corporate fleets, which could have a negative impact on new vehicle sales volumes in the medium term."

Factors to consider

Donachie says some of the key factors to consider when selecting a used truck include whether the purchase is being made from a reputable organisation and whether sufficient service points are available in the geographical area of operation.

"Other important questions to ask pertain to whether service packages can be purchased to provide peace of mind and whether the service history of the vehicle being purchased is available," he says.

Van Rooyen agrees: "Service records are not always available, which is why TruckStore relies on qualified staff to conduct thorough technical inspections before used trucks are sold."

She says TruckStore pre-owned stock is divided into three categories to indicate the level of testing and refurbishments undertaken.

"Trucks in the bronze category, for example, receive only a technical inspection and basic cleaning. In the silver category, the vehicles undergo refurbishment and are less than six years old while, in the gold category, all the vehicles receive a technical inspection with repairs, services and refurbishments done. These vehicles are less than four years old and come with a manufacturer warranty."

Red flags

Purchasing used trucks is often associated with 'red flags' – warnings of possible pitfalls along the way. Donachie singles out as one such "area of concern" the availability of late model trucks which are on the market at low prices. "The question always to ask is why is the truck so inexpensive," he says.

Van Rooyen advises prospective used truck buyers to ensure that the vehicle is mechanically sound.

"The mechanics of the vehicles should be a priority," she says. "Mechanical soundness lies at the very heart of the TruckStore and Daimler's philosophy."

Reputable supplier

"The service backup offered by the supplier can never be stressed enough," says Donachie. "I would go even further to add the OEM's service and experience as an added advantage when looking at used trucks."

As the providers of the equipment needed to carry the national logistics load, suppliers must recognise the integral part they play in supporting business sustainability and the economy at large.

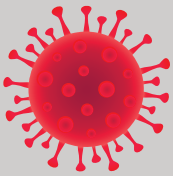
"At Scania, we have placed financial agility at the centre of a repurposed value chain. By repackaging maintenance and repair offerings, bundling essential services and assessing the value chain critically, we have been able to offer our customers cost savings across both our new and used truck offerings".

In the wake of the COVID-19 pandemic, fleet managers and business operators have to investigate alternative cost-saving initiatives over and above the usual total cost of ownership calculations.

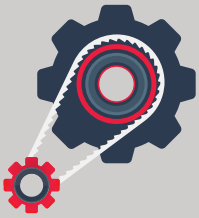
"We realise that business operators need updated technology to be available in the latest truck models to provide

QUICK TAKE

Heavy duty truck operators have always had a cost-saving focus, but many must make this their top priority now, in the midst of a cash-flow crisis



The measures implemented to address the COVID-19 health emergency had a severe impact on already-strained businesses in the South African marketplace



Key questions to ask the used truck dealer include whether service packages can be purchased to provide peace of mind and whether the vehicle's service history is available

Service backup offered by the supplier can never be stressed enough

Scania offers service packages on some products.

TruckStore pre-owned stock is categorised to indicate testing and refurbishments done.

"During such uncertain economic times, customers may not have confidence in the longevity of contracts or the competitiveness of their businesses, making the purchase of used vehicles attractive. The repayments on used vehicles are lower than those for new vehicles, which alleviates pressure on cash flow at present."

Harold Donachie, GM – Used Vehicles at Scania South Africa

"Service records are not always available, which is why TruckStore relies on qualified staff to conduct thorough technical inspections before used trucks are sold."

Annelie van Rooyen, head of Daimler Trucks and Buses' TruckStore division

deeper insight into cost efficiencies.

"Adding better fuel efficiencies and improved performance to a fleet manager's arsenal also helps to win the cost war."

Instead of stripping away value to increase affordability, Scania enters into long-term commitments to the logistics sector which requires affordable access to products and services".

Van Rooyen, too, stresses the importance of providing value to the customer: "Regardless of whether the client is a small business owner or part of a large corporate fleet, it is essential that we provide the right advice and that our offered products will give the customer piece of mind, especially in this challenging business environment."

Buying used: advantages

Donachie says this "challenging business environment" calls for flexible terms to customers, which his company provides through Scania Finance.

"We also offer a range of service packages on certain of the products to provide the customer with peace of mind."

Van Rooyen advises prospective used truck buyers to seek out options where a manufacturer's warranty and service plans are still applicable.

TruckStore offers these benefits on selected vehicles, giving the customer the assurance that the vehicle they are purchasing meets the requirements for certification.

"If reducing financial risk is what you're after," she says, "go for a lower price tag but never sacrifice reliability and overall condition just to get a good deal. Look out for a 'good as new' used truck in excellent mechanical shape."

Scania's Donachie says keeping South Africa's logistics sector sustainable requires input from all the key players.

"Safety cannot be compromised while business cash flow dries up. However, business also needs revenue to ensure sustainability. It's a challenging dichotomy that, as a truck manufacturer, we must fully explore."

He says the South African logistics sector has always been one of the most resilient in the world and that the current problems facing the industry will force positive changes that could see fleet managers and business owners working closer with vehicle manufacturers to find new solutions.

"We are having those conversations with our customers," he says. "These conversations across the sector will become the basis for a closer and more productive partnership that will ensure that cost-savings can protect jobs and business sustainability." ✪

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Scales attached fleet-wide give management the "pulse" of the entire operation.

PUTTING PRODUCTIVITY IN YOUR HANDS

With lockdowns almost behind us, the more pressing concern for mines and quarries at the moment is to rapidly ramp up production in an effort to recoup output lost during the hard lockdown. In an environment where emphasis is fixed firmly on output, fleet-wide, modern load weighing systems can give management the 'pulse' of the entire operation, putting productivity into their hands, writes *Munesu Shoko*.

Having lost production during the hard lockdown, mines and quarries face increased pressure to rapidly ramp up production. Capex projects may have to take a backseat as the urgency to rapidly meet new production targets moves to the fore.

Today's modern weighing systems, says Glen Webster, sales manager at Loadtech, the authorised Loadrite distributor in southern Africa, provide a networked, holistic view of operations, enabling site managers and operators to respond proactively with each load, as well as site- or project-wide by the hour, day and week. "Increased productivity goes beyond faster, more accurate loading. It now directly impacts the bottom line in each phase and across the entire project," he says.

Christiaan Luttig, marketing director at JBI Industrial Solutions, the sole distributor of Pfreundt's range of load weighing solutions in sub-Saharan Africa, says effective use and utilisation of weighing systems provides much more than just load & haul production totals. Looking at the fundamentals of a weighing system – Measure-Analyse-Improve – these systems can provide valuable insights into the daily flow of an operation.

"Tracking KPIs in the operation as they happen gives site management the opportunity for quicker actions on areas of concern identified by onboard weighing systems. Once you start analysing weighing data, inefficiencies in the supply chain become clear and precise. Having this information available in real time allows for improvements immediately, with proven positive outcomes such as increased production for same periods, reduced cost per tonne, a decrease in machine hours for the same production output, leading to a more efficient and profitable operation," says Luttig.

According to Ivan van Heerden, MD of Dynamic Weighing Systems (DWS), the sole agent for the VEI Group line of on-board weighing and payload management systems in southern Africa, productivity is predicated on efficient throughput of the ore. "By utilising weighing systems, productivity can be tracked from the face to the loadout point, thus allowing for efficient cost per tonne analysis. Stockpile management is also made easier by knowing exactly how much is in the stockpile in real time," says van Heerden.

Key gains

Unlike traditional survey methods, says van Heerden, onboard weighing systems

Effective use of weighing systems provides much more than just load and haul production totals.

QUICK TAKE

Today's modern weighing systems provide a networked, holistic view of operations, enabling site managers and operators to respond proactively with each load, as well as site- or project-wide by the hour, day and week

Effective use of weighing systems provides much more than just load and haul production totals. Looking at the fundamentals of a weighing system – Measure-Analyse-Improve – these systems can provide valuable insights into the daily flow of an operation

By utilising weighing systems, productivity can be tracked from the face to the loadout point, thus allowing for efficient cost per tonne analysis

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

allow for real time monitoring of "what is happening to your yellow metal fleet". This allows for dynamic management of the mine site. Importantly they allow for trucks to be loaded correctly, thus avoiding overloading and the associated costs due to increased fuel use, wear and tear and other maintenance issues.

VEI, through DWS in South Africa, is said to be the only non-OEM weighing systems company that offers suspension-based weighing solutions for rigid dump trucks. The company also offers suspension systems for road trucks.

"The single salient point about these systems is that they remove the element of guesswork in loading, thus trucks and trains are loaded correctly the first time and there is no need to reweigh or return to stockpile. By utilising this single feature, a return on investment of six months or less can be realised and thereafter profitability increased," says van Heerden.

According to Luttig, intelligent software platforms such as the Pfreundt Web Portal and JBI Vision can combine all weighing systems in an operation onto one easily manageable platform. These platforms serve twofold: firstly, to offer site management live KPIs to manage equipment and operators with greater efficiency and with immediate actionable improvements. Secondly, he says, the KPIs can be integrated with current mine management systems for live production tracking, cost analysis and used for future expansion analysis.

"One of our most popular products in our range is the Pfreundt wheel loader weighing system that comes in four variants to suit each operation's requirements. The system does not require any operator actions during the loading process, with the new auto add functionality. The system prompts the operator to do a zero check after each completed task – this helps to keep the accuracy at a high level," says Luttig.

The Pfreundt Belt weighing system comes in two variants – mobile crushing & screening as well as static conveyor systems. The WK50 also has a zero tracking that ensures better accuracy throughout the day. "Both these systems connect to our software solutions that allow full visibility of actual production and productivity," says Luttig.

Onboard scales, says Webster, have evolved beyond the basics of accurate weighing. Scales attached fleet-wide, he says, give management the "pulse" of the entire operation. Measuring each part of an operation and centralising and integrating data to a web portal creates a business intelligence system that offers management an entirely new perspective.

"These systems let operators and managers accurately track production data, optimise truck loading and eliminate overloading and costly fines. Fleet and site managers gain greater visibility into overall site operations. With real-time access to reliable, consistent payload data, accurate payload is just the beginning," says Webster.

When it comes to measuring productivity, adds Webster, 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.

"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," he says.

DWS is the preferred provider of onboard weighing systems for one of the biggest coal loading operations in Mpumalanga.

Intelligent software platforms such as the Pfreundt Web Portal and JBI Vision can combine all weighing systems in an operation onto one easily manageable platform.

Loadrite systems let operators and managers accurately track production data, optimise truck loading and eliminate overloading and costly fines.

Onboard weighing systems 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," adds Webster.

Cost reduction

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 tonne of material, you can see how productive each machine is and possibly find ways to reduce fuel usage," says Webster.

Loadrite systems 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.

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

The single salient point about onboard weighing systems is that they remove the element of guesswork in loading, thus trucks and trains are loaded correctly the first time and there is no need to reweigh or return to stockpile.

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," he adds.

Flagship projects

Commenting on some of the flagship projects his company has been involved, DWS's van Heerden says the company is the preferred provider of onboard weighing systems for one of the biggest coal loading operations in Mpumalanga.

"We have also installed our VEI systems on Caterpillar 777s at Sishen, as well as the 220 t and 130 t Belaz trucks. Our systems were also selected for Transnet's new fleet of straddle carriers. Multiple train loading operations use our systems and since 2012 over 1-million tonnes of chrome ore have been monitored and loaded from a well-known chrome and platinum mine," says van Heerden.

JBI Industrial Solutions, says Luttig, is currently involved in an iron ore operation that was struggling to reach production targets for export. The company fitted a weighing system onto a mobile crusher and a wheel loader. This allowed the customer to monitor live tonnes per hour and analyse the feed rate into the crushing as well as percentage yield on the split.

"From day one, the customer was able to make minor changes to the crusher to increase percentage yield, adjust the process before the crusher to get a more consistent supply to crusher. With the wheel loader weighing system, the customer is now able to monitor live product movement further down the supply chain, as well as optimising their transport with correct optimal loading," says Luttig.

The wheel loader weighing system, he adds, is now also being used to calculate accurate cost per tonne on interlink trucks, through monitoring exact tonnes moved per cycle. With accurate production tracking, the customer can forecast production totals and improve maintenance schedules as well.

Loadtech was recently chosen as the preferred supplier of a weighing solution to be installed on new eight LiuGong wheel loaders supplied to execute a chrome handling project in the North West Province of South Africa.

As part of the mine-ready specification, the machines had to be delivered installed with the Loadrite L3180 SmartScale loader scale. The contractor did its market research on what would work best and all recommendations pointed towards the Loadrite system from Loadtech. The contractor also took advice from the yellow metal equipment supplier, Burgers Equipment & Spares, on the best load weighing system that could be installed on the new LiuGong wheel loaders.

More recently, Loadtech's weighing systems were installed on a fleet of Scania Performance-Based System (PBS) vehicles deployed in a mining application in Mpumalanga to transport mining products between Steelpoort, Limpopo, and Maputo, Mozambique.

"Once the major equipment is specified, the operational costs become the biggest challenge. Key to the success of any bulk transport contract is the ability to consistently load the trucks to the legal maximum limit. In reality, 90% of the income goes towards repayment of capital and daily running costs, leaving a very thin margin for net profit. If the contract is based on a rand per tonne, then loading the last tonne becomes critical in ensuring the remaining 10% or 'cream' of the profit," says Webster.

Loadtech supplied its proven on-board weighing system. The system consists of remote weight sensors and a centralised display mounted in the cab. "Total gross weight of the vehicle plus axle group weights are shown on the display, allowing the driver to take responsibility for the load of their truck. The system enables the truck to be loaded consistently to within 2% of the maximum load on every trip, thus maximising the income per load," concludes Webster.

Screen technology is penetrating into ever finer size ranges.

DRY SEPARATION GAINS TRACTION IN FINER SIZE RANGES

Diverse classification methods are used in quarrying and mining applications. Traditionally, hydrocyclones have most often been preferred to meet fine separating cut requirements, while screen systems and other separation methods have generally been used for the size range above that. However, this convention now appears to have lost its validity, with dry technologies such as screens and air classifiers gaining the edge in finer size ranges. By *Munesu Shoko*.

Hydrocyclones have historically been the go-to solution for fine separating cut requirements. However, other technologies such as fine screen technology and air separators are challenging the status quo, and are penetrating into ever finer size ranges.

Jorge Abelho, director – Technical Support at Pilot Crushtec International, reasons that traditional mining makes use of wet processing technologies such as hydrocyclones to remove fines from products. With the global push to reduce the environmental impact, he says, new and more efficient dry technology is gaining favour.

"Hydrocyclones make extensive use of water, which is already a scarce natural resource in most areas of the world. Then there are challenges and costs associated with the treatment of the contaminated water," says Abelho.

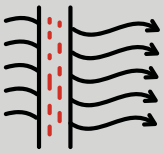
Wet processing, he says, is significantly more efficient in removing fines than screening. There are, however, improvements in fine screening, but there also are challenges associated with blinding of screens as well as the significantly larger screen areas required for similar production rates if compared to wet processing. As far as wet processing is concerned, governments are also reviewing or implementing regulations which further control the use and disposal of water in mining applications.

"I believe that in future, air separation will play a

Screening is one of the dry processes that can be used for fines separation.

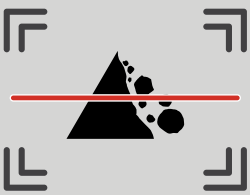
QUICK TAKE

Hydrocyclones have historically been the preferred solution for fine separating cut requirements

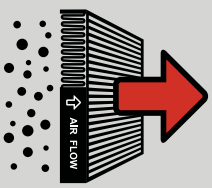


Traditional mining makes use of wet processing technologies such as hydrocyclones to remove fines from products. With the global push to reduce the environmental impact, new and more efficient dry technology is gaining favour

In future, air separation will play a major role in fine screening – there is no need for water or any subsequent costly treatment of wastewater



Air classifiers separate and recover ultrafine, fine and coarse materials in mining, aggregates production, sand manufacturing and other industrial processes



major role in fine screening. There is no need for water or any subsequent costly treatment of wastewater. There is less impact on the environment when using air separation and the material cut points can be easily adjusted," says Abelho.

Air separation to the fore

Generally, in quarrying and mining applications, says Abelho, fines are an undesired by-product from the blasting and crushing processes. Removal of the fines is necessary for the beneficiation of the products. Traditionally, fines were regarded as a waste product and ended up in tailings dams if removed by a wet process.

"Screening is one of the dry processes that can be used for fines separation, but I see more development and potential in the air separation technology in the future," he says.

Any fines separation technology that does not make use of a scarce natural resource such as water is going to have an advantage over hydrocyclones, he adds. "Access to water, tightening regulations, the 'green movement', as well as the costs associated with treating or disposing of contaminated water are all driving the initiative for dry separation methods. There is also no need for tailings or settling dams where screens or air classifiers are used," says Abelho.

Fine screening, he says, does have its fair share of challenges related to managing blockages in the screen mesh

Any fines separation technology that does not make use of a scarce natural resource such as water is going to have an advantage over hydrocyclones.

Removal of the fines is necessary for the beneficiation of products.

TALKING POINT

"I believe that in future, air separation will play a major role in fine screening. There is no need for water or any subsequent costly treatment of wastewater. There is less impact on the environment when using air separation and the material cut points can be easily adjusted."

Jorge Abelho, director – Technical Support at Pilot Crushtec International

as well as requiring a large screening area. "Air classifiers are very efficient in fines classification and the material cut points can be adjusted without interruptions to production."

Abelho, however, notes that the main limitation in all dry separation methods is that they are ineffective on material with a high moisture content. This applies to both screens and air classifiers.

Metso Air Classifier

An exciting product for fines removal is the Metso Air Classifier. It uses several air separation principles in a single machine. Air classifiers separate and recover ultrafine, fine and coarse materials in mining, aggregates production, sand manufacturing and other industrial processes.

"The Metso Air Classifier can be described as a gravitational inertial classifier which uses the principles of gravity, inertia, centrifugal and aerodynamic forces to efficiently separate fines. It makes use of two adjustable air streams to vary the cut point when separating fines. It has no moving parts in the material stream and has a minimal impact on the environment," explains Abelho.

Gravitational inertial air classifiers utilise secondary air flow, along with gravity and sharp directional change, to make adjustable, accurate separations of material from 300 microns to 63 microns. With no moving parts and extensive use of ceramics in wear areas, the gravitational inertial air classifiers require limited parts replacement and virtually no maintenance.

Metso's gravitational inertial air classifiers are widely used to produce manufactured sand and mineral fillers. "Gravitational inertial air classifiers separate fines from crushed rock in manufactured sand production. The dry solution uses a unique chamber and airflow design to ensure precise separation of ultrafines from sand with an accuracy of microns," says Abelho.

The solution uses a unique chamber and airflow design with ceramic liners to ensure precise separation of ultrafines from sand. The end result is sand with optimised shaping, gradation, and particle moisture. Highly durable ceramic tiles are used to protect the classifier's body. The tiles need to be replaced every four to seven years, which is double the two to three year replacement interval of hard-rock liners. Ceramic tiles are suitable for all types of feed material: abrasive, hard and soft rock.

Gravitational inertial air classifiers use a primary and a recirculating secondary airflow to separate fines from coarse particles. Because the airflows are not affected by wear, the grading remains consistent to an accuracy of microns. At the same time, particle moisture remains at an optimal level.

Thanks to the process not using water, it is both economical and environmentally friendly as well as ideal for colder climate. The volume of ultrafines in the end product is adjusted by changing the total airflow, and by changing the ratio of primary and secondary airflows.

How does it work? Feed material is evenly introduced from the top of the classifier in a controlled curtain along with primary air. Secondary air is drawn in at the bottom, inducing a scrubbing effect on similar-sized particles. "Recirculation and scrubbing enables high efficiency and precise separation of ultrafines. Coarse particles drop out of the bottom of the classifier through an airlock," concludes Abelho.

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LEASING VERSUS OWNERSHIP IS NOT A CLEAR-CUT DECISION

To lease a fleet of vehicles versus ownership is a decision most fleet operators and businesses will have to make from time to time. The choice is a complex one, and making the right decision isn't always as clear cut as one might think or hope it is. By *John Loxton,* WesBank head of Fleet Management & Leasing.

While financial considerations are most obvious, these are not the only factors to take into consideration. Trucking routes, seasonality, organisational preferences, the type of operation, and even the configurations of a fleet must also be considered.

Each organisation has unique needs, which is why a flexible leasing solution that allows customers to select a variety of options should be investigated. The ultimate decision will depend on what is best for the fleet operator and the company at a given point in time.

Each organisation has unique needs, which is why a flexible leasing solution that allows customers to select a variety of options should be investigated.

Key considerations

Irrespective of how a vehicle is financed, the cost of finance is usually the largest single cost of owning and operating a fleet of vehicles, other than for long distance transport, where fuel is the largest cost element by far. There are a few options for financing vehicles, including an outright purchase, financial leasing and an instalment option. No matter which option is chosen, in today's times, the focus for fleet managers should be on achieving the lowest cost of ownership.

Full maintenance leasing from a third-party provider remains an advantage over the ownership model for a variety of reasons, the foremost of which are purchasing power and an expansive, reliable maintenance and support network. This is especially true for larger fleets where the business is motivated by the benefits from tax structures and cash flow. For example, a larger fleet may not need the depreciation benefit that comes with financing a loan and will decide to take advantage of leasing's lower payment options, which then allows them to basically allocate the monthly lease payment as an expense. This also provides for shorter vehicle life cycles and allows them to take advantage of the latest technologies as they become available.

No one-size-fits-all

There is no one-size-fits-all solution, and customers should have an ability to determine their own terms, financing arrangements, and the service delivery method of their choice. A major benefit of financing a fleet is it that it offers fleet operators a specific, customised finance structure, with terms that match their specific needs.

More and more fleet operators are also acknowledging that while they need trucks for a job, they don't need to own them. They want productive vehicles to increase driving time, and to manage the rising cost of equipment, mainly due to emission rules and to new technologies that promise tremendous value. This places more emphasis on maintenance, with the need for more highly trained technicians, and more training as information coming off the trucks has to be understood.

The result is that more companies are seeing that running fleets and trucking is not their core capability and they are becoming more and more comfortable with handing that function over to a specialist with buying and procurement experience, one that is able to assist with specifying the right trucks and equipment for their needs, as well as the ability to provide the all-important maintenance to ensure uptime.

John Loxton, WesBank head of Fleet Management & Leasing.

At the end of the day it is not about one option being inherently better than the other, but rather which one is a better fit for an organisation's financial circumstances and total operations. What is highly beneficial for one company may prove to be a real problem for another.


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Alan Berger

CONSTRUCTION EQUIPMENT'S PERFECT STORM: COMMODITISATION & TECH DISRUPTION

Time is running out for the established equipment industry order. The winners of tomorrow will be those that bundle today's emerging trends in the right way. Industry heavyweights Alan Berger and Carl Gustaf Goransson signpost the way forward.

Q: Why is the industry getting more competitive?
Carl-Gustaf Goransson (CGG): The industry remains fragmented and one result of having so many players is intense competition. The fight for customers has driven manufacturers to continually improve their products, such that the current standard of products is uniformly high. Because of the improved product quality, the risk of changing brands is low, meaning customers are becoming less loyal to particular brands. These factors together are driving a commoditisation effect – if all products are good, then all products are the same. Indeed, the ability for the OEMs to drive price increases is becoming limited, with even larger machines becoming commoditised over time.

ABOUT ALAN BERGER

With a longstanding interest in automated machinery, Alan Berger has worked in the vehicle industry for over 25 years. He has led product development for Volvo Construction Equipment and was chief technology officer of CNH Industrial, focusing on leadership, product development efficiency and the digital and electrification transformation.

Another source of competition is being driven by the digitisation of products, and how OEMs build and sell digital service offerings. The potential to increase revenue and profit in this area is significant.

Q: In the future, will technology be the key differentiator between manufacturers?
Alan Berger (AB): In the short term, yes, but ironically, far from differentiating manufacturers, new technology will, over the longer term, accelerate the commoditisation of equipment. It will also start driving the much-needed 'lean' productivity improvements on job sites that have transformed factories in recent decades. These systemic productivity improvements will be much greater than can be achieved by incrementally better equipment. Those that are early adopters of these technologies will reap the benefits, while the rest of the industry scrabbles to catch up.

How to develop and build digital services will be one of the keys to success. It will also move the sector from today's largely 'break it -fix it' approach to a service offering based on data defined in the RnD process. A digital service product is to a large extent built on information on performance, availability, security and changes of the product. Put simply, digital services will be defined and developed around this information and determine how machines are maintained and optimised.

Q: Who will win the battle for market success – value or premium brands?
AB: I see it as a diverging and then converging set of trends. Developing economies are increasingly moving towards value products from value brands – as these products are now reaching reasonable levels of performance. But as products from all manufacturers become more commoditised, the differentiator will increasingly hinge on


Carl Gustaf Göransson

brand attractiveness and value – and that's where the established brands have a clear advantage.

CGG: As machines become more alike, we foresee buying behaviour shifting from owning equipment towards a pay-per-use and/or rental business model. The established brands have been built up over decades – some are more than 100 years old.

But although brand loyalties will still be important in the future, we expect the combination of commoditisation and new ownership models to loosen established brands' hold on consumer loyalty, leading to a fiercely competitive market landscape. The packaging of new machine sales with future services based on digitalised platforms will define success, both for value and premium brands, largely driven by customer demand for more insightful data.

Q: What will be the fallout from COVID-19 – do you foresee an increase in OEM consolidation?

AB: I am not sure the pandemic will be a driver of structural change. But the trend towards commoditisation highlights that it is plainly inefficient for the industry to have so many manufacturers all making essentially the same investments in incremental product improvements. So, I see a longer-term trend for a) consolidation and/or b) alliances for the machinery, while the new competitive battle is played out in the technology and service arenas.

CGG: Even prior to COVID-19 the industry was ripe for consolidation among manufacturers. There is an over capacity in OEMs, in production and a lack of synergies in manufacturing footprint, optimisation and supply chain setup. The technology roadmap is also in need of consolidation to save costs. With so many players in the market, without some level of consolidation, there is an issue of market sustainability. To counter this, OEMs may become more focused on specific segments and then grow in their respective areas. On the distribution side, dealers are likely to promote more brands than they currently do, and cover larger territories.

Q: What should OEMs focus on to capture strategic advantage and growth?

AB: The larger players already have the scope and scale they need, so there is little benefit in them buying smaller OEMs. The smaller ones, however – particularly those with broad product portfolios – will need to seek scale just to survive. Regarding the high technology players, I think that the most successful providers of job-site level solutions will need to (at least appear to) operate independently from the well-known equipment brands, since they need to be able to provide equivalent functionality across multi-brand job-sites.

CGG: Consolidation is an attractive option, either within product segments, for example, general-purpose equipment, road building, among others, or consolidation within a geographical area, prioritising areas of strong regional presence and building distribution infrastructure to grow their businesses. In other words, clearly defining and focusing on what are 'core' and 'non-core' products for the OEM will yield greater returns. Given the high focus on digitalised services adapting the sales process and business models towards the new offerings will also be a key differentiator in the future.

Q: How important is winning 'the battle for talent' in the new look construction equipment industry?

CGG: The industry faces a challenge in recruiting the right people and is already suffering significant talent gaps today. Quite apart from a new generation of software programmers and engineers, modern machinery increasingly requires more advanced technicians to support equipment, both remotely and on-site. There is also a gap in our ability to analyse data. As digitisation plays an ever-increasing role in tracking and maintaining equipment, the industry will have to try harder to be the employer-of-choice for people with these new skillsets.

AB: There is an enormous talent transformation that needs to happen across the industry. Much of the value in the future is going to be generated by technology/electronics, so the challenge is to maintain the current product knowledge while developing deep and fully integrated electronics knowledge beyond the current 'bolted-on-the-side' approach we see in most vehicle companies .I think the real winners in the industry will be those who succeed in this challenge. ✪

ABOUT CARL GUSTAF GÖRANSSON

A seasoned global executive, Carl Gustaf Göransson has worked in the construction equipment industry for over 25 years. Most recently, he was global president construction for CNH Industrial and a member of the CNH Global Executive Council. Prior to that he was senior vice president Sales, Markets and Services with Cargotec's Hiab Brand, and president European Central Construction Equipment with Volvo Construction Equipment.

ELECTROMOBILITY'S TIME HAS COME

With equal performance to diesel power and a much better operating environment, saving the planet has never been easier, says Elodie Guyot, head of Volvo CE's electric compact excavator range.

Electric vehicles have been around for almost as long as the automobile, but for the past 100 years or so Big Oil, in the form of petrol and diesel-powered combustion engines, has been the outright winner. But now things are changing, and electric power is about to give oil the shock of its life.

Over recent years society has come to realise the need to reduce our carbon footprint to protect the environment. This has led governments to set ambitious CO2 emission reduction targets. But they can only meet those targets if manufacturers develop compelling alternatives to oil-fuelled combustion engines. That's not all, the final point of the triumvirate is customers – they also need to buy into this new direction.

Technology's fast track

Fortunately, the stars are coming into alignment. Battery, motor and control systems are all developing rapidly, and the growing number of suppliers in the market mean that there is greater choice for OEMs, like us at Volvo Construction Equipment, to choose from.

More players mean more possibilities to meet customers' requirements and more competitive pricing, and soon the price of componentry will start to come down. The performance of these elements is also increasing rapidly, such that they are now at a level where battery-electric drive is applicable for one of the automotive world's most demanding applications – construction.

Volvo CE unveiled its first electric products last year – one of which was the ECR25 Electric – a compact excavator in the 2,5 tonne class. It brings several benefits with it, not just zero emissions. These include a much-improved operating environment. The machine makes virtually no noise and has none of the vibrations associated with diesel engines either. The difference is remarkable, and something customers are pleased with. Customers are also pleased at not having to deal with fuel and oil, spillages, among others, and the health issues of getting these on the skin.

Operationally, there are also benefits, for example, zero emissions electric machines can work safely inside buildings. Because of this, one early adopter of the technology looks like being indoor applications and tunnelling contractors, where these machines' lack of exhausts mean that they operate safely in confined spaces and deep underground.

One concern about any new technology is: 'Will it be better than what I haveve already got?' When it comes to our new compact excavators the answer is a qualified 'Yes'. The performance is comparable to a diesel equivalent machine, and the 100% torque from standstill means that reaction times are faster.

The batteries are also designed to last a full shift. These small machines don't tend to work continuously. The average in an eight-hour shift is that the machines will work for half that time. And with our new ECR25 Electric, its battery can meet that target for 80% of the time, depending on application – more for some, less for others.

The price of innovation

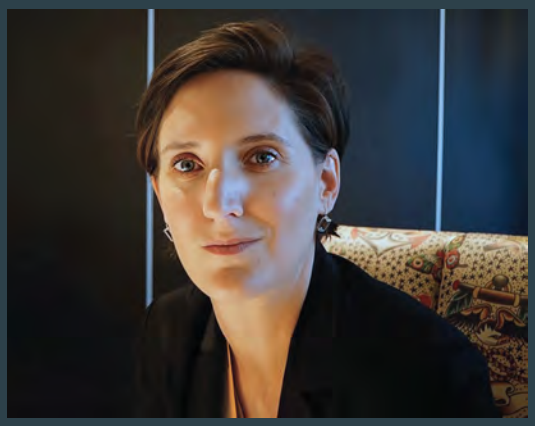
While prices are falling, the volumes of these machines are still tiny, meaning that there are no economies of scale in componentry to drive down costs. Batteries are the biggest component – and they are expensive. So, for the time being, electric construction equipment will be priced at a premium over traditional diesel-powered machines. But as volumes increase, we expect prices to drop sharply, and move towards parity with diesel machines.

Batteries are also heavy, and add weight to these compact machines, even when counterweights are removed. But cell technology is improving rapidly, and we see even this teething issue will be soon solved. In terms of battery lifetime, we believe our batteries are good for the first life of the machine – 8-10 years.

Are electric machines safe?

These compact excavators are as safe as any other electrical appliance. At only

ABOUT ELODIE GUYOT



Elodie Guyot is project manager Electromobility at Volvo Construction Equipment, with a special focus on bringing electric compact machines to market. She is an experienced global product marketing manager with a history of working in the machinery industry. Guyot holds a degree in International Trade from Tamkang University in China, and a post graduate qualification, also in International Trade, from Lyon III University/EM Lyon Business School, France and Guangdong Business College, China.

48 V, they aren't classed as high voltage, and require mainly common-sense precautions.

Some people point to the fact that electric machines aren't as kind to the environment as they claim – citing the rare earth minerals used in the componentry, and the fact that the electricity that powers them can come from 'dirty' sources, such as lignite-fired power stations.

And these critics are right, they are not 100% clean, but they are a step in the right direction. We can't afford to wait until all the challenges are solved but must work incrementally towards a common clean-energy goal. This is a societal issue, and beyond any one manufacturer to solve.

Is electric just for the little guys?

48V is great for compact equipment, but for larger machines we will need more power. For some applications, there is still a place for hybrids and even for plugging larger machines (like big excavators) directly into the grid.

While hydrogen fuel cells look like the ideal solution for electric power, emitting only water and heat as waste products, the technology is still immature, and needs further development. In the meantime, we will need to find the best electric solution for the machine and application, and not be too rigid in committing to one type of technology.

The future will require boldness

Volvo CE was the first company to commit to stopping the development of diesel-powered compact equipment, and devoting resources to an electric-only product future. Our step-by-step evolution will evolve bigger machines over time, as the technology become more powerful and robust, and we become confident that there is sufficient customer demand to make it pay. This also involves a fundamental shift in our business, one that will see us learning new competences and developing new business models.

We also need to be much faster in developing products and spotting new technology opportunities. While we are doing this, our dealer network will need to embrace the new technology and adapt their business models to a world where machines don't need the same maintenance regime as diesel powered machines do.

There is plenty of time for this, as diesel power is going to be around for years yet. (Or at least combustion engines are – biofuels also show great potential.) But the change is coming. Electric machines are not just a flash in the pan. After a century of playing second best to Oil, electricity has arrived, and eventually electric power is going to take over the world. ✪

Size counts in opencast mining contracting

With decades of opencast mining experience – both for clients and for its mining operations – SPH Kundalila has extensive insight into how to maximise efficiency on site.

According to Graeme Campbell, SPH Kundalila's group commercial operations manager, efficiency starts with a focus on the high-cost components of mining projects. Campbell highlights the key objective of reducing the rate per tonne moved while ensuring high uptime levels and preventing unexpected stoppages.

"Contractors influence their rates considerably by having access to the optimal size of load and haul equipment," he says. "While there are more companies in the market with fleets of smaller haul trucks, for example, the limited capacity of these units may raise the rate per tonne for the client."

SPH Kundalila has extensive insight into how to maximise efficiency on site.

Illustrating the case with a 200 000 tonne-per-month mining operation – working 18 hours per day for 26 days per month – he points out that a contractor could use six 18-tonne trucks or just four 40-tonne units.

"Using fewer trucks of higher load capacity impacts a range of costs," Campbell says. "There would be 16 operators required instead of 24, and the size of the maintenance facilities that must be made available are also a function of the number of trucks in operation."

The lifespan of the equipment is also a factor, with the smaller trucks expected to complete about 20 000 hours – around five years – in their productive lives. By contrast, the larger mining trucks can generate returns for anything between 30 000 hours and 50 000 hours – commonly reaching 10 year lifecycles.

"Of course, the larger equipment comes at a much higher capital cost, so are really only within the reach of established and successful companies like SPH Kundalila," Campbell says. "In this way, the large contractors are able to assume a significant portion of the capital burden for mining clients."

He highlights that these larger contractors can often achieve even more economical rates per tonne than the mine itself, as the equipment used can be carried over to new projects – extending the period over which the value of the asset is amortised. After closure, a limited-duration mining project, on the other hand, may be left with equipment that still has value but which it is not possible to realise.

"Compared to the smaller truck market which services the broader earthmoving industry, there is much less of a market for the larger mining trucks, so they are often not easy to sell at the end of a contract," he concludes.

Data tracking shows mines where to improve

Centralising information from its proximity detection system (PDS) hardware and monitoring devices, Booyco Electronics offers mines a rare opportunity to become both safer and more productive.

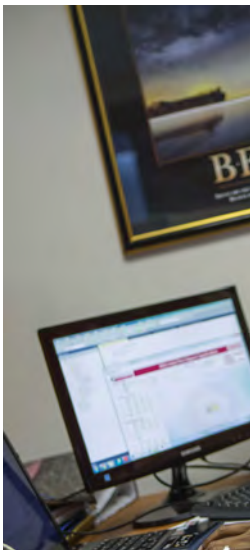
According to Anton Lourens, CEO of proximity detection solutions leader Booyco Electronics, a single source of information on the mine's assets is the key to enhancing operations by identifying patterns of unsafe behaviour.

"Our Booyco Electronics Asset Management System (BEAMS) is essentially a central information hub for the mine's PDS assets," says Lourens. "The software suite is a web-based application used on a robust database, linking the PDS hardware products and the monitoring devices."

This provides a single source of data that can be leveraged for greater insight into relevant aspects of the mining operation – raising the level of safety and productivity in the workplace.

"The real achievement of BEAMS is that it allows the data from our Booyco CWS, Booyco PDS or Booyco CXS to be analysed for patterns which indicate unsafe behaviour," he says. "Customers can then design an appropriate intervention to prevent any further occurrences."

He emphasises that this allows a mine to paint a picture of the complete working environment, shedding new light on operational issues which were previously not visible. Measuring the working environment and interactions in this way then means that risks and bottlenecks can be actively reduced and managed – boosting productivity as a result. This helps to give mines an in-depth view of the operation and the performance of their related assets.



"We have engineered BEAMS for easy implementation," Lourens says. "It can be used on web browser platforms, and is designed to be adaptable to the information and infrastructure environment."

BEAMS can also integrate with the lamp room management systems in underground mines, ensuring legal compliance with lamp room requirements. It helps mines locate its safety equipment such as lamps, self-contained self-rescuers and gas instrumentation.

"BEAMS can be set up to suit the needs of each user," says Lourens. "It can generate a standard set of reports, or be customised to specific requirements."

Caterpillar launches fully mechanical Cat D6 GC dozer

The newest Cat bulldozer brings back familiar components to meet the needs of customers who require a robust machine that is easy to maintain, productive and economical to own and operate. Fully mechanical components and robust structures offer a dozer that is tough in a wide range of conditions and provides a quick return on equipment investment. The D6 GC is an addition to the Cat dozer lineup with 158 kW (212 hp) of nominal net power and operating weight ranging from 21 630 to 22 710 kg.

Like the long-popular D7G dozer, the D6 GC is powered by the well-known Cat 3306 engine. A 3-speed planetary powershift transmission and Caterpillar exclusive torque divider ensure that more useable power gets to the ground for solid all-around performance in a wide variety of applications. These mechanical components make up a robust power train that is easy to diagnose and maintain, even in remote locations.

Operators will find familiar 2-lever clutch and brake steering controls. Traditional blade controls and an easy-to-read analogue dash display add to the simplicity and ease of operation. Choose a dozer with either open (canopy) or enclosed cab, both with Integrated Roll-Over Protective Structure (ROPS/FOPS) for comfort, excellent visibility and added safety. Suspension seat includes a built-in retractable seat belt, and the cab is available with air conditioning for added operator comfort.

The elevated sprocket undercarriage provides excellent ride balance and puts more track on the ground for added stability and performance. Heavy components are located low in the machine delivering a low machine centre of gravity compared to its D7G oval track predecessor.

Everything about the D6 GC is designed to help make it easy to own. Familiar systems and widely available parts help make maintenance and repairs easier, especially in remote locations.

The elevated sprocket helps make maintenance easier with modular components that are easy to remove/install for service.

Efficient aluminium bar plate cooling package delivers excellent ambient capability. The durable system is highly abrasion resistant and designed to minimise plugging.

The elevated sprocket helps make maintenance easier with modular components that are easy to remove/install for service. Segmented sprockets are easy to replace. The undercarriage is optimised with strong structures for stability and durability. The two-piece track roller frame has a maintenance-free recoil system, and the sealed and lubricated track helps prevent internal wear and maximise bushing life.

To save time on daily maintenance, the D6 GC features grouped service points and a minimal number of daily grease points. ✪

BEAMS allows data from the Booyco CWS, Booyco PDS or Booyco CXS to be analysed for patterns which indicate unsafe behaviour.

Demag cranes for Harcliff Mining

Harcliff Mining Services has chosen Demag Cranes to supply two 25-t double V girder cranes and one 6,3-t single girder crane at its newly acquired factory in Meadowdale, Germiston. The cranes have been successfully installed and are supported by Demag Service Agreements.

"Harcliff Mining Services recently acquired new factory space which is to be used for their gear box operation where their volume of production has increased. In addition to inheriting a 12-year-old Demag crane that was still working well, they required further crane equipment for this increased capacity. After meeting with our Demag specialists, it was established that with their proposed factory layout changes, one of our single girders and two of our double V girder cranes would meet their requirements satisfactorily," explains Emil Berning, MD of Demag Cranes.

"We knew how highly the Demag brand is regarded globally, and some of our sister companies have installed their equipment and found the quality and performance extremely high and reliable," says Darren Bagnall, MD of Harcliff Mining Services

"We met with Demag and discussed our requirements for our gear box operation and accepted their proposals. In addition, for performance stability, cost and safety reasons, we have also decided to support our new Demag cranes with the Demag Service Agreement Plan, which removes unexpected downtime and repair costs, giving us operational peace of mind."

The recent installation of the cranes at Harcliff Mining Services was conducted over a weekend in order to be COVID-19 compliant in terms of meeting the various protocols such as social distancing and working in a clean and sanitised environment. Operating within these restrictions threw up the challenge of ensuring that the removal of old crane equipment and the installation of the new Demag cranes was well synchronised to avoid delays, which was accomplished. ✪

Ctrack adds more features to its Iris video monitoring and telematics solution

Ctrack by Inseego, a leading vehicle telematics, tracking and fleet management services provider, has added more features to the Ctrack Iris video monitoring and telematics solution, enabling fleet operators even more control and productivity from their vehicles and assets.

By monitoring crew activities, it is possible to improve and enforce company processes and procedures and reduce theft, pilferage and stock damage. Furthermore, the video solution from Ctrack can improve vehicle route optimisation, increase load frequency and hasten turnaround times.

Ctrack Iris is a high-quality, customisable video monitoring solution ideal for rental vehicles, light deliveries, fleet vehicles, heavy commercials, general machinery and busses, and will now feature a newly developed dashcam.

Apart from a dual view (front and cab-facing) camera solution with infra-red night vision, the new three channel dash cam includes ADAS (Advanced Driver Assist System). ADAS includes a range of electronic systems that help the driver while driving. When designed with a safe human-machine interface, they are intended to increase car safety and more generally road safety.

While most road accidents occur due to human error, the automated system which is provided by ADAS is proven to reduce road fatalities by minimising these errors.

ADAS safety features are designed to avoid collisions and accidents by offering technologies that alert the driver or operations centre to potential problems.

Fatigue monitoring can be added to the Ctrack dash cam as an optional extra. This will require a third camera to be equipped to the dashcam specifically targeting the facial features of the driver, picking up on anomalies such as smoking, looking down at a cell phone or any out of the ordinary behaviour.

ADAS alerts drivers to other cars or imminent dangers and has a lane departure warning system. Video footage can be recorded in eight quality settings and real-time video streaming can be viewed on mobile devices giving fleet managers or operators absolute control over their asset.

Fleet owners can also benefit from a reduced number of insurance claims and settle claims much faster by using video evidence from the stored Iris footage. Iris can also be used to lower fuel consumption and improve vehicle maintenance through better driving, while also reducing diesel and goods-in-transit theft.

Ctrack Iris is supported by cloud-based, web software and a password protected mobile application. These platforms provide video and dashboard event management, and alarm triggers in real-time, ensuring reduced asset risk, more productive drivers, productive route management and ultimately reduced operating costs.

Another year of growth for TATA International Africa

Tata International Africa, a subsidiary of Tata International, has recorded another profitable year despite the challenging economies, shrinking markets, and a pandemic plaguing the region and the world. The group provides skills, expertise and various products in automotive, engineering, mining, farming and farm equipment, in 12 countries across Africa.

Strong growth in turnover was achieved from 2017 onwards to the extent of 40% growth year-on-year and by 2018 the company managed to break even. The strong growth of 40% plus continued from 2018 to 2019 and returned healthy profits. The focus and resolute business strategy in place is certainly working for Tata International Africa, as the company grows its expertise and strengths in their markets.

"Our efforts of the last four years since starting at the helm have begun to bear fruit. Piece by piece the changes in strategy, people, processes and product offering are beginning to come together to deliver meaningful profits," says Len Brand, CEO at Tata International Africa and Head of Distribution Vertical, headquartered in Johannesburg.

"Our continued growth is also driven by having the right team in place. We are fortunate to have a resilient hard-working group of people that I am constantly impressed by. In order to achieve our vision, we developed a strong strategic plan to help us focus on the right geographies, product segments and expansion areas, to get to a consistent turnover every month." continues Brand.

Len Brand, CEO at Tata International Africa and Head of Distribution Vertical.

According to Brand the businesses in Tanzania, Ghana, Kenya and Nigeria have been working exceptionally well over the past year. These include John Deere Construction and Agriculture, Tata Motors, Daewoo Trucks and Tata Truck and Bus. On the continent as a whole, getting the product mix right has been critical, supported by a strong network and relationship approach.

"We provide products and solutions that address the specific needs of each customer, and we understand their needs because we have good relationships in place. We also make a considerable effort to understand the markets and environments in which they operate. Trust has been built and we are now reaping the benefits," says Brand.

The company's success can also be attributed to a focus on supplying niche customers and helping them to be profitable. Building and maintaining partnerships based on trust and mutual respect, and applying the TATA ethos of touching communities in a sustainable manner have had a significant impact on the business.

Sixth generation Volkswagen Transporter range gets a facelift

The Volkswagen Commercial Vehicles T-Series range has been refreshed with a facelift that will now be called the T6.1.

The facelifted Transporter range consists of the Pick Up (Single and Double cab), Panel Van, Crew Bus, Kombi, Caravelle and California. The T6.1 range will go on sale in South Africa, Botswana and Namibia from January 2021.

In South Africa the T-Series, especially the legendary Kombi and Caravelle, have been the best-sellers for the past six decades. Now in its sixth generation, the Transporter range has sold around 12-million units worldwide; no other commercial vehicle in the world has been on the market for as long as the Transporter has. In South Africa, 10 097 units of the T6 range have been sold since its launch in 2015. The T6.1 will now continue the heritage and sales success story of the T-Series model range in South Africa.

What's new? Volkswagen Commercial Vehicles has further developed, honed and refined the T6.1, especially at the front. Particularly striking is the radiator grille, which is now significantly larger and forms a single stylistic unit with the new bumper. All elements below the bonnet, like the headlights, are new. On all versions two chrome-plated cross-bars link the new headlights to the radiator grille.

In South Africa the T-Series, especially the legendary Kombi and Caravelle, have been the best-sellers for the past six decades.

The lines of the two cross-bars are continued as LED daytime running lights, extending all the way into the housing units of the headlights, which depending on the specification can also be LED. The grille itself is now drawn out into the striking bumper. On the higher specification models a chrome strip also adds a refined touch to the bumper. With or without chrome elements, the new front design emphasises the width and increases the charisma of the T6.1. Six newly designed wheels, six new exterior colours and seven newly combined two-tone paintwork finishes round off the new exterior updates to the range.

In the interior, the new instrument panel not only meets the requirements of digitalisation, but also the aim of providing high levels of practicality. The panel has been equipped with an additional shelf in front of the driver. Also new is a larger tray for a smart phone with, an inductive interface for charging which is an optional feature.

The air vents in the dashboard can now be adjusted in every direction and simultaneously opened or closed using one slider control. Previously a second slider was needed for opening and closing. The steering wheel has also been redesigned - on the new multifunction steering wheel there is now a 'View' button, which enables the driver to switch between the digital cockpit's different display configurations with just one click.

Volkswagen Commercial Vehicles has reconfigured the entire range of infotainment systems in order to provide an unprecedented array of web-based functions and services. With the T6.1, Volkswagen Commercial Vehicles is offering a vehicle that is equipped with fully digital instruments, like the digital cockpit. All T6.1 models are equipped with a Composition Colour radio system as standard, whereas the Caravelle and California are equipped with the Discover Pro Media system with navigation as standard and on the Kombi Trendline Plus, it is available as an optional feature.

Locally produced tyre a game changer for trucking industry

Buying local is key to rebuilding the South African economy following the impact of the COVID-19 pandemic. Sumitomo Dunlop has launched a new premium Drive truck tyre. Produced in the company's state-of-the-art Ladysmith, KwaZulu-Natal Truck Bus Radial manufacturing plant to meet the needs of the "always on the road" trucking industry, the SP835A ticks all of the boxes for the long haul, highway trucking fleet.

"The SP835A is a big deal for both the company and the trucking industry," says Riaz Haffejee, CEO of Sumitomo Rubber South Africa, manufacturer of Dunlop tyres. "The launch of the SP835A sees the beginning of a new era where we are now able to supply a full set of locally produced tyres for the entire truck, for all positions – from Steer, to Drive and Trailer."

The SP835A was developed for improved cost per kilometre (CPK), high mileage in long-haul highway applications. Exhibiting even tread wear and low rolling resistance due to DECTES* technology (reducing fuel consumption), the tyre has been manufactured using a cut resistant compound and has a Heel and Toe resistant pattern. Better heat dissipation is achieved using base tread material in the tread construction which enhances re-treadability.

The SP835A was developed for improved cost per kilometre, high mileage in long-haul highway applications.

XCMG delivers customised GR2605 grader fleet to Rio Tinto

On September 9, XCMG held a fleet delivery event for its GR2605 and GR5505 mining grader fleet to Rio Tinto at its grader manufacturing base. Among the dignitaries were Greg Courts, GM of Purchasing at Rio Tinto China, Lu Chuan, president of XCMG, Dr Liu Jiansen, vice president of XCMG and several strategic suppliers.

The XCMG GR2605 grader, custom-built for Rio Tinto Group, is said to be an important signal of China's equipment manufacturing industry move towards the global middle and high end markets.

Designed for tough mining applications, the motor grader is powered by a 260 hp Cummins QSL9 Euro III engine. It also comes with Graziano reinforced wet brake axle with double circuit, DANA transmission, hydraulic system with load sensing, ROPS & FOPS cab with Denso A/C and low-pressure boosting system, mining spec tubeless L4 tyre, Lincoln central lubrication system and an auto fire extinguisher. The motor grader has a 3965 mm mining spec blade with alloy coating.

The delivery of the grader fleet will further deepen XCMG's cooperation with Rio Tinto. Through innovation-driven and excellent quality management, XCMG will build the GR5505, a 550 hp engine output motor grader, claimed to be the world's largest motor grader, customised specifically for Rio Tinto Group's requirements.

In his address at the event, Rio Tinto's Courts said: "China is the largest market for Rio Tinto and we will grow together with China's industrialisation. Every year, Rio Tinto will pay billions of dollars to source its equipment needs from China. Five years ago we established business relations with XCMG and purchased hydraulic cylinders for our mining excavators which operated at our Pilbara mine and after 200 000 working hours, we were convinced that XCMG is a trusted supplier," he said.

XCMG handed over a fleet of graders to Rio Tinto.

"In 2019, we expanded our procurement from XCMG to a full range of mining machines. The first XCMG motor grader arrived in Pilbara and it rated a 90% availability and we decided to place more orders .The success of the GR2605 grader customisation project is the result of the cooperation between the two parties. Thanks to the successful cooperation experience of this project, Rio Tinto firmly believes that XCMG has the strength to produce the most advanced super-horsepower grader in the world. The next phase of the project will see Rio Tinto and XCMG develop the GR5505, the world's biggest grader, together," added Courts.

With intelligent mining gathering pace across the world, XCMG and Rio Tinto will focus on development of autonomous mining equipment.

Lu Chuan, president of XCMG, pointed out: "The XCMG mining grader project is the result of a joint effort with the Rio Tinto team, supplier teams and every XCMG employee involved in the project. Internationalisation is a major priority strategy of XCMG. Rio Tinto is a global well-known mining group. As the No.1 construction machinery and mining machinery manufacturer in China and No.4 in the world, XCMG has always valued cooperation with Rio Tinto Group. Mining equipment is XCMG's strategic division and in recent years we have invested billions of dollars to make us a formidable player in this space. We have already established ourselves as a major player in the mining machinery industry." ✪

Volvo introduces F generation ECR58 compact excavator

The new ECR58 F generation compact excavators from Volvo Construction Equipment (Volvo CE) are said to provide outstanding levels of operator comfort, unprecedented versatility and performance.

In devising the ECR58, the aim was to combine all of the industry's best practices into a single product. And so, it has come to pass: the 6-t ECR58 compact excavator can unlock the full potential of its short swing radius and deliver top performance in a great multiplicity of applications.

According to customer clinics, the product delivers better control and smoother combined operations than many bigger excavators. And no wonder. The ECR58 offers a new standard in operator comfort and the most spacious cab in the industry. And yet it still keeps the overall machine size more compact than ever before.

On top of this, operator wellbeing, confidence, and safety are supported through a simplified workstation and user-friendly experience. The seat-to-joystick position has been revised and improved, while still being suspended together – a technique that Volvo introduced to the industry.

Designed to offer the highest levels of operator convenience, the Volvo cab features efficient soundproofing, numerous storage areas, and 12 V and USB ports. A fully opening front window and slide side window contribute to best in class all-around visibility. Operators can quickly and easily get to grips with the F-generation ECR58, thanks to the automotive style jog wheel, 5-inch colour display and easy-to-navigate menus. ✪

Extended warranty for Bobcat skidsteers

All Bobcat skidsteers (with the exception of the S18) now include an extended three-year, 4 000 hour warranty at no additional cost to the customer, reveals Arina van der Westhuizen national aftermarket manager at Bobcat Equipment South Africa.

Van der Westhuizen says warranties ensure protection against repairs due to any failures in materials or workmanship. In addition, an extended warranty greatly reduces a customer's exposure to financial risk.

It also gives customers a higher resale value in that if they decide to sell their equipment, any remaining warranty coverage can be transferred to the next owner. The extended warranty also informs a prospective buyer that the machine has received superior care and maintenance.

"We want to assure our customers of our continued commitment, give them peace of mind around the perceived value of their equipment and combine quality and price to increase the value we offer. We strongly believe that providing this to our customers gives us a competitive edge in the market. We are thus continuing with this campaign for as long as the option is there from the OEM, and for as long as we believe that our customers will benefit from it," says van der Westhuizen.

Bobcat Equipment South Africa has fully-equipped service centres and qualified technicians to take care of its customers' maintenance and repair requirements. Proactive maintenance plays a critical role in extending equipment life, and strong aftermarket service is therefore absolutely essential.

"It is no longer sufficient to simply sell equipment and not offer a comprehensive and cost-effective post-sales service offering. Customers pay good money for their machines, and deserve to have peace of mind in knowing that the company that supplied them the equipment will be with them throughout its operating life," concludes van der Westhuizen. ✪

Bobcat Equipment South Africa now offers extended warranties on its skidsteers.

SDLG resorts to virtual factory and product tour amid COVID-19 restrictions

With many countries' borders still closed amid COVID-19 and the need for safe social distancing, SDLG offered a tour of its smart manufacturing process and construction equipment over three live-streamed virtual events.

"Since it's hard for our customers and dealers to visit us in China, we wanted to bring SDLG to them, so we offered virtual tours of our smart manufacturing process and shared how we build SDLG's equipment to offer reliability in action," says Wang Xiaohui, GM of SDLG Import and Export Company.

The virtual event was live-streamed via SDLG's online shop at SDLG.en.Alibaba.com and was offered in five languages: French, Spanish, English, Russian and Arabic.

SDLG business manager Zhang Shuai took participants on a virtual tour of the company's assembly line for wheel loaders and excavators. Plus, Zhang offered an in-depth look at the company's research and development facilities, test yard and parts warehouse.

"Just because our construction equipment is simple to operate and maintain it doesn't mean our manufacturing process is simple, in fact we adopt smart manufacturing processes and use 5G technology in our factory," Wang says. "For example, in our road machinery workshop, we use welding robots to ensure precision and accuracy, also we use AGV transport system to delivery materials instead of the forklift inside the plant."

Products highlighted during the virtual event included the LG936, L958F and L975F wheel loaders; the G9190F motor grader; the E635F and E680F excavators; and the B877F backhoe loader.

Over 3 000 people watched the live stream event and it garnered some 22 100 likes on the website. The event also included a Q&A session where participants had the opportunity to speak with SDLG experts.

"We were honoured to see so many of our existing and future customers during the virtual event and look forward to meeting them in person in the near future," Wang says. ✪

The ECR58 F generation marks the start of a new philosophy for Volvo's compact excavator range.

The LG936 L was one of the products highlighted during the virtual event.

HOW COVID-19 IS DRIVING MINES TO ACCELERATE DIGITALISATION

There's no doubt the COVID-19 pandemic has fundamentally shifted the world of business, forcing organisations across sectors to rethink their business models and implement responsive operational changes. However, the mining industry is a different ball game altogether – mine workers can't simply work from home to curb the spread of the virus. Responsibly managing COVID-19-related risks extends beyond the obvious for mining companies. By *Louis Retief* – GM Innovation and IM at Exxaro.

As the supply of minerals and metals has a significant knock-on effect for the rest of the country – impacting supply chains, manufacturing industries, various economies and the general public – mining organisations must embrace digital technologies to ensure the safety of their employees during this challenging time.

If anything, this crisis has thrust digitalisation into the spotlight, spurring mining leaders to speed up their adoption of automated systems and data-enabled machinery. Digital transformation has become critical for mining companies to not only survive but to thrive beyond the current pandemic and well into the Fourth Industrial Revolution.

Let's look at what this means for our industry as we continue to adapt to an ever-changing environment.

The importance of digitalisation in mining

Over the past few years, digitalisation has had a significant impact on improving the efficiency of mining operations. Advancements in data visualisation and analytics, the Internet of Things (IoT) and automation technology have unlocked major productivity and cost-saving benefits in our sector.

As local mines return to full staffing capacity, the use of integrated digital solutions that gather and analyse operational data is more crucial than ever. Mining companies can use these valuable insights to make well-informed business decisions, particularly relating to managing risks and strengthening safety measures. For example, Exxaro has built integrated operations centres across all our business units to break down boundaries in the value chain and promote a single view of the operation, thereby driving improved understanding and decision making. By using automated weighbridges at our digital and connected Belfast mine, we can operate at the highest level of throughput and accuracy.

During the COVID-19 period, mining companies can also use digital technologies to screen their workers, alert infected employees, monitor and track their contact with others or book visits to our head office. Our implementations of digital signature solutions also negate the need for documents having to be distributed physically for approvals. Exxaro also uses a mobile phone platform to convey information and conduct surveys with all of our employees and contractors. We have a responsibility to prioritise the health and safety of all our employees and leveraging digital tools can help us do just that.

Innovative mining during uncertainty

While the future of our industry and how we'll work is unclear, we do know that agility is key for mining businesses to seize digital opportunities. Companies that are forward-thinking in their approach and those that leverage technologies to transform their business are set to yield even more benefits in a digitally driven world.

For Exxaro, this means targeting up to a 25% improvement in productivity through an enterprise-wide digitalisation strategy that includes adopting a "cloud first" approach with the deployment of scalable digital platforms e.g. for customer and supplier engagement, IoT, advanced analytics, robotics, automation and virtual/augmented reality. We are adopting technologies that will enhance the way our people work, rather than displace them, and upskilling our workforce to be able to operate these new platforms. A cultural drive that trains employees and promotes teamwork is crucial as it minimises the disruptions that digitalisation brings.

Louis Retief – GM Innovation and IM at Exxaro Resources.

With increased operational efficiency, improved collaboration among stakeholders and enhanced employee safety, the value of digitalisation in our sector can't be emphasised enough. COVID-19 has undoubtedly sparked the urgency for mining companies to accelerate their digital transformation, presenting a prime opportunity for our industry to weather the storm of change.

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