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SETTING A NEW ERA IN VERSATILITY WITH VOLVO EC210DL

JG AFRIKA CELEBRATES 100 YEARS OF EXCELLENCE

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REGULARS

ON THE COVER

Latest from Babcock is the 21-tonne (t) Volvo EC210DL crawler excavator, which plugs the gap between the existing Volvo EC200D and EC220D models in the 20-t plus market segment. A major talking point is the machine's ability to work with a range of attachments, making it the ultimate tool carrier and a go-to machine for different tasks on any site. Getting the most out of a machine is a key factor in fleet owners' buying decisions. With a special design focus on versatility and best-in-class fuel efficiency, the new Volvo EC210DL excavator from Babcock meets the ever-changing needs of a market that is continuously searching for increased productivity at the lowest cost per tonne of material moved.

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There has been a bigger urgency to have Public-Private Partnerships (PPP) effectively implemented as it is a way to address Africa's infrastructure deficit. The efficacy of such partnerships will be especially important on the African continent.

Africa's biggest challenge is its infrastructure deficit and the impact this deficit is having on the continent's competitiveness in the global context. The African Union is of the opinion that this deficit requires a 'continental solution' that will overcome limitations brought about by geographical location so as to create corridors for regional and international trade that will unlock the potential of the continent.

Co-CEO of Zutari, Teddy Daka, said in a recent opinion piece that there has, for quite some time now, been a desire by various African leaders to develop the continent's economy through a common market for goods and services. He mentions the 2016 McKinsey report that states that Africa's output could expand by some USD1-trillion by 2025 "if Africa's manufacturers upscaled to meet domestic consumer and business demands." This will obviously require inter-sectoral collaboration between business and governments to allow for the transporting and exporting of goods.

Daka is of the opinion that it has not all just stayed at the talk-show phase: these African inspirations has begun to translate into policy-making such as the African Free Trade Agreement and the AU's Programme for Infrastructure Development which are both coordinated efforts to unlock possibilities and address the deficit. According to Daka research, advocacy and institutional work are ongoing to reshape African policies to enable more effective integration. However, in practical terms these policies will be enabled by the effective implementation of Public-Private-Partnerships (PPPs) as a mechanism.

"Our ability to leverage innovative regional development hinges on the translation of infrastructure development practices across the entire development process. It is clear that infrastructure delivery – and the quality of leadership, governance and public-private cooperation required for its development – both exist as grand challenges in their own right and underpin the interventions necessary for many others," says Daka.

One cannot blame the industry for being sceptical about PPPs. They are notoriously complex and can take many years to materialise. In a recent survey conducted by RIB CCS in Africa and the Middle East in the final quarter of 2021 ('2022 Construction Industry Outlook'), one of the key insights was that a mere 8% of respondents are excited about PPPs.

While PPPs are a great way to unlock investment in the industry, the low score probably relates to an overall lack of confidence in PPPs and government's strategy around them.

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5G SET TO BE A CONSTRUCTION INDUSTRY GAME CHANGER

The COVID-19 pandemic has fast-tracked the construction industry's digital transformation, and more and more companies are leveraging cutting-edge technology to improve their on-site operations.

But as digital technology becomes increasingly integral to the construction process, so too does high-speed, reliable internet connectivity, says Databuild CEO Morag Evans.

"In fact, in today's digital landscape, it's critical. A construction site is a hive of activity at any given time, with numerous teams working together to deliver the required project timeously and within budget.

"This demands an enormous amount of collaboration between teams and if on-site connectivity is not up to scratch, they won't be able access crucial information when they need it and the project could soon be facing expensive reworks and delays.

"The same applies to companies making use of remote operations, equipment tracking and building information modelling (BIM). For these data-intensive technologies, sluggish and erratic internet connections simply won't cut it."

Consequently, says Evans, 5G, the fifth generation of cellular network technology, will soon become the wireless communication standard of choice among construction participants.

"Not only is 5G more reliable and stable, but it also promises speeds ten times faster than 4G networks. Indeed, some experts are even predicting speeds up to 100 times faster." She cites a recent report by Africa Analysis which reveals that while the South African 5G market is still in an early growth phase, 5G subscribers in the country are expected to reach 11 million by 2025, with a 43% population coverage. This is significantly higher than 90 000 % subscribers and 4,4% population coverage at the end of 2020.

This holds numerous advantages for the internet-connected construction site, especially in the areas of collaboration, productivity and safety.

"Data-intensive BIM files, for example, can be processed in the cloud rather than a mobile device and their content downloaded quickly and easily.

"Additionally, biometric devices worn by workers to monitor their health and safety are becoming increasingly popular on construction sites. In the event of an emergency, however, every second counts, so network speed and reliability are vital."But with all the benefits that 5G brings, the technology is not without its challenges, Evans points out. Not only does it require a significant investment to implement acceptable 5G coverage on a construction site, but there is also the ever-present aspect of security to consider.

"While 5G allows for more connected devices on site and for information to be accessed from any location, it also means more hacking opportunities for cybercriminals. Consequently, strict security protocols must be implemented and adhered to so as to protect and safeguard sensitive data and prevent a security breach."

"These concerns aside, there's no escaping the fact that super-fast internet is becoming indispensable to the construction industry, and role players need to start thinking now about laying the groundwork for 5G-enabled construction sites so that they can harness the innovative opportunities it offers and position their businesses for growth," Evans concludes. ⦿

> *"Data-intensive BIM files, for example, can be processed in the cloud rather than a mobile device and their content downloaded quickly and easily."*

Soluade,seen with Chris Campbell, CESA CEO.

A CALL TO SERVICE

"We have the ability to rewrite the gloomy narrative which has dominated our lives in recent years – the pandemic and its challenges. We can overcome, we can recover. But we have a lot of work to do – as an industry we need to ask ourselves, where do we even begin?" This was the question posed by ***Olu Soluade, newly appointed president of Consulting Engineers South Africa (CESA),*** *at the Presidential Media Address hosted recently Sandton, Johannesburg.*

Backed by a strong career in the consulting engineering industry, Soluade succeeds outgoing president Sugen Pillay and will serve for the 2022/23 period. In selecting his presidential theme for the year and in answering his opening question, Soluade has focused his message on 'A Call to Service'.

"The construction industry was again the worst-performing sector in the economy in 2021. Whatever goals we are looking to achieve, whatever message we want to convey and whatever progress we want to make are underpinned not by the what, but by the how. We know what needs to be done to move our industry and our country forward – it is the way we do it which will define our success. I believe the time has come for us all to get involved in contributing to the economic recovery of our country."

Soluade stated that being called to service should come naturally, even when juggling priorities. He believes there are four requirements for service:

- Availability: "We need to set aside and volunteer some of our time".
- Willingness: "We cannot be coerced into service".
- Sacrifice: "There will be tough decisions to make".
- Vision: "We must keep an eye on the end goal".

Soluade believes that leading by example is the hallmark of great service. "This means talking the talk and walking the walk – with integrity and excellence. Successfully working in service for this public need will greatly aid in achieving our goals and motivating our industry".

In light of this, Soluade uncovered five core areas which will underpin CESA activities for the year ahead.

- Increase advocacy efforts in the area of sustainable transformation in respect of race, gender, and technology in our sector.
- Maintain the standards of professionalism and build on the levels of quality management whilst encouraging CESA members to integrate sustainability into the solutions offered to their clients.
- Improve on the business and advisory support to members and clients with an emphasis on best practice procurement.
- Continue efforts towards building and strengthening partnerships with government, private sector client bodies of our members as well as with other stakeholders.
- Ensure that good governance and integrity prevail within the industry and profession, particularly amongst CESA members as the apex body for the consulting engineering sector in the country.

CESA calls on President Ramaphosa to prioritise projects

"We call on President Cyril Ramaphosa, as he prepares for his State of the Nation address next week, to focus government's efforts on unlocking the much publicised, close to R900b project pipeline into shovel-ready projects. We believe the state can achieve this by leveraging as much of the technical and built environment capacity in the private sector as is needed to fill the gaps that exist in public sector as a matter of urgency," said Soluade. He added that the public sector is generally regarded as the most important client to the industry, and the role of the public sector remains critical to the engineering profession.

"CESA is committed to acting in service of our industry and our country, to protecting lives and livelihoods, and to encouraging others to do the same. We remain available and willing to make sacrifices to achieve our vision. As a voluntary association, we are by nature in service and we call on others in our industry to set the example of serving with pride, integrity, honour, and discipline," concluded Soluade. ⦿

DIGITAL TRANSFORMATION AND THE ROLE OF AI

The purpose of digital transformation is to allow an industry to perform at an optimal pace, as well as to leverage newer technologies out there. This results in a more effective working environment. ***By Archana Arakkal, Machine Learning Engineer at Synthesis***

If we look at the banking sector as an example, digital transformation has assisted the industry to transform by using new technologies. The adoption of new technologies helps change the way in which operational structures work.

As an example in the banking sector, a customer applying for a loan would physically have to go into their financial services provider; manually filling out forms that would get filed away in a cabinet; and the branch would take two to three months to process the application. Enter Artificial Intelligence (AI). Now using new technology it can be done in seconds. Or milliseconds.

Object Character Recognition (OCR)

An interesting development in the AI space is Object Character Recognition (OCR). In the not so distant past a person applying for a loan could scan the form; now with OCR, a photograph on a mobile phone is good enough. Thanks to machines that recognise objects and characters and extract the content, transform it into plain text, there is no longer any need to go into the institution.

With AI we are becoming smarter with how we work by optimising the way businesses function, and we are doing this is less time too.

Machine Learning can propel digital transformation

For some, AI is a buzz word and there certainly is a lot of fear around it, but the reality is, it can propel organisations forward, especially in areas they are struggling with. For example, fraud detection and customer profiling. The benefits and advantages specifically in these two areas are obvious when the role of machine learning is clearly understood. Fraud can be detected quickly; and in the case of customer profiling – done accurately there are many ways business can use this information to reach the individuals who make up their customer base.

Clean data and data-driven decision making

Using machine learning and AI depend on the foundation of the company's data. Like everything – if data is accurate, the results are excellent. However, organisations do have legacy issues, and data can be inaccurate and misconstrued.

This is a challenge as businesses need to fix their data before they can reap the enormous benefits of clean data. Here, interestingly enough, humans are needed to step in and correct information.

Humans will always be needed, but we need to get to a place where we use technology to our advantage. AI can help to get the data to the place it needs to get to.

Let's start using AI to augment humans so we can fix what exists. It can't be one or the other – we need a combination of AI and human interaction.

Why AI matters

It's not only machines getting smarter, but people are also becoming more tech savvy and more demanding. In order to keep up, we need to start leveraging technology and infrastructure. Not only are we going to be using AI to enforce digital transformation, but we are catering for a market that demands it. AI is not something in the future – AI is already here, and if your organisation is not already using it, you are falling behind.

"It's not only machines getting smarter, but people are also becoming more tech savvy and more demanding."

Archana Arakkal, Machine Learning Engineer at Synthesis

We are a bunch of numbers

Gone are the days where one person has one footprint. Today, the average person has three devices on which are interacting. On average this one person has about five accounts, such as social media, banking apps, fitness apps, shopping apps etc. This means that there are more digital footprints than there are existing human footprints.

Bot nor not

In South Africa, we are reaching a point where AI has matured to the point where human interaction is no longer necessary in some instances. For example, Google has released an AI model Generalised Pre-Transformed Trainer (GPT3) that can understand language and talk back to you (in a call centre environment), and you will not be able to differentiate whether it is a bot or a human.

In conclusion, the fear around AI is null and void; if you look at the good it definitely outweighs the bad – AI can be so useful. Yes, fear is driven by the unknown, but the reality is, people will always be needed. ⊙

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JG AFRIKA CELEBRATES 100 YEARS OF EXCELLENCE

JG Afrika, a proudly South African consulting engineering firm, is celebrating 100 years of engineering and environmental excellence. This significant milestone bears testament to the skills, experience, dedication, and passion of a strong team of people who are committed to JG Afrika's core values of 'Experience', 'Quality' and 'Integrity'.

"I am exceptionally proud of this accomplishment as it demonstrates the sustainability of our business."

Paul Olivier, Managing Director of JG Afrika

The company was first founded in Johannesburg in 1922 and was formally known as Jeffares & Green and has since grown into a leading multi-disciplinary engineering and environmental consultancy operating locally and internationally.

"I am exceptionally proud of this accomplishment as it demonstrates the sustainability of our business. There are only a few South African companies and now only two local engineering firms to have reached this milestone. Over the years, we have survived a world war, many far-reaching changes in government and its ideologies and, more recently, a pandemic that has wreaked havoc on the global economy. We have always been quick to adapt to change and emerge stronger than before," Paul Olivier, Managing Director of JG Afrika, says.

The company's proud legacy was started by John L.S. Jeffares when he established JLS Jeffares Consulting Practice in Johannesburg. Jeffares was shortly awarded an OBE to pioneer a railway route from Victoria Falls to Walvis Bay. Five years later he was joined by Harold (Hal) H. Green and together they undertook work throughout sub-Saharan Africa, including the hydrological study and access roads for Kariba Dam. In 1947, they formed a partnership, and the name Jeffares & Green was used for the first time.

Throughout the years the firm continued to progress and evolve and in 2016 Jeffares & Green rebranded to JG Afrika to better reflect its African roots and commitment to uplifting the continent. The firm has continued to build on the reputation for quality engineering services that was established many years ago.

Apart from the main operating company focusing on the provision of consulting services in all fields of civil and structural engineering, the firm has since grown its professional service offering to now include as many as 23 different disciplines and fields of expertise. These are in high demand and the company's extensive skills and experiences are being deployed in large infrastructure through to smaller community-based projects.

1922-2022

ENGINEERING | ENVIRONMENTAL

Olivier remains proud of all of JG Afrika's projects, especially those that are improving the lives of the most vulnerable. "Our community-based projects are designed to have a significant positive socio-economic impact right from the early implementation phases. This is by providing ample opportunity for the training and development of members of poor communities located within the project footprint. It helps to create jobs in areas where there is high unemployment, while also ensuring the long-term sustainability of infrastructure because communities' members have been adequately trained in monitoring and maintenance. Extensive public participation and stakeholder engagement processes also ensure project buy-in and unite different factions so that we can all work together efficiently towards achieving a common goal," he says.

Innovation has remained at the heart of the firm for all these years. This is evidenced by, among others, the many awards that JG Afrika has received for its projects from leading professional bodies, such as the South African Institution of Civil Engineering and Consulting Engineers South Africa.

However, innovation will play a considerably larger role for the company as it harnesses new technologies and enters other markets that provide more opportunities for growth. This is line with the company's drive to expand its footprint in Africa and other continents, increasing its client base and, in so doing, ensuring business sustainability for many more years to come.

Olivier is convinced that he has the best team to help him drive this heightened focus on innovation. An environment has been created that encourages people to be innovative and find unique solutions to challenges. The company has preserved its strong family values and culture over the years. For most employees, JG Afrika is a 'home away from home' and they have remained loyal to the firm for many years. This culture and working environment also attract the best young talent to the company to ensure continuity.

Certainly, this milestone would also not have been possible without the ongoing support that the company continues to receive from its clients. Many have nurtured a longstanding professional relationship with JG Afrika. They value the firm's ability to keep pace with their changing requirements and demands of industry, especially over the past 10 to 15 years. This has been a period of significant change in the engineering and environmental sciences market. It is a trend that is expected to carry on unabated. Olivier is confident that the firm will continue to adapt to this disruption and respond to the immense opportunities that it brings.

"JG Afrika is only 100 years young, so there is still a lot of potential to learn and grow to ensure that we remain the best at what we do. We are looking forward to many more years of providing leading technical services, as well as innovative and sustainable solutions to our growing client base," he concludes. ⊙

SAINT-GOBAIN RECOGNISED 'TOP EMPLOYER GLOBAL' FOR THE SEVENTH CONSECUTIVE YEAR

For the seventh year in a row, Saint-Gobain, global leader in the construction and industrial markets, has been awarded the 'Top Employer Global' certification by the Top Employers Institute, based on an audit covering more than 400 working condition practices within the HR and career development processes. The Group is one of the 11 companies worldwide to have received this label. This year, Saint-Gobain stood out for their processes that unite its employees and bring them closer together thus creating a sense of belonging within the organisation, namely its values, ethics and integrity. The good performance in terms of company strategy, leadership and recruitment strategy were also highlighted.

The Top Employer Global 2022 label was awarded to Saint-Gobain, which now has 38 countries certified, two more than in 2021, with Egypt and Vietnam having been labelled for the first time: Argentina, Australia, Austria, Belgium, Brazil, Canada, Chile, China, Colombia, Czech Republic, Denmark, Egypt, Estonia, Finland, France, Germany, India, Indonesia, Ireland, Italy, Japan, Malaysia, Mexico, Netherlands, Poland, Portugal, Romania, Saudi Arabia, South Africa, South Korea, Spain, Sweden, Thailand, Turkey, the United Arab Emirates, the United Kingdom, the United States and Vietnam.

"Being certified as a Top Employer showcases Saint-Gobain's recognition to the significance and importance that we place on our biggest assets – our people. The diversity and inclusive culture of the Saint-Gobain people makes us stronger and this is fully supported through our great HR policies and people practices," says Fanie Vos, Saint-Gobain Constructions Products Africa HR Director.

"Saint-Gobain's purpose of making the world a better home extends into the workplace and participating in the Top Employer program helps to ensure that our employees experience their journey with us more fulfilling and find more meaning and usefulness with us. We remain dedicated to maintaining and improving our status as a Top Employer by listening to our employees and appreciating their contribution to our purpose.

We have experienced how our efforts in this regard has impacted our greatly improved Employee Engagement results in 2021, our great strides in Learning and Development, our continued focus on Diversity and Inclusion and ensuring a conducive work environment for all our employees. Stay with us on this exciting journey." ⊙

ABOUT SAINT-GOBAIN

Worldwide leader in light and sustainable construction, Saint-Gobain designs, manufactures and distributes materials and services for the construction and industrial markets.
Its integrated solutions for the renovation of public and private buildings, light construction and the decarbonization of construction and industry are developed through a continuous innovation process and provide sustainability and performance.
The Group's commitment is guided by its purpose, 'MAKING THE WORLD A BETTER HOME.'

NICHE CAREERS FOR WOMEN IN ENGINEERING

Women are occupying almost every type of role in today's business world, including niche roles that are sometimes overlooked. While fairly uncommon, they can be rewarding positions for women to consider. Sizakele Mofokeng can attest to this. She works as a civil engineering technologist for engineering firm, GIBB, and believes it's a fulfilling career.

Mofokeng, who hails from Soweto, Johannesburg, had always wanted a career involving maths and science, so she obtained a diploma in civil engineering and then a BTech majoring in Transportation at the University of Technology. The difference between an engineer and a civil engineering technologist is the title of the degree. An engineer holds a BEng or BSc and a civil engineering technologist holds a BTech.

Mofokeng was then employed by GIBB in 2008 and worked her way up the ranks to become a civil engineering technologist. The roads we drive on, pavements we walk on, and the conveyors used in mines all originated as a design by technologists like Mofokeng.

When she's not working on drawings in the office, Mofokeng is on site where she observes her design work come to life. As an example, she recently spent eight months in Durban, acting as resident engineer on a walkways project. She finds it a fulfilling change of environment and enjoys working with the teams on site.

Civil engineering is a broad field that spans transportation, the structure of buildings and bridges, geotechnical, surveys, and water and sewerage, to name just a few specialisations. Besides the work she does as a civil engineering technologist, Mofokeng believes that civil engineering in general is a good career choice for women.

While the industry has been historically male-dominated, more women are entering the field, but she believes there's room for improvement in this regard. It has been difficult for some women to make their mark, but Mofokeng advises women to believe in themselves and have the self-confidence to push through. "It's also important to have a mentor, keep abreast of new developments in the industry, and build a strong network."

Mofokeng's work provides stimulating and challenging opportunities. She describes GIBB's current large-scale mining project as one of these. Mofokeng is involved in the design process for the formation of conveyors for a mining project, and is managing the Roads team. "This is a challenging project as it involves multi-disciplinary teams; therefore, the management of time, work and people is essential, and I have the added responsibility of being accountable if deliverables aren't met."

One of her favourite projects to date was the Bus Rapid Transport (BRT) project in the Johannesburg CBD. BRT is a

"I also enjoy multidisciplinary projects. It's exciting to witness different disciplines collaborating, realising the interdependence of the teams involved, and seeing the impact of our individual work overall."

high-capacity bus-based transit system that includes dedicated lanes, busways, traffic signal priority, off-board fare collection, elevated platforms and enhanced stations. Mofokeng says, “I was involved in the design and construction supervision of the BRT routes, and it was important to me to see how much it benefited the community – myself included.”

She also works on GIBB’s other private as well as municipal clients such as SANRAL. A typical project would be initiated when a brand-new road is needed, for example. It is the civil engineering technologist who starts the project by creating the necessary drawings. Projects also require preliminary work to be carried out, including surveys and geotechnical, which is the assessment of the soil in preparation for the new road.

When asked what makes her feel fulfilled, Mofokeng says it’s rewarding to see her designs reach construction stage. “I also enjoy multidisciplinary projects. It’s exciting to witness different disciplines collaborating, realising the interdependence of the teams involved, and seeing the impact of our individual work overall. That’s very fulfilling. It’s also good to meet different people, especially those on site, because you learn a lot from them.”

The civil engineering industry faced challenges with COVID-19 and lockdown, just as every industry has. Working from home was challenging, especially when consulting colleagues about drawings. However, the company adapted and now has a hybrid working model where technologists can work from the office when it’s necessary to collaborate more interactively with colleagues.

Lockdown also affected employment. Instead of having two people with a different set of skills, it became more economical for an organisation to have one multi-skilled person. “This has made me focus on where I am lacking and become committed to filling in the gaps in my skills to be a more well-rounded engineer,” says Mofokeng.

The transport industry as a whole did not escape the effects of lockdown, either. As public transport was suspended during hard lockdown, trains came to a halt and stations became disused and were vandalised – this is an ongoing problem even now, and has taken a toll on the people in the community who were dependent on using the trains.

Mofokeng also notes that since the roads were used heavily before (and this is picking up again now), the infrastructure needs to be upgraded. “There’s a great need for the upgrading of roads that were not necessarily properly maintained before. That means there’ll be great work opportunities for civil engineering technologists,” she says.

According to her, civil engineering provides a fulfilling and rewarding career. Her advice to students interested in the field is that it’s important to build a strong community network. “You already have a community of like-minded pupils in school, and in varsity you build on that community with other engineering students. Then you build on that when you start working. This community is important for your growth and to provide support and guidance.”

Mofokeng finds her job fulfilling, and in the near future, would like to begin mentoring – especially high school pupils interested in engineering and first-year students studying civil engineering. She says, “I would like to give them the insight into the careers they can follow, and to encourage them to discover the industry and all that it has to offer.” ⊙

ZUTARI APPOINTS NEW CHIEF MARKETING AND COMMUNICATIONS OFFICER

Consulting engineering and infrastructure advisory firm Zutari has appointed Zipporah Maubane as Chief Marketing and Communications Officer for Africa and the Middle East (AME).

The company renamed its Africa operations Zutari following its demerger from Australian partner, the Aurecon Group, in January 2020. "Since the demerger, we have re-engineered how we partner with our clients to strengthen our position in the infrastructure and engineering sector in the AME region," says Zutari co-CEO Teddy Daka.

"With her track record in brand management and communications, we look forward to Zipporah's contribution in building trust with our clients and employees as we continue our journey as Zutari," says Daka.

"We have done well in rebranding our business and positioning Zutari in our markets, and I look forward to Zipporah's contribution in maturing our brand promise," says co-CEO Dr. Gustav Rohde.

Zipporah is a seasoned marketing and communications executive with a successful track record in the technology, FMCG, oil, and logistics sectors. She is a former marketing executive from Altron, having previously held senior positions at Coca-Cola, Sasol, BP, logistics company DPD and in the public sector.

She has worked in the rest of Africa and the UK, repositioning brands in B2B and B2C markets, managing crisis communications, driving internal communications for a winning culture, and building reputation and relationships with stakeholders in governments and the investor community.

Commenting on joining Zutari, Zipporah says she looks forward to working with Teddy, Gustav, and the leadership team to build Zutari into a brand committed to co-creating engineering design solutions that provide enduring infrastructure for all.

"This business has incredible depth of expertise and experience given its 90-year heritage. However, our brand is only two years old and still needs to be developed into a powerful asset. I am going to concentrate my efforts on building strong equity for the Zutari brand, so that it becomes a key driver of growth for the business and leveraging marketing to add new value to our relationships with our clients," concludes Zipporah. ⊙

ZIMILE LEADS BY EXAMPLE

South Africa's construction industry is of strategic importance for the country's economic growth and – more recently – recovery from two years of a pandemic-centred business environment. The sector has been sluggish in recent years; however, Shawn Gama, CEO of Zimile Consulting Engineers, believes that a shift in focus is necessary for businesses in the industry to survive, and thrive.

"Like any business trying to work in a constrained economy – in between lockdown levels and virus waves – we have faced trying times. However, I am proud to say that Zimile Consulting Engineers came through 2021 with a strong project pipeline and a full staff complement. We are in a very fortunate position, and it comes down to three things," says Gama.

Firstly, he believes that broadening their focus from road infrastructure to wider service delivery – especially water – has been key. "Water and sanitation became top of mind when COVID-19 first hit, and we had already started improving our expertise into water infrastructure which primed us to deliver exceptionally well. The lesson here is perhaps that, although it is great to find a niche, the time has come to broaden one's horizons. I am happy to report we have several water projects lined up for 2022," explains Gama.

Secondly, the need for rural infrastructure has become clear. Gama says: "While many companies have been focussing on metropolitan projects amid rapid urbanisation, the government is still working towards providing improved services to rural areas, too. We are increasingly putting ourselves forward for work in these rural sector of project infrastructure delivery. We have been partnering with communities and the public sector and have found a synergy here, where our engineering expertise can be applied to solve challenges faced by these rural communities." Thanks to their efforts in various rural municipalities, Zimile Consulting Engineers has grown their project portfolio into several new provinces and will look towards establishing satellite offices in these areas in 2022.

Finally, Gama reports that when working with the public sector, his focus on accountability and value for money has boosted their reputation as a go-to consulting engineering firm – bringing private sector skills into public sector projects. Gama explains: "There is currently a lot of mistrust between private and public sector stakeholders, with apprehension over local government's capacity to drive projects, and frustration over the procurement process. These feelings are not unwarranted – however, we have decided to lead by example, hold ourselves accountable for service delivery, and partner with our clients with fair treatment and value for money at the fore. I am happy to say that this approach has yielded great success in 2021 – a trend which is sure to continue into 2022.

"With South Africa's continued focus on infrastructure-led economic recovery, there are opportunities available for those firms ready to shift their strategy towards priority projects," concludes Gama. ⊙

THE IMPACT OF THE PANDEMIC ON CYBERSECURITY

Even prior to the pandemic, organisations had begun putting in place elements to manage distributed employees whether that be through corporate remote desktop or virtual private networking (VPN) capabilities. However, this was not done at the scale and at a rate required to manage the disruption caused by COVID-19.
By Ralph Berndt, Sales and Marketing Director of Syrex

Suddenly, companies had to deal with the influx of connectivity challenges that they needed to overcome for their employees to remain productive. Furthermore, support teams now had to manage providing access to critical systems, which were mainly hosted on-premises within the relative safety of their own corporate network. In many cases this resulted in companies having to implement more VPN licences to manage these additional external connections through their own firewalls.

The security elephant

But this gave rise to a significant security concern. A VPN does not provide any cybersecurity. It is merely a tunnel to the firewall so that users can authenticate themselves. However, during the lockdown many employees were reliant on their personal devices to be able to work. Businesses then had to consider how to secure these personal endpoints that ultimately would be traversing VPNs to access their corporate networks. This created more complexity and additional security challenges.

Without proper endpoint protection in place (beyond simply relying on an anti-virus solution), the organisation remained at significant risk. This is where a hardened endpoint protection solution that provides a small firewall on every employee's device, in line with that company's security policy, becomes critical.

Such devices notify the IT team if there has been an infection while trying to stop it from spreading across the network regardless of the user's geographic location.

Zero Trust

Invariably, all these challenges have given cause for businesses to consider additional security hardening such as moving towards Zero Trust. This comes down to not trusting any device or user by default. While this is significantly more secure for any organisations, it is critical to ensure that all third-party software such as enterprise resource planning and customer relationship management is technically operable with these tools.

It has been a fine balancing act between Zero Trust and reducing the complexity faced by end users, who may not be in the office. How teams could collaborate while working remotely also became a factor to consider. The emergence of Microsoft Teams to address this has been one of the defining technology moments of the past two years.

The ability to share data and communicate more seamlessly with people in the organisation from a centralised environment has driven the adoption of Microsoft Teams significantly.

Securing everything

Microsoft has been influential in driving the agenda around security in this digitally driven world. Businesses should focus on multi-factor authentication (MFA). This has become fundamental for all user authentication and the building block for proper digital security.

MFA enables businesses to identify users by adding an additional layer of security that requires the user to verify themselves beyond their traditional username and password. This is done with either a one-time pin sent to their mobile phone or through the Microsoft Authenticator application. This ensures that the individual behind the screen has the authority to access that specific data.

Through this authentication, the company has an additional guarantee that the user has been identified correctly and can thereby be managed more effectively. So, if a device and or their username and password have been compromised the additional MFA will ensure that the company's network is still inaccessible to an unauthorised user. ⊙

"Microsoft has been influential in driving the agenda around security in this digitally driven world."

Ralph Berndt,
Sales and Marketing Director
of Syrex

FROM LUXURY OFFICE PARK TO LUXURY LIVING

Growthpoint will apply its cross-sector development expertise to the R200m residential conversion of its Riverwoods office park in St Andrews, Bedfordview, in joint venture with Setso Property Fund (49%) and in collaboration with BlackBrick Hotels.

The game-changing development is a clever response to the surplus of office space in the market and the scarcity of residential space, especially for the new and upcoming generation of first-time buyers. It aims to make a positive contribution to society and the environment, reducing urban sprawl and carbon emissions by eliminating both new land and energy use.

In its current form, the 35 000 m^2 site has 10 000 m^2 of space to repurpose in six two-storey buildings, which are out of place in an area that, over time, has flourished into a sought-after and superbly situated residential neighbourhood.

These buildings' will tell a new story as 250-plus studio, one- and two-bedroom apartments clustered by a large, lush social central courtyard with iconic water feature, encircled by meandering lawns, and featuring a clubhouse, pool, collaborative workspace and more.

"With little alteration and no additional development bulk, Riverwoods lends itself to residential conversion. By retaining the structure and many raw materials, we are conserving energy and reducing carbon emissions. We are immensely proud to partner with Setso and BlackBrick to bring the Riverwoods vision to life," says Michiel Gerber, Development Manager at Growthpoint.

Setso, which specialises in office-to-residential conversions, is the development partner behind BlackBrick Apartments and Hotels', with two successful developments in Fredman Drive, Sandton — both converted from offices.

BlackBrick is building a network of villages for free-minded global citizens to accelerate their growth as they live and work between cities. Its urban living concepts have proven exceptionally successful, even during the pandemic. It is expanding across a growing network of cities locally and globally, including Cape Town, Umhlanga, and, now, Bedfordview. BlackBrick Bedford's serviced long- and short-stay residential community at Riverwoods will be packed with its popular facilities and services at accessible prices. BlackBrick will also manage the hotel and residential sectional title units.

"We are exceptionally excited to be adding this BlackBrick Resort Edition to the Collection. Bedfordview is a special project for us with its vast open spaces and green forest setting. We have been able to really turn up the resort facilities here with some new additions such as Padel Tennis, Volleyball a Trail Running Track, and a few other surprises," Moritz Wellensiek, Managing Director of BlackBrick.

With its upscale design and park-like setting, the reimagined Riverwoods will offer affordable modern living in a high-end, vibrant neighbourhood rich with amenities by creating an idyllic lifestyle.

BlackBrick Bedford is in St Andrews, adjoining the leafy suburb of Senderwood. It is short drive from OR Tambo International Airport and minutes away from the amazing range of retail and restaurants at Eastgate, Bedford Centre, Park Meadows Shopping Centre, Village View Shopping Centre and The Neighbourhood Square. The area is home to several of SA's leading schools, from pre-primary to high schools, including SAHETI school, St Andrews School for Girls, King David Linksfield, Crawford International Bedfordview and Holy Rosary School. It is also near numerous top names in hospital, medical and health care and surrounded by various sports and fitness facilities.

"As part of our ongoing asset management, we frequently evaluate the properties in our portfolio and consider all options to unlock the best value from our assets. There is no recipe, no single solution, so we take care to find the right approach unique to every building. This eco-friendly approach to building a vibrant urban community is a great result for Riverwoods," says Paul Kollenberg, Growthpoint Head of Asset Management: Office.

Once the redevelopment is complete, Growthpoint will exit its investment in Riverwoods. The move demonstrates Growthpoint's agility in changing markets and commitment to developing properties that make sense for society, the environment and its business.

"We're excited about the future of Riverwoods, which will make the best use of this prime residential lifestyle location for decades to come. We are also pleased to apply our development expertise to unlock value from this asset and advance Growthpoint's strategy to optimise and streamline our portfolio," says Kollenberg. BlackBrick Bedford residential launched on 5 March 2022. ⊙

FLANAGAN & GERARD's SHOPPING CENTRES CROSS **THE 2021 FINISH LINE ON A HIGH NOTE**

Flanagan & Gerard Property Group's quality portfolio of shopping centres recorded strong December trade, ending the year with impressive trading metrics despite 2021 being a challenging time for retail.

Seven of its 10 malls recorded double-digit turnover growth, while the entire portfolio's turnover grew by 12% from December 2020 to December 2021. Importantly, this December's turnover was also up nearly 9% on the pre-pandemic figures of December 2019.

Regional malls, Mall of the North in Polokwane, Limpopo, and Ballito Junction on the Dolphin Coast of KZN, notched up record turnovers this December, both topping R350m.

Shopper numbers across the portfolio grew a pleasing 7% in December - although this is still slightly short of footfall levels in December 2019. However, the size of shoppers' baskets has grown so considerably it is still driving higher turnovers.

Flanagan & Gerard's data signals that while Black Friday spending spikes weren't comparable to years gone past, the late November retail landmark still serves as the official kick-off for the festive holiday and back-to-school shopping. Its turnover figures suggest that shoppers open their wallets in November after holding back spending during September and October to save up.

It reports that the retail categories that outperformed in December include groceries, liquor sales, menswear, athleisure, shoes and electronics. Homeware also showed good trading, although turnover in this category didn't reach the same growth highs of 2020. Sporting goods underperformed in December, but they traditionally peak in January when schools and sports clubs re-open.

Some spending trends noted in December 2021 were regional, such as the outperformance of jewellery, eyewear and toy retail at coastal shopping centres. The Dolphin Coast's Ballito Junction Regional Mall once again proved as popular with holidaymakers as locals. Its car volume soared, and brands clambered to secure their spots in promotional space at the mall and in its parking area.

With South Africans craving opportunities to relax and socialise over the holiday, restaurants and cinemas fared relatively well in the Flanagan & Gerard portfolio this December.

Managing Director of Flanagan & Gerard, Paul Gerard, reveals, "Fewer COVID-19 restrictions this year supported the restaurant trade. While the international reaction to the news of the omicron variant halted foreign tourism, many South Africans cancelled their overseas travel and domestic retail benefitted from their local spend during the holiday season.

"All in all, this festive season was largely disruption-free and operationally supportive of retail. Our shopping centres delivered pleasing positive performance, and 2022 is already off to a great start with January footfalls to date ahead of 2021. All signs point to sustained positive growth in the year ahead."

The exceptional festive trading of the Flanagan & Gerard portfolio is no coincidence. The team works hard to keep its shopping centres fresh, appealing and relevant for their customers. It completed more than 120 new letting deals in the 15 months before Christmas.

The company only develops and invests in dominant regional shopping centres that retain dominance within their trade areas, and high-end niche community centres. Flanagan & Gerard developed and co-owns Ballito Junction Regional Mall in KwaZulu-Natal as well as Morningside Shopping Centre, Springs Mall and Vaal Mall in Gauteng, together with Highveld Mall and Middelburg Mall in Mpumalanga, and Thavhani Mall, Musina Mall, Great North Plaza and Mall of the North in Limpopo. Its respected track record includes an even higher number of retail properties developed for other leading investors.

This year, Flanagan & Gerard also has big plans. It will open the first phase of the new 24 000 m^2 and much anticipated Boardwalk Mall in Gqeberha (Port Elizabeth) in the Eastern Cape on 24 March 2022. The team will continue rolling out the Thavhani City development in Thohoyandou with its local partners - the mixed-use urban precinct including motor dealerships, big-box value retail and medical services around its top-performing Thavhani Mall, which is designed to be the future economic hub of North Eastern Limpopo. Exciting new additions are also on the cards for Ballito Junction. ⦿

All South African businesses are under pressure to reduce their carbon emissions.

Hannes Meyer, AfriSam Cementitious Executive.

PRIORITISE RESPONSIBLE MANUFACTURE, URGES CEMENT LEADER

As South Africa endures some of its most difficult economic times yet, the country should recognise the importance of supporting responsible manufacturing practice in its cement sector.

The call comes from Hannes Meyer, cementitious executive at leading cement producer AfriSam, who emphasises the strategic value – both economic and social – in a sector that generates this vital commodity.

"As the backbone of our national infrastructure, cement is also a product that represents our highest aspirations of mineral beneficiation," says Meyer. "To produce this valuable resource, we must start with mining our own deposits. We then process the ingredients through complex technologies that demand considerable financial investment and expertise."

The range of products that result must form part of an intricate supply chain before arriving where it must be used, he says. Almost the entire value chain, however, is local – creating market demand and local job opportunities all along the way.

"In addition to the basic requirements of the cement business, South Africa's cement producers are also mineral rights holders who must comply with mining regulations, which includes Social and Labour Plans," he says. "In addition to normal business legislation, we must go the extra mile to promote development in and around the communities where we operate."

He points out that this is currently more difficult for cement producers than for miners of more high-value commodities, who are currently benefiting from buoyant prices set by global markets. In contrast, cement prices are determined by demand in the country's building and construction sectors, where performance remains lacklustre.

"Despite the challenges, local cement producers like AfriSam continue to meet compliance requirements, as these align with our underlying corporate commitment to the future of Africa and the planet," says Meyer.

Added to the industry's responsibilities, he notes, is the growing pressure on all South African businesses to reduce carbon emissions in the interests of a low-carbon future that responds to the growing dangers of climate change. As an energy-intensive sector, cement production is researching and applying various innovations to reduce its carbon footprint. The government's recent carbon tax – which is payable by local producers – has created a further imbalance in the market that disadvantages local players, he pointed out.

"With the wholesale import of cement from countries unencumbered by a carbon tax, there is no level playing field for responsible local manufacturers who are often undercut by imports not governed by our rules," he says.

The danger of further weakening the South African base of responsible manufacturers, he says, is that the country will need to rely mainly on its own internal capacity if it wants to generate inclusive and sustainable economic growth into the future. With government hoping to raise infrastructure expenditure, there must be strong local construction expertise and products to implement these projects. "An important part of local cement producers' contribution is the skills and technology development that we continue to generate for the South African economy," says Meyer. "We develop skills in local communities, and opportunities for small black-owned businesses, as well as for women and youth in our supply chain. This is a core pillar of responsible manufacturing that the country should support and reward." ⊙

MORE JOBS AND INVESTMENT TO FLOW INTO THE ECONOMY FROM WIND TOWER MANUFACTURERS

According to the South African Renewable Energy Master Plan: Emerging Actions Discussion Document, "to implement IRP2019 would require over 14m solar panels and 3 600 wind turbines alone. This represents a significant opportunity in employment and GDP contribution through annual production across the value chain – a potential of up to R182b annually and 39 000 people employed, to deliver 2 600 MW of new capacity online each year in 2030."

Stakeholders are aware that much of this anticipated investment each year that is expected to flow in from the wind power industry for the next 10 years, will come from the economic benefits of stimulating the local value chain. Supporting this, the latest Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) bid window (BW5) introduced designated local content, which over and above the 40% threshold, requires bidders to procure specific components locally. The Department of Trade, Industry and Competition (DTIC) has reaffirmed this stance on local procurement and the protection of local industry, issuing a briefing note to the Department of Mineral Resources and Energy's Independent Power Producer Office (re-issued 28 January 2022).

The note addresses the DTIC's policy position with regards to designated items and the specific condition that only locally produced or manufactured goods meeting local content stipulations will be considered. The DTIC clarified that the exemption of steel and steel components for wind towers is not granted, in support of local production and content.

This is of course, a win-win for the country's economy as wind turbine towers constitute 20% of the value of a complete wind turbine. Furthermore, as a positive multiplier of economic effects, this ruling helps to drive local investment, jobs and skills, which the country in begging for.

Local OEMs (Original Equipment Manufacturers) are certain that they have more than enough capacity to supply the demand, not only for BW5, but further procurement rounds that the industry expects to come on line during 2022. Not only does South Africa have a local steel tower manufacturing facility with significant capacity, but there are currently also two local pre-cast concrete facilities, one in the Western Cape and another in Prieska, Northern Cape which recently produced concrete towers for Copperton and Garob Wind Farms.

Another advantage for the local economy, is that these concrete towers are 100% local, including raw material such as concrete and rebar steel, aggregates and labour. Hence, this industrial strategy is aligned with the Just Energy Transition Policy and one of many primary benefits of the South African government's REIPPPP.

"We are certain that South Africa has more than enough capacity to supply the demand and meet the DTIC's requirements. This is based on the assumption that on average the wind turbines installed in this latest bid window have an unitary power of 5 MWs, and that the local industry can manufacture more than 2 GW of towers annually, which is 30 to 40% more than the 1,6 GW of BW5's capacity," explained Compton Saunders, Managing Director of Nordex Energy South Africa.

As reported by GreenCape, a non-profit organisation that drives the widespread adoption of economically viable green economy solutions, as the industry gears up to meet the 24 GW of new renewable energy build by 2030, the need for local value creation will increase exponentially, to ensure that the sector contributes of the country's infrastructural needs, Just Transition objectives, job creation in transitioning sectors, and establishing a local manufacturing base.

OEMs, such as Nordex Energy South Africa, play a key role in stimulating local jobs and skills. The company sees the latest Bid Window (BW5), as an important link in driving the local value chain, which will directly stimulate the domestic job market. "Job creation and skills development will be a direct result of these consecutive bidding rounds, as they enable local manufacturing to be re-established," concluded Saunders. ⊙

VOLVO EC210DL – SETTING A NEW ERA IN VERSATILITY

Latest from Babcock is the 21-tonne (t) Volvo EC210DL crawler excavator, which plugs the gap between the existing Volvo EC200D and EC220D models in the 20-t plus market segment. A major talking point is the machine's ability to work with a range of attachments, making it the ultimate tool carrier and a go-to machine for different tasks on any site.

Getting the most out of a machine is a key factor in fleet owners' buying decisions. With a special design focus on versatility and best-in-class fuel efficiency, the new Volvo EC210DL excavator from Babcock meets the ever-changing needs of a market that is continuously searching for increased productivity at the lowest cost per tonne of material moved. The first units have arrived in South Africa, with the official launch scheduled for March this year.

Following the discontinuation of the previous B-Series, Babcock now has the right tool to complement its Volvo EC200D and EC220D models. With more than 265 units sold during the past 12 months, the 21-t segment is the most popular size class in the Southern African excavator market.

"With its 21-t operating weight, the EC210DL slots right in the middle of our two existing models, giving us the ultimate tool to offer our customers in what we believe is the most competitive segment of the local excavator market," explains Lance Mannix, GM Sales and Equipment at Babcock's Equipment division.

Versatility

Ideal for plant hire, general construction and small-scale quarrying, the Volvo EC210DL excavator has a special focus on versatility. This is achieved through its sturdy design and a longer undercarriage for greater stability, especially when working with attachments. The machine features a robust frame, combined with optimal engine power and hydraulic pressure, to provide superior digging forces and fast cycle times for greater productivity in all operations.

"Building on a strong tradition, the new EC210DL crawler excavator from Volvo Construction Equipment is equipped with a range of robust features to ensure a superior performance, shift after shift," explains Mannix. The EC210DL can be fitted with a selection of attachments that work in harmony with the machine to ensure optimal performance and profitability across applications."

To maximise machine versatility, launch units from Babcock will come fully spec'd with hammer piping, which allows for installation of an array of hydraulic attachments.

Fuel efficiency

Powered by the Tier 3 Volvo D5E engine, the machine is designed to lower fuel consumption and reduce operating costs. The powerful Volvo engine works in harmony with the machine's proven hydraulics to provide high torque at low rpm for the ultimate combination of performance and improved fuel efficiency.

For fast cycle times and optimum fuel consumption, the

EC210DL is equipped with intelligent work modes, including the new G4 work mode. Operators can choose the best mode to suit the task at hand, selecting from I (Idle), F (Fine), G (General), H (Heavy) and P (Power max) mode. Choosing the correct mode according to working conditions ensures added versatility and increased productivity.

"The intelligent ECO mode contributes to the machine's total improved fuel efficiency – without any loss of performance," says Mannix. "The design optimises flow and pressure, while maintaining digging power and swing torque."

Productivity

Based on Volvo's understanding that a comfortable operator is a productive one, the excavator is equipped with a spacious and safe operator environment, offering enhanced all-around visibility, an adjustable seat and ergonomic controls. The improved cab interior features a new I-ECU monitor that displays a range of information for efficient operation.

"The EC210DL also features increased hydraulic flow for responsive, accurate control in grading and combined operations. Operators benefit from smoother, easier movement when traveling and lifting simultaneously as well as better grading quality from the harmonised boom and arm movement," says Mannix.

Support

Every machine is as good as its service, reiterates Mannix. Availability of parts is therefore crucial in ensuring machine uptime for customers. With that in mind, Babcock has established a new national parts distribution centre to enhance efficiency of its supply chain process across all the company's operations.

The streamlined central warehouse will stock spare parts and components for all of Babcock's business units and will facilitate the swift dispatchment of items to all its national and regional branches, thus maximising uptime for customers.

With the new excavator, customers will also benefit from Babcock's service contracts. "A benefit of our service contracts is that they are flexible and tailored to meet each customer's unique needs," says Mannix.

A major advantage of Babcock's R&M contracts is increased machine uptime. The vehicles, says Mannix, are serviced by experts, thus the scheduled downtime related to maintenance is kept to a minimum. Machines are also serviced according to OEM specifications all the time, resulting in longer asset lifecycles.

"Volvo machines on service and R&M contracts are monitored via CareTrack, Volvo CE's telematics system. CareTrack gives us a wide range of machine monitoring information designed to save customers time and money," says Mannix.

Finance

For their machine purchases, fleet owners can take advantage of Volvo Financial Services' flexible finance options. Volvo Financial Services, the global captive finance company of the Volvo Group, started operating in South Africa in 2017, and has over the years seen increased growth of its portfolio.

As part of Volvo Group, Volvo Financial Services has in-depth knowledge of the yellow metal equipment market, allowing the captive financial service provider to offer clients a customised solution.

"As a global organisation, Volvo Financial Services leverages local expertise to ensure our local customers' unique business requirements are addressed through personal attention and tailored, competitive solutions. Apart from the machine, which we are sure brings an unparalleled value offering to the customer in the 21-t market segment, our range of complementary services such as repair & maintenance contracts and flexible in-house financing, speak directly to the needs of the modern-day fleet owner," concludes Mannix. ⊙

For more information contact enquiries@babcock.co.za

INCREASING COMPLEXITY RAISES BAR FOR ROCK ENGINEERING

*In this article, **William Joughin, Chairman and Corporate Consultant, Ed Saunders (left), Principal Consultant - Mining Rock Mechanics and Diane Walker (right), Principal Geotechnical Engineering at SRK Consulting** discuss the growing risks of deeper mining and the implications for rock engineering.*

With the world's most accessible mineral deposits already discovered and developed, extraction conditions are becoming progressively more difficult – making rock engineering more demanding. In open pits, slopes are often required to be steeper, with increased production pressures. As underground mines deepen, there is growing risk of mining-induced stresses and rock bursts. Orebodies also tend to be geologically more disturbed, making them harder to mine.

Orebodies are often exploited from surface using low-cost open pit mining, but as the orebody continues deeper, waste stripping becomes excessive and underground mining is considered. The transition from open pit to underground is challenging. Many factors, such as the shape and size of the orebody, rock mass characteristics, geological structure, economics, underground mining methods, environmental constraints, management of water, surface infrastructure and impact on local communities need to be considered.

The decision to leave a crown pillar to prevent pit slope failure and subsidence or remove the crown and manage the failure impacts needs to be made at the very beginning. This decision also significantly affects the design of the access to the underground operation, which in turn affects the timing and cost of the transition. Rock engineering plays a major role in all decisions.

Among the underground mining methods available, block caving is often favoured wherever it is feasible, as its cost-effectiveness makes it possible to mine even low-grade deposits economically. However, it does require higher capital costs, including intensive upfront investigation and analysis. While some other methods provide opportunities to learn lessons as mining progresses, block caving is less forgiving – the correct strategies must be adopted from the start.

All this points towards the growing importance of rock engineering design and the various technical inputs that contribute to this complex field. This applies not only from an economic perspective, but equally from the point of view of health and safety as well as operational risk. More geologically disturbed environments present a higher safety risk, requiring greater engineering effort to execute the mine plan. A comprehensive, integrated approach using a multi-disciplinary team is required, taking into account geological, geotechnical, structural and hydrogeological data. The interpretation of structures and rock mass is vital to anticipating hazardous conditions and can be incorporated into the mining strategies we recommend. The significant impact of water on the stability of pit slopes and underground excavations, especially in shallower operations, highlights the role of the hydrogeologist.

Various methods of analysis are available. Complex numerical modelling can assist in quantifying failure mechanisms, for instance, while a quantitative risk evaluation approach can be used to estimate the impact of slope failure on a mine's net present value.

The quality of the analysis is, of course, only as good as the quality of the data. The tools at our disposal to gather the necessary data are constantly improving. SRK makes the most of existing data to focus engineering works from an early stage.

Incorporating new technologies improves our investigation methods into rock mass conditions and allows data collection to be conducted remotely where access is unsafe or inaccessible. Some remote tools are also proving useful during the COVID-19 pandemic, when it is difficult to travel and to gain access to mine sites. LiDAR drone surveys have been employed to scan narrow-vein stopes before backfilling, for example.

Bathymetric and three-dimensional sonar surveys have even been taken in a mine closed over 50 years ago, improving the spatial understanding of the mine workings themselves, as well as the quality of the rock mass and the stability of the excavation.

The data and analysis must lead to a practical solution, and here there is no substitute for experience. At the end of a complex analysis, the experienced engineer must understand the risks that have been quantified and mitigate these in a safe and cost-effective strategy. SRK can match the most appropriate team from its global network of consulting practices with the project deposit and operating conditions, including structural geologists, hydrogeologists and numerical modellers. ⊙

SANRAL's R600M PROJECT IN THE WORKS FOR MAKANA, NGQUSHWA COMMUNITIES

A R600m project between Makana (formerly Grahamstown) and the Fish River Pass in the Eastern Cape, initiated by the South African National Roads Agency SOC Limited (SANRAL), will provide much-needed job opportunities for communities in the area.

Speaking at a two-day information session that SANRAL convened in Ngqushwa and Makana respectively, Sipho Mahlangu, SANRAL's consulting engineer on the project, said the project will entail upgrading the existing single carriageway to new geometric standards at the various intersections, constructing and extending underpasses to accommodate the new alignment on the road.

"Through this project, we will surface the road and do road markings on the Pikoli Bypass. The Pikoli Bypass was constructed in the previous construction phase of the project, and it will be used in this phase as a deviation route for road users. The bypass still requires additional sealing to be done as well as road markings. These will be done during this phase of construction.

"Additional work on the project includes formalising the T-Junction intersection provided for trucks that turn off to Fraser's camp farm stall. We will also do additional maintenance work of adjacent portions to the N2, as well as extending the climbing lane. Community access roads just off the N2 national road will also be constructed in the local areas of Lewiswood, Mabofolweni and Nobumba, creating further job opportunities for those who live in these areas," said Mahlangu.

The main contractor on the project is yet to be appointed. Welekazi Ndika, SANRAL's stakeholder coordinator for the southern region, said while the entire upgrade of the road is envisaged to take place over 30 months, SANRAL has allocated the first three months at the start of the project to a mobilisation period.

"This is a period in which the appointed contractor will interact with the community and set up Contract Participation Goals (CPG), which is the amount that will be allocated to the development of Small, Medium and Micro Enterprises (SMMEs). These matters will be discussed within the first three months together with the Project Liaison Committee (PLC)," said Ndika.

PLCs are established to ensure better communication and transparency on SANRAL projects, as well as ensuring that work done on projects is done seamlessly.

SANRAL Southern Region's Stakeholder Coordinator Welekazi Ndika presenting SANRAL's 14 Point Plan to SMMEs at SANRAL's information session in Makana.

Presenting SANRAL's 14 Point Plan – SANRAL's guiding tool to improve transparency and openness – Ndika said one of the ways in which this better communication and transparency is realised will be by appointing a Project Liaison Officer on the project.

"This role will be advertised locally. A Project Liaison Officer is an important role because this person is a point of contact between the Project Management Team (PMT) and municipality as well as the communities when projects are started. One of the things that this person will do will be to set up databases of local people that will be employed on these projects. We encourage community members to apply," said Ndika.

Other key projects that SANRAL has started in the area include routine road maintenance on Section 12 of the N2 and Section 13 of the National Route R67, as well as routine road maintenance of the National Route R72 Section between Nanaga and Keiskamma River.

Valued at R52m, the N2 and R67 project is envisaged to take over 40 months, and 24 months have already been completed. A contractor has not yet been appointed on the R60m National Route R72 project, which is envisaged to take more than 30 months. ⊙

UNIQUE PRECAST-CONCRETE RESERVOIR FOR CITY OF EKURHULENI METROPOLITAN MUNICIPALITY

A unique approach has been deployed to construct a new 25 Mℓ reservoir in Pam Brink, a suburb of Springs, Gauteng. With construction now nearing completion, this local innovation has again proved to be a quicker means of building large reservoirs while also providing a higher quality final structure than is possible using traditional construction methods. These are the principal reasons for the Department of Water and Sanitation of City of Ekurhuleni Metropolitan Municipality once more opting to build a reservoir in its jurisdiction using precast-concrete technology. Notably, this is the fourth large reservoir to be constructed in the City of Ekurhuleni Metropolitan Municipality in this manner.

The four reservoirs will help the City of Ekurhuleni Metropolitan Municipality augment water supply in its jurisdiction. This reservoir will cater specifically to the anticipated doubling in demand for water demand as a result of several planned new large developments in Pam Brink and Dal Fouche, a neighbouring suburb. Work on these developments will commence shortly after the finalisation of the construction of the reservoir and related infrastructure.

The system was approved by Tango's Consultants, which was appointed as the design engineer for the construction of the reservoir and to supervise the works programme.

With more than a decade of experience in precast-concrete technology and municipal services delivery infrastructure, Infinite Consulting Engineers played a critical role in the design of the system. As an extension of the principal engineering consultant's office on this project, Infinite Consulting Engineers also provides professional project input. This is in addition to collaborating with Tango's Consultants to ensure that the various aspects of the work scope integrate seamlessly so as to avoid delays. Infinite Consulting Engineers also approves and accepts liability for the final precast concrete structure.

These skills and experiences are being complemented by those of Corestruc, which brings to the project extensive concrete design and application, as well as significant rigging and erection expertise and capabilities.

The roof and walls were erected in as little as three months after the cast in-situ floor, as well as the bases for the precast-concrete roof structure and ring-foundation for the prefabricated wall were completed by the principal contractor, Anita Building. Anita Building was also tasked with the earthworks and site terracing, as well as the construction of the inlet and outlet chambers and all inter-related pipe work. Moreover, the company was responsible for training a large group of subcontractors and locals from poor communities located within the project footprint to work on less onerous aspects of the works programme. Up to 30% of the contract value has been set aside to socio-economic development.

By harnessing precast-concrete technology, the various trades are able to work simultaneously to save in construction time. Using conventional methods, work would first commence with the construction of the concrete floor slab and then the walls. The most complex and time-consuming aspect of the build, namely the reservoir roof, would be left as one of the last items in the construction programme, with work on its supporting columns only commencing once the wall had reached a predetermined height.

The factory is the heart of the project and extensive innovation has been implemented to ensure both efficiency of the production process and quality of the various precast-concrete elements that make up the reservoir system. For example, self-compacting concrete is used to manufacture elements that contain significant reinforcing and where conventional vibrating pokers cannot be used

effectively. Trial mixes were again prepared and tested for strength and durability, while also taking into consideration the workability of the concrete. Working in a controlled environment, Coreslab is also able to ensure the perfect dosages of admixtures. This is to avoid overdosing that may delay early strength development, imperative for uninterrupted production. Another significant focus in the factory is to maintain the perfect water-to-cement ratio to ensure concrete strength. Aggregates from suitable suppliers are also graded appropriately to avoid early concrete shrinkage.

The prefabricated elements are inspected and approved for dispatch to ensure the accuracy of the placement of the cast-in components. Reinforcement bar size and placement are also verified as part of the quality control procedures at the factory.

These steps are complemented by the checks and balances introduced by Corestruc ahead of mobilising to site to commence erecting the structure. Corestruc manages the setting out and installation of the column anchors for the precast concrete roof. By confirming the dimensional accuracies before erection, the company ensures that the beams of the roof structure fit the first-time round. The precast-concrete wall panels are placed and positioned in a similar manner with the assistance of permanent locating plates that are fixed to the ring foundation.

Pam Brink reservoir has an inside diameter of 65,2 m and water height of 7,8 m. The roof column grids for the roof slab and beam span are 10,87 m x 10,87 m.

The roof structure consists of hollowcore slabs that are placed on precast-concrete beams, which are supported by the prefabricated columns. They are connected to the in-situ bases by components that are cast into the precast-concrete columns, also referred to as "column shoes". Similar to the construction of a conventional steel structure, the precast-concrete columns are connected to hold-down bolts in the base. Suspended precast-concrete beams are then installed onto the columns. They are secured with dowels that protrude from the columns. The hollowcore slabs are then installed onto the beams and secured into place. This is achieved by tying the steel reinforcing and placing in-situ concrete into the cores of the prefabricated slabs. Stirrups protruding from the precast-concrete beam act as a mechanical interlock to form a composite mechanism with infill concrete.

The circular wall comprises 170 mm-thick precast concrete panels that have been prestressed vertically. They feature 32 mm-diameter polyvinyl chloride sleeves that have been positioned according to the post-tensioning design.

The panels are placed into position and then supported by push-pull props and steel brackets at the top of each. Unbonded cables are then pushed through the sleeves which are then grouted monolithically with the joints of the panels. Notably, unlike most conventional post-tensioned reservoir walls which are designed to slide, Infinite Consulting Engineers and Corestruc use a "slide-and-pinned" system. Post-tensioning is undertaken when the wall is not yet fixed to the ring footing and it is, therefore, allowed to slide on a steel bearing or locating plates. The coated post-tensioned cables are not bonded to the grout with the reservoir designed to maintain a residual compression of a minimum of 1 MPa in all directions. Horizontal reactions to the wall base are transferred to the ring foundation through the second phase cast in-situ kicker. This is where the ring tension in the base is also activated to resist the reaction. Additional post-tensioning of the lower part of the wall reduces the amount of rebar required in the cast in-situ ring footing. However, the project was not without its share of challenges.

Initially, the municipality was going to build this reservoir using conventional methods. Based on the success that Infinite Consulting Engineers and Corestruc achieved on the other three reservoirs, the client body decided to also build this water-retaining structure in the same manner. Tango's Consultants, therefore, initially designed an integrated column base-to-floor connection. Infinite Consulting Engineers and Corestruc decided to adopt the system because the principal contractor had already procured the floor and base rebar.There are also other important advantages offered by the system that have been noted by the municipality on these projects. This includes the precast-concrete reservoirs' smaller carbon footprint. The vertically stressed precast-concrete wall panels are thinner reducing the amount of aggregate and concrete used to build the reservoir. The hollowcore slabs, alone, reduce the carbon footprint of the structure by up to 40%, which is augmented by the use of prestressed 665 mm x 460 mm I-shaped beams. The self-compacting concrete used to manufacture the various precast-concrete elements also reduces the volume of the construction material required and conserves energy by eliminating the need for vibration.

It is also provides a safer means of constructing reservoirs. This is considering that the various elements are manufactured at ground level and erected on site by a skilled and experienced team.

Certainly, one of the project milestones was witnessing all the precast-concrete elements fitting into place and integrating without any discrepancies to complete a structure that is now receiving and retaining water. ⊙

From left: ***Authors of this article – Kobus Kotze, Director of Infinite Consulting Engineers; Tian de Jager, Director of Corestruc; Willie de Jager, Managing director of Corestruc and Kadiebwe Jean Paul Mulunda,Civil Engineer Technologist of Tangos Consultant.***

CHRYSO Plast Omega 174 allowed the mix designs to be optimised, giving more open time on the fresh mix concrete.

NEW-GENERATION PLASTICISER USED ON MUSINA BRIDGE PROJECT

An advanced new-generation water reducing plasticiser – CHRYSO® Plast Omega 174 – has notched up another successful application. The product has been used in the concrete mixes for the new Nancefield bridge, which forms part of SANRAL's Musina Ring Road Project in Limpopo Province. The R640m project, which allows the N1 to bypass Musina, is due for completion in Q2 2022.

The N1 will pass under the 77 metre long bridge. SANRAL wanted visitors from Zimbabwe and South Africa travelling on the N1 to experience a feeling of being welcomed and the bridge therefore features a prominent pair of 13 metre high 'hands' – which are essentially extensions of the centre piers – which express this message. The deck is supported by the columns of the hands and the bridge is aesthetically held on the palms of the hands.

One of the main reasons CHRYSO Plast Omega 174 plasticiser was selected for the project was that it countered the problem of slump loss. Due to the available aggregate, ambient temperature and distance from site, CHRYSO Plast Omega 174 was tested and found to be the most suitable admixture. Mix designs were conducted by Matthew Barker, general manager at CHRYSO for technical, mining and export at CHRYSO's centre of excellence.

Another challenge was presented by the hot temperatures – up to 45°C – typical of Musina in summer. The concrete temperature needed to be kept under 30°C to prevent thermal cracking. This was achieved by a combination of measures, which included keeping the concrete under shade and cooling it with sprayers, which involved installing a cooling tower to keep the water cool. CHRYSO Plast Omega 174 allowed the mix designs to be optimised, giving more open time on the fresh mix concrete. CHRYSO Plast Omega 174 was the primary product supplied for the Nancefield bridge and was used for the bridge decks, balustrades and the bridge piers with hands.

Just over 3 000 m^3 was required for the concrete of the bridge. The use of CHRYSO admixtures for the mix design was implemented by Jacques Marais, senior plant foreman for the production of concrete at OMV, part of the Raubex Group. The consulting engineers for the project were KBK Engineers.

CHRYSO Southern Africa's personalised technical service offering and logistics were the deciding factor in OMV using CHRYSO as the main admixture supplier for the project.

According to Ben Myburg, technical consultant at CHRYSO Southern Africa, "CHRYSO Plast Omega 174 is a multi-dose admixture, which allows concrete to exhibit extended workability characteristics. It improves the cohesion and lowers the viscosity of a concrete mix, which results in an improved homogeneity and compaction, allowing for superior off-shutter finishes thereby eliminating the risk of repairs. By reducing the need for extra water, it increases the durability of concrete by reducing permeability."

CHRYSO Plast Omega 174 is part of the wider CHRYSO Plast Omega range. Products in the range are ideal for applications such as underwater concrete, pumped concrete, large pours and flowing concrete. ⦿

Left: The prominent pair of 13 metre high hands was designed to give visitors a welcoming experience. Right: The specially designed balustrades follow the angle of the fingers.

CONCOR STARTS WORK
ON FAST-TRACK STUDENT BLOCK

Leading black-owned contractor Concor is hard at work on the latest student accommodation project in Braamfontein, Johannesburg - a much-needed contribution to the national shortage of these facilities.

The Groove, a substantial 13-storey development, will provide space for 899 students, and is conveniently located just opposite the South Gate of Wits University. Concor is working with developer Growthpoint Properties, who in turn is operating on behalf of Durban-based fund manager Vulindlela.

In addition to the new build, the project is also repurposing some of the existing buildings on the site where the old Doves & Kloppers funeral parlour became a familiar landmark on the busy Enoch Sontonga Avenue. These existing buildings will provide additional services and utilities for student residents.

The fast track venture is scheduled for completion in just 12 months, according to Concor site agent MacDonald Ngobese, and began in November 2021.

"Concor has a well-established reputation for delivering complex projects speedily and on budget, while still being highly competitive in terms of costing," says Ngobese, "This places us in a strong position to win projects like this."

He notes that the successful completion of fast track projects relies on having a highly skilled and experienced core team on site, to closely manage subcontractors and to keep s trictly to the construction programme. This also requires constant and in-depth communication with all stakeholders, from the client to operational partners and local authorities.

"The scope of the work includes full fit-out, right through to joinery," he says. "Among the challenges is the very constricted work environment, as the site borders busy urban roads and the M1 highway."

Two of Concor's tower cranes have been erected on site to help deal with space constraints and to expedite the movement of materials in the interests of a fast pace of construction. While one crane is working 13 hours a day on production work, the second is speeding up the off-loading and placement of material deliveries. ⊙

8 MERCHANT PLACE'S 4 GREEN STAR RATING

Identifying the need to improve the quality of its employees' work-life balance, financial group FirstRand planned to achieve this by providing wellness and lifestyle facilities within the existing Merchant Place campus in Sandton, Johannesburg.

Leading consulting engineering and infrastructure advisory firm Zutari played a crucial role in bringing this three-storey building to fruition by providing civil, structural and wet services, in addition to environmentally sustainable design (ESD) consulting.

Known as 8 Merchant Place (8MP), the centre has achieved a 4 Star Green Star Design certification under the Public and Education Building scheme of the Green Building Council South Africa (GBCSA). "This is in line with the purpose the building serves, namely a wellness centre fitted with medical rooms, gym, educare centre, complementary retail and a rooftop entertainment area with a perimeter running track," explains Yovka Raytcheva-Schaap, Associate, ESD Consulting & Project Management at Zutari.

The project is a showcase of the 'one-stop shop' solutions that Zutari prides itself on co-creating with its clients. "Having the civil, structural and wet services all provided internally by us allowed for efficient co-ordination between the disciplines and resolution of any clashes and issues before the construction information was issued," highlights Zutari Technical Director Mark Axelrod.

Zutari's structural scope of work encompassed the design and supervision of the new building, including strengthening the existing columns and underpinning the foundations, while the civil scope comprised the stormwater design. "From a structural perspective, the project was complicated by the geometry of the new floor slabs, strengthening the existing structure and interfacing with the existing services," points out Axelrod.

Calculations revealed that the load-carrying capacity of the existing columns and foundations in the basement was insufficient to support the additional load from the new building. Zutari therefore developed strengthening details for the existing columns using reinforcement concrete collars. This had to be carried out with minimal interference to the functioning of the building and vehicle movement along Bute Lane and in the basements.

Existing services in the basements such as water tanks could not be moved, which posed additional challenges. For the foundations, the underpinning piles were installed eccentrically to avoid existing services. As a result, strap beams were introduced to resolve the eccentric loads. The existing ground slab had a pond and landscaping that had to be removed in order to construct the new elevated ground level.

This consisted of sleeper walls with a BONDEK® slab, which is a profile steel sheeting widely accepted by the building and construction industry for high efficiency and speed of construction. To ensure that the new load was less than that of the existing ground slab capacity, the existing no-fines concrete under the new building footprint was removed.

"Having the civil, structural and wet services all provided internally by us allowed for efficient co-ordination between the disciplines and resolution of any clashes and issues before the construction information was issued."

Mark Axelrod
Technical Director at Zutari.

In terms of wet services, Zutari was appointed as consultant for the internal hot and cold-water reticulation, internal soil and waste drainage reticulation and central hot water generating plant installation, explains Vincent Gieselbach, the wet services engineer.

The design was carried out to meet both Green Star and SANS10400XA requirements. Efficient sanitary fittings were installed throughout the building. Hot water is provided by means of a central hot water system with a heat pump. Comprehensive water metering is installed and connected to the Building Management System (BMS) for optimal water-use management.

Enhanced indoor environment quality was achieved by means of increased ventilation rates, glare-control elements, optimised external views and connection to nature, thermally comfortable spaces and use of occupant-friendly materials and finishes. Dedicated exhaust risers within the tenancies ensure that air pollutants from printing machines, for example, are exhausted outwards.

The building's optimal energy performance results from the selection of energy-efficient HVAC system and lighting, and the rigorous commissioning and finetuning of all services. Where individually enclosed spaces are unoccupied for a period, the BMS automatically switches off electricity-consuming services.

Given the location of the building in the wider Merchant Place campus, 8MP makes use of centralised existing services and facilities such as a standby generator farm, back-up chiller capacity and the wider-campus BMS and parking spaces, which would have had to be sourced independently for a conventional building.

"This arrangement makes the project unique from a reuse of equipment and facilities perspective, which certainly contributes to the improved overall environmental performance of the building," highlights Raytcheva-Schaap.

Waste management was handled in a responsible way during construction of the building. An Operational Waste Management Plan was implemented by the project owner to ensure that, once the building was operational, waste generation is reduced and that a large percentage is diverted from landfill by means of recycling and/or reuse.

Lastly, 8 MP incorporates safety features aimed at limiting the spread of COVID-19 infections and similar viruses. For example, the main entrance of the building, as well as all entrances to the different tenancies, feature touchless doorways.

The drawings for the existing building were all completed on CAD. However, due to the geometric complexities of the new building, 3D modelling was vital for the success of the project. Together with architect Boogertman + Partners, Zutari drove the BIM collaboration on the project, ensuring all services were coordinated on one federated model.

"The benefits of 3D modelling were transferred to the contractor, as initially it was challenging to visualise the complex slab geometry," adds Axelrod. Zutari assisted Trencon to install Naviswork Freedom, as well as demonstrating how to operate the model.Project completion was originally planned for 20 January 2021. However, due to COVID-19 restrictions, the site stopped all work for ten weeks from March 2019, and the project was finally completed on 16 July 2021.

"The ESD credentials of the building, as well as the implemented occupant health and well-being features, are a testament to FirstRand's commitment to environmental sustainability and providing best-in-class support services to its employees," concludes Raytcheva-Schaap. ⊙

KEY FACTS

- Total project cost: R121 115 550 (excl. VAT)
- Gross lettable area (GLA): 3 800 m^2
- Four storeys above ground
- Four Star Green Star rating (Public and Education Building)
- Ground floor: Restaurants, optometrist, hair salon, dentist, etc.
- First floor: Gym facilities
- Second floor: Baby day-care; Play school (1-3), Pre-school (3-5)
- Third floor: Running track, outdoor seating, kitchen
- Roof: Accessible for maintenance

PROFESSIONAL TEAM

Client / Developer: ERIS
Architect: Boogertman + Partners
Civil and structural, Wet services and Sustainability: Zutari
Mechanical Engineer: Adaptive Resource Engineers
Electrical Engineer: Claassen Auret
QS: Vusela
Project Manager: Metrum
Contractor: Trencon

GREEN WALLS STABILISES AND BEAUTIFIES

The Fibertex team works closely with landscapers, architects and building contractors, to design and install environmentally-friendly green-wall solutions, rather than using conventional hard-facing concrete structures for retaining walls.

Fibertex FiberRock 20S and 30S geosynthetic geocontainers are a lightweight, durable and cost-effective substitute for traditional earth retention systems – providing an attractive and efficient protection for slopes and also aid in erosion control.

"Fibertex geosynthetics are sustainable materials designed to protect our precious natural environment," explains Burger Fourie, Technical Sales Engineer at Fibertex SA. "FiberRock 20S and 30S geocontainers are manufactured locally from water permeable needlepunch nonwoven fabrics. By filling these bags with a free-draining medium, like sand, a durable retaining structure can be built, which allows the free passage of water through the structure.

"FiberRock geocontainer are also used as a medium for planting shrubs, which eventually cover the entire structure, to create green wall solutions."

The soil mass behind retaining walls can be reinforced with Fibertex Secugrid geogrids, which is a soil reinforcing geogrid manufactured from high modulus extruded monolithic bars and welded junctions. This material is used to minimise soil deformation under tensile loads over the lifetime of the structure. All variations of Fibertex FiberRock geocontainers are manufactured at the company's plant in Kwazulu-Natal, according to the consistent quality control policy of the Fibertex group, which is held to stringent international standards.

The Fibertex geosynthetics range encompasses a complete portfolio of nonwoven and woven geotextiles, as well as gabions and mattresses, drainage pipes, fittings and erosion control and cellular confinement solutions.

Fibertex also supplies soil reinforcing products, including geogrids and geocells, as well as geosynthetic clay liners, as part of composite lining systems in modern landfills.

The local Fibertex team supports the company's diverse product range with a technical advisory service throughout the African continent. ⊙

AFRICAN CONSTRUCTION EXPO ANNOUNCES REBRAND TO THE BIG 5 CONSTRUCT SOUTHERN AFRICA

African Construction Expo, Southern Africa's construction and built environment multi-award winning, flagship exhibition, has unveiled its refreshed and reworked identity. The event will run as The Big 5 Construct Southern Africa from 2 February 2022.

According to the organisers, leading event company dmg events, this update is reflective of the evolution of its place in a dynamic and transforming market and geography. Whilst a name change and rebrand is significant, the core foundation and vision of the event has not changed and the team are committed to ensuring that they provide a platform that not only unites the Southern African construction sector but demonstrates cutting-edge innovation, and provides a stage for knowledge and business opportunities for industry stakeholders.

After two years of having to host the event digitally, the 2022 edition will be in person from 7 – 9 June 2022 at its usual home, the Gallagher Convention Centre.

Timing of the event could not be better. A key component of South Africa's Economic Reconstruction and Recovery Plan announced by President Cyril Ramaphosa in November 2021 is underpinned by 'aggressive infrastructure investment', with a strong emphasis on localisation, job creation and streamlining of the regulatory framework.

According to Devi Paulsen, Vice President of dmg events, "With a healthy pipeline of infrastructure projects on the cards in both Southern and South Africa, indicators point to a healthy rebound for one of the worst hit sectors by the pandemic. The decisions by governments to develop and invest in infrastructure provides a wealth of opportunities for established players and new market entrants."

"Our decision to rebrand to The Big 5 Construct Southern Africa allows the Southern African edition of this series to successfully align to the strengths of an iconic portfolio of global events, hosted in Dubai, Egypt, Saudi, Nigeria and Kenya, which has been running for over 42 years and collectively welcome over 100,000 participants annually."

With hundreds of global suppliers exhibiting their products and services, a number of thought-leadership conferences, hours of networking, business matchmaking programmes and free-to-attend workshops and talks, The Big 5 Construct Southern Africa 2022 will play host to thousands of attendees from over 40 countries.

"For eight years we have been committed to facilitating buyer/seller face-to-face connections and showcasing the most innovative solutions for the region," says Tracy-Lee Behr, dmg events Construction Portfolio Director. "We believe in accelerating progress in the construction industry to support economic growth and to promote a healthier and more sustainable built environment across Southern Africa," she added.

The Big 5 Construct Southern Africa

The Big 5 Construct Southern Africa, previously African Construction Expo, is a significant contributor to the economic growth, recovery and transformation within Southern Africa's construction industry and places a special focus on facilitating face-to-face buyer and seller engagements and showcasing the most innovative solutions for the region.

The Big 5 Construct Southern Africa will be co-located with Totally Concrete Expo, African Smart Cities Summit, Deck & Flooring Africa and Woodex for Africa. The five events will be held 7 - 9 June 2022 at the Gallagher Convention Centre, Johannesburg, South Africa.

"With a healthy pipeline of infrastructure projects on the cards in both Southern and South Africa, indicators point to a healthy rebound for one of the worst hit sectors by the pandemic."


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For 130 years we've cemented our legacy as a reliable and supportive pan-African industry partner, with a range of hard working, 100% local, 100% premium quality products.
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CCSA PUBLICATIONS PROVIDE PLASTERING GUIDELINES

Hanlie Turner, Business Development Manager of CCSA

Cement & Concrete South Africa (CCSA) has among its extensive list of publications two leaflets which deal with plaster problems which often becomes a nightmare for contractors and have for many years been among the most frequent technical inquiries received by the CCSA and its predecessors.

Hanlie Turner, Business Development Manager of CCSA, says many building contractors are not sure how to evaluate acceptable plastering, mainly because of a lack of formal standards or regulations covering plaster quality. "This makes it difficult for home-owners and other clients to force a contractor to make repairs," she states.

In addition to the tuition in plastering provided by the CCSA's School of Concrete Technology in its regular courses, CCSA publishes two free leaflets with detailed guidelines on plastering:

- ***Successful*** *Plastering* provides the technical information necessary to ensure that plastering is done correctly. It deals with selecting materials (including assessing the suitability of sands), calculating mix proportions, and provides instruction for the preparation of the surface of various substrate before the plaster is applied;
- *Common defects* in plasterdiscusses how to assess if a plastering project is acceptable and covers the most common defects in this part of the building process. The leaflet includes advice on structural and non-structural cracking, debonding, lack of hardness, grinning (when mortar joints are clearly visible through the plaster), expansion and popping. The causes and repair method for each problem are discussed. ⊙

THE CONCRETE INFO CENTRE THAT HELPED SHAPE SA INFRASTRUCTURE AND TECHNOLOGY

The role Cement & Concrete SA's Information Centre has played in providing knowledge for the sustainable infrastructural development of Southern Africa, and the training of top concrete technologists, cannot be calculated but must be immense given the scope of service provided, says Susan Battison, Senior Information Specialist for CCSA.

The Information Centre has steadily grown over the past 64 years and now has over 150 000 seminal reference items on cement and concrete, including information on the latest forms of, and new developments in, concrete.

Established in 1957 as part of Portland Cement Institute (PCI), the Centre has been a part of the PCI successors right through to the Cement & Concrete SA (CCSA), established in March this year. "The Centre has been a valuable and trusted source of information for hundreds of tertiary students who have become some of the world's leading concrete technologists, and now occupy top positions at universities and industry bodies and companies in many corners of the world," Battison states.

She says placing monetary value on the Information Centre's unique collection is impossible. "It is the largest cement and concrete 'library' in Africa and, probably, the southern hemisphere. The true value of the collection lies in the information that has been gathered, and the true potential of this is only realised by accessing and using that information," Battison states. "Despite revolutionary changes in information technology in recent years, the Information Centre collection has kept pace with the latest trends in information dissemination and remains a valuable resource on cement and concrete information."

Part of the CCSA Information Centre's services is the sale of the newly-published and acclaimed 10th edition of Fulton's Concrete Technology, and titles such as Architectural Concrete, Concrete Basics for Building, Concrete Road Construction, Guide to the Common Properties of Concrete, Concrete Industrial Floors on the Ground, Fundamentals of Concrete, Farm Reservoirs and many more. Other publications are listed on the website https://www.cemcon-sa.org.za/information-hub/books-for-sale/. Books may be purchased directly from the Information Centre in Midrand or online at BidorBuy at https://www.bidorbuy.co.za/.

Hanlie Turner, Business Development Manager of CCSA, says the Information Centre handles the sale of all Cement & Concrete SA publications. "Members of Cement & Concrete SA are entitled to take out printed reference works and enjoy a discount on any publication purchased. The business model of the Information Centre has changed within the CCSA stable to be a 'member-only' library. Access to this invaluable collection of concrete technology reference works is highly valued by our members.

In fact, the cost of membership of Cement & Concrete SA is insignificant when the value of information that could be accessed is considered," Turner adds. ⊙

KBC TO ROLL OUT VIRTUAL REALITY SAFETY TRAINING IN 2022

The latest technological advances in training are being introduced locally by KBC Health & Safety in the form of virtual reality. This allows learners to experience a simulated version of real-life dangerous scenarios where they can learn to mitigate the associated risks with the benefit of being in a safe place, explains ***Innovation Manager, Natalie Pitout.*** *KBC is a holistic provider of Onboarding solutions in Southern Africa, as well as induction and other training solutions across the mining industry.*

"The benefit of simulation is that it is not a real-life situation where a possible fatality could result. Instead, any wrong actions can be addressed safely and proactively," says Pitout. Virtual reality is not a standalone competency module, but is being introduced by KBC as part of a blended learning approach. It has been under intensive development for about six months and will be rolled out later this year.

Blended learning means there is a theoretical component designed to impart the necessary knowledge, which learners are then assessed on, followed by a virtual reality experiential component by means of headset goggles. Pitout highlights that this is completely different to virtual training, which is essentially instructor-led training in a virtual environment. Here learners simply login to a platform like Zoom or Microsoft Teams and receive training as if they were in an actual classroom environment.

"A major benefit of virtual reality is that we can put people from different industries together in one room with the same virtual setting," points out KBC Regional General Manager Coastal Ruan Janse Van Rensburg. For example, coal and platinum miners can be engaged together to identify common hazards in their respective segments. "It means we can actually see how different workers react in different situations."

This is made possible by introducing analytics on the back end, an enhancement that KBC is currently refining. "We want to be able to get to a stage where we are actually able to define the risk rating that a particular employee or contractor poses to a company when on-site," says Janse Van Rensburg. "That level of detail is obviously a long-term goal, as we are still in the process of defining the measurement parameters."

Pitout adds that analytics will clearly identify if people are making the same mistakes or whether they are identifying similar risks. "It could most definitely even bring out another training need." For example, if a working-at-height environment is simulated and people are seen to be making the same mistakes, the hazards or risks can be identified for clients and an appropriate virtual reality simulation suggested to remedy that problem. "It might even be that only a refresher course as opposed to more intensive retraining is required."

The COVID-19 pandemic has seen an increased interest in interventions like virtual reality, says Janse Van Rensburg. "It has pushed clients to not only learn how to use the technology, but also to incorporate it into their own training programmes. This is going to prove to be a vital value-add for our clients."

KBC is collaborating with various business partners responsible for the technology itself, while it is the training specialist equipped to carry out the necessary training interventions. "We work hand-in-hand producing the modules, providing the necessary guidance in what we require and exactly how to build the simulation," points out Janse Van Rensburg.

A key focus for the rollout is expected to be the Centralised Induction Training Committee (CITC) in Richards Bay, which has expressed a keen interest in the offering. "The CITC is very open to new thinking and technology. It is not only invaluable for us to have such a partner, but it is hugely beneficial to the mining industry as a whole," says Janse Van Rensburg.

"Due to the trying times as a result of COVID-19, we want to make our clients more aware that we do offer training services like virtual reality which will allow them to deal with any problems before contractors actually go to site," concludes Pitout.

Advantages of Virtual Reality

- Immersive learner experience
- Virtual environment
- Learners tend to learn much quicker with practical experience
- Information is retained better by the learner
- Safer learning environment
- Virtual reality safety training allows for endless repetition
- Allows you to test and evaluate your safety procedures
- Provides insightful evaluation of problem areas.

The Lokotrack® ST4.10™ mobile screen has an extensive 5' x 20' 9 m² screening area and is especially designed for large-scale aggregate screening.

POOR CHOICES PLACE CRUSHING CONTRACTORS AT RISK

As the economic pinch continues in sectors like construction and mining, there has been an alarming increase in the number of companies let down by underperforming crushing and screening equipment, spares support and technical aftermarket support, according to ***Pilot Crushtec Director of Sales and Marketing, Francois Marais.***

"It appears to us as if many companies have selected equipment based purely on price, rather than its suitability for their application."

Francois Marais, Director of Sales and Marketing at Pilot Crushtec

"We have fielded a growing number of calls recently from companies using other manufacturers' equipment, requesting urgent assistance in providing alternatives or support to help them meet their contract obligations," says Marais. "It appears to us as if many companies have selected equipment based purely on price, rather than its suitability for their application."He highlights the devastating impact which these constant – and sometimes catastrophic – technical failures and lack of spare supply have on the performance and reputation of these crushing service providers. With crushing contracts being invariably linked to strict time and output requirements, any downtime can place delivery and fulfilment at risk.

"Even if the equipment can be kept functional, these unexpected repair and maintenance costs can end up rendering a project unprofitable," he says. "What is happening in these cases is that any savings from the capital expenditure on the equipment is being eaten up by fast-rising operating expenditure."

Operating risk

The irony is that it is often the companies whose profitability is already marginal, who try to survive by purchasing low-priced equipment upfront. He points out that this exposes the business to dangerously high levels of operating risk, as any unexpected downtime quickly wipes out the narrow profit margin.

"One bad purchasing decision can push these players over the edge,"

A SOLUTION FOR EVERYONE

As a handling, personnel lifting, and earthmoving specialist, Manitou Group's know-how sets it apart, allowing it to create custom machines and attachments. Its 'Special Solutions' department offers a multitude of adaptations to meet the specific needs of its users.

Load cell jib crane

Manitou telehandlers have a number of applications, some of which require pull force to be measured as pipes 70 to 650 mm in diameter, with a weight of 70 to 500 kg per meter, are unrolled and rolled up. To meet this demand, the Group's teams put their heads together and designed a jib crane with a load cell.

A load cell has been added to the hook of a standard jib crane to enable the force to be measured. The measurement is then displayed on three different screens inside and outside the lift truck. When the maximum force is reached, an audible and visual alarm is triggered. This system, validated by Apave (a group that supports companies in the fields of control through inspection, testing and measurement services), is proving to be effective. For increased safety, a shatterproof film has also been applied to the windshield to make the driver's cab safer, and a blue dot projected onto the floor gives a visual indication of the machine's forward travel. Four telehandlers have says Marais. “There is a mistaken belief that they can ‘save their way’ to profitability – which simply does not make financial sense in this competitive sector.”

He emphasises that successful crushing contractors recognise the vital importance of mission-critical equipment in their enterprises and contracts. They earn their success and reputation by top-class performance, ensuring the production levels that customers demand – and thereby winning the return business necessary for sustainability and growth.

Incentivised by the wrong metrics

“The economic environment certainly makes many firms risk-averse, and this tempts them to trim their capex budgets to unsustainable levels,” he says. “This suggests that they are incentivised by the wrong metrics, and may not have a proper alignment between their procurement mandate and their strategic business objectives.”

He notes that this challenge is also reflected in a prevailing business culture in which buyers feel they are only justified in purchasing after the price is substantially reduced.

“Our approach at Pilot Crushtec has always been clear: we provide the assurance of performance, so that customers do not put themselves at unmanageable risk by purchasing our equipment,” he says. “With this approach, we try to set them up for success, and support them in meeting their own customers’ expectations in turn.” Marais argues that Pilot Crushtec can achieve this because of its 30 years of experience, and the proven quality of its equipment, service, spares stock holding and backup support.

The company invests heavily, for instance, in its on-site stockholding, so that customers do not have to wait usually for parts. It also configures its equipment with everything that customers need, so they are not left stranded in the middle of a project without mission critical features.

“Our decades of experience in the field means that we know what our customers use to improve performance, and we supply these features as standard on our equipment,” he says. “When you consider all the added features that our machines come with as standard, it is easy to be impressed by the value for money that we provide.” By way of example, he points to the Metso Lokotrack LT120 mobile jaw crushing plant, which comes standard with a hydraulic rock-breaker which is a very expensive item to include as a standard.

The unit also boasts the innovative Metso lifting tools system for changing the liners on the jaw crusher, saving more than half the time to replace liners. It also has 30% less hydraulic oil, making for considerable savings that the average customer would not expect. Pilot Crushtec has been the local distributor for Metso for the past six years.

“By saving on downtime and enhancing safety, we help customers remove excessive risk from their projects, so they can build sustainable brands and successful businesses,” he says. “It is no coincidence that the top five contractors in the crushing space rely predominantly on equipment from Pilot Crushtec.” ⊙

The Lokotrack® LT200HPX™ mobile cone crusher just got even better, now with the option of a pre-screen to boost production even further.

been fitted with this new attachment for the same client: an MLT 630, an MHT 790, an MHT 10180 and an MHT 10230. They also feature innovative equipment: four cameras positioned around the machine giving 360° vision on the in-cab screen, two external emergency stop buttons and a rear parking aid.

It took two years to develop this tailored solution in collaboration with the local dealer and the end customer.

Mining telehandler

As well as customizing attachments, Manitou adapts existing machines for use on challenging terrain, including for mining operations. A number of options are added directly to the machine to make it more robust and enhance operator safety. Laurent Cuvelier, Special Solutions Manager, explains: “What our team is trying to do is offer our clients a bespoke service by meeting all their needs. We can satisfy many niche markets by offering comprehensive and innovative solutions that allow operators to work in complete safety”. The fixed telehandler MT 1335 HA is a prime example. Protection grilles are placed over the lights, the engine hood and the cab to protect them from damage. Many of the controls accessible inside are now on the outside, for instance two emergency stop buttons, emergency steering and access to the batteries. The integration of a green and red indicator lamp indicates the machine’s direction of travel. The platform basket has also been reinforced to withstand potential impact with walls. All these options have been designed on the Ancenis site as a result of the combined skills of the design offices in France and Italy (where the Mining Competence Center is based). ⊙

MULTI-BRAND APPROACH BETTER SERVES KEMACH EQUIPMENT CUSTOMERS

Traditionally a single-brand distributor, Kemach Equipment has over the past year transformed into a multi-brand equipment solutions provider, thus providing customers with the convenience and efficiency they need by offering multiple products and services under one roof.

Following the end of its long-term dealership agreement with JCB in 2021, Kemach has adopted a multi-brand strategy that has seen the company entering into distributorship agreements with several premium equipment manufacturers.

"We felt that by being linked to a single brand we were limited to a certain extent. There are several sectors of the South African economy which we couldn't participate in. Previously, we were pretty much limited to the construction sector, and missed out on opportunities in the materials handling, mining and quarrying sectors, among others," explains Les Lothian, CEO of Kemach Equipment.

Business realignment

The business realignment strategy was put in motion in March 2020 when, in partnership with Anhui HELI, Kemach introduced its Kemach Forklift range, giving the company a footprint into the lucrative materials handling market.

"The forklift business has performed beyond our expectations, especially given that we launched right before the COVID-19 outbreak in South Africa. We have already sold over 300 units, with some leading blue-chip companies among some of our first customers," says Lothian.

This was followed by a distributorship agreement with McCloskey International in October 2020, which gave Kemach the footprint in the mining, aggregates, construction and demolition, as well as recycling and infrastructure markets.

Kemach has already recorded remarkable success with the McCloskey offering, averaging a machine a month since taking over. The machine population is evenly spread across quarrying, mining and recycling applications.

"Adding McCloskey to our range of leading brands enhances our ability to satisfy the growing needs of our customers, while also creating the opportunity to strengthen our position as a total solutions provider to the markets we participate in," he says.

In July 2021, Kemach took over the distributorship of the full range of BULL backhoe loaders in South Africa, Lesotho and Eswatini. Leveraging an existing wide backhoe loader customer base, Lothian is adamant that Kemach will be a player of substance in the backhoe loader market in South

Africa, which sells about 1 200 to 1 300 units a year.

"We believe that with the addition of the BULL product to Kemach Equipment's expanding world-class offerings, we have the ultimate earthmoving solution across all industries," he says. "This is a robust product built on the right fundamentals. We will complement it with good support and an industry-first three year/4 000-hour wet drivetrain warranty as standard."

The BULL deal was followed by yet another strategic distributorship agreement with BOMAG GmbH in August 2021, allowing Kemach to market and support the full range of BOMAG's heavy and light machines in South Africa, Lesotho and Eswatini.

"BOMAG is a huge win for us. It fits perfectly well with where the economy is going. Government has announced a massive infrastructure development programme and we are positioned to play a critical role in that," he says. "BOMAG is also a big name in landfill construction, and has had huge success in that market in the last couple of years with the previous dealer. Given South Africa's waste problem, we believe we will play a significant role in that segment."

In August 2021, Kemach Equipment signed a distributorship agreement to sell and support the full range of Liebherr earthmoving equipment in South Africa. The range includes excavators (20 – 100 t), wheel loaders (10,4 – 25 t), bulldozers (20 – 73 t) and a line of telehandlers.

On the construction side of things, Lothian says Liebherr offers a strong offering in the 20 – 30 t excavator segment, which constitutes about 60% of the excavator market in South Africa. The larger excavator range, together with the extensive wheel loader offering, also allows the company to compete at the larger end of the scale, complementing the McCloskey offering in the crushing and screening space. Lothian is also excited about the prospect of having a dozer range in the Kemach stable for the first time.

To complement its range of BULL and Liebherr tool carriers, Kemach has added the Torpedo range of hammers to its stable, effective September 2021. The range was previously distributed locally by Maximum Equipment, which remains a sub-dealer for Kemach in South Africa.

Five pillars

Lothian reiterates that Kemach is building its business around five different pillars – Kemach Forklifts (materials handling), McCloskey (crushing & screening), BULL backhoe loaders (construction), BOMAG (infrastructure development) and Liebherr, which gives the company a footprint in not only construction, but also the logistical handling of mining materials. All of these segments leverage each other, giving the business the much-needed balance.

Apart from diversification into different sectors of the economy, the multi-brand strategy also allows Kemach Equipment to offer a total solution to its customers, especially at a time when customers continue to chase the convenience that comes with dealing with a single provider for their different needs.

"In a crushing and screening application, for example, we are now able to offer a crusher and a matching excavator to load it. At the backend, the customer may need a wheel loader to clean up whatever they are handling and to load material onto trucks. Previously, we were not able to offer that full value chain, but now we can. We have also been very careful in selecting our OEM partners. All the products in our stable complement each other, are of the highest quality and offer true value for money," concludes Lothian. ⦿

C.I.S ENGINEERING INDUSTRIAL STRUCTURES DIVISION NOW FULLY OPERATIONAL

C.I.S Industrial Structures was formed in 2019 as a separate division of CIS Engineering. The Division is focused on fabrication of industrial structures for the building, mining, mineral beneficiation, petrochemical, chemical and water industries. Christo Marais, Managing Director of C.I.S Engineering says that the creation of this focused division has been extremely successful and has already resulted in the completion of several major projects. The division specialises in steel structures in the following broad categories


1


2

1. Building structures

C.I.S Industrial Structures has successfully manufactured a variety of building structures which include:

- Complex residential structures
- Wide span large warehousing
- Factory buildings and extensions including crane support structures

It is worth mentioning that the structure for House Midax, pictured in 1 above, received a recommendation from SAISCE.

2. Process support structures

Mining and chemical process plant inevitably require steel supporting structures. The division has successfully completed several such projects recently and a covering structure installed at a vanadium mine is depicted in 2 above.

3. Process vats and tanks

The division has successfully manufactured welded steel tanks and bins for the mineral beneficiation industry. They recently completed a mega project with sister company Turnmill Proquip for the manufacturing of four leach vats for a vanadium mine (picture 3).

3

4. Mechanical equipment structures

C.I.S Industrial structures manufactures a variety of mechanical equipment structures such as crane beams, sieves and shaker structures and conveyor structures. Depicted in 4 is the steel structure of shaker used in the mining industry.

5. Piping and ducting

The Division has successfully manufactured non-pressurised, large diameter piping and ducting to typical high welding requirements such as AWS D1.1 (picture 5).

The division operates under the C.I.S Engineering Quality system, which is certified to ISO 9001:2015.

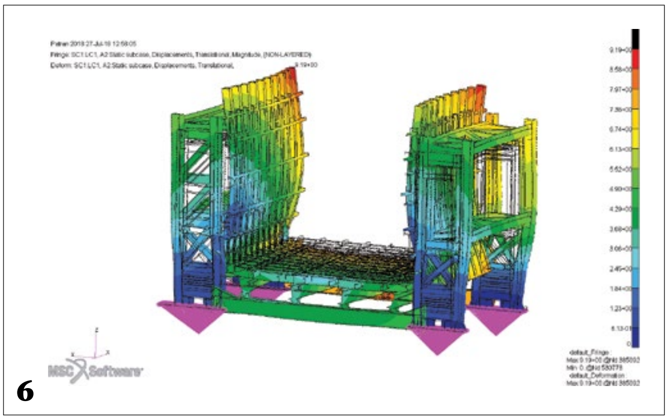
The division is housed in the C.I.S Engineering complex which consists of 10 000 m² of factory space under roof and crane, lay down and despatch areas of some 15 000 m² as well as administration and engineering offices.

The plant houses modern automated and semi-automated steel processing equipment and the division has full access to laser and plasma cutting facilities of sister company Structa Profile, which is housed in the same complex. The division can offer a full complement of associated design services which include draughting, CAD modelling and structural analysis (picture 6).

Says Christo Marais: "We can truly offer smooth product development from sketch to product."⊙

5

4



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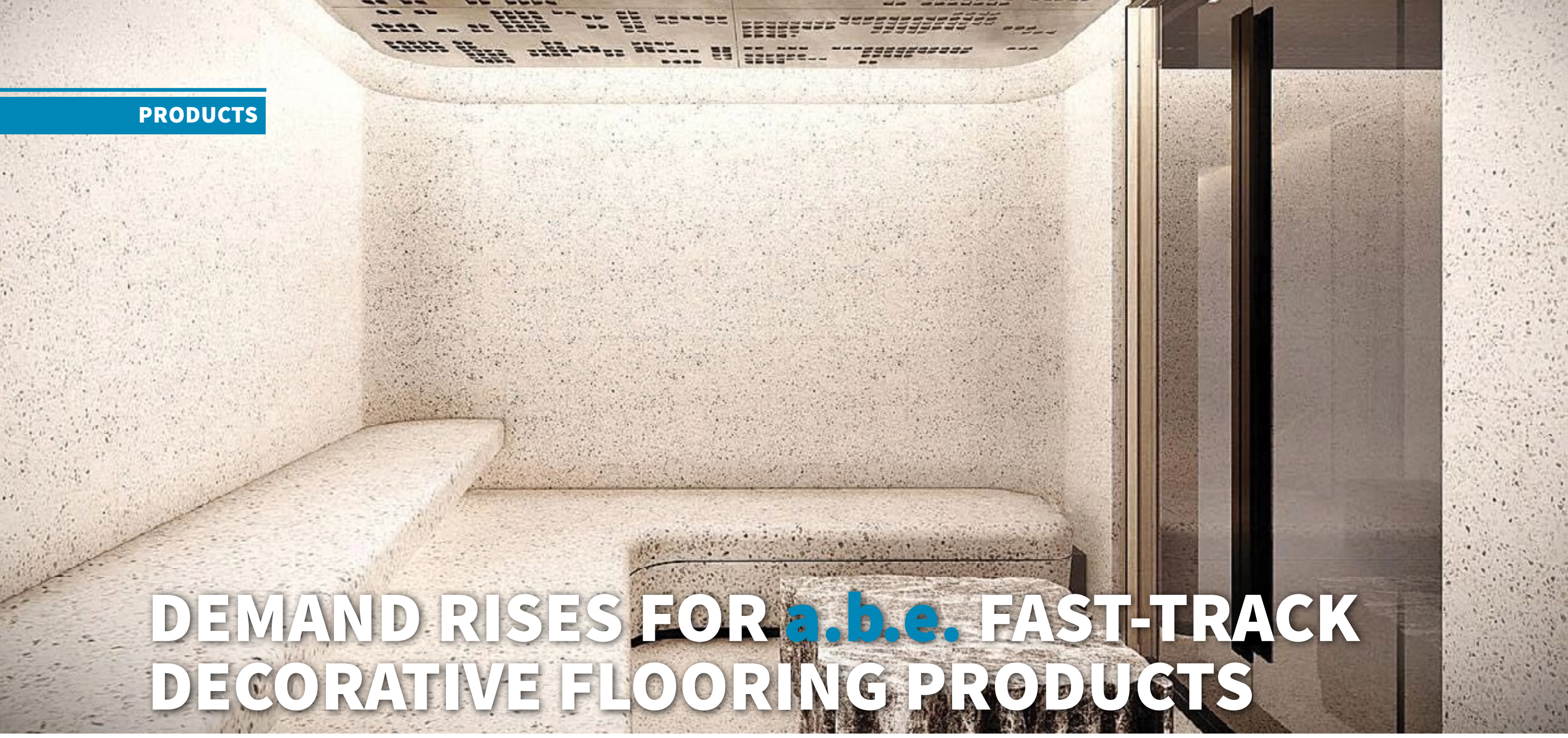

DEMAND RISES FOR a.b.e. FAST-TRACK DECORATIVE FLOORING PRODUCTS

Demand for decorative flooring products from a.b.e. Construction Chemicals has soared over the past few months as the construction sector gained momentum and the spring season inspired home-owners to spruce up their homes, says ***Peter Jones, a.b.e.'s National Sales Manager: Flooring.***

a.b.e., with its head office in Boksburg, is part of Saint-Gobain Africa. Jones says four products which have particularly been in demand both from the construction industry and the residential market are Chryso Granicrete, Chryso Béton Ciré overlay, abecote WD 337 epoxy paint, and abescreed SLCP self-levelling screed.

Chryso Granicrete is a blend of exclusive selected dry powders containing portland cement, hardwearing minerals and additives. The polymer modified cementitious base allows for thin skin topping applications and, once ground and polished, the product offers a hard wearing and decorative finish. The surface may also be Nano-Etched to provide an exposed aggregate type finish, or coloured by adding micronised iron oxide pigments.

Chryso Béton Ciré offers a myriad of applications for the residential, hospitality and tertiary sectors. Applied with spray gun or trowel to obtain the desired finish, the product can be used to smoothen floors with blowholes or surface irregularities, and can cover large surfaces in a short time - about 200 m^2 per day, on average. "The Béton Ciré system, which includes Chryso Béton Ciré Finishing as final coating, can be pigmented to obtain different colours to complement various finishes," Jones explains.

The system is suitable for renovations as well as new construction, both indoor and outdoor, and for application over tiled surfaces. Available in a wide range of architectural features including warm earth colours, it can be used as a plain, burnished or coloured skim application to floors and ceilings and is ideal for columns, stairways, architraves and facades; counter tops; and concrete and MDF wood furniture. It can also be applied to walls.

"Apart from residential applications, Chryso Béton Ciré is now very popular as decorative highlight in stores, restaurants, commercial buildings, hotels, bathrooms, patios and showrooms," Jones states. "Recent projects include residences in Hersham on the Garden Route, and in Simbithi Eco Estate in Ballito."

abecote WD 337 tough epoxy paint, one of a.b.e.'s most respected floor coatings - with a track record of over 30 years - is a two-part, water-dispersed tough epoxy paint that produces a durable and smooth floor coating.

"abecote WD 337 epoxy paint is not only decorative and ideal for DIY home applications, but also robust enough to protect factory and warehouse floors, such as those at chicken farms, dairies, and wineries. It is also widely used at motor workshops and shopping centres."

Some noteworthy flooring projects for which the product was specified include Havanna Hills Wine Estate in Durbanville, Douglas Green Winery in Wellington, SA Breweries in East London, ABI Coca-Cola in Durban, Reebok Pump Station in George, Base 4 Aviation hangar in Western Cape, the NEU Pack Industries plastics extrusion factory floor in Jacobs, KZN, as well as various residences countrywide.

"This is an economical product that can be applied over damp surfaces, and easily overcoated for maintenance. It is exceptionally popular as a protective and decorative coating for masonry and cementitious surfaces and can be used for industrial, commercial and residential applications."

Available in six colours, abecote WD 337 is both oil- and petrol-resistant and has strong impact-resistance as well. It is suitable for cold rooms and ramps as it can be mixed with fine aggregates to provide non-skid surfaces.

Finally, demand for abescreed SLCP self-levelling screed is also running high. This is a single-pack, rapid hardening cement-based screed for levelling floors where quick setting is required. It can be applied by trowel, or pumped.

The product is ideal for fast-track refurbishment and new construction where finishes such as carpets, tiles, vinyl, wood block or cork need to be installed quickly. It provides smooth floors for offices, dwellings, shops, public buildings, airports, warehouses, workshops, factories and other areas subject to similar loads.

"Furthermore, it is normally possible to walk on abescreed SLCP only two to four hours after application. As it is protein-free and will not harbour bacteria, it is ideal for canteen flooring and the medical sector," Jones adds. "This product range is growing and now offers different MPa strengths for specific applications, as well as a.b.e. repair and vapour systems."

CONSTRUCTION SITE SECURITY AN ONGOING CHALLENGE

It has been said that every construction site is a crime scene waiting to happen. Not only are these properties relatively empty after working hours, but those left unoccupied for extended periods owing to work stoppages are even more vulnerable to criminal activities. Valuable tools and equipment left unattended are often too much of a temptation for thieves and vandals to resist.

Then there is the ever-present threat of the construction mafia – armed gangs that invade construction sites, harassing workers and threatening violence unless their employment demands are met.

Site security is an ongoing challenge, says Databuild CEO Morag Evans. "With criminals using increasingly creative ways to access a site and remove and/or destroy construction material, appliances, tools and equipment, criminal activities are costing the construction industry around R1 billion each year, with only six per cent of stolen equipment recovered.

"Besides the expense incurred to replace any stolen or vandalised items, the loss can cause further delays to the project which ultimately, are costlier than the value of the stolen or damaged goods."

While most site managers understand the importance of having deterrents in place, the days of flimsy fencing secured by a chain and padlock are long gone, Evans continues. Instead, construction site managers should look to digital technology as a more effective means of improving on-site security.

"Besides the expense incurred to replace any stolen or vandalised items, the loss can cause further delays to the project which ultimately, are costlier than the value of the stolen or damaged goods."

Databuild CEO,
Morag Evans.

Webcams

Livestreaming work being done on a construction project has proven to be an effective deterrent against theft and other illegal activities. Webcams enable site managers to not only monitor activities from as many vantage points as they choose, but also around the clock, thanks to cloud-based technology. Webcams have also become more durable over the years and nowadays can produce high-definition recordings, with some even including remote zoom, pan and tilt controls to further maximise visibility.

Drone surveillance

Drones are rapidly becoming integral to improving security on job sites. They provide construction teams with an overhead view of equipment, materials and people and thus can be used to spot intruders from a safe distance. Night-vision cameras and thermal sensors enable them to provide imagery that the human eye is unable to detect. Many drones can be operated with a mobile device, which enables site managers to closely survey the entire job site from the comfort of their home or office.

Robot guards

This may sound futuristic, but robot guards are already being deployed on construction sites around Europe and the United States, patrolling and monitoring site entrances and exits 24/7. Always on duty and always alert, these robots move quickly and efficiently to chase down any unwanted intruder and even capture their identity.

GPS technology

Global positioning system technology uses monitoring sensors to track the movement and positioning of materials and equipment on the construction site. The system can be set up so that any sudden changes trigger an immediate alert which is sent to the relevant site manager, contractor or security personnel.

The consequences of ineffective security should never be underestimated, Evans concludes. "The negative impacts of a poorly secured construction site are about more than financial margins and the project outcome; poor security protocols place valuable lives at risk and these can never be replaced."⦿

STEADY SUPPORT FOR SCHOOL OF CONCRETE TECHNOLOGY'S HOME BUILDERS' COURSE

As the construction industry gradually gains post-pandemic momentum, there has been steady support for the School of Concrete Technology's "Mortars, Plasters, Screeds, and Masonry – SCT12" online training course for home builders.

Matthews Magwaza, lecturer at the School – which is part of Cement & Concrete SA – says the SCT12 course was originally developed to assist National Home Builders' Registration Council (NHBRC) inspectors to interpret and assess the requirements of the NHBRC Home Builder's Manual. South African builders must enrol new homes with the NHBRC before construction starts to protect housing consumers' rights.

Magwaza says builders from diverse parts of South Africa, including the Eastern Cape and KZN, have recently completed the one-day course which includes a laboratory session in the form of a virtual presentation, video recording and description. The course is currently presented only online but, should lockdown regulations allow, there are plans to resume live classes in Midrand, Cape Town, and Durban later in 2022.

The syllabus for "Mortars, Plasters, Screeds, and Masonry" includes:

- Factors that affect the strength of concrete;
- The role and selection of cement, sand, stone, and water in the production of concrete;
- Mix proportions for concrete for foundations and floors;
- Floor screeds;
- Properties of mortar and plaster;
- Sand-cement mixes;
- Slump and cube tests for concrete;
- Vital role of proper curing;
- Concrete and clay masonry: expansion and shrinkage;
- Cavity and block walls;
- Importance of movement joints;
- Common causes of cracking; and
- Receiving and storage of materials.

Magwaza says the School of Concrete Technology has generally been impressed by the students' enthusiasm to learn more about concrete and provide satisfactory, sustainable homes. "If there is an area still commonly neglected by the home builders we have taught it is curing.

There still seems to be a great deal of ignorance about proper curing's major influence on concrete durability, strength, wear-resistance, and stability. Even concrete that has been specified, matched, mixed, placed and finished could still fail if the project is not completed with proper curing," Magwaza stated.

The School of Concrete Technology will present several SCT12 courses this year. The first three which are likely to be held online, will be on February 24, March 31, and May 19. Live classes are provisionally planned for Durban and Cape Town in June and August, respectively, should lockdown regulations be relaxed. ⊙

PRECAST CONCRETE MANHOLES AND ACCESSORIES

We all drive over them, complain when they go missing, but seldom realise the crucial role manholes play in the construction of underground pipelines. Rocla, who is the leading manufacturer of precast concrete in Southern Africa, designs and manufactures standard and customised manholes.

Precast concrete manholes provide a working chamber for an easy and cost-efficient access for technicians and their equipment needing to inspect or conduct maintenance.

Placed at regular intervals along the pipeline, used as a junction where stormwater pipes meet up, or where stormwater flow needs to be redirected as well as for ventilation along sewerage systems, precast concrete manholes are still the preferred choice for infrastructure projects due to their durability (lasting up to 100 years). Assembled at site, they are quick and easy to install.

Rocla's precast concrete manhole with an interlocking joint profile together with the application of a sealing material makes for a simple yet effective solution. The Manhole chamber sections are supplied in lengths of 1 000 mm, 500 mm and 250 mm, and are available in diameters of 750 mm, 1 000 mm, 1 250 mm, 1 500 mm and 1 800 mm and 1 950 mm but special sizes can be accommodated. Manholes may be manufactured with step irons to facilitate a safe, steady and easy entry and exit. Special intermediate or larger sizes can be designed and manufactured subject to a feasibility study, and Rocla engineers can assist in this evaluation process.

Accessories

Cover Slabs are available for sealing the manhole chamber. Rocla also manufactures Reducer Slabs for use in deep manhole chambers, enabling the diameter of the chamber to be reduced in order to make it more cost effective. Step Irons can be cast into the wall of the chamber whilst concrete lids are also offered as an alternative to the conventional cast iron lid.

Reported high theft rates of the cast iron lid option often leave numerous manholes open and exposed, resulting in a health and safety risk. The heavy nature of precast concrete lids, combined with the zero-resale value of the precast concrete lid reduces the temptation for theft.

Manhole components can be used with both stormwater and sewer applications. In the case of sewer applications, Rocla will make use of dolomitic aggregates. Precast concrete manholes are ideal where maintenance-free, high quality solutions are required. ⊙


JG AFRIKA
EXPERIENCE QUALITY INTEGRITY