

Construction WORLD



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ON THE COVER

Major South African construction company Concor is currently building a super-basement in Sunnyside, Pretoria as the first phase of the Trevenna Office Campus. It is part of a larger venture driven by the Public Investment Corporation (PIC). This expansive 68 000 m2 basement will service the future three A-grade office buildings of this campus. AfriSam, a leading supplier of superior quality construction materials and technical solutions, is supplying the readymix concrete for the second half of this project. *Construction World* recently visited the bustling urban site where readymix deliveries must be timed meticulously to suit the construction programme.

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Civil construction work has picked up (further) in Q1. The FNB/BER Civil Confidence Index gained 11 points to register a level of 42 in 1Q2023. This is up from 31 in 4Q2022 and is the highest level of confidence in six years. This improved sentiment is underpinned by a marked increase in activity. This also means that sentiment has now increased for four consecutive quarters. It, however, still means that about 60% of respondents are dissatisfied with prevailing business conditions.



The FNB/BER Civil Confidence Index can vary between a maximum of 100 (which indicates that all respondents were satisfied with prevailing business conditions) and a minimum of zero indicating that all respondents were dissatisfied. A level of 50 indicates that the respondents are equally divided between those satisfied and dissatisfied. The fieldwork for the first quarter of 2023's survey was conducted between 8 and 27 February 2023.

The improved business confidence increased because of better activity. Statistics South Africa reported a (smaller) 1,2% annual decline in the real value of construction works in 4Q2022, from the 3,1% contraction in 3Q2022. Siphamandla Mkhwanazi, Senior Economist at FNB says this may point to a further improvement, possibly in 1Q2023. At the moment improvements come off a low base, but they are improvements nonetheless.

The smaller contraction has also led to better profitability after a period during which civil contracts experience profit margin pressure. This, says Mkhwanazi, is what led to the more upbeat mood and increase in the level of confidence.

Although anecdotal, the availability of work is expected to trend higher in subsequent quarters, especially in the third quarter of the year for particularly public sector projects related to water and road infrastructure. Should the tenders for the various expected projects be awarded, it will boost construction work (and the industry confidence) for the next few quarters. In addition, there are private sector investment in the alternative energy sector.

The better sentiment is because of the broad-base improvement in the business environment. Other indices that measure growth in civil construction activity, employment

and profitability were at multi-year highs. But, Mkhwanazi cautions that, given the public sector's poor track record when it comes to delivering infrastructure projects, sentiment may not be as predicted. At the moment indications are that sentiment will keep on increasing on par with the increase of construction work in the civils industry.

Wilhelm du Plessis
Editor

IN THIS ISSUE

This issue's cover story took me to Sunnyside in Pretoria where Concor is building a super basement as the first phase on the new Trevenna Office Campus. This is a 68 000 m² basement and the logistics required by the contractor and the readymix supplier are meticulous.

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HOW SA'S NEW STATE OF DISASTER COULD AFFECT CONSTRUCTION CONTRACTING

South Africa declared a state of disaster in response to the longest and most intense power cuts in the history of the country. The previous state of disaster during the COVID-19 pandemic, had significant knock-on effects for the construction sector, with specific legislation necessitating far-reaching changes. The first set of regulations to the electricity state of disaster were gazetted on 27 February 2023. Construction law specialist Natalie Reyneke, Director at MDA Attorneys, considers areas that may be impacted by the situation.

Less red tape?

It stands to reason that procuring more electricity generation at speed would be a priority in an energy crisis. Consequently, independent power producers (IPPs) may benefit from reduced red tape in the process of getting approvals to bring production projects online. Procuring related goods and services may also be simplified to speed things up.

The regulations enable specific directions to be issued during the state of disaster, such as:

- Removing barriers to developing and building new generation capacity
- Streamlining and speeding up applications and decision-making on energy expansion projects. Examples may include environmental authorisations, condonations and exemptions associated with energy infrastructure and generation
- Energy infrastructure upgrades and repairs may not have to comply with aspects of the National Environmental Management Act
- Expediting the appointment of original equipment manufacturers (OEMs) to fast-track Eskom's delivery of the Generation Recovery Plan

Despite the directions that can be issued under the state of disaster, legislation that governs procurement by public institutions will remain in place.

These are the Public Finance Management Act (PFMA), Municipal Financial Management Act (MFMA) and Preferential Procurement Policy Framework Act.

However, the PFMA and MFMA do contain emergency provisions which apply during the state of disaster. To curb abuse of the system and corruption experienced during COVID-19 state of disaster, any goods or services procured under these emergency provisions must be published and reported to Parliament within a month, including reasons for deviating from the normal procurement procedures.

Accounting officers are required to take steps to ensure that anti-corruption measures are implemented during emergency procurement.

Specific regulations governing PFMA and MFMA emergency procurement procedures have not yet been published, but there are strict confines in both acts, so it will be interesting to see how they can be amended during the state of disaster.

Loadshedding as a claim for time and/or damages

The energy crisis has impacted numerous clients and contractors in various ways. Affected contractors are seeking advice on whether loadshedding, or the unavailability of electricity, is an employer or a contractor risk. The answer depends on the form of contract between the parties. Since loadshedding first became a reality, I have seen several contracts that specify lack of electricity as a contractor risk. In that case, the contractor needs to allow for additional time taken to complete the work, and/or costs for generators.

In contracts that were not as prophetic, the now well-known force majeure clause in standard form contracts would be most obvious place to seek answers. The FIDIC Red Book refers to force majeure as an exceptional event. The question is whether loadshedding would be an exceptional event, given the history of loadshedding in the country.

New contracts being concluded now would need to anticipate load shedding in the immediate term and provide for this in the contract. It is no longer an exceptional event. The electricity shortage is unlikely to be solved quickly.

Changes in law

The COVID-19 state of disaster represented a change in law in some contract forms. This had far-reaching consequences for employers under the standard form FIDIC construction contract - the contractor was entitled to an extension of time and the payment of costs as a result of the change in law. Based on what has been gazetted to date, this change in law does not have significant time and cost impact on contracts already signed and in place. Contracts entered into during the state of disaster must carefully consider regulations that only apply while the state of disaster is in effect.

Quicker dispute resolution processes

Over the past few years, dispute avoidance clauses have been included in the most common standard form contracts (FIDIC 2017 and NEC4). The purpose of these clauses is to identify early interventions to avoid or limit the extent of disputes.

The state of disaster regulations published do not specifically address the avoidance of disputes. ©

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ENGINEERING PROMOTES SUSTAINABLE DEVELOPMENT AND EMPOWERS COMMUNITIES



The World Engineering Day for Sustainable Development on 4 March definitely has an impact on how engineering is perceived, says Elana Forbes, a structural engineer at globally trusted infrastructure firm AECOM. “It is extremely important to increase awareness of the industry continuously,” says Elana.

A motivating factor to get young people to pursue a career in the industry is the idea of sustainability. “We inspire young people to pursue careers that not only are intellectually rewarding and stimulating, but which are also socially and environmentally responsible. We have the power to create positive change through our work, as engineering is not just about technical problem-solving, it contributes to the greater good for society.”

Assistant Resident Engineer Megan de Jongh, says: “If you are interested in problem solving and asking why and how, then you should consider a career in engineering. I believe engineers make the world a better place and that there is a very gratifying feeling from knowing you are making a difference.”

She adds: “STEM careers are for anyone who are willing to work hard and likes a challenge. Being part of a project that improved the lives of the surrounding community has been one of the highlights of my career so far. Sustainable development is a responsibility that we as engineers should take ownership of.”

Luvendren Govender, based in the mechanical engineering department in the Durban office and heading up a fairly young team of junior and candidate engineers and Revit modellers, highlights that the challenges facing South Africa creates opportunity for young engineers and young students who want to pursue a career in engineering to answer those challenges and develop solutions. “It creates a space for them to make a

difference in our local communities.”

Forbes adds that engineering plays a critical role in sustainable development “because as engineers we are responsible to design and oversee buildings and infrastructure that underpins modern society.” She explains that sustainable development is the practice of meeting the needs of the present without compromising the ability of future generations to meet their own needs.

Engineering combines technical aspects with creative design under the umbrella of a multidisciplinary industry. “The best part about the industry is seeing what you create in real life, like driving past a building and knowing you worked on that. Not many professions can actually say so,” says Forbes.

Jean-Pierre Rousseau, Practice Area Lead, Structures and Building Civils, concurs that “engineering is the ultimate playground. The field challenges us to utilise all we can harness from mathematics, science and technology in contributing to how the world is shaped around us.”

In terms of advice for aspirant engineers, Elana says a strong academic foundation is vital.

“Secondly, be curious, because engineering is all about problem-solving and to be successful in your career you must be willing to ask a lot of questions. “Always seek to understand the underlying principles behind your work. If you do not understand something, obtain clarity. And then, of course, there is the importance of getting hands-on experience, because whilst classroom learning is important, it is different from being in the field.

She continues: “Be passionate and committed. Engineering is a challenge,

but it can be incredibly rewarding. To be successful, you must be passionate about your work and committed to learn and grow throughout your career. Always keep an open mind and embrace new challenges and keep on striving for excellence.”

Rousseau advises to take a balanced approach to your learning and development. “Engineering is not only about mathematics. You also need to be well schooled in language. The ability to script, code and programme has become a differentiating factor. Ethics, financial and legal knowledge is also important. In the world of digital integration and global collaboration, good soft skills cannot be understated.”

Govender says: “At AECOM we are quite fortunate in that we get to work on local and international projects, from vehicle manufacturing plants to breweries and infrastructure. We are doing a lot in the BIM space and energy analysis in terms of energy modelling, which speaks directly to sustainability.”

“South Africa is a beautiful country filled with potential and great opportunities in the field of engineering. AECOM has world-class technology, skills and experience readily available for young engineers in South Africa,” says De Jongh.

“The world is your playground,” concludes Rousseau. “South African engineers are ranked as among the best in the world. Our educational institutions are top class, and we graduate into a substantially more complex market than abroad. This spawns innovation and lateral thinking, which are highly rated engineering traits. Locally, our country is battling an ageing infrastructure fleet on all fronts, which needs urgent intervention and creative solutions to ensure a growing economy. What better place to be.” ©



WORLD ENGINEERING DAY, A TIME OF REFLECTION ON THE STATE OF SA'S INFRASTRUCTURE

World Engineering Day for Sustainable Development reiterates the South African Institution of Civil Engineering's (SAICE) view that infrastructure operation and maintenance are complex activities that require a team of skilled technical professionals to avoid compromising the lifespan of assets through neglect.

World Engineering Day for Sustainable Development was proclaimed by UNESCO at its 40th General Conference in 2019. It has been celebrated worldwide on 4 March each year since 2020 as a UNESCO international day of celebration of engineers and engineering.

The celebration of World Engineering Day provides an opportunity to promote engineering as a career and to highlight how engineering can change the world for the better. Steven Kaplan (**pictured**), President of SAICE, believes that this day is an opportunity to engage with government and industry to address the need for engineering capacity and the quality of engineers around the world, as well as develop strategic frameworks and best practices for the implementation of engineering solutions for sustainable development.

16 000 civil engineering professionals, at your service

"Our 2022 Infrastructure Report Card (IRC) reveals that South Africa's public service faces a debilitating shortage in engineering skills. Most municipalities are desperately understaffed in these crucial positions or staffed by people who do not have the requisite training or experience. At the level of leadership, engineering professionals are under-represented on the boards of state-owned enterprises and at senior management level in all spheres of government," states Kaplan.

"Put simply, problem-solving skills and depth of knowledge differ from engineers to technologists to technicians. Infrastructure departments require the correct balance of all three of these professional categories to function well," he continues.

In reality, the proportions of those employed in local government are alarmingly skewed towards the narrower-skilled technicians. As a result, most departments, and especially municipalities, do not have a balanced technical capacity even when they have increased the technical headcount. Many programmes to increase the capability of the public sector have consequently failed.

SAICE has the skills and capacity to assist the State in dealing with the so called shortage of engineers, and with solid programmes in place that assist with the road to accreditation remains open and committed

to assisting wherever possible.

"Our membership base of approximately 16 000 civil engineering professionals remains a formidable repository of knowledge. Through our divisions, which hold vital technical and industry-related knowledge, we can without any obligation provide support in the areas of technology, implementation processes, quality of solutions and training, and development for technical capacity building," explains Kaplan. With this wealth of experience, SAICE has continued to advocate for partnerships between the public and private sectors. "Meaningful partnerships and collaboration will aid in achieving the shared goal of professionalising the public service. We are ready to engage and assist this country's municipalities," he adds.

"South Africa is home to a vast number of civil engineering professionals, many of whom are unemployed, and through adequate use of these engineers we can create sustainable jobs and grow the country's economy. We have excellent, highly-experienced local engineers who need to get first choice when it comes to local engineering work."

Engineers can unlock SA's economic potential

The 2022 IRC highlights how attempts to curb corruption have had the unintended consequence of discretionary powers being withdrawn from even those professionals with integrity, rendering them powerless (or fearful) to exercise judgement they have developed over years of practice.

Kaplan stresses the need to urgently appoint appropriately qualified and professionally registered technical people to plan, identify, procure and manage high-budget engineering projects in order to unlock the economy. The brain drain happening in the public sector is devastating; it costs the country money and resources to produce world-class engineers, only to lose them because they can't find employment.

As a learned society with decades of experience and a membership of more than 16 000 civil engineering professionals, SAICE has the resources to fix, rebuild and grow South Africa's vital infrastructure to world class standards to provide a better quality of life for all, and in so doing, create job opportunities through construction for millions of unemployed South Africans. ©



PROFESSIONAL INCOMPETENCE: THE CONSTRUCTION KILLER

Incompetence of professionals in construction is a matter of life or death. This was the hard-hitting message of the South African Council for the Project and Construction Management Professions (SACPCMP), speaking at the 2023 National Occupational Health and Safety Conference presented by the Department of Employment and Labour in Cape Town this week.

“It is important to realise the sheer danger of incompetence to the boots on the ground at a construction site”, said Sindi Kwenaithe, the SACPCMP’s Executive: Operations, who spoke at the OHS Conference. “In many cases, the construction workforce is a modern pioneer working in remote, inhabitable environments to create safe, habitable environments for others. So, the question arises, who keeps them healthy and safe?”

Kwenaithe addressed OHS conference-goers on the importance of competence to ensure professionalism within the construction health and safety sector. Noting the massive risks faced by those working in the construction sector, she said that construction workers faced extreme environments and, in many instances, under horrendous conditions. Coupled to such hazards were risks of harassment and violence for the female workforce.

“This sector needs competent professionals who are driven to achieve healthy and safe construction sites. Not every occupation has the risks of falls, being caught in or between objects, machinery or equipment, electrocutions, and being struck by an object as frequently as in construction. Expertise and a special understanding of this environment are required to ensure that the construction workforce is protected as well as the public around construction sites,” she said.

The recent disasters faced by communities in the Northern Hemisphere following earthquake devastation brought this message forth even more: “Watching buildings crumble like sandcastles following the recent earthquakes brought into sharp focus the importance of competence and professional ethics in the professions responsible for the construction of infrastructure and buildings that people use, live in, and through which they attempt to eke out a living for themselves and their communities.

This also extends to the competence required throughout the phases of construction, which impact the workforce, and may ultimately impact on quality.” Kwenaithe noted

that the SACPCMP had recently reviewed the way in which it measured and assessed competence for construction professionals. The Council has established mechanisms to establish whether or not a person is capable of providing the services required and, while so doing, protecting the public.

“A little over a year and a half ago, we embarked on a journey to develop competency standards and frameworks for all its professions. Our approach was to move away from the reliance on peer review,” she said. “Looking at the required competencies of the Construction Sector, the move ensures a common language and understanding of standards to conduct competency assessments in a structured way. This competency modelling conveys ability, personal characteristics, skills, knowledge, and behaviour, to ensure an assessment process that is objective and inclusive.”

In addition, the SACPCMP has also included three additional competencies to ensure responsiveness to socio-economic issues. These are Diversity, Equity and Inclusion (the ability to work effectively with people from different backgrounds, culture, gender, race, ethnic origin, age etc); Sustainable Development and Environmental Protection (to embrace environmental, social and economic objectives to deliver long-term equitable growth that benefits current and future generations); and Leading Digitisation (to stay abreast of digital trends to leverage new digital technologies and optimize their application).

“The professionalisation of the Construction Health and Safety Professions is a matter of life and death,” said Kwenaithe in closing her address. “Families have been left destitute after losing their sole bread winners because enough was not done to keep them healthy and safe at work.

These tragedies cannot be ignored and those who are assessed as competent are required to work according to a high ethical standard.

They are the champions of the health and safety of construction workers, and they are what this sector needs.” ©

IMPROVING THE BUILT ENVIRONMENT SECTOR FOR WOMEN

Statistics released in 2022 by the Council for the Built Environment Professions (CBEP) demonstrate that male professionals constitute 86% of the built environment, whilst female professionals constitute 14%. These figures highlight the gross underrepresentation of women in the built environment professions, especially considering that Stats SA indicates that women constitute more than half of South Africa's population.

Further to this, the survey indicated that over 44% of women in the built environment industry identify career knowledge, gender discrimination, racial bias, and inflexible work practices as some of the major barriers in their career advancement.

"The Council for the Built Environment (CBE) joins the globe in celebrating International Women's Day today in recognising their strong presence, leadership, resilience, and contribution towards economic growth," says Dr. Msizi Myeza, Chief Executive Office at the CBE.

The CBE is promoting the participation and inclusion of women in the built environment sector through the Women Empowerment and Gender Equality Transformation Collaborative Forum (WEGE TCF) to intensify the eradication of 'male superiority' and 'female inferiority' in the South African built environment professions.

The WEGE TCF is charged with advocating for a built environment that is safer and more inclusive for women, youth and persons with disabilities. In addition, the CBE's fundamental mandate is to revolutionise the built environment industry, produce qualified built environment professionals, and accelerate the empowerment of women, youth, and persons with disabilities. It's important to note that women are a majority on the CBE's Council and executive management.

In commemoration of International Women's Day and the celebration of women throughout the month of March, the Council for the Built Environment (CBE) convened a webinar on economic empowerment for women in the built environment on 15 March 2023.

The theme will focus on women's economic empowerment - their ability to participate equally in existing markets; their access to and control over productive resources; access to decent work, control over their own time, lives, and bodies; and advocating for them from national to international institutions.

"We at CBE believe that meaningful reform can only occur by collective action, and we encourage all women, youth, and people with disabilities to become a part of the growing movement to achieve gender equality in the built environment," concludes Dr. Myeza. ☺

The advertisement features a dark blue background with a large, detailed image of a Flygt Concertor wastewater pump. The pump is a grey, cylindrical unit with a blue handle on top and a blue flywheel on the side. A glowing blue brain graphic is superimposed on the top of the pump, symbolizing intelligence and adaptability. In the background, there are colorful, abstract wave patterns in shades of pink, purple, and blue. The text is white and blue, providing clear information about the product and its benefits.

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SASSDA QUESTIONS WHY SA STAINLESS STEEL NOT FIRST CHOICE FOR PROJECTS

*Creating increased demand for South African stainless steel within key sectors such as mining, automotive and food and beverage is a key area of focus for the Southern Africa Stainless Steel Development Association (Sassda) in 2023. This was the view of **Sassda Executive Director Michel Basson** in a recent webinar on the 'State of the Stainless Steel Nation' where he provided a comprehensive local and global overview of the sector.*

Basson stated, "The local industry is well-positioned to supply African markets with a variety of world-class stainless-steel products that can rival other global competitors. This presents significant opportunities for local fabricated products including industrial capital equipment for mining, agricultural applications, food processing and health applications."

Sassda has therefore put measures in place to strengthen the industry, provide access to new opportunities and capacity in other sectors, and stimulate local demand.

Basson elaborated; "Local demand can also be stimulated through the designation of local products in infrastructures at all government levels. We see many projects where there's a definite contract requirement for 100% local supply; these companies require exemption from the DTIC."

Punting the use of local stainless steel

In pursuit of its mandate, Sassda is also exploring opportunities to replace numerous applications where galvanized metals are currently being utilised with 3CR12, the world's most specified 12% chromium utility stainless steel. Sassda has various partnerships in place to facilitate localisation in industries such as food and beverage, medical, automotive, cutlery, travel, and containers in multiple countries, providing a range of opportunities for the local stainless steel market.

Sassda has also been assisting with evaluating various government-funded projects and has seen definitive growth in municipal undertakings in certain provinces. "Unfortunately, we are currently constrained by a number of restrictions; however, we are working on these together with our private partners via the Steel Masterplan."

This type of engagement with government forms part of Sassda's broader mandate of engaging in key lobbying efforts for its members. For example, Sassda was able to lobby the dtic to exclude stainless steel from the recently announced ban on scrap export regulations.

A global view

Basson also provided a broader view of the current state of the stainless steel sector globally and locally. He reported that despite various global issues over the past few decades, stainless steel has maintained a steady annual compound global growth rate of 5.8%, which is more than double the growth rate of copper, and 30% more than aluminium. He also highlighted the fact that between 2005 and 2021, China

experienced rapid growth in stainless steel production, while South Africa remained stable at approximately 13% of global production. Basson stated, "Locally, the COVID-19 pandemic significantly impacted the industry over the past three years, resulting in a negative trend in local production and export shrinkage in 2022. Nevertheless, the South African stainless steel industry is still regarded as a world-class supplier. The sector displayed remarkable resilience in bouncing back from the pandemic-induced restrictions."

The power crunch

Locally, stainless steel production and fabrication are currently facing their biggest hurdle to date: loadshedding. This challenge overrides all previous issues, as the total loadshedding hours have already exceeded those of 2021 and 2018-2019 combined. The effects of loadshedding include diminishing staff safety, motivation, productivity, and increased living costs, contributing to a visible decline in apparent consumption during 2022. The South African Reserve Bank has identified this as a huge future risk that could result in social unrest, straining socio-economic stability.

"But we need to be optimistic about the future, and this is possibly the time to rethink what we do and how we do it. The energy issue might be an opportunity to make the industry more energy efficient and less energy dependent," says Basson.

Enhanced access

Against the backdrop of these challenges, Sassda's focus has been on adapting its processes by providing enhanced tools to facilitate easier access to its members' stainless steel products, together with the expansion of the association's education and training programmes. This training includes several accredited CPD presentations that can also be customised.

Sassda also offers a broad range of tools for every level; those relevant to government, partners, the broader industry, and even to non-technical consumers. These tools provide technical advice and guidance.

Basson concluded; "Despite challenges facing the industry, Sassda is optimistic about the future of the South African stainless steel sector, and based this optimism on our industry's cohesive 'strength in numbers'. With these collaborative efforts and the resilient nature of our industry, we remain a strong global competitor in 2023." ☺

WATER SHEDDING LIKELY TO BE FAR MORE DISRUPTIVE THAN LOADSHEDDING

Access to water is a basic human right, as emphasised by World Water Day on 22 March, which focuses on solving the global water and sanitation crisis. “If you touch on the community aspect, load shedding is an inconvenience, but as soon as you do not have access to clean water, it becomes a human rights issue,” comments Elisabeth Nortje, Associate Director – Environment, Africa at globally trusted infrastructure firm AECOM.

“Water is a basic service and critical human need and hence it is key to make it available to all people on the continent,” says Jan-Willem Van Huyssteen, Associate Director – Water Systems, Africa, AECOM. There is a great urgency to effect change in the industry to provide sustainable water supply and responsible sanitation management. Incidents such as the severe droughts in Cape Town and Gqeberha, the widespread failure of the sanitation systems in KwaZulu-Natal and other areas is an indication of a concerning trend in the industry that sustainable water supply and sanitation management requires intervention.

World Water Day is about accelerating change because water affects everyone and requires collective action. “I start to think about the children, the elderly and the sick who do not have that basic human right of clean water, and I realise how privileged I am to have running water in my house and to have relatively clean water all the time,” says Nortje.

Another issue is permitting compliance, with South Africa’s major water users like industry and mining being compelled to conserve this precious natural resource for future generations. Associate Engineer Jonathan Schroder says AECOM’s expertise lies in reconciliation strategies for water supply systems or catchment areas. Such strategies attempt to ensure water security for the time it takes major water projects to get off the ground, which can be up to 30 years.

“We have been doing these studies for the past decade, and what we are seeing is a slippage in terms of the implementation of such strategies,” points out Schroder, adding it is partly due to administrative challenges associated with finance approvals. In many places, the cheapest resources have already been developed and exploited. Any incremental additional volume of water therefore has a tariff implication, with these marginal costs having to be shouldered by already cash-strapped municipalities. Ironically this is resulting in a delay in agreements and implementation on some of the bigger schemes that have lower increases in the unit cost of water due to the scale of the commitment.

Schroder concurs with Nortje that so-called ‘water shedding’ must be avoided at all costs. “Electricity can be switched on and off. Load shedding has an impact on the electrical infrastructure, but not nearly the same impact as water shedding would have on water infrastructure and water leakages and losses.” The problem is exacerbated when municipalities have to limit water resources to the detriment of their own income stream, which is needed to tackle the problem of insufficient water resources.

End user awareness and education is critical, which is where global platforms like World Water Day play a vital role. “It poses a massive challenge because ordinary citizens are often not aware of the extent of our hydrology’s variability, and how much water we are actually using. Our dams are full right now due to the very wet years we have had. But we are actually over-extracting from them; it is only that we have been lucky enough to have had this wet period that we have the luxury of some limited time to address the problem,” warns Schroder.

However, infrastructure capacity constraints are already looming as a constraint to water supply, even if we have temporary ‘extra’ water resources. “We cannot increase the capacity of treatment (for potable supply) infrastructure until we have a reliable additional resource. While there may seem like there is sufficient water in our dams and river systems, to build additional treatment, plant capacity or pump stations and pipes would be premature. If we go into a dry cycle, which is likely to happen in the near future, building that additional infrastructure before the resource is secured is not only premature, but it will also accelerate the speed of depletion of the limited water resource, and incur costs that cannot be recouped,” warns Schroder.

“The fact that the pressure is building is going to force a need for change in end user behaviour,” he argues. For example, following Cape Town’s Day Zero, the city’s per capita use is now significantly lower. “Right now, the pinch has not really been felt, so there is a bit of lethargy in our response to the looming challenges. For me, the concern with water is that if the situation is not corrected and users do not change their behaviour and we move into a water shedding scenario, the problem is the people who are most vulnerable will likely be impacted the most.”

Schroder says: “Unfortunately, many end users are unaware of the risks of their current behaviour.” This includes not paying for or conserving water, which reduces the revenue available to municipalities to maintain existing infrastructure build for the future. In this regard, AECOM is looking to partner with the private sector on a range of initiatives to mitigate this risk. “We still have time to act, and preserve largely functioning water supply systems, but the time to act is now.”

AECOM is well positioned as a local large business with global reach to support clients in solving these very challenging problems. Utilising wastewater as an alternative water source for either industrial reuse or potable supply is an example of such an initiative. AECOM has a strong local process engineering team capable of providing the necessary support to local clients. ☉



*CESA President
Olu Soluade
delivering the
opening address
at the CESA
Infrastructure
Indaba 2023.*

CESA'S ANNUAL INFRASTRUCTURE INDABA UNPACKS PROFESSIONALISATION, **TRANSFORMATION IN SA'S BUILT ENVIRONMENT**

Consulting Engineers South Africa's (CESA) annual Infrastructure Indaba, held recently in Durban, Kwa-Zulu Natal, unpacked the role that engineers continue to play in developing South Africa's infrastructure, which provides the foundation for sustainable development enabling economic growth for future generations to come.

The theme for this year's Indaba, which was held in March, was 'Engineering the Future Now'. It provides a platform for stakeholders from all sectors of the built environment to come together and share knowledge and best practice aimed at ensuring the provision of value-for-money infrastructure for economic development and prosperity.

The Infrastructure Indaba was officially opened by Chris Campbell, CEO of CESA. Olu Soluade, CESA President, during the first session, "Economic Reconstruction and Recovery Plan - Infrastructure Delivery and Maintenance of Public Assets", called for government's enhanced focus on 'professionalising the state' to enable the right people with the requisite skills, experience and competencies being placed in key positions.

"This will ensure that money is spent in a cost-effective manner for both the social and economic benefit of the people of our country.

As an industry organisation, our mandate is to lobby for

positive change within the regulatory environment to enable our members better serve society," he added.

In the focused discussion on "Building a capable state – Engineering Skills - Professionalisation of engineering services in the public and private sector," Professor Mohamed Mostafa, an academic leader (Agri/Civil Eng & LS/CS) from the University of KwaZulu-Natal, emphasised that to enable sustainable development, our country needed to drive centres of excellence across various sectors.

The lack of which would continue to impact service delivery in the country to those who needed it the most: "Poor infrastructure is a serious challenge to the development of communities and economic progress. It changes the lives of communities drastically and contributes to increased poverty."

In driving sustainability and excellence in this country, he believed there was an urgent need to eradicate corruption, lack of accountability and mismanagement; as well as to enhance

the capability and competency of professionals in the public sector, with particular reference to the inclusion of engineers in this space.

“The interference of politics to critical decision making related to the built environment must change as it is not based on engineering. Tenders are run by non-technical individuals, i.e., not engineers, and there is no consideration for quality, functionality, qualifications and technical merits. To address the risk of infrastructure collapsing, we need qualified, competent and professionally registered engineers in important positions across the public space.”

Steven Kaplan, 2023 President of the South African Institution of Civil Engineering (SAICE), highlighted key challenges in the country’s infrastructure space from the recently published 2022 Infrastructure Report Card. He also highlighted the need for appropriately qualified and professionally registered technical people back into the system to plan, identify, procure and manage large-spend engineering projects to unlock the economy.

Campbell added that CESA aims to continue to collaborate with various industry stakeholders that are participating in the Infrastructure Indaba, in order to gain greater public sector confidence and trust. “This will ensure that our intentions are simply that of partnering to optimize the outcomes of infrastructure delivery for the benefit of our people and the economy.”

The Economics of Transformation

The second session focused on transformation was facilitated by Ntembeko Zifuku, MD at HN Consulting Engineers. Andre van der Walt, General Manager at SMEC Power and Energy function in Africa, presented in the second session focused transformation. He provided insights into the transformation journey of SMEC, as well as provided examples of the growth of transformation. “We need large consulting engineering firms and large contractors to be local and to have the necessary capacity to execute large projects – and transformation must be a part of that journey and the move to the future.”

Mahendren Manicum, MD at Naidu Consulting, added: “True economic transformation will only be achieved by embracing legislation, and by how well organisations can transform the lives of the less marginalised in a way that matters – that is true

economic transformation.” Ismail Essa, Head of Transformation at SANRAL, asked a critical question during his presentation: “Is the Construction Charter easy to manipulate to achieve good BEE levels while the reality is not so?” He called on the industry to reflect on their efforts and actions to date regarding transformation. “We believe that more can be done, especially if the efforts can be combined rather than individually, perhaps co-ordinated by CESA and others. The industry is under capacitated, and the upturn of work is the wave to ride in order to grow the industry to reflect the demographics of the country as close as is possible.”

Meanwhile, the last session at the Infrastructure Indaba, “Infrastructure Development and Energy Infrastructure Services”, was facilitated by Dr. Vishal Haripersad, CESA Board member and Regional Manager of Knight Piésold Africa.

Nicky Weimar, Chief Economist at Nedbank, explained that load shedding continues to impact the growth of South Africa’s economy, with the South African Reserve Bank estimating that load shedding shaved 2% of the country’s GDP in 2022.

The energy crisis, she added, resulted in the current dwindling of gross fixed capital formation, which remains critical for the creation of employment opportunities. “Addressing the country’s energy issues will ensure a decent reserve ratio and allow for growth of the country’s economy.”

Sibusiso Ntshalintshali, Head of Energy Transition at the eThekweni Municipality, expressed that the municipality welcomed the State of Disaster on Electricity Crises and regulations that have been developed to accelerate procurement in new capacity in line with the Presidential Energy Action Plan. The municipality aims to reduce reliance on Eskom by 20% 2025 (short-term target), increase local generation to 40% (medium term) and achieve energy independence by 2050 by embracing an integrated energy approach in the municipality to enable a shift from a high-carbon economy to a low carbon economy.

Ntshalintshali was joined by William Joughin, SAIMM President-elect and chairman of SRK Consulting, as well as Prince Moyo, General Manager: Transmission Asset Management at Eskom, who unpacked the National Energy Crisis Committee workstream initiatives and unpacked the utility’s 10-year historical investments in transmission and key priorities. ☺

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TECHNOLOGY HELPS ACHIEVE ‘WATER FOR ALL’



This year’s National Water Week drove the agenda of ‘Water for All’, an objective which SRK Consulting has supported in many ways – one of which has been through its application of isotope technology.

Ismail Mahomed, Principal Hydrogeologist at SRK Consulting, has recently used isotopes to identify the source of water contamination, as a first step in resolving this threat to water security. South Africa is classified as a semi-arid country, emphasised Mahomed, and cannot afford the pollution of its scarce water resources.

In a recent address to the conference of the Network for Industrially Contaminated Land (Nicola), he explained how isotopes had proved a valuable and cost-effective technology to help resolve a contamination issue at a metals processing plant.

Fingerprinting

“A particular environment will acquire a characteristic isotopic composition or signature by virtue of the hydrogeochemical processes involved,” he said. “We can use this isotope signature for ‘fingerprinting’ – giving us clues to trace the source of water, and hence of the contamination.”

In his case study, he explained how spatial variations in deuterium and Oxygen-18 occur in the hydrological cycle – leading to a lower proportion of these isotopes in rain that falls inland than in rain falling at the coast.

“These are among the variables we can use to identify whether the source of water is from surface dams or from groundwater – as the signature from the rainfall will be retained in groundwater,” said Mahomed. “Evaporation also has an impact on this signature as preferentially lighter isotopes will evaporate from the oceans and surface water.”

Tracing groundwater

One of the aspects of the case study was considering the evaporation signature of some of the ponds on the client’s site – a signature which was different to the groundwater. Data analysed during this project suggested that there was some mixing of water from different sources in the underdrain of one of the ponds. He explained that hydrology can benefit greatly from using isotopes in the tracing of groundwater, to help determine the vulnerability and sustainability of water resources.

“The technology helps hydrologists to determine factors affecting water quality such as sub-surface processes, geochemical reactions and reaction rates,” he said. “It can also be used to better understand the relationship between surface and groundwater, and even to detect leaks.”

The United Nations’ World Water Day is also being celebrated in March, with the organisation warning that countries are not making enough progress in meeting Sustainable Development Goal (SDG) 6. This goal aims to ensure safely managed water and sanitation by 2030 for

South Africa is classified as a semi-arid country, emphasised Mahomed, and cannot afford the pollution of its scarce water resources.

Ismail Mahomed,
Principal Hydrogeologist at SRK Consulting.

all the world’s population. The UN has said that there is an urgent need to accelerate change, by going beyond ‘business as usual.

Must move faster

“The latest data show that governments must work on average four times faster to meet SDG 6 on time, but this is not a situation that any single actor or group can solve,” reported the UN. It has called upon global citizens to “be the change you want to see in the world” – by taking action on how they use, consume and manage water.

Among the approaches for accelerating action in water management that SRK Consulting has promoted in its engagements with clients is water stewardship. With water management becoming a key risk for industries like mining, consulting firm EY has rated water as the leading environmental, social and governance (ESG) risk in mining for 2023. SRK Consulting principal consultant Fiona Sutton explained that water stewardship offered a practical process for companies in mining and other sectors to collaborate more closely with partners and stakeholders in managing their shared water resources.

“This approach is also supported by valuable best practice tools like the International Water Stewardship Standard from the Alliance for Water Stewardship (AWS),” said Sutton. “The AWS Standard offers a globally applicable framework for major water users to understand their catchment and their own water use and impacts, with practical guidance on how to effectively manage these impacts.”

Water security

Growing concerns about South Africa’s water security saw Finance Minister Enoch Godongwana announce – in his

recent Budget Speech – planned expenditure on national water infrastructure of R121b over the medium term. This included R3,7b in municipal water infrastructure, through the National Budget facility for infrastructure.

SRK Consulting has been extensively involved in water infrastructure, including facilities for rural water supply points. Gert Nel, Principal Hydrogeologist and partner at SRK Consulting, explained that these water points were vital in providing water to communities, schools and clinics which could not be reached through bulk water supply systems.

Rural support

“However, there is a need to provide more support for these stand-alone supply points, to ensure they are reliable and sustainable,” said Nel. “After the installation of these

facilities – such as boreholes and water treatment systems – there is seldom any backup support or funding to sustain their continuous operation.”

When such facilities are planned, it is necessary to also include aspects such as training, awareness raising, mentoring and on-going support. For instance, there needs to be ready access to technical support for breakdowns, and training on how to regularly maintain or service the equipment. This will extend the life of the installations and improve their value to the community – while reducing the risk of water-borne diseases.

SRK Consulting works with both the public and private sectors in their water management interventions, and applies a range of scientific and engineering disciplines to help achieve the goal of ‘Water for All’. ☺

EXECUTIVE TEAM TACKLE WIND TURBINE HEIGHTS TO BUILD AND DEMONSTRATE LEADERSHIP

Nordex Energy South Africa’s executive team recently completed the Global Wind Organisation’s Basic Safety Training (BST) course to further develop its learning culture for enhanced safety and operational performance. This type of training may be commonplace in the wind sector, but definitely not for executives who rarely have the opportunity to enter a wind turbine let alone ascend the heights of a nacelle, often close to 120 metres above the ground.



This team has collectively worked in the energy sector for close on 100 years, but many of them haven’t formally trained to work at heights or engaged in other formal BST.

Under the direction of the Managing Director, Compton Saunders, the team see this training as more than safety, but a critical part of their leadership approach to connecting and better understanding what the company’s technicians and engineers experience on a daily basis.

“We subscribe to ‘Visible Felt Leadership’, which emphasizes the importance of engagement, personal connection and purposeful action. This helps to provide better support to our teams that service our wind turbines across our nine sites and will ultimately enhance productivity and increase efficiency, going a long way to achieving organisational and team goals,” explained Saunders.

It is this same approach to Quality, Health, Safety and Environment (QHSE) that led to the team of construction staff and specialist technicians currently undergoing on the job experience during, some for as long as six months, at facilities across Europe, as well as in Australia.

“The Nordex Group pursues a long-term target of zero occupational accidents, measuring its performance against a range of parameters to review effectiveness and improve its safety culture. Our team in South Africa, by extension, subscribes to this value, which is why it is

important our leadership team demonstrates this commitment and doesn’t just talk about it,” concluded Saunders. ☺

ABOUT GWO

Global Wind Organisation, a non-profit body founded by wind turbine manufacturers and owners, aims to achieve an injury-free work environment in the wind turbine industry through the deployment of common international standards for safety training and emergency procedures.

Nordex Energy South Africa (NESA), boasts a total installed capacity of more than 1 GW, making it the market leader with 32% market share on the total installed wind capacity in South Africa. By Q1 2022 NESA would have built and will be operating (O&M) nine wind farms (1.1 GW) in the country, under the REIPPP Programme.

The Nordex Group focuses on development, manufacturing, project management and servicing of onshore wind turbines and this has been the core competence and passion of the Nordex Group and its more than 8,500 employees worldwide for 35 years. With the acquisition of Acciona Windpower in 2016, the Nordex Group has become a global player and one of the world’s largest wind turbine manufacturers.

VUKILE APPROVES INVESTMENT IN SUSTAINABLE BACKUP POWER

Vukile Property Fund, the specialist retail property REIT (real estate investment trust), will invest around R350m in backup power as it deploys a strategy to efficiently supplement the electricity supply to its malls. The solution augurs well for continuous trade of all the tenants in these malls, at lower costs and CO₂ emissions than diesel, while providing Vukile with the opportunity to manage the long-term impact of rising electricity costs, its biggest operational cost line item, beyond the current crisis.

The electricity crisis is a risk to retail jobs, livelihoods, and the ability of many South Africans and their communities to function adequately and safely. But specialist retail property investor Vukile has found a cost-saving, reliable and sustainable energy solution to the power crisis for retailers in its large portfolio of primarily township and rural shopping centres.

Laurence Rapp, CEO of Vukile, comments, “The Vukile values of treasuring partnerships, embracing the idea of social cohesion, and driving shared value permeates how we do business. This initiative is not only financially accretive but also drives sustainable malls and ensures that our numerous communities continue to be comprehensively serviced, even in the current challenging context.”

He adds, “It is imperative that all sectors of SA work together, innovate and find solutions to the current national energy crisis and beyond. This exciting initiative is Vukile’s attempt to do exactly this.”

In its quest to help tenants face the challenge of load shedding, Vukile has undertaken extensive research and is investing significantly so that 17 landmark shopping malls nationwide get solar photovoltaic (PV) powered battery systems to give their shops more affordable and environmentally friendly power.

“The electricity crisis poses a risk to our tenants and communities that we cannot ignore, so we have identified a solution that will save money for both Vukile and our tenants in the long run and keep them sustainably powered through and beyond load shedding,” says Itumeleng Mothibeli, MD SA at Vukile.

Emphasising that it is in the interest of all stakeholders to have all tenants trading sustainably within a mall, Mothibeli adds, “Some 70% of our malls trade during load shedding. We would like to increase this number to 100% by giving our retailers the option to tap into a cheaper, more sustainable and clean form of backup power than the currently widely used diesel-powered generators.”

Vukile’s research shows that while diesel-driven generators have been a suitable solution for lower levels of load shedding in the past – and continue to be so in certain cases – in continuous Stage 3 or higher load shedding, the financial cost of current backup solutions makes them no longer feasible in most cases. They carry unsustainably high

fuel costs, substantial maintenance costs and contribute to carbon and noise pollution. On average, total electricity costs for tenants increased by between 25% to 30% based on having to run generators at R8-10/kWh during load shedding over the period January to October 2022. This is unsustainable.

Rather, Vukile will provide its tenants with the option of reliable solar power, which, combined with battery storage, costs less than grid power. This will also save many retailers the hefty cost of installing their own backup systems, particularly diesel generators that are unsustainable at higher load shedding stages. When retailers’ operating costs are reduced, consumers stand to benefit too.

The communities served by Vukile’s malls benefit by being able to meet their daily retail and leisure needs without the stress of power outages. They’ll also have much-needed access to data from the free Wi-Fi networks available at Vukile’s shopping centres during power outages.

Energy management has become a core competency for Vukile, and its energy management solutions will ultimately reduce costs.

Vukile’s new hybrid solar-battery grid-tied systems will give shopping centres at least three sources of power – solar PV, battery backup and the national grid. These silent systems are easy to integrate into malls’ existing power networks, need little maintenance and are simple to expand. They are especially effective for shopping centres, as the busiest trading hours coincide with daylight hours when the sun can power solar PV panels. Retailers have the option to augment this further with generators for days when solar generation is constrained.

The roll-out of this project has been fast-tracked and can be achieved in about half the time required to install generators. The first phase is scheduled for completion by the end of 2023.

“We are excited about this cutting-edge solution which will create value for Vukile and all its stakeholders. It is financially accretive for Vukile, provides a cost-effective solution for tenants and ensures access to retail, food and even data for our consumers. Apart from this, our renewable energy-based solution lightens our carbon footprint. Ultimately, this ensures a sustainable outcome for our investors,” notes Rapp. ☉

VAAL MALL GETS A POWERFUL INFRASTRUCTURE BOOST

Vaal Mall, the shopping capital of the Vaal Triangle, situated in the heart of Vanderbijlpark, is upgrading its infrastructure to include a solar-first power and backup energy system and a convenient new link road into the mall directly from the R57 Golden Highway.

The new 2.5 MW rooftop solar plant, when taken together with Vaal Mall's existing carport solar installation of 1 MVA, increases the mall's total solar power plants to 3 MW.

As part of the project, the mall's diesel generators will also be consolidated to create a hybrid solar and diesel integrated power system for the mall. The system is designed to use solar power whenever available, including during load shedding.

Commenting on this major upgrade, which will help the mall's tenants and shoppers avoid disruptions and live greener lives, Shana Maree-Paraskevopoulos, Growthpoint's Portfolio manager for Vaal Mall, says, "Once this ground-breaking new energy management project is complete, Vaal Mall will be able to stand proudly among South Africa's leading renewable-energy-powered shopping centres. It increases the solar energy we use and decreases the amount of diesel burned, dramatically reducing diesel costs for the mall and its tenants, and benefitting the environment."

The mall's decreased reliance on the national grid and fossil fuels aligns with the environmental commitment of its

owners. Growthpoint has set an ambitious target to be carbon neutral by 2050, with green buildings and green energy helping it to achieve its goal. Flanagan & Gerard continues to embrace renewables and other sustainable initiatives to do their part in the global drive to cut carbon emissions.

Vaal Mall's owners are also building a new link road off the Golden Highway, with a traffic signalled intersection, which will help alleviate traffic into the mall from Barrage Road and Rossini Boulevard.

Maree-Paraskevopoulos adds, "We strive to offer an exceptionally pleasing, hassle-free shopping experience for all visitors, and the new entrance road will go a long way to making shopping at, and getting to, Vaal Mall even more enjoyable."

Vaal Mall's new state-of-the-art energy management system and accessible new entrance point will be complete by the end of June this year. ☺

The mall's decreased reliance on the national grid and fossil fuels aligns with the environmental commitment of its owners. Growthpoint has set an ambitious target to be carbon neutral by 2050.





BALLITO JUNCTION TO ENHANCE ITS OFFERING WITH A MAJOR UPGRADE

Ballito Junction, the popular regional mall on KwaZulu-Natal's north coast, has announced plans to upgrade the original section of the mall, bringing it in line with the rest of its premier shopping experience and enhancing its offering to the community.

The 80 000 m² world-class Ballito Junction on KwaZulu-Natal's Dolphin Coast started as a 10 000 m² convenience centre. After a major expansion, it opened at eight times its original size in March 2017. Now, it is this original cornerstone section of the centre, near Pick n Pay and Dis-Chem, that will be refreshed, enclosed and expanded with a major upgrade.

Ballito Junction is owner-managed by the investment consortium of Flanagan & Gerard Property Group and Menlyn Maine Investment Holdings, resulting in a passionate, hands-on approach to ongoing investment in this singular retail asset.

As part of this upgrade project, the current Pick n Pay entrance will be enclosed, and the adjoining external section of the mall will be expanded to make space for several exciting new restaurants and speciality tenants, all arranged around an attractive piazza. In addition to enclosing the entrance, space for three new restaurants will be created, spilling out onto the piazza.

The greenery and visual attractiveness of the design around the piazza will bring in an important experiential aspect to Ballito Junction overall.

With more than 200 carefully selected stores and six anchor tenants – Pick n Pay, Woolworths, Checkers, Edgars, Game and Nu Metro – Ballito Junction combines convenience with a world-class shopping experience, and its cornerstone upgrade will ensure it provides a consistent and exceptional retail

setting. The upgrade will allow for an enhanced offering by certain existing retail tenants, including Pick n Pay, Pick n Pay Liquor, Polo, Pick n Pay Clothing, Rage, Dial a Bed, Crazy Store, and Sorbet, whilst also creating space for a line-up of new and exciting retailers.

New and exciting brands recently added to the current retail mix include Kingsley Heath, Samsung, Carrol Boyes, Rochester, Uniq, Checkers Outdoor, Pet Shop Science, Little Me, Yokico, Gary Rom Man, Spar Pharmacy, Sneakerhead and Tape.

“The aim of this project is to match the old section with the modern and contemporary look of the mall, while creating an experiential node centred around entertainment and speciality offerings,” explains Geraldine Jorgensen, CEO of Ballito Junction. “We want to refresh the restaurant offering on this side of the mall to create an optimal experience for business people, families and the broader community surrounding Ballito.”

Construction has commenced in February 2023 and completion of the enclosed entrance and new outside section, including must-visit restaurants, is to be complete before the festive season in late 2023.

“Our strategy for this project is to create a base from which further mixed uses can be added to the centre in future, so we are laying the foundations for even more to come,” reports Jorgensen. ©

WHAT SA'S NEW GENERATION OF BUYERS ARE LOOKING FOR

Older Gen Zs (born between the mid-1990s and early 2000s) are beginning to enter the property market in increasing numbers, with a large percentage indicating that they believe homeownership to be a 'high priority'.

This is according to a 2022 survey, which found that 72% of the Gen Zs surveyed are expected to buy a home in the future and that 43% of these respondents are expected to do so in the next five years. To add to this, CoreLogic estimates that Gen Zs made up 9% of all first-time homebuyer applications in the US in 2022.

Closer to home, Grant Smee, Managing Director of Only Realty Property Group says that while affordability remains a key challenge for Gen Z homebuyers, they are continuing to prioritise saving in the hopes of making their homeownership dream a reality.

"While many Millennials opt to rent for the flexibility this option offers, some aspirant Gen Zs have their sights firmly set on buying a home," he says. "Many would-be buyers recognise the strategic benefits of investing in property as a wealth creation strategy. If they're buying a home to live in, they're thinking about the long-term appreciation of a tangible asset and the profit they will make when it comes time to sell. Other young homebuyers are choosing to purchase a rental property that will generate additional income while they continue living at home to maximise their savings (buy-to-let properties)," he explains.

Overcoming affordability challenges

Compared to previous generations, Gen Z is delaying homeownership, with many choosing to live with their family during their first few years of employment to save up enough money to purchase their first property. The rising cost of living in South Africa and the multiple recent interest rate hikes have also resulted in many choosing to rent rather than buy for the foreseeable future as costs associated with buying a home remain a barrier to entry.

"While a lack of funds plays a part in the decision to delay homeownership, this generation also understands that homeownership isn't something that should be rushed in to as it is a long-term commitment with significant financial implications," Smee says.

Young would-be buyers are also holding off on entering the property market to give them enough time to save for a deposit. Data from ooba Home Loans shows that first-time buyers are prioritising deposits more than ever, with the average size of deposits from this demographic rising to 10,1% in January 2023. This is the first time the average deposit size has exceeded 10% since the start of the pandemic.

"However, not having a deposit should not deter Gen Z buyers as banks continue to approve 100% (zero deposit) bonds at record high levels – especially for first-time homebuyers. Homebuyers can also take advantage of the competitive lending environment, with many banks offering buyers interest rates below prime," explains Smee. "Homes are also becoming more affordable due

to low House Price Inflation (HPI) in much of the country. The average purchase price for first-time buyers was R1,12m in 2022 -0,2% below the 2021 average according to data from ooba Home Loans," he adds.

Where they're buying

Lightstone data indicates that Gen Z first-time buyers have a clear preference for metros as opposed to rural areas. Inland, Pretoria proved to be most popular for first-time buyers, followed by Johannesburg, eMahlani and Rustenburg.

On the coast, Cape Town saw the majority of first-time buyers, followed by Gqeberha (which has seen a spike in young homebuyers in recent months), and Durban.

"While many Gen Zers are interested in living in cities, they are also looking for affordability, prompting them to choose up-and-coming neighbourhoods on the outskirts of urban areas rather than the most expensive neighbourhoods in the city centre," says Smee. "As the most tech-savvy generation to date, they're also primarily using technology to inform their purchasing decisions and to find a home," he adds,

What they're looking for

Smee shares that this generation is very deliberate in their property strategy and has clear preferences when it comes to the home of their choice. He lists some of Gen Z's top homebuying preferences:

- **Lock-up-and-go.** "The majority of young buyers don't want to be responsible for the maintenance required when purchasing a large freehold home and instead prefer sectional-tile. These units are easier to rent out, which is often a key part of the Gen Z property strategy."
- **Mixed-use developments.** "Mixed-use developments typically include a variety of amenities such as restaurants, shops, and entertainment options, all within a convenient walking distance. Units within these developments are often more affordable and offer greater opportunities for socialisation, which is important to Gen Z buyers."
- **Sustainability-focused.** "Gen Z is environmentally conscious and is increasingly looking for sustainable features in homes. This includes everything from energy-efficient appliances and solar panels to eco-friendly building materials."

Finally, he shares that when Gen Z homebuyers decide to enter the property market, affordability is their number one priority. "They are often looking for smaller, more affordable homes or seeking out areas with lower housing prices. Some are also considering alternative housing options like tiny homes or co-living spaces, and we expect these to be trends that will dominate the residential property market in the next few years," he concludes. ©

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AFRISAM READYMIX FOR SUNNYSIDE'S NEW SUPER-BASEMENT

Major South African construction company Concor is currently building a super-basement in Sunnyside, Pretoria as the first phase of the Trevenna Office Campus. It is part of a larger venture driven by the Public Investment Corporation (PIC). This expansive 68 000 m² basement will service the future three A-grade office buildings of this campus. AfriSam, a leading supplier of superior quality construction materials and technical solutions, is supplying the readymix concrete for the second half of this project. Construction World recently visited the bustling urban site where readymix deliveries must be timed meticulously to suit the construction programme.

Martin Muller, Senior Contracts Manager at Concor, says that the basement is 20 metres below ground level. “The scope of the project is to build a 68 000 m² super-basement structure of five levels of reinforced concrete slabs which will form parking for the overall Trevenna campus. It ties into the existing campus which already has three buildings.

“The super-basement that we are building in this multi-phase development has the capacity to facilitate another three office buildings on top of it. Concor is responsible for the extensive underground services such as sewer and stormwater infrastructure, electrical reticulation, lifts to the ground floor and access control,” says Muller.

Trevenna's challenges

Muller says that apart from meticulous planning and management of logistics because of the site's urban location, the ingress from surface and groundwater and rock conditions posed challenges. “The site is below the water table and we therefore had to contend with large volumes of groundwater when we started with the bases. “Water had to be pumped out of the worksite and into the stormwater system,” says Muller. “The client has a water usage licence and on average, since bulk earthworks started, some 40 million litres have already been pumped out.”

The blasting was done by the bulk earthworks contractor

and once this portion of the contract had been done, Concor moved onto site in February 2022. “This was a phased handover of the basement because of the amount of work and the challenges experienced by the bulk earthworks contractor with the hard rock – up to 250 MPa - and groundwater,” Muller says.

The basement is constructed off conventional bases on this hard rock as it is sufficient to support the structure with no piling required,” says Muller.

“The way in which we have managed these potential risks showcase Concor's experience and expertise on functioning on complicated projects to be able to meet the client's deliverables,” adds Muller.

The limited working space necessitates that the rebar and formwork are stacked on the deck itself that has already been completed. The footprint of the basement extends across almost the entire site. “Logistics, material handling and deliveries are critical and require careful and meticulous project planning to ensure that materials arrive in line with the construction programme, which relates directly to AfriSam's - the readymix supplier - deliveries,” says Muller.

In-situ construction of post-tensioned beams

All the beams used for the super-basement are post-tensioned. This enables the use of thinner slabs that use less



The basement is 20 metres below ground and covers 68 000m² over five levels.

concrete and rebar and adds to the overall project's green star strategy. "There are no transfer beams on the ground floor – normally you transfer the top load down to the columns with transfer beams.

In this case we have shafts that stiffen the structure below so there is no need for transfer beams as the loads are directly on the columns. The entire structure is stiffened up by the shear walls and the lift shaft," says Muller about this design innovation.

The concrete mix required for the readymix

Readymix concrete is pumped for this in-situ construction of the post-tensioned slabs. The concrete mix is a green star mix (three or four stars) and is likely to be higher for subsequent phases.

"At tender stage it was specified that the concrete had to have a 30% replacement of cement. AfriSam used these requirements to match them to the available materials in the area and indicated that the readymix concrete would be extended with fly ash. In addition, we had to supply the readymix concrete from a plant in close vicinity to the site location," says Mervin Govender, Regional Sales Manager AfriSam.

The engineers specified that the concrete suppliers had to design various strengths: 40 and 50 MPa for the columns,

35 MPa for the walls and 30 MPa for the slabs.

For the post-tensioned concrete mix, the engineer NAKO ILLISO required shrinkage tests which is a three week process to determine how much drying shrinkage the concrete will experience over time to ensure that there is no cracking later in the structure. These tests required that the drying shrinkage not exceed 400 micro strain.

AfriSam has the advantage that it has almost 90 years of experience in the industry. "We have lots of history in terms of our various quarries with regards to what deposits it contains and we understand the inherent and physical properties well, to the extent that AfriSam has published a Technical Reference Guide which is available on our website at no cost. We have knowledge of cementitious products and the extenders that we use to reduce the carbon footprint – the concrete mixes for this project have been extended with fly ash in line with the engineer's requirement to meet green star standards.

"AfriSam's Ferro readymix plant in Pretoria North is the main supplier plant for this site – it is based 14 km from the construction site," says Nithia Pillay, AfriSam's Regional Product Technical Manager: Construction Materials. It is adjacent to AfriSam's Ferro aggregate quarry and has the capacity to batch 60 m³ of readymix concrete per hour. "We have 14 base trucks at Ferro. For scheduling



Left: Concor is currently building a super-basement as the first phase of the Trevenna Office Campus. Right: The structure will contain 2 300 tons of rebar.

purposes, Concor supplies AfriSam with their concrete requirements for the week in advance. We either confirm, cancel or move orders as required which in turn enables the resourcing of the plant from a trucking, material and staff complement perspective.”

He explains that the batching is computerised. “The plant is fully automated and uses Command Batch software, a US based company that services readymix companies worldwide.

“Each load that leaves the plant is accompanied by a batch printout which highlights if there are any deviations from the target mix design. This is expressed as a percentage in relation to the limits set by SANS 878. This standard sets out percentages for every material type in terms of allowed deviations. AfriSam has tightened these percentages from e.g. 2% for cement down to 1%,” says Pillay.

He adds that the supply of readymix to this urban mega basement project has logistical challenges as readymix has to be transported to the construction site and requires efficient planning to ensure timely delivery.

An added benefit is that AfriSam is able to produce readymix during loadshedding as all its plants have been equipped with backup generators. This allows for uninterrupted supply of readymix concrete.

Batching and testing

Pillay explains that the plant loads in three batches as this provides the system the opportunity to correct itself in relation to over- or under batching.

“Everything is automated,” explains Pillay. “The batcher provides oversight and support for the system and will check moisture content of the fine material as it will affect the strength and workability of the concrete. The moisture content check is done every hour to ensure that consistent product is supplied from the plant,” says Pillay.

AfriSam conducts its own internal testing. “We have roving mobile laboratory assistants and aim to test every 125 m³ that is dispatched. The site’s own testing regime is more comprehensive and tests after every 50 m³ that is poured or cast. AfriSam conducts split testing with the site laboratory to ensure that there is directly comparative results between two independent sources ”

This process control ensures that there is consistency in terms of product that leaves the plant and delivered to site.

Pillay adds the readymix concrete for a project with tight timelines needs to tick various boxes. “Speed, consistency,



Readymix concrete is pumped for the in-situ construction of post-tension slabs.

flexibility, cost-effectiveness and durability are some crucial aspects. In addition, it is important that the readymix is delivered in line with AfriSam’s aim of environmental sustainability where, aside from the product that reduces the carbon footprint, it must be delivered in a responsible manner and reduce waste and emissions.”

Pumped concrete

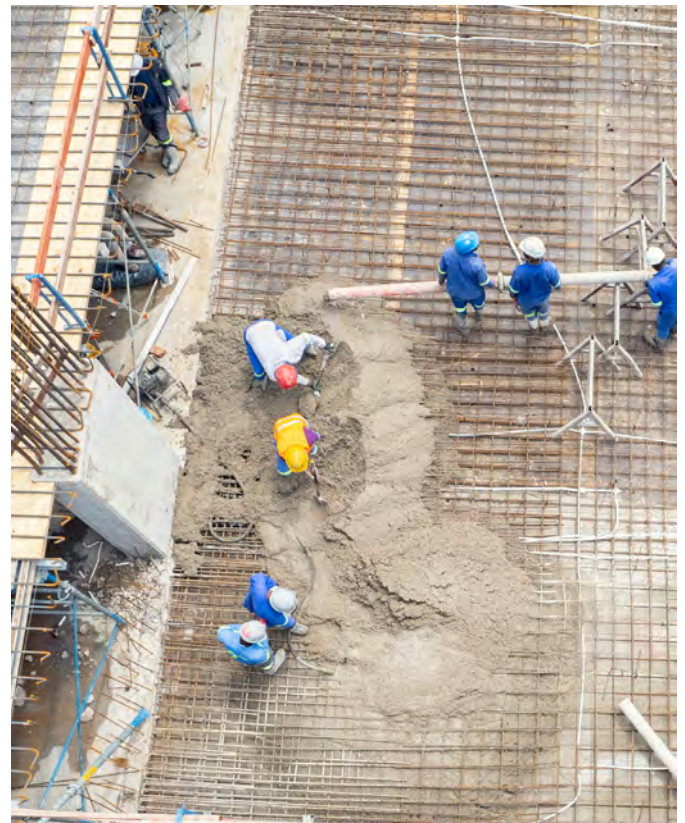
As construction progressed, all concrete now has to be pumped for the super-basement. Pillay says that pumped concrete is different in design to directly discharged concrete, the design methodology for pumped concrete involves reducing coarse aggregate and increasing fine aggregate to enable improved flow of the concrete via the pipe line delivery system. ☺

SAFETY

Concor has a commitment to safety and zero harm. This has earned it the highest safety rating on the Trevenna. The Master Builders Association (MBSA) awarded the project a Five Star Safety Grading. Concor also achieved first place in the 2022 MBA National Safety Competition. The project had not had LTIs at the time when this interview was done.

INTERESTING FACTS

- 2 300 tons of rebar in the structure
- An average of 250 labourers on site
- 15 students from Tshwane are their internships on site
- 15 local subcontractors (SMMEs) ward 81 Sunnyside area
- 44 subcontractors on site currently
- 15 000 m³ of readymix from AfriSam



Pumped concrete has less coarse aggregate to enable the concrete to be pumped in a constricted space.

CONSTRUCTION SECTOR WAITS FOR GAME CHANGING ACTION

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

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

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

He noted the importance of how Finance Minister Enoch Godongwana dealt with plans to restructure Eskom's capital debt, as any worsening of the energy crisis could undermine the economic predictions in the budget speech. If loadshedding was exacerbated, he felt that the country may not even reach its meagre 0,9% growth target for the year. In such a scenario, government's own spending plans would be further dampened by lower tax revenues.

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

Focusing on the construction industry, Dr Jammine once again painted a sobering picture – but highlighted the sector's potential to deliver economic benefits. He reminded his audience that construction provides 7,8% of the country's employment, even though it makes up just 2,6% of GDP.

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

Commenting on Dr Jammine's presentation, Richard Tomes, Sales and Marketing Executive at AfriSam said: "Although the operating environment remains challenging, one of the positive elements AfriSam has noted is the increase in the infrastructure spend budget allocation, and we remain hopeful that the implementation of the infrastructure projects will gain momentum and start delivering true value for the construction industry." Considerable overcapacity was still evident in the non-residential building sector, especially commercial office and retail space.

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



"Where the real hope lies is in government getting its act together and starting to implement its capital projects."

Econometrix Economist,
Dr. Azar Jammine.

AfriSam SA Budget Breakdown Event

About this annual event itself, Tomes remarked that AfriSam's purpose is to make valuable information available to the various stakeholders that interact with its business. "With many of us operating in the same industry, material matters such as the external environment we operate within not only relates to AfriSam but also to our stakeholders' businesses.

We hope that the information being shared at an event like this will not only provide them with insight about some of the decisions that AfriSam takes but will also provide them with valuable insights to enable decision-making in their own businesses or organisations to ensure their future success and sustainability. ☺

BUILDERS LAUNCHES BUILDERS PRO BENEFITS PROGRAMME TO BOOST TRADESPEOPLE'S BUSINESSES

More South Africans are feeling the pinch of the rising cost of living, including the country's small and medium-sized businesses. According to Business partners' SME Index, unfavorable economic conditions, exacerbated by loadshedding, petrol price hikes, and COVID-19's lingering effects, contribute to low business confidence among the country's SMEs.



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promotion, services and deliveries paid for. Category 2 rebates will be 2% against the amount spent over 12 months.

These benefits will help more of the country's small and medium-sized businesses overcome challenges such as cash flow, access to quality building and DIY solutions, and help tradesmen establish sustainable small businesses that can weather economic storms.

Marketing Head at Builders Janet Booysen says, "We realise that loyalty programmes are more crucial than ever to South Africans, as many consumers turn to them when they need to stretch their pockets and make the most out of their everyday purchases. We want to ensure that our essential tradespeople also benefit from these rewards as

To help address these challenges, Builders, the leading home improvement, DIY, and building materials retailer, has introduced the Builders PRO benefits programme to help tradespeople (plumbers, electricians, carpenters etc.) navigate the country's increasingly challenging economic conditions. The programme offers tradespeople savings-related benefits such as incredible deals, and personalized offers on DIY products and services, from construction to gardening and even maintenance projects, tailored to their businesses and, most importantly, their customers' needs.

Builders PRO customers will be the first to know about new launches, have the option of a virtual or physical card and most importantly, get money back as a rebate on all cash purchases allowing them to save while getting more work done. The Builders Pro card entitles cash trade customers to a rebate after spending R50 000 or more in cash excluding VAT, within a specified 12-month period determined upon sign-up. For example, if the period is 26 December 2022 to 31 December 2023, the rebate will be paid into the customer's Builders Pro profile at the end of February 2023.

Tradesmen who spend over R50 000 within 12 months through the Builders PRO programme will qualify to have their rebates aligned to the stock category they purchased during the period. Stock categories qualifying for the rebates include:

Stock category 1: All stock purchases excluding category 2 purchases receive rebates from 3-5% based on the amount spent over 12 months.

Stock category 2: Sand, stone, cement, concrete, steel and wooden trusses and truss covering, all non-stock buyouts,

small businesses are responsible for the country's economic growth by contributing to job creation that sustains many South African households."

The popularity of rewards programmes remains high among South Africans, who turn to them to help them navigate this challenging economic period and stretch their pockets. The 2022 Truth and BrandMapp Loyalty Whitepaper highlights this dependence, revealing that 73% of South Africans use loyalty programmes consistently.

Builders says its PRO programme will allow SMEs to also reap the rewards of a benefits programme that can alleviate some of the difficulties their businesses face.

"The country's tradespeople have unlimited potential to alleviate South Africa's challenges, including the job crisis, which is why we're so invested in this sector's survival and recovery following the impact of the pandemic. In addition to the benefits our programme will offer these customers, we also hope that finding new ways to support this sector will encourage more South Africans to pursue a career in this field and plug into the skills gap in the market," adds Booysen.

According to South Africa's Department of Higher Education and Training's recently published list of high-demand occupations, the country continues to experience a scarcity of individuals trained and qualified to meet the demand for crucial artisanal jobs such as plumbers, electricians, and builders.

The list highlights how these artisan-based businesses, which serve homeowners, have different development needs to other industries and require increased focus to enable this segment's growth. ☺

SA SHOULD USE MORE RECYCLED CONCRETE AS BUILDING MATERIAL

The many benefits of using recycled concrete as a construction material are often overlooked and not fully utilised in South Africa, says Bryan Perrie, CEO of Cement & Concrete South Africa (CCSA).



Perrie says the use of recycled concrete could reduce the carbon dioxide emission of concrete as well as lower the depletion of natural resources and dumping of concrete at landfill sites.

“The demolition of in-situ, precast and tilt-up reinforced concrete can be achieved relatively easily by modern, cutting, breaking and lifting equipment. Once demolition of post-tensioned concrete has been completed, the concrete and reinforcing steel can be separated for recycling. Recycled concrete can be used as aggregate for building products such as bricks, blocks, layer works in road construction, or land reclamation thereby reducing the amount of material sent to landfills. This recycling also reduces the need for new virgin materials thereby saving resources and the energy required to process them. Crushed concrete absorbs carbon dioxide,” he states.

Perrie also feels that at ready-mixed concrete plants, wash water could be collected and reused in fresh concrete, and aggregate from returned concrete screened out and reused to reduce the amount of waste generated at the plants. Precast components from structures should also be considered for reusing in new buildings instead of simply demolishing and recycling the concrete. Structures using precast elements can be designed for such reuse.

He adds: “In former industrial areas and inner-city precincts, there are many old factories or old warehouses that can be converted into acceptable dwellings. Concrete buildings can often be adapted relatively easily for new uses. Unused office space, for example, can be retrofitted as residential accommodation.”

The benefits of reuse and retrofitting include:

- Saving of natural resources, including raw materials, energy and water required for new structures;
- Reducing the quantity of solid waste sent to landfill; and
- Lowering the energy consumption and pollution emanating from the extraction, manufacturing and transportation of virgin materials.

“The durability of concrete structures is a key factor in their suitability for reuse. The architect or designer needs to apply many different strategies to ensure that the structure is sustainable in terms of its environmental and social impact, to minimise the use of energy, to minimise the use of water, and the generation of waste during the life cycle of the building. All of this can only be assessed by carrying out a full life-cycle assessment of the structure,” he adds.

Perrie believes recycled concrete has a significant role to play in creating a sustainable and ecologically responsible built environment. When considering buildings that has reached the end of their first life, the order of decision-making should be: reuse of the building, reuse of the components and then - as last resort - demolition with the recycling of materials.

“Recycled concrete aggregate made from crushed concrete has proved viable and makes economic and ecological sense. As a coarse aggregate, it is particularly appropriate as bedding material, concrete roads and pavements, floors, reinforced concrete, precast and masonry elements, and foundations.”

Perrie says tests have shown that using the recycled materials leads to an 80% carbon dioxide reduction compared to new concrete mixes, with a 75% embodied energy reduction.

“With soaring fuel prices, transport costs for aggregates continue to increase, whereas recycled aggregate is generally closer and more readily available,” he adds. ☺

SEPHAKU CEMENT IS DECARBONISING WITH ALTERNATIVE FUELS AND RAW MATERIALS

Cement plays a fundamental role in construction and is part of a global market worth in excess of USD326b, but its carbon footprint is undeniably huge. South Africa's reliance on coal makes it one of the largest greenhouse gas emitters in the world. With the government's commitment to reach net-zero carbon dioxide emissions by 2050, it is imperative that companies come on board by investing in clean power and transitioning away from coal.

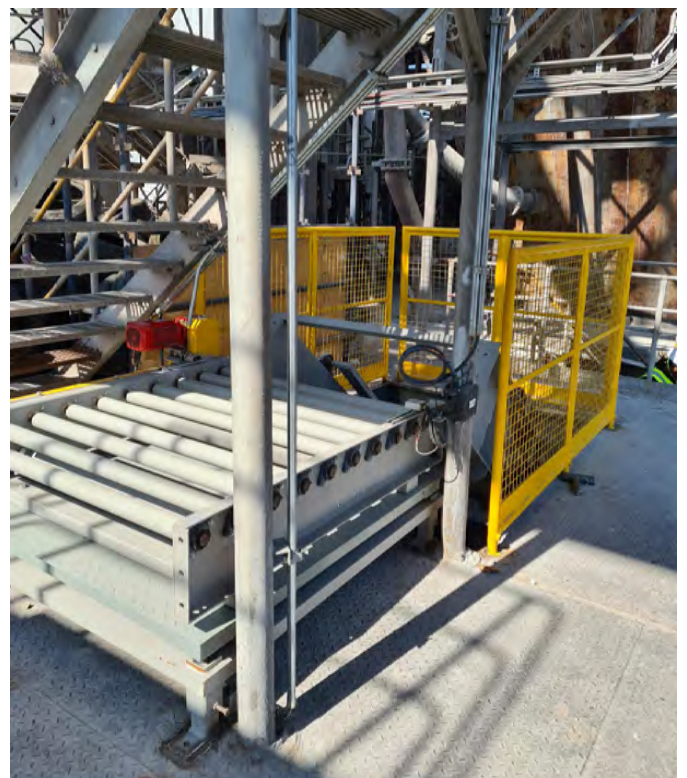


Supporting this goal, Sephaku Cement have taken a stand and are committed to decarbonizing through the use of alternative fuels and raw materials. Alternative Fuel Resources (AFR's) such as scrap tyres can be used as a substitute for traditional fuel and reduce the use of fossil fuels.

Sephaku Cement has commenced with the use of whole tyres as an AFR in the clinker production process as a partial coal fuel replacement.

Clinker production is the most energy-intensive step in the cement process with the predominant use of coal. The use of waste or alternative fuels and resources (AFRs) such as scrap tyres is used as a substitute for traditional fuel.

The number of end-of-life tyres is growing globally, and many countries are banning the dumping of tyres in landfills, making it a problematic waste to store or destroy. The use of scrap tyres in cement kilns is one of the best solutions for the complete and safe destruction of tyres as there is a simultaneous benefit of destroying waste and creating energy, making the use of scrap tyres both energetically and economically justifiable. Tyres have 25% more calorific value than coal and are available almost everywhere to help in lowering CO₂ emissions and they serve as a cleaner alternative to fossil fuels. DCSA contracted with Resiliant Circular



Consulting and AFS Technology, a specialist in automated tyre feeding systems for cement kilns, to build the Sephaku Cement tyre feeding system at the Aganang Plant in Lichtenburg in the North West Province. This system commenced operation in August 2022 with whole tyres being fed continuously, at a rate of up to 3 tyres/min. Phase two will commence in Q1 of 2023 and this will include a fully automated handling system that takes the tyres from the ground floor to the feed elevation utilising a hook elevator, significantly increasing efficiency and productivity.

An added benefit to the entire project is the economic upliftment of the local community. By upskilling and using local community resources in the management of the site storage yard and handling of tyres being fed into a kiln, the community around this Sephaku Cement plant will profit.

This tyre AFR initiative is another step in the decarbonising process of the Aganang Plant, and Sephaku Cement is committed to expanding and will continue to explore further environmentally positive actions that can be taken, to reduce their carbon footprint. ☉

SPECIAL TRAINING FOR CONCRETE BATCHERS BY SCHOOL OF CONCRETE TECHNOLOGY

Cement and Concrete South Africa's School of Concrete Technology is planning to offer special one-day courses for concrete batchers and batch plant staff in Midrand, Durban, and Cape Town in the second half of 2023.

John Roxburgh, senior lecturer at the School of Concrete Technology, says batching – the process of measuring and combining concrete ingredients according to the predetermined mix design – is a vital element of concrete production which ensures high and uniform quality of ready mix concrete for each batch produced by a batching plant.

“The durability of a structure is highly dependent on the quality of the concrete used to build it. Therefore, it is essential to precisely and meticulously select the concrete ingredients and this can only be achieved by a competent batcher. It is, for example, important to maintain the water-cement ratio constantly at the set value and a skilled batcher will be able to adapt his or her production to cater for the water content in the aggregate,” Roxburgh explains. “Unskilled batching can result in weak or brittle concrete that is prone to cracking which endangers the safety and durability of a structure.”

He says proper batching offers several other benefits including:

- Low variability in plastic and hardened concrete properties

- Better plant efficiency
- Lower production costs
- Higher client satisfaction and sales volumes

“Proper batching cuts down on waste and therefore reduce costs. By measuring and combining ingredients more accurately, skilled batching avoids ordering too high or too low volumes of concrete ingredients which can lead to excess waste and higher production costs.

“The training course offered by the School of Concrete Technology will provide batchers and staff at a batch plant with the essential concrete education and theory to competently produce quality ready mix concrete. The training will also benefit batch plant supervisors, laboratory staff, sales and staff and even general labourers involved with batching,” Roxburgh adds.

Topics covered in the course will include:

- Batcher's responsibilities
- The concrete materials and their effect on the concrete mix
- Fresh properties of concrete - and the tests to check it;
- Basics of mix design, including the control of the water content
- Testing for the hardened properties of concrete
- Basic management of a batch plant, including implement Quality Control systems. ©



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Patrick Flannigan, Technical Manager
in the Concrete Business Unit
at CHRYSO Southern Africa.

CHRYSO'S SUSTAINABILITY SOLUTIONS FOR SWELLING CLAY AND FINES

As the construction sector aims to achieve more demanding sustainability targets – including a lower carbon footprint – the CHRYSO®Quad range presents valuable opportunities for dealing with challenging sands.

The shortage of natural sand is a growing environmental issue in countries like South Africa and indeed across the African continent as it is a non-renewable resource, explains Patrick Flannigan, Technical Manager in the Concrete Business Unit at CHRYSO Southern Africa. The trend is to use more manufactured sand, usually sourced from stone crushing operations – and hence also called crusher sand. When contractors have to truck sand to site over long distances, this extended value chain adds to the carbon footprint of the product and project.

“For environmental and cost reasons, there is a shift towards trying to reduce the volume of natural sand in a concrete mix,” says Flannigan. “It is also usually preferable to procure sand from a source closer to site to reduce carbon emissions from transportation and to lower the cost.”

The challenge, he points out, is that the clay content of readily available sand can cause complications in the mix – while the manufactured sand often includes a level of fines that is too high or too low to be optimal. This is where the CHRYSO®Quad range has provided a breakthrough, as the first comprehensive range of admixtures for all challenging sands. This is good news for companies who rely on quality results in their concrete including contractors, readymix suppliers and precast manufacturers.

While not all clays are a problem in concrete, he explains

that swelling clays tend to absorb newer generation plasticisers which denies the user the intended benefits such as water reduction or slump retention.

“Our CHRYSO® Quad range uses CLEAR® (Clay Enabling Admixture Response) technology allowing for efficient dispersion of hydraulic binders in concrete mix design,” he says. “CHRYSO® Quad CLEAR® therefore restores the benefits of plasticisers in conditions where the clay content is problematic.”

To understand where such a solution will be required, there is also a CHRYSO® CLEAR Test – an innovative and quick service from CHRYSO Southern Africa to analyse sand. Due to the fact that swelling clays cannot be easily identified visually, it is important to conduct a special test for total clays on site before the local material is used in concrete.

“An advantage of our Quad CLEAR® test is that it picks out only the swelling clays, so contractors can be alerted to the presence of those clays that will negatively affect the performance of the concrete,” he says. Where these swelling clays are detected, CHRYSO® Quad CLEAR® can be added as a liquid to the relevant customised solution.

Where the use of CHRYSO® Quad CLEAR® worked well recently for a customer was in the heavy precast manufacturing sector. Flannigan explains that this particular precast manufacturer operates a number different sites and there were



The shortage of natural sand, a non-renewable resource, is a growing environmental issue for concrete production.



CHRYSO Gap Gradation Fixing Technology allows the use of manufactured sand which contains fines levels that are either too high or too low.

CHRYSO CLEAR Test is an innovative and quick service from CHRYSO Southern Africa to analyse sand.

varying clay conditions in the source material at each of these.

“With this customer, it made sense for them to standardise on using CHRYSO® Quad CLEAR®; not only could it solve the challenges arising where swelling clay occurred but, where this challenge was not present, it still delivered the required benefits such as water reduction and concrete flow,” he explains.

The other area where concrete users could face challenges is regarding the fines content of their sand. Crusher sand will often have either too little or too much of this fine material and neither condition is ideal in achieving optimal concrete performance.

“The solution in this situation is our CHRYSO® Quad GRAFT® (Gap Gradation Fixing Technology) which we also add to our plasticiser for applications where the customer encounters an excess or lack of fines in their source material,” says Flannigan. “Where natural sand is still being used in the mix as a filler, the proportion of this material can be reduced.”

He concludes with the warning that climate change is likely to exacerbate the issue of challenging sands, and this is particularly so in countries like South Africa where increased flooding is likely to introduce more silt, clay and organic material into rivers – which are a key source of natural sand. ©

MEETING THE CHALLENGES OF SAND

- CHRYSO® Quad CLEAR® (Clay Enabling Admixture Response) addresses the challenge of swelling clays in natural sand, which can inhibit the performance of plasticisers.
- CHRYSO® Quad CLEAR® Test identifies swelling clays in sand to alert users to apply corrective action.
- CHRYSO® Quad GRAFT® (Gap Gradation Fixing Technology) allows the use of manufactured sand which contains fines levels that are either too high or too low.



The CHRYSO Quad solutions significantly drive down sand procurement costs and the carbon footprint on transportation through using local resources.



ADMIXTURES FOR THE OMARURU BRIDGE, NAMIBIA

When we think of Namibia, most of us will conjure thoughts of hot, dry desert rock, blanketed seasonally by a blast of beautiful flowers. Henties Bay and Swakopmund are two coastal towns that attract a lot of local and international traffic – so their local infrastructure is vital. The Omaruru River bridge was constructed in 1980 and by 1992 comprehensive concrete repairs had to be conducted. Twenty three years later, due to excessive salt ingress and exposure to the harsh corrosive environment, its structural integrity was compromised to the extent that it necessitated a solution.

Between June and August of 2021, Sika Namibia Country Manager, Andre Visser consulted with contractors, Actual Impact Group cc, on the supply of products to upgrade and rehabilitate the Omaruru River bridge, in Henties Bay, and the rail overpass bridge in Swakopmund, both on the MR44.

The project kicked off with major demolition and clearing works conducted by the main contractor. Given the strict project timelines, the 80 km distance apart and the need to run concurrently, time proved to be the major challenge to the successful delivery of both projects. Anyone familiar with the Skeleton Coast and Namib Desert will know that – with any application process – weather will be the major deciding factor of project success. Having to endure dust storms, mist, rain and wind gusts in excess of 60 km/h, our dedicated teams worked around the clock to ensure that the necessary quality and completion targets were achieved.

Once the preparation and concrete work – such as piers and abutments – was complete on the sites, Actual Impact Group was appointed to supply and install a wide range of products, and to assist with technical advisory services for the duration.

While both projects had one or two unique repairs, the range of products and their uses were similar. Sika supplied all the specialist construction chemicals and materials (epoxy/cementitious grouts, wet/dry epoxy, curing agents, shutter release agents).

Initial bridge repair work was attained with SikaGrout®-212, an easy to use, single component, high strength, shrinkage compensated cementitious grout; and Sika MonoTop®-412 NFG. On both projects, Sikalastic®-152 was applied to all exposed concrete components, which totalled around 4450m². Sikalastic®-152 is a 2-part, cementitious, polymer modified, flexible, crack-bridging, fibre-reinforced mortar for waterproofing and concrete protection, and can be applied to various types of construction substrates. The expansion joints on both bridges were sealed with Sikadur-Combiflex® SG system. Both Sikadur®-42 ZA and Sikadur®-43 ZA were used under the bridge bearing pads on both sites. The former is a 3-part, moisture tolerant, multi-purpose epoxy grouting system, and the latter a solvent-free, three-component, repair and filling mortar based on a combination of epoxy resins and



selected high strength aggregates. After mixing, it forms a trowel-able mortar with good adhesion to cementitious substrates.

About 480 m² of bridge deck and approach slabs at the Swakopmund site, had SikaBit® Pro P40 PE applied. It is an APP modified, bituminous, torch-applied, waterproofing membrane. SikaBit® PRO P-40-0 PE is reinforced with a dimensionally stable non-woven polyester inlay. The underside has a thin polyethylene burn-off film for effortless application. It can be applied to wood, metal and concrete substrates including over existing bitumen roofing membranes.

Sikaflex®-11 FC+, a 1-part, multipurpose elastic adhesive and joint sealant with very good application properties, and which bonds and seals most construction material substrates, was used on the bridge parapet joints at both sites.

On the general concrete work, Sika AnchorFix®-2+; a solvent-

free, two-component anchoring adhesive, was used to anchor the concrete balustrades on the bridges. Sika® Antisol® E was used as a concrete curing agent - it is a ready to use spray applied liquid wax emulsion that prevents water loss from the surface of freshly placed concrete. It forms a thin film barrier on the concrete without affecting the normal setting action.

The rehabilitation of the MR44 Omaruru River Bridge and Swakopmund Road over Rail Bridge was named the SANRAL SAICE 2022 National Award Winner for: Most outstanding Civil Engineering Project – International Category; and were also featured in the SAICE Civil Engineering Magazine (Vol 30) March 2022. “We received exceptional service from Andre and his team at Sika Namibia and managed to successfully complete a flagship project with outstanding results – never a bridge too far for Sika,” says Eugene Gouws, Project Manager at Actual Impact Group. ©



QUESTIONS TO ASK WHEN CONSIDERING CAPEX

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

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

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

Set up for failure?

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

explains. "The fact is that there are many numbers that are not on the quotation, so anyone making a purchase on the price alone is not appreciating the full operational picture."

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

Support structure

The infrastructure of support behind a product often has a lot to do with the legacy of an original equipment manufacturer (OEM), he says. It is important to know that the equipment comes from an established and reputable business which has invested consistently over the years in its various capabilities.

The Nordberg® HP300™ cone crusher complete module.



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



Metso LT110 and LT220D mobiles crushing aggregates in a quarry.

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

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

Asking the question

“These are the kind of numbers that don't appear in a quotation, so purchasers should ask the right questions that will reduce their risk related to how their equipment will perform in the field and how it will be supported,” he explains. “This will give a contractor valuable insight into how they will meet their own performance requirements, and how much uptime they can realistically expect.”

“The big question is whether you are getting the maximum, consistent and reliable production from your equipment and delivering on your contract requirements,

which is really where the customer's success and growth is based on,” says Marais.

Efficient, safe

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

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

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

The high level of safety inherent in Pilot Crushtec's range of crushing solutions is evident from its compliance with stringent mining industry standards – which clearly benefits the construction sector in turn. These features would include

wrap-around trip wires, time-delayed start-up panels or additional guarding elements.

Recycling waste

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

Its compact modular range includes a cost effective brick recycler – the BRO605 impact crusher. With 600 mm wide conveyors and small double-deck and triple-deck screens, it is perfectly suited to small scale recycling applications. There is also the Rubble Master, a complete on-track, diesel driven, mobile, horizontal shaft impact crusher. The crushers in the range are

capable of handling 80 to 200 tonnes per hour.

Modular solutions

For quarries, who must service the construction sector with a regular supply of aggregate, Pilot Crushtec has provided modular solutions to improve crushing consistency and capacity. The modular option is a convenient way of avoiding disruption in the plant, says Marais.

Where a cone crusher needs to be replaced in a secondary crushing application, for instance, a modular skid-mounted installation can be successfully introduced without requiring a complete redesign and rebuild of the plant.

“This allows the quick deployment of equipment in situations where crushing stations are ageing or have experienced critical failures,” he says.

“This is especially relevant in this competitive market where the construction environment remains challenging and cost sensitive.” ©



Over 93,000 individual items are kept in stock to enable short lead times for customers to ensure minimum downtime.



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



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

THE TERRAFORCE BOOK OF IDEAS

South African manufacturer with a passion for excellence and knowledge sharing, Terraforce has become a hallmark brand in the highly competitive precast concrete hollow core retaining block field.



Proprietary by design, Terraforce blocks are engineered to perform, backed by close to four decades of dedicated research and development, which started with the S block in 1984.

Today, one of the mainstays in the series is the L range, available either with a smooth or textured surface (Standard or Rock Face option) and in flat or rounded shapes. These can be employed in combination to create landscaped terraces, mass gravity or composite retaining walls for embankments and erosion control, as well as for stormwater management, among many other applications.

Over the years, Terraforce has also established a library of technical manuals for use by the industry, which can be downloaded from their website. One of the most recent and best known is the updated *Terraforce Design Guide* for segmental retaining walls, which is based on the company's original 1992 version. The latest edition released in 2022 was developed with the participation of professionals in three countries in accordance with BS 8006 and SANS 207:2011.

Illustrations that inspire

This was the motivation for the manufacturer's latest initiative – the *Terraforce Book of Ideas* – which showcases creative ways to install aesthetically appealing structures ranging from beach erosion works to culverts and bridges, staircases, pedestrian ramps, sports ground seating and amphitheatres.

Header: Eight fascinating chapters

The *Book of Ideas* has eight chapters, namely:

- **Chapter 1:** Patterns and plantability – This provides

an introduction to how Terraforce's various systems can be formed.

- **Chapter 2:** Features and inclinations – This chapter looks more in-depth at design options, starting with foundation detailing and wall angles.

- **Chapter 3:** Corners – Whether to match the terrain or create a design element, corners are an integral part of most structures.

- **Chapter 4:** Steps and stairs – This chapter opens with a practical guide on how to employ the interlocking Terraforce 4x4 Step Block system, with reference to case studies.

- **Chapter 5:** Seating – Steps and seating often go together; in this chapter, there are outstanding examples of arenas and amphitheatres designed and built for schools, communities and businesses.
- **Chapter 6:** Contractor's check list – Before any design gets to the build stage, however, a comprehensive series of processes and procedures must be followed to ensure safe retaining wall structures. That's the core focus of this chapter, which drills down into crucial categories, namely: Retaining Wall Design; Construction, and Monitoring, Maintenance and Restrictions.
- **Chapter 7:** Typical cross sections – This chapter contains examples of typical cross sections for retaining applications and underscores the level of engineering detail required as designs become more complex.
- **Chapter 8:** DWG file index: Last but not least is a listing of almost all the technical drawings contained throughout the book. These are available on request as AutoCAD DWG files.

Innovation and quality

"We've always prided ourselves on innovation, and the Terraforce Book of Ideas illustrates this with real-world examples that optimise form and function to perfection," adds Rust. "Working with our licensees and the broader consulting engineering and specialist contracting community, we continue to push the boundaries of possibilities," Rust concludes.

BOOK OF IDEAS

To download the latest version of the Terraforce Book of Ideas visit <http://designguide.terraforce.com/download-pdf/>

STEEL CLADDING TREND HEIGHTENS AESTHETICS, ENERGY SAVINGS AND SAFETY

As the custodians of quality and technical excellence locally and pan-Africa, the Southern African Institute of Steel Construction (SAISC) has highlighted the trend of the increasing innovative use of steel cladding to enhance the architectural ornamentation of buildings in South Africa - and the myriad benefits of this durable, energy-saving and environmentally-friendly building option.

Steel cladding has always been the dominant material for industrial buildings, albeit purely functional rather than aesthetic - however, it is increasingly being installed as both roof and side cladding on upmarket residential and commercial buildings across the country, explains SAISC CEO Amanuel Gebremeskel.

The SAISC is one of just six similar industry professional bodies globally which is strategically positioned to track and understand key steel sector trends.

Gebremeskel explains the rising trend: “Architects are really delving into what can be done with steel cladding materials in a way that propels the industry towards (much-needed) energy conservation, environmental sustainability and improved aesthetics of buildings - and entire built environments - for the benefit of local communities and businesses, as well as the entire steel value chain.”

Aesthetic appeal and environmental benefits

Gebremeskel notes that South Africa has already been ahead of other global players for decades, as on-site steel rolling

for cladding purposes was a local innovation back in the late 1960s and early 1970s.

“More recently, sky rolling has been introduced to facilitate the rolling of exceptionally long, single lengths of cladding directly onto the roofs of structures. A local profiler recently achieved the world record for a single length of 240 m.”

However, Gebremeskel points out that architects and developers have now embraced both the aesthetic appeal and environmental benefits of steel cladding, including its energy-saving fire-resistant properties.

“Developers have discovered that architects can make a big difference with cladding from a visual perspective, which is increasingly regarded as being worth the extra cost. Industrial buildings previously, for example, involved minimal design work, and were built largely to be functional ‘boxes’. The innovative use of cladding makes them more distinctive and aesthetically pleasing. From an energy-saving perspective, the use of insulated metal cladding is still in its infancy in South Africa in this regard, but we are



seeing examples coming through, which is an encouraging sign and a good value-add to the use of cladding for purely aesthetic reasons,” he says.

Gebremeskel adds that this trend was evident at the 2022 Steel Awards, which showcased several uses of cladding across categories, including in homes, offices and warehouses.

“It is exciting to see architects increasingly using significant amounts of cladding in innovative ways in the design and construction of large warehouses, a trend which has been evident for some five to six years,” says Gebremeskel.

One such project, a citrus processing warehouse located in the Eastern Cape, which used steel cladding in its roofing, won the Popular Choice vote at the Steel Awards event. Due to the unique combination of steel cladding and vents this building does not require any artificial heating or cooling, saving energy costs and cutting carbon emissions. Another high-profile project was 108 Albert Road, Woodstock: an urban renewal development in Cape Town, which involved the stripping of the existing external brick walling, the addition of two storeys of lightweight steel framing - and then enclosing the entire structure with metal cladding.

“The design plan was to add additional storeys above the existing office space, re-cladding the structure and unifying the design through fenestration and balcony cut-outs. Of note is that all the brick walls in this project were converted to light steel frame studs with steel cladding. This greatly assisted in the reduction of the building weight, allowing for the additional storeys, while not adversely affecting the seismic behaviour of the building. Seismic load is directly proportional to weight - and Cape Town sits in a moderate seismic zone. The transformation of the building lifted the tone of the entire neighbourhood which was previously quite depressed,” he explains.

He adds that the use of insulated panels also presents a significant growth opportunity and that these are already being used in the local steel construction sector.

“Another opportunity lies in energy conversion methods that could use solar photovoltaic (PV) panels to create cladding. There is significant research and development being invested into this arena, and it is anticipated to

become more cost-effective over the next few years,” he says.

Overall, Gebremeskel believes the market outlook for steel cladding is 'positive' in the short- to-medium term.

From aesthetics to fire prevention

“South Africa is experiencing growth in the number of data centres being developed around the country. These require the construction of large buildings for which metal cladding is generally used. The same trend is evident regarding the need to build automated warehouses for imported goods. The prospects for cladding and large buildings are accordingly positive,” he says.

Steel cladding also presents the steel industry globally with interesting research opportunities on the use of these materials in informal settlements - as various forms of cladding have traditionally been a fire prevention or retardation measure.

Gebremeskel explains how the SAISC's fire research centre at the University of Stellenbosch has attracted global attention for its research into the use of fire preventing metal cladding panels: “The SAISC's fire research centre at Stellenbosch university is involved in investigations into cladding systems that can actually slow down or stop the progression of fires in informal settlements. The strategic use of aesthetically-pleasing, safe metal cladding could also assist in the refurbishment of buildings in the Johannesburg central business district (CBD). The relationship between fires and cladding is a major and much-needed research topic around the world,” he points out.

With the rapid trend towards a preference for steel cladding, Dennis White, Executive Director of the Southern African Metal Cladding and Roofing Association (SAMCRA) a sub-association of the SAISC - has for the past ten years been developing local product specifications and standards to ensure product quality.

Specifications and certification

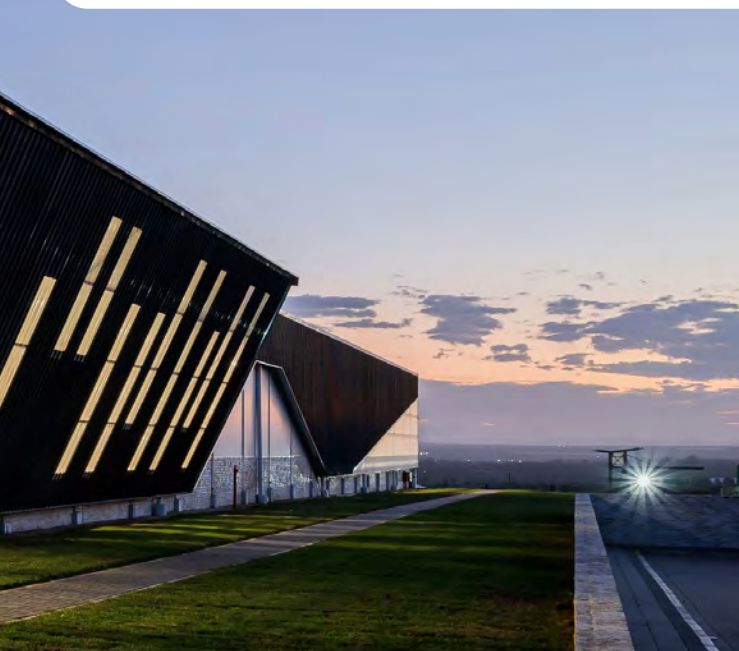
“Our technical industry experts have been working on product specifications and certification to create a reliable testing regime for cladding properties, such as wind and gravity-induced loads, and to develop technical standards for products and the installation thereof.

There were previously only outdated, adopted basic standards for cladding - but now as an industry we have been able to contribute to this vital technical aspect of product certification,” he says.

Gebremeskel adds that these new technical specifications will improve knowledge of quality among steel sector professionals, helping to raise standards and root out the use of cladding materials which are substandard or non-compliant. This is particularly relevant in the design of cladding for informal and low-cost developments where houses are typically built close together and therefore present a greater fire risk.

“We will be hosting a series of online and in-person technical question and answer (Q and A) sessions and seminars of interest to engineers, architects and other steel construction industry professionals, to highlight the technical aspects of quality and safety regarding cladding and fasteners and the new specifications in 2023.

In summary, the use of steel cladding will continue to be used extensively bringing with it impressive energy-efficiency, safety and aesthetic improvements to the built environment - provided the correct standards of safety and quality are adhered to,” he concludes. ©





MASSIVE ANCHOR BLOCKS UNDERPIN MSIKABA PROJECT

The four massive concrete blocks that anchor the Msikaba Bridge in the Eastern Cape are key components of this iconic project, being built by the Concor-Mota Engil Joint Venture (CME JV).

According to Concor's Project Director, Laurence Savage, the blocks represent the engineering on which everything else rests. "Since they are largely buried structures, they tend to be overshadowed by other, more dramatic, elements of the bridge, such as the 127 m high concrete pylons, but they are just as critical and their construction has been challenging in many aspects. The geology has been complex and each anchor block has faced its own unique demands, be it the location on site, geology, extent of rock fragmentation and water ingress."

The Msikaba Bridge, which forms part of the South African National Roads Agency Limited's (SANRAL) N2 Wild Coast project, will span the 198 m deep Msikaba River gorge and will help to drastically cut travel times for vehicles travelling between the Eastern Cape and KZN. It features a main span of 580 m which, on completion, will rank as the longest main span constructed by the cable-stay method in Africa.

The bridge is being built from the north and south banks of the gorge and comprises two identical 'halves', each spanning 290 m, which will meet mid-point over the gorge. Each half is supported by 17 pairs of cables attached to the inverted Y-shaped pylons, one on each side of the gorge. The pylons are back-stayed into the anchor blocks, two on either side of the gorge, by 34 pairs of cables – 17 for each half – which are positioned 130 m behind each pylon.

Each anchor block has a length of 49 m, a width of 10 m at the base (narrowing to 4 m on the spine of the structure), a depth of 17,2 m, and a mass of 21 500 tons. Their construction has been underway virtually since work

on the Msikaba project began in earnest in late 2019. They will reach completion shortly, mere weeks before the deck is launched over the gorge.

Very precise blasting techniques were required for the bulk excavations for the four blocks with the blasted rock material being cleared out using 30 ton excavators and ADTs supplied by local sub-contractors. Extensive lateral support was installed in the side walls.

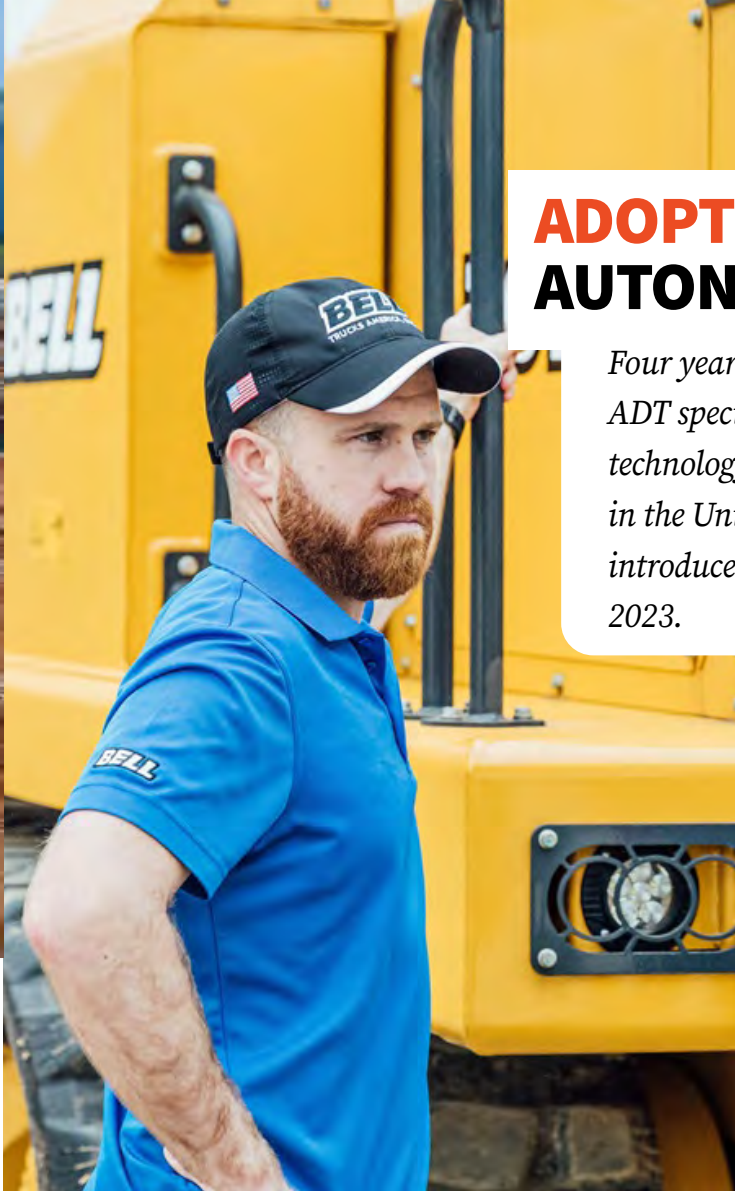
Construction of the blocks has involved the placing of 4 100 m³ of structural concrete and 2 650 m³ of mass concrete, as well as the fixing of 200 tons of reinforcement in each anchor block. Each block was cast incrementally with 11 lifts varying from 1,25 m to 1,75 m per lift.

Commenting on the difficulties faced during construction, Savage says these have included working in deep excavations and confined spaces, sometimes with heavy machines, and working in and over reinforcing, with much of the work taking place at night.

He also points out that a key principle of the project has been the use and involvement of the local community and various local business partners and sub-contractors. "This meant that many of our workers were untrained when we recruited them, as were a number of the sub-contractors. Today, these partners and sub-contractors are key contributors to the success of the project," he says. As a final comment, he notes that the Msikaba project passed the 3 million LTI-free man hours mark in October 2022. "This is an amazing achievement which is a credit to everyone on site, but especially to the teams on the anchor blocks who put in many of those 3 million hours," he says. ©

ADOPTION STAGE FOR AUTONOMOUS BELL ADTs

Four years after commencing extensive testing, global ADT specialist, Bell Equipment, reports that autonomous technology is now at the adoption stage with more customers in the United Kingdom, South America, and Australia set to introduce autonomous Bell ADTs on their worksites during 2023.



Bell B50E are working in a quarry. In addition, they will soon be establishing a demo site in South America.

“As part of our strategy to enable interoperability between our ADTs and various control systems, so that customers have a choice of third-party suppliers, we have recently engaged with a third supplier and hope to begin testing this system later this year,” he adds.

The xtonomy and Pronto AI systems, although both autonomous, offer different benefits depending on a customer’s needs.

“Xtonomy has vast experience in the autonomous field with years of stable testing. It offers a complex radar-based system, which is less affected by inclement weather, but requires higher upfront costs and relies on the loading tool operator to manage the operation,” says Castle. However, the continuous site and object mapping, with minimal manual interaction, makes the system well-suited to multiple load and dump sites. In addition, the advanced in-cab display and supervision screens allow for easily integrated with other equipment on-site to provide a fully autonomous offering.

“Pronto AI, on the other hand, offers quick deployment with a much simpler, integrated system that has subscription-based pricing with minimal upfront costs,” says Castle. “Theirs is a camera system and the non-dynamic site and object detection require manual interactions. However, it is controlled by a user-friendly mobile app and routes can be easily changed by manually driving them. It is also possible to run this system over a private LTE network.”

Concludes Castle: “The beauty of both systems is the flexibility they offer our customers. Bell provides a standard cab with no extra hardware taking up space to create an environment where manual, remote or autonomous operation is interchangeable. This means that once an ADT has finished a contract on an autonomous site, the sensory and control system can easily be removed and the truck either fitted with a new system for another site or be used in a manual operation.”

“We’re extremely excited to have reached the adoption stage,” says Bell Equipment Product Manager, Brad Castle (pictured). “Right now we are working closely with one of our UK customers. They are a leading mobile plant supplier and earthmoving contractor that has a large existing fleet of Bell ADTs and is looking to initially install an autonomous system onto two B30Es for a quarry application. Initially, they will be introducing autonomous ADTs on two of its sites as part of a continuous drive to improve safety.

“At the same time, we have a mining customer in Australia who will be introducing five autonomous Bell ADTs later in the year. Both these customers have chosen xtonomy as their preferred guidance system.”

Brad explains: “Providing autonomous-ready machines will be a part of our core business in the future, but in terms of sensing and guidance systems we decided that it makes more sense to partner with market leaders and innovators, as we do with drivetrain, hydraulics, and electronics technologies in our trucks. Bell currently has two approved service providers, Xtonomy based in Europe and Pronto AI in the United States, both of which can work with Bell customers from anywhere in the world.”

Xtonomy has had B30Es operating autonomously in the Alps since 2020. Pronto has established two test sites in the US, one at a Texas sand mine and another in Reno, Nevada, where three autonomously operated Bell B45Es and a

“Part of our strategy is to enable interoperability between our ADTs and various control systems, so that customers have a choice of third-party suppliers.”

GROWING TO MEET EXPANDING MARKETS

Steady demand for specialist plant hire services is driving the growth of Benoni-based service provider, Webcon Mini Plant Hire, requiring expansion of its fleet for several different requirements.



Owner, Sakkie Davies, says demand for smaller plants such as TLB's has driven growth recently, adding that customers are moving to suppliers of quality equipment who can take a load off their shoulders by maximizing equipment availability and solving their onsite challenges. Relationships are King and companies like Webcon are thriving on repeat business and the strength of their offerings.

The strength of relationships also extends to suppliers and Webcon recently ordered a further five machines from its long-time supplier ELB Equipment with the purchase of four GEHL GBL X900 TLBs and a single Sumitomo SH210 excavator. These are expected to soak up demand from its clients across the country and neighbouring countries.

Webcon has equipment as far as Zimbabwe, Kathu, Malelane and Durban within the construction industry making quality a priority especially when it comes to maintenance and breakdown cost elimination. "ELB Equipment offer package deals in addition to parts and services, making it a one-stop shop for all my earthmoving need".

During the handover of the machines, ELB area sales manager, Elmiel Bolleurs and the Pre-Delivery Inspection (PDI) team collectively handed over the five earthmovers to Webcon, bringing them to 55 earthmovers in total. This

comes to show that good business relationships could affect the long-term growth of an organization.

Sakkie and Michelle Davies were met with warm congratulations as they came to collect the machinery. Webcon has been a loyal customer of ELB Equipment since 2010. "ELB's price is right, their service is affordable, and their parts are available even in the aftermarket." Sakkie continued to say that ELB Equipment goes out of its way to sort out any issues without hassle. Bringing their part in maintenance and support, ensuring continued business from Webcon and other loyal customers.

"Commitment to teamwork is the key to any successful business" Davies continued to explain how every aspect, every part, and every person plays a vital role in smooth operations, he exclaimed how important it is to be ready to work especially when it comes to the point when it's your turn. "Without one thing, everything could fall apart."

In conclusion, he added ELB Equipment makes money and Webcon makes money it's a win-win resulting in the understanding that without solid relationships in place, success is much harder for a business to attain. ©

"Every aspect, every part, and every person plays a vital role in smooth operations."

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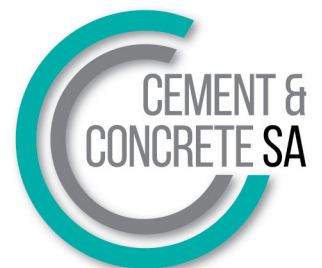




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