

# CAPITAL EQUIPMENT<sup>1</sup> NEWS

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AUGUST 2020



## ADVANCING TRUCKING INTO A NEW DIMENSION

**EQUIPMENT REBUILDS:** Capital equipment: to rebuild, refurbish or to buy new?

**FLEET MANAGEMENT:** Fleet management post-COVID-19: the role of the solutions provider

**RIGID DUMP TRUCKS:** Drivers and market outlook for 100 t rigid dump trucks



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# CONTENTS

## FEATURES

### COMMENT

- 2** Sidestepping common used equipment buying pitfalls

### COVER STORY

- 4** Advancing trucking into a new dimension

### EQUIPMENT REBUILDS

- 10** Capital equipment: to rebuild, refurbish or to buy new?

### FLEET MANAGEMENT

- 14** Fleet management post-COVID-19: the role of the solutions provider

### RIGID DUMP TRUCKS

- 22** Drivers and market outlook for 100 t rigid dump trucks

### BATTERIES

- 26** Lithium-ion battery solution for the forklift market

### TRANSPORT

- 30** Scania's 'unbeatable' New Gen range meets 'matchless' financial agility  
**32** MG Carriers enters the fray with DAF Trucks

## THOUGHT LEADERSHIP

- 35** How to work on the construction site with ease  
**40** COVID-19 – what will the SA mining industry look like after the pandemic?

## NEWS

### MINING NEWS

- 38** Russia starts using 5G network on autonomous mining dump trucks  
**38** Metso Outotec commences operations

### CONSTRUCTION NEWS

- 39** XCMG's global expansion continues unabated  
**39** Caterpillar's 175 000<sup>th</sup> medium high drive dozer

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# SIDESTEPPING COMMON USED EQUIPMENT BUYING PITFALLS



Munesu Shoko – Editor



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**A**s the cost of doing business keeps rising amid the COVID-19 pandemic, the thought of purchasing new capital equipment is generally out of reach for many in the immediate future. In such an environment, many find used equipment to be a cost-effective option.

That Africa is generally a big used equipment marketplace is irrefutable, but of concern is that our market doesn't have the greatest of reputations, and is often referred to as the 'graveyard of used equipment'. Many African countries are often the last stop of machines beyond their cost-effective lifecycles. They would fail to be sold on because they are often in a poorly maintained condition.

Thus, despite the economic advantages of buying used, many business owners still shy away from the so-called money-saving option because the risks in many instances outweigh the rewards. However, with a little extra effort on the buyer's part, the most common used equipment buying pitfalls can be avoided.

How can buyers take the risk out of buying used? What should you look out for when purchasing a used machine? Do you know what signs may indicate you proceed with caution or what might be a red flag?

The most important thing is securing backup from the supplier of used equipment, and also the fact that the history of the machine is securely backed up. The unavailability of the service history of the machine might be a key indicator that it has been abused before. It is worrying that used equipment is often bought with no available previous maintenance records or knowledge

of previous concerns.

It is advisable to test and inspect the piece of equipment before you make up your mind to buy. You can employ the services of a qualified mechanic or experienced operator to conduct physical and functional inspections on your behalf.

The hours logged on a piece of machinery are not always a reliable indicator of the health of the engine. Be sure to pay extra attention to several other details to help make a final decision and protect your equipment investment. Potential buyers should look out for leaks and damage when inspecting used machinery. Even if a piece of equipment looks good on the outside, it's hard to tell the condition under the hood.

That's where an oil analysis can be a valuable tool for the buyer. It is like a blood test for a machine's engine, transmission and hydraulic systems. The cost of an oil analysis kit is minimal considering the valuable insights it can provide on a machine that likely costs millions of rands.

It is important, when buying used equipment, to look beyond the price tag. Nothing can be worse than buying a piece of equipment at a 'bargain' price only to have it fail shortly after it is deployed at a crucial jobsite where any form of downtime is unacceptable, especially given the unforgiving nature of today's project timelines.

If you make a mistake on a small appliance, you will have a few regrets and move on. That same mistake on a big piece of construction or mining equipment has far reaching implications that will cost you for the long haul. 🌀





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Compared with the predecessor, customers can expect up to 5% lower fuel consumption on the advanced Actros range.



# ADVANCING TRUCKING INTO A NEW DIMENSION

**With the introduction of a raft of new innovations on the Actros – recently crowned the International Truck of the Year 2020 – as well as its new Arocs range, Mercedes-Benz Trucks is advancing heavy duty trucking into a new dimension driven by technological proficiency, writes *Munesu Shoko*.**

**W**ith the introduction of 64 new technological features and advancements on the Actros, Mercedes-Benz is reiterating its commitment to the ongoing development of its products to ensure lower total costs of ownership (TCO), maximum safety and uptime for users – important parameters for every truck owner.

The new advancements come almost two years after

Mercedes-Benz launched the fourth generation Actros locally, which, according to Maretha Gerber, head of Mercedes-Benz Trucks Southern Africa, has enjoyed resounding success in the market.

The new range of technological developments, says Michael Dietz, CEO of Daimler Trucks & Buses Southern Africa, are behind the truck's recent award-winning success. The Actros was in November last year voted





the Truck of the Year 2020 by a panel of specialist commercial vehicle journalists from Europe, South Africa, Russia, Brazil, Australia and China.

With nine victories in total, Mercedes-Benz is now the most successful truck maker in the hunt for the Truck of the Year accolade. The truck's success story started back in 1997 when the first Actros rolled onto the market and the subsequent vehicle generation brought home the award.

In line with the jury's considerations, the title is awarded annually to the truck that makes the biggest contribution towards road transport innovations that are advantageous to the economy, emissions, safety, driveability and comfort of vehicles. With more than 60 innovative features, the Actros ushers in new levels of low TCO, uptime and safety.

"We are very proud and excited to



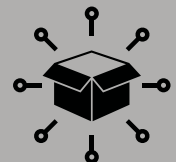
The new advancements come almost two years after Mercedes-Benz launched the fourth generation Actros locally.



In both the distribution and construction applications, the new Mercedes-Benz Arocs model series benefits from a range of new innovations.

## QUICK TAKE

With the introduction of 64 new technological features and advancements on the Actros, Mercedes-Benz is reiterating its commitment to the ongoing development of its products to ensure lower TCO, maximum safety and uptime for users



The Actros was in November last year voted the Truck of the Year 2020 by a panel of specialist commercial vehicle journalists from Europe, South Africa, Russia, Brazil, Australia and China

**TRUCK OF  
THE YEAR  
2020**



Compared with the predecessor, customers can expect up to 5% lower fuel consumption on the advanced Actros range, of which the biggest contributor is the Predictive Powertrain Control



Six new models have been added to the existing Arocs range, comprising three freight carriers, an 8x4 tipper and two all-wheel drive off-road vehicles

**SIX NEW  
MODELS HAVE  
BEEN ADDED**





Initially introduced in 2019, Arocs has raised the bar in reliability, robustness and bodybuilder friendliness within the construction segment.

introduce the phenomenal truck in the year in which it essentially holds the International Truck of the Year title. This is not only historic for our market, but validates our progressive efforts to close the gap between our local and international product offerings," says Dietz.

Gerber highlights that the technological revolution of the Actros hinges on five new key innovations – the MirrorCam; Multimedia Cockpit; Active Brake Assist 5; Predictive Powertrain Control (PPC) and Uptime.

#### Predictive Powertrain Control

Compared with the predecessor, customers can expect up to 5% lower fuel consumption on the advanced Actros range, of which the biggest contributor is the PPC.

"Mercedes-Benz Trucks is advancing trucking into a new dimension of fuel-saving driving with this technological feature. Depending on the traffic situation ahead, PPC can realise significant fuel savings," explains Gerber.

In addition to a satellite-based positioning system, PPC uses accurate digital road maps that contain data on topography, which means the truck knows the road and route profile ahead. This allows the new Actros to employ an anticipatory driving style, saving as much fuel as possible and ensuring optimal driver support.

"PPC requires precise 3D Map data for effective deployment of functionality and it is in this breath that Daimler Trucks made a notable investment to ensure all primary routes and most of the secondary routes

in South Africa are mapped prior to the launch of this truck. This certainly signifies the importance of the market to the Daimler Trucks organisation," adds Gerber.

The overall aim here is for the truck to save as much fuel as possible and to support the driver optimally. Moreover, the interaction between PPC and yet another ground-breaking Mercedes-Benz innovation, Proximity Control Assist, improves fuel efficiency. Proximity Control Assist provides information on preceding vehicles, so that PPC can ideally plan gearshifts and variations in speed.

The system benefits from the PowerShift 3 automated gearshift's new Economy+ driving mode, designed for an even more economical driving style. The Standard and Eco drive programs are again standard on the new Actros.

#### The MirrorCam

For the first time in a mass-produced truck, the new Actros with MirrorCam replaces the conventional main and wide-angle mirror with a camera system. The MirrorCam improves safety and manoeuvrability. The system operates completely with digital cameras and displays. The streamlined cameras are mounted on the right and left of the roof frame.

The camera images appear on two 15-inch displays mounted on the A-pillars in the cab. The brightness of the displays can be manually adjusted. The viewing area can be changed at the door-operating unit, as in conventional mirror adjustment. The camera system can also be heated.

"The MirrorCam offers considerably improved all-around visibility. A pleasant side effect: the driver also has a good view at an angle past the A-pillars, enlarging the field of vision – an additional safety feature," explains Gerber.

Additionally, using conventional mirror configurations, it is possible for the driver to be on the road with badly adjusted mirrors, causing a so-called 'blind area', in this area, pedestrians and cyclists can be easily overlooked. However, the MirrorCam solves the problem of badly adjusted mirrors entirely: before every engine start, the camera automatically sets itself up for optimal vision. From any perspective, the display shows the same complete image.

Multiple functions of the MirrorCam support the driver: while cornering the picture on the display for inside the curve swivels along with the semi-trailer, to provide an optimal view of the entire trailer.

Distance lines also help the driver better estimate following traffic. An additional, separately adjustable line can also indicate the end of the trailer, for



"We are very proud and excited to introduce the phenomenal truck in the year in which it essentially holds the International Truck of the Year title. This is not only historic for our market, but validates our progressive efforts to close the gap between our local and international product offerings."

Michael Dietz, CEO of Daimler Trucks & Buses Southern Africa



"Predictive Powertrain Control requires precise 3D Map data for effective deployment of functionality and it is in this breath that Daimler Trucks made a notable investment to ensure all primary routes and most of the secondary routes in South Africa are mapped prior to the launch of the truck. This certainly signifies the importance of this market to the Daimler Trucks organisation."

Maretha Gerber, head of Mercedes-Benz Trucks Southern Africa





## Everyone talks, one delivers. The new Actros.

**MirrorCam.** In place of regular exterior mirrors, the new Actros is equipped with the revolutionary, aerodynamic MirrorCam. The ingenious system provides an optimal all-round view, high levels of safety when maneuvering, turning and changing lanes, and achieves fuel savings of up to 1.3%. Where many others only talk about efficiency and greater safety, the new Actros delivers it. No wonder it won International Truck of the Year 2020.

Detailed information can be found at [www.mercedes-benz.co.za/trucks](http://www.mercedes-benz.co.za/trucks).

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Mercedes-Benz Uptime increases vehicle availability through remote diagnosis and smart planning of workshop visits.

example. Centimetre-precise manoeuvring thus becomes even easier. The MirrorCam features a special manoeuvring view for reversing: the upper part of the display shows the area approximate to the vehicle and the lower part – with a certain overlap – the distant areas.

### Multimedia Cockpit

Dubbed the revolution in human machine interfaces (HMI), immediately eye-catching inside the cab of the new Actros is the new Multimedia Cockpit. The core of the newly developed interface between driver and vehicle are two central colour displays. The primary colour display with its high-resolution flat screen technology replaces the traditional instrument cluster with its speedometer, revolution counter and fuel gauge.

The neatly arranged and clear display informs the driver about all essential driving and operating states, as well as the actions performed by Active Brake Assist 5, Predictive Powertrain Control and other driver assistance systems. In addition, the display can be personalised.

“The secondary display features touchscreen technology. It enables drivers to conveniently control the majority of the functions within the truck. Important functions like the lights, heating, aircon and telephone can be directly selected with shortcut buttons. The driver can also display the vehicle condition, such as axle load, at any time,” explains Gerber.

Numerous connection options for mobile end devices increases the convenience of work and operation in the Multimedia Cockpit. Up to six driver profiles can be saved in the Multimedia Cockpit by means of the usual driver cards for Fleetboard. The primary colour display and the secondary multi-touch display can be operated via the new multifunction steering wheel with touch control buttons, also known as finger navigation-pads. Swiping or pressing the touch control

buttons operates the vehicle systems and retrieves information.

### Mercedes-Benz Uptime

Uptime is a parameter of sheer significance to any fleet owner. Mercedes-Benz Uptime increases vehicle availability through remote diagnosis and smart planning of workshop visits.

“With the aim of greater vehicle availability, Mercedes-Benz Uptime offers an innovative service product for customers of Mercedes-Benz Trucks through intelligent vehicle networking in real time and through intensive customer care. The fully automatic tele-diagnosis system continuously checks the status of the vehicle systems in the truck,” says Gerber.

It takes just seconds to interpret the data, identify critical conditions and provide concrete recommendations for action. Should there be a need for maintenance or repairs, Mercedes-Benz Service will immediately assist the customer with an individualised solution, optimally geared to the particular trip planning and vehicle condition. For customers this affords significantly facilitated scheduling of workshop visits and vehicle availability, so that fleet operators can operate their trucks even more efficiently.

### Active Brake Assist 5

Said to be unique to Mercedes-Benz Trucks, the new Active Brake Assist 5 with further-improved pedestrian detection affords greater safety for pedestrians. New in the current version of the emergency braking assistance system is the interaction between radar and camera systems.

Among other things, the system's response to moving pedestrians in a speed range below 50 km/h has been improved. Within the system limits, Active Brake Assist 5 is now capable of carrying out emergency braking when encountering pedestrians crossing its path, approaching from the front or walking across.

If Active Brake Assist 5 detects a risk of collision with a vehicle travelling ahead, a stationary obstacle or a moving pedestrian, the driver is alerted to the danger by a three-stage escalating warning system.

“If the driver fails to take action, a visual warning and warning tone will first occur and partial braking will then be applied. If the driver still fails to react, within its limits the system can carry out maximum full stop braking and at a speed under 50 km/h activate the hazard warning light system, in order to signal following traffic,” says Gerber.

Finally, on coming to a stop the vehicle applies the new electronic parking brake. Active Brake Assist 5 can detect hazardous situations in many cases better than the driver detects and thereby react at an earlier stage. Like its predecessor, the purpose of Active Brake Assist 5 is to support the driver in minimising the danger of a collision and reducing or wholly preventing the consequences of an accident.

### New Arocs

Benefitting directly from the innovations available in the new Actros is the new Arocs range. Initially introduced in 2019, Arocs has set the benchmark in reliability, efficiency and safety within the distribution segment, while raising the bar in relation to reliability, robustness and bodybuilder friendliness within the construction segment.

“We are therefore thrilled to announce that six new models have been added to the existing range, comprising three freight carriers (the Arocs 3336/48, the Arocs 3340/48 and the Arocs 3352/45), an 8x4 tipper (the Arocs 4145K/51) and two all-wheel drives off road vehicles (the Arocs 1845AE/45 and the Arocs 3345AE/45),” explains Gerber.

The Arocs benefits from a range of innovations such as electronic parking brake, multifunctional steering wheel and keyless start, among others. The electronic parking brake activates automatically when switching off the engine, but can also be switched on and off manually, using the lever in the cockpit. The integrated HOLD function activates when the vehicle is at a standstill simply by pressing the brake pedal more firmly, for example, at a red traffic light or on an uphill gradient.

“With the addition of the new Actros and additional Arocs models, I am pleased to say we now boast a complete product line-up within the heavy duty truck segment, that is not only unmatched in its design, but offers value for money to our customers,” concludes Gerber. 🌟



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# CAPITAL EQUIPMENT: TO REBUILD, REFURBISH OR TO BUY NEW?

**With the rising cost of doing business, purchasing new capital equipment may be out of reach for many in the foreseeable future. As companies turn to refurbished or rebuilt equipment to stretch their dollar while servicing their contracts and operations, *Capital Equipment News* takes a closer look at the options. By *Mark Botha***

**O**n the question of how today's economic conditions affect the demand for capital equipment rebuilds, Ryan Gaylard, head of the Barloworld Remanufacture Centre at Barloworld Equipment, says that, during any economically challenging time, capital purchases are one of the first areas of spend to be scrutinised by equipment owners.

"The economically useful life of capital assets is inevitably extended to drive up the return on capital. The demand for rebuilding machines and components increases in periods of economic downturn."

Haver & Boecker Niagara sales manager South Africa Ricco Britz agrees: "We are living in extraordinary times and facing enormous economic challenges all over the world," he says.

"The mining sector is, however, no newcomer to challenges throughout history, and equipment or machine rebuilds are just one of many cost-saving tools that we at Haver & Boecker Niagara offer to our customers."

He says the company has seen a steady increase in the demand for machine rebuilds over the years.

Metric Automotive Engineering operations director Andrew Yorke adds that, when customers take a critical relook at their costs and become cost focused, the repair or remanufacture of equipment, engines or engine components becomes "an obvious cost reduction

choice when compared with new replacement".

"However, it is essential to recognise the difference between a repaired component and a remanufactured component. The most obvious difference would be that the repaired component offers more of a saving than the remanufactured one."

He says that, while these components may look the same from the outside, companies must look past the fresh coat of paint to understand the added value of the remanufactured component over the repaired component.

"These major components are designed to be remanufactured without compromising the quality, durability and performance of the component itself, and can extend the life of the engine significantly."

BLC Plant CEO Luigi Stravino says that, in an environment where the cost of doing business is on the rise and new capital equipment is financially out of reach for most, many companies find that refurbished or rebuilt equipment is the best way to stretch their dollar while servicing their contracts and operations.

He says companies do not necessarily want assets on their balance sheets in these turbulent times.

"With limited liquidity, companies can turn to our rental product of refurbished equipment, which alleviates the financial pressure and allows for some head room.





Barloworld Equipment notes that the demand for rebuilding machines and components increases in periods of economic downturn.

## QUICK TAKE

During any economically challenging time, capital purchases are one of the first areas of spend to be scrutinised



Companies do not necessarily want assets on their balance sheets in these turbulent times



The ability to support the asset once it returns to operation is a factor to be considered very carefully



A rebuild performed by a reputable provider will be more reliable, safer and cheaper to operate in the long term



for commodities will always be there, even through this current crisis and into the foreseeable future, especially in the South African coal sector.

"The demand for commodities will always be there, which leads to some movement in the trade of equipment for the mining sector. Further enhancing this is the weakening rand, making our local commodities more attractive for export as global stockpiles slowly deplete and require replenishment.

"We have seen in our numbers that the demand for used equipment has increased over the past six months, even with and throughout the strict local lockdown. People are looking for quality used and refurbished equipment supplied with reputable backup and support."

### Key market drivers

"Cost is always a key driver in this segment of the market, as is turnaround and, of course, quality of rebuild," says Barloworld Equipment's Gaylard.

"The ability to support the asset once it returns to operation is a factor to be considered very carefully, in terms of both skilled technical personnel and parts."

Metric Automotive Engineering's Yorke agrees: "Cost, cost, cost," he says, "followed closely by availability, are key drivers."

He says that, while some companies understand that there is more to a repaired or remanufactured component than just its cost, the majority source their components based on cost only.

"Availability or delivery times and the exchange rate also have a significant influence on decision making."

BLC Plant's Stravino points to the performance of commodities and the mining sector, the fluctuating rand, and a revival of the construction sector. He says economic sectors are cyclical in nature and that, although the current cycle in the construction sector is "artificially long" because of the COVID-19 pandemic, industry can hopefully expect an upturn in demand from that sector.

"We know the construction sector is cyclical in nature and we are hoping government invests in the construction sector as a mechanism to revive the economy. This will give a much-needed boost to the sector and hopefully increase trade of construction equipment."

Haver & Boecker Niagara, says Britz, views cost savings, improved performance and reliability, as well as reduced lead times as drivers for equipment rebuilds or refurbishment. In terms of cost savings, he says customers can save up to 40% of the cost of new equipment such as screens.

"Our technicians will identify the

"We can expect restricted supply from equipment OEMs into the market due to the pandemic and its consequences, including the effect it has had on the rand-dollar exchange rate. We expect that new OEM stock coming to our market will be more expensive due to the weakening of the rand.

"This makes the option to purchase new equipment unaffordable to most, but the option to look at reputable rebuilds remains a viable alternative."

At the end of the day, he says, "although commodity prices fluctuate, the actual mining





Equipment refurbished or rebuilt by BLC Plant.



"Cost is always a key driver, as is turnaround and, of course, quality of rebuild. The ability to support the asset once it returns to operation is a factor to be considered very carefully, in terms of both skilled technical personnel and parts."

Ryan Gaylard, head: Barloworld Remanufacture Centre, Barloworld Equipment



"The mining sector is no newcomer to challenges throughout history, and equipment or machine rebuilds are just one of many cost-saving tools that we at Haver & Boecker Niagara offer to our customers."

Ricco Britz, sales manager, SA, Haver & Boecker Niagara



"It is essential to recognise the difference between a repaired component and a remanufactured component. The most obvious difference would be that the repaired component offers more of a saving than the remanufactured one."

Andrew Yorke, operations director, Metric Automotive Engineering

exact root cause of the problem and re-engineer component replacements, providing equipment that will operate at peak performance, with a maximised lifespan."

He says the entire rebuild can, in many cases, be completed much faster than the lead time of purchasing a new screen.

### Importance of the service provider

"Given that cost matters a great deal," says Barloworld Equipment's Gaylard, "and even more so at the moment, there is a very real temptation to send the rebuild to a service provider with the lowest initial quote."

However, he says, mission-critical capital assets are procured as they are



A vibrating screen before being rebuilt by Haver &amp; Boecker Niagara.

vital to the production value chain. If these are unavailable, this value chain is compromised and the owner's business is negatively affected.

"Saving some money on a rebuild but having capital tied up in an asset which is unable to produce because of a poor quality rebuild or back-up service is counterproductive and often stems from viewing a rebuild in terms of initial quoted cost, rather than cost per ton, or uptime."

He says a reputable service provider will also ensure that all product updates or upgrades are carried out (or give the owner the option to have this done), which will further enhance the value the machine can add.

"Back-up after the rebuild is key, too: does the service provider have a wide enough footprint to support the machine or component once it leaves their premises? Do they have skilled and qualified personnel and approved parts?"

The service provider should also have a good relationship with the OEM and have "deep experience" of the machine.

"Lastly, and very importantly, the supplier must support the equipment owner's health, safety, environmental and equity or transformation goals."

A rebuild performed by a reputable provider will be more reliable, safer and cheaper to operate in the long term: "After all, there is a reason most of will not have our personal vehicles maintained by just anyone; our lives depend on the quality of the service."

Metric Automotive Engineering's Yorke says failure of mission-critical components and unavailability of equipment will cripple production and possibly entire operations.

"Considering a reputable service provider is simply not enough," he says. "In-depth technical site visits to the service provider's facilities are critical. Ensuring the provider has the necessary resources including equipment and skills allowing the





A vibrating screen after being rebuilt by Haver & Boecker Niagara.

remanufacture to OEM specifications, coupled with a quality system, should be the bare minimum.

"Quality remanufacture will be more expensive than repair, but those savings are quickly lost if the repaired components do not provide the required performance or lifetime and the mission-critical asset is unavailable."

Britz says it is "extremely important" to choose a reputable company for refurbishment or rebuilds. He says Haver & Boecker offers the PROcheck service programme which applies the company's expertise to recommend best practices for processing efficiency.

"By partnering with operations and routinely monitoring the efficiency of their screening process, we can identify

potential problems early on. This results in extended service intervals and improved equipment performance."

### Rebuilding/refurbishing: advantages

Barloworld Equipment's Gaylard says cost is a primary advantage as rebuilds are cheaper than purchasing new machines and extending asset life has a positive effect on the asset owner's balance sheet. He warns, however, that "care should be taken to not extend the life beyond the point whereby it would make economic sense to procure a new asset." He says the OEM will be able to assist in determining this point.

"Rebuilds can also often be done quicker than procuring a new asset, particularly when we consider that many machines and components are imported. This means that capital assets can be back in the field and generating revenue in a relatively short time."

A reputable service provider will also provide a warranty on the rebuild, depending on the scope of the work. In some cases, this can be comparable to the warranties of new machines.

"It is worth mentioning again that a well-established and reputable rebuild provider will stand by their work and provide after-sales support to keep the asset performing optimally."

Remanufacture to OEM specification does not compromise the performance of the diesel engine component as the OEMs design these components to be remanufactured several times, says Metric Automotive Engineering's Yorke.

He also refers to the cost advantage over purchasing new components, and to the advantage in terms of turnaround time: "Remanufacturing components is often quicker than sourcing new ones from the global market. There is also the overlooked advantage of 'recycling' the component, rather than replacing it with a new part." 🌀

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# FLEET MANAGEMENT POST-COVID-19: THE ROLE OF THE SOLUTIONS PROVIDER

**In the months following the COVID-19 pandemic, fleet management can provide a way for fleet owners to get their vehicles back on track while growing the bottom line. *Capital Equipment News* approached a few players in this field for their take on the matter. By Mark Botha**

**N**etstar CTO Francois Stols says his company's statistics prior to and during the initial lockdown show that long haul and logistics carriers saw 70% or more of their fleets parked. By contrast, he says, essential service carriers such as food delivery companies saw an increase in mileage travelled.

"Given this increased demand," he says, "the route planning and delivery optimisation provided by fleet telematics services can assist essential services in meeting the demand."

He says, with the national lockdown being lifted gradually (at the time of writing), the more traditional carriers are again becoming active, but are still not operating at full strength.

"Optimum fleet operation is vital to ensure profitability under these conditions and the ability to use fleet telematics to save operating costs has become a driver of these systems."

MiX Telematics Africa's fleet sales director Henry Smith agrees that fleet management solutions can provide improved efficiencies, better asset security and lowered risk. He says telematics data is used to implement changes that make fleets more productive, so saving time and money.

"Fleet management solutions," he says, "should address different business needs with regards to fleet and vehicle size, as well as specific industry requirements."

He says telematics solutions offer real-time visibility, showing fleet managers how their assets are being utilised.

"Premium solutions can be tailored to suit the operations' efficiency, safety, security and compliance needs. Businesses using telematics data experience tangible results, such as considerable improvements in utilisation, efficiency and driver behaviour, resulting in lower costs and higher profit."

"To compound the issue," says WesBank's head, Fleet Maintenance & Leasing John Loxton, "we were already facing substantial headwinds in terms of the macro-economic climate in South Africa prior to the lockdown. So, if anything, fleet owners should now be exploring ways to reduce costs and preserve cash flow."

"We apply our skills, knowledge and resources to reduce the costs associated with running a fleet." He says the company's balance sheet also enables fleet owners to sell



Fleet owners are able to sell their fleets to WesBank Fleet Management and lease them back.



Statistics prior to and during the initial lockdown show that long haul and logistics carriers saw 70% or more of their fleets parked



Data can provide actionable intelligence for making enhancements across all departments within a business



Efficient use of vehicles will reduce fuel and maintenance costs, and business owners must therefore know how their vehicles are being used



It makes no sense to invest in fast depreciating assets as the complexity of vehicle maintenance has also supported acceptance of managed fleet services

QUICK TAKE

their fleets to WesBank and lease them back.

These measures, says Loxton, are designed to reduce costs and enable fleet owners to preserve cash flow.

Ctrack MD Hein Jordt says the availability

of relevant data is crucial, especially in these times of the COVID-19 pandemic.

"Accurate data, preferably in real time, assesses what is actually happening within a fleet operation, so that suitable decisions

can be made," he says.

"The best route for fleet operators without access to the required data would be to approach fleet management consultants trained to analyse the fleet operation, and to implement a solution to suit their needs."

He says all Ctrack assessments are based on the specific data needs for the various types of vehicle in the fleet. Ctrack, he says, uses five key fleet management areas in its evaluations to cover all aspects of fleet control.

Cartrack South Africa CEO Harry Louw agrees with the importance of relevant data. He says that, in the right format, data can be used to provide actionable intelligence for making enhancements across all departments within a business, as this results in improved efficiency, optimised processes and cost reductions.

"For fleet owners, this intelligence is a valuable commodity in the COVID-19 impacted economy. Knowing where expenses are incurred and putting measures in place to reduce these can bring about positive changes to the bottom line."

### Benefits to the fleet industry

Louw says businesses such as logistics companies, which are governed by speed of



delivery, use this data to identify route delays, and to map new routes for their vehicles.

"You can also use Cartrack's actionable intelligence to introduce and drive incentive-based reward programmes and skills development, so benefitting the company and its people."

Ctrack's Jordt says operators must ensure that holistic telematics solutions are used to address factors such as risk, cost control, fleet utilisation, operations control and asset control.

Dangerous and irresponsible driving poses a risk to the business, as does unauthorised vehicle usage.

"The element of risk includes the safety and fatigue levels of the drivers, as well as their intervals of rest; general vehicle security; theft; hijackings; signal jamming; route adherence and area management."

Driver behaviour impacts the bottom line and cost control therefore provides insights into aspects such as speeding; collisions;

harsh braking and cornering. He says driving pattern monitoring has the added benefit of reducing fuel consumption.

In terms of fleet utilisation, "efficient use of vehicles will reduce fuel and maintenance costs, and business owners must therefore know how their vehicles are being used, not just how they are being driven." Ctrack provides data on odometer readings, vehicle operating hours, turnaround times, route adherence and waypoints.

"Real-time fleet management also helps reduce fuel consumption. Controlling your vehicles becomes increasingly difficult as the fleet grows in size and the routes and schedules change." Ctrack addresses this complexity with productivity reports, route deviation details, time adherence insights and others.

Jordt says it can be difficult to keep track of the conditions of individual, ageing vehicles, which is why Ctrack provides

daily health checks and odometer or hour meter readings. The company aims to provide as much information as possible on all operational parameters to improve operational efficiencies and reduce costs.

MiX Telematics' Smith also stresses driver behaviour and vehicle utilisation as aspects of the fleet industry deriving benefit from fleet management solutions. Good driving behaviour reduces fuel consumption and vehicle maintenance costs while optimising vehicle usage leads to increased profitability over time.

Customer service, too, benefits by the implementation of fleet management solutions as the fleet operator manages routes while monitoring locations, stops and zones.

"This results in quicker turnaround times, improved visibility of delivery timelines and generally better service."

He says fleet security, another important factor of the fleet industry, helps to reduce hijacking and theft by means of asset tracking and stolen vehicle recovery.

WesBank Fleet Management's Loxton says the fleet management industry caters to the entire value chain, from vehicle selection to vehicle disposal.

"Fleet management also caters to license renewal; traffic fine management; telematics; road-side assistance; accident and maintenance management; fixed maintenance and tyre costs, for example, as well as asset funding on a long-term rental basis," he says.

Stols says Netstar saw an almost zero crime rate immediately after the initial lockdown.

"However, as the restrictions were lifted, and with other socio-economic pressures on the rise, we saw a sharp spike in highjacks and vehicle theft. The fleet industry is not immune to this, but the emphasis is more on cargo security."

### Simplified telematics data

A key trend is to simplify the data obtained from telematics devices to allow for quick and reliable interpretation.

In line with this, Cartrack's Louw says data must be provided in such a way that it is easy to analyse, and provide the intelligence to implement changes quickly.

"In businesses where time is money, any change that brings about an improvement in efficiency is a win."

He says this actionable intelligence is a valuable commodity for fleet owners in the COVID-19 impacted economy:

"Knowing where expenses are and putting measures in place to reduce them can bring about positive changes to the bottom line."



"Interest in 'dots-on-a-map' tracking was soon overtaken by more comprehensive fleet management systems."

Netstar CTO Francois Stols



"Businesses using telematics data experience tangible results, resulting in lower costs and higher profit."

Henry Smith, MiX Telematics sales director: Fleet (Africa)



"We continue to witness an increased level of acceptance of asset rental or leasing."

John Loxton, WesBank head, Fleet Maintenance & Leasing





WesBank Fleet Management is an asset and fleet management outsource service provider.

Ctrack's systems, says Jordt, provide fleet managers with real-time visibility of their entire fleet.

"Detailed information presented in an easy-to-understand format empowers companies and individuals to make report-driven changes on their fleet vehicles, thereby directly managing events that affect the bottom line."

Ctrack has developed what Jordt terms a "valuable insight into fleet operations" in the form of its supporting software and business intelligence platforms. These platforms can now provide customers with

"foresight": "One can no longer provide basic solutions to an increasingly sophisticated market, so solutions must be tailored to differing user requirements."

He says the various Ctrack platforms cater to the specific needs of smaller business and large corporates. These solutions include Ctrack Mobi for mobile devices and Ctrack Online, for viewing data and reports online.

"Ctrack Maxx for large enterprises involves secure software permitting large fleets to have their daily operational requirements at the

controller's fingertips."

The Ctrack Iris camera software provides 24/7 viewing and replays that match tracking alarm and risk notifications, while Ctrack Driver Mobi allows drivers to inspect a fleet vehicle before it is used. Ctrack Mobi also provides instant access for office-bound fleet operators.

"We will outsource operational fleet management in our 24/7 Bureau Service model, should fleet management place a strain on clients' operational staff or should they require extra employees. This helps fleets reduce operating costs and operators still have real-time access to data and fleet activity via the online and mobile applications. Our service level agreement minimises risk, and outsourcing means more time for staff to complete their other duties."

"All this software is designed for functionality and ease of use while providing more than just a tracking solution: it offers the ability to identify trends, detect risks and act proactively on areas requiring intervention, from service schedules to route management."

MiX Telematics' Smith says fleet managers must be able to adapt to day-to-day challenges quickly. He says numerous factors can make a standard journey accumulate unnecessary costs, be less efficient and exposed to risks.

The company has recently introduced the MiX Insight Analyser online business intelligence solution, designed to help fleet managers make faster, more informed operational decisions by presenting relevant and accurate fleet data in a simplified way.

"The telematics data is presented in dashboards, graphs, charts and tables in the MiX Insight Analyser platform, making it easy to detect trends and draw conclusions about fleet utilisation and driver behaviour, and showing fleet managers exactly what areas to focus on and which changes to make for immediate improvement."

Smith says the solution provides user-friendly, visually engaging and dynamic dashboards, replacing static telematics reports. The data updates automatically, in real time, based on user presets.

This BI solution helps fleet managers make insight-driven decisions for more efficient operations, saving time and money."

Loxton says WesBank Fleet Management is a trusted asset and fleet management outsource service provider and telematics forms an integral part of its value proposition.

"Some service providers integrate telematics into their business model by establishing or acquiring telematics companies. As a financial services company,



"One can no longer provide basic solutions to an increasingly sophisticated market, so solutions must be tailored."

Ctrack MD Hein Jordt



"The days of providing a basic fleet management platform are over. Customers want value for money, with a clear return on investment, and world-class service."

Harry Louw, CEO of Cartrack South Africa





The Ctrack Driver Mobi.

we partner with specialist telematic service providers in the industry instead."

He says the company therefore leverages the R&D conducted by these service providers, as well as their intellectual property, to offer the best solution.

"This enables us to offer our fleet customers custom-made telematics solutions that would in turn enable them to obtain visibility and traceability of fleet assets."

Loxton says this approach also enables fleet owners to identify asset abuse, as well as recovery in the event of theft.

"Most importantly, though, it enables the ability to identify and modify driver behaviour in the interest of reduced operating costs and the retention of asset value."

Netstar, says Stols, sees the telematics industry as one of the pioneering industries of the Internet of Things (IoT).

"A modern fleet telematic system not only

## Fleet management solutions in the market

### Netstar

Netstar CTO Francois Stols says his company supplies cargo security solutions to the fleet industry, in addition to its normal tracking systems. "We fit various cameras to high-risk vehicles, including devices that are hidden in the cargo to ensure that, even if a hijack is successful, we can still recover the cargo. All of this is, of course, in addition to the normal fleet management services we provide."

### MiX Telematics

MiX Telematics Africa's Fleet sales director Henry Smith says the MiX Fleet Manager platform is cloud-based, providing real-time GPS location and telematics data accessible 24/7, via a web interface and mobile app. "Customers select from several solutions, ranging from Essential to Premium, designed to suit various business use cases.

The premium solution offers access to driver and vehicle information that can be linked to the CAN Bus data and provides real-time intelligence, allowing fleet operators to make informed and timely decisions.

"Our tracking module provides a real-time view of the asset's position (moving or stationary) and which driver is behind the wheel. It also displays speed, driving direction, past trips, ignition status, driving violations and more."

The solution's robust reporting allows data to be reviewed and analysed in detailed, dynamic and customisable formats and dashboards.

"Reports include movement, trip, location and utilisation reports, as well as driver scoring, event violations, fuel and cost analysis reports."

The MiX Fleet Manager platform represents an end-to-end solution giving fleet operators the tools to sustain high-performing operations running at optimum levels of efficiency and safety to maximise return on investment.

"Real-time and historical tracking, stolen vehicle recovery and trailer tracking are our key security offerings. These enhance driver safety, as well as commercial fleet security."

This range also includes asset management solutions, hardware, accessories and value-added services. The company can also provide a dedicated, onsite resource.

"Depending on operational goals or regional requirements, customers can choose from fleet camera systems to in-cab navigation and messaging devices; journey management and driver engagement tools; hours-of-service monitoring and satellite communication, among others."

### Ctrack

Ctrack MD Hein Jordt says the company provides integrated solutions

with third parties and products not normally seen as "true" vehicle tracking products.

"Our one-stop shop for fleet managers provides, among others, the Ctrack Iris solution, which facilitates live viewing of dashcam footage, as well as footage from up to six cameras fitted to trucks, trailers and inside cargo bodies."

The company's in-cab devices assisting drivers with multi-tasking and route management provide reports accessible via mobile and cloud-based platforms.

"Our products and services are designed to suit a variety of applications where flexibility is required," he says. Industry-specific solutions include transport and logistics; airport solutions; agriculture; mining and yellow equipment; government and public transport and small and medium business solutions, among others.

### Cartrack South Africa

Cartrack South Africa CEO Harry Louw says smart fleet management solutions are the best way to minimise risk and create processes to better manage potential problems.

"Features such as accident reconstruction, in-cab camera systems, trip reports and sensors to monitor diagnostics are invaluable mechanisms in investigations related to public issues."

He says fleet monitoring is simplified with the use of Cartrack's mobile app, which ensures faster access to data and a streamlined user experience. The app provides detailed reports on factors such as speeding and vehicle usage, among others, and allows the operator to take control of the routes travelled to save on-road time.

"Cartrack's Communicator is a task management software solution designed to get the best performance out of drivers and vehicles. Fleet managers can assign new tasks and add information to tasks via Communicator, and drivers can provide updates on their route progress."

### WesBank Fleet Management

WesBank's head, Fleet Maintenance & Leasing John Loxton says the company has a number of 'key attributes' that differentiate the company from the rest of the market.

"These differentiating factors are found in our trusted brand, our experience and expertise. It makes no sense to have world-class systems and fantastic looking presentations without the substance to back them up with focused fleet management insight and expertise.

"We add value through our management and leasing services, augmented by our ability to help fleet owners select the most suitable vehicles optimising the economic vehicle lifecycle, and by means of ongoing analysis of funding structures that will combine to offer fleet owners a world-class service."





Mix Telematics' MiX Insight Analyser.

provides accurate positional information, but with the proliferation of IoT sensors now fitted to vehicles, we are gathering data from temperature sensors; door sensors; camera systems; driver behaviour monitoring systems and many other data-generating devices."

He says that, in some cases, these parameters are sent through "every second, in real time". This means the telematics system must process enormous amounts of data. Netstar, he says, already "ingests" over 200-million data records per day.

"This number is increasing exponentially and, to cope with such vast amounts of data, we developed our own big data IoT platform, which is infinitely scalable and can ingest data from any source."

He says the conventional way of providing daily and monthly reporting is no longer good enough as fleet operators want to see trends and comparative behaviour.

"We do this by providing bespoke business intelligence dashboards. We are also increasingly using artificial intelligence to provide predictive analysis – the 'old school' way was to report accidents and incidents, but the new approach is to predict and prevent these incidents."

### Current trends

Addressing the current trends in the marketplace, Cartrack's Louw says fleet management solutions have improved substantially over the last five years.

"The days of providing a basic fleet management platform are over. Customers want value for money, with a clear return on investment, backed-up by world-class service."

"In a nutshell," he says, customers want better technology with improved cost-reduction and efficiency solutions, at a

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The MiX Track and React Bureau Service.

lower price and with better service. Many competitors unable to adapt to these changes have fallen by the wayside.

WesBank Fleet Management's Loxton points to "recent developments" in car sharing, ride sharing and autonomous vehicles: "We'll see many variations and ever-evolving business models in support of these developments."

He is, however, "not convinced" that the local market is ready for this relatively new way of assessing mobility.

"In the South African market, we continue to witness an increased level of acceptance of asset rental or leasing as a more effective way of acquiring the ability to transport goods or to provide mobility. This is very encouraging as it follows the accepted business practice of more mature fleet markets such as North America and Europe."

He says it makes no sense to invest scarce resources in fast depreciating assets as the complexity of vehicle maintenance has also supported a high level of acceptance of managed fleet services.

"The most prominent trend in this market has definitely been not only the acceptance of telematics to a level where it is considered essential; in the near future, we expect the emphasis to shift towards cleaner energy uses such as the electric vehicle (EV). The current oil prices would perhaps create the expectation for EVs to be some years away from reaching our shores. This is probably not wrong."

Nonetheless, the EV wave "is coming" and industry should accept that transport efficiencies beyond 2025 will be focused on the EV market, with very little if any further development of internal combustion engines.

"So, current and future trends in the fleet market will focus on the integration of all of these factors through more effective use of data and analytics. Given where we are right now, I would place equal emphasis on the

ability of fleet management service providers to offer fleet owners financial sustainability.

"It simply does not make sense to outsource fleet management services to price leaders promising all the bells and whistles without the expertise and a very strong and sustainable balance sheet backing the service offering."

Netstar's Stols says fleet telematics started in earnest some two decades ago, when GPS-based positional data became commercially viable.

"However, interest in 'dots-on-a-map' tracking was soon overtaken by more comprehensive fleet management systems, with an initial emphasis on fleet efficiency management, later supplemented with driver behaviour monitoring and safety."

With more and more truck OEMs realising the value of telematics, it has also become more viable to start measuring engine and other vehicle parameters. This, says Stols, has resulted in better maintenance regimes and the lowering of fuel and other operating costs.

"In South Africa specifically, we also see a huge trend in managing cargo security and risk through the use of telematics and related technologies. But the really big shift in market trends is the value that big data is bringing."

He says on the road autonomous transport systems, accurate telematics data and inter-vehicle communication systems are "the forerunners of this new era awaiting us".

"At Netstar, we have already developed systems for the mining industry that will autonomously arbitrate potential safety conflicts such as impending collisions, and take evasive action."

Jordt says the need among fleet managers for complex solutions has been growing over the past two to four years.

"Ctrack identified this need and has developed integrated solutions with third parties and products that are not normally seen as specific vehicle tracking equipment," he says.

The company has therefore included in its offering managers the Ctrack Iris camera solution, which allows them to view live dashcam footage, including footage from cameras fitted to trucks, trailers and inside cargo bodies.

"The additional need for advance driver assistance systems has grown exponentially and the Ctrack system can now reduce the fleet manager's risk in insurance claims."

Years of R&D have resulted in in-cab devices that assist drivers with multi-tasking and route management. These provide software reports that are easily accessible via mobile devices and cloud-based platforms.

"Our On the Road platform is now supported by Garmin, where the driver interaction provided by our software allows the customer to integrate their billing to their customer base with a proof of delivery feature."

He says the business environment is under great pressure, making the correct decisions vital when buying equipment such as tracking and fleet management systems.

"The cost of services is most important, so it is paramount that operators evaluate payback times against immediate benefits such as fuel saving.

"Operators should analyse costs, capabilities and possible future developments in their fleets. They should choose a platform which can be expanded upon automatically, instead of choosing the one that will require more hardware investments later."

Smith identifies as a current trend in the industry the use of fleet camera systems to livestream video footage which, he says, provides fleet managers with heightened control over their fleet and a better context to understand what drivers encounter on their trips. These systems also allow the viewer to monitor cargo loading and unloading, as well as possible damages that may occur during the process.

The MiX Vision fleet camera solution offers live streaming from up to eight cameras simultaneously via the MiX Fleet Manager online platform or mobile app.

Tools for "in-the-moment" driver coaching are another trend: "These enable the improvement of driver behaviour by means of real-time safety alerts allowing drivers to correct their actions on the road. Identifying and correcting poor driver behaviour is the first step to reducing risk, as well as fuel and maintenance costs."

He says the MiX Track and React Bureau Service assists fleet managers with real-time driving event management and quick responses to emergency incidents while the MiX Vision Bureau Service aims to decrease risky driving behaviour by means of reviewing fleet camera video footage for corrective driver behaviour coaching. 🔄



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Possibly one of the most attractive features of the Volvo R100 E is that its overall design has been kept simple.



## DRIVERS AND MARKET OUTLOOK FOR 100 TONNE RIGID DUMP TRUCKS

**Both Babcock and Barloworld Equipment have launched new 100 t rigid dump trucks in the local market: the Volvo R100E and the Cat 777E respectively. *Capital Equipment News* takes a look at these models' key features, the drivers of the 100 t rigid hauler market, and the outlook for this market going forward. By Mark Botha**

**S**tefan Coetzee, product manager, Trucks and Mining Applications at Caterpillar's southern African distributor Barloworld Equipment, says the 100 t class is the preferred truck size for smaller mining operations and contract miners around the world. He says this size is big enough to support high-scale production, yet small enough to manoeuvre easily.

"This size class provides optimum ground pressure for varying underfoot conditions where higher capacity trucks cannot be operated and lower capacity trucks will be unproductive." He says this segment is versatile enough for use with a variety of loading tools available in the market.

### Market

"Better cost per tonne and durability have resulted in this size class becoming the largest in the rigid hauler market segment," says Coetzee.

According to David Vaughan, MD of Babcock International Group's Construction Equipment division and southern African distributor of Volvo Construction Equipment, the 100 t class is the best-performing in terms of local rigid hauler sales, which

totalled some 80 units in 2019.

He says rigid haulers are used primarily by large, established mining operations and quarries.

"These machines are ideal when large quantities of material must be moved on haul roads that are well maintained and generally in good condition." Sales of rigid haulers are driven by demand for commodities and commodity prices.

### Caterpillar 777E

Coetzee says Barloworld Equipment delivered some of South Africa's first Caterpillar 777Es in 2016.

"The Cat 777E has been well received locally as a successor to the respected Cat 777D, which was launched in 1996 and stood firm as an industry favourite for 20 years because of its durability and reliability."

This new model provides several enhancements based on global customer feedback, he says.

Barloworld Equipment customers are also able to order the high-spec Cat 777G.

Coetzee says the Cat 777E allows customers to achieve lower cost per tonne due to improvements in productivity, fuel

economy, durability and maintenance.

He says these trucks are well priced and offer the same C32 ACERT technology engines as the G series, as well as other interchangeable components.

"The Cat 777E, with the C32 ACERT Tier 2 engine, has a lower fuel burn rate than its predecessor's 3508B engine, as well as extended oil change intervals. It is 7 t lighter than competing models, while sealed wet brakes all round (not just at the rear) are also an option." He says the model comes standard with the technology to connect to Equipment Management Services (EMS) for improved machine management and maintenance.

In terms of fuel economy, the Cat C32 engine provides 758 kW gross power, compared to 746 kW on the 3508B engine in the 777D model, delivering 5% savings in fuel. The Tier 2 rating of the C32 translates to lower emissions than the Tier 1 rating of the previous 3508B engine.

"Several new features come standard or as options on the Cat 777E, further contributing to fuel savings. For example, an Auto Neutral Idle feature engages idling in forward gear, placing the transmission in neutral to save fuel.



Barloworld Equipment delivered some of South Africa's first Caterpillar 777Es in 2016.



The 100 t class is the preferred truck size for smaller mining operations and contract miners around the world



These machines are ideal when large quantities of material must be moved on haul roads that are well maintained and generally in good condition



There are a number of these machines currently operating locally and, to date, the results have been very pleasing



The market outlook for 100 t haulers is good, given that these trucks' versatility is undisputed. These machines will no doubt continue to hold firm as a viable option in any fleet

QUICK TAKE

"The optional Engine Idle Shutdown feature automatically shuts the engine down to conserve fuel after a period of idling in the park position."

He says the timing of the shutdown can be programmed according to conditions and requirements. An overload speed limiter can also be enabled for effective hauling. A warning is issued when operating conditions exceed acceptable limits, prompting the operator to run the truck at its most efficient engine revolutions and gear to save fuel while improving component and tyre life. The operator can also select an optional

economy mode which reduces engine power by 10%.

"Servicing is even more convenient in the 777E with engine oil changes extended to 500 hours and hydraulic filter life extended to 1000 hours." Added to ground-level access to the electrical service centre and an option of grouped grease points, is a new optional fluid service centre with fluid level indicators on a keypad.

He says the redesigned cab interior provides better visibility and comfort. The operator station includes a new dashboard, gauge cluster and centre console, as well

as a larger advisor display as an interface for operator, monitor, payload, service, settings and service mode.

"To help the operator optimise productivity and prevent premature wear, the Truck Production Management System incorporating strut pressure sensors and on-board computing can be installed with a scoreboard on the exterior to indicate under- or overloading."

Safety is a priority, with a new four-point access system and joystick gearshift control with inbuilt parking brake control. Other safety features include delayed engine shutdown to allow system components to cool, and engine crank lock-out to lock the engine and disable the starter during servicing.

"The durability of the Cat 777 series continues with a new truck frame design that excludes bumper extensions but offers increased strength of the front bumper to improve the approach angle of the truck," says Coetzee. 597

## Volvo R100E

Vaughan says Volvo Construction Equipment offers a range of rigid haulers including the R100E dumper.

"There are a number of these machines currently operating locally and, to date, the results have been very pleasing," he says. "The machines are proving to be reliable, productive and fuel efficient."

He says this efficiency, which is aided by Volvo Dynamic Shift Control, has produced "favourable" worksite performance results at the Manungu-Welgevonden Colliery in Mpumalanga, for instance.

"The R100E was put to work on various sections of the colliery, where overburden hauling resulted in payloads between 93 and 103 t. Topsoil hauling resulted in payloads between 62 and 73 t and the haul cycles equated to 1 100 m, one way. The best fuel consumption recorded was 41,4 l per hour on an average payload of 95 t. This translates to around 2,3 t per l."

He says the components making up the drivetrain are "perfectly matched", resulting in a machine that can cope efficiently with steep inclines.

The drivetrain is configured and calibrated to facilitate electronic integration between the engine and transmission. This, says Vaughan, adds to cost-effective and productive performance.

"This integration between engine and transmission ensures smooth gear shifts which, in turn, result in consistent momentum, ultimately leading to reduced operating costs."



There are a number of R100E rigid haulers currently operating locally.



Servicing is even more convenient on the 777E with engine oil changes extended to 500 hours and hydraulic filter life extended to 1 000 hours.

Volvo Dynamic Shift Control includes a Shift Energy Management feature, an automatic, self-learning transmission-to-engine control feature maintaining constant torque output during transmission gear shifts.

"Automatic Adaptive Shift Control creates adaptive shift memory based on parameters such as machine speed, acceleration, deceleration and throttle inputs."

Vaughan says the feature selects the best shift schedule, including part load shifts, based on these parameters. This feature optimises gear selection and shift point to maximise speed and torque performance.

The Adaptive Shift Control is payload sensitive when connected to the optional on-board weighing (OBW) system. When the OBW registers a payload below the

programmed threshold, the R100E moves from stationary in second forward gear. The machine automatically shifts down to first forward gear if the payload is above the programmed threshold. This is to provide the power to start moving.

Other Automatic Adaptive Shift Control features include a Gear Hunting Inhibitor, which changes the gear shift pattern by delaying an upshift when a potential gear hunting (cycling) scenario is sensed, as well as Transmission Over-speed Protection, which sounds a warning when the transmission is in overspeed.

"The Neutral Coast or Free-wheeling Inhibitor works with the transmission over-speed protection. The transmission control senses output speed and does not permit neutral gear selection. The transmission control system downshifts the transmission

automatically. This feature activates the rear-brake retarder, should it sense over-speed."

In terms of the Vehicle Speed Limiter, the Vehicle Control Unit software "collaborates" with Volvo Dynamic Shift Controls to promote machine adaptation for regulatory mine site safety by permitting a programmable maximum machine speed or maximum gear selection.

Vaughan says the V-shaped load body ensures load retention during haul cycles and the ergonomically designed cab is fully roll-over protected (ROPS) and features a falling object protection system (FOPS) while offering good visibility.

"Visibility is further enhanced by the integrated Volvo Smart View which allows the operator to keep an eye on surrounding job-site traffic," says Vaughan.

"Possibly one of the most attractive features of the R100 E is that its overall design has been kept simple. This has resulted in a machine that is reliable and easy to repair, should the need arise to do so."

### Market outlook

"The Cat 777E is appreciated by customers throughout the industry for the performance it delivers in terms of reliability, durability and high productivity at low cost per tonne in both mining and large earthmoving applications," says Coetzee.

To him, the market outlook for 100 t haulers is "good, given that these trucks' versatility is undisputed. These machines will no doubt continue to hold firm as a viable option in any fleet."

He says models offering lower operating cost per tonne have become a "crucial consideration" in any production environment, particularly in the current tough economic climate.

"Given its versatility," says Vaughan, "the 100 t off-highway truck makes a sensible addition to any earthmoving fleet and, as a result, will hold a place in the market for the foreseeable future." 🌟



"Possibly one of the most attractive features of the R100 E is that its overall design has been kept simple. This has resulted in a machine that is reliable and easy to repair, should the need arise to do so."

David Vaughan, MD Babcock's equipment division




"Better cost per tonne and durability have resulted in this size class becoming the largest in the rigid hauler market segment."

Stefan Coetzee, product manager Trucks and Mining Applications at Barloworld Equipment



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The battery packs can be adapted to fit any forklift.



## LITHIUM-ION BATTERY SOLUTION FOR THE FORKLIFT MARKET

**Chemical and solar energy company CHASE Technologies aims to convert 50% of the current electric forklift market from lead-acid to lithium iron phosphate (LiFePO4) batteries within five years. *Capital Equipment News* takes a closer look. By Mark Botha**

**T**he company's research and development on an affordable lithium-ion battery solution for the forklift market started in 2017 and came to fruition by mid-2018, when the first of these batteries were delivered to market.

According to CHASE Technologies GM Brent Frazer, the technology has been well received and is in high demand.

"To date, we have delivered around 180 units into the market," he says. "Since our first successful implementation, we have been tweaking the technology to achieve the optimum configuration that suits the forklift segment and traction market in general."

The company has an exclusive distribution agreement with a global, high-volume producer of heavy-duty LiFePO4 batteries ranging from 25.6 V/135 Ah units to 80 V/ 700 Ah units.

Based at Johannesburg's Alrode South, Chemical and Solar Energy (CHASE) Technologies, says Frazer, also has footprints in Cape Town and Durban. The company is primarily supported by a network of distributors and dealers but employs its own technical support team of six people.

"Our core business has historically focused on forklifts," he

says, "but the success we had in that field has allowed us to branch into other traction battery markets, including cleaning equipment and golf carts."

### No alterations to equipment

He says the conversion to LiFePO4 batteries requires no changes to the forklift as the battery is "purely an energy source".

"LiFePO4 batteries simply deliver electrical power to the machine, just as lead-acid (PbAc) batteries do. It's a bit like using leaded versus unleaded petrol – you are just using a more refined fuel source." Frazer says the only modification to the forklift itself is the installation of an external battery display.

In terms of applications for LiFePO4 battery technology, he says the company is currently only focused on non-automotive traction applications.

"The chemistry we use is not viable for electric vehicles. The medium-term roll-out plan includes energy storage for cellular towers and industrial and commercial applications, but the current focus is purely on traction energy."





Some 50% of electric forklifts may be converted to LiFePO4 batteries.

## Future growth

Addressing future growth and expansion opportunities, Frazer says the company will also look to supply ancillary markets such as golf carts, cleaning equipment, access platforms and back-up power solutions to

assist with load shedding.

He says that, while other suppliers have fitted forklifts with LiFePO4 batteries, these are mostly standby batteries reconfigured into forklift power supplies.

"Our cells and modules are specifically designed for the heavy industrial traction battery market. They are robust and able to withstand greater impact and vibration."

## Environmental impact

In terms of the environmental impact of LiFePO4 technology as opposed to that of lead acid, Frazer says most LiFePO4 chemistries can be recycled into their base elements.

"This means that no single lithium ion chemistry is better than the others in terms of environmental impact – as opposed to lead-acid batteries, which pose pollution issues from heavy metals including lead, as well as from sulphuric acid."

"Given that the rule-of-thumb economic lifespan of a forklift is typically around 12 000 hours, this means that the battery is guaranteed for as long as the forklift is in operation. Longer cycle life and lower upfront cost ensure a greatly reduced watt-hour (Wh) cost."

## Cost of ownership

When compared to lead-acid batteries, LiFePO4 currently delivers power at roughly twice the price per kilowatt-hour (kWh), as the raw materials used in this technology are pricier than those in lead-acid. Frazer also ascribes this to the R&D investments still needed by the fledgling technology, as well as

to the current small scale of production.

"However," he says, "as volumes increase, economies of scale driven by demand are already driving prices down. We anticipate price parity in the next five to 10 years."

He says total cost of ownership for LiFePO4 batteries is "already lower" than that of their lead-acid counterparts due to their longer life and the fact that multiple lifecycles can be extracted from LiFePO4.

## Safety

Frazer explains that LiFePO4 is one of several chemistries within the broader lithium-ion battery category.

"Lithium cobalt oxide or LCO batteries are used in applications such as laptops and mobile devices while lithium nickel manganese cobalt oxide (NMC) is ideal for powering electric vehicles and medical devices. LiFePO4 technology is used to provide standby power and, now, to power forklifts."

He says LiFePO4 is the most stable battery technology available while being less energy dense than the most lithium-ion chemistries found in mobile devices or EVs.

"These high-energy sources are important in those applications as they provide a light-weight, compact source. The trade-off, however, is drastically reduced safety. LiFePO4 is by far the safest of all the chemistries and substantially safer than lead-acid."

## Thermal runaway

This safety is illustrated when comparing the "thermal runaway" of the various chemistries. This phenomenon pertains to internal heat generation within the cell. Thermal runaway temperature denotes the temperature at which this heat generation exceeds the rate of heat dissipation, leading to heat build-up.

"Thermal runaway for lithium cobalt oxide (LCO) batteries occurs at around 150°C while, in lithium nickel manganese cobalt oxide (NMC), it occurs at 210°C. In LiFePO4 batteries, thermal runaway only takes place at 270°C, which makes it the safest option."

He ascribes this to "strong covalent bonds" in LiFePO4 batteries, which ensure that the chemical bond is stable, even at high temperatures.

"Even applying a cutting torch to the battery only causes the material to glow, but as soon as the torch is removed, the reaction stops without achieving flash point."

With a cycle life of over 4 000, LiFePO4 also has a longer lifespan than LCO (500 – 1000 cycles) and NMC, with its 1 000 – 2 000 cycle life.

LiFePO4's added volume and weight per kW of energy produced is not a disadvantage in forklift applications since the battery forms part of the forklift's counterweight.

"Anything more compact or lighter would



CHASE Technologies' lithium-ion battery for the forklift market has been well received in the market



Given that the rule-of-thumb economic lifespan of a forklift is typically around 12 000 hours, this means that the battery is guaranteed for as long as the forklift is in operation



When compared to lead-acid batteries, LiFePO4 currently delivers power at roughly twice the price per kilowatt-hour (kWh), as the raw materials used in this technology are pricier than those in lead-acid



The company is looking to supply ancillary markets such as golf carts, cleaning equipment, access platforms and back-up power solutions to assist with load shedding in the future

QUICK TAKE



LiFePO4 is the least energy-dense lithium-ion battery.



The battery packs are designed for arduous conditions.

another cathode element, is a “safe and stable” metal, while the phosphate in the cathode consists of one particle phosphorous (a component of human blood) and four parts oxygen. The anode is made of graphite.

Frazer says lithium-ion and lithium-polymer are the most energy-dense technologies, which means the energy generated per kilogramme weight is greatly increased in these batteries, which makes them more efficient in terms of energy storage and transfer. However, this in itself means that the chemistries are less stable.

“The additional volume and the resulting added weight in LiFePO4 play into our hands as we use the batteries’ weight to make up the required ballast weight, while delivering a far superior level of safety and longevity.”

## Battery monitoring system

Each of CHASE Technologies’ LiFePO4 batteries is supplied with an integrated battery monitoring system (BMS) to manage the charge and discharge of the battery while ensuring maximum possible lifespan.

Frazer says these systems do not differ from those used to monitor lithium-ion batteries as LiFePO4 batteries are based on the same chemistry.

“While different manufacturers have different designs in terms of hardware and software, most measure the same data, including internal cell and pack voltage; current; state of charge and minimum and maximum cell temperatures.”

The CHASE Technologies BMS includes short-circuit and over-voltage protection, as well as over-current and under-voltage protection, among others.

“Should any of these parameters be breached, the BMS would shut the battery down and provide a full fault diagnostic history,” says Frazer.

He says the BMS also includes charge and discharge contactors and fuses to protect against potentially catastrophic failures. The system incorporates a telemetry system, which enables the company to access this data for remote monitoring and adjustment of the parameters.

## Future developments

In terms of what to expect in the battery market of the near future, Frazer says research is ongoing in terms of chemistries which will “almost certainly yield other options”. He says battery monitoring systems and charger technologies are evolving to deliver more reliable and faster energy and data transfer.

“Just as an exponential increase in uptake and demand (which fuels further uptake and demand) has driven Moore’s law, these same factors will ensure that energy storage technology follows a similar trajectory.”



“LiFePO4 batteries simply deliver electrical power to the machine, just as lead-acid batteries do. It’s a bit like using leaded versus unleaded petrol – you are just using a more refined fuel source.”

Brent Frazer, GM at CHASE Technologies

require additional ballast weight, which would add to the cost. This is why LiFePO4 is the most suitable chemistry for the industrial equipment market.”

## Non-hazardous cathode

The cathode used in LiFePO4 batteries is non-hazardous as its elemental composition includes lithium, which is safe to ingest and is even prescribed for the treatment of depression. Iron,





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The New Generation Scania trucks and services have been engineered to perfection with the goal of improving fuel efficiency.

## SCANIA'S 'UNBEATABLE' NEW GEN RANGE MEETS 'MATCHLESS' FINANCIAL AGILITY

**Many operators are hesitant to purchase new trucks as the current uncertain business environment threatens business confidence. Unprecedented business challenges are forcing fleet managers and business owners to rethink their traditional purchasing cycles. Thus, Scania South Africa is equally rethinking its business model to make upgrading financially easier for economically beleaguered fleet owners.**

**T**he impact of the COVID-19 pandemic on the trucking industry has been devastating, leaving transport companies in a precarious position. To this end, Scania South Africa is offering a fitting solution to help companies navigate the tough business conditions.

"The improved efficiencies leading to vital cost economies, offered by our New Generation Trucks, will really make a difference," says Mark Erasmus, GM: Sales at Scania South Africa.

The New Generation Scania trucks and services have been engineered to perfection with the goal of improving fuel efficiency.

Through improved aerodynamics, new engine concepts together with intelligent support systems, such as eco-roll and active prediction, the range offers substantial cost savings through greatly reduced fuel consumption.

Connectivity is also highlighted as a valuable cost-cutting tool. "Our connected services deliver it all – from Scania's

Fleet Management System, to remote diagnostics and driver coaching.

Our systems are also uniquely easy to use so they are used more often, leading to greater insights that translate into long-term cost efficiencies," explains Erasmus.

Connected technologies are used to manage entire fleets, maximising uptime and productivity.

### New standards

Scania is also setting new standards in maintenance plans using several operational factors and vehicle specifications to offer a continuously updated and flexible maintenance plan that minimises downtime to the lowest possible cost.

"Factors such as topography, fuel quality and stop and start frequency all affect the level of maintenance needed," says Erasmus.

By individually optimising the different modules in the maintenance plan, such as air filter and gearbox, Scania ensures that downtime is planned and only occurs when necessary.

For each maintenance event, timing and content is calculated based on factors such as cost of spare parts and labour.

This way, an optimised maintenance interval can be adapted to suit a particular business operation's schedule.

Even when things don't go according to plan, Scania provides operators with a complete back-up system designed to





minimise downtime and keep a vehicle on the road.

Scania Assistance is an essential support service that is available 24/7/365. "We understand that your truck needs to be working for you to make a profit," says Erasmus. "Everything about our aftersales service is designed to do that, at a minimum cost."

### Financing agility

Putting these cost efficiencies into the hands of businesses who could benefit from the cost-savings but don't have the appetite for large capital expenditures in these difficult times has required Scania South Africa to look for optimal financing agility.

"We understand our role as equipment providers and the value chain we need to provide to make our equipment relevant in a tough economy," explains Nomonde Kweyi, Marketing Director, Scania South Africa.

"To this end we have developed industry-leading financial offers that allow our customers to work with and use our world-class technology and performance, backed by our extended warranty and coverage plan, while also benefiting from financially agile repayment models."

Scania's new all-inclusive monthly payment offer includes maintenance, repairs, insurance and extras, with the option to upgrade or purchase after 36-months. "It gives operators a bundled offer that covers the essentials at an unbeatable monthly rate", explains Kweyi. For Scania South Africa, it's about supporting its customers.

"To keep businesses sustainable, we need to play a role in ensuring that they have access to the latest technology, best performance and most cost-effective aftersales services. However, to get them into that value chain, we needed to make affordability a focus," says Kweyi.

"Scania South Africa is ready to play a pivotal role in ensuring businesses have the best-in-class equipment and support to confidently recover and thrive, not just in the short-term but in years to come." 🌱

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MG Carriers, part of Bakers Tankers, has taken delivery of five new DAF XF Super Space Cabs from Babcock.



## MG CARRIERS ENTERS THE FRAY WITH DAF TRUCKS

**To expand its footprint into the dry goods market, bulk liquids transport specialist Bakers Tankers last year established its MG Carriers subsidiary. Having initially used Bakers Tankers' trucks for the new venture, the company has now taken delivery of five new DAF XF Super Space Cabs from Babcock, the first ever fleet to be owned and operated under the MG Carriers brand, writes Munesu Shoko.**

**A**t a handover ceremony exclusively attended by *Capital Equipment News* at the start of Alert Level 3 of the South African lockdown, adhering to strict safety parameters in line with the COVID-19 regulations, Babcock handed over five DAF XF Super Space Cabs to MG Carriers, a newly-established subsidiary of Bakers Tankers.

Bakers Tankers is a specialist bulk liquids transport company created in 2008 as a division of the highly successful and respected Bakers Transport Group. Having worked in the family-owned business since 1978, MG Tayoob established Bakers Tankers at the height of the global economic crisis. Key to the success of the business from the onset, even in the face of the tough economic conditions at the time, was the identification of a specialist niche market, that of bulk liquids transport.

Since then, Bakers Tankers has established itself as a force to be reckoned with in the highly competitive transport landscape in southern Africa. The company has proven itself as an expert carrier of volumetric cargoes. Its success has over the years been driven by a combination of its vast knowledge of the transportation and chemical industries, steadfast commitment to its customers and, most importantly, a driver workforce that is prompt and professional.

"We knew full well from the start that the requirements of this transport sector demanded extra skills uncommon to the general freight operations," explains Tayoob. "For

that reason we immediately recruited the necessary professionals and added them to the already solid foundations of Bakers Transport. Our solutions driven approach has over the years helped us to maximise opportunities, improve efficiency and provide our clients with premium results."

Speaking of opportunities, the company is riding on its strong relationships with fuel companies, built over many years, to expand its business into the dry goods market, initially focused on packed products, in the form of lubricants. "That's how we branched out into the dry goods market. The MG Carriers business, which is named after me, will be run as a separate entity with its own fleet of trucks," explains Tayoob.

MG Carriers, says Tayoob, won't necessarily be limited to the transportation of lubes; the company will eventually expand into other sectors of the dry goods market.

### Five new trucks

MG Carriers has since purchased its own first fleet of trucks, the five DAF XF Super Space Cabs delivered by Babcock's Transport Solutions business, the southern African distributor of DAF Trucks, on June 12 this year. This is the first time Bakers Tankers has owned and operated DAF Trucks.

Why DAF? "Babcock gave us a very good deal," says Tayoob. "The package they put together – which includes tailor made maintenance plans and a favourable





Babcock officially handed over the five trucks on June 12, 2020.

arrangement toward the second economic life of the vehicle – speaks directly to our unique needs.”

The five trucks will run with tautliners, transporting lubricants between Durban and Johannesburg. Another key consideration in opting for the DAF range, explains Tayoob, was Babcock’s comprehensive support footprint along the N3 route. Babcock has two DAF Truck dealerships in Johannesburg and Durban to support the N3 long-haul route.

Explaining what makes the truck tick, Fayyaz Adam, sales executive at Babcock’s Transport Solutions business, says greater driver comfort and fuel economy, coupled with Babcock’s commitment to its “trusted to deliver” mantra on the service side of the business, makes DAF Trucks a competitive value proposition for transport businesses. “In DAF we have a vehicle that is high in productivity and low in operating expenses,” says Adam.

Adam believes that the MG Carriers deal is significant in Babcock’s quest to further grow DAF Trucks’ market share in the local transport industry. “It’s extremely important,” he says. “The prestige of the Bakers Group buying into DAF is proof that confidence in the brand is rapidly growing in the South African transport industry. This is a

## QUICK TAKE

MG Carriers, a newly-established subsidiary of Bakers Tankers, has taken delivery of five DAF XF Super Space Cabs from Babcock



The five trucks will run with tautliners, transporting lubricants between Durban and Johannesburg



A key consideration in Bakers Tankers’ decision to buy its first ever DAF Trucks fleet was Babcock’s comprehensive support footprint along the Durban-Johannesburg route



Babcock believes that the MG Carriers deal is significant in its quest to further grow DAF’s market share in the local transport industry





"Since signing the dealer agreement with DAF Netherlands in July 2010, we have grown DAF Trucks' presence across the country through an extensive dealership network to support sales and provide aftermarket services."

David Black, operations director of Babcock's Transport Solutions business



This is the first time Bakers Tankers has owned and operated DAF Trucks.



The five trucks will run with tautliners, transporting lubricants between Durban and Johannesburg.

major step towards our goal to become the preferred supplier of extra heavy commercial vehicles in South Africa."

One of DAF truck's standout features, explains Adam, is its ability to perform optimally and efficiently in a wide range of climates and applications. Its day-to-day performance is further reinforced by DAF Trucks' proven fuel consumption.

#### DAF growth in SA

Since becoming the importer for DAF Trucks in southern Africa, Babcock has steadily expanded the brand's footprint in the region. "The vehicle has simply performed exceptionally and has given clients the confidence to continue with DAF," says Fayyaz. "Our dealer network and 24/7 roadside assistance have grown steadily over the past three years and this has been essential in us being able to deliver the efficient service the industry demands."

2020 marks a decade of Babcock's partnership with DAF Trucks. David Black, operations director of Babcock's Transport Solutions business, elaborates

how Babcock has expanded DAF Trucks' footprint over the years, and increased sales of DAF Trucks in the region by over 3 000% since it became the sole importer and distributor of DAF Trucks, parts and services across southern Africa.

"Since signing the dealer agreement with DAF Netherlands in July 2010, we have grown DAF Trucks' presence across the country through an extensive dealership network to support sales and provide aftermarket services," says Black.

Black says Babcock was quick to realise the potential of representing a market-leading European truck brand in South Africa, offering customers in the logistics and transport sectors a competitive, fuel-efficient truck built for the long haul.

Babcock established its first DAF Trucks dealership in Johannesburg, before opening its second dealership in Durban to support the busy N3 long-haul route. To meet the needs of customers operating in the mining sector, Babcock then established a DAF Trucks dealership

in Middelburg, Mpumalanga, before rolling out several other DAF Trucks dealerships along all the country's major long-haul routes to support a wide range of industries.

"Today Babcock represents DAF Trucks across southern Africa, including Mozambique and Zambia, with strategically located service centres providing support to Babcock's DAF Trucks dealers. All our DAF Truck customers have access to best-in-industry services, and Babcock is fully committed to maintaining customer relationships long after sales are made," says Black.

The dedicated commitment to customers earned Babcock the accolade of DAF Sales Operations Best Service Dealer of the Year award in 2019, two years after being named the DAF Best Sales Dealer Sales Operations for 2017, a year in which Babcock doubled the sales of DAF Trucks in the country.

"Babcock is fully committed to representing the DAF Trucks brand in southern Africa, not just through sales, but also by building supporting infrastructure and offering our customers flexible financing options and comprehensive aftersales service," emphasises Black.

In addition to the extensive regional network of sales and support centres, these services incorporate quick availability of parts, 24-hour emergency assistance 365 days of the year, and overall total transport solutions designed to maximise earnings per kilometre. Tailor-made repair and maintenance contracts are also available, and this was one of the major influencers in Bakers Tankers' decision to opt for its first ever DAF Trucks fleet. 🌟





# HOW TO WORK ON THE CONSTRUCTION SITE WITH EASE

How to organise a site in the most efficient and cost-effective way is the question many operators ask themselves before starting a job, or even buying new equipment.

**W**hat are the most compatible machines? How can I cut costs? How can I easily do the job? Is there a way to take advantage of the waste material? How can I organise my construction site safely?

These are just some of the problems that companies want answers to. Especially during this time where rules are more restrictive and we must work under strict safety protocols. Those who work on job sites need solutions to make their job easier.

Unfortunately, there is no such thing as a magic wand. But there is a concrete way of making work on site easier. At least this is the word on construction sites all over the world, in particular those where they have installed MB Crusher units – crusher buckets, screeners, drum cutters, grapples and shaft screeners, on their equipment.

This is where the idea of collecting stories of our customers' experiences came from, allowing us to better understand what opportunities and solutions new equipment and new technology can offer as valuable allies on the job site.

## 1. Keep the site organised and clean

Effective site management helps eliminate danger and significantly reduce accidents. Benefits of an organised jobsite include: more efficient use of space, freedom to move and fewer accidents on site. But above all, how important is it to choose suitable and efficient tools for the job?

This is what happened in Luxembourg during the construction of the European Union council's new building. Here, a BF120.4 crusher bucket and an MB-S18 screening bucket, were both installed on Kobelco excavators, crushed and separated the resulting material from the demolished Jean Monnet building to construct the brand new Jean Monnet 2, a 22-storey tower.

The MB jaw crusher processed 9 000 t of demolition material, ensuring a daily production of 500 t. The MB-S18 screening bucket selected and cleaned the material to speed up the process. A recycling station was practically created on the construction site.

The advantages? Reduced waste material hauling costs, an organised and clean construction site without material stockpiles and the autonomy to produce crushed material.

Easy! Two excavators and two operators are all you need. A cleaner construction site is safer. With MB Crusher equipment, it's also cheaper.

## 2. Improve logistics

Limiting what gets transported on and off your site means saving money and reducing traffic around the job. This applies to construction sites in urban and residential centres and in places in high altitudes where transporting materials and machinery is complicated and above all, expensive.

A solution? Install the MB Crusher unit

directly to your construction equipment. Which is what a company in Friuli, Italy, did. The company was contracted to do different jobs for Civil Protection force and organised a construction site in record time during the COVID-19 pandemic.

The job involved containing an escarpment, where it wasn't possible to build reinforced concrete retaining walls due to the vertical drop of 15 m. How did they decide to proceed? By removing the previous barrier and building a new one made of wood and stones. There were a few logistical problems. How were they going to bring the drainage gravel to the construction when the nearest supplier was an hour away? Then, there was another problem. The truck could only arrive 492 feet from the construction site so they also needed to find a way to transport the crushed stone to the final destination.

Mission impossible? No! Because by installing an MB-S10 screening bucket to the excavator already present on site, they began to select and clean the material they acquired from the previous barrier, while an MB-C50 crusher bucket crushed the stones. They then screened the material again to obtain regular sized and clean pebbles to make a state-of-the-art drainage system.

## 3. Recycle the waste material and limit the purchase of new materials

Crushing and separating material on site allows the construction site to be autonomous and free from disposal and transport costs. The job is easy. In fact, the material recycled with MB Crusher products can be immediately reused on site for fill, new construction, and other jobs. Or it can be put back on the market and sold.

This is how a company in Germany thought of installing an MB-L200 crusher bucket on its Komatsu WA100 wheel loader. By simply sitting inside the cabin, the operator cleared the site from waste and inert material, and rebar.

The company practically created its own recycling centre on site, then made it into a new service of its business. In fact, now the company also takes delivery of other inert materials to be recycled, with its crusher, and sells the crushed material at a 0-20 mm to customers who need aggregate. Not only that, the yard also has a BF120.4 crusher bucket which produces crushed material to use as substrate. A quick and easy solution.

The three Rs, reduce, reuse and recycle, make circular economy more accessible, especially during this time, when receiving a supply of material can be slowed down or even impossible. 🌱



Carl Gustaf Göransson.

# THREE FACTORS THAT WILL DETERMINE WHO WINS MARKET SHARE IN THE CONSTRUCTION INDUSTRY

**Carl Gustaf Göransson explains how distribution, digitisation and electrification will decide the future victors in the global construction equipment sector.**

**Q: What do you see as the biggest growth drivers within the international construction equipment sector?**

**Carl Gustaf Göransson [CGG]:** Ordinarily we would see market demand alone driving volume growth, but today other factors are coming into play. If we disregard the short-term impact of COVID-19 as an extraordinary event, the industry will be shaped by a combination of: infrastructure investment that supports climate change; digitisation; and regulations on emissions, noise and transport.

Creating modern infrastructure and replacing older inefficient systems will be driven with a much higher regard to climate change in the future, especially in the European and North Ameri-

## 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.

can markets. Increasing urbanisation will also drive market growth – by 2050 close to 70% of the world's population are expected to live in urbanised areas, up from a little over half (55%) today.

Big machines don't always work well in inner cities, so one product category we see growing fast is compact equipment, especially mini excavators and compact tracked loaders. The great unknown is legislation: if emission, noise and transport regulations toughen or harmonise quickly, the replacement cycle away from traditional diesel power combustion engine into new electromobility will accelerate.

**Q: COVID-19 aside, what markets do you expect significant growth from beyond 2020?**

**CGG:** From a volume perspective, of the top eight markets in the world the strongest growth will come from India. With the second largest population in the world, the country is going through an industrial and technological evolution that will drive the need for investments in infrastructure and energy supply. This is already happening – 25-30 km of railway are being laid every day, alongside new road networks connecting major conurbations and airport construction.

While India will grow fastest, China is set to remain the largest market in the world for a foreseeable future. We don't expect to see much change in the rankings of the other markets. North America, Germany, UK, Italy, France and Japan all have a large installed base, economies of scale and a variety of jobs that require all types of machinery.

**Q: What about other emerging economies?**

**CGG:** There is a lot of potential for Brazil to move up the ladder, as the country returns to a reasonable level of economic stability and growth. The long recession has left infrastructure in the country, especially roads,



massively underfunded. This could present a large opportunity for the construction equipment industry.

**Q: How is the distribution of equipment set to change?**

**CGG:** The role of distribution will play a key role for the future – but it does involve considerable change. With better access to improved data quality – available in real time – dealers should aim to capture more of the aftermarket business.

Thanks to increased competition, we also expect to see consolidation in the distribution network – meaning dealers will transition towards a multi-brand strategy from today's largely single brand exclusivity, diluting dealers' brand association. At the other end of the scale you will see more specialised dealers, for example, dealers focusing solely on compact equipment in urban areas.

**Q: Do you foresee the relationship between OEMs, dealer and end customer becoming closer?**

**CGG:** This is a developing trend that will accelerate in the next five years, as data transparency and digitisation act as a catalyst in driving interaction between the three parties. For example, OEMs are heavily investing in uptime support teams that are available 24/7 to the end customer.

OEMs are also publishing operating hours on their entire fleet, information that is publicly available. Information like this will drive transparency and help achieve greater uptime, productivity and product efficiency. These services provided by the OEM are being driven by increased digitisation, which is drawing the relationship between OEM, dealer and customer closer.

**Q: What will be the impact on manufacturers' product strategy?**

**CGG:** Compact track loaders have gained ground, mainly in North America, but are also starting to grow in popularity in other parts of the world. Mini excavators have proven their versatility and agility and are now one of the largest product categories in the world.

Here we will most likely see more variants and optimisation of the weight classes. Telehandlers will continue to grow as a concept also. Looking at traditionally large segments, we see declining volumes in products like the backhoe loader, which will continue to lose share to other products like compact loaders and mini excavators.

On the large excavator side, we are likely to see new concepts, especially on hydraulics efficiency and new short tail-swing concepts for larger machines above 30-t operating weight. Finally, the coming regulations will

drive technologies such as alternative propulsion i.e. electrification on a larger scale.

**Q: Digitisation and Big Data could transition the sector from a product-centric business model to product-as-a-service alternative. Do you feel the construction equipment sector is taking advantage of this?**

**CGG:** Until now, I think construction has not fully embraced the potential of digitisation and Big Data. If you look at the agricultural business, it is a field-centric focused operation, meaning through data utilisation, the farmer can optimise field productivity in terms of tonnes of corn per acre, among others. The tractor or harvester becomes the focal point for data extraction, allowing the farmer to capture and analyse data to drive efficiency and overall performance.

Until now, the data available within the construction equipment sector has been product focused; litres/hour, oil pressure, gear shifts/hour, average rpm, among others. Now the trend is becoming more about productivity and uptime. With more efficient data extraction and analysis capability, we will see newly developed services and processes driving data commercialisation, alongside entirely new revenue stream.

These will cover proactive maintenance planning and scheduling, capacity utilisation and optimisation, and integrated parts ordering involving the complete supply chain. This trend will further drive OEM and dealer integration in how they engage customers with an all-new product and service offering.

**Q: What regulations will act as industry drivers and how do they differ by region?**

**CGG:** Besides noise regulations, there will be a continued emphasis on emission regulations to drive a better climate. We see significant variation from region to region, with Europe, Scandinavia and China driving legislation in favour of cleaner power sources, electrification being a key example, and other regions such as North America, India and other parts of Asia developing at a much slower pace.

That said, we see the development in electrification moving at a high pace within certain construction equipment product groups and applications. Already the electrification concept has made inroads on compact and handheld equipment. We predict rapid growth in this area, assuming continued development on cost, battery performance and weight – all of which will make this option more attractive for the customer.

**Q: The current oil surplus/demand slump has triggered low fuel prices; how will this impact the industry?**

**CGG:** Short and mid-term continued low oil prices will be beneficial for the construction industry and its current global fleet. This perceived advantage may not last, as emissions regulation will have a bigger impact on the shift to alternative fuel sources than the spot oil price.

There is also scope for new fuels to make inroads in the coming decade, extending the use of internal combustion engines, and extending the second life of the used fleet currently under stage IIIB and Stage IV standards. An example of this is Africa, where a supply of high-quality fuel with lower sulphur levels could allow the current fleet of machines in North America and Europe to operate there.

**Q: Assuming a world of sustained modest oil prices, do you foresee India following China's path towards electrification?**

**CGG:** India is approximately a quarter the size (21-25%) of China's total market, with a total volume market of 82 000 units. Several factors will play a role in electrification in India. The most important one is the availability of electricity. If electric consumption were to spike, as things stand, there is a substantial lack of infrastructure to meet that energy requirement in India. As a result, unless there is large-scale infrastructure investment in sustainable and cleaner power sources the growth of electrification will be limited in India.

The speed at which electrification and other alternative power sources will be implemented, largely depends on government legislation, investment capability and oil price. Historically, periods of low oil price have tended to slow down the adoption of alternative power sources in developing countries. However, I do feel with technological advancements, alternative power sources are becoming more economical in comparison to fossil fuels and we foresee this trend picking up pace over the medium term. India will move towards electrification but at much slower rate than China.

**Q: Which market do you feel will lead the recovery and why?**

**CGG:** With large stimulus measures already in place China is leading the way out of the current 2020 market slump, and there are clear indications of strong future growth potential. Despite the short-term impact of COVID 19 on India's construction market, we see steady market growth in the mid-to-long term, driven by its burgeoning infrastructure needs. 🌐

## Russia starts using 5G network on autonomous mining dump trucks

A 5G pilot zone has been deployed for the first time at the SUEK coal company open-pit mine in Khakassia, Russia to test the potential of 5G as part of an autonomous haulage system developed by Zvyfra, Finnish-Russian industrial digitalisation leader.

The pilot project is trialled on 130 t BELAZ-7513R autonomous mining dump trucks. Robotic dump trucks are part of the Zvyfra Intelligent Mine system, which is aimed at providing efficient, safe, completely unmanned mining technologies based on robotics, industrial artificial intelligence (AI) and internet of things (IoT).

Part of the wireless 5G network, with a length of 1,5 km covering the robots' route, has been deployed on Huawei equipment with a view to performing the tests at the Chernogorsky open-pit mine (Abakan-sky open-pit mining area, Chernogorsk, Khakassia). The cover is provided by two 5G distributed two-section base transceiver stations (gNodeB), operating in non-standalone mode. The width of the operating channel is 100 MHz.

The main task of the pilot project is to test 5G networks for unmanned and remote-control transport, as well as to reveal and document the technological advantages of the latest-generation network over an industrial WiFi/MESH network.

The whole functionality of the robotic centre was utilised as part of the 5G technology tests. All video streams from high resolution cameras, which are mounted



The pilot project is trialled on 130 t BELAZ-7513R autonomous mining dump trucks.

along the dump trucks perimeter, are received by the information processing centre for real-time equipment control. The use of 5G technology has therefore meant that a great deal of information could be transmitted and delays minimized, thus significantly increasing the accuracy of the movement of the gigantic machines and control safety compared with networks in previous use.

The development of new generation networks can give impetus to the implementation of new technologies in the Industrial IoT sector. 5G in particular will become a new communication standard for automation: the high rate of data transfer and lack of delays will make this standard essential for all unmanned systems, especially for risky operations. 5G networks provide a more stable connection, a minimised delay in control signals – which is critical for remote transport control and management – and are not affected by disturbances which can be created by various active Wi-Fi networks.

"Robotic dump trucks allow for a significant increase in freight transport production rates (up to 30 %) thanks to a reduction in non-technological downtimes related to human factors (shift changes, lunchtime, etc.), an increase in the average speed of robotic dump trucks during travel and thus an increase in the number of movements per shift (by approximately 20%)," says Pavel Rastopshin, MD of Zvyfra. 🌐

## Metso Outotec commences operations



Metso Outotec commenced operations on July 1, 2020.

Metso Outotec, a new company with leadership in sustainable minerals and metals processing and recycling technologies began its operations on July 1, 2020. Headquartered in Finland and listed in Nasdaq Helsinki, Metso Outotec employs over 15 000 professionals in more than 50 countries and its illustrative combined sales for 2019 were about €4.2-billion.

The company offers its customers crushing and screening equipment for the production of aggregates as well as equipment and solutions for minerals processing, metals refining,

chemical processing, and metal and waste recycling. Metso Outotec's industry-leading service capabilities and global network are complemented with a comprehensive range of spare and wear parts, refurbishments and professional services.

Metso Outotec brings together a long history of technological leadership, customer focus and excellence in services, leveraging the strengths of both companies. The benefits to customers and other stakeholders are unmatched in the industry: full offering that ranges from ore body to metal, extensive global services network and significant investment in R&D, allowing the company to create sustainable technologies to the customers' benefit. The combination offers potential for significant cross-selling and cost synergies and an even stronger platform for innovation, digital leadership and growth.

The growing interest towards the environment and the impacts of climate change, urbanization, decreasing ore grades and electrification are forcing traditional industries like aggregates, minerals processing and metals refining to redefine their license to operate. Metso Outotec can drive these industries towards a responsible use of the world's natural resources.

"It is our core expertise to help our customers transform the industry. We offer sustainable technologies and services that reduce the consumption of energy and water by increasing process efficiency, recycling and reprocessing of tailings and waste. Our extensive offering and expertise help our customers improve their business and lower their risks. We are their partner for positive change," says Pekka Vauramo, the President and CEO of Metso Outotec. 🌐



## XCMG's global expansion continues unabated

The global COVID-19 pandemic cannot stop the international expansion of XCMG, the leading Chinese construction equipment manufacturer, with more than 100 XCMG hydraulic excavators shipped to North America during the epidemic.

The exported XCMG excavators are customised models for North America, which are equipped with a Cummins EPA Tier 4F engine, offering sound performance and reliability.

XCMG has been exploring North America, a high-end equipment market, with a great deal of effort for the past few years. Informed by its XCMG Research Centre in the United States, the company has developed a series of products that meet the certification standards of the region. At the same time, XCMG continues to invest in building a local sales and service system, providing customers with the equipment and unparalleled support service in the region.

Johnson Hire Ltd is one of the most notable customers operating XCMG machinery in North America. The company, based in western Canada, is primarily into civil engineering and its fleet comprises six XCMG hydraulic excavators consisting of four XE150E (15 t) models and two XE35 (4 t), all purchased from XCMG's dealer for western Canada, JAPA.

Mr Johnson, owner of Johnson Hire Ltd, finds the XCMG excavator ideal for his type of work because of its quality, productivity, reliability and ergonomics. He is mostly encouraged by a range of tried and tested components on the range, making the XCMG excavator a competitive offering in arduous operating conditions.

"The Cummins Tier 4F engine and Kawasaki Hydraulics are not foreign to us. Parts availability in Canada is also another reason we continue to invest in XCMG machinery," says Johnson.

Johnson is satisfied with the productivity of his XCMG XE150E, which is said to be performing beyond expectations. Powered by a 90 kW engine and equipped with a 0.75 m<sup>3</sup> bucket, the machine is suited for earthmoving and truck loading.

Johnson also finds his XCMG excavators a lot better in terms of fuel efficiency than some of the competitive brands he has operated before. In fact, he has seen an 8% fuel



XCMG recently delivered 100 excavators in North America.

saving compared with his previous machines in his fleet.

"When it comes to aftermarket support, XCMG and JAPA never let us down — they have a complete understanding of our unique operational needs. JAPA also carries sufficient stock of parts worth more than US\$1-million dollars at any given time. The dealer also has an experienced and dedicated service team, which helps minimise downtime, increase production and extend machine lifecycle." 🌟

## Caterpillar's 175 000<sup>th</sup> medium high drive dozer

In 1985, Caterpillar expanded its revolutionary elevated sprocket undercarriage concept to its medium track-type tractor (MTTT) line with the launch of the H-Series models. Still unique to this day for the 130 to 350 hp (100 to 250 kW) dozer class, the high drive design conformed to the ground better, improving durability, serviceability and performance compared to low-drive and oval track designs.

The Cat D4H, D5H, D6H and D7H dozer models were the first to feature the high drive design, and in 1987, the D8L model was added to the family. In addition to bringing many of the same large dozer advantages to the medium line, the elevated drive sprocket allowed movement of the front and rear track idlers. This helped to fine-tune machine balance and ground pressure for specific applications more easily than oval track machines. For the first time, variable pitch angle tilt (VPAT) blades were made available to high drive dozers with the D4H and D5H models for finishing jobs faster by grading at higher speeds.

Thirty-five years later, Caterpillar celebrated the unrivalled success of the elevated

sprocket design in the medium dozer class by producing three commemorative 175 000 units in May 2020. "One of the original taglines to promote the early high drive tractors was 'Beyond Known Capabilities,' because these units set a new standard for efficiency, productivity and ease of operation," says Wes Holm, chief engineer, Caterpillar medium tractor products. "With our next generation medium dozer line, which includes the new D5, D6 and D7 models, we continue to push these envelopes through adaptation of technology to drive productivity and efficiency to another level."

With travel and gathering restrictions resulting from the ongoing coronavirus pandemic, Caterpillar cancelled in-person celebrations to mark the historic 175 000-unit milestone for its medium dozers.



Built in East Peoria, the first two commemorative units were Cat D6 XE electric drive dozers, featuring a sleek dark grey and black paint scheme.

However, three customers took possession of the commemorative units, which feature special decals on the fenders denoting the 175 000-unit milestone. The 175 000 image appears inside the cab as well, where it is embroidered on the headrest and printed on a plaque denoting each unit's limited-edition status. 🌟

# COVID-19 – WHAT WILL THE SA MINING INDUSTRY LOOK LIKE AFTER THE PANDEMIC?

It is fair to say that although the South African mining industry represents 8% of our GDP and employs approximately 450 000 people, by 2019 figures, it is SA's sweetheart industry. The mining industry was one of the first industries to be permitted to resume activities during the lockdown (and in some instances did not even fully shut down at all). By Wessel Badenhorst, Partner – Hogan Lovells Johannesburg.

**M**ining is a sunset industry. Minerals are finite. Their extraction becomes more challenging every year as mines have to go bigger and deeper to access minerals. At some point we will run out of mineable resources, but for now it is projected that there are still approximately US\$2,5-trillion of mineral resources in the country. No picture of SA's future is complete without taking into account what mining can contribute.

Any prediction of the industry's future must inevitably consider the impact of the COVID-19 pandemic globally, but must also consider what transpired over the past quarter of a century since the dawn of our democracy.

## Changing dynamics

In the mid to late 1990s, mining was controlled by approximately seven large mining groups. They operated like mini-governments and had large service departments, including research and development budgets. The re-entry of South Africa's mining industry into the global economy has contributed to the fundamental restructuring of the old 'mining house' system as doors opened to international investment and movement of currencies relaxed. Over the past 25 years, we have seen:

- A new mineral law dispensation where the old Roman-Dutch law of mineral ownership was replaced with governmental custodianship. This was radical, but was needed to wrestle the economic power away from the mining houses and enable junior minors to enter the industry. This has also brought regulatory oversight as to who can own mining rights and under what circumstances a transfer of those rights can occur.
- Mining operations have been deconcentrated through various spin offs to smaller operators. This, coupled with the opening up of new mining right applications post the deconcentrating of mineral rights, have brought many

entrants into the mining industry. Although the bulk of mining is still in the hands of majors, there are now in excess of 58 mining companies who are members of the Minerals Council (previously the Chamber of Mines).

- The development of a social and labour responsibility mindset where mines acknowledge their licence to operate within host communities and focus on leaving a sustainable legacy once the life of mine comes to an end.

## Ultimate disruptor

The COVID-19 pandemic may prove to be the ultimate disruptor or accelerator of change to the industry where the normal strategies of risk mitigation such as weathering currency and commodity fluctuations may prove ineffective. In looking forward there are three themes that will drive the metamorphosis of the industry:

- **Technological research and development:** To remain competitive, the industry will have to spend more on technological research and development as it used to under the mining house system. We will need new technologies to unlock the country's remaining mineral wealth and this may include artificial intelligence and deep level remote mining employing skilled operators, rather than sending workers underground. This is an emotional issue, as the argument is often made that technology will replace employment and in a country where we are teetering on an unemployment rate of 30,1%, this is not an insignificant consideration. Although one has great empathy with such a concern, it is not a question of choosing or rejecting technological advancement. Without it, some mineral resources cannot be mined at all and for the rest, it is important that mines remain competitive. Technology is the only answer to delaying the inevitable death of the industry once our mineral wealth runs out.
- **Economies of scale:** small mining operators remain more vulnerable to internal and external threats. Larger



Wessel Badenhorst, Partner – Hogan Lovells Johannesburg.

companies are able to spread the risk among their operations, capitalise on economies of scale, attract better investment and unlock funding.

- **Infrastructure challenges:** The stability and cost of electricity supply remains the primary infrastructure challenge to the industry. Small mining operations cannot solve their electricity demands themselves. It is encouraging that Government is developing strategies to permit and encourage private electricity generation, but the capital costs thereof puts this beyond the reach of small and medium mining operations.

## The future

The future may very well look a little like the past. We should anticipate the consolidation of mining interests and operations over the next few years into the next decade. In the post pandemic jungle, the evolution of the mining industry will ensure that only the fittest survive. To be able to capitalise on these opportunities, mining companies will need to be bigger and stronger.

But these trends were there before COVID-19 anyway – all that will happen now is that the financial stresses on small and medium mining operations will accelerate the process where financially distressed mining operations are the low hanging fruit to the astute mining investor. 🌐





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