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E300 LC EXCAVATOR 04



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B&E THRILLED WITH NEW FINLAY SCREEN AND KOBELCO 85T EXCAVATORS

"When crushing and screening even low-grade iron ore with its specific gravity of around 3,3 you need the robust design and build of a Finlay Screen to get the job done properly."

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BUYING CHEAP, MAY NOT NECESSARILY BE CHEAPER

There is a perception in the crushing and screening industry that some capital equipment offered by Pilot Crushtec and Metso is not as cost effective as competitors, when in fact the truth is that these premium products often come with many essential features as standard.



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REVITALISING THE IQSA

At the annual Institute of Quarrying Southern Africa (IQSA) Conference recently held in Johannesburg, Jeremy Hunter-Smith, CEO of KwaZulu-Natal based Blurock Quarries officially took over the reigns as chairperson of the IQSA. He told me about the challenges the IQSA are faced with but also explained the exciting new initiatives to revitalise it.

The IQSA is an international professional body for quarrying, surface mining and the related extractive, processing and construction industries. Membership is open to individuals, rather than companies. "The IQSA's long-term objective is to promote progressive improvements in all aspects of operational performance through the medium of education and training through to supervisory and management level," says Hunter-Smith. "The Institute does not represent the commercial interest of members' companies, nor is it a trade association. It rather seeks to promote members' interests through working to enhance the recognition of

professional managers involved in an industry which provides society with construction and road materials and minerals used in the manufacture and production of a multitude of everyday products."

Hunter-Smith says his main focus during his tenure will be to get the younger members of the institute more involved by making the IQSA more attractive to the industry. This already started at the conference with the presentation by the New Zealand Institute of Quarrying that aimed to create awareness for the international platform the IQSA works on.

"In addition," says Hunter-Smith, "there will be a focus on training and education. It has been a difficult focus over the last few years, exacerbated by COVID-19."

For Hunter-Smith, the relevance of IQSA membership is that it creates a platform for likeminded individuals in the industry to get together, network, share good practises and to support OEMs as the IQSA is the one of the only places one can see new technology for this industry all in one place.

"The institutes of quarrying in

the UK, Australia and New Zealand link closely with other associations in the construction industry. These institutes are growing and are responsible for a large portion of training and in so doing they are uplifting and bringing the quarrying industry together," maintains Hunter-Smith.

In South Africa the biggest challenge the IQSA is faced with is arranging the events that function as industry networking opportunities. "In the past the conferences were spread over four days, but first the way in which corporates spend and then COVID-19 forced us to re-look at the nature of these conferences. We now have an annual conference that is made possible by various corporate sponsors. In addition our focus will be to arrange networking opportunities on regional level to also attract those members that cannot travel to our annual conference. Our change in focus is also a move with the times," Hunter-Smith.

"The IQSA has gone through tough times. The focus must be on the young individuals to create a long-term and sustainable membership. An aging membership was always going to be a challenge. At the same time, the knowledge and wisdom of older members, must be valued," he explains.

For Hunter-Smith it is vital that the IQSA forms part of the knowledge-sharing platform with the quarrying institutes of the UK, New Zealand and Australia. "I sit on a quarterly presidents/chairmans meeting which currently is online and shares different ideas. One of the major projects that we are currently working on is IQ Connect. This is an app-based platform on which different talks on different topics are shared – particularly around mental health in the post-pandemic reality. We are hoping to launch a platform where all members can, by invitation, listen to these talks online."

May Hunter-Smith's tenure be the start of a revitalised IQSA. Best of luck to him. ●

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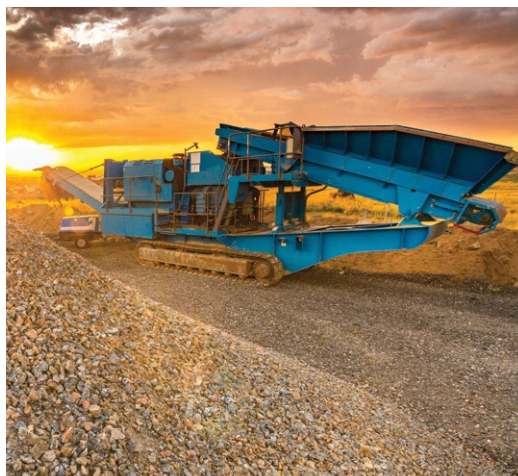
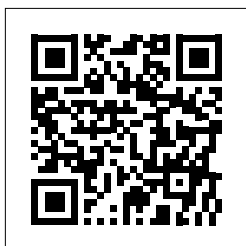
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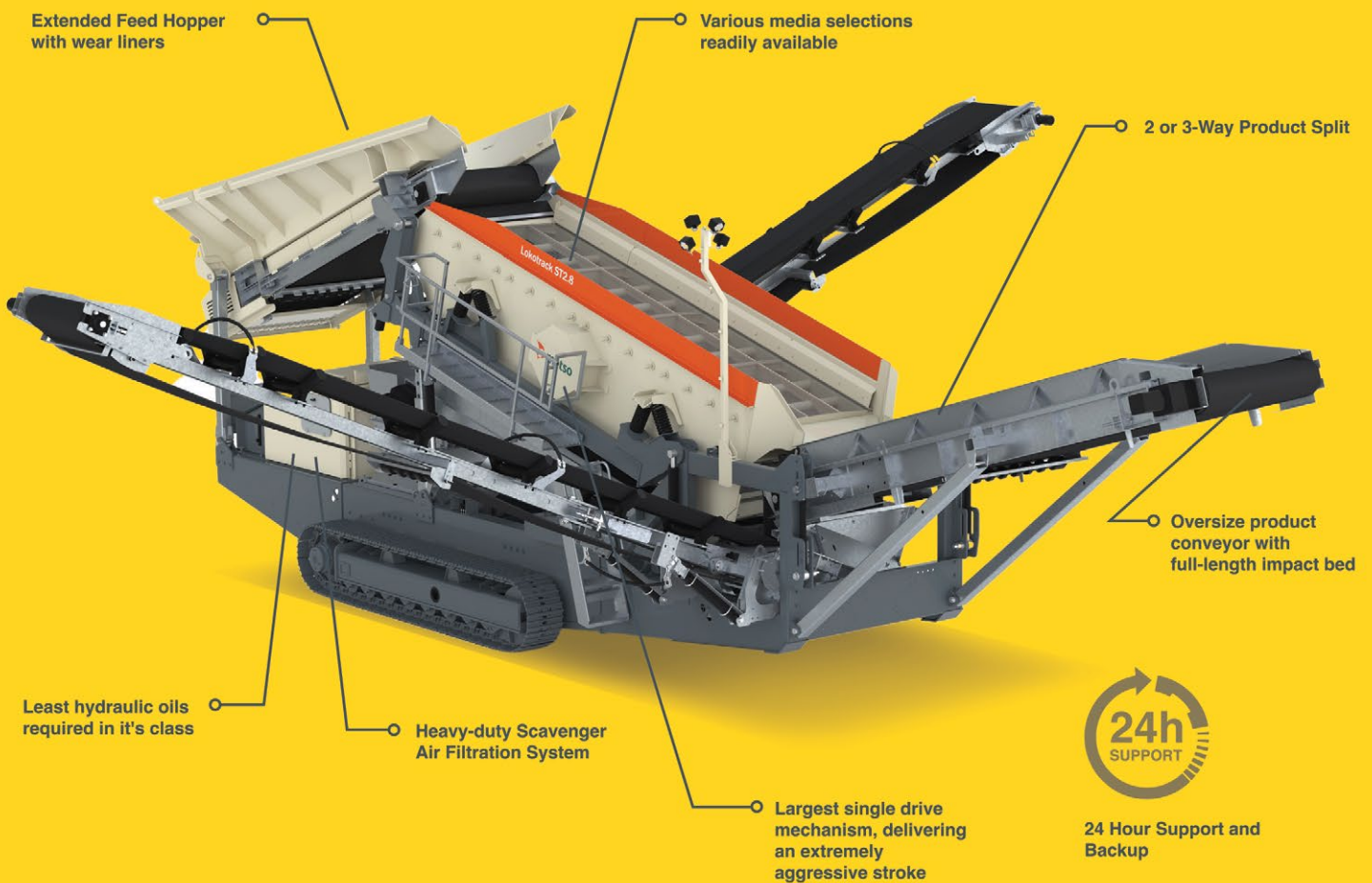
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The 30 ton E300 LC is a general construction machine that is ideal for applications including quarrying, contracting, mining and general construction.



NEVER IDLE JOHN DEERE E300 LC EXCAVATOR

In March 2021 John Deere announced the expansion of its construction line-up to 18 countries in Southern and Western Africa. In addition to the John Deere machines, customers in these markets have access to product support through the world-renowned John Deere dealer network. Upon introduction John Deere focused on the 21-ton E210 excavator in its excavator offering. It is now actively marketing the E300 LC, a 30-ton mid-sized excavator. **Modern Quarrying** spoke to Griffiths Makgate, John Deere's Construction and Forestry Sales Manager: Africa and Middle East about this excavator's performance, uptime and cost of ownership, but also about John Deere's pledge to assist customers to keep machines running.

John Deere has been building products for 185 years and its construction equipment is respected all over the world because it offers optimal uptime, productivity and low daily operating costs. When John Deere introduced its line of construction machines locally in 2021, "we focused on the E210 excavator as this is

where the market was – market share wise," Makgate explains. "The introduction of machines was calculated so that the market was not swamped as we wanted to focus on each of the customer segments, and give the right amount of focus to a specific customer segment," he says.

"The 30 ton E300 LC is a general construction machine that is ideal for

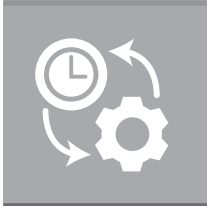


Daily checks are easy as service points have been grouped to swiftly check fluid levels and to grease the machine every day.

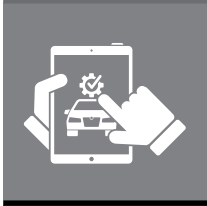
KEY TAKEAWAYS



The E300 LC is equipped with 6,8 litre six cylinder John Deere PowerTech Plus engine as opposed to the E210 which has a 4,5 litre engine.



The E300 LC combines power with smooth and low-effort control. The performance of the excavators is achieved through four power modes.



Remote diagnostics enable dealers and customers to monitor machines remotely and react quickly and proactively when problems occur.



These engines are fuel efficient even though, for me, fuel efficiency is subjective as it is influenced by the altitude of where the test took place.



The 30-ton E300 LC is a general construction machine that is ideal for applications including quarrying, contracting, mining and general construction.

applications including quarrying, contracting, mining and general construction," he says.

"The E300 LC falls in between a small contractor type of machine and semi-mining and fits into this segment because the bucket can be removed and fitted with different types of attachments," says Makgate.

The heavier nature of the machine makes it even more effective. "The E300 LC has a 2,9 m low reach. It is offered in a short and long carriage – the latter gives more stability on the machine as the undercarriage is slightly longer. It is a good machine for contractors moving between different construction

applications," he adds.

The E300 LC is equipped with 6,8 litre six cylinder John Deere PowerTech Plus engine as opposed to the E210 which has a 4,5 litre engine. "These engines are fuel efficient even though, for me, fuel efficiency is subjective as it is influenced by the altitude of where the test took place.

However, compared to excavators currently in the market, it is about 6 l per hour more fuel efficient," says Makgate. The machine is also equipped with auto-idle which reduces engine speed when hydraulics are not in use.

The E300 LC's open-centre hydraulic system is fully integrated with the John Deere

PowerTech engine to deliver excellent power, control and efficiency.

Performance and uptime

Makgate explains that John Deere's strategy for the design of its construction machines revolves around performance, uptime and cost of ownership. "The E300 LC has been built to deliver optimal uptime, has heavy-duty booms and arms, a robust electrical system while the hydraulic routing has been optimised," Makgate says.

The excavator employs reliable digging structures and hydraulic, electrical and undercarriage components. "Consider, for instance, the hydraulic routing of our machines: in most cases when an excavator fails it will be with hydraulics. It takes long to trace where the problem is, whether it is an oil leak or a problem with the feedline," says Makgate. "Our hydraulic lines have been simplified with less such lines, so if a cylinder breaks it is easy to replace it," he explains.

Aside from a simplified



The excavator employs reliable digging structures and hydraulic, electrical and undercarriage components.



The spacious and quiet operator station is designed with convenience in mind.



Griffiths Makgate, John Deere's Construction and Forestry Sales Manager: Africa and Middle East.

hydraulics system, Makgate explains that John Deere has added more rollers to its undercarriages, as more rollers absorb more weight, increases movement and the durability of the machine. "There are many maintenance free components to our undercarriage to ensure that more uptime is ensured," adds Makgate.

Other durability-enhancing



The machines display qualities and strength in areas that would normally easily fail. Our design is cognisant of those areas that cause money spend. We attempt to master and strengthen those areas and present customers with a stronger, more robust machine.

features include wet-sleeve cylinder liners, heavy-duty cooling systems and extended service intervals.

The E300 LC combines power with smooth and low-effort control. The performance of the excavators is achieved through four power modes (low, economy, standard and high) and three work modes (lift, dig and, hammer/bidirectional auxiliary) to deliver the right power for maximum productivity and strong digging force.

Trademark of John Deere excavators

"The trademark of all John Deere

construction machines, not just excavators, is performance, uptime and cost of operations," says Makgate. "The machines display qualities and strength in areas that would normally easily fail. Our design is cognisant of those areas that cause money spend. We attempt to master and strengthen those areas and present customers with a stronger, more robust machine."

Marrying maximal digging forces, swing torques and lift capacities with smooth control and multifunction capabilities

"The shorter the stick, the higher the breakout force. If the stick is longer, one sacrifices the breakout



The E300 LC falls in between a small contractor type of machine and semi-mining and fits into this segment because the bucket can be removed and fitted with different types of attachments.



The seven-inch touch-screen monitor provides the operator with quick access to the machine's features, functions and diagnostics.

force. John Deere's excavators marry the ideal length with the optimal power so that it becomes unnecessary to use additional machines to do the job," says Makgate. "The time cycle of the swing is also optimal to save time when one is digging, swinging to load or to stockpile and to swing back. This ensures maximal productivity," he adds.



JDLink™ is a telematics system that provides real time utilisation data and alerts that assist customers to maximise productivity by minimising downtime.

Operator comfort

The spacious and quiet operator station is designed with convenience in mind: the seven-inch touch-screen monitor provides the operator with quick access to the machine's features, functions and diagnostics. "The ergonomically placed and robust controls, automatic temperature control and optimal seat ensure that the operator is comfortable and productive all day," says Makgate. The operator cabin has a wide expanse of front glass that provides excellent all-round visibility.

Simple servicing

"JDLink™ is one of the features we pride ourselves in," says Makgate. JDLink™ is a telematics system that provides real time utilisation data and alerts that assist custom-

ers to maximise productivity by minimising downtime.

"Remote diagnostics enable dealers and customers to monitor machines remotely and react quickly and proactively when problems occur," says Makgate. "If a customer is planning a 500 hour service for instance, through the help of JDLink™ the dealer or customer can log into the machine and see what parts are needed upfront," he explains.

"Daily checks are easy as service points have been grouped to swiftly check fluid levels and to grease the machine every day. Covers can be opened easily from ground-level for the quick-change of filters," explains Makgate. Combined with the detailed diagnostics, this minimises downtime and costs.

More than power

"John Deere's excavators are competitively priced, but the customers get so much more than just the machine. John Deere brings value to the table: when a customer engages with us, we can sell a lot more in terms of value. We have managed to keep existing machines in the market running, have parts availability, specialised technicians and the capability," adds Makgate. "It is our pledge that we offer customers aftermarket and product support to assist them with achieving their goals," he says. "We focused on the 21 ton excavator and now we are focusing on the 30 ton – to ensure that the customer has a good experience of it. Our dealers are spread throughout the country – and can be contacted for a demonstration." ●



The keynote speaker on the second day of the conference was respected economist Dr Roelof Botha.

RECONNECTING AT INSTITUTE OF QUARRYING SOUTHERN AFRICA CONFERENCE

After an absence of two years necessitated by the COVID-19 pandemic, the annual IQSA Conference was held over two days at the Kopanong Hotel & Conference Centre in Benoni. At the conference the new chairperson, Jeremy Hunter-Smith was inaugurated, while the programme was packed with interesting papers, and conference goers had the opportunity to reconnect with colleagues and interact with the various companies that exhibited at the conference.

The conference kicked off with Jeremy Hunter-Smith, CEO of KwaZulu-Natal based Blurock Quarries, officially taking over the reigns as chairperson of the Institute of Quarrying Southern Africa's (IQSA). His tenure will be for two years and he takes over from PPC's Lazarus Meko.

Overview

A wide array of topics were covered by speakers at the conference. This included 'Small scale mining – case study' by Zama Sithole, 'Understanding the pressure on electronic detonators', delivered by AECI's Christopher Simelane, 'Basics of dewatering equipment and edge dewatering

technologies' by Malcolm Gillespie from Royec Global and a highly interesting report on quarrying in Antarctica – 'Quarrying way down south' by Gavin Hartley from IQQ Australia.

The keynote speaker on the second day of the conference was respected economist Dr Roelof Botha. His presentation centred around the budget in March as well as the Afrimat Construction Index (ACI) for the fourth quarter of 2021. The ACI is a composite index of the level of activity within the building and construction sectors, and is compiled by economist Dr Botha on behalf of Afrimat. He regarded the budget as one of the best in the last decade and painted a positive picture for the quarrying and

construction index. Read more about the ACI on page 36.

Digitalisation

Hunter-Smith said that the COVID-19 pandemic highlighted the need for the quarrying industry to speed up its digital transformation and related technologies.

To stay competitive in the post-COVID era, urges Hunter-Smith, requires new strategies and practices. These have to become a critical component within a business.

One of the sessions at the conference focused on exactly this: how modern technologies can drive efficiencies. Mintek's Peter J. van Staden's presentation was entitled 'Digitalisation of quarry operations'. The paper presented was based on research



After an absence of two years necessitated by the COVID-19 pandemic, the annual IQSA Conference was held over two days at the Kopanong Hotel & Conference Centre in Benoni.



Sanral's Louw Kannemeyer presented 'Sanral – 5 year focus on current and future projects' a highly anticipated presentation as the Sanral is vital to the quarrying industry.



From when *Modern Quarrying* was started, it has had a close relationship with the IQSA. This year was no different.

by the EU-Funded DEQ Project that included insights from 25 companies in 10 countries (Germany, Italy, Sweden, Finland, Portugal, Austria, Portugal, Columbia, France and South Africa). It focused on the institutionalised process of aggregate production's multiple operational steps and had the aim of ascertaining what the value would be from data collection and central processing during these processes. It focused on 'digital twinning' of the crushing and screening section in the quarrying process which attempted to define the optimisation objective for the study. This included the maximising of revenue, profit, energy consumption and yield, while minimising cost.

There has been an enthusiastic European reception to the study that recognised that there is a need to maintain safety, security, efficiency and profitability with minimal environmental and social impacts, which they are aiming to achieve by deriving more value from available information.

A large number of inventory/vehicle tracking by 'Expert Systems' are on offer, but the main question remains: "who is going to watch all that data?"

The study indicated that a digital twin indicates alternative optimisation options and

provides direction – is does not merely generate more data for interpretation. There are limitations though: generally WiFi/LAN infrastructure is lacking in the quarrying context to facilitate data communication. The study also found that relatively little provision for measurements were made (to verify improvement, one needs to measure) and experimentation with blasting alternatives are subject to time-consuming regulatory approvals.

Training

Jeremy Hunter-Smith introduced the launch of UK training for South Africa with the anecdote of a CFO asking the CEO "What happens if we invest in developing our people and they leave us?" to which the CEO answers, "What happens if we don't, and they stay?"

The new training offered by the IQSA, CPD Select, provides a flexible and innovative approach to continuous professional development (CPD).

It offers access to the latest bitesize eLearning modules and structured content, all of which can be undertaken, based on your business needs.

Over 70 modules are available which are interactive, on the go and has video support. The modules have been designed

for all learning styles and are flexible as learning can happen at a customisable pace. The training can focus on any of these subjects: Health and Safety, Blasting, Geology, Sustainability, Construction products, Environmental, Processing, Extraction and Planning.

The training can happen on laptops, tablets or on smartphones.

Hunter-Smith says that the UK's IQ has been supporting industry employers since 1949, developing high quality training and raising standards to meet the needs of an ever-changing industry. "Its training and qualifications are recognised globally with flexible learning formats available to meet the needs of both individuals and operators."

Sanral

Sanral's Louw Kannemeyer presented 'Sanral – 5 year focus on current and future projects' a highly anticipated presentation as the Sanral is vital to the quarrying industry.

South Africa has the 11th longest road network in the world (public roads) – more than half of SADEC's roads are in South Africa.

This presentation highlighted the complexities Sanral is faced with in awarding tenders. These range from governmental nuances to administrative nightmares. ●

The first Institute of Quarring Southern Africa Conference in two years was an opportunity to reconnect, learn and socialise.



Jeremy Hunter-Smith from Blurock Quarries and Theolan Govender from AfriSam.



Probalan Govender from AECl Mining Explosives.



Sandro Scherf and Charl Marais from Pilot Crushtec International.



Loadtech was awarded 1st prize for their stand.



Karabo Molefe, Khanyisile Zondi and Ntuweleni Matshusa from Weir Minerals.



Deon Bosman (Astosol) and Henk Wiltz from Drift Supersand.



Wilfred Malladain from Schauenburg.



JP Marion and Donovan Scott from Transvaal Rubber Company.

Photos by Bennie Venter



Jannie Krige from Kenmore.



Matewis Heyns, Hennie du Preez, Bennie van Nieuwenhuizen and Michelle Fedder from BME.



AECI received 2nd prize for their innovative stand.



The 3rd Prize for best stand went to Techroq.



Anton Schilz, Dawid Taljaard and Glen Webster from Loadtech.



Kobus van Niekerk and Raj Singh from Bell Equipment.



Miles Mulder, Michael da Camara and Rui Caldas from Caldas Engineering.



Ken Mouritzen from BLT.

ISHE AUDIT YEAR END REPORT – 2021

The majority of the ASPASA members agreed to carry on with the ISHE Audits for 2021, as long as good COVID-19 protocols were followed. So, armed with enough sanitiser and face masks, the year was tackled with a positive attitude to add value to the industry under strenuous circumstances. Here is an overview based on the ASPASA ISHE Audit Year End Report compiled by Marius van Deventer, ASPASA ISHE auditor.

It was quite obvious that the pandemic had a negative effect on the industry, not only financially but also psychologically. ASPASA had seen a rise in injuries and incidents in the industry at large which can be put against external influences affecting employee's awareness and concentration on the task at hand. Almost all quarries were affected by employees testing positive for COVID-19, and some of these infections could have been while people were at work. In general, the compliance to COVID-19 protocols were excellent.

Audit scope

the audit covers all operations on the mine that falls under the legal requirements of the Mine Health and Safety Act and applicable Regulations. Audits were also done for members that run operations that are governed under the Occupational Health and Safety Act. Both audit protocols are frequently revised to be updated on new legal requirements and industry standards.

The audit itself started off with an introduction meeting where experiences and findings of the year were shared with those attending the audit, as well as the consistent process to be followed for the day of the audit. All COVID-19 protocols had to be followed and therefore attendance to this meeting was minimised.

This was followed by a thorough

and in-depth inspection of the facilities on the mine where most of the day was spent. Legal registers, inspections, pre-start checklists, licences to operate machines, isolation records, etc. are amongst the documents scrutinised during the site inspection. The auditor has in-depth knowledge of the legal requirements of technical, plant, machinery and mining area requirements and these are evaluated for legal compliance.

Discussions with employees in the workplace was obviously difficult during the audits due to COVID-19 protocols, but supervisors and section heads were still encouraged to join the inspections in their respective areas.

The final session of the audit was to scrutinise the documented health and safety system against the requirements of the audit protocol.

A key role of the audit process is to provide guidance and add value in achieving Zero Harm. Knowledge and experiences are shared across the industry which increase the understanding and change the attitude and behaviour of all those employees responsible for health and safety.

Audit findings

The development, implementation and compliance of the health and safety management systems of ASPASA members have always been of a very high standard and 2021 was no different than previous



years. Total commitment is required in the quest to Zero Harm, and the ASPASA members audited have demonstrated this again.

The audit outcomes have again shown that all ASPASA members are fully committed to the health and safety of their employees and those interested parties affected by their operations. Members always strive to full legal compliance and the setting of very high standards in achieving of their Health & Safety objectives and targets.

Unfortunately this year ASPASA has seen too many preventable accidents. Most managers have identified the psychological effects from 'Covid Fatigue' as a root cause to these accidents.

Only 69 audits were done for the year as some members opted out of the audits due to their own restrictions of external visitors to their operations during the pandemic.

The average score obtained for 2021 is 0,25% lower than the previous year's scores, but it did show some good improvements under strenuous conditions.

The average score of all ISHE Audits for 2021 is 89,19% with the highest score 97,63% and lowest score 70,40%. Sixty percent of the member audited achieved scores of above 90%. Special recognition is



given to those quarries that achieve Showplace Status on this audit.

Breakdowns of achievements in the ASPASA Audits:

- Showplace Status (95% +) – 9 Operations
- 5 Shield Status (90% - 95%) – 33 Operations
- 4 Shield Status (80% - 90%) – 19 Operations
- 3 Shield Status (70% - 80%) – 8 Operations
- 2 Shield Status (60% - 70%) – 0 Operations
- 1 Shield Status (50% - 60%) – 0 Operations
- Participation (< 50%) – 0 Operations

Positives identified

- The sharing of information is a crucial aspect of the auditing process. Good Quarry Managers are always eager to learn from what other operations do and what leading practices are available that can improve the health and safety performance at their own operation.
- Health and safety conditions were sustained and maintained throughout the industry under very difficult conditions.
- There was a general improvement in the compliance to machine guarding requirements.

KEY TAKEAWAYS



Only 69 audits were done for the year as some members opted out of the audits due to their own restrictions of external visitors to their operations during the pandemic.



The average score of all ISHE Audits for 2021 is 89,19%.



The ISHE Audit has identified a new Top Performer in Afrimat Qwa Qwa (97.63).



A key role of the audit process is to provide guidance and add value in achieving Zero Harm.

- Some operations made expensive modifications and improvements to their crushing and screening plants to further improve their health and safety standards.
- Mine development was made according to mine planning which resulted in no serious incidents being recorded on mine failure or blasting incidents.
- No mining fatalities recorded for the auditing period and only a few NIHL

Top Ten Awards

No	Operation	Awards '21
1	Afrimat Qwa Qwa	97.63
2	Midmar Crushers	96.32
3	Lafarge Gala Quarry	96.24
4	Afrisam Rheeboek	96.08
5	Afrisam Peninsula	95.29
6	Afrimat Kliprug	95.21
7	Afrimat Dundee	95.04
8	SPH Kundalila Pilanesburg	95.03
9	PPC Laezonia	95.00
10	Afrisam Verulam	94.93



occupational diseases were recorded.

- Employees are better informed about requirements and knowledge on safe work conditions.
- The belief in the support that ASPASA provides as an industry body.
- There is still a very high level of compliance to COVID-19 protocols.

Aspects that need attention

- Too many lost time, disabling injuries and reportable injuries recorded for the auditing period.
- Identification of risks and/or non-compliances due to poor inspections and identification of deviations – this would either be due to incompetence of the person doing the inspection, or that the inspection itself becomes a ‘tickbox’ exercise.
- Traffic Management Plans: risk assessments were done some time ago according to legal requirements and subsequent plans were put together to segregate vehicle-to-vehicle

and vehicle-to-person interaction. Final development and implementation of such traffic management plans almost came to a complete stop during the last two years and no further development were identified at most quarries.

- Failure to comply with the TMM pre-start checklist hazard classification.
- Poor housekeeping in plants that contribute to dust exposure and access to running machinery.
- Poor compliance to isolation and lockout requirements.
- Poor accident/incident investigations.
- Closing the loop of accidents and incidents (planned task observations).
- Compliance to WIM, HIV and TB, dispensing of condoms, etc and other directives.
- Near Miss reporting and recording of Sec 23 refusals.
- Contractor management: service providers to the industry are trusted to deliver the professional assistance, services,

advise, training and have knowledge as expected from them as agreed with service level agreements. This is unfortunately not always the case.

- It has been reported that some training providers are not adding value to the development of employees, especially with fast-tracked training programmes..

Conclusion

The rollover from the 2020 national lockdown and the COVID-19 pandemic had a major financial and psychological effect on the entire industry and most operations went into survival mode with production and sales as the primary objective. However, health and safety standards were never neglected during this period.

The ISHE Audit has identified a new Top Performer in Afrimat Qwa Qwa. This quarry has set a very high standard for others to follow and with a dynamic team, it will interesting to see to what new heights this quarry will reach. These leading practises will be shared with others.

The compliance to legal requirements and own standards and procedures are still very high throughout the industry, but this does not safeguard members against accidents or incidents and findings from DMRE Inspectors. Consistent compliance on a day-to-day basis needs to be prioritised.

Numerous success stories can be documented where teamwork has made a difference to the health and safety culture at specific mines. These changes can only be effective in a top-down approach where the right example is set, and correct resources provided for employees to follow and implement.

ASPASA is looking forward to new challenges in the next audit year with the expectation of some legislative changes will be effected with harsher measures to be legally compliant. There has also been a call on all ASPASA members to again take part in the audit process and to share their experiences, good or bad, with the industry and let others learn from these. ●



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B&E THRILLED WITH NEW FINLAY SCREEN AND KOBELCO 85T EXCAVATORS

“When crushing and screening even low-grade iron ore with its specific gravity of around 3,3 you need the robust design and build of a Finlay Screen to get the job done properly.”

This was said not by someone in the marketing department at Bell Equipment, the Southern African distributors of Finlay equipment, but by Shalloe Watkins, Senior Manager: Plant for B&E International, the multi-disciplinary crushing, contract mining, material processing and engineering group. And he should

know as since 1994 the company has owned approximately 50 Finlay Screens and Crushers across the entire range.

B&E International was founded in 1982 and has since been incorporated into the listed Raubex Group of companies. The company operates several crushing and screening plants ranging in size from 50 tonnes to 500 tonnes per hour and which operate as single

phase to five-stage crushing and screening plants.

“We pride ourselves on tailored solutions for crushing and screening, mineral processing and engineering services, quarry services and opencast mining,” Shalloe says. “Our plant, equipment and our experienced personnel are deployed all over South Africa and in neighbouring countries.”

Recently B&E International won



From left: Andrew Bowles (B&E International Contracts Manager), Sascha Caixeiro (Bell Equipment Sales Representative) and Shaltoe Watkins (B&E International Plant Manager).



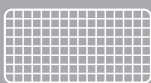
a tender to process low-grade iron ore for a major mine near Kathu in the Northern Cape. The tender called for the contractor to use a mobile double-deck screen that would be fed from a jaw crusher to produce predominantly coarse and very fine material with a lesser amount of material that could be used for stemming, which means filling the tops of drilled holes that have been charged and primed for blasting.

“After consulting Bell Equipment’s knowledgeable Sales Representative, Sascha Caixeiro, we decided that the Finlay 893 Double-deck Screen would best suit our purposes, first on this contract and looking ahead,” says Andrew Bowles, B&E International’s Contracts Manager. “We felt the Finlay 893 Screen was very competitively priced and with our in-house financing in place we could place the order in December 2020

KEY TAKEAWAYS



The Finlay 893 Screen was competitively priced and, with Bell’s in-house financing in place, the machine could be ordered in December 2020 and delivered in January 2021.



The top deck has punch-plates that produce material of -30 mm to +15 mm and the bottom deck contains a wire mesh with 15 mm apertures.



Initial fuel consumption figures hover around the 51 litres an hour mark in a challenging application.



We pride ourselves on tailored solutions for crushing and screening, mineral processing and engineering services, quarry services and opencast mining.



and the machine was delivered promptly in January 2021, which allowed us to commence work almost immediately.”

The top deck has punch-plates that produces material of -30 mm to +15 mm and the bottom deck contains a wire mesh with 15 mm apertures. “On this contract and in keeping with the guidelines of our client, we work during daylight hours and the split in material sizes is 45% coarse, 45% very fine and 10% of a size suitable for stemming,” Andrew explains. “We currently have the Finlay 893 Screen producing between 450 and 500 tonnes of processed material an hour which is way below its design capacity, but we’re limited by a quality control factor as determined by our clients.”

“Despite the challenges the comminution presents us with, we’re confident of getting three months of productive life out of the punch plates in the top deck and knowing that Bell Equipment has such a wide national footprint with strategically situated branches carrying spares gives us peace of mind.”

Considering that the dense and abrasive iron ore will place strain on any mechanical handling equipment, both Andrew and Shaltoa have been impressed by the Finlay 893 Screen’s relatively frugal fuel consumption of 12 litres an hour.

“Further to what Andrew said about Bell Equipment’s technical backup, I should add that our faith in the products that Bell Equipment sells is evident as recently we took delivery of two new Kobelco SK850LC 85-ton Excavators,” Shaltoa adds. “We had sold off some older equipment during the slump that was caused by the pandemic and once business started picking up we needed these excavators in a hurry. Bell Equipment to its credit had stock at a very competitive price.”

It wasn’t merely a case of buying at first sight as Shaltoa expands on the purchase: “We had looked very carefully at the specifications of the Kobelco SK850LC Excavators and the machine’s reach, breakout force and cycle times were all in the exact ballpark of what our requirements were and then some,” he says. “The standard, general purpose bucket carrying an almighty 5,1 cubic-metres also impressed us and our colleagues on the various sites where the machines have initially been deployed have expressed their extreme satisfaction with this.”

Shaltoa believes that when needed, this larger than normal bucket will really earn its keep when feeding mobile crushing and screening equipment, and coupled with quick cycle times, will add greatly to lowering

production costs per tonnes.

“We put the two Kobelco SK850LC Excavators to work almost immediately with one headed to the South Africa-Zimbabwe border post at Beit Bridge where it is being used in rebuilding essential infrastructure on both sides of the Limpopo River,” Shaltoa says.

“The second Kobelco SK850LC was sent to Queenstown in the Eastern Cape where it immediately increased production rates in a quarry that provides building material for a host of housing and infrastructure projects in that area.”

“These are not the biggest excavators we’ve owned and operated but, while we concede that they are still brand new, we’re confident that what they bring to the party in terms of quicker cycle times, larger bucket size and all-round great performance will add a positive spark to our production rates.”

Initial fuel consumption figures hover around the 51 litres an hour mark in a challenging application. B&E International bought the two Kobelco SK850LC Excavators with standard warranties of 12 months or 2 000 hours and are in discussion with Bell Equipment to provide their own maintenance staff with some technical training to understand the machines better and so improve their longevity. ●

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BUYING CHEAP MAY NOT NECESSARILY BE CHEAPER

There is a perception in the crushing and screening industry that some capital equipment offered by Pilot Crushtec and Metso is not as cost effective as competitors, when in fact the truth is that these premium products often come with many essential features as standard, while other suppliers, with what may appear to be 'less expensive' equipment, offer these as optional extras or not at all. **Modern Quarrying** spoke to Francois Marais, Pilot Crushtec's Sales and Marketing Director about how the notion of 'saving your way to profitability' does not make sense in the highly competitive quarrying sector.

There is a perception that the capital expense on, for instance, a Metso* may be on the higher end of the market. When we discuss pricing with a client, it is always preceded by a conversation about what the supply scope of the project will include. Generally speaking, if you are shopping for something in our environment you will typically contact a number of suppliers and they will provide you with the price for a standard piece of equipment – one will have a price point anchored in your mind. Not many will explain what is included in the scope. What ultimately happens is that when we unpack the offering, the price point becomes more digestible because there is a better understanding of what is included in the capital expenditure compared to others in the market," Marais explains.

For contractors, Marais says this is a problematic position to be in. "They may be supplied with what they perceive as an inexpensive quote, but when the machine starts to operate, they may discover the pitfalls of not having been supplied with the correct equipment to fulfil contract obligations," says Marais.

"We are able to give new potential buyers a good understanding of the scope of the equipment. Because of the track record with our equipment, we know what specifications should be standard

to optimise operation, production and maximise uptime," he says. Crushing contracts have strict time and output requirements, so downtime places contract fulfilment at risk.

Informed by a track-record

Pilot Crushtec's history of 32 years provide them with a track record and invaluable experiences by owners. "We provide the assurance of performance so clients do not put themselves in unmanageable risk by purchasing equipment. For example, the Metso Lokotrack LT120 mobile jaw crusher comes standard with a hydraulic rock-breaker. This is a very expensive item that we include as standard. It would be simple to remove that from the standard specification at factory level and have a machine that can be marketed as the cheapest," he elaborates. "Over the past three decades we have learnt that if you do not have a hydraulic hammer on a big jaw crusher and something gets stuck, it can be a very long process for the blockage to be removed before the plant is up and running again. The lost operational time can be quantified. This makes the greater capital expenditure upfront reasonable and understandable," says Marais. "The saving clients make down the line and the efficiencies on operations are why our clients tend to succeed more often than not." Considering the added features that





Having been involved in the mining, aggregates and recycling industries for over 32 years, Pilot Crushtec's extensive range of modular equipment covers the majority of project requirements.

come standard on Pilot Crushtec's machines, the value for money that these machines offer is clear.

Cost-efficiencies

"Various factors come into play in terms of cost efficiencies. If we are talking labour, running and operating costs, Metso's are known for having a relatively competitive operating cost," says Marais. "What makes us stand out are the intangibles that are not necessarily included in an operating cost calculation." For example: all of the Metso equipment that are imported come standard with a five year warranty. This covers major components – so should there be a crack or a critical failure on a major component, Metso replaces it if the client was in compliance with the terms of the warranty. "It is fairly simple to work out what the wear parts, fuel, and labour are going to cost as these are knowns. What many do not factor in are the risks associated

KEY TAKEAWAYS



There is a perception in the market that if a contractor does a cheap deal upfront to save on capital expenditure, profit is going to be greater on pricing.

What makes Pilot Crushtec stand out are the intangibles that are not necessarily included in an operating cost calculation.

Successful contractors know that they must deliver consistently and understand the metrics that determine capex budgets and the broader picture.

By linking the Metso Metrics to a belt scale on the plant, production rates can be monitored.



Pilot Crushtec's SupportLink division provides equipped, qualified and experienced personnel to professionally service and repair all its products.



Generac® Mobile Lighting solutions offer ready to run, versatile lighting towers with instant set-up time, ensuring that our customers can generate income immediately.

with critical failures that can occur. It may be an operating cost that the client had not provisioned for in their operating cost calculations whereas it will be replaced with our warranty," says Marais.

Possible results of buying cheap

In the current risk-averse economic climate, the capex budgets are trimmed without cognisance of aligning procurement mandates and strategic business objectives. "This means that the purchase of equipment is often informed by the wrong metrics," says Marais. "What needs to inform capex decisions are factors that will influence unaccounted breakdowns, critical failures, operational costs and skilled labour costs," says Marais.

"Many of our clients have a mixed brand fleet of equipment. Often when we go onto site we hear the horror stories of long lead times for parts and poor quality of technicians – all leading to the inability of

some contractors to deliver on the tonnages as part of their contractual obligations as a result of this downtime. These are the pitfalls that some of our clients fall into by opting to make a much cheaper capital expense upfront. The cost, performance and reputational damage to their business can be significant," says Marais.

"When time comes to make a capital expenditure again, some will spend a bit more on the capital side because they understand what the longer-term knock on effect will possibly be. Others will still find the cheaper option more attractive that they believe will enhance their profitability. Ultimately some win and some don't. I am not saying that buying cheap is setting yourself up for failure. There is a percentage that do succeed and a percentage that have many issues that damage their balance sheet," he says.

Marais says that when purchasing equipment you are lining yourself

up for some form of debt and a responsibility to be able to repay that debt. "If a cheaper purchase leads to you not being able to deliver on a contract, you cannot service your debt any more, this can lead to the complete collapse of the business – savings in the short term can lead to detrimental results in the future."

'Saving their way to profitability?'

"There is a perception in the market that if a contractor does a cheap deal upfront to save on capital expenditure, profit is going to be greater on pricing. The reality is very different: although some may increase profitability because of capex savings, in general the equipment ends up costing more because of downtime, waiting for parts, and the inefficiency of poorly trained technicians. The cheaper capex can quickly be erased by operating expenditure. In short, the business is exposed to high levels of operating risk," says Marais.

He says that successful contractors know that they must deliver consistently and understand the metrics that determine capex budgets and the broader picture. "They are thorough and disciplined – this is vital as routine and discipline is essential for optimal operation," says Marais.

A philosophy of sustainability

Marais says that it is Pilot Crushtec's philosophy to deliver to what the client's requirements are and to be able to support that for a sustainable period of time. "We have 32 years' experience, proven quality of our equipment, services, spares stock holding and backup support. We are not about turning a quick transaction and leaving the client high and dry. We have a large client base and existing relationships and many have dealt with us for multiple decades. We believe we are the premium offering in the market and it is a position that we want to retain," Marais concludes.

* Pilot Crushtec International imports selected crushing, screening and washing solutions from world-leading manufacturers such as Metso, Rubble Master, Edge Innovate, Generac Mobile. ●



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SYNERTREX® IIOT INTELLIGENCE PLATFORM **ALLOWS** **PRODUCTS TO ‘SPEAK’**

Modern Quarrying spoke to Theo Hendricks – Product Manager Comminution at Weir Minerals Africa about the Synertrex® intelligence platform that can be integrated into quarrying customers' existing systems to optimise the performance of the Weir Minerals equipment in their processing plants. In addition to the improvement of safety, this platform pre-empts wear part replacement, and allow mines to remotely monitor and, by advanced data analytics, gain the right insights for further optimisation of the operating parameters.

As a leading OEM, Weir Minerals has a strong customer-focus, well aware that customers need continuous improvement and innovation," says Hendricks. "That is why we are investing in intelligent equipment – The Synertrex technology informs customers when something is wrong while it also predicts a problem before it happens. In a way we are teaching our products to speak."

Synertrex® technology involves sensors that are fitted onto customers' equipment in critical positions which enable the capture of critical data on a continuous basis. The platform's IIoT data is cloud-based and then used in reports in a format that customers can understand so that they can make informed decisions. "Weir Minerals has a state of the art network of monitoring centres that can review customer data wherever our equipment is digitally-enabled," says Hendricks. It offers an advanced level of understanding and allows operators to monitor every aspect of the equipment's operation.

Primary digital response

Hendricks says that Synertrex® technology is part of Weir Minerals' primary digital response. "It is our primary goal to optimise the performance of our equipment, to give a timely, proactive and correct response to the right person and at the right time to improve the performance of the equipment," Hendricks says.

The Intelligence platform achieves this with the real-time data it collects as well as being connected to other data sources, such as maintenance data and equipment design data. This is factual and actual and allows remote monitoring and predictive analytics. "This data is available to customers anywhere, at any time and on any device including PCs, smartphones and tablets," Hendricks elaborates. "Information is

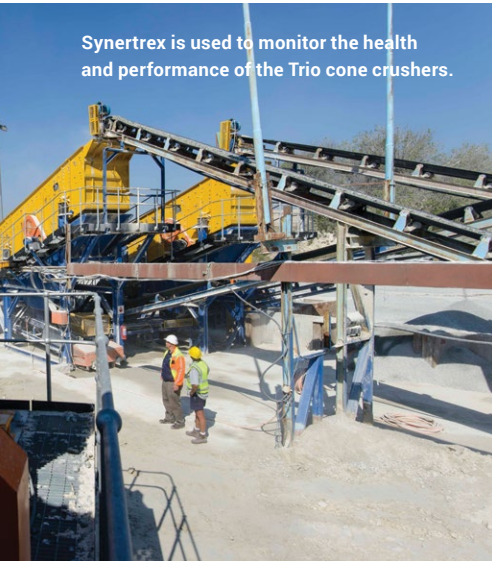


Theo Hendricks, product manager comminution at Weir Minerals Africa.

displayed on a simple and easy to understand dashboard on these devices or integrated into the existing systems on customer operational systems," he says.

Safety and Synertrex® technology

Safety is integral to Weir Minerals and of paramount importance in quarrying. "With the Synertrex platform we have developed algorithms that can predict plant problems before they happen to allow timely and appropriate response. Manual tasks can be automated, thus removing the risk of human intervention where people can be exposed to safety risks," says Hendricks.



Synertrex is used to monitor the health and performance of the Trio cone crushers.



Synertrex can be retrofitted while new equipment is designed for the unit to be fitted during assembly.

"In the days before remote monitoring, technicians had to visit the site to attend to problems. They relied on the operational staff present to explain the problem to them. This was not always very factual. Remote monitoring allows you to have critical data at your fingertips – all the time – and technicians do not need to travel to site as they now have factual data to advise or solve the problem," Hendricks explains.

According to him the uptake of this IIoT-enabled product has been slower among quarrying customers than among mining customers. "Quarrying is a more robust and manual operation.



The intelligent platform is used to monitor bearing hydraulics, drive train and tyre wear on Enduron high pressure.

Despite the slower uptake there have been early adopters such as CnC Crushers. Adoption allows us to do case studies which will in turn increase the uptake," says Hendricks.

The benefits for quarrying operations

For quarrying, Weir Minerals' intelligence platform can be used to monitor crusher liner wear so that wear patterns, cracks and other hotspots can be identified. This enables decisions regarding the equipment to be taken to allow scheduled downtime while a replacement part can be ordered upfront. "By monitoring process parameters, production targets can be met, while our monitoring technology allows process automation which leads to greater energy efficiency," says Hendricks.

Weir Minerals uses Synertrex® technology to monitor Trio® cone crushers so that areas such as the health and performance of the crusher, its lubrication, hydraulic and control systems are measured and monitored so that component replacement is planned with minimal downtime.

The intelligence platform is also used in its Enduron® HPGR where it is deployed to monitor bearings hydraulics and drive train. Tyre wear monitoring and predictiveness will be included in the near future .

Hendricks explains that the

technology can be fitted to certain other Weir Minerals equipment, and that it will be rolled out to most other Weir Minerals equipment. "The digital hardware kit is easy to retrofit, while new equipment is designed to be enabled with the platform," he adds.

Ongoing support

Weir Minerals has a strong focus on customers and on-site support is offered from installation to commissioning to handing over to the customer. "Weir Minerals' technicians travel to the customers' site, installs the sensors, and connects it to the cloud. As part of our ongoing support and optimisation, Weir Minerals can advise on reporting and dependent on what is installed at a customer's site, provide training so customers know how the platform works and what it can do. We can advise on reporting, create alerts, and offer response recommendations," Hendricks says. "Weir Minerals' support and training are ongoing as we want customers to have a positive response and experience."

In conclusion Hendricks says that he believes that digital solutions as the Synertrex® platform are the future. "At Weir Minerals we constantly strive to improve customer satisfaction, production and performance on the plant. It is at the forefront of everything we do." ●

MOBILE SOLUTIONS – FROM ROCK TO ROAD

Astec, founded 1972 has a vision to apply creative thinking and state-of-the-art technology to traditionally low-tech industries. **Modern Quarrying**, spoke to Regional Sales Managers Casper Booyse (Johannesburg) and Ricardo Isaacs (Cape Town) about the company's mobile crushing solutions.



What does Astec offer the contractor who is looking at a mobile crushing and screening solution?

We offer contractors a full range of versatile crushing and screening equipment which can handle high volumes of material without sacrificing productivity and profitability. Our broad range is designed to offer fast and efficient site establishment where mobility is key. Our GT125 jaw, FT200 cone and GT205 screen plants are available locally and are backed by our unmatched sales, training and aftermarket service and support.

How are these plants designed for jobs that require quick and easy site mobility?

Our plants can crush within a tight footprint, handle difficult material and produce a variety of products. Our GT125 mobile jaw crusher, for instance, has a low-profile hopper for quick setup and makes it easier to see when loading feed to the crusher with an excavator or FEL. If an 'uncrushable' goes in, you can stop the machine using the remote adjust, remove the blockage and then continue crushing.

In what applications can the mobile plants be used?

Our mobile plants are ideally suited for most applications that require mobility. This includes aggregate, recycling,

construction and demolition, as well as mining. Because of the increased price of fuel, customers want to crush as close as possible to the material and eliminate unnecessary trucking of material to the plant.

How do Astec mobile plants increase productivity and profitability?

Our plants will provide faster throughput and more capacity. For example, our GT125 jaw crusher which has large heavy-duty flywheels that produce up to 33% more inertia than competitor models, provide a reduced cost per ton over the life-cycle of the machine. It has a 38 mm stroke which processes more material and increases production. As a result, the GT125 is powered by a CAT C7.1 engine (225 hp) is more fuel efficient and delivers significant savings compared to other models in a similar class.

With regard to mobile crushing and screening plants, what is Astec's unique selling point?

We have and continue to put in a considerable amount of effort to set us apart from others. Safety is vital: our mobile plants are equipped with fail safe controls that allow for start/stop on each machine function. It has the ability to start and stop the plant from the cab of the loader or excavator. The crushing plants

can be started with material in the chamber and our machines have excellent access all around the engine area while the air/hydraulic filters and hydraulic circuits/valves are easily accessible at the side of the machines at ground level.

How does Astec create value for customers?

By working closely with the customer, we can identify the challenges, ensure that the proposed plant is right for the application and provide thorough training to aid with preventative maintenance to ensure optimum running time. By enhancing the customer experience with controls and automation, customers can work faster, smarter and save money.

How have you married crushing and screening with the move towards the IIoT?

Our plant is connected with world-class telematics platforms. We can provide our customers with a competitive advantage in real time monitoring and remote connectivity to help minimise operating costs and maximise uptime and efficiency.

What is meant by 'Built to Connect'?

'Built to Connect' is our company's purpose and vision to connect people, processes and products. In the process it advances innovative solutions from rock to road. ●

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ROBUST TRUCK FOR TOUGH AND DEMANDING ASSIGNMENTS

The Volvo FMX is Volvo Trucks' most robust truck to date, and it will make the toughest assignments easier – whether there's a road or not. It has an entirely new cab, increased payloads, and innovative safety features. With increased front axle loads of up to 20 tonnes and a 38-tonne bogie, the new Volvo FMX is built for the toughest conditions and most demanding assignments like mining operations. **Modern Quarrying spoke to Eric Parry, Sustainability Manager of Volvo Trucks South Africa.**

What makes the Volvo FMX robust and ideal for the harsh context of quarrying?

We make all our trucks using high quality components combined to offer you an efficient and durable truck, optimised for how you use it. On top of that, the Volvo FMX has a cab exterior that can handle tough conditions without getting damaged. The robust front with a steep approach angle, the skid plate and the steel bumper protecting the headlamps and other components are just a few examples. The high ground clearance and sturdy axle installations are other examples. Altogether, these are hard to beat.

How does the FMX allow customers to tailor the truck to their specific needs?

In quarrying you'll need a chassis that's built to handle a lot of action daily. You probably have a superstructure purpose-built for your operations. Volvo Trucks tailors your truck's chassis to support your success – using components and systems that are guaranteed to work reliably for many years to come. The Volvo chassis offers the flexibility to build a truck for any kind of superstructure used in any kind of transport assignments. The new Volvo FMX features the heaviest addition to Volvo's chassis range – a 38-tonne bogie that allows for a Gross Combination Weight (GCW) of up to 150 tonnes. In addition, the front air suspension option has been updated, allowing for front axle loads of up to 10 tonnes, or 20 tonnes for double front axles.

What can be tailored?

The Volvo chassis offers the flexibility to build a truck for any kind of superstructure used in any kind of transport assignments. You'll get your



Volvo FMX just the way you want it.

What configurations for driven front axles are available?

The Volvo FMX is designed for high axle loads. Regardless of if you choose leaf suspension or air suspension, the front axle can take up to 10 tonnes on a single axle. And 20 tonnes on dual front axles. This directly translates to improved productivity. Configurations for driven front axles come in 4x4, 6x6, 8x6 and 10x6.

How can the chassis be tailored to the customers' needs?

An extensive number of chassis specifications can be tailored to the customer's needs: chassis heights, maximum front axle load, rear suspension, towbars, fuel tanks, AdBlue tanks, fifth wheels, Volvo Dynamic Steering, tandem axle lift, automatic traction control, tag axles, pusher axles and brakes.

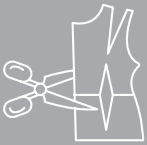
▶ A professional safety inspection takes a third-party perspective of aspects that workers often overlook.



KEY TAKEAWAYS



The new Volvo FMX features the heaviest addition to Volvo's chassis range – a 38-tonne bogie that allows for a Gross Combination Weight (GCW) of up to 150 tonnes.



Volvo Trucks tailors your truck's chassis to support your success – using components and systems that are guaranteed to work reliably for many years to come.



Volvo FMX is Volvo Trucks' most robust truck to date, and it will make the toughest assignments easier – whether there's a road or not.



Volvo Financial Services provides the right finance partner for your truck matters.

How is the driven front axle positioned to give the truck a better approach angle?

You can get your Volvo FMX with a driven front axle in a 4x4, 6x6, 8x6 or 10x6 configuration – to make sure challenging terrain doesn't stop you. The driven front drive axle is positioned to give the truck a better approach angle. It's designed to be strong and streamlined.

How does the axle contribute to optimal ground clearance when the truck is fully loaded?

The parallel rod behind the axle beam is integrated, making the sturdy axle casing the lowest point of the vehicle and significantly improving ground clearance when fully loaded.

What does the Tandem Axle Lift allow the operator to do and what are the benefits if this?

Tandem Axle Lift lets you disengage and raise one of the drive



axles. When the axle is raised, the truck behaves like a 4x2 or a 6x2, resulting in a tighter turning radius and significantly improved manoeuvrability. It also reduces fuel consumption by up to 3%.

How is the 300 mm ground clearance achieved?

Our rear air suspension made for construction trucks gives you up to 300 millimetres of ground clearance. Spring members, air bellows and stabilisers are placed on top of the drive axle. The result? You get the ground clearance of leaf suspension with the comfort and efficiency of air suspension.

What innovation does the Volvo FMX have for starting uphill?

Hill Start Aid can keep the truck still at an angle while the powertrain builds up torque. If you should get stuck, Rock Free is an I-Shift function that lets you rock the truck back and forth to by pumping the accelerator until your truck comes loose.

What specification options make the Volvo FMX optimal so that superstructure bodies can be fitted to it?

The Volvo frame is completely straight and parallel behind the cab, making the bodybuilder's job a whole lot easier. Our engineers never place anything above the top of the frame. This area belongs entirely to the body-

builder, adding a lot of flexibility. The frame comes with an upper row of holes designated for the superstructure. Since we don't use any rivets, the bodybuilder can easily attach equipment. The rear frame can now be factory cut exactly as you need it – in 50 mm increments – to perfectly match your superstructure. To widen the rear end options even further, the rear underrun protection can be placed in several different positions. Choose a 266 mm or 300 mm frame to match the demands of your superstructure. The bodybuilder module makes it easy for the bodybuilder to tap into the truck's electrical system to tailor functions. The bodybuilder module is conveniently accessed through flexible dashboard switches and the Work Remote. The chassis can be factory prepared with body attachment brackets, mounted on the frame – now available not only in the wheelbase area but also on the rear overhang. Some heavy applications put a lot of pressure on the frame. Therefore, we offer a wide range of choices of inner liners, to provide all the reinforcement you need.

Ergonomically speaking, what does the customer get from the cab design?

The new Volvo FMX comes with increased space in the day cab and storage of up to 800 litres. Where the FMX operates, visibility



is of utmost importance. Volvo Trucks designed the FMX, so drivers get improved visibility thanks to a lowered door line and new rear-view mirrors. The visibility is further improved by adding a camera on the passenger side which provides a complementary view of the side of the truck.

The interior is characterised by a new robust and dust resistant dashboard with more storage space, new colours, and a modern cluster. It includes a dynamic 12-inch high-resolution instrument display with a user-friendly interface allowing the driver to immediately see relevant

information and select up to four different screen views, depending on the driving situation. The instrument display comes ready for future updates and connected services.

Aside from the actual truck, what services does Volvo offer to keep the Volvo customer focused on their task of getting the job done?


Volvo Connect offers tailor-made solutions for your specific needs: from managing your fleet and transports to managing workshop visits with Service Planning, and easy access to your digital services and data on Volvo Connect.

From scheduled maintenance to maximum uptime, a Volvo Service Contract keeps you on the road. By reducing downtime and total cost of ownership, while improving operational control, it'll also improve your bottom line. Choose between Blue, Silver and Gold contracts to suite your needs.

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Genuine Volvo Parts and Service keep your truck in top condition and prevent unplanned stops. ●





The PMB Quarry is located in the Msunduzi Local Municipality which lies to the northeast of the city. It has settlements on three sides.

UPGRADES INCREASE QUARRY'S CAPACITY, **EFFICIENCY AND AVAILABILITY**

AfriSam's Pietermaritzburg Quarry (PMB Quarry) provides a diverse portfolio of aggregate products that are suitable for readymix, asphalt, civils, road building and concrete product manufacturing in the construction sector. The operation's material output is currently vital to key infrastructural improvements in the area which include the upgrades to the N3, municipal roads, and various building projects. **Modern Quarrying** visited the facility to learn about upgrades that will lead to optimised operations and the ability to step up production when the construction industry fully recovers.

AfriSam in KwaZulu-Natal

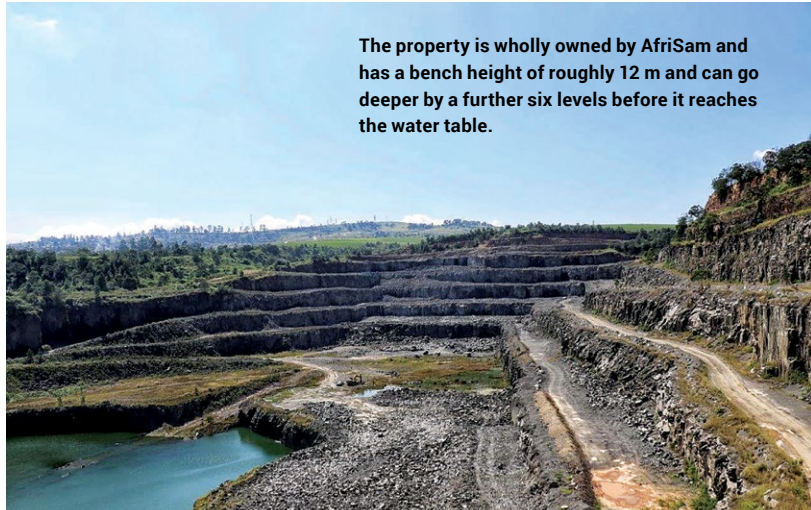
AfriSam is a supplier of superior quality construction materials and technical solutions optimising the use of cement, aggregate and readymix concrete. For AfriSam, the aggregate and readymix markets in KwaZulu-

Natal have done well from a volume perspective considering the volatility over the last three years. In addition to the infrastructural national and municipal road projects that the PMB Quarry supplies with base and sub-base material, it has sup-

plied readymix and other products to the Midlands Mall upgrade, the Brookside Mall and Southgate complex developments, housing in surrounding rural areas, the Durban University of Technology with its related student housing and various bridge projects.



The facility aims to provide product to projects within a radius of 60 km, but because its road stone is of such a good quality, this often increases to 100 km. It has supplied road stone for the King Shaka International Airport.



The property is wholly owned by AfriSam and has a bench height of roughly 12 m and can go deeper by a further six levels before it reaches the water table.

Benefitting the community

"It is important for us as AfriSam to invest in the development of communities surrounding our operations," says Ernest Sebeelo, Works Manager at AfriSam's PMB quarry. As such the PMB Quarry has contributed to education by establishing a school, provided the community with a computer and science laboratory, and is in the municipal approval stage to develop a library in partnership with the municipality and its external funders. The quarry also provides opportunities to people from the informal settlement to its south-west. This includes the removal of alien plants, site cleaning and some security," says Sebeelo.

Quarrying in a fast developing area

The AfriSam supply channel in KwaZulu-Natal is divided into two areas: coastal around Durban, and the Midlands (where PMB Quarry is located).

The PMB Quarry is in the

KEY TAKEAWAYS



The Techroq T8R VSI crusher is an impact crusher and was installed mainly to increase sand production at the plant to keep up with market demand.



The upgrade increased the sand output by approximately 15% of overall production.



The two upgrades reduced the dynamics on the civils, minimised downtime and improved safety and sustainability.



It is important for us as AfriSam to invest in the development of communities surrounding our operations.



The oversized parts of the aggregate get sent back to a 36 inch Osborn crusher. The G5 is deposited onto a stockpile while G2 material goes through a vertical shaft impact crusher and then to the stockpile.



As Pietermaritzburg Quarry is a key plant for AfriSam, it has been prioritised for capex investments to ensure the quarry is able to meet demand when the market fully recovers.

Msunduzi Local Municipality, located to the northeast of the city. Established in 1946, the quarry has a Life of Mine of 100 years and gives employment to 27 direct employees and up to 60 indirect contractors.

"The urban area surrounding the facility is growing rapidly with various developments already completed or in the pipeline. The greater Pietermaritzburg area also has a lot of work in the pipeline," says Sebeelo.

"Our facility aims to provide projects within a radius of 60 km. However, our road stone is of such a good quality that this has at times increased to 100 km. We have, for instance, supplied road stone for the construction of the King Shaka International Airport," says Sebeelo.

Built for efficiency

Sampie Kruth, AfriSam's Engineering Manager for KwaZulu-Natal explains that AfriSam's Pietermaritzburg facility has a plant A and B. "The A plant produces aggregate and sand and is split in two sections, namely primary and secondary. The primary plant produces crushed material for the intermediate stockpile (ISP), which is where the secondary plant receives its first crush material. It further produces products that only go through the jaw crusher (first crush) and also hand stone (rock that is used for gabion baskets).

"AfriSam's latest upgrade to the plant is a Metso C120 jaw crusher at the primary feeder," Kruth says. This crusher feeds the secondary 57H Osborn cone crusher from where the material goes to the ISP. "We have three Metso HP200 crushers, and a vertical shaft impact crusher which was

upgraded 18 months ago."

The secondary plant that feeds from the ISP produces coarse aggregates (28, 20, 14 and 10 mm), road stone washed aggregates and crusher dust that is used for asphaltting, concrete and various other applications in the civil engineering and building industries.

The B plant is much smaller and is a conventional base material plant. It currently produces G2, G5 and sub-base material. "It has a 30x42 Telsmith jaw crusher from where material moves through a 48 inch Telsmith cone crusher." The oversized material gets sent back to a 36 inch Telsmith cone crusher for recrushing. The G5 is deposited onto a stockpile while G2 material goes through a vertical shaft impact crusher and then to the stockpile," Kruth explains.

Increasing production

In general, the quarry has had significant capex investment to ensure we are ready when the market fully recovers. After AfriSam's Coedmore quarry, this quarry produces the second largest volumes in KwaZulu-Natal," Kruth explains.

At the start of 2021, the PMB Quarry installed a VSI crusher in its tertiary plant. "This Techroq T8R VSI crusher is an impact crusher and makes use of velocity and inter-particle impact to shape the material, thereby reducing the flakiness index of the material. The reason behind this is to improve the quality of the aggregate required for road stone and asphalt," Kruth explains. This crusher was installed mainly to increase sand production at the plant to keep up with market demand. This project increased the sand output by approximately 15% of overall production.

An upgrade for consistency

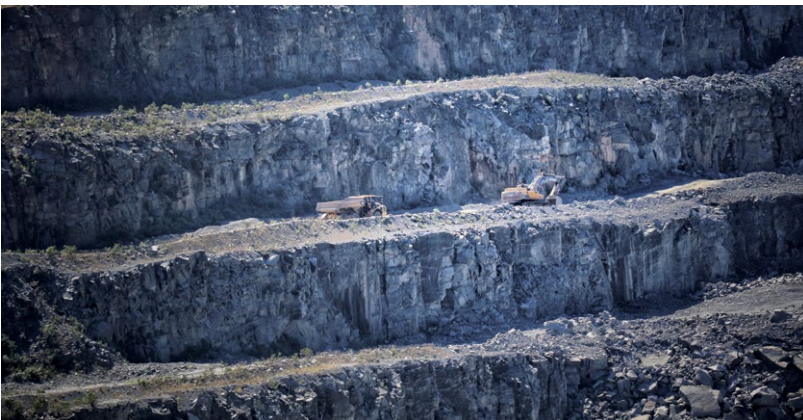
The second and most recent upgrade was done during the industry builder's break at the end of 2021. "The purpose of this upgrade was to replace the existing crusher with a Metso C120 jaw crusher," says Kruth. "We had numerous issues with the steel and concrete support base of the pre-



From left: Lindo Msomi – Engineer in Training; Dirk Maritz – Engineer; Sampie Kruth – AfriSam’s Engineering Manager for KwaZulu-Natal; Ernest Sebeelo – AfriSam’s Works Manager at the plant and Christopher Myeza – Maintenance Supervisor.



The new addition reduces downtime and is safer to operate and has hydraulic gap adjustment which negates the need to physically adjust gaps. In addition, it is more maintenance friendly.



Operations and quarry development must be optimised to ensure that fuel consumption to bring the quarry’s dolerite to the processing plant does not increase.



vious crusher due to the dynamic forces of the crusher during operation. This resulted in fatigue cracks on the crusher main frame which had to be welded every few months,” says Kruth.

The new Metso C120 crusher is mounted on rubber dampers. “The dampers reduce the dynamic forces from the crusher onto the support steelwork – almost like shock absorbers,” says Kruth. The crusher is not bolted to the frame and keeper plates are used to keep it in position.

The benefits of the upgrades

The crusher has been in operation for three months and benefits such as reduced downtime and increased safety are already evident. “The new jaw crusher has hydraulic gap adjustment which negates the need to physically adjust gaps. In addition, it is more maintenance friendly.”

From a safety perspective, it is safer to lift the crusher liners with an overhead crane as it has casted lifting holes instead of lugs, and special OEM supplied lifting tools.

“Operationally we are now optimised for success,” says Kruth. “We have reduced the dynamics on the civils, minimised downtime and improved safety and sustainability,” concludes Kruth. ●



The new C120 Metso crusher that replaced the previous crusher is now mounted on dampers. The dampers reduce the dynamic forces from the crusher onto the support steel – almost like shock absorbers.

Time to get smart about saving fuel



Nico Pienaar, director of ASPASA.

With diesel prices at an all-time high and the prospects of relief dwindling as the Ukrainian war crises drags on, it is time for surface miners to adopt new ways of saving fuel and managing fleets.

While many of the premium equipment and vehicle distributors offer comprehensive telematics systems to optimise productivity and save fuel, it is still possible to use manual methods to gather most of the information and attain similar successes.

Nico Pienaar of surface mining industry association, ASPASA, says the cost of diesel is becoming prohibitive and placing new and marginally profitable mines at great risk due to shrinking margins.

Here are just ten interventions to get the ball rolling:

- Responsible persons should spend time watching the processes in operation in order to gauge effectiveness of equipment deployed
- Ensure static machinery such as crushers are running efficiently and

Afrimat Construction Index recovers to pre-pandemic levels



Afrimat, the JSE-listed open pit mining company providing industrial minerals, bulk commodities and construction materials, has released the findings of the Afrimat Construction Index (ACI) for the fourth quarter of 2021. The ACI is a composite index of the level of activity within the building and construction sectors, and is compiled by economist Dr Roelof Botha on behalf of Afrimat.

The ACI staged a remarkably swift recovery from the COVID-19 induced slump that occurred during the second quarter of 2020, increasing by 74% within only two quarters. Since then, however, progress has been muted, due mainly to a slow rollout of the government infrastructure

programme and a slowdown in commercial building. A year-on-year improvement of 0.8% was nevertheless realised in the fourth quarter of 2021 and the improvement over the fourth quarter of 2019 (pre-COVID-19) stands at 1,3%.

An encouraging feature of the latest ACI is the continued sterling performances of the values of hardware retail sales and wholesale sales of construction materials, which are 60% and 55% higher, respectively, than in the base year (2011). These two key indicators of construction sector activity have also recorded real growth rates of 8% and 10%, respectively, since the fourth quarter of 2019 (pre-COVID-19).

It is also encouraging

that a majority of the indicators recorded positive growth rates on both a quarter-on-quarter and a year-on-year basis. Unfortunately, Statistics South Africa (Stats SA) data on value added by the construction sector remains well below pre-COVID-19 levels, in sharp contrast to all of the other indicators. This discrepancy suggests that Stats SA may be underestimating the contribution to construction activity made by the informal sector.

The shining stars of the ACI were construction sector salaries, hardware retail sales, employment, and the value of building plans passed in the country's larger municipalities. ❀

that feeds are kept at an optimal level.

- Look for worn or damaged surfaces that may be slowing the movement of material through the entire process.
- Deal with bottlenecks and choose to either park plant equipment or stockpile material rather than trickle supplying crushers, screens etc.
- Use the correct equipment for the job in order

to ensure the fastest and most efficient methods are used.

- Adhere to OEM maintenance requirements of trackless mobile machines, excavators and drill rigs and undertake daily maintenance checks.
- Ensure proper maintenance of roads and access roads to ensure free flowing traffic and faster return cycles.
- Limit idle times and

ensure operators are well versed in the most efficient and fastest ways of extracting and loading minerals.

- Match excavators and loading equipment with the dumpers at the mine to minimise the number of passes required.
- Ensure ground engaging tools are adequate for the current ground conditions and that they are not worn out. ❀

McCloskey R155 scalper meets recycling contractor's expectations

A year after taking delivery of its first ever McCloskey machine from Kemach Equipment, Crush-It Green (CIG) reports that the R155 scalper, deployed at one of its crushing sites in Gauteng, has lived up to expectations.

Founded in 2019 when the two partners took over an existing recycling and production facility that had been in operation since 2016, CIG is one of the few South African companies that holds a Global GreenTag Certification, one of the world's most trusted and widely recognised ecolabels.

Although CIG is still active in its founding concrete and rubble recycling business, the company has in recent years expanded into crushing and screening of virgin material, working on several sites in Gauteng, including Nigel, Soweto and Germiston. The scope of projects entails screening of gold-bearing dumps for a client and then crush the rock to produce aggregates for the construction industry.

On the back of an expanding project portfolio, CIG went into the market for a new scalper early last year to bolster its fleet. Having traditionally been devoted to a certain premium brand, for several reasons CIG decided to go the McCloskey route and took delivery of its first ever McCloskey R155 scalper in March 2021.

"We have always run a certain brand, but our usual supplier didn't have stock at the time, and we wanted a scalper quite urgently. We were not keen on a second-hand unit and could also not accommodate the Covid-19 influenced long lead time," says Clint Rodwell, partner at CIG.

Rodwell says the existing relationship with Bradley Karolus, sales specialist at Kemach Equipment, whom Rodwell had previously dealt with for years before he recently joined Kemach, was one of the key factors in CIG's purchasing decision.

"Bradley assured us that the McCloskey R155 scalper was equally good, and this



has turned out to be true. With his assurances, we decided to take a chance and bought the McCloskey scalper," says Rodwell. "A year after running the machine, we are happy with the performance and the support from Kemach."

A key factor in CIG's buying decision was the versatility of the machine. By its very nature, says Rodwell, the McCloskey R155 can be used as a scalper or a final screen. Central to the versatility of the machine is also the feeding arrangement, which offers customers the choice of either an apron or belt feeder.

"McCloskey offers both options – apron and belt feeder – to suit different

customer needs. This is based on our understanding that customers require different feeder arrangements for different applications," says Karolus.

Further machine versatility is achieved through the interchangeable top deck of the machine. "The machine's top deck can be configured with a grizzly, mesh or punch plate. McCloskey is one of the few OEMs offering such a range of options," says Rodwell.

Another crucial factor in CIG's decision was the fact that McCloskey runs common components, such as engines and hydraulics. "McCloskey runs a Cat engine, which is a common motor in the market. ❀"

Celebrating 40 years of Hillhead

Join the QMJ Group in the run up to this year's Hillhead as we celebrate 40 years of the iconic quarrying, construction, and recycling exhibition.

Over the past four decades Hillhead has grown to be a show like no other – from the humble beginnings of our very first exhibition held in 1982 at Jackdaw Crag Quarry, to the spectacular and unique experience it is today!

You are invited to share your favourite Hillhead memories using the hashtag

#40yearsofHillhead and the organisers will include the best of your photos in its online anniversary gallery which goes live on hillhead.com from the start of May.

With this year's show set to host over 600 exhibitors for the first time, it is the perfect opportunity to explore the products and services from the leading players in the quarrying, construction, and recycling sectors. You can view the full exhibitor list at hillhead.com

Being the largest



exhibition of its kind anywhere in the world, Hillhead provides a unique setting for exhibitors and visitors alike to do business amongst live working demonstrations

and static displays.

Register now at hillhead.com for your free visitor ticket to this summer's show, which takes place from 21-23 June. ❀

BME's new AXXIS Silver™ aims at small mines, quarries

Ensuring that quarries and smaller mines can leverage the latest generation of its renowned AXXIS™ digital initiation system, Omnia company BME has recently launched AXXIS Silver™.

According to Tinus Brits, BME's Global Product Manager – AXXIS™, the AXXIS Silver™ offering is a powerful but slimmed-down version of the cutting edge AXXIS Titanium™ product.

"AXXIS Silver™ embodies the key technological advancements of AXXIS Titanium™, while providing a cost-effective option for mines which blast on a smaller scale," said Brits. "Most importantly, AXXIS Silver™ gives mines even safer blasting while saving time on blast preparation and initiation."

The new AXXIS™ system

employs a dual basis of safety – with a dual voltage and dual capacitor configuration.

"The ASIC chip enhances safety levels and allows for inherently safe logging and testing," he said. "Blasts are initiated by a robust, encrypted blast command ensuring that detonators all receive their respective commands and fire as planned."

Bennie van Nieuwenhuizen, BME's AXXIS™ quality manager, highlighted that AXXIS Silver™ also speeds up the blasting process.

"The logging, testing and programming is done with one unit and requires only one visit to the blast hole," says Van Nieuwenhuizen. "There are also specific advantages that we have built into AXXIS Silver™, such as the thinner wire which we've developed to



suit small-diameter vertical blastholes."

The carefully researched copper-cladded steel wire is idea for these applications, as it is able to straighten out even in these small holes. The user can therefore feel exactly where the booster is during the charging process, avoiding the problem of thicker wire that coils against the walls of the hole.

He emphasised that the value added by the AXXIS

Silver™ initiation system is enhanced by its integration with BME's Blast Alliance suite of digital tools.

"These include our BLASTMAP blast planning software, XPLOLOG data logger and online dashboard, and the Blasting Guide App for Android devices," he said. "These tools enhance the ability of mines and quarries to design and implement customised blasting solutions with speed, accuracy and safety." ❀

CDE launches its largest and most advanced water management system

CDE, a leading supplier of wet processing solutions for the natural processing and waste recycling sectors, has revealed its new AquaCycle A2500 thickener, the latest addition to its top-of-the-line water management and recycling systems.

With a capacity of 2 500 m³/hour, the new A2500 is CDE's largest and most advanced water management system to date. It has been developed in response to calls from materials processors operating in high tonnage markets for water management solutions equipped to supply their operations with sufficient water supplies while ensuring optimal production efficiency, minimum loss of fines and maximum water recycling.

Darren Eastwood, Strategic

Development Director at CDE, says: "It is increasingly important for materials processors to invest in an effective water management system that ensures a steady supply of clean water to their plants through cost-effective means.

"The continued advancement of our pioneering wet processing solutions and leading-edge water management systems is supporting operators working in the natural processing and waste recycling sectors worldwide to overcome the challenges of washing in water-pressured or water scarce areas today."

Where CDE bridged the gap in 2018 with the launch of its A900 and A1500, providing a median alternative to its 600 m³/hour and 1500m³/

hour models, the new A2500 expands the range with a 2500m³/hour option to fit the requirements of sites processing high tonnages. The increased capacity also provides a lower rise rate, enabling operators to process challenging, harder to settle materials.

Designed for easy use and safe access for efficient maintenance, it boasts the first lattice bridge structure on any CDE thickener. An integrated monorail also provides unrivalled access to the motorised rake, gearbox and motor.

Powered by the motorised rake arm, the introduction of a new floating scum scraper, which is independent of the rake's height, allows for the easy removal of unwanted foam, oil and



Darren Eastwood, Strategic Development Director at CDE.

light weight trash. And, creating even radial flow to all regions of the A2500, a redesigned volute feedwell optimises the incoming flow for improved flocculant performance.

Darren says the development of the new A2500 delivers all the benefits of CDE's existing AquaCycle range on a much larger scale. ❀

Seamless plant switchovers on Zest Weg genset solutions

As power outages and load-shedding continue to plague the optimal performance of industrial and mining process plants, Zest WEG is providing standby power solutions that ensure no power loss when these disruptions strike.

According to Damian Schutte, electrical engineering team leader at Zest WEG, many plants face complex and lengthy restart routines if there is a power failure on the main grid and this severely compromises plant efficiencies.

“With our design and manufacturing experience, we can provide genset solutions that can be started up prior to an outage, so that the plant can continue operating seamlessly while switching from utility to standby power, and back again to the utility,” says Schutte.

Adding to this, he highlights that Zest WEG’s customer-focused approach means that it responds positively to the challenges that companies face in scheduling and implementing these backup systems. In a recent project in the Western Cape, the Zest WEG team provided a plant to a customer in the marine sector with a customised genset solution to suit its specific needs and also help the customer face unexpected circumstances.

The plant was experiencing considerable downtime due to loadshedding by the national utility, as it would take some time to bring the plant back to operation. The engineered solution includes six 550 kVA generators, two 11 kV transformers, medium-voltage (MV) switchgear, and breakers for synchronising between generators themselves and also

with the utility.

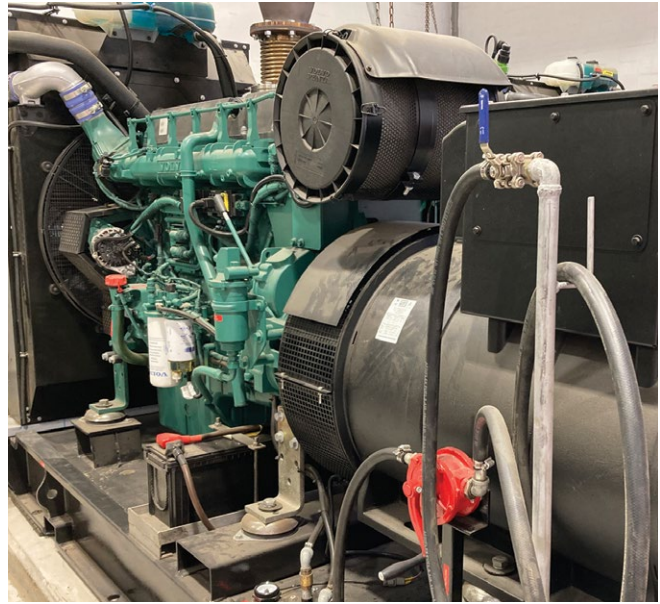
“The smaller size of generator provides flexibility and was a cost saving, as some units can be switched off depending on the site load requirement,” he says.

When frequent loadshedding was suddenly announced by the utility, the customer asked Zest WEG for an urgent temporary solution while continuing to implement the project. The team brought three of the gensets on-stream to keep the plant functional until the planned solution was in place.

Bradley van der Spreng, business development consultant at Zest WEG, notes that all major components for power plant solutions such as these can be manufactured and assembled by Zest WEG and Brazil based parent company, WEG. The company can, however, accommodate a client’s specifications should they refer to a nominated supplier, allowing the gensets to be built for easier on-site installation.

“Our extensive engineering and programming on these systems makes it vital that they are fully tested before being delivered to site,” says van der Spreng. “Whatever we specify in the contract can usually be tested in-house at our advanced facility in Cape Town.”

Customers are invited to attend the



factory acceptance test (FAT), which includes load testing of the generators at different

loads up to 110%, synchronisation checks, and MV tests if this is part of the scope. ❁

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PRIORITISE THE PEOPLE ASPECT IN PDS INSTALLATIONS

As the implementation of proximity detection systems (PDS) takes centre stage at surface mining operations ahead of the yet-to-be-announced compliance deadline, leading PDS and CPS developer Booyco Electronics has encouraged mining companies to give equal impetus to both vehicle-to-vehicle and vehicle-to-people installations.

According to Anton Lourens, CEO of Booyco Electronics, traffic management planning has come under the spotlight recently as requirements for PDS and effective risk management interventions are set to become enforceable under the provisions of the Mine Health and Safety Chapter 8 MHSA Act 29 of 1996.

Despite the uncertainty around the exact compliance deadline surface mines have, in recent years, advanced their risk assessments and installation of PDS technology, where significant risk exists. However, Lourens is concerned about the seemingly one-sided focus on vehicle-to-vehicle installations, at the expense of equally important vehicle-to-people installations.

“Out of the enquiries we get, we have observed that there is limited assumed risk on people detection,” says Lourens. “We see a big focus on vehicle-to-vehicle risk, with limited requests for the



people protection aspect of PDS installations. We are not sure if the approach is informed by internal risk assessments or the fact that mines have put in place measures to separate people from machines.”

As part of their risk assessments, several operations have, as an example, implemented pedestrian walkways as a means of separating people from moving machinery. While Lourens acknowledges that PDS technology is not a silver bullet on the quest



Anton Lourens, CEO of Booyco Electronics.

for Zero Harm, he believes that, as an engineering control system, the technology has proven its mettle in mitigating risk at mines.

“We have seen operations opting for fixed barriers as part of their traffic management plans to separate people from machinery,” says Lourens. “Separating people from moving machinery only mitigates part of the risk, yet the PDS can warn against possible collisions (Level 7), identify corrective paths (Level 8), or implement a ‘slow-down and stop’ intervention together with ‘motion inhibit’ (Level 9), which makes it a better solution than physical barriers.” ●



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