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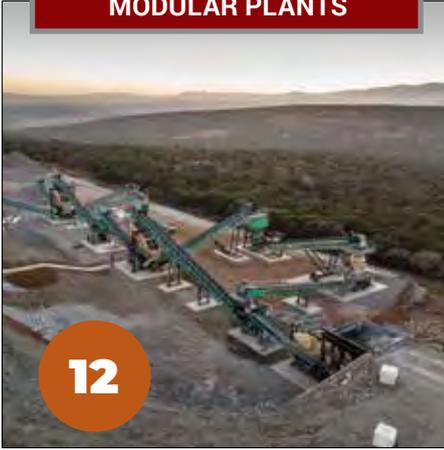
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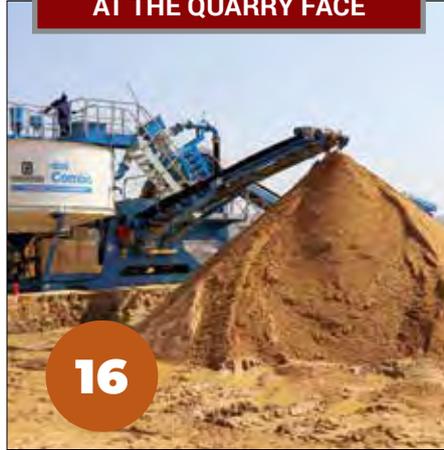
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MODULAR PLANTS

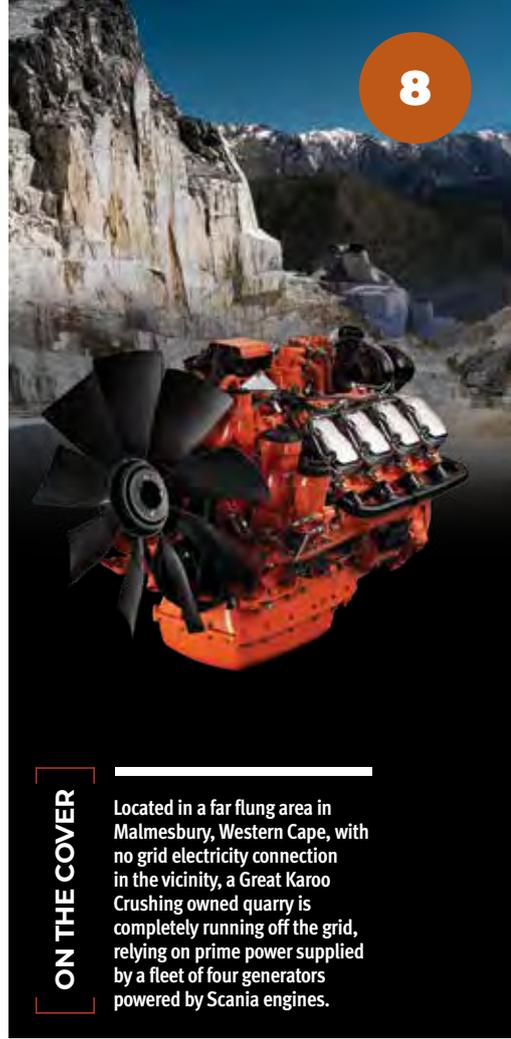


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AVOID TANKING RISKS

Successful aggregate managers know multiple factors contribute to their profitability, from minimising their trucks' cycle times to ensuring their crew's safety. Even support equipment, such as water trucks, can't escape their analysis – or at least they shouldn't.

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HOW HAUL ROAD MAINTENANCE CAN EXTEND TYRE LIFE

Traditionally, tyres were just a cost of doing business. Mine and quarry owners were accustomed to spending the initial purchase price of a large mining truck in tyre-related costs over the lifetime of the machine. Today, tyres are no longer considered just a cost; they are mission-critical to keeping your haulage fleet working.



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IS IT ALL DOOM AND GLOOM FOR THE QUARRYING SECTOR?

If economist projections are anything to go by, it is apparent that we have had quite a hectic year, economically. The South African economy is stuttering, with the International Monetary Fund recently revising the country's growth forecast for 2019 from 1,2% predicted in April to a paltry 0,7%, in line with slowing global growth.

This is compounded by rating agency Moody's Investors Service's recent announcement that it is lowering its outlook on SA's credit rating from stable to negative, signalling the country's 18-month window to get its act together to avoid further reduction to junk status.

What are the implications for the quarrying industry? Of concern to the quarry owner, the general sentiment is that construction, the bread and butter for the industry, is at a standstill. The big construction

projects are not coming to market. The government simply doesn't have money to invest into new infrastructure projects.

However, Andries van Heerden, CEO of Afrimat, believes that there are still pockets of opportunity, and it is up to the industry to identify opportunity and make the most of it. Based on that approach, Afrimat has just reported record interim results for the six months ended 31 August 2019, with revenue increasing by 19,9% to R1,7-billion.

Regardless of Afrimat's extended business reach through its diversification programme, the traditional construction materials market still recorded some growth, with revenue and operating profit increasing by 6,1% and 6,5%, respectively.

Van Heerden notes that quarry operators have to embrace the changing face of their industry. For example, in recent years, the way

infrastructure projects have been rolled out has changed significantly. Projects are packaged into smaller lots to allow upcoming construction contractors to compete in the country's infrastructure rollout programme.

Afrimat estimates that more than 60% of its sales now go to small and medium construction companies. The company has adapted its operating model accordingly to meet the needs of its new clientele. Van Heerden reasons that construction today is "like water from a sprinkler than a bucket".

It's a different market altogether, which changes quarry owners' strategies and risk profiles. For example, a couple of years ago quarries had huge debtors with credit limits, but today a lot of their business is on a cash basis.

Van Heerden believes that Afrimat remains well positioned to capitalise on its strategic operating model. The company foresees continued growth from an excellent asset base and expects further expansion of its range of unique products. Operational efficiency initiatives aimed at expanding volumes, reducing costs and developing the required skill levels across all employees, remain a key focus across all its operations.

I share the same view with Van Heerden. Quarry owners need to continue finding those niche pockets of opportunity, those little feeding spots behind the rocks to increase their revenue potential. It's not going to be a walk in the park, but with a bit of determination and innovation, it is achievable.

Munesu Shoko – Editor

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Dangote Cement to digitise cement plants

GE and Africa's leading cement producer, Dangote Cement Plc, have signed an agreement to deploy GE's Asset Performance Management (APM) digital solution to reduce unplanned downtime and enhance performance at its two cement plants in Obajana and Ibese, Nigeria.

The project includes extending the current service agreement for an additional 50 000 operating hours for the seven GE LM6000PC aeroderivative gas turbines installed at the sites. GE's total plant solutions will improve efficiency, reliability essential to continuous operations and the plants' business strategy.

"Power supply is both a key input and a major cost in our manufacturing process," says Ravi Sood, operations director, Dangote Cement Plc. "Operational performance is crucial to our cement plant's overall productivity, directly affecting end products. Being at the front of cement production in Africa, we believe extending our services agreement with GE and



GE's APM digital solution will reduce unplanned downtime.

the introduction of digital solutions will allow us to improve efficiencies, anticipate further reductions in unplanned downtime and become more self-sufficient in power production in a country which, with approximately 190 million inhabitants, is the most populous country in Africa and the seventh most populous country in the world."

APM leverages cutting-edge technology to monitor the performance of power generation assets to reduce downtime, avoid turbines damage and remotely predict and resolve issues. APM sensors will be installed not only on the seven aeroderivative turbines, but also on their associated generators and gear boxes to predict and accurately diagnose issues with greater accuracy before they occur.

"Energy infrastructure is getting smarter, and digital solutions allow not only the shift from traditional calendar-based repairs to predictive maintenance, but they also increase power asset availability and reliability," says Elisee Sezan, CEO for GE's Gas Power businesses in sub-Saharan Africa. ●

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Illegal mining threatens surface mining industry



Nico Pienaar, Director of Aspasa.

A widespread breakdown in the rule of law is threatening small and medium sized surface mining operations as rule-breakers and illegal mining operations undercut legitimate operators.

In a sector of the mining industry that employs a large amount of the country’s miners, a collapse of this nature will have a devastating impact on the economy. Yet, regulators and government entities are turning a blind eye and in some instances promoting the proliferation of illegal practices.

According to Nico Pienaar, director of surface mining association, Aspasa, a wave of illegal and undisciplined mining practices is building and may become unstoppable without urgent intervention. Gross environmental damage, serious health and safety breaches, abuse of labour legislation and tax avoidance are some of the immediate issues at stake.

“If left unchecked, the biggest problem will be the collapse of formal mines who can no longer compete on an equal footing. In many instances these mines and quarries supply essential products to build our roads, infrastructure and houses and without a large-scale and reliable supply we foresee a catastrophic and widespread fallout.

“The problem has been growing for some time now and our tripartite alliance partners in government, business and labour are well aware of our concerns. However, recent reports from some of our regions indicate that lawlessness is starting to spread with the market in some of these areas becoming a free-for-all.

“We are seeing municipalities allowing environmentally damaging borrow pits to be excavated ‘willy-nilly’ simply to have easy access to material to build roads, illegal mines operating alongside legitimate ones and threatening them with violence and we are seeing corrupt officials victimising individuals and companies who ‘dare’ to report illegal operations or non-compliances of mines,” says Pienaar. ●

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ASPASA AT WORK

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What does the future hold for the industry?

The world is changing and miners in many instances need to adapt their practices and product offering to stay relevant. Nico Pienaar, director of surface mining industry association Aspasa, says years of tough trading conditions have reshaped the South African and global economies and that tightening legislation surrounding health and safety, as well as environmental and sustainability issues, have put compliance and financial pressures on miners in recent times.

Added to this, commodity prices remain under pressure and certain mined goods have lost their sparkle on the local stage while dwindling demand for others has reduced on global stages. This has led to some confusion in certain quarters and led the association to prod its members to gaze into the future.

“We don’t know exactly what the future holds, but at least we can examine emerging trends and try to plan for the future. That’s why we need to start debating the future and our position in it, both globally and locally,” says Pienaar.

Although not exhaustive, the following list is a glimpse of the imminent future and it will pay for mine managers and owners to spend a few minutes thinking about each point and how it may impact their future trading:

Internet of things (IoT) – Imagine having all the information you need about your operation, markets and equipment at your fingertips. What would you be able to do differently?

Water scarcity – Many mining processes are partly, or fully, reliant on water in order to extract or process commodities. Can future water supply be guaranteed and if not?

Energy sources – Eskom has showed us the light in the dark. How do energy shortages affect your operation and what can be done to mitigate risks or find viable alternative energy sources?

Social currency – In the past the bottom line was all that mattered and profitability was seen to be the only measure of success. In a changing world however, another currency is becoming equally important and is judged almost solely by the good that a company does in its geographical area and area of specialisation – social currency. Do you know your mine’s social currency?

BBBEE – Sustainable or not, South Africa has a legacy and needs to redress the wrongs of the past. How can we invent a structure that is conducive for people of all walks of life without disempowering others?

Climate change – This may become one of the biggest challenges to mining in future as well face more wet days, more dry days, more storms and storm seas ahead. Climate change is reshaping our landscape and we need to do



Tough trading conditions have reshaped the South African quarrying industry.

our bit to reverse damage to our environment. What changes do you foresee in your children’s’ lifetime?

Sustainability – This is required in every aspect of our business from environmental and human resources, to in-pit operations and supply chains. Every aspect of our business nowadays needs to be carefully measured to ensure a sustainable future. Will your mine still be here in 10 years?

“We need to start thinking about the future, what commodities will we need? How will we need to reshape our environment to survive and how can we ensure that our mines will prosper and compete in years to come? We would like members’ feedback and if need be Aspasa can even hold workshops to help us plan for the future,” concludes Pienaar. ●

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Afrimat's record interim results thanks to diversification

Afrimat, a leading open-pit mining company providing industrial minerals, bulk commodities and construction materials, recently reported a record set of interim results for the six months ended 31 August 2019, with revenue increasing by 19,9% to R1,7-billion.

Headline earnings per share increased by 94,3% from 93,6 cents to 181,9 cents, mainly due to an improvement across all three business segments, and an excellent performance by the Bulk Commodities segment. The operating profit margin increased from 14,1% to 18,5%.

Afrimat's CEO, Andries van Heerden, says the group continues to deliver exceptional results supported by its diversification strategy, as well as cost reduction and efficiency improvement initiatives. "The improved earnings generated by all three operating segments contributed to these record results, and we are extremely pleased with the

performance achieved."

He added that the group's operating units are all strategically positioned to deliver excellent service to customers, and act as an efficient hedge against volatile local business conditions. "Our product range is well diversified to include aggregates and concrete-based products as construction materials and limestone, dolomite and silica as industrial minerals as well as iron ore as bulk commodities."

After the slowdown experienced in the Construction Materials segment during the prior period, the segment experienced a marginal recovery, with revenue and operating profit increasing by 6,1% and 6,5%, respectively. The operating profit margin remained flat at 13,2% for the period.

At a regionalised level, the KwaZulu-Natal business reported improved results following a successful restructuring process in the prior year, while the Western



Andries van Heerden, CEO of Afrimat.

Cape aggregates business continued to deliver solid results. "The Mozambique business continued to supply construction materials to smaller projects in the north of the country, in anticipation of the major LNG project. The Gauteng business is, however, still feeling the effect of the slowdown in the economy." ●



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Earthmoving in Fast Forward

Scania engines are at the heart of a Western Cape-based quarry's production.



POWERING OFF-THE-GRID PRODUCTION

Located in a far flung area in Malmesbury, Western Cape, with no grid electricity connection in the vicinity, a Great Karoo Crushing owned quarry is completely running off the grid, relying on prime power supplied by a fleet of four generators powered by Scania engines, writes **Munesu Shoko**.

When Great Karoo Crushing established its quarry just outside Malmesbury, one of the key contests was that the location is very far from utility electricity connection. The company had two choices, either to fork out millions of rands to get connected, or to go the generator route on a prime basis. The second option made sense, both from a cost perspective and reliability point of view.

Bear in mind that South Africa is currently experiencing an electricity crisis. A structural shortage of electricity supply remains one of the country's most critical challenges going forward as legacy infrastructure ages and replacement is long overdue. With its four generators powered by the DC 16 power generation Scania engine, proving to be fuel-efficient and reliable, the quarry is flying

high with no electricity disruptions to its 18-hour a day operating schedule.

Reliable and cost-effective

Johan Louw, engines manager at Scania South Africa, says the quarry relies on two 700 kVA and two 500 kVA for all its power needs. At the heart of the four gensets is Scania's DC16 engine, which, according to Louw, is proving to be a reliable and cost-effective power source. From a fuel consumption perspective, the quarry is recording about 105 litres of diesel consumption per hour on each unit.

Louw is adamant that these fuel consumption figures are hard to beat. "No any other manufacturer will beat the Scania engine fuel efficiency," he says. "As a result, we have had several enquiries from other quarries considering the off-the-grid route. We have proven, especially in prime power applications, that the Scania engine

Scania South Africa has a sizeable population of engines powering gensets operating in prime power applications on several operations across the region.



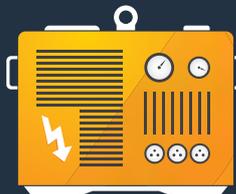
KEY TAKEAWAYS

Located far away from utility electricity connection, Great Karoo Crushing's Malmesbury quarry is completely running off the grid, relying on prime power supplied by a fleet of four generators powered by Scania engines

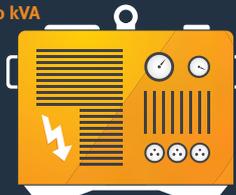
The quarry relies on two 700 kVA and two 500 kVA for all its power needs. At the heart of the four gen sets is Scania's DC16 engine

Scania South Africa's 95% parts stock availability is among the best parts support benchmarks in the industry

The engine is equipped with a Scania developed Engine Management System to ensure the control of all aspects related to engine performance



x2 700 kVA
x2 500 kVA



is hard to beat when it comes to fuel consumption.”

In fact, Scania South Africa has a sizeable population of engines powering gensets operating in prime power applications on several operations across the region.

“We have several units running in Botswana, Zambia, Seychelles, Malawi, Namibia, Zambia, Zimbabwe and Madagascar,” says Louw.

“Power shortages are a real issue to contend with for quarries and mines operating across the region and as Scania South Africa we are well positioned to offer reliable power generation engine solutions and the necessary backup support to keep these engines firing on all cylinders,” says Louw.

Engine in detail

The Scania DC16 engine for power generation is based on a robust design with a strength optimised cylinder block containing wet cylinder liners that can easily be exchanged. Individual cylinder heads with four valves per cylinder promotes repairability and fuel economy.

The engine is equipped with a Scania developed Engine Management System (EMS) in order



The quarry operates 18 hours a day.



The Scania DC16 engine for power generation is based on a robust design with a strength optimised cylinder block containing wet cylinder liners that can easily be exchanged.

to ensure the control of all aspects related to engine performance. The injection system is Scania's XPI (Extra High Pressure Injection), a common rail system that gives low exhaust emissions with good fuel economy and a high torque. The engine can be fitted with many accessories such as air cleaners, radiators and PTOs in order to suit a variety of installations.

The Scania powered generators at this particular quarry are run 18 hours a day at near maximum load – usually hovering around 70% maximum capability. In rare overload situations, the gensets have an accumulated peak overload of 110%, as long as they are not overloaded for more than 1 hour in a 12-hour span.

"Wherever there is a substantial need for reliability and efficiency, a Scania engine is just what is needed. We have manufactured engines for more than a century, and leveraging this experience, we are at the forefront of engine development, with performance and lower total cost of ownership at the heart of this development," says Louw.

Support matters

At this Malmesbury quarry, Scania South Africa is responsible for service and backup of the engines. Louw says uptime is a key parameter for the quarry and therefore, the health of its gen sets is of critical importance. "This is a very critical installation, and to make sure that the gensets are always running, we are responsible for the servicing and backup at large," he says.

As a result, the gen sets are running at their maximum capacity always, ensuring that there are no disruptions to production. "We have ensured maximum uptime with minimal downtime at this operation," says Louw.

Louw adds that Scania South Africa's high spare parts availability has been central to maximising uptime, not only at this Malmesbury quarry, but across several other operations the OEM is involved.

A good product is only as good as its service. This is one of Scania's very strong points. The Engine Division benefits from Scania's wide

service network across sub-Saharan Africa. In fact, uptime is a word of honour at Scania. The unique Scania modular concept with shared components and systems for all of its engines means higher parts availability, minimised waste and easy servicing for a single technician.

In addition, a full 500 hours between oil changes and maintenance boosts uptime even further. Higher uptime equals better business, and ultimately, greater operating economy for customers.

"We have a special understanding of the industry and we are well aware that uptime is a very important factor for our engine customers. With our strong sub-Saharan African footprint, we are able to keep the engines running in all corners of the region," says Louw.

Louw adds that Scania South Africa's 95% parts stock availability is among the best parts support benchmarks in the industry. "This availability translates into tangible customer benefits. Proximity to service and rapid access to parts are very crucial in this line of business," says Louw.

Scania engine for every application

For every Scania engine model – 9, 13 and 16-l – there is a complete line-up of power ratings to choose from. Industrial and Power Generation sectors constitute 75% of Scania SA's Engines business, while the rest is from Marine engines.

For quarries considering the genset route, there are 24 Scania engine models available for the local power generation market. Power ratings start at 250 kVA up to 800 kVA for the diesel-powered range. This is complemented by a gas engine range recently introduced locally in 2017.

"We also have a small range of gas engines we introduced recently, with power ratings from 350 kVA to 460 kVA. There is a big move towards gas-powered engines, and as part of our total solutions approach, we have engines that speak directly to that very need," says Louw, adding that there are three engine models available for the gas power generation range. ●

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AUTHOR: **MUNESU SHOKO**

EARNING MODULAR RETURNS

At a time when aggregate producers seek some insulation against the cold whims of the construction market, Pilot Crushtec International's standardised modular solutions offer several benefits, including lower capital and operational costs compared with bespoke plants, quick lead times and flexibility to operational changes.

Maximising productivity and reducing both the capital cost and cost per tonne can help quarries survive the typical boom and bust cycles associated with the construction sector. As an industry whose fate is tied to the cyclical nature of the construction market, quarry owners often feel the pinch of sustained dips in the market, and only feel the relief when prospects pick up again. Although quarrying companies can't entirely disentangle themselves from this cycle of boom and bust, increasing productivity and seeking ways to reduce their costs can provide some shield against the downward cycles of the market.

The choice of equipment solutions plays a significant role in surviving the tide of an incessantly slow market. Buying decisions should consider the capital and operational costs, as well the ability to increase uptime and productivity, key parameters that make the difference between stagnation and profitability. Modular crushing and screening solutions tick all the right



KEY TAKEAWAYS



Pilot Crushtec International has been at the forefront of the modular revolution since 2007



The company can design and implement solutions that can process anything from 10 to 500 t per hour – and should requirements change over time, additional units can be slotted in to increase production



From an operational cost point of view, modular solutions work out cheaper than their tracked counterparts because they don't rely on diesel power



All Metso components in the Pilot modular solutions are covered with an industry-first 5-year/10 000-hour warranty

Pilot Crushtec International has been on the forefront of the modular plant revolution since 2007.



boxes as far as these parameters are concerned.

Modular solutions are not new to the quarrying sector. For decades, these ancillary solutions have been used from time to time, but in recent years they have become a staple for operations and contractors seeking long-term crushing and screening gains. One of the names that quickly comes to mind in the African marketplace as far as modular solutions are concerned is Pilot Crushtec International. The company has been at the forefront of the modular revolution since 2007.

Francois Marais, Director – Sales & Marketing at Pilot Crushtec International, tells *Modern Quarrying* that the company has popularised the modular solution since then. “We saw an opportunity to help clients who previously spent a lot of time,

“We saw an opportunity to help clients who previously spent a lot of time, money and resources on designs and engineering of bespoke plants.”

FRANCOIS MARAIS

money and resources on designs and engineering of bespoke plants, when in fact they could benefit from standardised solutions that are much easier to turn around, easier to maintain and don’t require as much planning,” says Marais.

“We started by designing some standard modules which included all the crushing stages – primary, secondary and tertiary – encompassing jaw crushers, cone crushers, vertical shaft impactors (VSIs), horizontal shaft impactors (HSIs), feeders and hoppers, a whole range of standardised equipment that could be interchangeable in a plant set up and could literally be configured like a Mechano set,” says Marais.

Enter Metso

Following its appointment as the sole distributor of the Metso aggregates range in southern Africa in 2016, Pilot Crushtec has since taken the modular concept to a whole new level, seamlessly integrating of the company’s industry know-how, innovation and manufacturing capabilities with Metso’s globally renowned product.

Metso’s crushers and screens are now at the heart of Pilot Crushtec’s modular offering. “Now that we have Metso in our stable, we are now able to offer the



Metso's crushers and screens are now at the heart of Pilot Crushtec's modular offering.



The modular plants are extremely scalable and, as such, can cater to a wide variety of companies, irrespective of size or application.

best crushing and screening products in a standardised, modular solution that is easy to configure, very flexible in terms of layout and setup, and very fast to turn around for customers,” says Marais.

Marais says when the concept started, it appealed more to the larger companies within the quarrying space, but over the past few years, smaller entrepreneurs and medium-sized companies are also leading the uptake. The modular solution in this case makes perfect sense for those enterprises starting off small, with an eye to growing their business and creating sustainability within a challenging global economy.

“These modular plants are extremely scalable and, as such, can cater to a wide variety of companies, irrespective of size or application. We can design and implement solutions that can process anything from 10 to 500 tonnes an hour – and should requirements change over time, additional units can be slotted in to increase production.”

However, Marais indicates that major focus has been on the 300-500 tonnes an hour capacity class. “Looking at what the Metso product can offer, we can now go up to 1 000 t an hour if need be. These solutions can work across applications, but we have predominantly worked with aggregates producers over the years,” he says.

Process flow

Explaining the process flow, Marais explains that the design team would sit down with a customer and establish client needs first. Pilot Crushtec International uses two sets of software to accurately establish the ideal modular solution for the required production capacities.

“We will sit with the client to establish what material they are crushing,

expected tonnages, output in terms of products to be generated by the plant, among other considerations. Firstly we work out the process flow using Metso’s process simulation software called Bruno. We then move to a solution called Visio, where we have 3D modelling for every single modular component,” says Marais.

“Once we know how many crushing stages are required and what the products and tonnages are, we then do the actual layout of the plant using 3D modelling software. We can also use the geography of the site to model the correct layout. With those two sets of software, we have an idea of how we can design the required solution,” adds Marais.

Key benefits

The modular solution offers an array of benefits to the customer. Firstly, from a design perspective, customers can select the components they need to suit their specific application. These units are then interlinked with conveyors and a solution is tailored to their specific needs and site specifications. Once the design is defined, all the modules and individual components are sent to site, lifted into place and bolted together.

Marais says modular systems are readily available modules that can quickly be on site and operational within a day or two. To give an idea, in one of its recent installations, Pilot Crushtec delivered a solution in five months, from point of order in February 2018 to the point of installation and commissioning in July 2018. “The five-month timeline included ordering, design and manufacturing, sourcing of all the crushing components, transportation to site, installation and commissioning, which in this environment is unheard of,” says Marais.

Traditionally, bespoke plants have lead teams of at least two years and more. “Just the design and engineering of traditional bespoke plants takes 12 months, while costing customers a fortune. With this solution, the lead times are very short, and customers also save on not having to do any civils on site,” he says.

Speaking of costs, modular



Should requirements change at any point within the design process, customers are able to tweak their plants.



Pilot Crushtec's modular systems are readily available modules that can quickly be on site and operational within a day or two.

plants generally have a lower capital cost compared with their bespoke, static counterparts. From an operational cost point of view, these solutions also work out cheaper than their tracked counterparts because they don't rely on diesel power. "They are far cheaper to operate and can still be quite easily relocated," says Marais.

The modular solution is also a cost-effective option as far as maintenance costs are concerned. Marais says generally there is more work to be done in a large bespoke plant in terms of maintenance. He reasons that with bespoke plants, getting replacement parts takes a bit longer, whereas in a standardised solution, parts are off-the-shelf in most instances. "With these solutions, our objective is the same as our customers' – to maximise their uptime. Breakdowns and downtime related to maintenance are big enemies of production, and ultimately, profitability."

Additionally, should requirements change at any point within the design process, customers are able to tweak their plant, so they have the right layout, equipment and capacity to get the job done at all times. "You get to choose what you need, when you need it, and can add modules as and when required," he says.

Covered for the long haul

On top of these cost and operational benefits, all Metso components in the Pilot modular solutions are covered with an industry-first 5-year/10 000-hour warranty. Effective 1 January this year, Pilot Crushtec standardised the extended warranty across the whole Metso product range it supplies.

Marais says Pilot Crushtec is the only Metso dealer across the world to offer

the 5-year/10 000-hour warranty. The ground-breaking initiative is a true indicator of Metso's confidence in its product. It is also a sign of service commitment from Pilot Crushtec International as the exclusive distributor of Metso's aggregates products and services, including static, tracked and wheeled crushers, scalpers and screens in southern Africa.

As part of the Metso Life Cycle Services for Aggregates, Metso's Equipment Protection Services (EPS) was offered as an optional extra. The comprehensive plan includes extended warranties and scheduled inspections with Metso-certified technicians. EPS is built on three core elements: extended warranty to 5 years or 10 000 hours; scheduled inspections with Metso-trained and certified technicians, coupled with OEM parts recommendations; and maintenance planning and reporting for mobile equipment through Metso Metrics Services.

Southern African customers will now enjoy the 5-year or 10 000-hour warranty as standard. This gives equipment owners the much-needed confidence in their cost structure by anticipating and minimising unexpected equipment failures. Along with extended warranties that cover repairs or replacements on key parts that need to be replaced, the plan includes comprehensive inspections and other services to keep Metso equipment running smoothly at all stages of operation.

The Metso extended warranty covers the whole machine, excluding wear parts, for the first 4 000 hours, which is double the industry-wide warranty. From 4 000 to 10 000 hours, which is when fatigue starts setting in, Metso covers all the critical components.

"It made sense for us to package it as a standard offering. It's a massive leap and draws a line in the sand for our competitors. We believe in our quality and know that if customers prescribe to OEM servicing levels, their equipment will last longer and perform better. The extended warranty also assures our customers that the OEM and the supplier are ready to deliver on their promise," concludes Marais. ●

Following a collaborative design process with Ground Breakers, CDE developed and built a Combo modular plant to transform 60 tonnes per hour of raw feed into washed 0-6 mm river sand and 0-1,5 mm plaster sand.



BREAKING NEW GROUND

By tripling production, enabling production of two sands simultaneously and significantly reducing water usage, among other benefits, CDE's cyclone technology is paying huge dividends for a South African sand and aggregate producer. By Munesu Shoko.

Having started producing sand and aggregates out of decomposed granite back in November 2016, Ground Breakers – a brainchild of two young entrepreneurs with a background in plant hire, logistics and quarrying industries – is fast becoming a sand producer of choice within its area of supply.

Within three years of operation, Ground Breakers – owned by Johan Meintjes and JC Janse van Vuuren – has established itself as a leading supplier of construction materials. Operating from its Lindley quarry in Johannesburg, the company produces an array of construction materials, including G5, G6, G7, building sand, river sand and plaster sand.

At the centre of its market leading position is the quality of its sand and the flexibility to produce to customer spec. Key to these capabilities is the recent investment in CDE's patented Combo™ – the world's first all-in-one wet processing plant.

Before investing in the CDE Combo, Ground Breakers previously deployed a bucket wheel system to transform the quarry's raw feed of decomposed granite into construction sand and aggregates, with additional low-value fill or bedding products.

The downside

Bucket wheel systems have traditionally been the mainstay for washing sand in the local market. These were cheap to buy,



however, a major downside is that up to 37% of valuable fine sand is lost to slime dams, reasons Willem du Plooy, business development manager at CDE South Africa.

Consequently, an upgrade of the existing bucket wheel system was required to tackle the loss of valuable materials to ponds and excess moisture in the final products. “Our quarry site in Lanseria faced a lot of challenges; we had limited water sources and limited space to put up a proper wash plant. Any silt dams we dug were taking away valuable mining area,” explains Meintjes.

“The market required a clean washed concrete sand, and our bucket wheel was not delivering a quality product. We also lost a lot of fines to the settling ponds, wasting material that we could not sell without dredging the ponds and re-processing it through the bucket wheel. We knew that to grow the business we had to find a more sustainable and efficient washing solution,” adds Janse van Vuuren.

KEY TAKEAWAYS



Ground Breakers, a leading Gauteng supplier of sand and aggregates, has purchased a CDE Combo – an all-in-one wet processing plant



Before investing in the CDE Combo, Ground Breakers previously deployed a bucket wheel to transform the quarry's raw feed of decomposed granite into construction sand and aggregates, with additional low-value fill or bedding products



As bucket wheels struggle to process sufficient volumes of water to achieve the desired cut points, fines were not efficiently removed and 100-300 micron fractions were lost to ponds



Deploying the CDE Combo has allowed Ground Breakers to triple its production from around 20 t per hour to between 60-80 t per hour

Explaining some of the downsides of the conventional system, Du Plooy says a bucket wheel is basically a water in, water and sand out overflow system, with no defined separation parameters. The more water in the system, the more the sand loss. The less the water in the system, the more silt in the sand. “It’s a very difficult balancing act,” he says.

“As bucket wheels struggle to process sufficient volumes of water to achieve the desired cut points, fines are not efficiently removed and 100-300 micron fractions are lost to ponds or to the water treatment phase along with the overflow, making the sand product coarser. To mitigate the risk of inaccurate material classification, bucket wheels’ settings must be adjusted on a regular basis,” says Du Plooy.

Diverting excess material to

settling ponds requires considerably more space to accommodate the latter, and classification efficiency decreases as the proportion of fines in the feed material grows. The time then required for clearing out settling ponds to recover lost material requires long periods of plant downtime.

“To give an idea, after three days of operation with the old bucket wheel system, they had to stop production because the accumulated silt would be too excessive in the system,” explains Du Plooy.

Outside of the issue of high maintenance costs for a restricted throughput, the sand product typically discharged from the Ground Breakers’ bucket wheel system contained between 23% and 25% of moisture. The high moisture content meant that stockpiling the final



Switching from the bucket wheel system to the Combo has resulted in massive production gains for Ground Breakers.

product required double – sometimes triple – handling (to move the material to a separate stockpile area).

CDE to the rescue

Following a visit by CDE experts, Ground Breakers' feed material was tested at CDE's laboratory. Based on the analysis results, CDE engineers established that the customer could make significant savings by adopting cyclone technology to eliminate the loss of fines to ponds. This would help to retain every valuable grain of sand available in the system and reduce the size of the settling ponds as well as maintenance time. In addition, CDE technology could add a plaster sand product to the company's offer, which has higher commercial value than the river sand currently processed.

After considering the site's footprint and the customers' requirements, CDE presented the Combo all-in-one wet processing and water recycling system as the most appropriate solution to the customers' requirements. The Combo would allow them to produce two high-quality sands simultaneously from the raw feed including plaster sand and river sand, for a much faster return on investment.

Incorporated cutting-edge water management would ensure that the final products would be dewatered to an average 12% moisture, making them ready for market straight from the belts. As an added benefit, the fully integrated CDE AquaCycle thickener would allow for up to 90% of the process water to be recycled directly into the system for near-independence from fresh water supplies.

Following a collaborative design process with the customer, CDE developed and built a Combo modular plant to transform 60 t per hour of raw feed into washed 0-6 mm river sand and 0-1,5 mm plaster sand.

The Ground Breakers' bucket wheel was not effectively reducing moisture in the sand products and fines were lost to ponds. To address these limitations, the Combo high-frequency dewatering screen dewateres the material in one pass, removing the need for re-processing and double handling. Once the sand slurry with the silt material is discharged from the hydrocyclones, it is delivered to the screen which is sized according to the customers' specific capacity requirements.

This allows for the production of a sand product with a moisture content typically ranging from 10% to 15%. As a result, the product is ready for market straight from the belts, in turn converting sand into revenue in the shortest possible time. An added benefit of the Combo system is that although the plant packs a powerful punch, it only requires a very small footprint, which makes it easy to relocate, even in remote areas and urban settings.

"Our CDE Combo is compact and highly efficient. It produces two properly washed products and our customers are very happy that the moisture content



The Combo allows Ground Breakers to produce two high-quality sands simultaneously from the raw feed including plaster sand and river sand, for a much faster return on investment.

is so low. This means a considerable cost saving to them, as generally we sell per tonne," says Meintjes.

"Because the system works basically as a full-circuit unit, retaining fines and recycling used water for immediate re-use in the system, the need for silt dams has been significantly reduced and we have been able to preserve valuable mining areas," adds Janse van Vuuren.

Massive gains

Switching from a bucket wheel system to the Combo™ has ushered in massive production gains. Firstly, production has tripled, from around 20 t per hour with the old bucket wheel system to between 60-80 t per hour with the CDE Combo. "The old system also lacked consistency because the plant would get blocked more often," says Janse van Vuuren.

"The Combo has also been conducive to considerable cost savings, as generally we sell per tonne. The additional -2 mm product has many uses, from plastering exterior walls to making paving bricks. It has increased our profitability considerably," adds Meintjes.

"The new Combo on the Lanseria site has allowed the company to maximise yield and reduce its operational costs. The production of sand and aggregates is guaranteed to be within specifications, with no risk of cross-contamination when two products are processed simultaneously, and in line with the requirements



quality sands simultaneously from much faster return on investment.

of customers or their downstream processes,” says Du Plooy.

According to Du Plooy, another major gain of installing the Combo is the flexibility. It allows Ground Breakers to produce more than two products by manipulating the amount of fines or course material. This allows Ground Breakers to spec the material according to specific client needs. Apart from the flexibility offered by the conveyor system, one can also put in new screens to change the product spec.

In fact, when we visited the site, CDE and Ground Breakers were working on a spec change on the plant. Originally the cut size on the fine sand was 1,5 mm. Ground Breakers had a request from one of the clients who would like the cut size to get closer to 3 mm. By changing some of the panels on the screen, the production team is now able to change the cut size to the required 3 mm cut.

“At CDE we put all our passion and expertise in developing equipment that is tailor-made for each client to the highest quality standards. Return on investment is fast thanks to reduced requirements for spares, highly efficient water management as well as longer and more reliable running time.

“CDE’s products are specifically designed to require minimum attention, minimal civils and a minimal number of operators thanks to its one-touch technology, so that it can be left to simply produce clean sand



An upgrade of the existing bucket wheel system was required to tackle the loss of valuable materials to ponds.



Johan Meintjes (left) and JC Janse van Vuuren, owners of Ground Breakers.



Ground Breakers' bucket wheel was not effectively reducing moisture in the sand products and fines were lost to ponds.

and aggregates at the required rate.

“It was a pleasure to support Ground Breakers in installing the next generation of wet processing equipment to allow the company to achieve the full potential of its vision and its quarry site,” concludes Du Plooy. ●



AVOID TANKING RISKS

Successful aggregate managers know multiple factors contribute to their profitability, from minimising their trucks' cycle times to ensuring their crew's safety. Even support equipment, such as water trucks, can't escape their analysis – or at least they shouldn't. By Josh Swank.

How equipment operators haul and apply water can significantly impact overall productivity and safety. Though water trucks appear basic in application and design, several factors have a significant impact on efficiency, from the challenges of water movement in the tank to the steel used in the tank's construction. All of these factors impact uptime, maintenance, efficiency and safety. The key to a productive and safe solution lies within the truck's water tank design.

It's hip to be square

Rounded water tanks are the most common. They get the job done, but not without challenges. The tank's curved sides raise the water's centre of gravity, making the truck less stable when navigating haul roads. To mitigate the instability, operators often avoid filling their tanks completely. This means they need to refill more frequently, contributing to added downtime and increased fuel consumption as they backtrack to the water source.

Additionally, rounded tank designs contribute to water churning since there are no corners, edges, or obstructions to slow the water's momentum. This constant, and sometimes rapid, water movement poses a safety risk for the driver and people nearby since the water can shift the centre of gravity and cause the truck to become unstable.

Alternatively, water tanks with square corners minimise churning and have a larger capacity by simply not rounding off the sides of the tank. They also maximise productivity and operator safety due to their box-shaped structure, water baffles and water metering systems. The design also lowers the unit's overall centre of gravity, enhancing stability and allowing drivers to safely fill the tank to capacity. The box-shaped structure makes it possible to haul about 20% more water than rounded tanks, resulting in considerable time and cost savings.

For example, an operation may have three, 60-t water trucks with 57 000 l rounded tanks in its fleet. Each truck works eight hours per day and sprays about one load

Water tanks with square corners minimise churning and have a larger capacity by simply not rounding off the sides of the tank.



The box-shaped structure makes it possible to haul about 20% more water than rounded tanks.



per hour, using the rest of the time to drive back to the water source to refill the tank before setting out to spray again. Since the drivers feel the water surging, they typically fill the tank to 80% capacity. By the end of each day, this water tank fleet would spray about 1-million litres of water.

A quarry running the same trucks with square-cornered tanks can cover a much larger area with minimal backtracking. This is partly because each of the three, squared water tanks can hold about 62 500 l, close to the truck's true hauling capacity. The truck drivers in this example now can fill the tanks to capacity and also spray one full tank per truck each hour, but by the end of the day, this water tank fleet has sprayed about 1,5-million l of water.

Bafflingly high safety

A water tank's internal baffling system is another key element that affects safety and efficiency. Baffles inside the tank help minimise water from surging side-to-side and front-to-back. Almost all water tanks feature baffles, but many

KEY TAKEAWAYS



Rounded water tanks are the most common. They get the job done, but not without challenges – the tank's curved sides raise the water's centre of gravity, making the truck less stable when navigating haul roads



Alternatively, water tanks with square corners minimise churning and have a larger capacity by simply not rounding off the sides of the tank



A water tank's internal baffling system is another key element that affects safety and efficiency



Having complete and easy control over their tank's water output gives truck drivers control over their safety on haul roads

have large holes cut out to provide maintenance personnel access to the individual compartments. These openings allow water to surge between compartments, limiting surge protection and increasing the risk of the truck tipping or being involved in another type of accident.

To minimise surging, some tanks feature sophisticated water control systems that use baffling that runs from floor to ceiling as well as along the complete length and width of the tank, resulting in full compartmentalisation of the water. Within the outer compartments, some manufacturers install side-surge stabilisers along the walls to prevent water from rolling or churning. The number of

compartments can vary between tanks. For instance, a 221 446-l tank might have 42 or more individual compartments.

To offer the best level of water compartmentalisation, these baffles require holes to allow water to flow freely throughout the tank, but they need to be small enough to prevent water from surging during use. To address this, some water tanks feature access doors that are about as tall as an average-sized worker to provide a more advanced solution than simply a hole near the ground in the baffle walls. These baffle doors, which technicians walk through easily, practically eliminate the need to crouch down while they maintain the

tank, and the doors remain shut while the water tank is in operation. With access between multiple compartments, technicians have minimal concerns about working in confined spaces.

To allow technicians into the tank for maintenance, some manufacturers incorporate external doors, which can provide fresh air and natural light throughout the tank after opening all of the external and baffle doors. When the tank is empty and the inside needs servicing, technicians simply enter the tank and open the baffle doors. This system offers load stability as well as easy service and maintenance, allowing technicians to access the inside of the tank safely and easily, instead of putting off the difficult work for later.

Let it loose

Having complete and easy control over their tank's water output gives truck drivers control over their safety on haul roads.

For instance, individually controlled spray heads help water truck drivers optimise their water usage as well as minimise the chance of oversaturating haul roads, which can create slick driving conditions. Inside the cab, operators can turn on the individual spray heads – and in some systems, programme a spraying interval. This optimises water usage, so operators cover more surface area with minimal risk of making haul roads too slick for other aggregate equipment. Additionally, the added control and metering means they spend less time backtracking to a wellhead than a truck with a traditional water tank control system.

Water truck drivers also need to concentrate on their surroundings to ensure their safety as well as the safety of others. Taking attention off the task at hand can significantly increase the risk of an accident, especially when operating heavy-duty off-highway equipment. Components, such as simple water metering controls, also contribute to overall safety by allowing the water truck driver to better focus on his or her surroundings while driving.

Remote controls are one more way

water truck drivers ensure their safety, especially when combatting fires. Traditional systems require the operator to use a joystick and view monitors inside the cab of the water truck to spray water onto the fire or spray down an area of a facility. Flexibility is key, which is why advances in technology now have some manufacturers offering remote-controlled alternatives that allow the operator to control the water cannon as far as half a mile away.

Built for safety

Efficiency and safety are also affected by maintenance. A tank with a flat top reduces the likelihood of slipping and falling when filling or servicing the truck. And trucks that feature lanyard tie-offs further enhance safety by providing an anchor point for operators if they were to fall.

Mechanics also need access to the tank's interior to complete routine maintenance, such as clearing out sediment and debris that builds up over time. This can be a significant challenge with some tank designs. With many tanks, the only access point is through the fill hole on the top. The alternative is to cut a hole in the side of the tank using an acetylene torch, which creates sharp edges for those entering the tank to manoeuvre and requires a repair job after the maintenance is complete.

Alternatively, enhanced water tank designs eliminate this hassle and safety hazard by incorporating as many as three external access doors on both the front and back of the tank. When opened, the doors allow personnel to easily enter the tank and, with the aid of the baffle doors, have natural airflow and lighting for truck maintenance.

Designing tanks for minimal and easy maintenance is one way manufacturers help minimise the risk of injury for those servicing a water tank and its electric and hydraulic systems. For instance, some manufacturers use 450 Brinell steel – some of the hardest and most durable steel on earth – to achieve a long service life for the water tank.

Mechanical pipe joining systems allow mechanics to replace damaged piping easily. They are able

to remove the coupling's collar, replace the pipe and tighten the collar to form a complete seal instead of having to weld on a rusty pipe, which can often take hours and equate to substantial downtime for the water truck.

Other innovations feature hydraulic-powered water pumps that drivers can activate while the engine runs at any rpm, whereas most require a low rpm rate. This virtually eliminates the risk of overpowering a water pump, which is costly to replace.

Don't cut corners

Quarries are most profitable when equipment manufacturers make productivity and safety the core of their designs, especially for water tanks. Choosing a manufacturer that puts one at the expense of the other puts operations managers at odds with their superiors as well as their employees.

However, choosing equipment that achieves its full potential and keeps workers safe ensures that quarries' bottom lines stay in the black and everyone returns home safely every day. ●

About the author

Josh Swank, vice-president of sales and marketing for Philippi-Hagenbuch, oversees the aggregates, refuse and mining industry sales group and has been with the company for more than 16 years. His previous roles within the company include global sales and marketing manager and account manager.



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AUTHOR: MUNESU SHOKO

HOW HAUL ROAD MAINTENANCE CAN EXTEND TYRE LIFE

About 80% of all large tyres fail before they wear out. Cuts are responsible for about 45% of failures, with impacts causing nearly 30%. One of the most important things a mine or quarry can do to prevent premature failures is to take care of its haul roads.

“Cuts and impacts are mostly caused by spillage on the haul road,” says Caterpillar application consultant Kent Clifton. “When you are driving a car, it’s easy to dodge a large rock. With a mining truck, by the time you see it, it’s too late.”

Design matters

Clifton, who has visited sites all over the world and witnessed best practices, says the first step is proper design. The best haul roads have crowned straight sections, super-elevated curves, safety berms and drainage ditches on both sides.

Negotiating curves can generate high lateral tyre forces, which contribute to high tyre wear and ply separation. Superelevation – the difference in height between the inside and outside edges of the bed of a banked road – helps eliminate these forces.

When properly designed, superelevation keeps loads level and square on the tyres, decreasing side forces on the tyre casing, and reducing

Traditionally, tyres were just a cost of doing business. Mine and quarry owners were accustomed to spending the initial purchase price of a large mining truck in tyre-related costs over the lifetime of the machine. Today, tyres are no longer considered just a cost; they are mission-critical to keeping your haulage fleet working.

It’s important to remember that the haul road begins at the loading face and ends at the dump point.



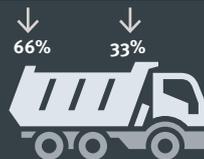
KEY TAKEAWAYS



About 80% of all large tyres fail before they wear out. Cuts are responsible for about 45% of failures, with impacts causing nearly 30%



A wise approach to superelevated curves is to determine the safe speed for negotiating a turn at a certain lateral tyre force. In general, a 20% lateral coefficient of traction is safe for all but slippery conditions



Grade is also important because it affects where the load sits on the tyres. The goal is for 33% of the load to be in the front of the truck and 66% to be in the rear



Roads should be three times the width of the widest truck, so tyres aren’t bumping into the safety berms or dropping into ditches



scuffing and wear on the treads. In addition, superelevation allows trucks to operate at more consistent speeds, which means less braking and less heat – another cause of shortened tyre and component life.

The amount of superelevation depends on the curve's radius and the speed at which it is negotiated. Because superelevated turns can prevent a danger when slippery, those over 10% should be used with caution.

Another approach to superelevated curves is to determine the safe speed for negotiating a turn at a certain lateral tyre force. In general, a 20% lateral coefficient of traction is safe for all but slippery conditions.

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“Roads should be three times the width of the widest truck, so tyres aren't bumping into the safety berms or dropping into ditches”

KENT CLIFTON

66% to be in the rear, Clifton says. The ideal grade is between 8 and 10% with low rolling resistance of 2% or less.

It's also important to remember that the haul road begins at the loading face and ends at the dump point. Proper design of bench and dump areas can increase tyre life as well by reducing spillage that can become a hazard to tyres. Trucks should be able to quickly come in, turn around, and then back up. “You don't want to turn the steering wheel and move the tyres while the truck is not in motion because when tyres twist on top of the rocks, it causes wear,” Clifton says.

Road width is another concern. “Roads should be three times the width of the widest truck, so tyres aren't bumping into the safety berms or dropping into ditches,” he says.

Using the proper material to prepare and maintain the road bed is also important. If the surface under the haul road is soft or moist, rolling resistance is high and tyres are allowed to sink – which means contact with dirt along the sidewall. This can wear away the rubber from the tyres.

Usually in cases of high rolling resistance, the ground is wet – another threat to tyre life. “Moisture causes tyres to slip. And when tyres slip, they are not



Making sure haul roads are free from rocks and other debris should be a top priority on every mine site.



Good roads improve production, extend tyre life and reduce overall operating costs.



Proper design of bench and dump areas can increase tyre life.

biting the surface – which means they are burning rubber,” warns Clifton.

Keep it clean

While haul road design has a significant effect on tyre life, by far the biggest threat is cuts and impacts due to rocks on the haul road. When a tyre comes in contact with a rock, it can cut the tread or cause the belting of the tyre to separate, which reduces the tyre’s structural strength.

Making sure haul roads are free from rocks and other debris should be a top priority on every mine site, Clifton says. And that dedication does make a difference. “Some mines will get just 4 000 to 5 000 hours from a tyre,” Clifton says. “But Pine Branch Coal, in the Eastern Coal area of the United States, is averaging 11 400 hours from a tyre. They operate in one of the most severe environments for tyres. If you can extend tyre life at Eastern Coal, you can do it anywhere.”

Pine Branch owner Dave Duff, who has been in the mining business for over 50 years, says proper haul road maintenance comes down to making it a priority. “It’s a lot of work, but you just have to keep after it,” he says. “We try to do it the best it can be done. People have to care about it. And we do.”

“The key is communication,” he continues. “We all have radios, and whenever anyone sees a rock, they tell someone and it gets picked up. It’s teamwork.” Pine Branch has machines dedicated exclusively to removing rocks from the haul roads. “We call them the rock chasers,” Duff says. “We have little tractors that are outfitted with a box scraper. And they run wherever a rock has fallen.” In addition to picking up rocks, the box scraper also pushes dirt and smaller rocks into low spots that need to be filled.

Pine Branch also focuses on proper watering techniques. In addition to causing slippage, water also makes fallen rocks even more dangerous to tyres. “A wet rock cuts twice as quickly as a dry rock,” Duff says. “We try to find a happy medium. We have to keep the dust down so you can see the rocks in the road. But we can’t get it too wet either.”

Train operators

Operator training is important to every aspect of mine operations – and extending tyre life is no exception. Motor grader operators need training in how to properly maintain haul roads to maximise tyre life. Truck operators need to be aware of how their driving habits have an impact on tyres.

“Watch your loads and watch your speeds,” says Pete Holman, senior consultant in Caterpillar Global Mining. “Check your tyre pressures. Be aware of rocks and debris. Be careful on turns.”

“A lot of what impacts the life of tyres comes down to who is driving your truck,” says Duff.

Haul road maintenance sometimes takes a back seat to moving material. “Instead of putting an operator on a motor grader to maintain roads, mines will have him drive a truck – because what’s in that truck is what makes money for the mine,” says Clifton. “But if poorly maintained roads lead to trucks up on blocks because they don’t have tyres, then you have lost the production you could have gotten from that truck.”

“Sure, haul road maintenance is a cost, but it’s worth it,” he says. “Good roads improve production, extend tyre life and reduce overall operating costs.” ●

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A machine that effectively removes unwanted fines from abrasive and non-abrasive aggregate applications.

WASHING OUT SUPER FINES — NO WATER NEEDED

How do you eliminate large amounts of unwanted fines in your material? Many aggregate producers face this problem. The availability of water for washing, and the environmental issues that accompany settling ponds, also magnify this problem. Fisher Industries' Air Separator technology provides the much needed answers to these questions.

Available as portable or stationary units, the Fisher Air Separator is a field-proven machine that effectively removes unwanted fines from abrasive and non-abrasive aggregate applications. Supplied locally by Dakota Mining and Quarry Equipment, the air separator in many cases eliminates the need for wash plants and has proven itself effective in limestone, granite, trap rock, sand and gravel applications.

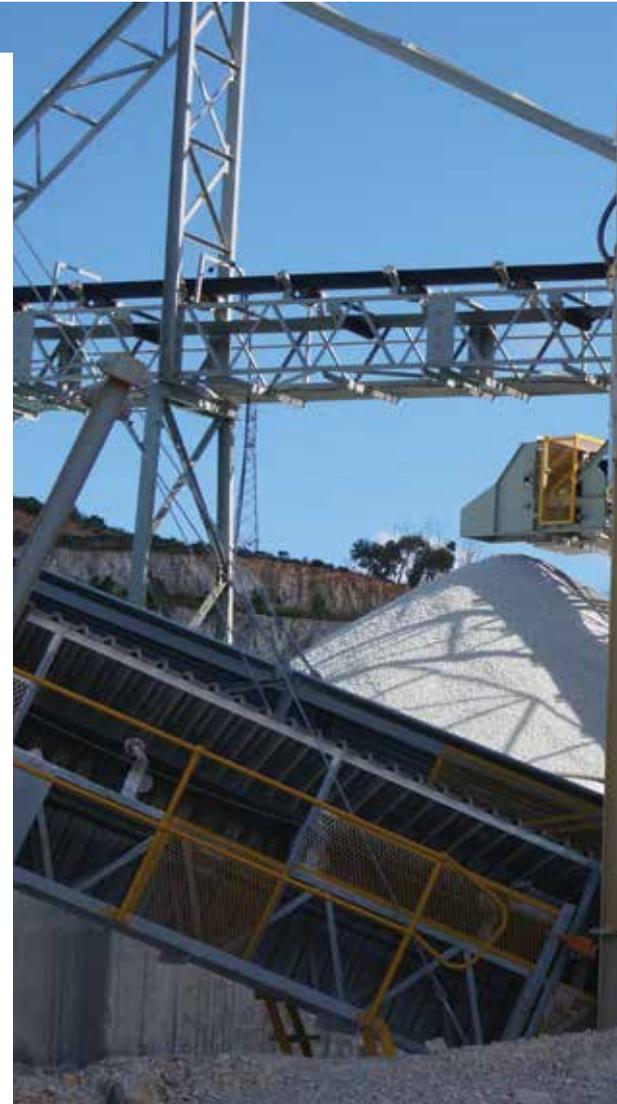
The Air Separator was first introduced in Africa in 2010. Howard Behrmann, CEO of Dakota Mining and Quarry Equipment, explains that the concept has been tried and tested in a number of commodities. In aggregate quarries, the Fisher Air Separator has been successful in removing unwanted fines in manufactured sand for asphalt.

On a major SANRAL project in the Free State, with the lack of water for washing the FAS was instrumental in delivering in specification crusher dust to the asphalt plant. The removal of fines from the manufactured sand for concrete use resulted in a significant saving in water and cement in the final mix.

Several companies in the local aggregate space have purchased the air separator. These include Raubex Bloemfontein, SPH Cape Town, Independent Quarries East London, Great Karoo Crushing, Blasting and Excavating, OMV Stilfontein, Afrimat Port Elizabeth, Lafarge Port Elizabeth and Dorning Crushers Kokstad.

Applications and tests

The unit has successfully been tested at Namakwa Sands for the



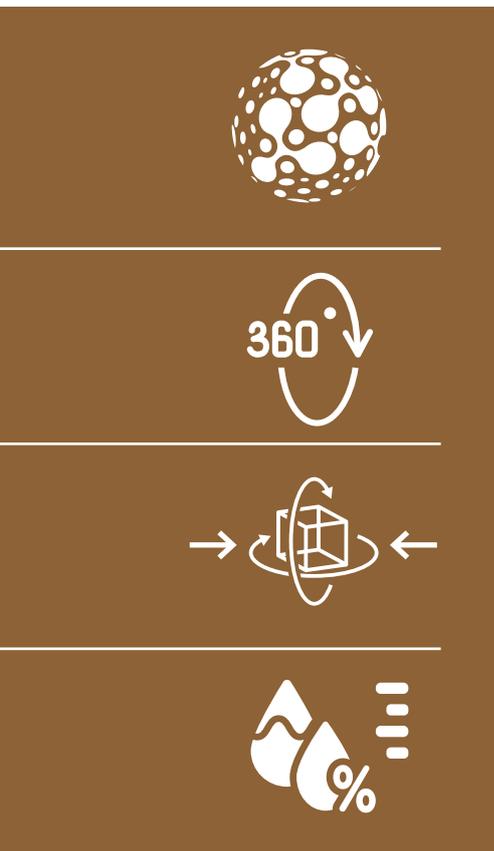
KEY TAKEAWAYS

The principle of operation is simple and the unit has minimal moving parts

The operation involves introducing the feed material into a vertically rotating chamber where a rotating fan assembly creates a counter air flow

The outer wall of the chamber is constructed in a way that a counter current air stream can pass from the outside inwards. The rotation of the chamber also acts as a fan, generating the counter current air flow

When processing natural fines with the Fisher Air Separator, a moisture content of 3% or less will provide the best results. In processing crusher fines, the Air Separator will run effectively at 3-5% moisture content



Owing to its compact size, it is easy to transport and set up.

separation of mineral sand. It has also been deployed at SAK in a limestone application, as well as at Alpha Sand Pretoria in a natural sand application.

The Fisher Air Separator has successfully been tried and tested in the iron ore industry for the removal of super fines from 0-8 mm material, turning a waste product into a usable material, as well as assisting in the saving of water and chemicals in the final process.

The machine was also deployed in the diamond mining industry to successfully reduce unwanted fines and to assist in the reduction of water usage in the final process. It is estimated that the saving on water usage could be as high as 80%.

Dry versus wet processing

Behrmann is of the view that for years washing has been the way the industry produces its fines and manufactured sands, but there are a lot of downsides. He says that with water in short supply, as well as pricey, along with managing



Many local quarries have investigated the value of dry fines processing.

power and fuel costs related to washing plants, quarry managers have to revisit the systems they employ.

“The Fisher Air Separator effectively removes unwanted fines from aggregate products, bringing otherwise rejected material into specification. Its ability to ‘dry’ process materials and remove excess fines promotes an efficient and clean operation,” explains Behrmann.

Many quarries have investigated the value of dry fines processing. Where the system has been implemented, aggregate producers are said to have reduced the amount of sludge they produce. Some applications have also eliminated the need for a traditional wash plant.

Principle of operation

The principle of operation is simple and the unit has minimal moving parts. The operation involves introducing the feed material into a vertical chamber where a rotating fan assembly creates a counter air flow. The outer wall of the chamber is constructed in a way that a counter current air stream can pass from the outside inwards.

As the air passes up through the chamber it comes into contact with the feed, which due to centrifugal force, is moving outward in the

chamber. The air flow passes through the feed and in so doing removes fines present in it. The fines with the air flow are circulated and deposited on the outer wall of the discharge cone. Coarse material falls through the chamber and is discharged via an inner cone. General operation of the unit produces minimal dust.

“The air separator has been designed to remove unwanted fines without the need for sand washing. There is no baghouse required or external air source. The air is generated by the rotor fan spinning counter-clockwise and creating a ‘tornado’ effect within the two inner cones. The air re-enters the unit through a set of louvres halfway down the outer cone, and is then lifted up through a suction and passes through the material as it is centrifugally thrown out into the separation zone,” explains Behrmann.

The air tramps the finer particles and distributes them in the outer cone and the heavier particles fall down through the inner cone. The faster the fan is, the more air that is moved around in the unit and the more particles that are removed from the feed.

The Air Separator has an on-plant

hydraulic system that is used to set up and tear down the unit.

Major benefits

Fisher Industries has recently introduced its Small Air Separator. The unit has been specifically designed for smaller operations and contracts. It has all the same functions of the large air separator, just on a smaller scale, producing 40-50 t per hour. Owing to its compact size, it is easy to transport and set up.

Driven by a 65-hp electric motor, one of the key features is the AC variable speed drive for fan-speed adjustments. The air separator comes with the feed conveyor and two discharge conveyors, all mounted on the chassis for travel.

The conveyors have 7,5-hp motorised head pulleys for drives. The Air Separator has an on-plant hydraulic system that is used to set up and tear down the unit. A removable electric panel with all the controls and a power cord is mounted on the chassis as well.

“An automated grease lubrication system is also mounted on plant, assuring that all bearings and labyrinth seals are greased properly. The air separator can be set up and dismantled in less than two hours,” says Behrmann.

In granite, limestone, trap rock or sand and gravel applications, the Fisher air separator effectively removes unwanted fines from aggregate material. In some cases, the air separator has cut the amount of #200 fines in half.

When processing natural fines with the Fisher Air Separator, a moisture content of 3% or less will provide the best results. In processing crusher fines, the Air Separator will run effectively at 3-5% moisture content. ●

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EVOLVING BEYOND THE SCALE

Onboard loader scales have become an increasingly critical part of quarry and mining operations. As premium scales have evolved, a growing focus on productivity data gives operators greater insight into load and haul.

Today's systems provide much more than accurate payload weight. They add value with features that improve site safety, track stockpile inventory, empower operators with performance feedback, integrate with truck scales, and more.

As technology advances, networks become faster and more reliable, scale accuracy and user-friendliness improve, and customers expect more convenience and better results from their systems. Buyers should expect a minimum accuracy of +/-1% margin of error or better for loader scales, excavators at better than 3% margin of error, and conveyor scales better than +/-0,5%.

Connectivity gives managers access across multiple sites and projects and insight into process improvement. Embedded GPS and built-in Wi-Fi help monitor and manage equipment via those improved networks. Usability and convenience continue to improve, and installation and support improvements are a priority for scale providers and customers alike.

Smart managers are leveraging data and connectivity across each operation and the enterprise to make improvements mid-shift that quickly add up to real dollars. For example, Trimble LOADRITE



Today's loader scales like those from Loadrite provide more accurate payload weight.

KEY TAKEAWAYS



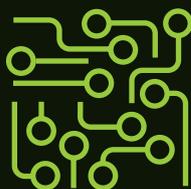
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Trimble LOADRITE X2350 excavator scales help prevent lost productivity through optimised loadout and other loading operations using payload tracking and real-time mass-haul visibility



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

X2350 excavator scales help prevent lost productivity through optimised loadout and other loading operations using payload tracking and real-time mass-haul visibility.

There is a substantial return on investment (ROI) in the latest technology, including a changeout to aftermarket scales from OEM scales that may lack the newest features. New improvements and capabilities give a clear path to easier operation, improved efficiency, more productivity and a healthier bottom line.

Seeing the big picture

As onboard scales evolved beyond the basics of accurate weighing, the focus broadened to tackle larger real-world problems. What shortcomings exist and how do we address them? How can we better leverage data to make a bigger impact?

Today's modern weighing systems



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

provide a networked, holistic view of operations, enabling site managers and operators to respond proactively with each load, as well as site-/project-wide by the hour, day and week. Increased productivity goes beyond faster, more accurate loading. It now directly impacts the bottom line each phase and across the entire project.

Scales attached fleet-wide give management the "pulse" of the entire operation. Measuring each part of an operation and centralising and integrating data to a web portal creates a business intelligence system that offers management an entirely new perspective.

These systems let operators and managers accurately track production data, optimise truck loading and eliminate overloading and costly fines. Fleet and site managers gain greater visibility into overall site operations.



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

With real-time access to reliable, consistent payload data, accurate payload is just the beginning.

Choosing your system

Scales (or weighing systems) – are simpler, easier to use, more sophisticated and provide an ROI by leveraging captured data; but choosing the right system is key to success. Those looking to install next-generation onboard scales should consider the following:

Accuracy – Operators need pinpoint accuracy to optimise payload operations, so this may be the most important consideration. When moving thousands of tonnes per day, a 1% accuracy improvement adds up quickly, to tens of thousands of dollars of extra revenue a year. When evaluating accuracy, look for scales offering:

- Consistent weighing over a range of environmental conditions – temperature changes, rough terrain and weighing on the move.
- Premium sensor and multi-point weighing technologies that provide a larger weighing “sweet spot.”
- Slope compensation technology, for example, when feeding the hopper, loaders may go up a ramp or the site may not have even terrain.

Stakeholder Requirements – Stakeholder needs vary significantly across operators, site and fleet managers and customer reporting and billing teams. Some of the latest systems provide operators with real-time visibility with payload data displayed in-cab. Others provide insight into the entire operation, and data from all operating equipment to help managers optimize asset management and operational efficiency. Think through stakeholder priorities and look for a solution that meets everyone’s needs.

Return on Investment – Expectations when adopting an integrated system is a benchmark 15% improvement. Depending on each organisation’s focus, that might mean 15% cost reduction, a 15% improvement in productivity, or some combination of factors. Consider business goals and areas offering the greatest room for improvement when selecting a system.

For example, without a loader scale, operators must estimate each load. This typically leads to on-purpose underloading to avoid overloading. Underloading 3 t on a 20-t load is a 15% shortfall. Whether for sales transactions or baseline productivity, an accurate onboard scale can provide an immediate gain of 15% in haul utilisation and sales per haul. If trucks are overloaded, they are sent back from the scale house to tip off excess. Accurately loaded trucks eliminate that, improving truck turnaround time. With a typical turnaround target of 10 to 12 minutes, added time to go back and tip-off can be three to four minutes – 30% added, wasted time. If a truck needs to go back to the stockpile to reload, that doubles transit time, a 100% return on efficiency that can be easily captured with accurate onboard weighing.

Equipment interoperability – Consider the lifecycle of onboard scales as well as other equipment and technology components. Infrastructure should support a mixed fleet and allow data to be captured on loaders, excavators,

haul trucks and conveyors. An improved, more-efficient flow of data and reports between managers and operators streamlines project workflow and fuels productivity gains compared to older systems that could not quickly share data and generate reports. Incremental adoption of compatible scale technology can help drive improvement at each phase and spread capital costs. The ability to capture data from other loaders, excavators, conveyor belts and haul trucks creates a powerful management tool.

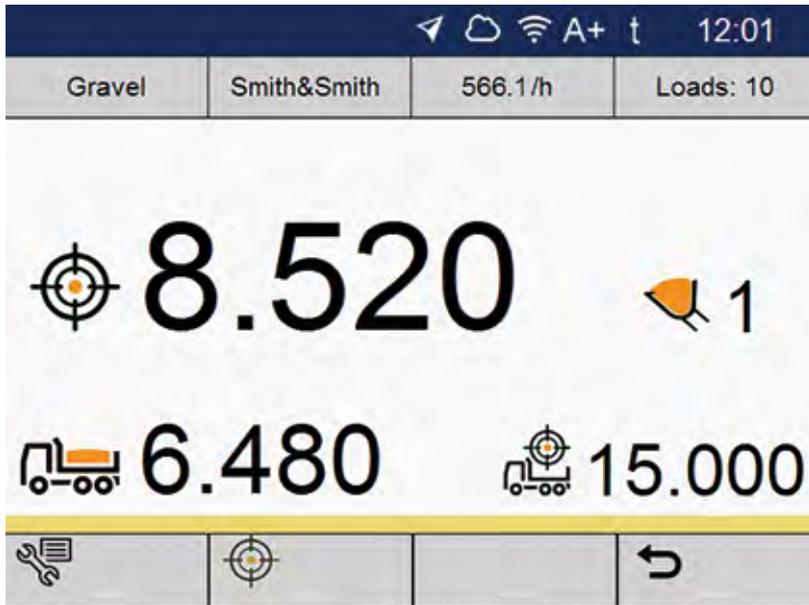
SmartScales go beyond weighing

– Modern SmartScales go beyond accurate weighing to deliver fast, streamlined machine-to-machine connectivity – machines, operators and managers share data quickly and easily, boosting communication and productivity. Better connectivity and information sharing are key to making effective decisions by having the right data available at the right time. SmartScales empower operators to self-improve, setting personal benchmarks and focusing on loadout efficiency and pit productivity from inside the cab. Look for:

- Real-time data access by customer, product, machine, or productivity.
- Dynamic visualisation that makes it easy to quickly analyse trends and highlight bottlenecks or issues. Look for colour-coded graph tools, table options and heatmap capabilities.
- Electronic load tickets sent directly via email and in-cab printers so operators can immediately print a load ticket to track individual trucks, daily or weekly load-out, and more.

GPS and connectivity – Connectivity brings operations information from the field to the mobile office or head office. It is more streamlined and affordable when connectivity options are built-in, giving managers and operators a shared view of production status. Truck scales can send job orders directly to the cab via electronic tickets with time-stamped, dated payload information when scales include:

- Built-in Wi-Fi connectivity for faster, cheaper communications.
- Embedded-GPS to precisely track inventory, monitor machine stress



The ability to capture data from other loaders, excavators, conveyor belts and haul trucks creates a powerful management tool.

and schedule maintenance, and identify unused capacity. **Convenience and usability** – Increased exposure to technology (like smart-phones) sets buyer expectations higher for convenience and usability. Operators need onboard scale systems with uncluttered, easy-to-use displays that help keep their focus on the job at hand. A dedicated payload data display makes this information always available, rather than sharing a screen with non-vital information. Support for multiple languages is also critical when projects have diverse workforces and share data across multinational operations.

Installation and support – When shopping for onboard scales or weighing systems, look for partners that specialise in scales with expert product knowledge and onsite support to prevent operational delays. The right partner should ensure installation, calibration, training, regular scale maintenance and ongoing support. Look for a partner that provides technology solutions beyond your current needs to support future growth.

Technology-workflow alignment – The newest equipment provides preview weights at low-lift levels for faster last-bucket adjustment to improve efficiency with each load. Machine-to-machine communication gives excavator operators unprecedented insight into each bucket's weight and the total weight in the truck to improve every loading operation. Managers have access to data sitewide via a central reporting location help improve efficiency and boost the bottom line. As data capture, gathering, and analysis becomes a larger part of optimising operational efficiency, systems now offer two-way data syncing to improve the interaction between excavator and truck operators. A centralised product data list enables control and updates in near-real-

time over-the-air, eliminating the need to ever stop the loader or ask the equipment dealer to update the list.

Looking to the future

Improved networks, with more speed, range and reliability, and smaller, more reliable, more sophisticated sensors that are easier to install keep enabling and driving the capture and smarter use of data. Systems that are more accessible and easier to use support improved productivity and communication across the job site and enable simplified data collection and exchange.

Trends will continue to optimise payloads and empower operators to be self-managing, enable managers to identify bottlenecks and improve decision-making, productivity, and customer service. By focusing on these adoption strategies and evaluation criteria, organizations will be more informed and competitive. ●

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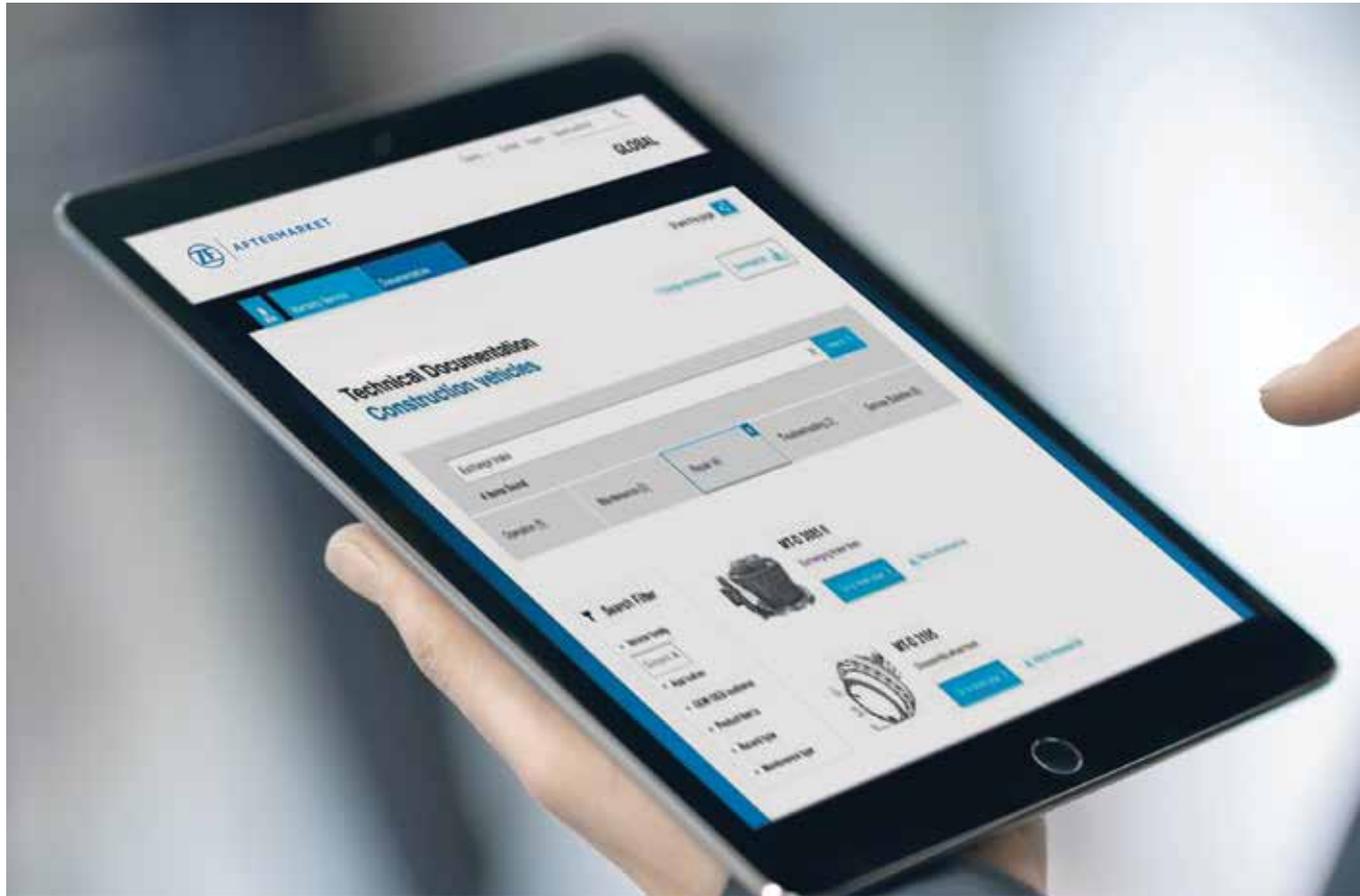
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KEEPING MACHINES UNDER WATCH

Digital machine management and telematics solutions are fast becoming the new standard in the quarrying and mining industries. At bauma 2019, several original equipment manufacturers presented their offerings that speak directly to the growing digital needs across the different product segments of the market, writes **Munesu Shoko**.

To ensure optimum efficiency, profitability and machine protection, equipment owners must be able to monitor the location and performance of their machines – anytime, anywhere. This was the overall message from bauma 2019, where several original equipment manufacturers showcased their own machine management and telemetry solutions designed to help customers get the best out of their mission-critical capital equipment assets.

ZF Aftermarket, one of the pioneers in the digitisation of off-road machinery, presented a portfolio of intelligent service solutions for the digital transformation of the off-highway sector under the motto ‘Service of the Future’. The company showcased its new online portal with technical information and video-based repair instructions, as well as the innovative telematics solutions to enable more efficient operation.

Caterpillar rolled out a wide range of equipment, technology and services that empower and encourage customers to ‘Rewrite the Rules’ of the jobsite. Advancing the Choose, Connect and Operate principles, the displays provided customers with a wide choice of machines, greater connectivity for managing machines and the jobsite, as well as advanced technologies to operate profitably.

Epiroc unveiled its My Epiroc, a new solution for the mining and infrastructure industry, with attractive features for increasing fleet efficiency and safety. It helps fleet owners and managers optimise their fleet



The Openmatics Dashboard gives fleet operators access to a wide range of telematics services, which process the analysis data for a wide range of applications.

performance, from any device, any time.

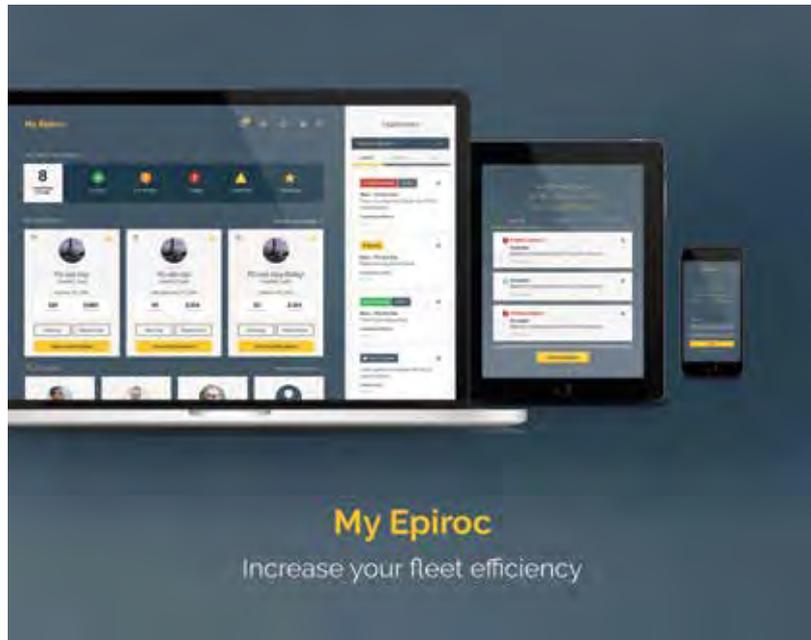
Terex Finlay showcased its OMNI by Terex, a real-time connected tablet based system that is fitted within the cab of a material feed excavator or shovel to provide centralised remote access and keeps the operator in control using a simple and intuitive onsite live interface.

Service of the Future

ZF Aftermarket showcased how it links intelligent applications with modern, digital technologies. The service offers and telematics systems thereby ensure efficient and transparent use of off-road machinery.

With its intelligent telematics platform, Openmatics, ZF Aftermarket presented its vendor-neutral, retrofitable and cloud-networked solution for optimal control and management of the entire machine fleet. An on-board unit in vehicles, coupled with the vehicle electronics, records all relevant vehicle data stored on a cloud server.

The Openmatics Dashboard gives fleet operators access to a wide range of telematics services, which process the analysis data for a wide range of applications – for example, fleet management from machinery



My Epiroc is developed to be a work-flow optimisation partner, helping users keep track of productivity with relevant alerts and status updates.

KEY TAKEAWAYS



With its intelligent telematics platform, Openmatics, ZF Aftermarket used bauma 2019 to present its vendor-neutral, retrofitable and cloud-networked solution for optimal control and management of the entire machine fleet



The PL161 offers frequent data updates, providing location of attachments across worksites. It also tracks utilisation (actual attachment working time), and plans attachment maintenance and replacement cycles



Terex Finlay showcased its OMNI by Terex, a real-time connected tablet based system that allows operators to watch, monitor and adjust important parameters on their crushing and screening gear from the safety of the cab of a material feed excavator or shovel



Putzmeister introduced its Machine Cockpit, an advanced fleet management technology for its range of stationary concrete pumps and truck-mounted boom pumps



My Epiroc – which will be rolled-out to selected markets during 2019 – is a new solution for the mining and infrastructure industry, with attractive features for increasing fleet efficiency and safety



The machine cockpit is part of Putzmeister's clever solutions promise.



OMNI by Terex is a ground-breaking technology that will revolutionise the crushing and screening jobsite.

contractors and construction companies, but also long-term diagnosis for determining the causes of sporadic errors.

The off-road specialist also demonstrated the capabilities of its ZF Testman, an intelligent, diagnosis tool that allows web-based error diagnosis to be directly performed while driving. Thanks to the instrument, workshop visits for simply detecting defects and thus unnecessary downtimes, can be prevented in many cases. A machine does not have to visit the workshop until soon before repair is to take place.

ZF Testman is connected to ZFlink (interface) of the work machine and analyses the functions of all electronically controlled ZF products. In addition, the tool can be used to connect a notebook with the associated diagnostic software to the vehicle electronics. In this manner, sporadic errors can easily be identified. A web-based update service keeps the software always up to date. After transmitting the data to the cloud, ZF Aftermarket experts offer in-depth job-specific knowledge in the evaluation of the diagnostic results.

Cat's connectivity drive

The Caterpillar display at bauma Munich emphasised the OEM's connectivity drive. Its Cat LINK technology provides equipment owners a choice of options that best fit individual needs and budgets, ranging from simple machine monitoring to full-fleet tracking and management – all fully supported by Barloworld Equipment in southern Africa.

The Cat Product Link telematics system – which Barloworld Equipment also facilitates – collects data from machine assets, any type, any brand, including, for example, asset location, engine on/off, work hours, fuel burn and diagnostic-code alerts.

One of our new connected technologies at bauma 2019 was the PL161 work tools tracker designed to track operating hours and location of work tools. “For many customers the fleet of work tools represents a high value that needs to be managed and maintained for uptime,” explains Rogier Tonies, marketing manager, Work Tools at Caterpillar.

The PL161 offers frequent data updates, providing location of attachments across worksites. This reduces the number of lost attachments. It also tracks utilisation (actual attachment working time), and plans attachment maintenance and replacement cycles. The information is available to the owner via a secure website, Cat VisionLink, for full fleet management. Customers can track via smartphones with Cat App or on My.Cat.Com. Of note is that it can be mounted on any asset, brand and type.

Also, on display at bauma Munich was the recent examples of Caterpillar technology that further expand machine connectivity. The new, industry-first Cat App is designed to allow users remote access to telematics data – tracking machine hours, location, receiving diagnostic codes, and managing maintenance directly from their mobile phone without turning on their computer.

“With the operator ID feature, individual performance can be tracked and training opportunities identified. In addition, users can use their mobile phone

as the digital key for starting select Next Generation Cat machines. Users can also find value in viewing telematics data and additional equipment management resources on the companion website: www.my.cat.com,” explains Herwig Peschl, EAME industry sales director at Caterpillar.

Also new at bauma 2019 was a suite of Cat Connect technologies that provides remote equipment diagnostics and software updates. Cat Remote Services includes two key offerings – Remote Troubleshoot (allows dealers to run diagnostic testing and pinpoint potential issues) and Remote Flash (allows dealers to remotely load current versions of on-board software). These technologies will be coming soon to selected machines in southern Africa through Barloworld Equipment.

OMNI by Terex

Terex Finlay showcased its OMNI by Terex, a real-time connected tablet based system that allows operators to watch, monitor and adjust important parameters on their crushing and screening gear all from the safety of the cab of a material feed excavator or shovel. The generation of a secure and separate WIFI network and the integration of tablet technology enables multiple operators to be connected in real time on up to six machines in a crushing and screening train. It has been diligently and intuitively designed to give easy-to-use control to the operator with information and views of the entire machine train.

“OMNI by Terex is a ground-breaking technology that will revolutionise the crushing and screening jobsite,” says



Cat's PL161 offers frequent data updates, providing location of attachments across worksites.

Barry McMenamin, group engineering director at Terex Materials Processing.

The OMNI by Terex system allows the operator to view working information from each machine that is connected to the system, make informed decisions about each machine's operation, and remotely manage the entire machine train to maintain high efficiency and produce the required material specification.

The operator can adjust individual machine metrics or use global features, such as pausing the entire material flow across the train with one action, allowing unprecedented levels of control – all from the comfort and safety of the excavator or shovel cab.

Additional features of the new OMNI by Terex system include alerts that indicate when someone on the ground is making process adjustments and camera view of up to two cameras per machine – from vantage points such as material transition points, chamber inlets and material choke level on cones.

The OMNI by Terex system offers an option for other personnel on the jobsite (such as the wheel loader or excavator operator) to have read-only system access, enhancing their efficiency through remote view of the operation and timely interaction.

“Crushing and screening equipment operates in busy, challenging work environments with many hazards to consider – typically with one operator having multiple machine responsibility and limited process control, limited view of the process and the transition points for material, while another operator clears stockpiles and loads dump trucks, and has to manage both of those competing activities,” says McMenamin.

Machine Cockpit

Putzmeister also used the show to introduce its Machine Cockpit, an advanced fleet management technology for its range of stationary concrete pumps and truck-mounted boom pumps.

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Putzmeister’s clever solutions promise – through connectivity – less downtime, higher productivity and, thanks to real-time information and an overview of all relevant operating parameters, more safety and efficiency.

“We want our customers to experience digitalisation as a gain. No matter how complex our developments in this sector are, they remain simple to use. Ultimately, it’s purely about giving them the means to keep control and an overview at all times and to work as efficiently as possible with our machines,” says Sebastian Fuhrich, director Innovation Factory.

Fuhrich says one of the most important levers for companies is transparency in all areas. The Putzmeister Machine Cockpit is one milestone towards this journey. With the new technology, customers can get real time information on the status of pumps at the jobsite, critical status alerts, remote diagnosis capability to identify faults and implement appropriate measures, key figures for delivery rate, machine

use and fuel consumption, alerts when machines are on the move and reminders for maintenance.

“The benefits are many – warning messages for critical states, remote diagnosis of machine faults, as well as automatic maintenance planning reduce costly downtime. Real time information and the overview of all relevant operating figures, such as output, machine usage and fuel consumption, improve planning and ensure high productivity,” says Fuhrich.

My Epiroc

My Epiroc – which will be rolled-out to selected markets during 2019 – is a new solution for the mining and infrastructure industry, with attractive features for increasing fleet efficiency and safety.

My Epiroc is developed to be a work-flow optimisation partner, helping users keep track of productivity with relevant alerts and status updates. By design, My Epiroc assists by highlighting the things that need immediate attention. Only spend time on

getting things done, not digging through excessive information that just gets in the way. By being proactive unwanted down-time can easily be avoided.

“We strongly believe that it is crucial to include all roles that are needed to get the job done,” says Niklas Forsberg, information technology manager at Epiroc Rock Drills AB in Sweden. “My Epiroc helps to pinpoint faults and bottlenecks to find smart solutions. No clutter, no noise, just peace of mind.”

Whenever support is needed, My Epiroc users are just a click or a swipe away from remote guided support, finding contacts or to a transparent overview of all previously reported inquiries. It is easy to manage tasks and actions related to the fleet in an efficient way and get the input needed in order to prepare for reporting. Data is securely stored in an encrypted cloud environment, which customers can also utilise to upload their own relevant content to create a safe digital fleet library over time. ●

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Booyco Electronics at the cutting edge of proximity detection

With mine safety legislation getting progressively tighter, Booyco Electronics continues to ensure compliance with its proudly South African proximity detection system (PDS). One of the most significant advantages of the Booyco Electronics PDS is that it can effectively detect as many as seven TMMs and 20 pedestrians within one field, in the underground environment.

According to Pieter Janse van Rensburg, Booyco Electronics area manager for Mpumalanga, legislation coming into force in 2020 will mean the extended application of Level 9 safety standards. This level requires ‘full intervention’ from a PDS on trackless mining machines (TMMs) to avoid man and machine related incidents.

Booyco Electronics’ PDS can facilitate such collision avoidance, with automatic slow-down and even safe-stop of mining machines.

The system uses VLF antennae on a

vehicle to create fields within a danger zone around the vehicle. The size of each field can be determined by the customer, to suit their specific operating environment and addressing identified risk.

An RFID tag installed on the pedestrian’s cap lamp alerts them – through a light and sound alarm – when they enter this zone. The light changes colour from green to orange and then red, the closer the pedestrian is to the vehicle.

The vehicle itself also receives a warning from the PDS, with the operator being alerted that a pedestrian is in the proximity. If equipped and configured appropriately, the vehicle can also be automatically slowed down at a certain distance from the pedestrian, and similarly brought to a safe stop.

One of the most significant advantages of the Booyco Electronics PDS is that it can effectively detect as many as seven TMMs and 20 pedestrians



With 13 years of experience in PDS, Booyco Electronics has supplied in excess of 5 000 sets of mining vehicle equipment around southern Africa, as well as 50 000 pedestrian sets of equipment.

within one field, in the underground environment.

“Our technology prioritises the safety of the pedestrian in mines, whether underground or opencast,” says Janse van Rensburg. “Our mission is to save lives, and to ensure that every worker returns home safely every day.” ●

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Metso to acquire McCloskey International

Metso, specialists in the supply of crushing, screening and materials handling equipment, has signed an agreement to acquire McCloskey International.

“This acquisition augers well for both companies, which share a commitment to helping customers improve their operational efficiency, reduce risks and increase profitability,” says Pekka Vauramo, Metso’s President and CEO.

“We know that joining Metso is the right move for all our customers, employees, dealers and business partners. The combination of our focus on products and people and Metso’s global resources will help create even better solutions for our customers. Although McCloskey International will form part of Metso, the company will continue to operate as a separate, independent company, focused on growth of the existing McCloskey brand name and the current independent distribution structure and network,” explains Paschal McCloskey, Founder, President

and CEO of McCloskey International.

According to Markku Simula, President of the aggregates equipment business area in Metso, “this agreement will strengthen Metso’s aggregates business in key growth areas globally and will extend the customer reach, especially to general contractor businesses”.

“Customers in aggregates and construction have varying business needs. This acquisition supports our expansion plans to approach customers through multiple complementary channels and offerings to meet their diverse needs,” he adds. “Going forward, Metso plans to continue developing the McCloskey brand and distribution channels, independent of the Metso channel.



HPE Africa supplies and supports the full range of McCloskey crushing and screening plants in southern Africa.

“The mobile aggregate equipment market is expected to grow by 4-6% annually during 2019-2023, driven by the underlying road construction spend. With this acquisition, Metso and McCloskey International will be able to better take part in the attractive growth of mobile products within the aggregates industry.”

The acquisition is subject to customary closing conditions, including anti-trust approvals. The closing is expected to take place during Q4 2019. ●

New southern African distributor for Allu

Allu has appointed a new dealer in southern Africa. Egelquip (Pty) Ltd will supply a comprehensive range of Allu Transformer and Processor attachments, and in conjunction with Allu, provide full aftermarket care, spare parts and dedicated customer service.

Egelquip is a South African company with a history stretching back to 1983. It now

supplies construction equipment throughout southern Africa, and is seen as a premium service provider within the plant and machinery industry. The company offers a range of services ranging from machine sales to plant hire, all based on reliable, quality manufactured, heavy duty equipment. These must be able to operate across a broad field of application types including mining, construction, waste management and waste disposal.

Egelquip was established in 2013 by Kieron Geoghegan as a ‘new’ version of his original business, Conquip Plant Hire, which began trading in 1983. Once retired from his position as an international director of this highly successful firm, Geoghegan decided to start up a more modern interpretation of this highly successful business model. As a result of this, Egelquip was created with the intention of embracing the changed business environment with a fresh outlook in order to strike competitively within the industry and related markets. This approach has led directly to taking on Allu Transformers and Processors throughout southern Africa.

The appointment of such a professional and experienced industry distributor reinforces Allu’s commitment in providing even greater levels of customer focus. It also further enhances locally focused customer support, while at the same time enabling customers to benefit from dealing with a truly global company.

In practical terms, this means that as well as providing ‘point of contact’ customer support in southern Africa, when the situation requires it, Egelquip will be able to call on round the clock assistance from Allu’s Finland based technical support department. This will further enable customers to benefit from the specialised advice and assistance that has made Allu the world leading supplier of material processing attachments: namely the Transformer and Processor series. ●



Egelquip will supply a comprehensive range of Allu Transformer and Processor attachments.

Young talent vital for business transformation and sustainability



Weir Minerals' development initiatives include a bursary scheme, a graduate programme, internships and apprenticeships.

The youth talent pipeline is the life-blood of sustainability for South African businesses and is key to transforming the country's economic landscape. Weir Minerals Africa is achieving significant success with its skills development programmes.

This is highlighted by Weir Minerals Africa's learning and development manager, Christia Uys, as she describes the success being achieved by the company's skills development programmes.

"We recruit and train young people to drive the energy and transformation of the business, by focusing on their skills and commitment," says Uys. "Rather than just head-hunting, we work to transform the business from within, while building a sustainable business."

Uys emphasises that their trainees are not only embarking on a training programme, but are embraced as a functioning part of the organisation. This growth of talent from within can, when conducted well, ensure the trainees feel part of the business and its culture and empowered to contribute.

"In our programmes, they are part of the business from day one and have a job to do with key performance areas," she says. "From the start, they have responsibilities and are active partners in meeting our business targets. Throughout the programme, there are people to develop, train and mentor them."

The company's development initiatives include a bursary scheme, a graduate programme, internships and apprenticeships. Uys emphasises that to achieve impact in skills development, there must be 'buy-in' among line managers. If the selection of learners is seen as just a human resources function, they will not get the ongoing support they need in their work.

"This is why Weir Minerals Africa is careful to involve all stakeholders within the business when we make selections," she says. "This way, the whole organisation commits to the development of our young entrants."

The bursary programme focuses on the four disciplines most in demand by the business – mechanical, metallurgical, chemical and industrial engineering. There are also opportunities in finance, HR and marketing.

"We want to prioritise sustainability of our business, so we focus on disciplines and skills which we can absorb directly into the business," she says. "Once the students complete their degrees, they are considered for the two-year graduate programme."

The careful selection and nurturing of bursars – which includes employing them during semester breaks – results in a significant proportion of them being employed by the company in permanent roles after the programme. There are usually about 15 to 20 graduates in the programme in any given year. ●

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ACCOUNTABILITY MATTERS



Nico Pienaar, director of Aspasa.

The issue of Eskom, the SABC and the South African Airways seems to be a hard one to sort out for the powers that be. Huge amounts of money are being pumped into these institutions to keep them afloat, but not a single person alleged to have stolen, or misused funds has been prosecuted yet.

We see those involved denying, ducking and diving. What is becoming evident, is that weak leadership feeds corruption. In a functioning democracy, a high degree of cooperation across all sectors and between all individuals is required. It is surprising to realise that in a country where we still believe that we have all the checks and balances in place, we still grapple with non-prosecution in an array of cases involving the greatest enemy to economic development – corruption.

This attitude of getting away with dishonesty is now filtering through to various other sectors and horror stories are now even affecting our own industry.

Across industries

I recently read an article in which a big South African cement company did some research on local cement producers cutting corners, and it made me think – this attitude is all over. The behaviour has spread across industries.

In a separate issue, I sit on a sub-committee of the Mine Health and Safety

In the previous edition of *Modern Quarrying*, I wrote about “keeping the morale high”. In my position I hear and see a lot, and it seems as if the moral high ground is spiralling down at an alarming rate.

Council at which we are looking at the regulations on conveyor belts. The present regulations say that the conveyor belts need to be SABS approved. Apparently, this is not happening in many cases. The cheap and nasty fire retardant belts are coming into the market, and operations are buying them, and this represents more possibility for incidents on sites. They burn easily and don't last long, but guess what, they are selling. When a conveyor belt catches fire in a mine underground, the incident normally results in fatalities – this has happened recently.

Then there is the issue of using low-quality material to build roads. Road builders dig their own holes, use the material to build a road that we as the public pay for. The problem is, digging of these holes constitutes a “mining” element. When a formal operation digs a hole, the Department of Minerals and Energy, the Department of Water Affairs and the Department of Environmental Affairs are all involved, to mention just a few. The material the legal operations supply must comply to a certain standard. All MPRDA and MHSA issues must be complied with by the established operation. On the other hand, the contractor will just dig, mine, finish and disappear. Workers are left dry, a hole in the ground is left, but we still say “we have built a road”.

Getting back to the issue of the big cement company's research, here is short summary. The study involved 274 samples of 14 products from 10 companies. This study has been made public due to the companies' corporate responsibility to all the stakeholders. At the end of the day, it was stressed that it ensures that the consumer gets what he/she is paying for. Yes, cement is the glue used to build infrastructure, which makes it an important commodity, and we as the public need to trust it. The stones and sand are in the same category. Concrete is made of cement, together with stone, sand and water.

Concrete, in all different forms, is one of the globally most used substance. Concrete will last for hundreds of years, and also one needs to know if when putting it together in the mix, it has to be done properly. The workers, the companies trust a conveyor belt and don't want to be killed or injured by it. Remember the employees, supervisors and junior managers do not purchase the product, this happens somewhere up the line.

Lessons learnt

Dwight D. Eisenhower once said: “You must never try to make all the money that's in a deal. Let the other fellow make some money too, because if you have a reputation for always making all the money, you won't have many deals”. There is a “buyer” who purchases it cheaply, who does not understand the consequences of injuries, fires or fatalities.

At the end of the day, honesty and trust are very important issues in the lives of humans in today's world. If we look at what is trust made of, we see:

- **Integrity:** This includes ethics, honesty and truthfulness
- **Competence:** This includes talent-based interpersonal, technical knowledge and skills
- **Consistency:** This includes reliability, good judgement in all situations
- **Loyalty:** To all people and the business
- **Openness:** Share ideas and information

So, what is the lesson here? Well, we all need to start asking questions. Surely, we won't buy an illegal, dangerous, non-compliant car and allow our families to drive in it. Likewise, we can't allow illegal, non-compliant products to be used at our operations. ●

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