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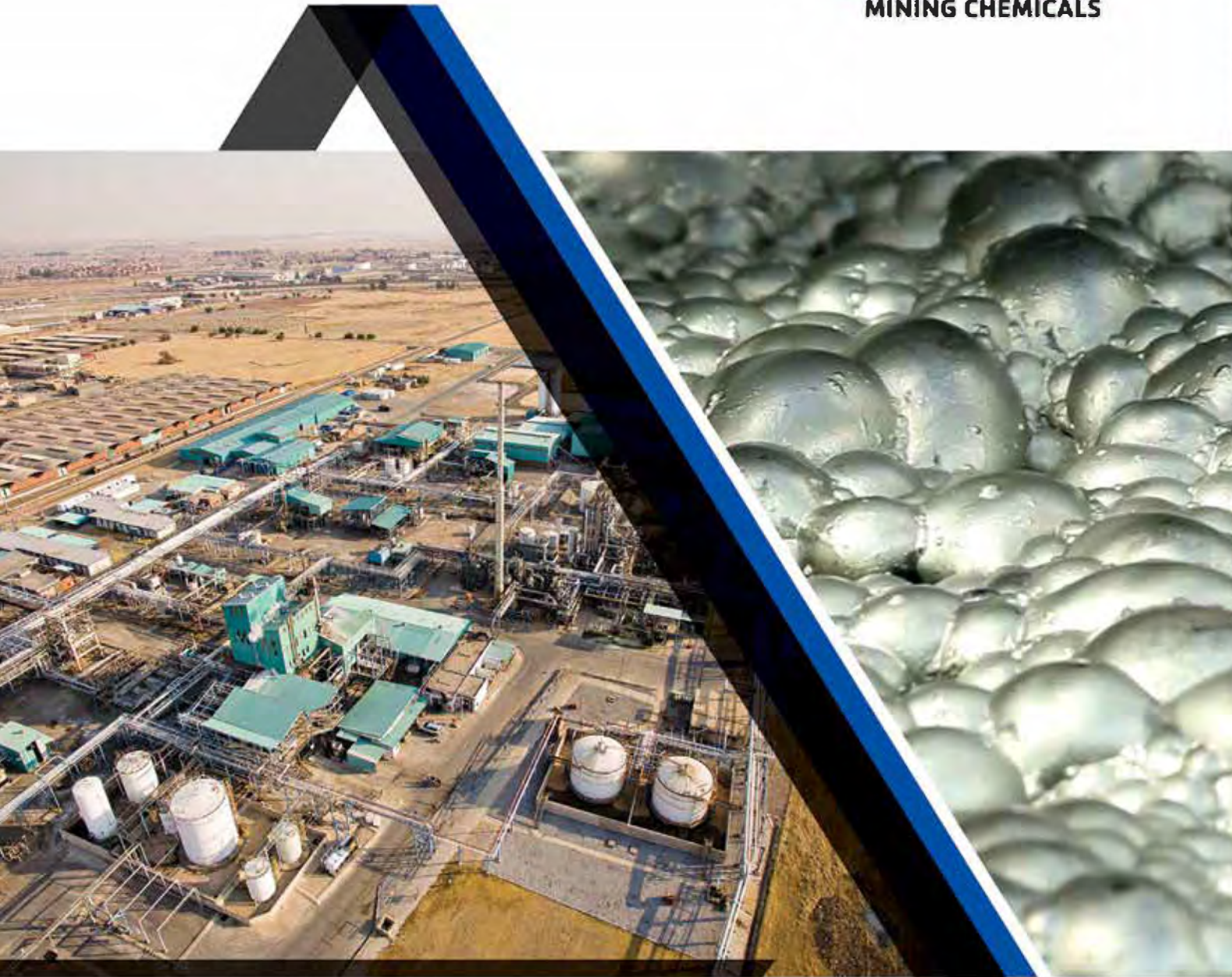
QUARTER 2 – 2020

ETO – MEETING PROJECT OBLIGATIONS

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With the launch of its new 500 tonnes per hour Combo X900 – the largest in the series to date – CDE has doubled the capacity of its all-in-one wet processing and water management solution and created a next-generation offering for material processors.



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PREPARING FOR QUICK RETURN TO PRODUCTION AND PROFITABILITY

COMMENT

In the midst of the coronavirus (Covid-19) pandemic, aggregate producers are facing unprecedented challenges, as is every other industry to a greater or lesser extent. The nationwide lockdown is a hard blow to an industry that has already been under tremendous pressure due to lower demand from the traditional construction market.

The amendments to the Disaster Management Act regulations that allow a phase-up in mining capacity to 50% during the lockdown period (at the time of writing), but with all the preventative and mitigating controls in place to fight COVID-19, is a welcome relief for the quarrying and mining industry at large.

While operations can now operate at 50% capacity, now more than ever, greater focus should be placed on the health and safety of the employees returning to work, and in so doing also protect the health of their communities.

Operations should by now have risk-based approaches that are designed to ensure workable preventative and mitigating measures to fight COVID-19 in line with the

Department of Mineral Resources and Energy's directives.

It's important that managers embed good hygiene practices into their toolbox talks and walk-around inspections. The toolbox talk is such a good time to discuss health and safety with the crew, including reminder advice to practice good basic hygiene such as covering your mouth with an arm during coughs, frequent handwashing and avoid touching your face, among others.

Dealing with COVID-19 and all the customary pressures of running the business, such as having to meet your wage bill obligations in a constrained market, may seem overwhelming for quarry owners. How can operations deal with this adversity and find workable solutions that will dictate a positive outcome post COVID-19?

In any kind of pressure, it's always important to take a breath, pause and think through your response. As time passes, there will be a better understanding of the situation, and a better understanding leads to more predictable outcomes. Unfortunately, the industry's natural reaction to downturns is to just cut the

workforce. My view is that operations should wait to make such decisions, given the current skills dearth in the industry, which will make it difficult to rehire the same skills when the market rebounds.

It's tough to find skilled operators, and you often can't just hire someone with no experience, especially if you expect a rebound. Before taking drastic measures of reducing staff, consider how you can cut costs caused by waste and improve efficiencies.

However, when it comes to cutting costs, quarry owners and management alike need to be thoughtful of how to do it. What we see over and over again is that companies do implement cost cutting measures and within 18 months most of that cost comes back into the system because operations really didn't think of other ways they could approach the downturn in the first place.

In my recent monthly update with director of Aspasa Nico Pienaar, he advised that operations should start planning for the surge in demand that will occur immediately after the lockdown. He is of the view that construction will have to catch up on lost time and, therefore, construction materials should be available to "help rebuild the livelihoods of South Africans". This, he says, will take meticulous planning of mine management to find ways to quickly return to production and profitability.

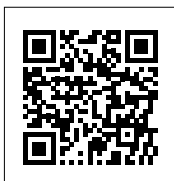
Whereas we may traditionally have looked to the flexibility of our teams to help us through, there is now a range of new workflows enabled by technology to help operations cope. Now may be a great time to learn more about the options available and talk with technology partners about your unique site challenges, your goals and how technology can work for you.

Munesu Shoko – Editor

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Finding solutions to pedestrian collisions on surface mines



Aspasa's work so far has focused on the development of appropriate plans, risk assessments and the development of technologies to suit the needs of small scale mines.

Surface mining association Aspasa is working with stakeholders to find a solution to strict pedestrian detection system (PDS) legislation that will work for smaller surface mines.

Its membership largely consists of smaller individual mines or mining groups with small scale operations spread around the country. The

new legislation, which was developed principally for underground operations and large-scale surface mines, may be too expensive for many to afford and the association has formed a subcommittee with 37 participating companies, University of Pretoria and the Minerals Council South Africa, to find solutions.

Aspasa director Nico Pienaar says the work so far has focused on the development of appropriate plans, risk assessments and the development of technologies to suit the needs of small scale mines.

“According to the legislation all mines must comply with PDS legislation or face severe penalties. This will be particularly harsh in the event of accidents and may lead to mine closures, large fines or prison sentences for the responsible parties.

“Our work has therefore focused on finding solutions that will work for us. We have already identified challenges, not least of which being the complexity of collision avoidance systems and potential costs.

“We have also hit snags obtaining permission to use PDS equipment in different OEMs’ equipment, and experienced difficulty with some mines’ understanding of Section 21 technical files, as well as a general lack of commitment towards implementation dates, among others,” says Pienaar.

He says many OEMs are uncertain of the possible liability and have legitimate safety concerns as far as stopping interventions of vehicles travelling at speeds greater than 10 km/h. Many are rather concentrating on International Council on Mining and Metals 2025 target dates for fully integrated OEM solutions.

Industry may also be missing the point as far as assessment of risk or the lack of effective risk assessments are concerned. PDS systems are only required where risk of pedestrian collision exists, and effective risk assessments and mitigation interventions may deem the installation of such devices unnecessary, for instance where separation of pedestrians and traffic is concerned or where proper traffic management plans are implemented and managed properly.

Each site is different and requires that these measures be put in place with the involvement of all stakeholders concerned. There also seems to be a general unpreparedness among miners, PDS suppliers, equipment OEMs and others to be able to implement PDS solutions in time to meet legislation.

“However, we are committed to making it work in our industry as the benefits are clear to see. We are confident that properly implemented PDS systems will have many benefits including a reduction in accidents and injuries, better management and control of TMMs, adherence to legislation and the requirements of the MHSA, as well as the creation of a ‘feel safe environment’.” ●

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Afrimat Construction Index shows decline in Q4 2019

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, 2019. The ACI is a composite index of the level of activity within the building and construction sectors, compiled by economist Dr Roelof Botha, on behalf of Afrimat.

In contrast to the marginal increase in the value added by the construction sector during the fourth quarter of 2019, the ACI declined by 2,9% this quarter. The trend of the ACI, as measured by the four-quarter moving average, is now at its lowest level since early 2013.

“It is clear that a combination of high interest rates, uncertainty over land reform, inefficiencies within the public sector at large, and lethargic overall economic growth continue to place the construction sector under pressure,” says Botha.

Viewed from the perspective of the base year for the ACI (the first quarter of 2011), the ACI has increased by an average annual rate of 1,6% in real terms, which is only marginally less than the average annual increase of 1,8% in South Africa’s real gross domestic product over this period.

Botha says it is clear that the construction sector is under-performing, which should be ringing alarm bells for government, due to the obvious and urgent need to expand the country’s infrastructure, especially in the areas of electricity, housing, transport and water.

He says a particular point of concern is the decline of almost 7% in the year-on-year ACI level (from 121,9 to 114,3) and the continued weakness in both the volume and sales value of building materials produced.

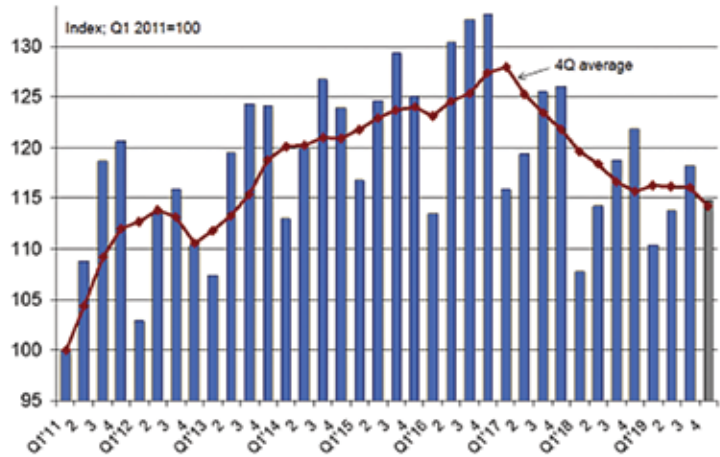
“Although the latter two indicators don’t fully reflect the utilisation of building materials in the informal sector, they mirror the downward trend in the value of building plans passed by the larger municipalities in the country. The latter was the worst-performing indicator included in the Index and declined by more than 13% in the fourth quarter of 2019, compared to the third quarter.”

Fortunately, data released early in March by Statistics SA confirmed a small increase in formal employment levels within the construction sector.

The ACI was also buoyed somewhat by the traditional increase in salaries and wages during the fourth quarter, mainly due to overtime and bonuses during December. The performance of retail trade sales for the hardware sector was also encouraging. This indicator increased by almost 9% in the fourth quarter.

According to Botha, the economy as a whole

Afrimat Construction Index (ACI) – 4th quarter 2019



Viewed from the perspective of the base year for the ACI (the first quarter of 2011), the ACI has increased by an average annual rate of 1,6% in real terms.

and construction activity in particular remain in desperate need of meaningful interest rate relief to lower the cost of fixed capital formation and stimulate growth and employment creation. ●

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Aspasa aims for safer mines

Despite the solid performance of surface mines under the banner of Aspasa in its annual health and safety audits, the industry association is pushing for further reforms to ensure safer mines in the year ahead.

The association's members have not recorded a fatality in five years due partially to the effectiveness of its compliance audits which highlight any potential shortcomings and risks. The association also raises awareness through constant communication and information sharing, both internally and via the media, to ensure problematic areas are addressed timeously.

Aspasa director Nico Pienaar says that every year the audits uncover a wealth of information relating to risks and non-compliances. This is immediately addressed with the mine's management, as well as being recorded for analysis and where necessary communicated with other members.

Last year's audits reveal some of the

areas where improvements are required:

- Many mines are still experiencing problems setting up an ISO 45001:2018 H&S Management System.
- Day-to-day identification of risks needs to be improved with internal inspections and identification of deviations from the system.
- Better efforts need to be made to complete occupational hygiene survey reports including better follow ups on over exposures.
- Some mines still need to develop and implement traffic management plans.
- Failure to comply with the trackless mobile machines (TMM) pre-start checklist hazard classification. TMM's operating with A-Class "No-Go" findings.



Aspasa members have not recorded a fatality in five years due partially to the effectiveness of its compliance audits which highlight any potential shortcomings and risks.

- There are still reports of poor house-keeping in plants that may contribute to dust exposure and access to running machinery.
- Poor compliance to isolation and lockout requirements.
- Deviations on proper machine guarding.
- Poor accident / incident investigation. ●

Calling for a level playing field in the cement sector

Speaking after AfriSam's Annual National Budget breakfast event held in Sandton recently, AfriSam CEO, Rob Wessels emphasised the need for fair competition in the cement sector. He said industry was engaging government and trade authorities to ensure fair conditions over the import of cement, including the enforcement of existing port tariffs for these goods.

"For a number of reasons, South Africa is unfortunately de-industrialising its economy," AfriSam CEO Rob Wessels said. "As committed corporate citizens, we are up to the social challenges and want to keep our industries thriving as an engine for upliftment."

He also noted that the recent imposition of carbon tax in South Africa meant a further cost added to local producers which many importers did not face. AfriSam sales and marketing executive Richard Tomes noted that cement imports were rising and were having a negative impact on job creation in the country.

In his address to the event, Econometrix chief economist Dr Azar

Jammie warned that the signs for any recovery in the construction sector this year were not good – with the International Monetary Fund (IMF) predicting a growth rate of only 0,8% for the local economy. This was even before the impact of the coronavirus outbreak in China was factored into this estimate.

"Most of the upturn in cement demand that we hope for, in the immediate future, will come from infrastructural investment projects rather than from the building industry," Dr Jammie said. "The outlook for the building industry in the coming year looks very bleak. Building completion statistics – especially for flats and townhouses – are declining sharply."

In the previous financial year, the construction sector had performed even worse than the broader economy, which grew at just 0,4% according to the IMF. The sector lost about 131 000 jobs in 2019, representing 8,8% of the workforce. This was the most jobs lost by any sector in the economy.

According to Jammie, cement sales had fallen by about 5% over the past



Econometrix chief economist Dr Azar Jammie warned that the signs for any recovery in the construction sector this year were not good.

year. However, he was "reasonably hopeful" that cement demand might achieve about 2% growth over the next few years. While there was "no total collapse", he did acknowledge that the cement industry was one of worst-hit sectors during the current downturn.

Tomes noted that AfriSam had already removed inefficient capacity and right-sized to cope with the current challenging environment. "Unless we see an upturn in demand soon, we might have to revisit other cost saving initiatives," he said. ●

Hillhead postponed to June 2021

In light of the ongoing coronavirus (COVID-19) pandemic, the organisers of Hillhead 2020 have announced that the show is to be postponed for 12 months.

Hillhead event director Richard Bradbury explains: “The health and safety of exhibitors, visitors, contractors and employees is our number one priority and with the peak of the epidemic predicted to coincide with the show in June, this would be severely

compromised.

“Therefore, following an extensive consultation process, the decision has been taken to delay the event by a year to allow market conditions to stabilise and to best support the construction and quarrying industry during this challenging period.”

Moreover, following industry consultation, the next edition of Plantworx, which was previously scheduled to take place in June 2021, will also be



put back a year.

Rob Oliver, chief executive of the Construction Equipment Association, comments: “While we are, of course, reluctant to change our plans for Plantworx 2021, these are unprecedented times.

“In the interests of both our sets of exhibitors and the industry as a whole, we will shortly announce our new dates for the next Plantworx in June 2022 at our Peterborough home.”

Kenneth Capes appointed Métier CEO

Sephaku Holdings has announced the re-appointment of Kenneth Capes as an executive director of Sephaku Holdings and CEO of Métier, with effect from 1 April 2020.

Capes’ experience spans the manufacture of ready-mixed concrete to quarrying. He first joined the company’s board as an executive director in 2013 as part of the founding owners of Métier following its acquisition in the first quarter of 2013. His extensive knowledge and passion for concrete manufacture led him to be a co-founder of Métier in 2007, expanding the operations from KwaZulu-Natal to Gauteng province.

His prowess in building materials and entrepreneurial flair enabled Métier to outperform its peers. He was the subsidiary’s MD for eight years until March 2016 before being appointed as the group business development executive director. ●



Kenneth Capes has taken the reins at Métier.

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ENGINEER TO ORDER – MEETING PROJECT OBLIGATIONS

In situations where standard product offerings cannot meet project-specific requirements, Weir Minerals Africa's Engineer to Order (ETO) process leverages close cooperation between the customer and the OEM's process, engineering and design teams. ETO ensures that equipment is built to specification and satisfies all project obligations, writes **Munesu Shoko**.

In a world where a one-size-fits-all approach has lost relevance in the development of mission-critical assets such as comminution equipment, Weir Minerals Africa has, over the years, adopted an Engineer to Order (ETO) strategy with great success.

Tiisetso Masekwameng, GM for Trio® and Enduron® Comminution Products at Weir Minerals Africa, says that in circumstances where standard models don't meet project requirements, an ETO project is initiated. She explains that typically with the ETO approach, production information and specifications are constantly moving between the client, the process team and the engineering and design division. Product data, including design specifications and engineering changes, is sent between the teams to ensure that the tailored, end-product meets exact customer and site requirements.

Extensive consultation

August Durow, engineering manager at Weir Minerals Africa, says there is extensive consultation between the process and engineering teams. "There is a lot of interface between the two teams well before we put a proposal to the customer. In designing the equipment, we strive to satisfy all the project and site requirements. Quite a lot of effort goes into that upfront process," he says.

A typical ETO project starts with the process team receiving basic information from the client, including material to be processed, feed sizes and the required size of the end-product. "The process team then carry out the sizing and selection of equipment to achieve the required final product. With the sizing also comes the costing and pricing of the equipment," explains Masekwameng.

The process team then generates a flowsheet, in



The ETO approach involves ongoing collaboration with the customer to understand the plant requirements.

will consider all the key parameters, including ease of maintenance, transportation (modularisation of equipment to get to site), ease of installation, safety and operations,” says Durow. “The conceptual design also factors equipment availability – we target anything between 80 to 95%, site dependent.”

During the design stage, the engineering team takes advantage of all the modern tools, including Finite Element Analysis (FEA) and 3D modelling software, to optimise the design. “We optimise the design for efficiency, performance, throughput, loading, construction, fatigue life and operational life,” says Durow, adding that machines are also optimised for total cost of ownership (TCO), from installation right through the product lifecycle and disposal.

While the engineering team is busy with FEA and 3D modelling, the process team, according to Masekwameng, conduct simulations to prove the workability of the identified process parameters in meeting the required spec of the end-product. “For us to be able to put out a proposal to the client, we have to run a simulation process first, with all the correction factors considered upfront to make sure that the proposed ETO project would meet the desired output and product size requirements,” says Masekwameng.

Success story

The Weir Minerals Africa team has had some great ETO successes thus far. At the time of writing, Weir Minerals Africa was busy manufacturing tailored screens and apron feeders for a challenging iron ore project in Nigeria. Of note is the two Enduron classification screens which are the largest ever built in South Africa by Weir Minerals.

The 4,3 m wide x 9,7 m long Enduron DBHG43/97 double-deck banana screens weigh in at 52 000 kg each. These will be deployed in a closed circuit with an Enduron HPGR supplied by Weir Minerals – the biggest HPGR in Africa. For this project, the client requested a 1 200 tonnes per hour (tph) plant, processing a feed size of 900 mm, with an end product of -1 mm required.

The Enduron DBHG43/97

KEY TAKEAWAYS



In circumstances where its standard product offering cannot meet project-specific requirements, Weir Minerals Africa has, over the years, adopted an Engineer to Order strategy with great success



The equipment customisation process – which entails close interface between the end user and Weir Minerals’ process and engineering and design teams – ensures the equipment meets the exact needs of the customer and their site-specific conditions



Using ETO, Weir Minerals Africa is currently manufacturing two 4,3 m wide x 9,7 m long Enduron DBHG43/97 double-deck banana screens weighing in at 52 000 kg each – the biggest screens of their nature to be manufactured in South Africa



Weir Minerals Africa has designed and manufactured two 2 m wide and 8 m long Trio TAF2008 apron feeders – the biggest of their nature to be manufactured locally by Weir Minerals Africa

conjunction with the engineering and design team. The flowsheet unpacks the plant layout and provides a detailed breakdown of the whole operational process, defining the various stages, from crushing (primary, secondary and tertiary) to screening, with a view to achieving the required final product.

After this process and before the proposal is put out to the client, the engineering and design team will create a conceptual design, which considers all the various parameters throughout the product lifecycle. “The conceptual design



Ongoing engineering and design updates result in lighter, more efficient screens going to market.

double-deck banana screen takes in 882 standard screen panels – on the top deck and bottom decks. One of the key challenges to this project was that Weir Minerals Africa couldn't find the required size of gear exciters for these massive screens. The engineering team needed the energy input to be higher and successfully designed and built the LTX 10 with an installed power of 110 kW, the biggest exciters to be built by Weir Minerals thus far.

A prototype LTX 10 was built in the Alrode facility, Gauteng, and Weir Minerals upgraded its testing facilities to test these exciters. "We are quite excited about the LTX 10 exciter – it opens a whole new market for us," remarks Durow.

Meanwhile, the two Trio apron feeders are the largest ever to be built by Weir Minerals locally. The two Trio TAF2008 apron feeders – to be deployed for ROM tip bin extraction in the same iron ore beneficiation application – are 2 m wide and 8 m long between centres. They weigh in at about 44 000 kg each. The return rollers and chain are all standard parts sealed for life (no lubrication needed). The apron feeders are electro-mechanically driven. The driveshaft comprises five segmented sprockets for ease of maintenance, and the manganese pans are robust and optimised for the type of product they will handle.

Commenting on the success of ETO in this project, Masekwameng says the constant interaction between the two



Engineering teams collaborate and utilise modern software to optimise process designs.

Weir Minerals teams, as well as the client, was key. In fact, Weir Minerals had initially offered a different solution altogether, but during testing on site discovered the material had a very high clay content of 18%, and high moisture content of 15%, which is deemed excessive when compared to the usual 5% moisture content in this type of material.

"Given these parameters, we had to add a clay washing plant for the client to make sure the whole plant would still produce the desired product. There has been continuous back and forth between us and the client, unpacking what we find on site, advising the client on what's possible, and going back to the drawing board with engineering to redesign the equipment. That's what, for me, ETO is all about – it's about the customisation of our offering to meet specific client needs and their operating conditions," she says.

Durow adds that there were seasonal valuations the engineering team needed to consider during the design of the screens and apron feeders. During the dry season, the moisture content might only be 2%, but the design also had to factor the 15% moisture encountered during the wet season. "We had to cover the whole range of variations in clay and moisture content. In the end, we had to design for a whole range of variations – and that's the beauty of ETO," he says.



August Durow, engineering manager at Weir Minerals Africa (left), and Tiisetso Masekwameng, GM for Trio and Enduron Comminution Products at Weir Minerals Africa, inspect the shafts intended for the biggest locally built Trio apron feeder.

Key benefits

In conclusion, Masekwameng says one of the key benefits of the ETO approach is that it allows Weir Minerals as the manufacturer to "offer the client a working solution". "The major benefit, for me, is that with ETO we ensure that the final solution delivers the final product as per the customer's request," she says.

"ETO reduces the risk for the client in their process and operations. It also minimises the risk in engineering and manufacturing stages because we have control of every parameter of the process in-house," concludes Durow. ●



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DRIVING HEALTH & SAFETY EXCELLENCE

In pursuit of consistent improvement, every year surface mining industry association, Aspasa, recognises the good performances of those of its members who achieve remarkable results in the association's stringent ISHE Audits. During 2019, the bar was raised high with more than half of the Aspasa members audited achieving scores of above 90%, confirmation that improvement continues apace among the association's member operations, writes **Munesu Shoko**.

Explaining the key drivers behind the success of the health & safety audits in recent years, Marius van Deventer, independent auditor, ISHE Audits at Aspasa, says the objective of the ISHE Audit is two-fold. While it is a compliance audit protocol for legal requirements, own policies, standards, procedures and guidelines, as well as industry-leading practices, it is also an educational process where information is shared during audits on what is going on in the industry, how other operations are implementing required legislation and regulations to ensure high standards in health & safety performance.

"The ISHE Audit protocol is not a checklist or a box-ticking exercise to determine a mine's compliance to what is required; it is a self-regulating compliance protocol to educate everybody on what is required

and how to implement a sustainable system in the quest to achieve Zero Harm," says Van Deventer.

The score achieved on the day of the audit, he says, is a reflection of compliance for that specific day, but a good score can only be achieved through long-term hard work, dedication and commitment, as well as empowering all employees with the right training, education and information to keep all employees healthy and safe. "We need to add value to each and every mine and, therefore, some of the discussions during the audit will be beyond the scope of the audit protocol to assist and educate everybody on compliance," says Van Deventer.

He recalls his early days of auditing the ISHE Audits for Aspasa members, and people would often "disappear and run away" from the auditor, while some were nervous to answer some of the questions. "Nowadays, it's a different scenario altogether,

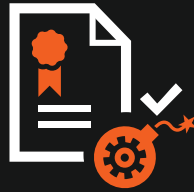


employees indeed want to talk to the auditor or ask questions. Everybody wants to interact with the auditor and learn something new or share some possible initiatives,” says Van Deventer.

Top operations

Due to this sort of buy in from operations, Van Deventer says the standards are getting high and every year it’s becoming more difficult to decide on the recipients of the ISHE

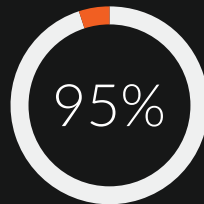
KEY TAKEAWAYS



More than half of Aspasa members audited during 2019 achieved scores of above 90% in their ISHE Audit



The difference between the top scores of the top 10 performers was only 1,83%



All the top 10 operations achieved a Showplace status, with scores above 95%



Raumix Aggregates’ Crushco was the best performer in the ISHE Audits for 2019 with a score of 96,85%

awards, considering the high level of competition.

To give an idea, more than half of the Aspasa members audited during 2019 achieved scores of above 90%, which is an outstanding achievement. “To achieve such a high score is not an easy feat, especially in an environment



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AfriSam Newcastle came second-best in the 2019 ISHE Awards.



AfriSam Newcastle has achieved Showplace status for the past 12 consecutive years.

where legislation changes continuously,” says Van Deventer.

The results for 2019 were so close, with the difference between the scores of the top 10 performers being only 1,83%. “The competition to become the top performer in the ISHE Audits has become tough,” says Van Deventer, adding that it, however, shouldn’t be about the numbers. “It should be more about legal compliance and identifying all possible hazards and risks, as well as implementing sustainable corrective actions to eliminate the possibility of having serious accidents or incidents.”

This year, all the top 10 operations achieved a Showplace status, with scores above 95%, which is testimony to the high standards at Aspsa member operations and the level of competition.

Raumix Aggregates Crushco was the best performer in the ISHE Audits for 2019 with a score of 96,85%. “This is an excellent score to achieve under very difficult financial constraints for the entire industry,” says Van Deventer. “The same credit can be given to all those operations that achieved a Showplace status with scores of above 95%.”

The top scoring 10 operations for 2019 were:

| | |
|--------------------------------|--------|
| 1. Raumix Aggregates Crushco | 96,85% |
| 2. AfriSam Newcastle | 96,44% |
| 3. Midmar Crushers | 95,99% |
| 4. Afrimat Scottburgh | 95,89% |
| 5. Lafarge Nelspruit | 95,70% |
| 6. Afrimat Harrismith | 95,67% |
| 7. AfriSam Umlaas Rd | 95,49% |
| 8. Raumix Aggregates Alfa Sand | 95,47% |
| 9. Raumix Aggregates Willows | 95,47% |
| 10. Lafarge Tongaat | 95,42% |

Other awards

As an outsider, Van Deventer says it is sometimes difficult for the auditor to really evaluate and understand the safety culture at an operation, especially when it’s a smooth running operation with very high health & safety standards.

All employees, he says, will contribute to the success of the mine in a team effort and supporting each other in a participation process.

While this is largely a team effort, certain individuals will be identified as instrumental in the success of the operation in achieving high standards and it is often those individuals that are rewarded for their contributions.

For the 2019 ISHE Audits, the following people were recognised in the following categories:

Health & Safety Management Awards for outstanding commitment:

- John Pretorius – Raumix Aggregates
- Elton Goosen – Lafarge
- Peter Eddie – Lafarge
- Brian Wevell – Afrimat
- Steven Jansen van Vuuren – Afrimat

Health & Safety Officer:

- Charity Mujuru – Raumix Aggregates Willows
- Willem Msiza – Raumix Aggregates Alfa Sand
- Manqoba Moyana – Lafarge Nelspruit
- Laurencia Maphumulo – Midmar Crushers

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As the top operation of the year, Raumix Aggregates Crushco achieved a 96,85% score.



Traffic Management was one of the focus areas for the ISHE Audits during 2019.

Operations Manager – Health & Safety:

- Anthony Bowen – Lafarge
- Theo Pretorius – Lafarge

Health & Safety Service Provider

Excellence:

- Paul Chamen & Ronelle Affinand – NOSHCON

Certificates:

- Anashree Maharaj – health & safety officer PPC
- Marienky Lebudi – health & safety officer PPC

Other winners in the ISHE Audit 2019:

Top Independent Performer:

Midmar Crushers

Consistency in achieving Showplace for five years or more:

- AfriSam Newcastle (12 years Showplace)
- Afrimat Harrismith (7 years Showplace)

- Lafarge Stanger (5 years Showplace)

Most Improved Operations:

- Afrimat Dingwell
- Afrimat Palmiet
- Afrimat Bethlehem

Aiming for safer mines

Despite these solid performances, Aspasa is pushing for further reforms to ensure safer mines in the year ahead.

The association's members have not recorded a fatality in five years due partially to the effectiveness of its compliance audits which highlight any potential shortcomings and risks. The association also raises awareness through constant communication and information sharing, both internally and via the media, to ensure problematic areas

are addressed timeously.

Aspasa director, Nico Pienaar, says that every year the audits uncover a wealth of information relating to risks and non-compliances. This is immediately addressed with the mine's management, as well as being recorded for analysis and where necessary communicated with other members.

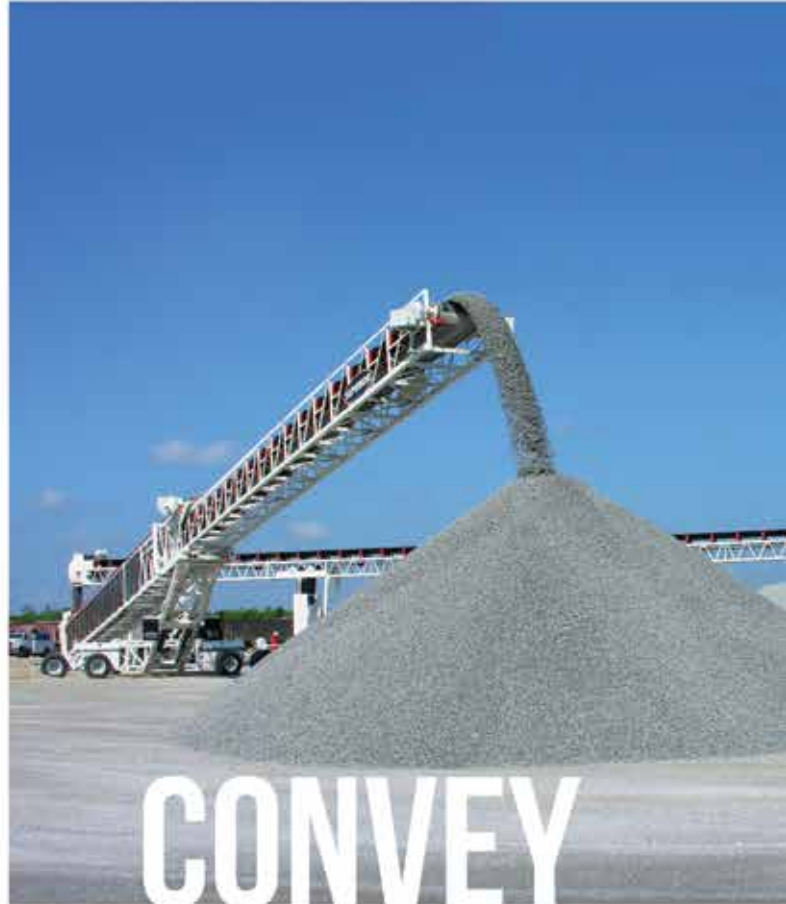
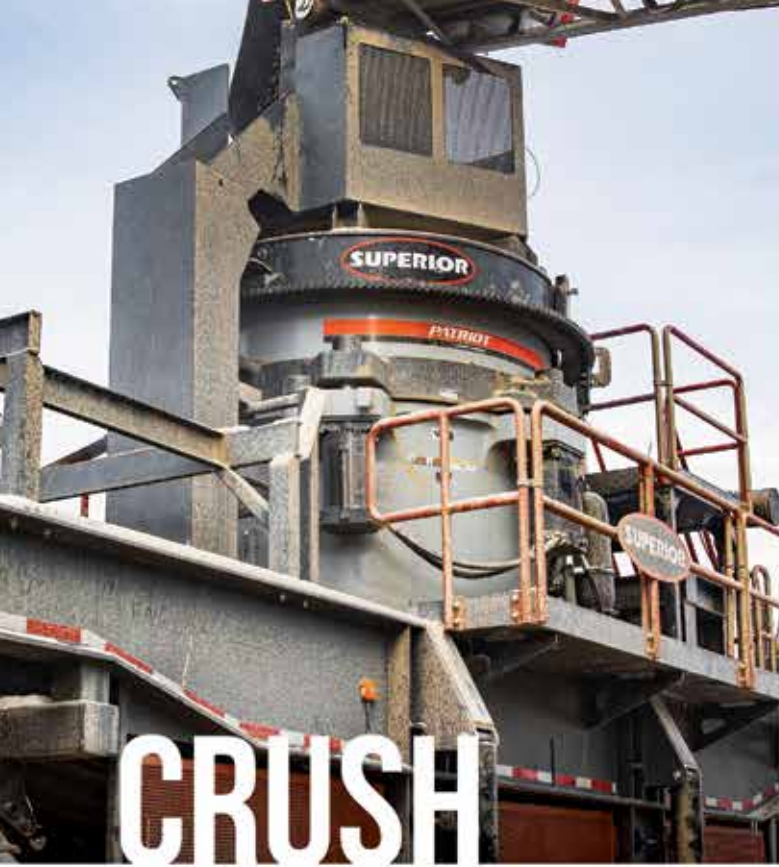
Last year's audits revealed any array of areas of focus.

"Unfortunately, we still see a number of serious injuries taking place in the industry and the majority of these are 'hand and finger' injuries," says Van Deventer. In some cases, he says, it is due to the use of incorrect PPE or a possible risk not being identified.

However, Van Deventer notes that no fatalities have been recorded on Aspasa's member operations in the past five years. "All members are committed to Zero Harm and every operation has objectives and targets to achieve this through Health & Safety Policy Statements," he says.

Traffic Management was one of the focus areas for the ISHE Audits during 2019, to evaluate the risk assessments and implementation of segregation principles for vehicle-to-vehicle and vehicle-to-person interactions. Aspasa has been instrumental in the development of Traffic Management Standards for the surface mining industry.

Other focus areas for the 2019 audits included the following, but were not limited to: identification of risks – own inspections with identification of deviations; occupational hygiene reports with follow-up of over exposures; compliance to the TMM pre-start checklist hazard classification; housekeeping in plants that contribute to dust exposure and access to running machinery; compliance to isolation and lockout requirements; deviations on proper machine guarding; accident / incident investigations; planned task observations; closing the loop of accidents and incidents; fatigue management and the implementation of a site specific fatigue management programme; as well as near miss reporting and recording of Section 23 refusals, among others. ●



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AUTHOR: **MUNESU SHOKO**

KEY PLANT UPGRADES PAY DIVIDENDS **AT OMV** STILFONTEIN

A raft of in-house plant improvements over the past 18 months – anchored by the automation of the secondary crushing circuit, installation of a new pan vibrating feeder and a new fines separator, among other upgrades – have increased production capacity by 30 – 40% at OMV Stilfontein.

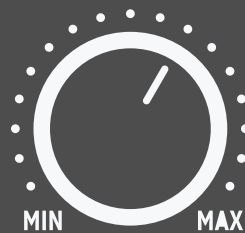
Since the acquisition by the Raubex Group, OMV has over the years continued to optimise its operations, looking to maintain and increase value by implementing innovative measures to increase productivity and efficiency.



Having acquired a controlling interest (70%) in OMV (previously Oranje Mynbou en Vervoer) in 2014, JSE-listed Raubex Group, one of the largest construction and material supply companies in South Africa, has over the years continued to fund internal growth. The investments have helped turn the company from a small family concern into a formidable construction materials supplier.

Since the acquisition by the Raubex Group, OMV has over the years continued to optimise its operations, looking to maintain and increase value by implementing innovative measures to increase productivity and efficiency. During a recent visit to OMV Stilfontein, *Modern Quarrying* was afforded an exclusive plant tour to witness several plant

KEY TAKEAWAYS



With manual feeding being an impediment to the secondary crushing process, OMV Stilfontein installed a programmable logic controller and human machine interface on the circuit to automatically regulate the feed box

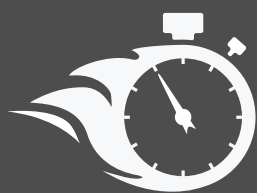


To improve sand production capacity, which is a big selling item, OMV Stilfontein has installed a new, large fines separator. This has helped up sand production capacity from 25 t to up to 33 t per hour

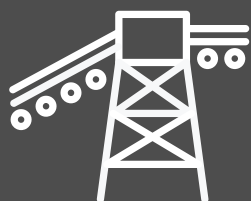


“We are trying to remove the human element in some of our crucial processes, such as choke-feeding the crushers and water balancing. The vision is to eventually automate the whole system in the future.”

PHILCO NIEMANN



A couple of plant improvements at OMV Stilfontein have resulted in 30 – 40% increase in production capacity



The loading constraints at the dump were addressed by a 100 m conveyor belt extension and a new feeder box

improvements undertaken over the past 18 months.

Asaph Mathibeng, operations manager at OMV, explains that the several in-house improvements, including an extended conveyor belt and a feed box at the dump; a new pan vibrating feeder; an automated secondary crushing circuit; a new, larger fines separator; and a self-built asset management system, have addressed several bottlenecks previously experienced on site.

Process flow

Before we delve into the new developments, let’s go through the process flow at this particular site. OMV Stilfontein processes mine rock dumps in the Stilfontein area of the North West Province. From the current rock dump, which is a heap of material tailed during shaft sinking of the Margaret Shaft, a national key point pumping station that pumps water to prevent underground flooding of mines located in the area, OMV Stilfontein processes



OMV Stilfontein previously experienced loading constraints at the dump, which were addressed by installing a new feeder box and extending the conveyor belt.

quartz material into road construction material and sand.

From the rock dump, front-end loaders feed anything up to 400 mm material into the feed box, which is then conveyed to the primary crusher via an overland conveyor belt. At the primary crusher, a 48 x 18 Hatfield jaw crusher, material is crushed to particle sizes of +/- 75 mm. At this stage, plant manager Richard Cawood, says that classification of material starts. "From here," he says "we can already take out 55 mm ballast, 38 mm stone and fine sand."

The 38 mm product is then classified at Sand Plant 2, where several material sizes, mostly the 19 mm, 13 mm builders mix and sand, are produced. "These are all the products we can take out at the primary crushing station and of note is that they are already washed," explains Cawood.

The overrun from the primary section then goes over to the 6 x 16 triple-deck vibrating screen where anything between 24 and 55 mm is classified. Anything over that goes to the surge or intermediary stockpile (ISP), located on top of a tunnel, where 75 mm or less overrun product is stockpiled. This is where the new pan vibrating feeder has been installed.

The secondary crushing stage starts here. In the tunnel, a vibrating pan feeder feeds a conveyor

belt that in turn feeds into a surge box. Material from the surge box is then fed into a 38" Osborn cone crusher (secondary crusher) where it is crushed to particle sizes of +/-25 to 32 mm. From here, material then goes up to a 6 x 16 double-deck screen where the first stage of classification in the secondary crushing plant starts.

"Here we classify -22 and -5mm aperture sizes," explains Cawood, adding that the overrun from here is then returned to the surge box before being fed into a 2 x 36 Telsmith cone crusher (tertiary crusher) where material is crushed to between 10 and 13 mm closed side settings. From here, material goes over to the second screen, a 6 x 16, with the same classification of -22 mm and 5 mm capabilities. The overrun goes back to the hopper for re-crushing, and this process continues until material meets the required aperture sizes.

From here, material goes to the VSI (vertical shaft impactor) crusher, where flaky material is turned into a proper round shape. This process automatically produces sand as well. Material then goes over to a 6 x 16 triple-deck screen where -15 mm, -10 mm and -5 mm aperture sizes are classified. The saleable material from here are the 20 mm and 14 mm road stone.

From here, material is sent to another small screen, where



Manual feeding at the tunnel was an impediment to the secondary crushing process, and was addressed by installing a new pan feeder manufactured and supplied by Weir Minerals.

-8 mm and -6 mm material is classified. "We also have got sand that goes through to a water well, where we take out -10 mm and -6 mm material as saleable product. Other saleable materials obtained here are the 10 mm, 9 mm, 7 mm and 4,5 mm road products, and these are all washed," explains Cawood.

At the sand section, a 6 x 6 Warman pump feeds material into a settling unit (another new installation) where material settles. From there a Warman WBH100 bare shaft pump pumps into a CAVEX 500 CVX hydrocyclone, which separates heavy material (sand) from light material (water). The final product then goes to a dewatering screen, and the result is sand, which is a saleable product.

The top selling materials on site are sand and the 20 mm road stone. In times of high demand for sand, the 10 mm and 4,5 mm products can be put through a crushing plant, the Sand Plant 1, to produce more sand to meet demand.

New installations

A number of plant improvements have been implemented over the past 18 months. To avoid front-end loaders (FELs) travelling long distances between the dump and the feed box, a 100-m conveyor extension was installed last year. This helps increase productivity, while increasing fuel efficiency.



A Siemens PLC has been installed on the circuit to automatically regulate the feed box at the secondary crushing plant.

Part of this improvement project was to install a new feed box, explains Philco Niemann, engineer at OMV. Because of the incessant breakdowns previously experienced on this part of the plant, “we came up with the idea to install a feed box with its own conveyor”. “Previously, we had to dump material directly onto the overland conveyor, which resulted in excessive wear and tear. We have addressed this problem by installing a new feed box with its own 6 m conveyor belt which then feeds the overland conveyor, which then takes material all the way to the primary crusher,” explains Niemann.

A second major new installation was the vibrating pan feeder on the secondary crushing plant. “Previously, we had a chute coming down on a conveyor with some chains and there was a person deployed to physically regulate the flow of material onto the conveyor belt. The human element here was a problem and resulted in production setbacks in some instances,” says Niemann.

The engineering team decided to install a vibrating pan feeder, manufactured and supplied by Weir Minerals, but installed and commissioned by the OMV team. With that came the automation of the secondary crushing process. “We also installed a PLC (programmable logic controller) and HMI (human

machine interface) on the circuit to automatically regulate the feed box. It is always good practice to choke feed your crusher and previously it was difficult to do it manually, and this is now done automatically,” says Niemann.

Another major installation was the dewatering cone (fines separator). This was installed to recoup more sand. “The fines separator is quite bigger than the previous one, and allows us to produce more sand, given that this is a top selling material on site,” says Niemann.

Another major benefit of the new fines separator is that it allows for recouping of more sand by reducing the amount of saleable material discharged into the tailings pond. In the fines separator, the light material overflows into the tailings dam, and the sand settles at the bottom. “Basically, we want to eliminate the amount of certified microns and less out of our sand, as well the amount of saleable material into the tailings dam,” says Niemann.

“We did an analysis on the material at the tailings dam and established that we were losing substantial saleable material into the dam. With the installation of the new fines separator, we have managed to recover about 10% of saleable product previously discarded into the tailings pond. This allows us to increase the amount of saleable



A larger dewatering cone (fines separator) was installed to recoup more sand.



From left: Asaph Mathibeng, operations manager at OMV; plant manager Richard Cawood; Philco Niemann, engineer at OMV; and plant foreman Johnny Thipampeng.

material on the floor, while reducing our environmental impact through less material into the tailings dam,” explains Niemann.

By implementing these changes, the operation has increased average production from about 700 t a day to 1 400 t per day. Previously, production could be pushed to 1 000 t a day, but with a lot of effort. Following these improvements, production capacity of 1 400 per day has become a norm, translating into a 30 – 40 % increase in capacity increase.

“In a nutshell, these improvements addressed a couple of bottlenecks.

We had loading constraints at the dump, which were addressed by installing a new feeder box and extending the conveyor belt. We also had a bottleneck at the tunnel, where manual feeding was an impediment to the secondary crushing process. We addressed that by installing a new pan feeder and automating the process. We also had a problem at the sand section, which is a big selling item, and that has been addressed by the installation of a big fines separator. Previously, we could only produce 25 t of sand per hour, and with this new installation we can now do up 33 t

per hour,” says Mathibeng.

Of note is that these improvements, says Niemann, were done in-house, except for the specialised items such as the vibrating pan feeder, which was manufactured and supplied by Weir Minerals, and the fines separator. However, the installation and commissioning of these items was done in-house, which is testimony to the in-house engineering prowess here.

Other innovations

Another major in-house innovation the engineering team is currently working on is the OMV asset management system. Niemann says the company struggled to get a system that could give comprehensive asset management capabilities in line with the company’s unique needs. “We looked at few systems in the market but we couldn’t find anything to cater for our specific needs,” he says.

Niemann and one of the engineers at OMV decided to build their own system to help with asset management across all OMV sites. This allows site managers to get information on their plants, including daily sales, daily production and availability of assets, all from a single dashboard. “This has given us more availability of our machinery, which increases productivity at the end of the day,” says Niemann.

When we visited the site, the team was busy installing a PLC system to automate its water supply to the plant. At the time, this was done manually. “We are trying to remove the human element in some of our crucial processes, such as choke-feeding the crusher and water balancing,” explains Niemann.

In conclusion, Mathibeng says in future the ultimate goal is to automate the whole plant. “The vision is to eventually automate the whole system in future,” he says, adding that there is, however, a long way before that can be achieved.

Niemann says the installation of the Siemens S7-1200 PLC on the secondary crushing circuit was to prove concept. “At this stage, the concept has been proven, and the next big step is to raise capital for a bigger automation project,” concludes Niemann. ●

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NEW MOBILE SOLUTIONS FOR CONTRACTORS, AGGREGATE PRODUCERS AND RECYCLERS

Pilot Crushtec and Metso have added a new product lineup to the range of mobile crushing and screening solutions available to southern African customers. Together with the well-known Metso Lokotrack range, the Nordtrack range offers customers greater operational flexibility in a competitive industry. By **Mark Botha**.

Pilot Crushtec sales and marketing director Francois Marais says the introduction of Nordtrack as an additional range of mobile equipment complements the existing machines on offer.

“After Metso’s acquisition of McKloskey late last year, the machines in the Nordtrack range were given the Metso quality overhaul with some small refinements and new features added.”

He says these machines complement the

Lokotrack range with alternative options for mobile screens, jaw crushers and a new range of tracked stackers. The Nordtrack range will therefore be positioned parallel to the Lokotrack range.

“This will allow Pilot Crushtec to compete in applications where we were traditionally not active. For example, we will introduce a new compact jaw, the Nordtrack J90, which has no equivalent model within the Lokotrack range offering.”

Marais says the Nordtrack screen and scalper



The new Nordtrack range allows Pilot Crushtec to compete in applications where the company was traditionally not active.

range enjoys a pricing benefit when compared with the Lokotrack range of screening and scalping products from Metso.

“There are a number of reasons for this,” he says. “The Nordtrack units do not come with a standard five-year or 10 000-hour warranty as the Lokotrack range does. The units come with a standard 1-year/ 2 000 hours warranty. The units also come with basic functions, making them easy to operate and service.”

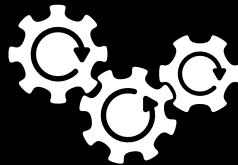
In terms of specifications, Marais says “the units still enjoy a high standard specification level with lots of modern features such as hydraulic adjustments, apron or belt feeder options. When it comes to screen box sizes, Nordtrack offers a broader scope compared with the Lokotrack range.”

He says Pilot Crushtec plans to launch nine new Nordtrack products to the South African market over the



The Nordtrack range is positioned to appeal to contractors at a more affordable price point.

KEY TAKEAWAYS



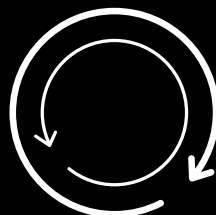
The new Metso Nordtrack range complements the existing Lokotrack line with alternative options for mobile screens, jaw crushers and a new range of tracked stackers



The new Nordtrack units are basic to operate and do not have complex IC systems to automate processes like the Lokotrack range



Pilot Crushtec is launching nine new Nordtrack products to the southern African market over the next year



The Nordtrack range is primarily suited for contractors, aggregate producers, recycling operations and start-ups in the crushing and screening industry



The Nordtrack range comes with a standard 1-year/ 2 000 hours warranty.



Francois Marais, sales and marketing director at Pilot Crushtec.

As part of the Nordtrack rollout in southern Africa, Pilot Crushtec will launch two new mobile stackers.



next year.

“We will essentially focus on the aggregates, commodities and recycling sectors and we feel it will fit perfectly into certain pricing and application gaps.”

Market segment

The Nordtrack is primarily suited for contractors, aggregate producers, recycling operations and start-ups in the crushing and screening industry.

“The range positions Metso’s mobile products at a price point which the Lokotrack range might not have been able to match. The Nordtrack range is more accessible, with more traditional functions attractive to certain clients.”

Marais says the range caters to some categories not addressed by the Lokotrack range.

“For example, Metso mobile has not had a compelling offering for compact crushing, but now, with the Nordtrack J90 unit with its

890 x 500 mm feed opening and its compact unit dimensions for transport and mobility on-site, we can cater to contractors working in demolition or doing small-scale primary crushing jobs for aggregates or recycling.”

He says that, in contrast with the Lokotrack range, Metso took a “traditional approach” with the development of Nordtrack. The design, says Marais, was focused on traditional equipment designs.

“There are no IC automation panels on the units and the start-up sequences are done through hydraulic levers as opposed to touch screen panels, as is the case on the Lokotrack range,” he says. “This is a preferred approach for some operators. With it, they know how to operate and maintain the equipment.”

Contracting sector

“For many contractors, contract terms are becoming shorter and return on

investment is a far greater priority than expecting to recover 30 000 or 40 000 hours of life from the machine.”

Marais says contractors must be assured that the capital outlay for the units can be justified and recovered quicker to make their operations profitable and viable. With this in mind, he says, the Nordtrack range is positioned to appeal to contractors at “a more affordable price point”.

The Nordtrack screening and scalping products also cater to softer rock and aggregate applications, with a broader range of screens and scalp-ers available to contractors.

“With this broader range, we hope to appeal to more contractors involved in screening and scalping applications.

“Although the unit capital outlay will be more attractive for some as opposed to the Lokotrack range, the biggest benefit is having the right aftermarket philosophy in place to support the units in the field.”

By creating an end-to-end, one-stop solution for clients, says Marais, Pilot Crushtec hopes to facilitate more efficient and effective operations.

“Most of our products work seamlessly with each other to ensure hassle-free operations. With this in mind, it must be noted that the existing Lokotrack product range is still available.”

He foresees that the biggest opportunity will be in the mobile screening area, where Nordtrack has a variety of sizes that will “almost certainly” cater to a broader range of applications. ●

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The new Combo X900 made its debut at CONEXPO-CON/AGG 2020.



CDE COMBO X900 – A NEXT-GEN SOLUTION FOR MATERIALS PROCESSORS

With the launch of its new 500 tonnes per hour Combo X900 – the largest in the series to date – CDE has doubled the capacity of its all-in-one wet processing and water management solution and created a next-generation offering for material processors, writes **Munesu Shoko**.

CDE, the leading manufacturer of wet processing equipment, recently used CONEXPO-CON/AGG to unveil its new 500 tonnes per hour (tph) Combo™ X900. Following its unveiling at the show, Kevin Vallely, director of engineering at CDE, tells *Modern Quarrying* that the new offering is now available to the African market. Other models available to the local market include the X200 and X400.

The Combo solution was first introduced to the global market at bauma Munich in April last year. Following its global unveiling, Vallely says the ground-breaking all-in-one wet processing and water management solution has been well received in the market. “The response has been extremely positive and we have a number of units operating in Europe, the Middle East and Africa,” he says.

The X900 is the largest in the series to date.



The Combo X900 enables materials processors to wash more than 500 tph.

The new offering will primarily target the construction sands market, especially manufactured sands. However, Vallely says it can be made available to industrial sands applications too.

“The Combo X900 can process 500 tph of feed material, including natural sand and crushed rock, containing unwanted clay, silt and other organic contaminants to extract quality in-spec washed and graded sand products that are market-ready straight from the belts,” explains Vallely.

Key features

The main benefit of the new model is the relocation of the control cabin on top of the AquaCycle. This, Vallely says, provides a weather-proof safe area to house the

KEY TAKEAWAYS



CDE, the leading manufacturer of wet processing equipment, recently used CONEXPO-CON/AGG to unveil its new Combo X900



With the capacity to process 500 tph of feed material, the Combo X900 is the largest in the series to date



The new offering will primarily target the construction sands market, especially manufactured sands



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The Combo X900 provides customers with almost total independence of water supply and minimises the requirements for costly site engineering due to its significantly smaller footprint which is, on average, 30% smaller than other traditional wash plant setups



The CDE Combo X900 encompasses five processes – feeding, sizing, sand washing, stockpiling and complete integrated water management.

control panel, poly plant, compressor and rakes gearbox – and the additional option of air-conditioning.

“As well as its increased capacity, the control cabin of the new Combo X900 has been repositioned to sit on top of the water tank. Plant and machinery are subject to major temperature extremes and fluctuations across different regions,” he says.

“By positioning the control cabin on top of the water tank, we are able to better protect the operational heart of the plant and offer a solution that can be adopted across all of the markets we operate in and where high and low temperature extremes are recorded.”

Furthermore, where traditional washing systems typically have a separate standalone water tank, the new Combo X900 has integrated this into the design of the AquaCycle thickener tank, resulting in a peripheral wall for water storage, which has significantly reduced the overall footprint.

It provides customers with almost total independence of water supply and minimises the requirements for costly site engineering due to its significantly smaller footprint which is, on average, 30% smaller than other traditional wash plant setups.

“Traditional washing systems would typically consume up to 15 times more water than that required for the Combo X900,” says Valletly. “Our best-in-class water management and on-board water recycling minimises costly water consumption and ensures up to 90% of process water is recycled for immediate recirculation through the closed-circuit system.”

The Combo X900 enables materials processors to wash more than 500 tph with only 3 000 litres per minute, about the same amount of water that would be required to wash a truck.

All-in-one solution

The CDE Combo X900 encompasses five processes – feeding, sizing, sand washing, stockpiling and complete integrated water management – a first for the industry and an important innovation to address a challenge faced by all customers of wet processing systems.

The Combo is said to be no ordinary machine but rather a technological response to the challenges faced by materials producers. It has been designed with a focus on transferring greater reliability and efficiency benefits to customers.

Offering a turnkey solution that delivers unrivalled control of in-spec washed products from a wide range of feed materials the Combo X900 creates enhanced reliability and efficiency, offering rapid onsite set-up, reduced start-up costs, the ability to process a wide range of feed materials (both natural sand and crushed rock), lower power consumption, a smaller footprint and

greater accessibility for maintenance.

With all essential processes being housed onto one chassis, the Combo system operates as one interconnected and pre-assembled unit which incorporates an integrated control panel with one single point of operation.

“With its single chassis design, the Combo X900 incorporates all essential processes – washing, dewatering, water recycling, and stockpiling – onto one single, interconnected and pre-assembled unit,” explains Valletly.

“A plug-and-play system, it arrives on site pre-wired and pre-tested, ready to process material within just five days as a standalone plant or as part of a larger turnkey solution,” he adds.

“Its single chassis design means the Combo X900 is portable and can be rapidly deployed or relocated to remote locations with minimal foundations and pipework. Coupled with its significantly reduced footprint, the Combo X900 is also ideal for compact quarries in urban settings,” says Valletly.

Solution for growing urbanisation

Valletly reasons that the new Combo X900 offers a solution to the global challenge of growing urbanisation. By 2050, it’s anticipated that nearly two-thirds of the world’s population will live in urban areas. With this comes increasing demand for sand – which accounts for around 35% of the concrete mix – to support construction and infrastructure.

“The urbanisation challenge requires a technological and sustainable solution,” says Valletly. “The Combo X900 maximises resource yield from natural sand and crushed rock feed, adding huge commercial value and minimising waste, and it ensures not one grain of value is lost to settling ponds.”

“We are supporting our customers to extend the life of their quarries through more efficient and sustainable technologies by extracting value in the form of manufactured sand from what was previously categorised as a ‘waste’ by-product, by ensuring maximum product yield from resources, and by boosting profitability through highly efficient processes,” concludes Valletly. ●



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ON PHOTO: AUTOMATED MONITORING SYSTEM

Employees and service technicians can quickly access info on any networked cleaner via cell phone.

AUTOMATED MONITORING SYSTEM FOR CONVEYOR BELT CLEANERS

As part of its continued development and implementation of advanced technologies for conveyors and other bulk material handling applications, Martin Engineering has launched a belt cleaner position indicator that monitors the blade, tracking and reporting remaining service life.

The intuitive Martin N2 Position Indicator (PI) monitors primary belt cleaner blades, notifying Martin service technicians and plant operations personnel when re-tensioning or replacement is required and/or when abnormal conditions occur.

The PI can be part of a new installation or directly retrofitted to existing mainframes that use the company's replacement blades. Managers and service technicians can quickly access info on any networked cleaner via cell phone.

With approximately 1 000 operating systems currently in service and installations continuing daily, the technology has been embraced by bulk material handlers in a wide range of industries and applications.

Designed in-house by the engineering team at Martin's Centre for Innovation (CFI), the N2 Position Indicator is produced solely in company-owned facilities to ensure the highest standards for quality control. In fact, the firm also engineered and built the



KEY TAKEAWAYS

The intuitive Martin N2 Position Indicator monitors primary belt cleaner blades, notifying service technicians and plant operations personnel when re-tensioning or replacement is required and/or when abnormal conditions occur

The PI can be part of a new installation or directly retrofitted to existing mainframes that use the company's replacement blades

The device eliminates the need for manual inspections by giving technicians precise information, delivering critical real-time intelligence and reducing exposure to moving conveyors, improving both efficiency and safety

Maintenance planning is simplified by having detailed information available on demand, allowing service personnel to deliver and install replacement wear parts during scheduled outages



proprietary equipment used to manufacture the new devices.

Martin offers the equipment, monitoring service and batteries free of charge to qualifying customers. The company will also support the PI components and provide customer alerts without cost as needed, with mainframes and tensioners replaced free for users of Martin belt cleaner blades.

“There are no annual maintenance fees, and no add-on charges for cell phone access,” confirms Martin Engineering global marketing director, Brad Pronschinske. “Most customers using our cleaner

blades can take advantage of this technology.”

In detail

Position indicators can be mounted anywhere from 3-800 m from the cellular gateway, and the robust, sealed construction means it is virtually immune from damage. Up to 50 units can be monitored by a single gateway connecting to the Internet, usually located at the highest point in the plant, where the cell signal is strongest. The system does not require a cellular line for each PI, instead communicating via radio frequency from each sensor to



Up to 50 units can be monitored by a single gateway connecting to the Internet.



The N2 PI notifies service personnel when a cleaner requires re-tensioning or replacement.

the gateway.

Operating independently of any plant communications infrastructure, the small physical size and low power requirements deliver a projected battery life of two years. The self-contained model was developed by Martin in order to minimise the dependency on in-plant resources. Only the gateway requires a constant 110 V power point.

The device eliminates the need for manual inspections by giving technicians precise information,

delivering critical real-time intelligence and reducing exposure to moving conveyors, improving both efficiency and safety. Maintenance planning is simplified by having detailed information available on demand, allowing service personnel to deliver and install replacement wear parts during scheduled outages.

Alerts are also provided automatically when a blade change is required; re-tensioning is needed; a cleaner has been backed off the belt; there is an abnormal condition;

a substantial change in temperature occurs; and batteries need replacement.

Conveyor evolution

The Position Indicator is just one component of the company's decades-long push to develop new and evolving technologies to improve bulk material handling and reduce the associated hazards. It's part of the same product family as Martin's automatic tensioning system to continuously maintain opti-

mum blade pressure without any operator intervention.

“This capability is a true enabler, bringing a number of benefits,” says Pronschinske. “Belt cleaner inspection time is basically eliminated, as maintenance personnel no longer need to physically view the cleaner to determine the tension or wear status,” he says. “It also reduces the time workers need to spend near the moving conveyor, helping to minimise the potential for accidents.”

Pronschinske describes the innovation as a game-changer in the industry, with a positive impact on productivity, operating costs and safety. Relying on actual operating conditions instead of human judgement to monitor blade wear and tension for optimal cleaning performance, the indicator maximises the blade’s usable surface area and reports with certainty when a blade is nearing the end of its useful life.

Delivering instant, continuous feedback while eliminating guesswork – tracking the individual performance and status of each cleaner – the detailed history also provides a maintenance log with service dates and work performed.

The result is an improved return on belt cleaner investments. Replacement parts can be scheduled for just-in-time delivery, and installation can occur during planned downtime instead of emergency stoppages. “By monitoring the rotation of the belt cleaner mainframe, the N2 Position Indicator helps managers plan tensioner adjustments and blade replacements during scheduled outages,” adds Pronschinske.

More benefits

The Position Indicator itself is a self-contained system that does not require an external power source. Manufactured from a proprietary grade of polyurethane that is very resistant to bumps, shocks and knocks, the device is said to be extremely robust. This material was chosen after Martin investigated numerous options and determined that other materials were simply not able to handle the challenges of severe operating environments. Able to handle a typical mining environment, the device can be installed inside or outside the transfer chute. It has also been designed to be reliable in the challenging ambient environment found at operator sites,

such as handling wet and sticky materials.

“The system recognises how much rotation is acceptable before tensioner adjustment is required,” Pronschinske explains. “It allows our service technicians to know exactly when a belt cleaner needs replacement, even before the customer does. And if excessive movement is detected on any cleaner, an alarm notice will automatically be sent to alert operators to check it immediately.”

The software tracks and displays blade status, remaining life, next scheduled tensioning, run time, wear rate, cleaner model, blade type and a number of other details.

“No other manufacturer has done more to advance the science of bulk material handling over the last three-quarters of a century, and Martin Engineering’s workshops have been teaching customers how to operate and maintain clean and safe belt conveyors for nearly thirty years,” concludes Pronschinske. ●

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Epiroc launches new DM30 II SP blasthole drill

Epiroc has introduced the DM30 II SP (single pass) rotary blasthole drill for quarrying and small mining operations. The crawler-mounted, hydraulic tophead-drive rig offers faster hole-to-hole drilling and a lower cost per ton through single-pass capability. The drill rig was showcased at CONEXPO-CON/AGG 2020, March 10-14 in Las Vegas, Nevada.

Built off the same reliable platform as the Epiroc DM45 and DML blasthole drill rigs, the DM30 II SP is suitable for a variety of single-pass rotary and down-the-hole (DTH) drilling applications. It can achieve a clean hole depth of 11 m for single-pass applications. The small footprint of the DM30 II makes it easy to manoeuvre on tight benches and simple to transport within the pit and over the road between pits.

The DM30 II SP offers a low total cost of ownership, with a structure design life exceeding 45 000 hours. The single-pass capability allows for faster hole-to-hole drilling and decreases the cost per ton. Its design and layout grants quick and easy access to all major service points, simplifying maintenance.

The DM30 II SP is designed to handle

4- to 6½-inch drill pipe with a hydraulic pulldown of up to 133,4 kN and a hole diameter of 140-200 mm. Customers can choose a low- or high-pressure compressor to create the right configuration for their drilling operation.

“Built off a proven platform and with the new single-pass capability, the DM30 II SP reduces the overall cost of production per ton and improves transportability,” says Heino Hamman, product line manager, Blasthole at Epiroc Drilling Solutions. “It offers high quality at an excellent value – and flexibility for the future.”

Outfitted with a number of enhancements to help keep operators safe on the job, the DM30 II SP features a FOPS (Falling Object Protective Structure) cab, ground-level isolation and an airend safety shutdown system for high-temperature situations.

For increased operator comfort, the DM30 II SP features an insulated, pressurised, heated and cooled cab with tinted glass, a suspension seat, 80 dBA noise level and excellent visibility. All operational functions are controlled from the driller’s console, and the ergonomic layout allows operators to instantly switch from drilling to tramming



The DM 30 II SP is a simple machine scalable to automated features.

for increased productivity. In addition, the electric-over-hydraulic controls are common across the DM series, making operation easy for drillers with DM series experience. ●

New hard rock and demolition crusher from Allu

Allu, the manufacturer of the Transformer and Processor ranges of material handling attachments, used CONEXPO 2020 to introduce its latest development, the new Allu Crusher. The new heavy duty range of Allu crushing attachments is purpose designed to meet the requirements of the demolition, recycling and quarrying industries.

The global launch of the new Allu crusher series will initially see three crusher models be introduced for excavators in the 10 to 33 tonne range. All have purpose developed features that ease their use and optimise performance, while providing easy maintenance in the field. Among the many customer focused features included on the new Allu Crushers are:

Reversible crushing: This reduces the potential for jamming, blockages, or obstruction with rebar are avoided, whilst delivering greater levels of

production and reducing the need for any manual involvement in the crushing process.

Feed plate design built into the jaw: Ensures that the feeding function in a fully loaded chamber delivers high rates of production with minimal risk of bridging.

Simple mechanical pin adjustment for output size regulation: Makes the entire crushing process easy and safe with quick adjustment for various output specifications.

The crusher ‘opens like a clam’: Through this design easy and quick replacement of wear parts is ensured through ease of access, saving time spent on maintenance, thereby minimizing risk to operators and maximizing productive crushing.

“By bringing the new product line to market we will be able to provide customers with what they have been

looking for. The Allu Transformer range offers unique productivity and efficiency benefits on soft rock and other materials, whilst the Allu Crusher range enables hard rock, and often troublesome demolition materials, to be effectively reduced,” says Jeroen Hinnen, vice president of sales at Allu Group. ●



MB Crusher – Precious resource for any type of quarry



The day starts very early for quarry workers. The working cycle is adapted to the length of the day, in order to make the most of daylight hours. Perfect harmony between man and nature, made possible thanks to respect for the resources which are extracted every day, in quarries and mines all over the world.

Nothing lasts forever, and even in quarries, the available resources are limited and destined to run out. For this reason, it is always necessary to look for new ways to profitably re-use the extracted material, even that which, until recently, was considered as waste. With MB Crusher solutions, all materials can become sources of immediate income.

Characterised by the wide area they cover and the considerable variations in height, quarries put the traditional fleet of machines used on the site through their paces. The range of MB Crusher brand products provides a practical solution to the need for the availability of instruments which are tough yet agile, capable of reaching areas where only excavators can move.

In order to improve synergy and compatibility with the traditional equipment used in quarries, such as fixed and mobile crushers and screeners, MB Crusher has developed a range of Crusher and Screening Buckets specially studied for extraction sites. Made entirely out of HARDOX, MB machines are available in various models and sizes according to the excavator on which they are to be fitted.

MB offers a specific range dedicated to quarries and mines, which also includes the largest crusher and screening buckets in the world: the BF150.10, which can be fitted to excavators of 70 t and more, and the MB-S23, which has a load capacity of 4,3 m³.

Thanks to exclusive and patented Made in Italy technology, MB crusher and screening buckets can process all extracted material, in order to render it re-usable directly on-site. The precision of production allows for materials which were previously destined solely for disposal to be processed in calibrated batches, which can be re-sold or re-used on-site, thus leaving the mineral balance of the quarry unaltered.

The range of MB crusher and screening buckets dedicated to quarries is suited for operations in steep and uneven areas, characterised by substantial changes in temperature. They require simple and rapid maintenance, which can be carried out directly by excavator operators on-site, guaranteeing problem-free production. ●

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SCHAUENBURG'S THERMAL AND IR SCANNERS CAN HELP QUARRIES

WITH COVID-19 TEMPERATURE SCREENING

New Thermal and IR scanners from Schauenburg can help quarries comply with new stringent COVID-19 regulations recently put in place by the Department of Mineral Resources and Energy (DMRE).

As quarries prepare to resume operations after the lockdown period, it is important that they prioritise the health and safety of employees who will be returning to work by putting in place preventative and mitigating controls to stop the spread of the coronavirus (COVID-19).

Martin Marais, sales and business development director at Schauenburg Systems, tells *Modern Quarrying* that as an affiliated member of Aspasa, the company “can play a big role in assisting the local quarrying industry with its compliance to the new COVID-19 regulations that the DMRE has put in place”.

Thermal Imager

To help quarries protect workers from contracting COVID-19, Schauenburg's Thermal Imager (camera) can be set up in portal fashion at entrances of operations. The unit is focused on the face to measure the head temperature as the person moves towards the entrance.

“Schauenburg's Thermal Imager is a real-time image transmission that has a built-in alarm that goes off if high temperature is detected. The unit is usually situated on the side or corner of the facility/entrance, connected to an LCD monitor for security personnel to identify any person above the temperature threshold,” explains Marais.

Even in a crowd, the unit is designed to ferret out any person with elevated temperature above the programmable threshold. A major advantage of the Thermal Imager is the capacity to measure multiple persons simultaneously, and therefore no queueing of persons is required.

IR Scanner

Schauenburg's handheld IR Scanner, on the other hand, is used in close proximity to a person being scanned.



The unit is held by the operator, approximately 3 – 15 cm away from the person being measured at the time. The operator will extend their arm in full length, allowing them to be at a distance of more than 1 m away when performing the test. This is a standard when making use of IR units as they rely on close proximity when measuring body temperature.

The product measures body temperature by collecting the infrared signatures given out of the forehead. The operations are totally simple and hygienic, and the measurement is fast and accurate.

Explaining the basic operation principle, Heenop says any object will emit infrared radiation energy, and its surface temperature directly determines the radiation energy and wavelength. Based on these principles, the product adopts a high-precision infrared sensor specially used for detecting the infrared radiation energy emitted by the human body with the wavelength of 5-14 um.



Scan QR Code to watch the video on this new technology

All persons entering the mine can be screened using the handheld IR temperature scanner. Screening can take place inside the visitor's vehicle without the driver or passenger having to exit the vehicle.

“It is, however, recommended for an operator to wear mask, gloves and goggles. This is provided that they are fully trained and competent on the use of this PPE in infection control. Persons identified with high temperature will then have to follow mine specific procedures,” concludes Marais. ●

Booyco on track with deadline for proving Level 9 safety

South African-based Booyco Electronics is well advanced in testing its proximity detection systems (PDS) to comply with Level 9 safety standards.

The importance of this testing arises from recent changes in Chapter 8 of the Mine Health and Safety Act, which require mines to take ‘reasonably practicable measures’ to prevent collisions between trackless mobile machines (TMMs) – as well as between pedestrians and TMMs.

Past measures implemented by mines have included systems that warn pedestrians of their proximity to TMMs (Level 7) and systems that deliver an advisory instruction to TMM operators (Level 8).

“The Level 9 standard raises the bar significantly, requiring electronic PDS systems to take mechanical control of the TMM and automatically bring it to a stop when a dangerous situation is detected,” says Booyco Electronics CEO Anton Lourens. “This elevates what is traditionally called a PDS into what is

really a collision avoidance – or collision management – system.”

Significantly, Booyco Electronics was the first to begin Level 9 testing in South Africa, which is conducted by the University of Pretoria’s Vehicle Dynamics Group.

The tests are aligned with the international standard ISO21815. It is expected that regulations regarding Level 9 compliance will be finalised by the end of 2020.

Lourens says the company’s strong relationships with TMM OEMs has allowed it to make good progress in testing its equipment on their machines in terms of Level 9 standards.

“This ensures that our technology can



Booyco Electronics’ TMM’s control unit indicates when the vehicle needs to slow down or stop, using audio visual displays.

assist to safely and effectively bring a vehicle to a standstill when required,” he says.

He highlights that the parameters of Level 9 control have evolved over the past year or two. Beyond just stopping a vehicle, the Booyco Electronics PDS can also instruct the vehicle to reduce its speed to a specific level under given conditions. ●



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Earthmoving in Fast Forward

TIME TO REFLECT



Nico Pienaar, director of Aspasa.

Many years ago I was introduced to the Maslow theories and I most probably never understood the importance of basics such as food, water and oxygen. The nationwide lockdown has made me think and reflect on these and other issues.

Over the past year or so, I learned about the importance of oxygen after being diagnosed with sleep apnea, a potentially serious sleep disorder in which breathing repeatedly stops and starts. Consequently, I had to use a machine to help me breathe. This was the only way I could sleep.

Now, the COVID-19 epidemic has taught me about the importance of the next set of basics, food and water. In the days of cave dwellers, they had to carry water and hunt for their own food. We now have shops, but what is sad is that not all people can afford to go and buy from the shop, one needs money, and also the means to get there. Thus the basic issues that Maslow defined are still issues of greater significance today; we just didn't appreciate them.

The job issue is another important one. When we learnt about the First Industrial Revolution, we were told that young children and pregnant women had to work in the coal mines in the UK, and they did this to put food on the table. Due to the mistreatment of people during that time, today

we sit with so many laws, which many still question why we have so many of them. Well, these laws were created because people were mistreated back then.

Our Basic Conditions of Employment Act is one such law. Working hours, leave and a host of other issues are covered in this act. Due to the lockdown, many are forced to stay at home, yet many people are willing to work, but can't. Remember many still have to put in the hours for them to earn a living.

So, from the time of the First Industrial Revolution to today's 4th Industrial Revolution, some things haven't changed. Having a job is still important; forget all the fancy issues, like titles and importance, status and self-centred stuff, you need to work for you to make a living. This made me think about the role of trade unions in today's environment.

Their focus at present should be on ensuring people have a job, rather than focusing on peripheral issues like benefits, allowances and perks. We just have too many unemployed people already and the COVID-19 setback will further erode the little available jobs. My view is that as an industry, small-scale miners also need to play their role in creating jobs. We don't have to give money away through donations to look good. The most important issue for me is to help your people make a living first during these tough times.

This lockdown period has also made me reflect on health and safety, where we have to redefine new norms. For example, it has always been a norm that one has to hold their hand on the rail when going up or downstairs. Now, the hand rail has become the ideal place for the virus to be transmitted. So, should there be a choice between hygienic practices and health and safety?

Small meeting rooms, crowded training centres and the like, are also issues to be considered going forward. The concept of working from home is something that might increase dramatically, this in itself will be a benefit to reducing the traffic, congestion and save the country money and lift productivity. So all of us will have to define what is important and what is not in this new world order. ●



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