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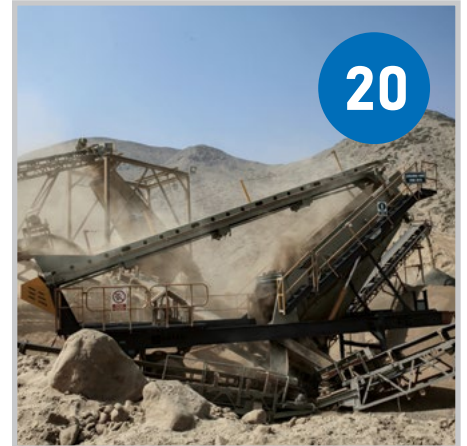
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THE CHANGING WORLD

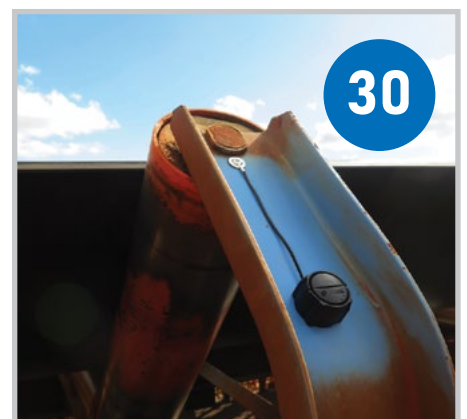
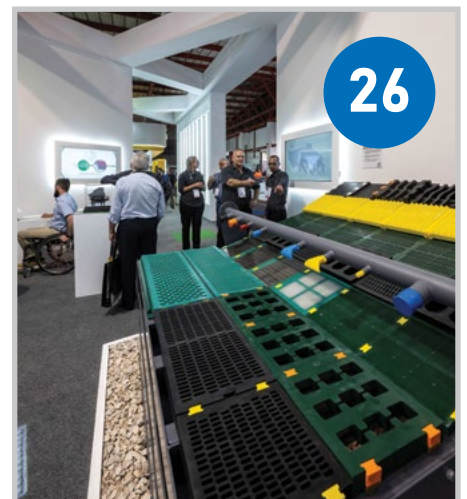
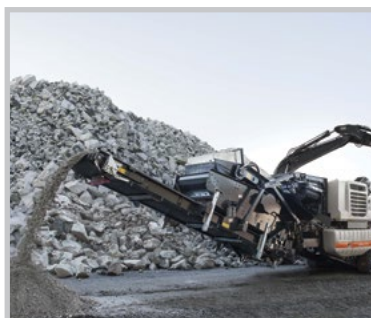
The Institute of Quarry Southern Africa's annual conference was held in April at the Premier Hotel in Umhlanga and was themed 'Our changing world'.

04

22

QUESTIONS TO ASK WHEN CONSIDERING CAPEX

There is no denying the competitiveness of the construction market, a fact that should make contractors and other buyers of crushing equipment even more – not less – concerned about the real long-term cost of their capital purchases.



WHEN THE GOING GETS TOUGH

Even though an (fairly insignificant) amount of quarry products are exported from South Africa, demand for quarry products is primarily driven by the construction industry (residential, non-residential and the civil construction markets). South Africa's construction industry has been on the decline since 2017 because of less spending on infrastructure, a depressed economy, and an erratic political climate. Because the two industries are so intricately linked, this obviously has had a direct effect on the quarrying industry.

Despite the flat curve of construction activity, South Africa still remains the largest infrastructure market in sub-Saharan Africa and the quarrying industry is slowly moving forward, albeit at a lower capacity than before. The country has ample reserves of quarrying products and there is strong government support to transform this sector.

However, this is not enough and although transforming the industry is vital and a focus within the industry, the fact remains that demand for quarry products is driven by developments within the construction industry. The latter's health is obviously directly determined by the state of the economy, investment and major infrastructure developments. Such

developments are currently – despite the few major infrastructure projects – absent. Sadly, government has an ongoing focus on social spending which, coupled with weak revenue growth, result in slow progress for the fruition of major state-driven projects.

During the COVID-19 pandemic, government did announce various stimulus packages as a means to get the construction industry, which is one of the biggest employers in the country, back on track. This is the case internationally where the outlook for the quarrying industry remains positive as new infrastructure development such as hospitals, renewable energy and road networks – post COVID – remained. Few of the packages planned by government became a reality and the current difficulties in the industry is a direct result of this. As if this were not enough, the construction (and quarrying) industry is currently faced with energy uncertainty while there are the ever increasing water, operating, and labour costs too.

Major government interventions

Over the last few years the South African government has had a number of policy and legislative interventions aimed at growing and sustaining the quarrying sector.

- Mineral and Petroleum Resources Development Act (MPRDA). This Act came into effect on 1 May

2004, and governs the acquisition, use and disposal of mineral rights in order to correct imbalances in the mining sector.

- Broad-Based Black Economic Empowerment Charter for the South African Mining and Minerals Industry (Mining Charter III). This Charter III covers seven main elements: ownership, mine community development, procurement, beneficiation, house and living conditions, human resource development and employment equity
- Preferential Procurement Policy Framework Act. This Act empowers the Department of Trade, Industry and Competition (DTIC) to designate industries, sectors and sub-sectors for local production at a specified level of local content in line with the national development and industrial policy goal. Effective from 4 November 2021, government has banned the use of imported cement in state awarded contracts to allow locally produced cement.

When the going gets tough

Despite what may feel like an increasingly steep hill to climb, sentiment at the recent and annual Industry of Quarrying Southern Africa conference in Umhlanga was decidedly upbeat. The IQSA's primary focus is to bring the quarrying industry together for networking and this conference is its primary event to achieve this. There were some 35 exhibitors ranging from established players in the supply chain to new entrants.

The conference itself was a balance of presentations that sketched the current context to important operational matters directly affecting the industry. The subtext was on greater effectiveness, safety, the environment and sustainability in the quarrying industry. Read a detailed overview of the IQSA's conference on page 4.

Modern Quarrying was present at the conference, as has been the case for more than a decade. It is a vital vehicle with which advertisers can reach this niche audience as our 6 805 readers are your buyers.

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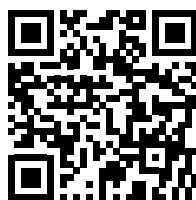
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AECI's Maida Ntuli.



Dr. Mark Rawlings from Energy and Combustion Services.



ASPASA's Anthony Bowden.



ASPASA'S health and compliance officer, Marius van Deventer.



ELB's Paul Lilley.



AfriSam's Kirath Isiripershad.

THE CHANGING WORLD

The Institute of Quarry Southern Africa's annual conference was held in April at the Premier Hotel in Umhlanga and was themed 'Our changing world'. The theme was especially apt as ASPASA and the IQSA collaborated closely for the first time in the quest to benefit the quarrying industry – albeit on, respectively, a company and individual basis. The conference also had many exhibitors as it was the ideal way for manufacturers and service providers to reach those that will use their products and services.

ASPASA's annual health and safety awards were presented during the conference and Letisha van den Berg, ASPASA's new chairman informed conference goers of ASPASA'S way forward.

Modern Quarrying attended the conference.

ASPASA – the way forward

Letisha van den Berg recently took over as Director at ASPASA after Nico Pienaar's retirement. At the conference she presented a summary of how ASPASA sees the road ahead. The aim of ASPASA is to promote a healthy and sustainable small surface mining industry in South Africa and to be the voice

of the industry by representing the interest of small opencast mining in South Africa. This it achieves by acting as a forum for its members and by establishing ASPASA members as small open cast surface mine suppliers of choice, based on compliance and leading practices.

She explained that ASPASA liaises with various industry bodies



Fatheema Brovko from the Mine Health and Safety Council.



Director of ASPASA, Letisha van den Berg.



Industry veteran, Neil Garden.



Roytec Global's Michael Marais.



University of Johannesburg's Professor Theo Venter.



With population growth comes the increased detrimental impact on the environment. ASPASA's environmental and industry audits play a vital role.

and Government to influence leading practices, standards and legislation to suit small surface mines.

These liaisons are with MINCOSA, MHSC, SADPO, SANRAL, SABITA, CASA, and the DMRE. As such, ASPASA can give guidance on environmental and safety protocols, permit requirements, and training

programmes which can assist members to navigate through complex regulations.

A crucial focus of ASPASA is to reduce the risk of accidents or environmental harm. This it does through its safety, environmental, blasting and technical audits through which it aims to ensure compliance from its members.

Van den Berg also explained that it supports research projects by obtaining members' inputs. It is also involved in the development of young industry members through IQSA.

"In short," said Van den Berg, "ASPASA aims to ensure that the voices of small surface mines are heard on all accessible platforms."

Stemming: friend or foe

AECI's Maida Ntuli gave a fascinating presentation about stemming.

"Stemming, in general, is an inert material that is used to confine the explosive energy that is generally placed just above the explosive column with the aim of containing that energy long enough so that energy can break the actual surrounding rock instead of losing it. So, if it's insufficient, energy is lost prematurely," said Ntuli.

"This is where venting occurs. It generally reduces the distribution

of explosive across a blog, which then has adverse effect in fragmentation as well as ground vibration. There is a balancing act that needs to be done with regards to stemming," explained Ntuli.

Industry veteran Neil Garden gave a detailed presentation on 'Setting up construction Quarries for the 560 km from Harare to Beit Bridge road rehabilitation project in Zimbabwe.' He explained the challenges of this massive project, the limitations and the eventual successes. Central to his presentation was the message that Southern African countries are in need of infrastructural development – especially roads – and that this presents an opportunity for the quarrying industry.

State of the quarrying industry – health, safety and the environment

ASPASA'S health and compliance officer, Marius van Deventer gave a talk on the state of the quarrying industry following the 2022 health and safety audits. He gave the statistics of the audit and displayed various photographs of examples of good and bad compliance as was found during the audits.

On the second day of the conference ASPASA's Anthony Bowden presented an insightful paper of the impact a growing global population will play. In five years' time South Africa's population is going to reach 65 million people and he questioned how the country is going to handle this if infrastructure goes unrepaired and upgraded, let alone the need for energy, water sanitation, waste management and the logistics needed to keep the population fed.

With population growth comes the increased detrimental impact on the environment. ASPASA's environmental and industry audits play a vital role in ensuring that the quarrying industry has a minimal impact on the environment. "A total of 66 audits were completed, these were both online and physical audits. Some companies requested that we do physical audits." His presentation went into great detail



ASPASA aims to ensure that the voices of small surface mines are heard on all accessible platforms.

about the compliance and non-compliance that was found and he highlighted examples of quarries that used innovation when it comes to dealing with pollution control.

The monitoring of dust

Dr. Mark Rawlings from Energy and Combustion Services presented a paper on how S-ARID influences behavioral changes for those responsible for monitoring dust on site, such as environmental, health and safety departments.

"S-ARID (static autonomous inspection device) operates globally and specialises in mining activity and energy as well as the emissions created by mining. We build long-term planning tools for mining operations and the emission it causes such as carbon emission reduction, while we also focus on repowering machines using alternative fuels." He explained how their products can be used in the quarrying context for dust emission monitoring.

How politics influence the economy

Well-known economist and academic, Professor Theo Venter from the School of Public Management and Governance and Public Policy at the University of Johannesburg presented the keynote address on the second day of the conference. He indicated how closely economic performance of South Africa follows political developments.

He maintains that we are in a VUCA environment (Volatile, Uncertain, Complex, Ambiguity). The extreme uncertainty caused by COVID has now been replaced by more uncertainty caused by the energy crisis. This crisis not only affects day-to-day life and

manufacturing, but also the water and food security.

His fascinating talk showed how closely economic performance tracks political factors and how each presidential term has performed and the impact it had on the performance of the South African economy. He predicted, based on factual evidence, that South Africa is swiftly moving to privatisation and that the situation in South Africa will only really start improving from 2026.

Other presentations

Besides the keynote addresses, the conference also had a 'young professional' presentation by AfriSam's Kirath Isiripershad about the evolution of the grizzly feeder at AfriSam's Coedmore Quarry and another by Roytec Global's Michael Marais about sand washing and tailings disposal.

ELB's Paul Lilley presented a paper on cone crusher control systems and how it helps to manage quarry operations.

Fatheema Brovko from the Mine Health and Safety Council gave feedback as to the findings of the Woman and Mining research. "This council is not a regulator, we advise the minister on occupational health and safety matters that are backed by the research we undertake," said Brovko. The council did research on woman in mining. "Even with these women entering our industry, we still face quite significant barriers to entry such as unconscious bias, there's discrimination, there's gender based violence and harassment, limited access to training for many women in our industry, and then also issues such as PPE and limited representation in leadership and decision making." ●



OF QUARRYING SOUTHERN AFRICA 2023 EXHIBITORS

There were 35 exhibitors at this year's Institute of Quarry Southern African conference in Umhlanga.



THE IQSA'S CORE ROLE FOR ITS MEMBERS

From this year there will be closer co-operation between the Institute of Quarrying and ASPASA. Here is Jeremy Hunter-Smith, the Chairman of the IQSA, chairman's report.

South Africans are resilient, always making a plan no matter what comes our way, even when the lights don't come on. But I think South Africans in the construction industry, must be the toughest.

The IQSA's core role for our members is networking and training. It has made great headway as we keep looking forward, knowing that we have come through a tough few years while continuing to add value to our members through our annual conference, technical days, golf days, the young member's network and the collaboration with ASPASA's new focus.

IQSA and ASPASA are working closely together to ensure the

industry's best interests at company and individual membership levels are maintained, while offering solutions in building a competent, safe and environmentally friendly industry.

In March 2022 a smaller but successful conference was held at Kopanong in Gauteng. Planning was a constant challenge as we did not know if there would be any amendments to the COVID regulations. We were overwhelmed by the drive for exhibitors wanting to attend the conference to showcase their products to the industry. The desire for like-minded individuals to come together, and share experiences and good practices - for the betterment of our industry - is key.

Two technical days were successfully held in 2022. This included a visit to Pretoria University to view the 3D dome and complete a virtual prestart inspection of an MMU through 3D goggles with controllers. This impressive technology will form the basis for training in years to come.

Focusing on our young members, the team at Pilot Crushtec opened their doors for a tour of their facility and imparted some of their years of experience to the up-and-coming leaders of the industry.

Golf days are always well supported both in the field and by our sponsors. A full field had a great day at the Royal Johannesburg & Kensington Golf Club where members enjoyed networking. ●

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INDUSTRY STANDARD AWARDS FOR HEALTH AND SAFETY PERFORMANCES

Marius van Deventer, ASPASA ISHE auditor, handed awards to deserving winners during the ASPASA awards ceremony on 13 April at the Institute of Quarrying's annual conference in Umhlanga.

"Thanks to the ASPASA team and members of ASPASA for the opportunity to acknowledge the best Health & Safety performances of 2022," he said.

"The Health & Safety Standards and performances of all ASPASA Members are still one of the best performances, if not the best, of any commodity mined in South Africa. These performances would not have been possible if it wasn't for the teamwork and commitment from everybody."

In the category **Special Recognition for Outstanding Commitment in Health & Safety** the following awards were made:

Siyasanda Ntshuntsha was previously employed by the maintenance and engineering team at Lafarge Nelspruit and carried the legal appointment as competent person for the mine. Under the leadership and support of the previous Mine Manager at Lafarge Nelspruit she was developed in this position and when Anthony Bowen left Lafarge, she took control of the entire H&S System.

The second recipient of an Award for Outstanding Commitment goes to a diesel mechanic at Afrimat's Kliprug Quarry in the Western Cape, Frank Kellerman. Diesel mechanics normally don't like paperwork but Kellerman's records, checklists, permits and systems have always



Quinton Duvenage and Executive Director of Afrimat, Collin Ramukhubathi.



Wiehann Steffens on behalf of SupaCrush Bigwill Quarry and Collin Ramukhubathi.



Anton Marnewick from Afrimat and Collin Ramukhubathi.

been up to date and maintained.

The third recipient of an Award for Outstanding Commitment goes to the Quarry Manager at Afrimat's Brewelskloof Quarry in the Western Cape, Mike Coad.



Marius van Deventer, ASPASA ISHE auditor.

The next category was the awards for **Health & Safety Officers**. The recipients excelled in their services to their respective operations to ensure that these achieved some of the highest scores on the ISHE

In summary: ASPASA ISHE Audits - 2022 Awards Recipients

Trophies

- Top Performer: Afrimat Qwa Qwa
- Top Independent Performer: Midmar Quarry
- Top Corporate Performer: AfriSam
- Most Improved Operation: SupaCrush Bigwill Quarry

Health & Safety Awards for outstanding commitment:

- Siyasanda Ntshuntsha – Lafarge Nelspruit

- Frank Kellerman – Afrimat Kliprug
- Mike Coad – Afrimat Brewelskloof

Health & Safety Officer

- Quintin Duvenage – SPH Kundalila Pilanesberg
- Ntombi Shibe – Sterkspruit Aggregates (NPC Intercement)
- Aubrey Mhlamvu – South Coast Crushers (NPC Intercement)



Jacomien de Bruyn, on behalf of Alfa Sand Raunmix Aggregates and Collin Ramukhubathi.



Jacomien de Bruyn, on behalf of Raunmix Aggregates and Collin Ramukhubathi.



Ashleigh Cokart from Afrimat and Collin Ramukhubathi.



Paul Chamen and Ronelle Affinand, from NOSHCON with Collin Ramukhubathi.



Frank Kellerman and Collin Ramukhubathi.



Vernon Brown, on behalf of AfriSam and Colin Collin Ramukhubathi.



Gary Botha, on behalf of Midmar Quarry and Colin Collin Ramukhubathi.



Anton Marnewick, on behalf of Afrimat Qwa Qwa and Colin Collin Ramukhubathi.



Loriaan van Tonder from Raumix Aggregates Donkerhoek Quarry and Collin Ramukhubathi.



Marius Kruger, on behalf of Afrimat Hluhluwe and Collin Ramukhubathi.



Gary Botha for Midmar Quarry and Collin Ramukhubathi.

Audits for 2022.

To achieve high scores on the ISHE Audits is not easy and can only be done by total commitment from the entire team. These employees have gone more than the extra mile to implement a sustainable Health & Safety system to ensure high standards in Health & Safety of all employees.

- Quintin Duvenage – SPH Kundalila
- Ntombi Shibe – Sterkspruit Aggregates (NPC Intercement)
- Aubrey Mhlamvu – South Coast Crushers (NPC Intercement)

The criteria used for the nomination of **Most Improved Operation** is not only the improvement in the actual score achieved during the audit, but also the improvements made in the implementation of the documented Health & Safety system, the development of the quarry itself, and the improvements made in the crushing

and screening plants.

For 2022, SupaCrush's Bigwill Quarry in the Eastern Cape was awarded as the most improved operation.

The **Top Corporate Performer Award** for 2022 goes to this company for their excellent performance in the ISHE Audits by achieving an average score of 94,26% for their 10 quarries audited and includes three Showplace Awards. They also achieved a LTIFR of Zero. This Award for 2022 was presented to Afrisam.

The **Top Independent Performer Award** for 2022 was again a well contested criteria with excellent achievements of high standards and total commitment through teamwork. It is not the first time that this operation has been acknowledged for their performances, and with an ISHE Audit score of 95,72% for 2022 the award goes to Midmar Quarry.

The honour of **Top Performer**



Mike Coad and Collin Ramukhubathi.

for 2022 goes to the operation that achieved the highest score of 97,25% for 2022. Anton Marnewick and his team will agree that health and safety starts with good housekeeping practices and total commitment and teamwork. This award was won by Afrimat Qwa Qwa – the Top Performer of the 2022 ISHE Audits. ●

NEW ASPASA CHAIRMAN

Experienced mining practitioner, Collin Ramukhubathi, has been appointed as the new chairman of surface mining industry association ASPASA.

With over two decades of experience in the mining industry, Collin has served in various leadership positions in the private sector. He began his career as a mechanical technician at Basil Read in Botswana, where he laid the groundwork of his technical knowledge and vast experience of mining construction materials.

Later, he worked for Afrisam in Gauteng and Ladysmith, then moved to Cape Town to join Portland quarry in 2006 before joining JSE-listed, mid-tier mining company Afrimat in 2009 as Area manager of the Western Cape business.

Collin has built a respectable reputation in Afrimat during the course of the past 14 years, and currently holds the position of Executive Director overseeing the departments of People Management and Sustainability respectively.

Solid foundation

Taking on the role of ASPASA Chairman, Collin believes that there is strength in unity and collaboration, particularly among small mines. He sees the need for ASPASA to play a significant role in helping mines meet best prac-

tices and comply with regulations - especially with junior mines.

"ASPASA's established audits are regarded highly by the industry and are regarded almost as highly as legal regulations in the country. This gives credibility to the organisation when the Department of Mineral Resources and Energy (DMRE) visits their sites. As a result, we want to build on the foundation that ASPASA has already established and work more closely with related organisations to avoid duplicating their efforts.

"Right now, our priority is to engage in the industry and demonstrate the strength of ASPASA's work to our members and prospective members. The organisation has a significant opportunity to help the industry and we want to extend our focus on community involvement, and other stakeholders and work closely in this regard with the Minerals Council South Africa (Mincosa) and other external stakeholders.

"We also want to take advantage of our relationship with the South African National Roads Agency Limited (SANRAL) to promote the use of commercial quality aggregates rather than borrow pits next

to existing mines.

That is why large quarries as well as small mines should get involved in the process. It is also why ASPASA has

played an instrumental role in the establishment of junior miners' seats on Mincosa to help stakeholders understand the challenges of smaller mines and the importance of championing their cause at the highest level," says Ramukhubathi.



Collin Ramukhubathi

Facing the future

He recommends that industry-wide solutions be found for some of the largest challenges facing the sector, such as load shedding and delays in infrastructure spending, which need to be fast-tracked. He also mentions the backlog of low-cost housing, Transnet rail infrastructure, community unhappiness with service delivery, crime, and business forums as his main concerns.

He believes that by collaborating and becoming part of the solution, ASPASA can use its expertise to identify and engage in practical ways to find solutions to these challenges. As the new chairman, Collin is excited to work with the management committee team and build on what they have achieved so far. He is grateful to be surrounded by the industry giants and experience the management committee has.

Collin is looking forward to collaborating with members, including those representing smaller mines who are represented on the board. We will all learn from each other's experience, strengths and weaknesses to make ASPASA more effective. ●

Right now, our priority is to engage in the industry and demonstrate the strength of ASPASA's work to our members and prospective members.

ASPASA CHAIRPERSON'S REPORT

Collin Ramukhubathi was appointed as ASPASA'S chairman earlier this year and delivered his maiden chairman's report at the recent IQSA conference.

As my first stint as chairman I am proud to report on some of the highlights of 2022.

First, I would like to thank Gert Coffee, for the years that he has served as chairman at ASPASA. I am grateful for the platform that he has built over many years. I know that I am standing on the shoulders of the giant and these are big shoes to fill. We wish him all the best in his retirement.

We have a new ASPASA Director. Letisha van den Berg has a tremendous amount of energy, ideas, vision and drive, and I am convinced that we will continue to see, as we have since the beginning of the year, a complete turnaround in the way the ASPASA works, both in terms of operations affiliated to ASPASA and Government Departments.

Other major highlights of 2022 include:

- Nico Pienaar, the previous ASPASA Chairman for numerous years, has retired.
- The expansion and increase of membership, one of ASPASA's key objectives, remain difficult in the current declining market. However, members from other surface mines and industries such as Salt, Dimension Stone, Silica, Claybrick have begun to approach ASPASA.
- One of the reasons why other industries are joining ASPASA is due to the fact that ASPASA provides relevant and necessary services to the industry by concentrating on Safety and the Environment.
- Environmental matters: ASPASA audited 69 sites during 2022
- Health & Safety matters: ASPASA audited 85 sites during 2022
- The above audits are world-class

and always remain prevalent and up to date.

Additional support is currently being received from ASPASA MANCOM as ASPASA has now set up quarterly MANCO meetings to discuss prevalent issues.

ASPASA also assist members with the following services:

- Technical influence in SANAS and COTO.
- Public Relations by improving the image of our industry with Government departments, as well as with the general public.
- Government liaison with various Government departments.
- Transport – TMM trail on level 9 from one industry member.
- International liaison by serving on GAIN, a global association that represents the quarry organisations from all corners of the world
- Women in Mining – there is a Gender Justice committee addressing solutions for PPE, how to deal with gender-based violence cases and supply chain opportunities to mining.
- Assistance with general industry matters when requested.

Training

ASPASA embarked on an objective to work closely together to ensure industry stays ahead of all the

training needs and find courses with reputable training providers.

Technical

Barry Pearce gives ASPASA a thorough report twice a year with detailed information on technical changes.

Legal issues

The Diesel Rebate has now finally been put to bed. Companies need to make sure their systems are in place and that logbooks entries and reconciliation are always up to date.

The issue that cost ASPASA a substantial amount of money during 2022 and which could continue into 2023 is that of the Royalty Act, especially the calculations.

The collision avoidance system that was gazetted is of concern due to the industry not sure how DMRE will enforce this. Industry must prove that they do not have any significant risk with regards to Traffic Management and ASPASA has approached DMRE to discuss the way forward.

ASPASA's interaction with local bodies as well as overseas bodies continues on a regular basis and is seen as a positive.

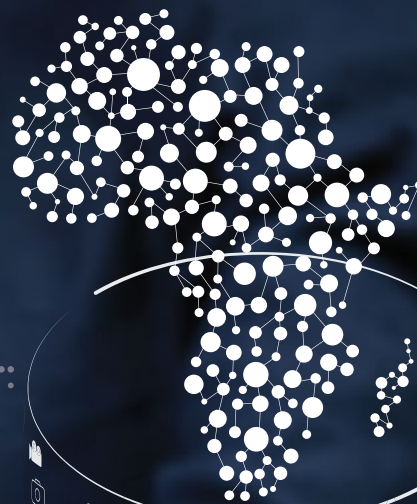
None of the above would have been possible without the input of the ASPASA MANCOM and I would like to thank each member for their time and effort. Also a special word of thanks to member companies that made personnel available to share their knowledge and expertise to improve our industry on all fronts.

I would like to especially thank the ASPASA personnel that through their vision, hard work and dedication have made and continue to make this association into one that represents our industry with the parastatals, clients, as well as the general public and local community. ●

2023 key focus points for ASPASA after the survey and MANCOM Strategy sessions

- | | |
|--|--|
| <ul style="list-style-type: none">• Growing the membership• Relook at the levy model• Cost savings• Services review• Focused technical report• Website upgrade and access levels• Roadshow and visibility of | <ul style="list-style-type: none">• ASPASA• Improved communication – specifically reducing emails and set up committee database• Support on MHSA TMM CAS implementation• Support on closing gaps on audits findings |
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The L3180 SmartScale adjusts for rough terrain, technique and movement so new and skilled operators can load accurately with confidence and speed.



ELIMINATING **GUESSWORK** IN LOADOUT PROCESSES

Given that the precise determination of the weight of products being carried at quarries is a crucial parameter in the daily functions of operations, it is essential to adopt efficient and accurate on-board weighing solutions. With the Trimble Loadrite L3180 SmartScale, the next generation of onboard weighing that uses artificial intelligence for more accurate, precise and faster loading, quarry operators can better optimise loadout, track productivity and prevent overloading.



Load weighing systems give quarry management the 'pulse' of the entire operation, putting productivity in their hands.

KEY TAKEAWAYS



In an environment where emphasis is fixed firmly on output, the Trimble Loadrite L3180 SmartScale from Loadtech Load Cells can give quarry management the 'pulse' of the entire operation, putting productivity into their hands



A major talking point is the use of angle sensors instead of the traditional rotary triggers. This allows the system to adjust for rough terrain, technique and movement so new and skilled operators can load with greater accuracy, precision and speed



The Loadrite L3180 SmartScale connects machines and devices for the collection and syncing of data via the built-in WiFi to InsightHQ reporting portal



Since its launch some two years ago, the L3180 has seen an increased uptake in the local quarrying industry, with several big quarrying groups among the early adopters

With an anticipated rebound of the construction sector in South Africa in 2023, the more pressing concern for quarries is being able to ramp up production to meet the projected demand for aggregates. In an environment where emphasis is fixed firmly on output, the Trimble Loadrite L3180 SmartScale from Loadtech Load Cells can give quarry management the 'pulse' of the entire operation, putting productivity in their hands. The quarrying industry has a dynamic operational environment that makes it absolutely essential for the sector to deploy the right tools and systems to raise the bar of performance and efficiency. These tools have the power to directly affect the output and profitability of any quarrying business.



By tracking the amount of material moved per hour to measure productivity and set benchmarks using load weighing systems, operators can identify underperforming machines and make appropriate adjustments.

One critical tool that must form part of every quarrying business, argues Glen Webster, Sales Director at Loadtech Load Cells, is the on-board weighing system. There are several instances in quarries when weighing from a specific site becomes purely inefficient and inconvenient. This is where on-board scales come into play. The digital display fitted in the cabin of the vehicle offers easy assessment of weight metrics, thus minimising supervisory overheads and human error.

A new era

At a time when the quarrying industry anticipates a positive business cycle, the Loadrite L3180 Smart Scale, launched locally some two years ago, has ushered in a new era in load weighing systems. A major talking point, says Webster, is the use of angle sensors instead of the traditional rotary triggers. This allows the system to offer accurate weighing in tough conditions.

Webster notes that the next generation L3180 loader scale is the company's best yet, changing the game in the industry by being able to adjust for rough terrain, technique and movement so new and skilled operators can load with greater accuracy, precision and speed.

"Ideal for wheel loaders, excavators and conveyor systems, the L3180 SmartScale adjusts for rough terrain, technique and movement so new and skilled operators can load accurately with confidence and speed," he says. "Intelligence in the weighing software and new hardware gives operators of all skill levels the ability to load faster and more productively than ever before."

Key features and benefits

The LOADRITE L3180 SmartScale uses weighing intelligence and solid state sensors for more accurate, precise and faster loading. It also connects machines and devices for the collection and syncing of data via the built-in WiFi to the InsightHQ reporting portal. When using Trimble's cloud-based InsightHQ quarry reporting portal, personnel can gain access to site production and operator performance KPIs on desktop or mobile devices.

"The L3180 now offers in-cab KPIs, including tonne/hour, tonnes and truck count to enable operators to monitor performance and achieve daily targets," explains Webster. "Data is presented in dashboard or graphical formats, including a new loadout performance heatmap,



powered by built-in GPS. The system caches data locally and then syncs it with InsightHQ."

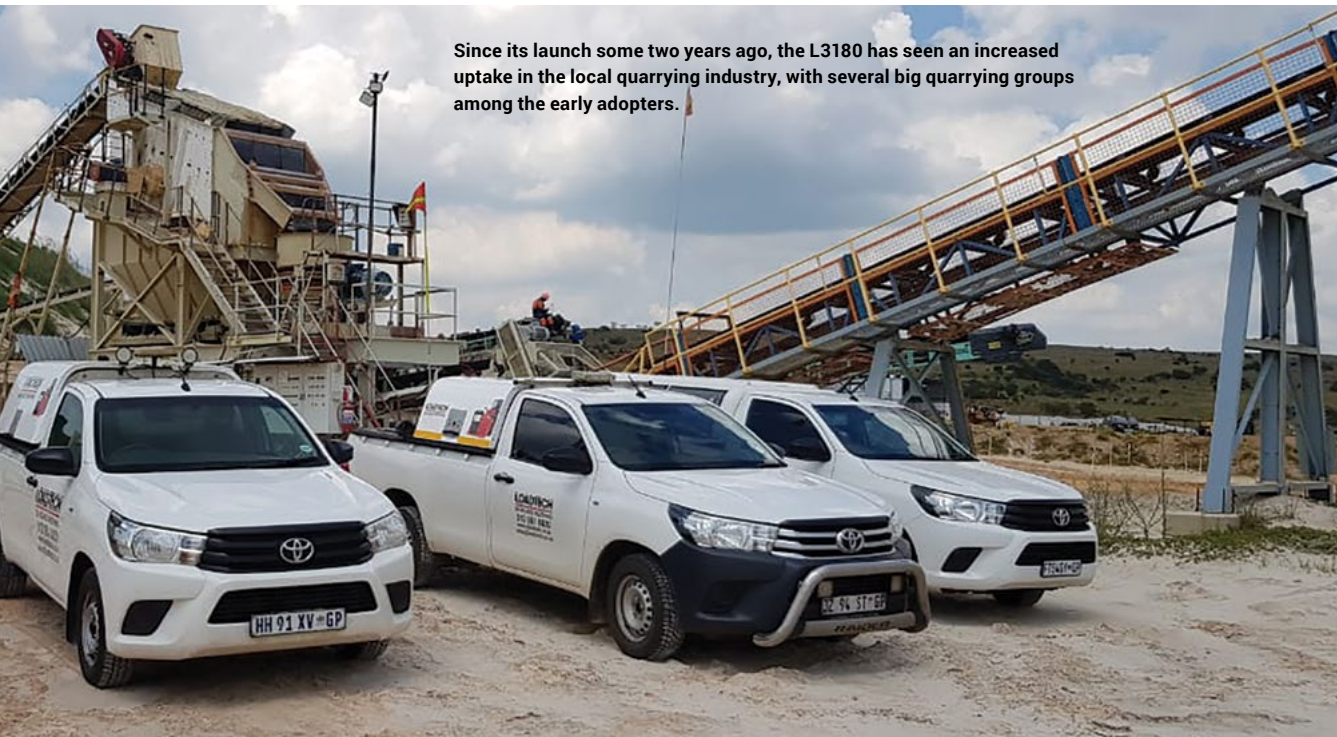
The L3180 keeps payload data safe by caching data during power or signal weakness/loss. When the connection is restored, wireless connection is re-established and data will automatically sync with InsightHQ.

The 5.7" touchscreen display is twice the size of previous generation displays and features colourful graphics, a cleaner interface design and a new touchscreen to allow for faster menu navigation and interaction.

New loading information detail, including customer and product for each job, can be customised on the interface by each operator to match their workflow and make it easier to see the right information for maximum productivity.

"Customers are guaranteed more uptime with the L3180 SmartScale. The new multi-axis IMU sensors are more robust with no moving parts, reducing the need for repair and maintenance. They are also faster and less invasive to install, with no need to customise mounting brackets or to weld," explains Webster.

Additionally, eTickets sends load information to any email address,



Since its launch some two years ago, the L3180 has seen an increased uptake in the local quarrying industry, with several big quarrying groups among the early adopters.

reducing the need for truck drivers to leave the cab while on site, and get on the road quicker. In the COVID-19 world, an eTicket-enabled worksite also helps support a safer environment for visiting truck drivers as there is one less reason to exit the truck cab and potentially put themselves in an unsafe area.

"Before COVID-19, it was standard practice to use a paper workflow with load tickets for truck drivers. With social distancing and the risk of injury to truck drivers who leave their cab around heavy equipment, this may no longer be acceptable. The answer is paperless, contactless Trimble eTickets," says Webster.

Increased uptake

Since its launch some two years ago, the L3180 has seen an increased uptake in the local quarrying industry, with several big quarrying groups among the early adopters, says Webster.

"We sold about 90 units in the first year and about 200 the second year. There is an apparent mindset shift in the industry. Quarry owners are now aware that they can actively reduce their total cost of ownership across their earthmoving equipment and trucks by using load weighing systems' monitoring and

alert features to set benchmarks and measure productivity," he says.

Webster says the industry has seen the importance of understanding how productive their machines are, including how much fuel they use and how much material they move. They can also use that information to make changes where necessary to improve efficiency and reduce costs.

By tracking the amount of material moved per hour to measure productivity and set benchmarks using load weighing systems, operators can identify underperforming machines and make appropriate adjustments to ensure all equipment is working at its optimum efficiency.

An on-board weighing system such as the Loadrite L3180 SmartScale can be used to calculate the weight of material in an excavator's or loader's bucket, relay this information to the operator and record the weight for later use. Being able to track the amount of material moved per hour can then be used internally as part of an overall business analysis to measure productivity and set benchmarks.

"Once you know your benchmark productivity rates, it's also easy to identify equipment that is underperforming, which sets off a

trigger for an investigation into the underlying causes. These causes can vary widely, from operator error to equipment failure."

Once productivity benchmarks are set, fleet managers can customise their systems to capture a wide range of other data such as cycle times, which can then be used to identify process bottlenecks and inefficiencies. By resolving these issues, managers can improve productivity and reduce operating costs.

"The Loadrite system can also measure the cycle times between each loading event, which can show how efficiently material is being moved. Shorter cycle times generally point to a more efficient and therefore more profitable operation," says Webster.

The system actively helps reduce fuel usage. By using an accurate on-board weighing system, operators can ensure trucks are filled correctly the first time, with no productivity lost due to under loading or overloading.

"By loading trucks correctly from the outset, unnecessary truck movement is reduced as there is no need to turn around for either a refill or a removal of material once the trucks get to the weighbridge," concludes Webster. ●

MAXIMISING ENVIRONMENTAL COMPLIANCE WITH ASTEC HIGH FREQUENCY SCREENS

To meet their Environmental, Social and Environmental (ESG) targets, quarries and mines are increasingly embracing dry separation methods to mitigate water usage on their sites. With the use of Astec high frequency screens, operations can use little to no water in their screening processes.

While sand and aggregates are key to the urbanisation trend globally, quarrying also happens to be on the front line of water security risk. The industry uses water for an array of purposes, including mineral processing and dust suppression, amongst others. With experts warning of a serious global water shortage, sustainable water management within the extractive industry has

become critical.

To aid the industry and meet the need for water sustainability, Astec Industries offers a wide range of high-frequency screens to produce specification sand product with the use of minimal to no water. Dry classification is a process that has been used in the aggregates industry to manufacture specification sands for many years, but the technology is not widely applied. However, the technology is gaining traction as a preferred

solution in the global aggregate and mining applications.

Astec's high frequency screens are engineered to provide higher production capacities and more efficient sizing when compared to conventional screens. High frequency screens feature aggressive vibration applied directly to the screen, providing the high capacity for removal of fine material, as well as aggregate chip sizing, and producing dry manufactured sand.

The frequency of the screen is mainly controlled by a vibrator, which is mounted above and directly connected to the screening surface. Its high-frequency characteristics differentiate it from a normal vibrating screen. High-frequency vibrating screens usually operate at an inclined angle, traditionally varying between 0° and 25° and can go up to a maximum of 45°.

High frequency screens operate with a low stroke and have a frequency ranging from 1 500 to 4 500 RPM. Applying high speed vibration directly to the screen media allows for increased stratification and separation of material. This improves screen efficiency at high production rates as compared to conventional screens. Coarser material requires more amplitude and less frequency, while finer material requires less amplitude and more frequency.

Variable high frequency screens are more versatile to tackle varied material conditions such as particle size distribution, moisture and have higher efficiency due to incremental increase in frequency. These can also be used effectively to process manufactured sand for size segregation and removal of silt, which is typically 75 microns or below.

In addition, a unique tensioning system provides the quickest screen media changes in the market. Easy and safe replacement of each screen section translates into less downtime for screen changes and increased operation time. ●





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QUESTIONS TO ASK **WHEN CONSIDERING CAPEX**

There is no denying the competitiveness of the construction market, a fact that should make contractors and other buyers of crushing equipment even more – not less – concerned about the real long-term cost of their capital purchases.



Driving home this point is Francois Marais, Sales and Marketing Director at Pilot Crushtec, who argues that a supplier's quotation for capital equipment only shows a portion of the actual key facts to consider when making a purchase of this nature.

"It is sadly the case that in many transactions a buyer will be interested in just one figure on the quotation – what they believe is the main factor when deciding what to buy," says Marais. "While the purchaser may think that this price is affordable, there is often no way of knowing, just based on a quote, whether the supplier has a solid track record, whether they genuinely keep spares in stock, how many technicians they have or whether the equipment proposed will perform to expectations."

Set up for failure?

Where equipment is sold that is not carefully suited to its applica-

tion, and is not well supported to ensure uptime, the danger is that the buyer might be being set up to fail, he explains. "The fact is that there are many numbers that are not on the quotation, so anyone making a purchase on the price alone is not appreciating the full operational picture."

Even though the capital price is seen as the key data on any quotation, this should not stop the purchaser from asking a range of other questions of each supplier they are considering. Perhaps the main area of concern should be the quality of the supplier, have they got a track record, how much experience do they have, how many spares do they have in stock right now and what support structure is in place to ensure optimal uptime levels, suggests Marais.

Support structure

The infrastructure of support behind a product often has a lot to do with the legacy of an original equipment

manufacturer (OEM), he says. It is important to know that the equipment comes from an established and reputable business which has invested consistently over the years in its various capabilities.

"With 33 years in operation, Pilot Crushtec has created a high performance culture of service orientated and skilled personnel," he says. "Over this time, we have supplied and commissioned over 2 000 mobile crushers, screens and conveyors."

With over 300 of its modular plants in operation, the company's 20 dedicated parts personnel dispatch an average of 6 788 spare parts monthly. A considerable portion of the company's 12 000 square metre factory is its parts warehouse, where some 93 000 individual items are kept in stock to enable short lead times for customers. These are not numbers included on any quotes a customer will receive when shopping around for equipment.

The Lokotrack® LT1213™ mobile HSI crusher is equipped with a horizontal shaft impact (HSI) crushing unit and can operate as a primary or secondary crusher, especially in recycling applications such as processing concrete, asphalt and demolition waste.



The Nordberg® HP300™ cone crusher complete module.



The Pilot Modular Twister VS350 VSI Module with conveyor producing shaped aggregates.

KEY TAKEAWAYS



There is often no way of knowing, just based on a quote, whether the supplier has a solid track record, whether they genuinely keep spares in stock, how many technicians they have or whether the equipment proposed will perform to expectations.



Where equipment is sold that is not carefully suited to its application, and is not well supported to ensure uptime, the danger is that the buyer might be being set up to fail.



By incorporating impact testing into an operation's regular maintenance routine, producers can ensure optimum screening performance and equipment reliability.



Supporting customers' performance is also Pilot Crushtec's ongoing attention to efficiency and safety, as well as how it paves the way for contractors to support the sustainability of the industry.

Asking the question

"These are the kind of numbers that don't appear in a quotation, so purchasers should ask the right questions that will reduce their risk related to how their equipment will perform in the field and how it will be supported," he explains.

"This will give a contractor valuable insight into how they will meet their own performance requirements, and how much uptime they can realistically expect."

"The big question is whether you are getting the maximum, consistent and reliable production from your equipment and delivering on your contract requirements, which is really where the customer's success and growth is based," says Marais.

Efficient, safe

Supporting customers' performance is also Pilot Crushtec's ongoing attention to efficiency and safety, as well as how it paves the way for contractors to support the



The Rubble Master RM90GO! impact crusher is suitable for the widest range of applications such as C&D waste, concrete, asphalt, glass, coal, natural rock and even reinforced concrete, to produce high quality construction materials.



With over 15 dedicated support technicians, Pilot Crushtec provides above average support of customers' materials handling equipment fleets.



Pilot Crushtec's Modular range consists of primary, secondary and tertiary crushers and screening modules.

sustainability of the industry. While most mobile crushers are located far from an energy source – and therefore need to be diesel powered – there is already a hybrid solution from Metso Outotec that will allow the cost saving option of an electrical source. This source will invariably be less carbon intensive, especially if southern Africa produces more electricity from renewable energy sources.

"When it comes to technology, we offer both simpler solutions and more advanced solutions with remote monitoring and automation features," he says. "There are also constant innovations and improvements in products and services to reduce operating costs and increase the ease of maintenance."

The high level of safety inherent in Pilot Crushtec's range of crushing solutions is evident from its compliance with stringent mining industry standards – which clearly benefits the construction sector in turn. These features would include wrap-around trip wires, time-delayed start-up panels or additional guarding elements.

Recycling waste

Marais notes that the construction sector has also recognised the growing importance of sustainability, one aspect of which relates to the recycling and re-use of construction and demolition waste. While this could still be described as a fledgling activity in South Africa, Pilot Crushtec has the solutions

available for companies who decide to step into this priority.

Its compact modular range includes a cost effective brick recycler – the BR0605 impact crusher. With 600 mm wide conveyors and small double-deck and triple-deck screens, it is perfectly suited to small scale recycling applications. There is also the Rubble Master, a complete on-track, diesel driven, mobile, horizontal shaft impact crusher. The crushers in the range are capable of handling 80 to 200 tonnes per hour.

Modular solutions

For quarries, who must service the construction sector with a regular supply of aggregate, Pilot Crushtec has provided modular solutions to improve crushing consistency and capacity. The modular option is a convenient way of avoiding disruption in the plant, says Marais. Where a cone crusher needs to be replaced in a secondary crushing application, for instance, a modular skid-mounted installation can be successfully introduced without requiring a complete redesign and rebuild of the plant.

"This allows the quick deployment of equipment in situations where crushing stations are ageing or have experienced critical failures," he says. "This is especially relevant in this competitive market where the construction environment remains challenging and cost sensitive." ●

The Numbers that matter

will never appear on any quote

PILOT CRUSHTEC®

CRUSHING AFRICA'S ROCK

300

Over 300 Pilot Modular
plants operating



33

33 years of service



2 000

Sold and commissioned over 2 000
mobile crushers, screens and conveyors



12 000m²

Size of factory – 12,000m²



120

Staff complement – 120 full time staff

Make sure you're looking at the numbers that really matter when choosing who to do business with. Our reputation, backup support, years of experience and resources are what set us apart from anyone else in the industry.

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DECK CONVERSIONS BACKED BY FIVE DECADES OF EXPERTISE

Multotec is an industry leader in metallurgy and process engineering and is celebrating its 50th anniversary this year. It is marking this milestone by reaffirming its position as a proudly South African company that can compete with top global competitors. The company was established in 1973, starting with an imported screening product from Germany intended for the sand and gravel industry. It soon realised the necessity to evolve and design a product that was more suitable for the local mining sector, and which could be manufactured locally. **Modern Quarrying** spoke to Multotec's Adele Ras (Area Sales Manager) and Gerhard van der Watt (Technical Sales Representative) about how it can assist customers in the quarrying market with deck conversions.

During the last 50 years, Multotec has worked to enhance countless client operations through the development and manufacture of high-quality process equipment and solutions. During this time, Multotec's mineral processing equipment has been able to address the unique challenges of the local industry, including robust equipment designed to lower the overall cost per ton.

"We pride ourselves on after-sales customer service, which is achieved by delivery, accuracy, commissioning support, as well as audits," says Ras.

"We offer modular screen panels made from various materials instead of the conventional woven wire mesh, such as polyurethane and rubber," explains Ras about the products that Multotec offers to the quarrying industry for deck conversions. These materials have a high abrasion resistance which is needed for tough quarrying conditions. "With a complete range of modular screen panels for mineral processing, Multotec ensures that the screen deck is optimised to achieve the required cut size efficiently, reliably and over an extended service life," she says.

Multotec's range of polyurethane screens are more cost-effective and achieve a longer working life than standard screen panels. Its rubber screens are specifically designed to absorb impact, ultimately improving equipment wear life. The range includes modular rubber panels and rubber trommel panels – rubber lining that helps customers achieve optimum screen use in coarse and heavy-duty mineral processing applications.

"Multotec also offers different compounds in both polyurethane and rubber, aperture sizes, and shapes available for deck conversions. Various accessories such as weir bars and deflector devices can be added to further optimise screening efficiency. Some of the new developments include laser cut diamond-shaped panels that have increased open area as well as rail



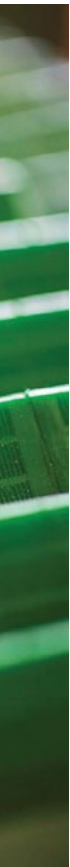
Multotec's TeePee panels have a raised pyramid surface, which doubles the screening area of flat panels in dewatering and rinsing applications.



systems and adaptor strips that fit onto screens so that they require no structural modifications."

Products geared for tough quarrying conditions.

Ras says that Multotec continuously improves its products, which in turn reduces the risk for the customer. The most recent improvement is self-extinguishing flame-resistant rubber panels. Multotec is



Multotec has more than 1 000 different apertures, several thicknesses and compounds available, all customised to the customer's application.



Adele Ras, Area Sales Manager, Multotec.



Multotec's screen frames and rail systems are designed for easy installation

also offering better ergonomics in terms of lightweight modular screen panels, which are smaller than the conventional size wire mesh panels and that will require no cranes or lifting equipment for installation," she says.

"Another advantage of using modular screen panels over

conventional woven wire screens is that it reduces the manpower needed for its installation," explains Ras.

Reduced cost of ownership

"Even though an initial upfront investment is sometimes needed, the benefit of improved abrasion resistant materials, reduced downtime, greater efficiencies as well as safety and production gains will lead to a reduced cost of ownership," explains Ras.

Benefits of support contracts

"Our support contracts include cost savings on transactional costs. Customers don't need to request quotes as they have fixed prices in place for a period of time. This assists with better shutdown planning and, in turn, less downtime," says Van der Watt.

"We have high availability of fast-moving parts that reduce lead times. Our products are locally manufactured at Spartan in Gauteng and Local Content was verified by the South African Bureau of Standards".



Multotec's new product developments include the laser cut diamond shaped panels.

Five decades of experience

"We believe that we are able to provide cost effective and quality goods as well as a high variety of options because Multotec is diversified and exposed to different customer bases, markets and commodities," says Ras. "Our perceived image as a result is professionalism, trustworthiness, credibility and reliability." ●



EMBRACE DIAGNOSTICS TECHNOLOGY **TO MAXIMISE PLANT PRODUCTIVITY**

Mining and quarrying are deep-rooted businesses. The oldest known mine is located in Southern Africa and was active, quite appropriately, during the Stone Age — an astounding 43 000 years ago. Possibly even more incredible are the ancient mines that are still producing. By Wilm Schulz, Haver & Boecker Niagara Service Manager

Fast forward to today, where we find an industry with a long history now characterised by advanced technology and innovative processes. The product hasn't changed, but increasing infrastructure and construction needs create a demand for constant innovation in how material is collected and processed. Mines and quarries must stay on the cutting edge to keep up, maximising productivity and profits in a rapidly changing industry. One way producers are doing this is by embracing advanced technology and diagnostics processes.

Digitally predict and optimise

Plant simulation software helps operations to spot and fix bottlenecks and take some of the guesswork out of plant design. This tool provides an overall view of the efficiency of the entire operation in order to optimise processes and look at opportunities for improvement, both in the case of existing sites and

new mines or quarries for all mineral processing applications.

Such programmes analyse dozens of different process equipment pieces, from crushers and vibrating screens to material washers and conveyers. Beyond equipment, the systems use scientific-based methods to monitor the operation's input, output and waste piles. Plant simulation software is used by OEMs to diagramme plant flow by calculating the mass and volumetric flow rates with machine-specific operating parameters when looking at machine placement. The software is also ideal for product pre-calculations when changing products or production rates, including dry and wet crushing, screening and sorting processes.

While several brands of plant simulation software exist, few are created by equipment OEMs. Software functionality is certainly a critical element, but perhaps more critical is a firm understanding of the equipment and process the software is designed to optimise. Choosing software programmed by an equipment manufacturer



Advanced vibration analysis systems such as Haver & Boecker Niagara's Pulse - pictured - allow the user to measure the health of a vibrating screen and spot irregularities invisible to the naked eye.

allows for the most accurate simulations and enhanced features based on real world application knowledge. Software that includes on-site training further maximises the effectiveness of the program.

Listen to the heart of your operation

Another next-level diagnostics tool is vibration analysis technology for the heart of any processing operation: vibrating screens. While the crushing equipment is often where the heavy investment lies, the screening equipment is where the money is made, so it's important to make sure the vibrating screens are running as efficiently as possible.

Advanced vibration analysis systems allow the user to measure the health of a vibrating screen and spot irregularities invisible to the naked eye. This could be a hairline crack in a side plate or side plate twisting that could affect longevity. The ability to catch and address these issues early can mean significant savings in terms of downtime and repair costs as a result of preventing a chain reaction of damage caused by the initial issue. For example, a damaged spring causing irregularities on a vibrating screen may not be immediately apparent during day-to-day operation but could lead to high costs if not fixed. In one recent case, a British Columbia producer used vibration analysis and the data indicated a problem. This led the operation to discover a broken spring and damage to the vibrating

screen's foundation as a result. The producer saved money by catching and correcting the problem early.

Vibration analysis also allows producers to fine-tune their equipment to maximise performance. Although the technology began with wired sensors, some of today's versions include eight wireless tri-axial sensors that fasten to key areas of a vibrating screen. Measurements from these systems can include orbit, acceleration, deviations and other important data points that indicate the condition of the machine. The sensors transmit the collected information via Wi-Fi to a tablet, allowing the user to stand a safe distance away during the process.

The data can also be sent to an online dashboard to be stored, allowing operations to view historical information and track machine performance. Some manufacturers offer to have their engineers review the data to provide technical insight and recommendations, all without needing to visit the site. On-site inspections can then be scheduled for further examination, if needed.

Hands-on approach

Plant simulation software and vibration analysis are ideal for setup, optimisation and problem-spotting, especially when combined with a hands-on approach.

Service programmes that include thorough site visits by experienced OEM representatives are essential for choosing the best possible

solutions for an operation. Some manufacturers offer comprehensive vibrating screen and screen media inspections followed by thorough reports to highlight areas for improved efficiency. These can be complemented by diagnostic services such as vibration analysis or plant simulation.

This type of programme can extend service intervals, improve vibrating screen and periphery equipment performance and save operations money. Inspections can be conducted even while equipment is running so they don't interfere with the flow of the operation.

Following all of this, the OEM can provide knowledge-backed recommendations. For example, production issues caused by blinding and pegging problems could be solved by changing to a different type of screen media or by blending media depending on its location on the deck. Adding polyurethane wear liners will boost longevity. General maintenance problems may be found that, left unresolved, could cost much more down the line.

Partnering with an OEM for regular check-ups can ensure operations continue to run as efficiently as possible.

When looking for new equipment, talk to the OEM about warranty programs that include biannual site visits, equipment inspections, vibration analysis, screen media evaluations, and recommendations. Some OEMs will offer warranties for up to three years.

Take advantage of new technology

The mining and aggregates industries aren't moving backwards. Producers need to stay abreast of the newest technologies to maximise uptime and keep up with infrastructure demands, otherwise they risk falling behind.

Innovations such as simulation software and vibration analysis make it easy to gather the information needed to stay ahead. Coupled with evaluations and recommendations from an expert manufacturer, that means more uptime and improvements to the bottom line. ●

Smart Conveyor is the most scalable conveyor belt monitoring system available, allowing up to 5 000 sensors per kilometre.

TRANSFORMING MINING WITH AIOT SOLUTIONS

Bosch Rexroth Smart Mine (Smart Mine) has joined the Bosch Rexroth Africa Group to revolutionise the mining industry with innovative Artificial Intelligence of Things (AIoT) solutions. These include Smart Conveyor, Stop-Start Retrofit, Smart Inspection, and Smart Lockout, all of which aim to optimise mining operations and promote sustainable business practices.

Jonas Corali, General Manager of Smart Mine, will be responsible for driving the mission and vision of the company. Other key personnel include Eddie Kleingeld, Regional Sales and Business Development Engineer, and Rodrigo Conte, Project Manager. The team also includes field engineers: Sifiso Shange, Themba Nyathi and Tshanduko Matshusa. The latter two were graduates of the Yes4Youth Programme, a government-business collaboration that seeks to reduce youth unemployment in South Africa.

Smart Mine's history in South Africa

Smart Mine previously operated primarily in Brazil and Chile in South America until it landed its first South African deal in 2019. The company later joined the Robert Bosch brand and is now a fully fledged

South African company that falls under Tectra Automation in the Bosch Rexroth Africa Group. "Our mission is to provide AIoT mining solutions that promote sustainability, future readiness, and business growth through digital transformation," Corali said. "Our solutions have already shown a significant return on investment for both Smart Mine and our clients."

Mining industry solutions

"Safety and efficiency are top priorities in mining, and our innovative solutions can help businesses achieve streamlined processes. Our Smart Conveyor is the future of idler roller monitoring, utilising cloud-based temperature sensors to identify problem areas along the conveyor belts. The alarm system eliminates the need for manual problem identification and provides instant location detection. Furthermore, it

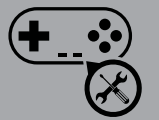
KEY TAKEAWAYS



Safety and efficiency are top priorities in mining, and our innovative solutions can help businesses achieve streamlined processes.



The solution ensures the safety of workers by preventing the accidental startup of machinery during maintenance or repair work, reducing the risk of accidents and injuries.



Smart Mine previously operated primarily in Brazil and Chile in South America until it landed its first South African deal in 2019.



Smart Conveyor is the most scalable conveyor belt monitoring system available, allowing up to 5 000 sensors per kilometre.

”

Our mission is to provide AIoT mining solutions that promote sustainability, future readiness, and business growth through digital transformation. Our solutions have already shown a significant return on investment for both Smart Mine and our clients.

can reduce unplanned maintenance, thus increasing the asset availability in the mining operation,” said Corali.

Smart Conveyor is the most scalable conveyor belt monitoring system available, allowing up to 5 000 sensors per kilometre. It is currently used in three locations in South Africa and is also suitable for various industries such as cement, logistics, sugar, and paper.

Installed on heavy-duty mine equipment, the Stop-Start Retrofit solution detects lack of motion, and stops the engine. It plays an imperative role in reducing CO₂ emissions and supports a mine's decarbonisation goals.

Smart Inspection and Smart Lockout are two other solutions offered by the company. Smart Inspection is a locally developed, web app-based system that streamlines inspection processes, eliminates paper-based forms, and reduces errors. It is customisable to meet each business' specific needs.

Smart Lockout supports on the isolation energy process in specific areas for any asset maintenance, which is often located at a distance from

the energy source. The solution ensures the safety of workers by preventing the accidental startup of machinery during maintenance or repair work, reducing the risk of accidents and injuries.

Smart Mine highlights

Smart Mine has experienced some remarkable milestones since inception, but one achievement stands out. Despite facing the challenges posed by the COVID-19 pandemic, its first Smart Conveyor solution was installed in Africa when the virus was at its most rampant. “It was a challenging time,” says Corali, “but we pushed forward with our mission to revolutionise the mining industry with our cutting-edge technology and great results have been achieved to date.”

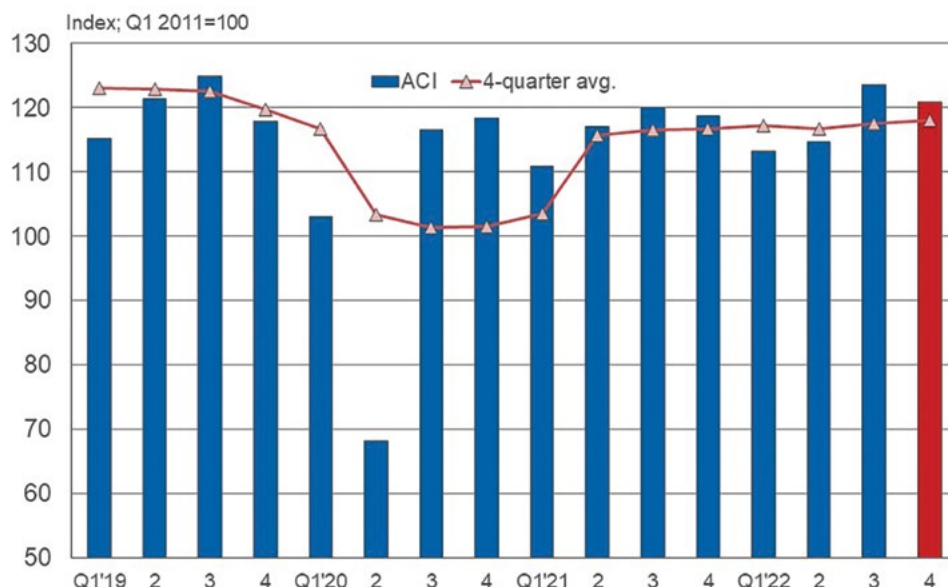
“The installation of this groundbreaking technology was a true highlight and it presented an opportunity to showcase the incredible capabilities of our innovation,” Corali points out. “Smart Conveyor's remote monitoring capabilities proved invaluable when site access was difficult, ensuring successful mining and minimised risks.”

“Subsequently, there has been an influx of enquiries and interest from potential clients. The success of Smart Conveyor has proven to be a game-changer for the mining industry,” Corali added.

Smart Mine benefits

AIoT enables secure and transparent data sharing, enhances efficiency, reduces costs, and improves safety in the mining process. It also enables the tracking and tracing of materials, promoting responsible sourcing and sustainability. Smart Mine's innovative solutions benefit the wider community and environment, reinforcing Bosch Rexroth Africa's commitment to sustainable economic growth.

Bosch Rexroth Africa is committed to the digital transformation of the mining industry by supplying it with the best cutting-edge solutions on the market. ●



AFRIMAT CONSTRUCTION INDEX DIPS marginally **IN FOURTH QUARTER OF 2022**

Afrimat, a leading mid-tier open-pit mining company providing Industrial Minerals, Bulk Commodities, Construction Materials and Future Materials and Metals, has released the findings of the Afrimat Construction Index (ACI) for the fourth quarter of 2022. The ACI is a composite index of the level of activity within the building and construction sectors in South Africa.

According to economist Dr Roelof Botha, who compiles the Index on behalf of Afrimat, the poor performance of the economy during the last quarter of 2022 was evident in construction sector activity, with the ACI faring marginally worse than the decline in real GDP of 1,3% quarter-on-quarter. “The year-on-year performances were nevertheless positive, with the ACI’s improvement of 1,9% outperforming the economy as a whole,” says Dr Botha.

One of the highlights is the welcome return to positive growth for value added by the construction sector, both on a quarter-on-quarter and year-on-year basis. It is worth noting that the construction sector component of GDP only includes the value added by contractors, whilst the ACI is based on a composite index of construction sector activity that includes another eight indicators.

“It is thus a substantially more comprehensive barometer of the state of the construction sector, as illustrated by the fact that two of its indicators, i.e., the value of wholesale trade in construction

materials, and hardware sales (retail), amounted to a combined R69,7b in the fourth quarter, compared to a construction sector contribution to GDP of only R36,8b.”

Dr Botha points out that the ACI has not yet managed to claw back the structural decline from its record high of 143,6 index points in the third quarter of 2016. “Although, at an index value of 120,9, the ACI is almost 21% higher than the base period, i.e., the first quarter of 2011, until such time as a marked improvement of investor confidence occurs, growth in the construction sector is likely to remain muted.”

Five of the nine individual indicators comprising the ACI recorded increases in the fourth quarter, compared to the same quarter in 2021. Over the past year, the star performer was the value of wholesale sales of construction materials, with an improvement of 9,3%. “Hardware retail sales also provided a boost to the ACI on a quarter-on-quarter basis, with an increase of 8%, but the remuneration of construction workers was the best performing indicator, compared to the third quarter of 2022, achieving a double-digit increase.”

Infrastructure spending by government as per the 2023/24 budget	
National government	R'Bn
Road infrastructure	61,76
Water resources & bulk infrastructure	34,09
Provincial grants	
Provincial roads maintenance	15,87
Provincial education infrastructure	13,87
Schools infrastructure backlogs	2,08
Local government transfers	
Municipal infrastructure	17,55
Regional bulk infrastructure	7,11
Water services infrastructure	4,67
Total	157,00

% Change in the constituent indicators of the Afrimat Construction Index – 4 th quarter 2022		
Indicator	% q-o-q	% y-o-y
Wholesale Construction Trade	-4,4	9,3
Building Materials (Sales)	-1,7	3,6
Employment In Construction	-0,8	2,7
Retail Trade Sales – Hardware	8	2,7
Construction Value Added	3,1	1,2
Building Plans Passed (Value)	-2,4	-1,4
Salaries & Wages – Construction	10,9	-5
Building Materials (Volume)	-11,7	-6,3
Buildings Completed (Value)	-18,2	-8,7
Afrimat Construction Index	-2,2	1,9
Real GDP	-1,3	0,9
Note: 1. Ranked by y-o-y % change		

The table above summarises the results of the ACI's constituent indicators, ranked by the year-on-year percentage change. All values are expressed in real terms, i.e., after adjustment for inflation.

According to Dr Botha, two key reasons for the continued sluggishness experienced by the construction industry are the sharp increases in interest rates and the dire state of the country's municipalities.

"In line with orthodox macroeconomic theory, higher interest rates are inversely correlated to GDP and, as a general rule, also lead to subdued construction and property market activity. It is not surprising, therefore, that new mortgage bond approvals administered by BetterBond started on a declining trend from the end of 2021, when the Reserve Bank's hawkish monetary policy kicked in. Since then, the cost of credit – and capital – as measured against the prime overdraft rate, has increased by 54%."

Dysfunctional municipalities also serve to explain part of the problem with the declining trend in public sector infrastructure spend. The table above lists the key spending plans for infrastructure announced in the 2023/24 budget, which boasted a fiscal revenue overrun of close to R95b.

The total for the three tiers of government (excluding state-owned enterprises) amounts to an impressive R157b, but 39% of this is channelled to the provinces and municipalities. Dr Botha points out that National Treasury, which is prepared to transfer an amount of more than R61 billion for infrastructure spending to the provinces and local governments, has

admitted that, out of a total of 257 municipalities, there are 175 that might be on the brink of a crisis. Of these, 151 municipalities are deemed "bankrupt and insolvent", and are unable to pay creditors and third parties, including the South African Revenue Service and pension funds.

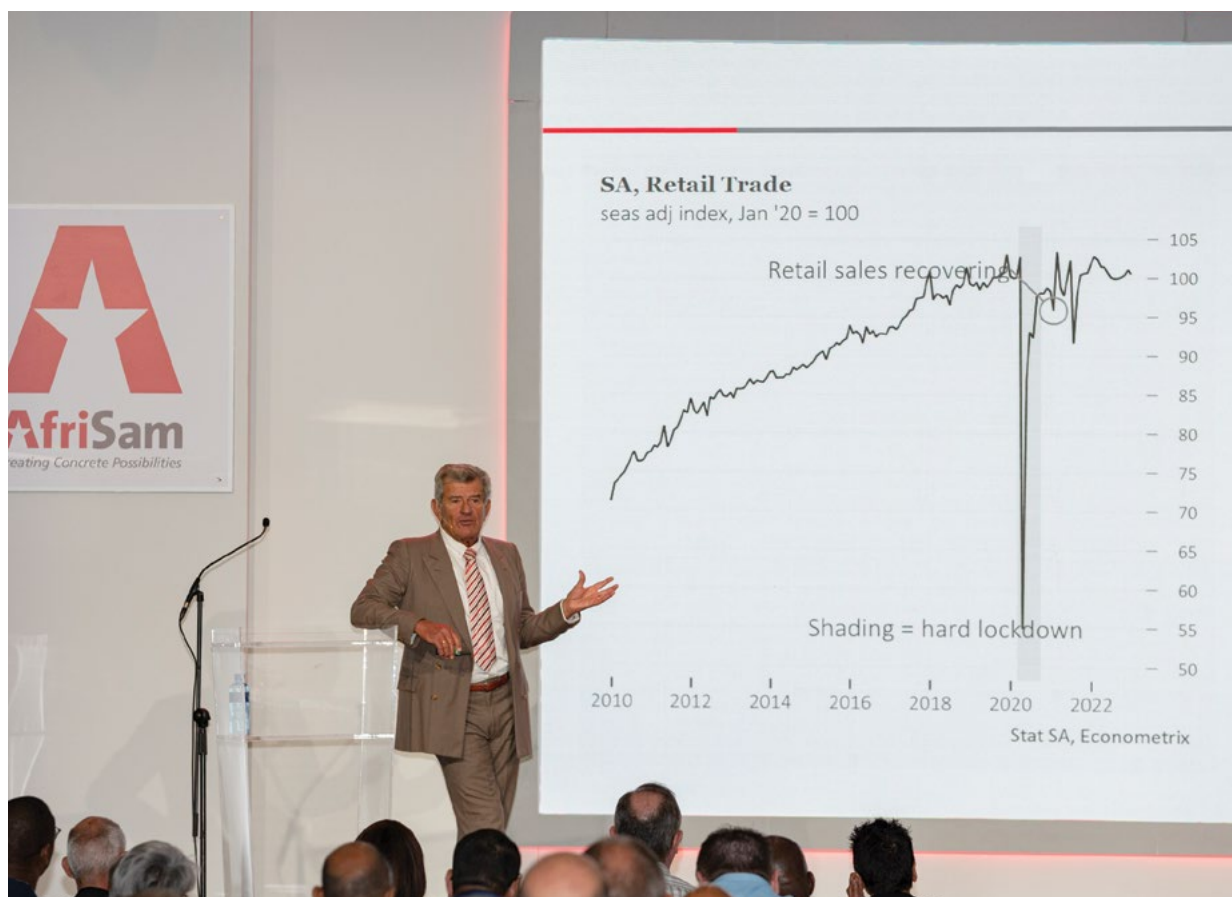
"It's therefore fairly obvious that the majority of the country's municipalities are simply not in a position to spend transfers from National Treasury earmarked for infrastructure in a manner commensurate with the needs of their respective communities."

Dr Botha adds that the only way to improve the ability of local governments to repair, maintain and expand infrastructure is for comprehensive private sector involvement at every stage of the process, from planning and tender evaluation to execution, and monitoring and evaluation.

Afrimat's CEO, Andries van Heerden, says that although the operating environment in South Africa is not easy, Afrimat continues to see value in its diversification strategy, but adds that the structural decline in the public sector's contribution to fixed investment and in turn infrastructure remains a concern.

"Despite Bulk Commodities being the largest contributor to Afrimat's revenue within this segment, we have continued to work on diversification to ensure that the Nkomati Anthracite Mine adds a significant additional revenue stream. Our plans to fully ramp up at this anthracite operation are progressing very well."

Van Heerden concludes by reiterating that Afrimat, being hugely entrepreneurial, will find ways to ensure the business remains sustainable. "Even through periods of deep crises such as that being faced by South Africa currently, opportunities still present themselves and we are seeing this across the four segments that make up Afrimat. We will continue to methodically evaluate every opportunity and ensure that we can successfully execute what we take on." ●



CONSTRUCTION SECTOR WAITS FOR GAME CHANGING ACTION

The outlook for South Africa's struggling construction industry remains uncertain, hovering between the massive infrastructure expenditure figures being publicly mooted and the state's seeming inability to implement its economic recovery plans.

At this year's AfriSam Budget Breakdown event, now a regular highlight on the construction sector calendar, Econometrix Economist Dr. Azar Jammie pointed to raised expenditure targets for infrastructure. Dr. Jammie said he was encouraged by the growth from R812b to R903b in the estimates for public sector infrastructure expenditure from the 2023/24 to 2025/26 financial years.

"These numbers are so big that if we were to see their full implementation, it would be a game changer not only for the construction sector, but for the entire economy," he said. "Where the real hope lies is in government getting its act together and starting to implement its capital projects."

He noted the importance of how Finance Minister Enoch Godongwana dealt with plans to restructure Eskom's capital debt, as any

worsening of the energy crisis could undermine the economic predictions in the budget speech. If loadshedding was exacerbated, he felt that the country may not even reach its meagre 0,9% growth target for the year. In such a scenario, government's own spending plans would be further dampened by lower tax revenues.

The question he posed was whether there was the political will within the governing party to allow Eskom's debt restructuring to take place. Such a move was inevitable, however, as he foresaw a complete realignment of politics in the general elections of 2024.

Focusing on the construction industry, Dr Jammie once again painted a sobering picture – but highlighted the sector's potential to deliver economic benefits. He reminded his audience that construction provides 7,8% of the country's employment,

even though it makes up just 2,6% of GDP.

"Implementing government's infrastructure projects would spark massive job creation, and the economy would grow by 5-6% a year," he said. As it was, business confidence among building contractors continued to deteriorate, although last year this deterioration had slowed.

Commenting on Dr Jammine's presentation, Richard Tomes, Sales and Marketing Executive at AfriSam said: "Although the operating environment remains challenging, one of the positive elements AfriSam has noted is the increase in the infrastructure spend budget allocation, and we remain hopeful that the implementation of the infrastructure projects will gain momentum and start

delivering true value for the construction industry."

Considerable overcapacity was still evident in the non-residential building sector, especially commercial office and retail space. The value of non-residential building plans passed averaged just about R1b in value compared to R3b in 2016. The brief recovery in the residential building sector – as homeowners renovated for home offices – had tailed off. Cement demand suffered negative growth in 2022, and was expected to improve only marginally over the next few years, he said.

AfriSam SA Budget Breakdown event

About this annual event itself, Tomes remarked that AfriSam's purpose is to make valuable information available to the various stakeholders that interact with its business. "With many of us operating in the same industry, material matters such as the external environment we operate within not only relate to AfriSam but also to our stakeholders' businesses. We hope that the information being shared at an event like this will not only provide them with insight about some of the decisions that AfriSam takes but will also provide them with valuable insights to enable decision-making in their own businesses or organisations to ensure their future success and sustainability. ●



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CONSTRUCTION KEY TO UNLOCKING SA'S NEXT EMPLOYMENT BOOM

Following the economic downturn seen over the past couple of years, the South African construction industry is quickly regaining strength and companies are hiring to meet growing demand. **By Roelof van den Berg, CEO of the Gap Infrastructure Corporation**

Construction consistently ranks among the top 10 largest industries in the country, adding millions of rands to the national GDP and employing roughly 1,2 million South Africans every year. As a result, the industry is not only a key employer, but has the potential to substantially lower the country's worryingly high unemployment rate.

According to research conducted by online recruiter CareerJunction, the building and construction industry has seen the largest rise in hiring activity of all sectors over the past three months with a notable 16% increase, followed by architecture and engineering with 15%.

If construction companies can keep this momentum going on the basis of increased project investment levels from both the public and the private sectors, then construction can grow into a truly influential industry and even more significant employer within the next few years.

Notably, in keeping with the needs of the local labour market, the construction industry has an abundance of job opportunities for unskilled and semi-unskilled labourers who are often overlooked by other industries. This is particularly significant for making a meaningful difference towards addressing unemployment, poverty, and inequality, and creating positions suited for our general workforce – potential which has been restricted in previous years owing to a lack of investment.

For companies looking to improve their hiring practices and help combat unemployment, a few steps need to be taken:

Hire lower-skilled workers and invest in upskilling programmes

The South African construction industry is currently under extreme pressure due to a pronounced shortage of skilled and qualified workers. The result is intense competition among firms for available skilled workers, while key positions often go unfilled for extended periods, which in turn further impacts the unemployment rate.

To help combat this shortage on a company level, Gap Infrastructure Corporation (GIC) endeavours to



Roelof van den Berg, CEO of the Gap Infrastructure Corporation



The construction industry is pivotal for South Africa's ongoing prosperity, from building homes and offices, to ensuring that South Africans have access to crucial basic services and key infrastructure.

appoint unskilled and semi-skilled workers when possible, provide in-house training, and help them to acquire more experience and qualifications.

Speed up hiring processes

Vacant positions add to unemployment for the time they remain open. Leaving one position unfilled for one month may not seem like it could have much of an impact, but spread that out over many companies across the sector, the numbers start to add up.

Construction companies can choose to emphasise hiring, speed up hiring processes, do away

with unnecessary and restrictive practices, and get employees into the office and onto the worksite sooner.

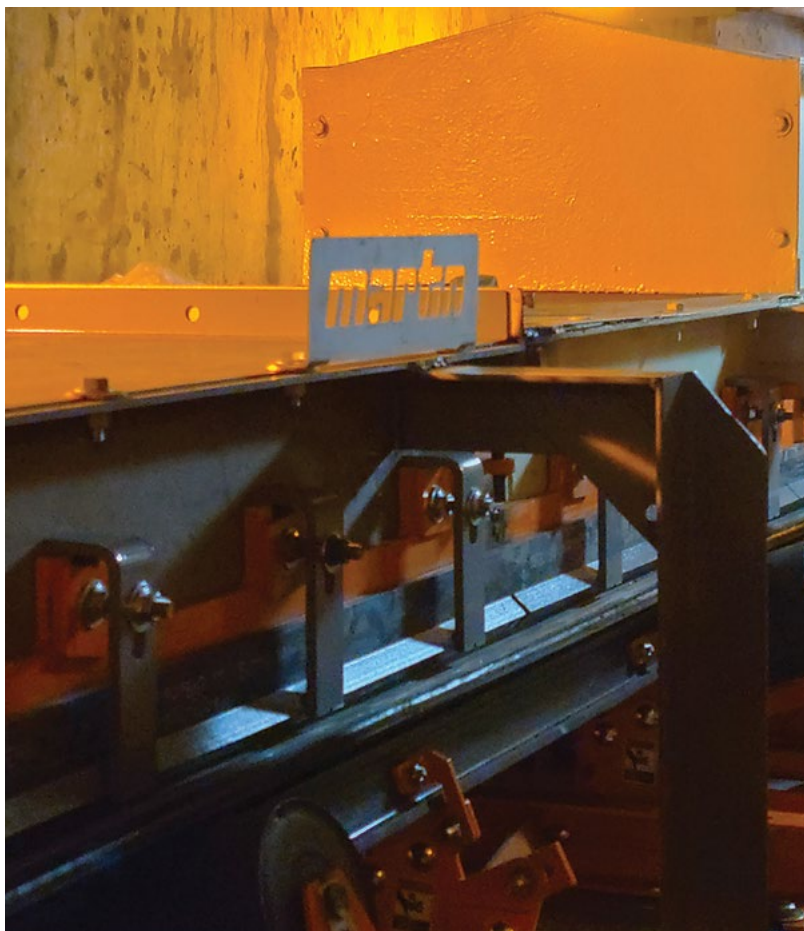
Retain employees during economic slowdowns

Economic slowdowns, downturns, and recessions usually negatively impact employment numbers as businesses are forced to retrench employees or close their doors. The effects are then felt for years after, as companies undergo the slow process of growth and re-hiring to build capacity.

But those construction companies that prepare for tough

times should have enough capital to carry themselves through a few months of decreased business. This in turn allows these companies to retain skilled employees in whom the business has invested time and money. These companies are also better off when the economy rebounds and other companies are forced to search for employees.

The construction industry is pivotal for South Africa's ongoing prosperity, from building homes and offices, to ensuring that South Africans have access to crucial basic services and key infrastructure. The industry further has the ability and a responsibility to create jobs and develop people as much as it does the country's buildings and infrastructure. ●



MODULAR TRANSFER POINT KIT OFFERS FASTER INSTALLATION

The global leader in conveyor accessories has reimagined the bulk handling transfer chute to reduce downtime for installation and offer more options for future modifications.

The Martin® Transfer Point Kit from Martin Engineering includes modular horizontal loading zone, settling zone, and stilling zone configurations, providing easier installation and a wider variety of chute options while facilitating future upgrades. The kit simplifies the installation process, reducing the amount of labour required for assembly and allowing the system to be pre-built prior to installation for reduced system downtime. The result is faster installation with less labour and shorter shutdowns, increasing the return on investment (ROI).

"This is a rugged one-kit solution designed to fit most standard

conveyors and belt widths, regardless of what material is being transferred," said Dave Mueller, Conveyor Products Manager at Martin Engineering. "Our Centre for Innovation (CFI) is constantly looking for ways to engineer equipment with safety and our customer's bottom line in mind. That's why the kit doesn't just streamline labour, time and production, but it's also a logistical solution by shipping it in one crate."

The Martin® Transfer Point Kit is a heavy-duty horizontal enclosure for the loading zone. Each kit is either ordered as a loading zone, settling zone, or stilling zone. The width and length of the kit are determined by the receiving belt's width and speed

and the dust characteristics of the material being transferred. Dustier applications may require a longer settling zone.

This innovation solves three common problems. The first is that transfer chutes are normally shipped in different packages that sometimes don't arrive at the same time. Upon delivery, inventory is stored until scheduled downtime, increasing the chance of loss or misplacement. Another problem is, for most new transfer chutes on the market, some components can be prepared and assembled beforehand, but generally, new chutes need to be completely fabricated during downtime. The inability to build the structure before a shutdown increases the

project budget and contributes to lost production time. The third problem is, after construction, horizontal transfer point chutes are commonly a single system that requires significant engineering and construction to be modified. Changes to existing transfer points can be challenging, but to accommodate new belt support equipment or adapt to increases in production, the chute is often raised or lengthened.

To address these problems, the chute sections are delivered in a single crate with every component for assembly included, able to be assembled prior to the shutdown and installation, saving time and money, and fully modular, making future changes easy without expensive construction projects.

The transfer point system accommodates belt widths of 450-1 800 mm and an internal chute width of 228-1 498 mm. Each modular section is either 1,21 m or 1,82 m long and constructed of mild steel, 304 stainless steel or 316 stainless steel, with a thickness of 6,35 mm, 12,7 mm, or 0,75 19,05 mm to accommodate a wide variety of materials and conditions.

The taller loading zone controls air turbulence and connects to both the drop chute and settling zone. When cargo hits a belt with great velocity, fines and lumps splash up the sides of the belt. Without a properly sealed enclosure, the material will spill underneath the conveyor, creating a hazard, restricting access and fouling other components. The settling zone follows the loading zone and helps mitigate dust emissions. Dust is collected, mechanically filtered or settled back into the cargo stream prior to leaving the stilling zone and continuing as a conventional open air conveyor.

Listed under a single part number, the kit includes a chutewall weldment, wearliner assembly, wearliner plate, outer chute supports, top cover, tail panel/clamp/rubber sheet, installation hardware and an owner's manual. The skirt seal is sold separately, since it is a single piece that runs the entire length of the chute and skirting is the most frequently replaced wear part in

most transfer points.

The Martin® Transfer Point Kit installation is covered under the Absolutely No Excuses Guarantee as long as a Martin Engineering technician is involved in the installation process. Although assembly instructions are clear and easy to follow, another benefit of involving a factory-trained Martin expert is that customers who have ordered the kit have experienced a significant reduction in assembly and installation time. Moreover, once the system is started up and tested, there is a knowledgeable person on-hand to offer advice on adjustments to ensure optimum performance.

"After installation, Martin Territory Managers or partner distributors are available to offer support," Mueller added.

"The feedback for the kit has been excellent. Customers get the heavy-duty Martin quality they've come to expect in a more convenient, efficient and sustainable package." ●

KEY TAKEAWAYS



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Martin Engineering has been a global innovator in the bulk material handling industry for more than 75 years, developing new solutions to common problems and participating in industry organisations to improve safety and productivity. The company's series of **Foundations** books is an internationally-recognised resource for safety, maintenance and operations training - with more than 22 000 print copies in circulation around the world.

TAKING PPE LEADERSHIP INTO NEW EXECUTIVE AND ADVISORY ROLE

South African entrepreneur and pioneer within the specialist PPE (Personal Protective Equipment) industry, Refilwe Sebothoma, has announced she will take an executive and advisory role within several businesses in which she has an interest. Sebothoma will use her praised business acumen, notable experience and track record in business development, to help build thriving, sustainable businesses that empower individuals and their communities.

From building a successful business from the ground up early in her career, buying into businesses within the PPE value chain, forming crucial relationships with key industry stakeholders, and becoming a brand with integrity, Sebothoma sees her biggest win as the opportunity to impact the lives of people. "Seeing people's careers grow through promotions, moving from shacks and building houses, furthering their studies, and getting master's degrees, is both heart-warming and hugely gratifying," she explains.

Taking the next steps into a new chapter in her career, Sebothoma will continue contributing, building, and impacting people in an executive and advisory capacity. "To impact and empower the lives of ordinary people through my work is where I'm most looking forward to concentrating my efforts. When individuals are empowered and self-sufficient, they can go back to their communities and replicate that impact. I want to pay it forward through mentorship and coaching so that upcoming entrepreneurs can learn from my mistakes and build better businesses, faster."

Sebothoma's entrepreneurial background has given her a solid foundation and insight into business strategy and building a compelling value proposition. "As Maria Montessori said, 'only

practical work and experience lead the young to maturity'. I have indeed put in the work and have built great attributes and strengths in the process, business development strategy being at the core of it, with the ability to impact, develop and build functional and independent teams which can sustain a vision is what drives me."

"Integrity and building great relationships are the new currency for businesses which are serious about sustainability and longevity," she adds. Sebothoma believes this ethos is particularly relevant for young women looking to make strategic inroads into traditionally male-dominated sectors of the economy. "While many industries have reported growth in women entering these fields, the growth is slow. My concern is that women are still not occupying the highest levels of management or having a share of ownership in critical value chains, which means there is much more work to be done. Having said that, I want to recognise and appreciate the men in leadership positions who have been very intentional about encouraging and supporting women at all levels."

In addition to surrounding yourself with wisdom and support through mentors and coaches, Sebothoma encourages young women entrepreneurs not to forgo leading with love, care, compassion, and respect. "As women, we have a call to keep



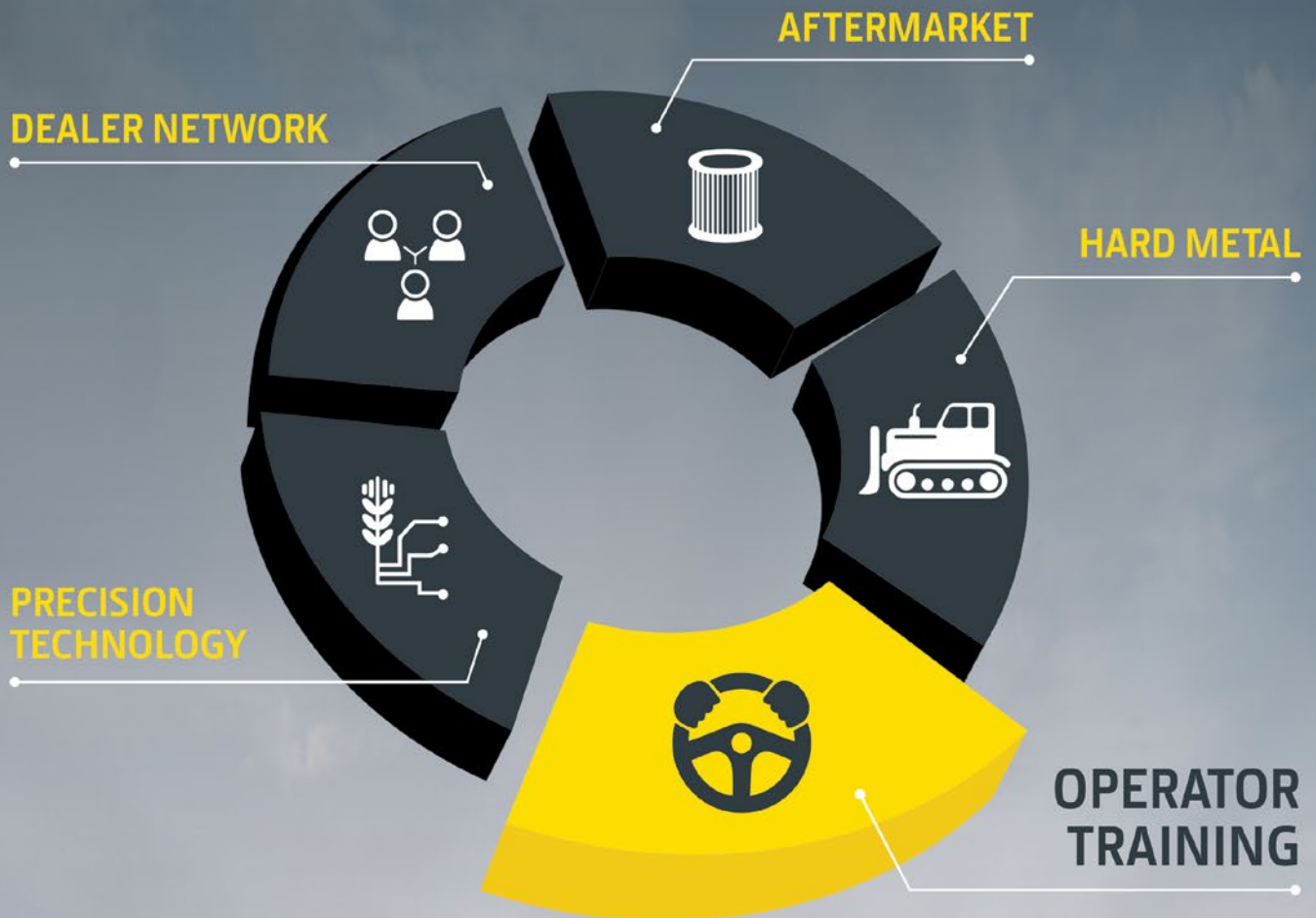
Refilwe Sebothoma - South African entrepreneur and pioneer within the specialist PPE industry.

investing in our own personal development because we can never be anything to anyone which we are not to ourselves, stretching ourselves out of our comfort zones and doing the work that matters for us. There is an opportunity for women to be deliberate about not just talking, but walking the talk, and supporting each other to build strong businesses which can offer great value to different industries."

In December 2022, Sebothoma was awarded the Inspired Visionary Award as well as the Leadership Excellence Award by Shell and GROW IMPACT for vividly mapping and executing on a winning aspiration for her business and for being a business leader that is on track to leading independent, profitable and enduring businesses. In a challenging economic environment, she has been able to realise annual revenue growth of 15,5% across the suite of businesses in the group delivering a staggering 8% in margin. ●

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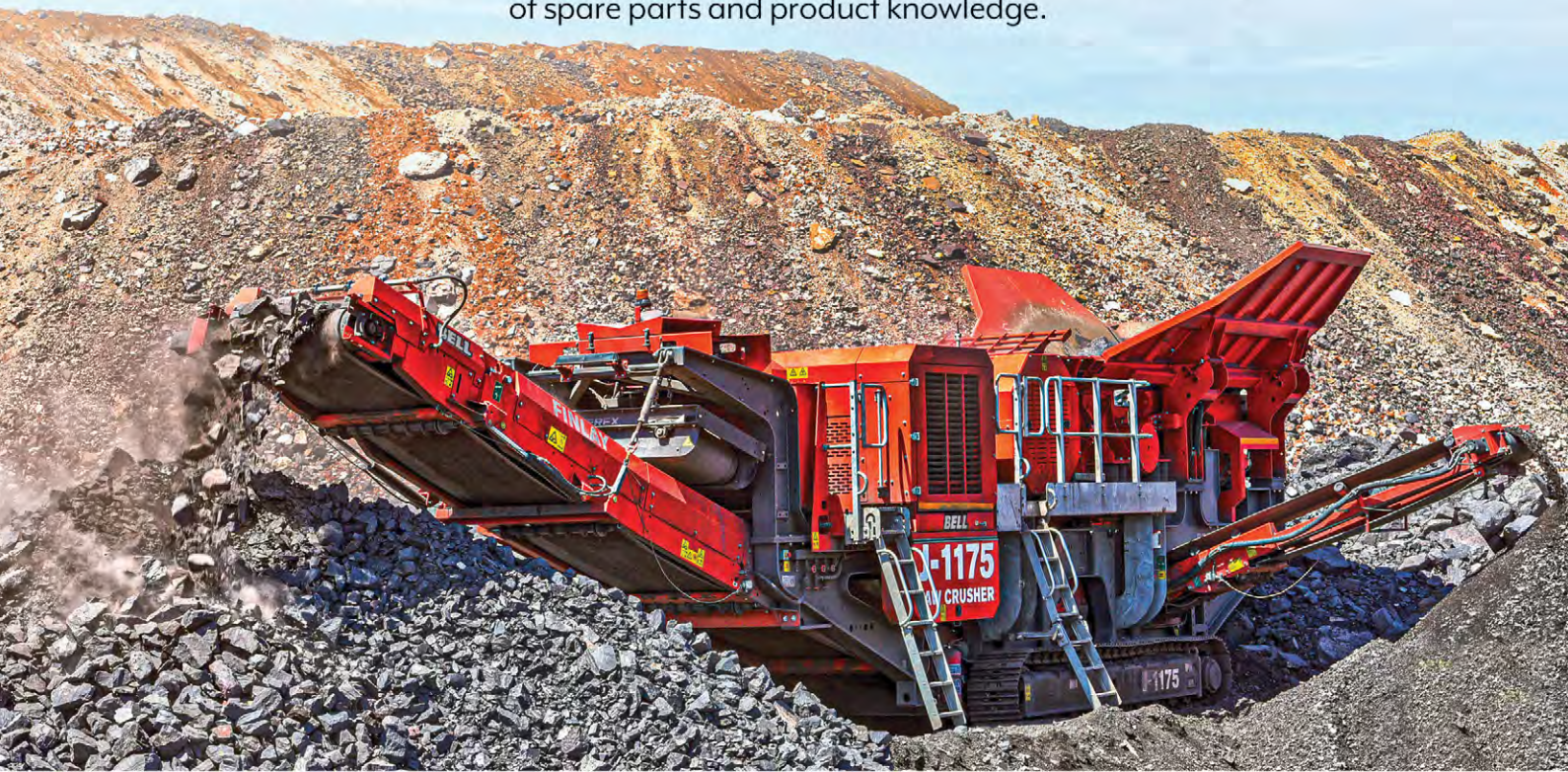
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