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ON THE COVER

Suited for large infrastructure projects, quarrying and coal mining, the new Liebherr TA 230 Litronic articulated dump truck (ADT) is now available in Southern Africa. Liebherr-Africa says the new 30-t class ADT is a welcome addition which not only plugs the gap in the company's earthmoving product range, but also changes the game in the local ADT landscape.

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Every quarter, Afrimat's Construction Index (ACI) provides a detailed overview of activity in the South African construction industry in the preceding quarter. It is a composite index of the level of activity in the building and construction sectors and is compiled by the respected economist, Dr Roelof Botha on behalf of Afrimat.

This index is the most accurate of the various indices for the construction industry in South Africa as it is not based on sentiment, but draws on other indices to arrive at the overall index. These range from the value of the total buildings completed, the volume of building materials sold, to the value of passed building plans.

The ACI shows that the construction sector managed to increase the value it added to the economy by 4,1% in real terms compared to the previous year. This increase in value add is despite various factors that influenced economic activity in South Africa. This included the floods in KwaZulu-Natal, extremely high fuel prices, loadshedding and strikes in mining companies.

In addition, the ACI also recorded an

increase of 2,4% over the first quarter of 2022 which is mainly because of the positive trend for both the volume and the value of building material sales. This bodes well for future construction activity.

Of the nine indicators of which the ACI is a composite of, the value of buildings completed in the metros and larger municipalities had a significant 21% year-on-year rate of increase. This resulted in an increase in employment in construction during the second quarter of 2022 and is a direct result of the start of more public-private partnerships in fulfilment of the government's infrastructure drive.

Notwithstanding these green shoots, South Africa remains a tough environment for construction companies to do business. The

ongoing loadshedding and the unstable and increasing costs of diesel combined with administrative and procurement difficulties, make the industry challenging. However, the challenging context can be overcome by diversifying and being nimble in the current cut-throat industry.

Until next month.

Wilhelm du Plessis
Editor



OUR DECEMBER ISSUE WILL FEATURE ALL THE WINNERS AND ENTRANTS OF THE BEST PROJECTS AWARDS.



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TOTAL CIRCULATION:
(Second Quarter '22)
15 188

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PUBLISHED MONTHLY BY
Crown Publications (Pty) Ltd
P O Box 140
BEDFORDVIEW, 2008
Tel: 27 11-622-4770 • Fax: 27 11-615-6108

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A NEW HOME FOR GVK-SIYA ZAMA KZN AFTER 40 YEARS

After some 40 years at the same address in Umbilo Road on the fringes of downtown Durban, GVK-Siya Zama's KZN operation is moving from this location to a new 900 m² office in Westville.



From left: Justin Meder, Regional Managing Director KZN; Yournell Naidoo, Senior Quantity Surveyor KZN; Cyprian Dladla, Key Projects Director KZN and Dumisani Madi, Chairman of the GVK-Siya Zama group of companies.

Umbilo was named after the Umbilo River that flows through Pinetown and Queensburgh via the Umbilo canal and eventually into Natal Bay at Bayhead. The suburb's name has its origin in the Zulu word, Mbilo, meaning 'boiling'. The elegant yet faded buildings of the precinct suggest a former time of commerce and vibrance, which have sadly made way for neglect, dereliction, crime and unsafe passing. This is one of the main reasons for the move to the new premises.

Former long-serving managing director of the business in the region, Johan de la Querra, commends his successors on the move and recalls the company's early days in the province when it established a foothold after buying the contracting division of G C Shave, a then well-known painting company, in 1969.

"We became a well-established restoration business, taking on notable projects such as Durban City Hall, Addington Hospital and the Durban Country Club. We were the only company who restored stonework, particularly the Pietermaritzburg 'pink brick,'" De la Querra says. In the 1980s, the company branched out to more specialist building repairs and added tenant fitouts to its repertoire, in the

process embedding its reputation as a specialist painting and restoration outfit.

The subsequent launch of GVK-Siya Zama in 1994 set the business on a different trajectory as bigger greenfield builds started to dominate its order book. Fast forward to 2022 and the group's modern-day reputation as one of the biggest privately owned construction companies in the country.

Says Chairman Dumisani Madi, "These new premises support our growth strategy in the region, will provide a shot in the arm for the team, and will ensure that we are more accessible and better positioned to support and welcome our clients in the region. Our new address, centrally located along the M13 at 1 Langford Road, Westville, prioritises staff well-being and offers a modern environment close to amenities, which is also conducive to collaboration and growth."

Managing Director in the region, Justin Meder, says the new office layout includes work hubs specifically designed to enhance the work experience of its many young construction employees by providing spatial access to senior role players that promote learning and mentoring.

On the back of several key projects currently under construction, this move further cements the group's investment and faith in the province. "Our team's commitment has seen this business grow despite the ravages of COVID and the recent floods," says Meder.

He remains positive about the outlook for the industry in the province and his business unit's commitment to growing its business in the region. ☺

"These new premises support our growth strategy in the region and will provide a shot in the arm for the team."

CONCOR'S TREVENNA PROJECT SECURES TOP SAFETY RATING PLUS 1ST PLACE IN 2022 MBSA NATIONAL SAFETY COMPETITION



From left: The Concor Team - Margaret Dube, HSE co-ordinator; Andrew Kgasago, Site Agent; Martin Muller, Contracts Manager and Givmore Mupondi, HSE Safety Officer.

Concor, a diversified infrastructure and services construction company has earned a Five Star Safety Grading from Master Builders South Africa (MBSA) and also secured first place in the National Safety Competition in Category G for projects between R250M and R450M. Both these accolades are in relation to Concor's construction of the Trevenna Basement project in Sunnyside Pretoria commissioned by the Public Investment Corporation (PIC).

Both the award and the Five Star Safety Grading from MBSA reflect the highest level of safety compliance by this leading black-owned construction company. The results are based on a stringent audit process including an on-site audit at the Trevenna site, where Concor began construction early this year. According to Martin Muller, Concor contract manager, the 11-month contract comprises a five level, 68 000 m² super basement with all services, lobbies and finishes.

"We have deployed five tower cranes on the site to fast track the project, ensuring the safe movement of steelwork, formwork and other construction material," says Muller. Readymix concrete is being used for the in-situ construction of post-tensioned slabs, with space at a premium due to the busy urban location.

"The exciting results of this compliance audit and the MBSA National Safety Competition hold great credibility as we have been audited and rated in relation to our peers in the sector," he says. He notes that Concor also conducts its own internal safety audits during the life of the project in line with the Occupational Health and Safety Act and other related regulations. Concor health, safety and environment (HSE) coordinator Margaret Dube says the MBSA audit

included a detailed physical inspection of site activities, housekeeping, cranes and equipment. Aspects such as temporary formwork are also required to be signed off by the responsible engineer.

"It also checks that all our documentation is compliant with legal requirements," says Dube. "After scrutinising the condition of our cranes, for instance, the audit team will also check that this equipment has been inspected by a qualified lifting machinery inspector (LMI)."

She highlights the importance of the company's HSE awareness philosophy: Stop. Think. Act! By applying this culture through visible felt leadership, safety is prioritised among staff and subcontractors alike.

"Wherever we work, it is vital for Concor managers and supervisors to lead from the front, providing an example for the whole site," says Muller. "This leadership must apply as much to safety as to production. Concor will continue to elevate health and safety at all its sites, while delivering on projects on behalf of its clients," Muller concludes. ☺

"We have deployed five tower cranes on the site to fast track the project, ensuring the safe movement of steelwork, formwork and other construction material."

FIFTEEN INNOVATIONS COMPETE FOR FIRST PLACE

The nominees have been determined. A jury of experts selected the 15 innovations nominated for the award from 41 finalists out of an original 133 entries.

Messe München and VDMA, together with the construction trade associations HDB, ZDB and bbs, are awarding the prize for the 13th time.

The competition was launched last year with the new categories of climate protection and digitalisation, and the categories of mechanical engineering, construction and research are back in the running.

Trade press visitors to the Media Dialogue on 21 and 22 June in Munich will have the opportunity to cast their votes online from 8 to 13 September, which will be included in the overall evaluation. All nominees will be presented on the eve of bauma, on 23 October, in the Max Joseph Hall in the Munich Residence, and the five innovations with the highest number of points will be awarded the prize.

The jury evaluates the entries based on criteria that are significant for the industry and its future. These include how practice-oriented a solution is or what economic potential it offers. Increasing digitalisation plays just as much a role as environmental protection aspects, sustainability, resource efficiency or the humanisation of the workplace.

The following entries have been nominated for the bauma Innovation Award 2022:

Category 1 Climate protection

- The Benninghoven REVOC System - Catalyst for asphalt mixing plants, BENNINGHOVEN - Branch of Wirtgen Mineral Technologies GmbH
- Minus CO₂ -building materials - renewable, better, economical, carbonauten GmbH
- Hydrogen-powered excavator, Liebherr France SAS

Category 2 Digitalisation

- Haptic collision avoidance, Bosch Rexroth AG
- One common digital language for construction sites, MiC 4.0 Machines in Construction
- MESH Technology, Mesh AG

Category 3 Mechanical engineering

- Ammann 3D Compactor eAPX 68/95, Ammann Verdichtung GmbH
- Built Robotics Exosystem™, Built Robotics Inc.



- Continuous advance, Herrenknecht AG

Category 4 Building

- Process tracking system b.navigate, BAUER Spezialtiefbau GmbH
- TSB - Transport System Bögl - rethinking local transport, Max Bögl
- CPC - Carbon Pre-stressed Concrete, Holcim (Deutschland) GmbH

Category 5 Research

- ROBETON, Individualized Production, RWTH Aachen University
- Site Execution System, TU Dresden - Institute for Mechatronic Engineering
- Deep Sea Sampling, Freiberg University of Mining and Technology Mechanical Engineering Institute

Press information of the nominees as well as their videos are available via the link www.bauma-innovationspreis.de.

The competition is a joint project under the auspices of the VDMA Construction – Equipment and Plant Engineering, Messe München, the Federation of the German Construction Industry (HDB), the German Construction Confederation (ZDB) and the German Building Materials Association (bbs). ©

ASAQS APPOINTS NEW EXECUTIVE DIRECTOR

After 10 years of exemplary service, Larry Feinberg recently resigned as the Executive Director of the ASAQS and has immigrated to Israel where he and his family are settling in well. The ASAQS is grateful to Feinberg for his leadership, unquestionable commitment to, and passion for the Quantity Surveying profession.

The ASAQS Board is pleased to announce the appointment of Karl Trusler as the incoming Executive Director of the ASAQS, effective from 1 September 2022. He is a registered Professional Quantity Surveyor, and for the past seven years has served the quantity surveying profession in his capacity as the EduTech Director at the ASAQS. ©



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THE ENERGY TRANSITION IN FOCUS AT KEY ENERGY 2022

Key Energy is the main international event presented by the Italian Exhibition Group addressing the energy transition in Southern Europe, the Mediterranean, the Balkans and the Middle East. It will be held this year in Rimini, in northern Italy, from 8 to 11 November, with some notable new features compared to previous editions. Christian Previati, Exhibition Manager at the Italian Exhibition Group, answers a few questions about the event and the opportunities it presents for organisations involved in the energy sector in Africa and Italy.

Setting out the format of the expo, Previati says, “Key Energy will provide a meeting point for all players involved in the energy sector and serve as a discussion hub for new opportunities across the entire spectrum of renewables. The traditional in-person format of the event will again be enriched this year with the innovative digital platform, which increases business and meeting opportunities significantly.”

Key trends on show

“The renewable energy sector is expanding rapidly, globally and in Europe, with continuous growth even in the last two years,” Previati continues. “This is a clear sign that the energy transition is not just a plan, but a reality, and – I would add, in light of recent international events – a necessity, which is changing the energy market. Europe is on track to achieve the goal it has set itself of complete decarbonisation by 2050. This goal can only be achieved if the deployment of renewable energies is accelerated and, in this context, the Key Energy event will drive the

energy transition.

“In parallel with the focus on renewable energy sources and technologies, highlights of this year’s edition will address mobility, energy efficiency, and the sustainable city, and include an international focus on challenges and opportunities in the sector in Africa, Canada and Mexico.”

Green growth in Africa

“Among the most eagerly awaited events of the 2022 edition is the Africa Green Growth forum, organised in cooperation with ITA – the Italian Trade Agency, which will directly involve African institutional representatives and associations from the energy sector. We are honoured that countries such as Egypt, Algeria, Morocco, Tunisia, Rwanda, Kenya, and others, have confirmed their participation; countries where there are interesting growth opportunities for the renewable energy sector.

This is also why we wanted to set up an authentic discussion and business platform at Key Energy 2022, which will be extended to the countries of the Mediterranean basin



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and on the African shore, and enriched with one-to-one meetings between delegations and companies.”

The Africa Green Growth forum is a born out of the collaboration between Res4Africa and the Technical Scientific Committee of Ecomondo and Key Energy. Embassies in Italy and participating countries, representatives of African governments, associations, qualified institutions and media, and trade delegations will work to establish links between the industrial and institutional sectors, supported by the Italian Trade Agency, the Ministry of Foreign Affairs and International Cooperation, the Ministry of Ecological Transition and the Ministry of Universities and Research.

A wide spectrum of leading technologies

“The next decade will be decisive in the national and international context for the development of an energy mix that is increasingly oriented towards renewable sources. Therefore, the Solar and Storage area at Key Energy will see a wide range of technologies, solutions and best practices on display. Wind energy as well as hydrogen will see the development of projects and actions for integrating production and storage technologies.

“Looking at the sustainable city, the focus will be on technologies and services available for upgrading efficiency and the redevelopment of real estate and cities, efficient lighting, efficient utilities, ICT solutions and products for smart services and buildings, the smart grid, sustainable mobility, electric and hybrid cars, car and bike sharing, smart parking, electric public transport, apps for integrated

transport, digital solutions and the electric city. And, with regard to electric mobility, charging infrastructure, electrification of company fleets, the transformation of the automotive ecosystem, batteries, and more.”

Identifying common ground between the EU and Africa

“In our view, Africa is a continent of particular interest. Considerable investments have been made in solar and wind energy: these are two resources that South Africa has in abundance. Italy and Africa have seen the exchange of trade grow significantly in recent years, and Key Energy can be a useful and profitable moment for interaction with regard to the energy transition, as well as an opportunity for business development with the major players in the Euro-Mediterranean basin.

“There are many opportunities for cooperation, collaboration and possible partnerships. The acceleration of the energy transition is driven by a multitude of processes and it makes sense to involve different players and international partners. Key Energy will act as a lab and reference point for the Mediterranean basin and North Africa.

“In closing I would like to add that, at Key Energy, international investors in the renewable energy sector and looking at Africa, Italy and the Mediterranean basin generally, will find an excellent business platform that favours meetings and discussions between key players and market stakeholders, dialogue between economic sectors, and an opportunity for all professional energy operators to learn and update themselves on new developments in the sector.” ©

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WOMEN WINNING IN CONSTRUCTION – ERWIC AWARDS WINNERS ANNOUNCED

The Construction Industry Development Board (cidb) hosted the prestigious Empowerment and Recognition of Women in Construction (ERWIC) Awards on 24 August 2022. This year's awards had 12 categories that recognised companies and individuals who support the gender transformation, development, and mentorship of women in the construction industry.

Attended by the Department of Infrastructure and Public Works Deputy Minister, Ms Noxolo Kiviet, who in her impassioned keynote address congratulated the nominees and winners, and stated that the event held during Women's Month celebrates the strength, dedication and resilience of these women dedicated towards building the country, "These awards should always stand as the clarion call for gender transformation within the construction sector showcasing the strength of women and serving as a vision of what women can achieve when given the necessary support."

CEO of the cidb, Bongani Dladla, stated, "The ERWIC Awards were developed by the cidb to celebrate and encourage the development of women in the construction industry. He explained that the competition at the ERWIC awards has always been fierce, and this year is no different. "The winners were all well-deserved and stood out in their respective categories."

The Winners

The winner for *Project Delivery Excellence of the Year – Grade 1* was Boitsholo Trading and Projects CC for their Coega Feltex Trim Factory Pretoria project. Coming in second place was Sbonzin Trading for their Upgrading of Gravel Roads to Surface Roads, including the associated Stormwater project.

Winning *Project Delivery Excellence of the Year – Grade 2 – 4* was Tumagole Trading Enterprise for the Renovations of the City of Johannesburg Recreation Centre project. In second place was Magiya Women's Developers for their Construction of Stormwater in the Mhluzi Ward 25 project, while third place was awarded to Letsogo Trading Enterprise for their Upgrading of the Hans Coetzee Road project.

The Project Delivery Excellence of the Year – Grade 5 – 6 was Mampumi Trading for their Buhlebuyeta Primary School (Refurbishment of 13 classrooms) project. And in second place was Philcorn Group for the Electrification of Driekoppies, Makaung, Malepetleke, Nghalalume project.

The Project Delivery Excellence of the Year – Grade 7 upwards was Oakantswe Construction & Projects for the Nellmapius Ext 22 (erf 1223 & 12224) project. In second place was Motheo Construction Group for the new Graaf Reinet TVET College project.

The Rural Project of the Year award winner was Kgothatso Electrical for the Electrification of 50 Households in the Boikhutsong Village project. The second place was awarded to Africa Hlahla Investments for Upgrading of Arlington Access Road project, while third place went to Quantum Leap Investments 656 (Pty) Ltd for the Imvani 145 Low-Cost Housing project.

The Mentoring Entity of the Year was awarded to Thabomeleng Construction Group, in second place was Masoko Construction CC, and third place was awarded to Kgothatso Electrical.

The first-place winner for *Transformation Entity of the Year* was Thabomeleng Construction Group, while KNM Projects was awarded second place.

Innovative Entity of the Year was awarded to Bashoeshoe Investments and Projects, second place was Siphumelele Business Enterprise, and the third-place award was to Thabomeleng Construction Group.

Business Resilience of the Year (COVID-19) was awarded to Quantum Leap Investments 656 (Pty) Ltd, while Moshiki and Letsogo Trading Enterprise were awarded second and third place awards, respectively.

The exciting *Youth-Owned Women Construction Entity of the Year* award was given to Yibanathi Mtirara from Magz Projects (Pty) Ltd, while second and third place were awarded to Mpumelelo Angel Lekhuleni from Mpumistone Projects and Kgothatso Matsogo from Kgothatso Electrical.

The Women-owned Construction Entity of the Year award went to Malebogo Lobelo from Lobelo Building Contractors, while Lynette Mazibuko from Lenda Construction and Supply Services and Mafani Nelly Dasheka from Quantum Leap Investments 656 (Pty) Ltd came in a close second and third place.

Itumeleng Mohoang from Thabomeleng Construction Group won the Women Mentor of the Year award.

And the *Exceptional Woman in Construction Contributor of the Year* award went to Itumeleng Mohoang from Thabomeleng Construction Group, in second place was Mafani Nelly Dasheka from Quantum Leap Investments 656 (Pty) Ltd, while third place was awarded to Faith Tshepis Mabena from Nokhanya Services (Pty) Ltd. The awards concluded with the prestigious Chairman's Award that went to Portia Tau Sekati.

Dladla indicated that the ERWIC awards were a resounding success, with the quality of entrants improving yearly. "The unique and exciting Youth-owned Construction Entity award indicates the bright future of construction and women's role in the industry. The quality of projects delivered, proven leadership through mentorship programmes, the resilience of some construction companies, and the winners of the awards of the coveted women-owned construction company of the year show the intent and purpose that the awards aim to celebrate – women belong and thrive in the construction industry. ©

"The ERWIC Awards were developed by the cidb to celebrate and encourage the development of women in the construction."

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PRIORITISING SAFETY ON CONSTRUCTION SITES

Statistics published by Federated Employers Mutual Assurance Company (FEM) reveal that 6 423 workplace accidents requiring medical attention were reported in 2021. Of these reported incidents, 56 resulted in fatalities. In addition, the report indicates that 11 761 days were lost in 2021 as a result of employees being injured and five people were permanently disabled.

In light of this, the Master Builders' Association Western Cape (MBAWC) urges its members, employers and employees in



the construction industry to prioritise safety both on and off site at all times with a view to eliminating accidents.

Health and Safety Manager at the MBAWC, Deon Bester (**pictured**), says the FEM figures are concerning. "Not only is any death, injury or disablement unacceptable, the downtime that occurs as a result of accidents impacts the overall delivery of projects".

"This is why employers and employees need to work together when it comes to health and safety compliance. The Occupational Health and Safety Act states that all employees have the right to work in a safe environment, but with that comes the responsibility of complying with the health and safety standards that have been put in place," he adds.

A closer look at the most common accidents that occur within the construction industry reveals that motor accidents are one of the largest contributors to the issue.

"This is a very difficult area to control, but people who make use of company transport, especially those being transported in open vehicles, must know the rules of the road.

These employees should not allow themselves to be transported in unsafe modes of transport. Employers operating these vehicles should always ensure that they abide by the requirements of the National Road Traffic Act, as well as the requirements of section 23 of the Construction Regulations," says Bester.

While many contractors and employers invest significantly in training their staff about health and safety compliance, it is up to all parties to ensure adherence to the safety learnings and on-site measures.

The MBAWC offers assistance to its members to ensure compliance with the Health and Safety Act. "We believe that nobody should lose their life while at work, which is why we offer advice on how our members can ensure that safety is constantly prioritised – both on and off site," concludes Bester. ☺

MBSA TACKLES KEY CONSTRUCTION INDUSTRY MATTERS AT ITS ANNUAL CONGRESS

On 9 September Master Builders South Africa (MBSA) addressed key challenges of the construction industry in South Africa at its annual Congress. The event was addressed by Dr Kgosientsho Ramokgopa from the Office of the Presidency.

Dr Ramokgopa is the Head of Investment and Infrastructure in the Office of the President of South Africa. He shed light on key interventions to rescue the construction industry from collapse and how a closer working relationship between government and the industry can be fostered to address infrastructure challenges in the country.

Commenting on the decision to host the event this year after a two-year hiatus, the Executive Director of Master Builders, Roy Mnisi said it was the considered intention of the

Federation to draw attention to the troubled sector following the impact of floods experienced in the 2021/22 rain season, social unrest of July 2021 and the socio-economic impact of the Coronavirus pandemic. "The combination of these adverse events has had a devastating impact on the construction industry, communities' livelihoods and damage to social and capital infrastructure" said Mnisi.

Master Builders South Africa (MBSA) is a Federation of registered employer Associations representing contractors and employers in the construction industry and is regulated in terms of Section 107 of the Labour Relations Act 66 of 1995.

The Federation's nine Master Builders Associations, and three Affiliate Associations represent more than 4 000 contractors and employers in the industry. ☺

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SAICE RECOGNISES EXCELLENCE

The South African Institution of Civil Engineering (SAICE) hosted its annual awards ceremony on 1 September, celebrating individuals and organisations, as well as its members, who have demonstrated resilience and promoted sustainability in the civil engineering profession.

The SANRAL SAICE 2022 National Awards was a hybrid event held both online and in-person at Montecasino, in Fourways, Gauteng, on 1 September, and was attended by over 300 guests in person and many guests streaming online across various social media platforms.

Professor Marianne Vanderschuren, President of SAICE, advocated the importance of the civil engineering industry and its pivotal role in enhancing economic development to help drive the infrastructure of tomorrow for the benefit of all South Africans.

“Civil engineering involves conceptualising, designing, building, supervising, operating, constructing, and maintaining physical and naturally built environment infrastructure projects and systems in both the public and private sectors.

“This is why SAICE plays an integral role for civil engineering

professionals in South Africa. And the SANRAL SAICE Awards affirms this critical role – we recognise outstanding individuals, projects, companies and our members, who go the extra mile in showcasing engineering ingenuity, innovation and excellence in our profession.

She explained that at a recent event, a leader in the insurance industry indicated that the sector is realising that occurrences, such as COVID-19 and regional flooding, will occur again, necessitating the rethinking of organisational approaches. “I think as engineers we need to do the same – to rethink our building standards, amongst others, and convert our precious infrastructure into more resilient facilities.”

Michael Mhlanga, chairperson of the SAICE Future Leaders Panel, highlighted the importance of the influence, and commitment, that future leaders must continue to showcase in



order to grow the civil engineering profession. He stressed that for young professionals, participation in local and international infrastructure projects is a critical step in enabling the development of well-rounded leaders.

The South African National Roads Agency Limited (SANRAL) was the two-time naming rights sponsor for the annual awards. Prof. Vanderschuren explained that SAICE is excited to partner with SANRAL in 2022 again. "Collaboration, co-operation and fostering relationships is at the forefront of growing the civil engineering profession in order to enable sustainable infrastructure development for future generations."

Keynote speaker for the evening, Edmund Nxumalo, CEO of Engineering Council of South Africa (ECSA), provided great insights on the value and role of the engineering industry in driving critical infrastructure development in South Africa.

"Our economic survival - the growth of this country - is in the hands of engineers. It is for this reason that the engineering status should be pushed to the next and highest level.

It is remiss for most of the country's infrastructure projects not to be driven and managed by engineers, as we have seen in some government departments, including

Tom McKune, SAICE's Head of Training, discussed the key focus areas of SAICE, which included ensuring that SAICE

remains relevant, and secondly, that SAICE continues to provide a service to its members. His address highlighted the different types of members within SAICE, and how SAICE is assisting these members, in particular students, associates and members in general.

Nthabeleng Lentsoane, SAICE's Head Marketing, paid special tribute to the many members of SAICE who have passed way, and honoured their legacy and contribution to the organisation.

"It is our honour to recognise individuals, organisations, and our members who continue to make an impact on the development of building a South Africa for generations to come, through innovation and ingenuity.

SAICE remains committed to sustaining the future of the civil engineering industry together with its members, partners and stakeholders," said Lentsoane.

Winners of the Sanral SAICE 2022 national awards

The individual awards honour an individual who has rendered outstanding service to the profession or one who has made a contribution of distinction to civil engineering:

- Engineer of the Year Winner (category sponsor – Reinforced Earth): Professor Pierre van der Spuy from Zutari
- Young Engineer of the Year Winner (category sponsor – Sika South Africa): Shilpi Jain from Stantec Melbourne Australia
- Technologist of the Year Winner: Kubendren Govender from Mariswe
- Young Technologist of the Year Winner: Tevan Govender from Knight Piésold
- Young Technologist of the Year - Highly Commended: Duard Erasmus from AECOM
- Graduate Engineer of the Year Winner (category sponsor – PPS for Professionals): Erin Da Silva from Hatch
- Graduate Engineer of the Year Winner (category sponsor – PPS for Professionals): Takalane Netshipale from the KwaZulu-Natal Department of Health
- Graduate Technician of the Year Commendation: Avuyile Mayekiso from ROMH

In the project-based awards' category, projects showcased portray innovation, pioneer-thinking engineering and how the profession finds solutions to challenging demands.

Most Outstanding Civil Engineering Project – Technical Excellence category (category sponsor – SKI Civil & Structural Engineers)

- Winner: Royal HaskoningDHV for the KwaZulu-Natal Department of Transport's Sani Pass Phase 2: Roadworks – km 13,6 to km 25,0
- Highly Commended: Zutari for Rand Merchant Banks' RMB 8 Merchant Place Project

Most Outstanding Civil Engineering Project – Community Based category

- Winner: Naidu Consulting for the KwaZulu-Natal Department of Transport's Construction of the Msunduze River Bridge No. 3202 on Local Road L3110 project
- Commended: Royal Haskoning DHV for the Mossel Bay Municipality's Brandwacht Pedestrian Bridge Project

Most Outstanding Civil Project in the International category (category sponsor – SKI Civil & Structural Engineers)

- Winner: Zutari for the Roads Authority Namibia's Upgrade and rehabilitation of Omaruru River Bridge, No. 435, in Henties Bay, Namibia project.

Most Outstanding Investigative or Planning Report or Study

- Commendation: SMEC for the Investigation and Design of Remedial Works for Wall No. 2 on Main Road P73. ©



BUILDINGS OF THE FUTURE – HERE ARE THE FIVE ESSENTIAL PILLARS

In an era of digitisation and electrification, commercial and industrial facilities need to rethink its focus. Forty percent of the world's CO₂ emissions come from buildings, whilst 30% of the energy consumed (in buildings) is wasted. By Okkie Momberg, Prescription Manager at Schneider Electric.

Moreover, there are 10 times more connected devices, and data generated has taken a giant leap in the last five years; edging towards 500 billion Gigabytes, driven in part by the rapid adoption of technologies such as Artificial Intelligence (AI).

The reality is when planning a new facility or retrofitting an older building, five essential pillars that need to be factored in to keep trend with a world that is consuming energy and data at a monstrous pace.

Pillar One – availability

In a country impacted by a severely strained grid and resultant unstable power supply, building owners and facility managers are faced with a very real challenge, how do they keep the lights on and the data flowing, so to speak.

It is estimated that load shedding costs the economy up to R500m per stage, daily. An enormous amount that begs the question: what are building owners doing to mitigate the impact, ensuring their tenants continue to stay productive and, most importantly, profitable?

Power availability is a non-negotiable pillar that demands top priority for owners and facility managers to keep buildings running optimally. And there are several workable, attainable renewable and alternative energy solutions that provide redundancy and mitigate the instability and losses that come with an unreliable grid.

Pillars Two and Three – sustainability and efficiency

Sustainability and efficiency in buildings go hand in hand.

From a sustainability point of view, achieving carbon-neutral, green building certification is certainly a big driving force.

However, certification is not the end of the line; the building industry needs to look at sustainable practices within its supply chain, ensuring that each cog in the wheel moves towards greener practices.

Efficiency feeds into sustainability, as already mentioned South Africa's power provision is unstable, which is why building owners and managers need to look at energy demand within their facilities and optimise it accordingly. This means granular correlation analysis determining how the energy is being used and whether it is utilised efficiently – ultimately impacting the wellbeing of the building.

Also, improved efficiency allows for flexibility – a space can with relative ease be customised to fit a tenant's specific needs. With the necessary building management systems in place, heating, electrical and connectivity requirements can be adapted to meet pertinent needs.

Pillar Four - cybersecurity

The pandemic saw a considerable portion of the local workforce working from home. However, more and more businesses and their employees are returning to the office which means cybersecurity and connectivity must be fortified and readily available.

The IT infrastructure needs to be fortified and offer bandwidth and resultant speeds to meet technology demands. Whichever way you look at it, tenants now have the upper hand, there are many buildings ready for occupancy and have access to the cream of the crop which is why owners and managers must stay one step ahead of the competition.

Pillar Five – safety

As mentioned, IT services need to be fortified, conversely the same urgency applies to physical building safety.

Safety is a basic human right which is why buildings today must have access control, CCTV cameras and other physical security measures.

Additionally, the physical electrical infrastructure must be safeguarded against potential surges and worst fires that can be detrimental to both those working with the infrastructure and in the vicinity.

At Schneider Electric we offer a complete solution throughout the building value chain; managing safety, energy, optimising sustainability, and accessibility whilst ensuring that the building run as efficiently now and in the future. ©

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BOARDWALK MALL APPOINTS THREE GQEBERHA LOCALS TO LEAD ITS MANAGEMENT TEAM

Boardwalk Mall in Gqeberha, Eastern Cape, officially opened on 22 September 2022, has appointed three Gqeberha locals in key positions on its new management team. Boardwalk Mall is a major development by Flanagan & Gerard Group and Emfuleni Resorts, a subsidiary of Sun International, that is set to take shopping and entertainment in Gqeberha to new heights.

The R500-m project builds on the success and strong community roots of the landmark Boardwalk Casino and Entertainment World. Boardwalk Mall is an extension and upgrade of the Boardwalk Precinct, which is more than doubling its retail space to 23 000 m². Construction on the first phase of a 17-hectare development began in May 2021.

Gqeberha born and bred Solomzi Nqweni is the mall's new general manager. Solo first visited Boardwalk as a youngster and fell in love with the theatre of the precinct. He started his career as a professional cricketer, representing the local Eastern Province and Warriors Cricket teams. Solo has also gained outstanding business credentials. He has worked in investment banking at Investec, business operations at DEKT

Holdings and spent a year at Flanagan & Gerard learning the ropes of the retail property business.

"PE is called the friendly city for a reason; its people are generally honest and hard working. I'm excited to be around this team, to be part of building such an amazing project together, and to share it with everyone in September. The city has never had a precinct and shopping experience like this – it is completely new. We have many ideas bouncing around that we'd love to bring to life, so be ready for some wonderful surprises," says Solo.

Kirsti Dolinschek, Boardwalk Mall's marketing manager, hails from a Gqeberha family. She completed her BCom Honours in Business Management at NMMU (UPE) in 2005

BUILDING BETTER GREEN FUTURES

JSE listed Balwin Properties is a developer that cares about environmentally responsible building practices and the delivery of high-quality apartments to its valued clients.

Once a niche segment, green real estate is now firmly established as the next frontier in property development. Balwin Properties dominates this market in South Africa, while also being recognised as a leading responsible developer in the global market by way of industry awards, its number of green building certifications and uptake of green mortgages by customers who align with the underlying values.

The group's multifaceted approach to "Building Better Futures" has placed it in a class of its own over the years and taps into the unstoppable wave of corporates and individuals around the world who are consciously taking action to secure a future in which all can thrive.

Already, Balwin's green track record is solid.

Balwin Properties has for the past two years measured its Greenhouse Gas (GHG) emissions in the form of a voluntary carbon footprint report and publishes an

integrated annual report that tracks commitments and performance. Balwin was instrumental in the creation of Green mortgages in South Africa, which increases accessibility to homeowners who want to both save money through reduced interest rates and lower utility costs. It is committed to third-party certification for all new developments. In fact, it is the developer with the most apartments registered for Excellence in Design for Greater Efficiency (EDGE) certification in the world, and now targets 6-Star Green Star and Net Zero Carbon ratings from the Green Building Council of South Africa (GBCSA) for its lifestyle centres, already having nine of these buildings – all evidence of global excellence in practice. Its work among communities through the Balwin Foundation is equally impactful and combines donations to charities with skills development in local communities.

Balwin as a next step, early in 2022, consolidated

and moved back to the city in 2016. Kirsti has gained diverse experience in an impressive progression of marketing, promotions and communications roles, most recently as Retail Marketing Manager, Greenacres Shopping Centre. She has been visiting the original Boardwalk since 2004 for fun and entertainment and watched in excitement as the new Boardwalk began evolving in 2021.

“The opportunity to influence change in the local community and support local businesses as part of the Boardwalk Mall management team is genuinely exciting. When it launches in September 2022, Boardwalk Mall will be a catalyst that puts Gqeberha on the map as a national and international tourism destination.

It will transform the beachfront into a sporting and entertainment hub, not only for the city but hopefully SA. Locals are going to love the convenience and access to great national and local brands – on their front doorstep,” says Kirsti. She adds that Summerstrand and its surrounding areas have needed a full-service convenience mall for the longest time.

Anthony van Goeverden is a qualified EL&P electrician who has lived in the area all his life and loves it. He has been part of the Boardwalk team for 15 years and, as maintenance and engineering manager, has been involved to some extent with the demolition and rebuilding of the mall so far.

“The quality of the people working on the new Boardwalk Mall is exciting and stimulating. When it officially opens in September, shoppers are going to love its amazing design and, of course, the tenant mix,” says Tony.

The Boardwalk Mall philosophy is all about keeping it local, explains Paul Gerard, MD of Flanagan & Gerard. “We employ local people and contract local supplier companies wherever possible. Our new management team hit the ground running in March 2022. They certainly have their work cut out for the official opening on 22 September 2022.

By beginning now, they’ll get a head start learning the processes, building relationships and tackling the extensive launch preparations. We believe that when it comes to managing a shopping centre, it’s as much about the attitude

of the team as the skills, and the new Boardwalk Mall team has heaps of both.”

As locals, the team bring their passion for the community and city to the management of the mall. “We are committed to supporting local schools, businesses and community bodies in Summerstrand and beyond, to further the growth and development of Gqeberha and its friendly people,” says Solo.

As individuals, Boardwalk Mall’s team members are part of many diverse aspects of community life in Gqeberha. Solo loves reading, gaming and gyming, and actively raises awareness around a rare auto-immune disease called Guillain-Barré syndrome (GBS) and how it has impacted his life. Kirsti is an avid runner with 32Gi PE, full-time mom and keen supporter of local businesses and charities. From a small beach house outside Gqeberha, Tony embraces his passions in a way that few other places in the world would allow – he surfs, scuba dives, sport and spear fishes, cycles and adventure bikes.

With six months to go until Boardwalk Mall’s official opening on 22 September 2022, the development is comfortably on track to open complete and fully let. Currently, only around 2% of the mall’s gross lettable area is available to let, with 90% secured and the rest under negotiation.

Boardwalk Mall’s first small batch of retailers are opening this month (March). They include NuMetro, Magic Company, Urban Roti, Legends Barbers, Heylo, Boardriders, Hello! It’s Me., Ripcurl, Paco Taco, Tech and Sound, Larpelo Eyewear, Famous Bean Café, Steers, Debonairs and Fishaways, Friesland, Bem Vindo, and Capitec ATM. Many of these tenants are local independent retailers.

“This is the first taste of Boardwalk Mall’s exciting tenant mix that represents the city’s culture and people. We look forward to seeing these local traders form part of the cornerstone of this mall, and we believe this will happen through their growth and successful trading over time. We will be here to support them every step of the way,” says Solo. ☺

**This article went to print before the official opening.*



its actions around Building Better Futures into a comprehensive Environmental, Social and Governance (ESG) policy, which aligns with six of the 17 United Nations’ Global Sustainable Development Goals (SDGs) and identifies three big goals: Building Wealth (for first-time home buyers); Building Inclusion (for local development); and Building Smart (for a low carbon future). South Africans share in global concerns around the imminent threats posed by climate change, while also facing ever-rising utility costs and increasingly erratic service delivery. According to international research, home buyers are driving strong growth in the global

multi-family housing green buildings market, which is expected to grow from USD40,93bn in 2020 to reach USD55,54bn in 2025 at a CAGR of 7%. “Customers are more informed and acknowledge the benefits and cost savings in the long run from sustainable homes,” the research notes. Balwin is already delivering exactly this for homeowners, shareholders, employees, the communities it operates in, as well as the bigger property industry and green economy, having this new ESG policy in place will see Balwin gain even more ground in a growing market through increased confidence in a secure future from investors and customers alike. ☺



LIEBHERR TA230 – CHANGING THE ADT LANDSCAPE

Suited for large infrastructure projects, quarrying and coal mining, the new Liebherr TA 230 Litronic articulated dump truck (ADT) is now available in Southern Africa. Liebherr-Africa says the new 30-t class ADT is a welcome addition which not only plugs the gap in the company's earthmoving product range, but also changes the game in the local ADT landscape.

Having made its global debut in 2021, the Liebherr TA 230 articulated hauler was unveiled locally at an Open Day held at Liebherr-Africa's Springs headquarters on 24 June 2022. Speaking at the Open Day, Dieter Schmid, MD of Liebherr-Africa, said the new ADT closes a crucial gap in the company's wide earthmoving equipment range.

"With the addition of the TA 230 Litronic, we have become a full-liner in the earthmoving area. The ADT is the last piece of the puzzle, making us a one-stop shop for all our customers' earthmoving equipment needs. With its unique design, we believe the TA 230 ushers in a new era in the ADT segment," said Schmid.

Tendayi Kudumba, General Manager: Earthmoving at Liebherr-Africa, says the new 30-tonne (t) class ADT is ideally suited for a range of applications, including quarrying, coal mining and large infrastructure projects. Thanks to its optimal structure gauge, the TA 230 can also be deployed

in special applications such as tunnel construction and underground mining.

Unique design

The TA 230's unique design sets it apart from the rest of the competition in the ADT space. In fact, its modern design was key to winning the coveted 2021 Red Dot Award for high design quality. The Red Dot Award, considered one of the most important international awards in the field of design, is a true reflection of the painstaking research and development that went into the construction of the machine.

Designed from scratch and guided by extensive customer input, market analysis and a punishing testing programme, the TA 230 Litronic scores with modern designs in the front-end area, which create maximum ground clearance for true off-road performance.

For example, the powershift transmission is positioned



safely and compactly under the operator's cab. The newly designed, solid articulated swivel joint allows independent movements of front and rear end, thus ensuring maximum manoeuvrability. The robust and positive-locking swivel joint with tapered roller bearing is perfect for the shear stresses arising during use, withstands maximum loads and provides optimal force distribution.

"The interaction of balanced weight distribution, permanent 6 x 6 all-wheel drive, solid, flexible axle mounting, a large bank angle and the high ground clearance enable the TA 230 Litronic to deliver maximum performance in tough underfoot conditions," says Kudumba.

Ease of maintenance

With uptime in mind, the machine comes with an optimised maintenance concept. Thanks to the clever sensor technology, the TA 230 automatically performs the daily check itself. The machine runs through an inspection catalogue at the start, where levels of engine oil, coolant, the central lubrication system, for example, are checked for the nominal state. Any deviations are shown on the display in the operator's cab.

The electrohydraulic opening bonnet, as well as an integrated, folding ladder with non-slip steps, provide easy, safe and clear access to the entire engine compartment. All relevant service points are visible and easily accessible. Maintenance work can be performed comfortably and safely from a platform. Refuelling with fuel or urea solution is also done easily and safely from the ground.

Efficiency and productivity

Powered by a 6-cylinder engine delivering 265 kW of power, the TA 230 is driven by an 8-speed automatic powershift transmission that ensures optimal force distribution. With the actively controlled longitudinal differential locks, automatic traction control is also available.

"As soon as slip occurs at an axle, the torque is cleverly transferred to the axle or axles with traction. The new dump truck impresses with an excellent driving performance and enormous pulling force, even in the most difficult ground conditions and on challenging gradients. Maximum safety is always guaranteed thanks to optimal adhesion," explains Kudumba.

The machine's large and robust trough is designed for the effective transport of a 28-tonne payload. Numerous improvements have been made for quick and efficient

loading and unloading, as well as safe transport of the material.

The front of the trough is straight and the sills are low so that loading with a wheel loader, for example, is easily possible across the entire length of the truck. To quicken the release of the material during unloading, the inner edges of the new trough are tapered. The two tipping cylinders at the side give the TA 230 Litronic high tipping pressure.

The load can be tipped against the slope easily and quickly. During transportation, the long chute at the end of the trough ensures minimal material loss. The trough volume can be increased with the optional tailgate. Thanks to the large opening width, tipping of large and bulky transported material is easily possible. Even with the tailgate the overall width of the TA 230 Litronic is still below 3 m – this allows the machine to be easily and quickly transported on the low-loader.

An innovative, standard weighing system shows the current payload during the loading process on the display in the operator's cab. An optional loading light on both sides at the back of the operator's cab shows the loading level outdoors.

Assist systems

The modern assist systems installed in the new TA 230 Litronic support the machine operator, thus increasing safety and comfort during operation. Apart from a hill start assist, a speed assist is also available. With the hard stop function, the end position damping of the trough lifting cylinders can be activated or deactivated at the touch of a button. The trough lift is limited for work in a height-critical area with the aid of the height limit.

The speed-dependent steering provides additional driving comfort. The adaptive steering system continuously adapts the ratio of the steering movements to the current speed. This makes possible easy and accurate manoeuvring at low speeds, but also accurate steering at higher speeds, as well as fewer steering corrections when cornering or taking bends.

"In addition, the newly developed, spacious operator's cab of the TA 230 Litronic provides ideal conditions for comfortable and safe working. Thanks to the panoramic windows without any annoying struts, as well as the short, inclined bonnet, the machine driver always has an optimal view of the driving, working and articulating area of the machine," concludes Kudumba. ☺

CLEANING UP THE CONSTRUCTION INDUSTRY WITH RENEWABLE ENERGY

Carbon emissions from construction sites are a major contributor to global warming, largely owing to the industry's dependency on fossil fuels.



The construction of the 24 000 m² single-level Boardwalk Mall is 80% complete and forging ahead. After preparing to commence work in February 2020, demolition and bulk earthworks were finally able to get underway from February to April 2021, and construction began in May 2021. True to the development's deep commitment to creating local employment and opportunities, 87% of the labour on site is local.

Boardwalk Mall in the Eastern Cape is a major development by Flanagan & Gerard Group and Emfuleni Resorts, a subsidiary of Sun International (JSE: SUI). The R500m project builds on the success and strong community roots of the landmark Boardwalk Casino and Entertainment World. Boardwalk Mall is an extension and upgrade of the Boardwalk Precinct and is more than doubling the retail space in the precinct. The first phase of Boardwalk Mall opened on 24 March 2022, and the grand opening is on track for 22 September 2022. "Boardwalk Mall is a retail and lifestyle powerhouse," says Paul Gerard, MD of Flanagan & Gerard.

The mall is introducing the first Checkers, Woolworths Food and Dis-Chem stores to the Summerstrand area while also providing all the convenience and choice of a Pick n Pay and Clicks and the very latest cinema upgrade from NuMetro. Patrons can look forward to style from Sportscene, Totalsports, Ripcurl, Queenspark, Senqu, American Swiss, Exact, Refinery, Legit and Side Step. Boardwalk Mall will also serve up the much-loved menus of Spur, Steers, Debonairs, Fishaways, and Wimpy. Its McDonalds Drive Thru will also open on 22 September. Boardwalk Mall's banking line-up includes ABSA, Capitec, FNB and Nedbank.

The Boardwalk Mall philosophy is all about keeping it local. Providing a small taste of its signature style, the first phase of the mall spotlighted local independent retail talent when it opened in March this year.

Already well supported by the community, local concepts include Hello! It's Me, Bem Vindo, Friesland Milk Bar, Shark Rock Tattoos, Village Hardware and Paco Taco. Hombakazi and Larpelo Eyewear are local fashionistas who have both opened in the mall to complement their established countrywide online presence.

More local and independent retail highlights are coming in the mall's main phase, including home-grown labels MaXhosa with their South African branded high-end fashion, BohoGirl and Obriani. Proudly independent South African brands joining the mall include the brother-and-sister duo making new food-waves in the city, including The Balkan Burger & Deli, Gussies Stationers for independent stationery, homeware from @home, gifting as well as the Cape Town brand Yokico, for unique and funky

children's school accessories.

Main phase retailers are already preparing their Boardwalk Mall stores to welcome customers. The mall is 98% let, with only five shops available to lease, earmarked for retailers in categories including camping/outdoor, kids accessories, high-end dining, toys, and electronics/tech.

"Unique in many ways, Boardwalk Mall offers guests so much more than its retail and restaurants because it is located in the Boardwalk Precinct and connects seamlessly with the city and its beaches," notes Gerard.

Boardwalk Mall links with the Sun International Boardwalk Casino and the 5-Star 140-room Boardwalk Hotel. It is right on the beachfront, and shoppers can step out onto the beautiful promenade running along the incredibly popular Blue Flag Hobie Beach. It is also near the MSC cruise ship dock in Port Elizabeth Harbour, making it a must-visit for tourists.

"We are delighted by the reaction to the launch of phase one of the project, and the impact it has had so far. We are also extremely pleased about our joint venture with Flanagan & Gerard and the work done to date, and look forward to an exciting opening in September," says Graham Wood, Sun International Group COO for hospitality.

Get ready for excitement levels in Gqeberha to rise: a new 2,500 m² events arena is being built at the Boardwalk's heart - the Sunpark Events Arena. The Sunpark Events Arena will add to the lifestyle and entertainment activities on offer and provides an exceptional quality Eastern Cape venue for the legendary events that Sun International hosts around the country.

On opening weekend, Boardwalk's Sunpark Events Arena will host its first of many rugby events, Boks in the Park, broadcasting all the live action of South Africa v Argentina game on its amazing big screen.

"The major investment that goes into a shopping centre like Boardwalk Mall has exponential and multi-layered benefits for its community. With so many everyday needs taken care of under one roof at Boardwalk Mall, and so many new and special attractions for locals and tourists alike, we're excited to welcome everyone to a great place where our community comes first," says Gerard. ☺



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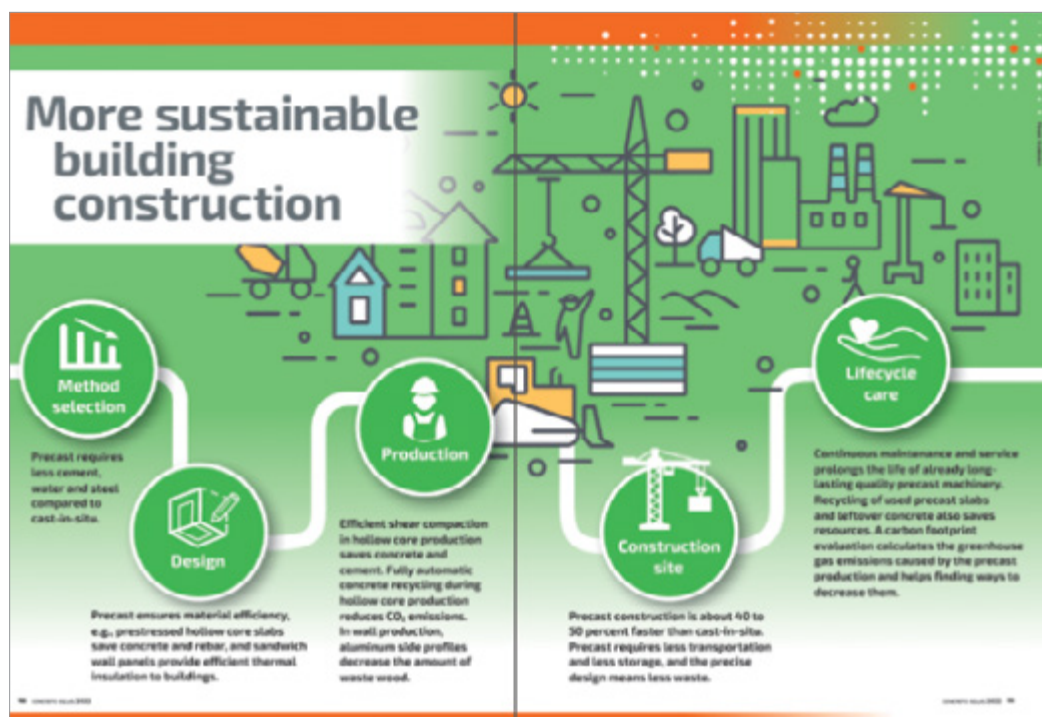
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WHY PRECAST IS CENTRAL TO CUTTING CONCRETE'S CARBON FOOTPRINT

With the ability to cut its CO₂ footprint by 25%, factory-based precast concrete production has the potential to save billions of tons of CO₂ being emitted each year. So why is it so overlooked, asks Mats Jungar, CEO of Elematic.



Precast is the cleaner alternative

The solution is – rather than casting concrete in situ – walls and floors should be made in tightly controlled precast factories. Whereas a slab poured on a worksite is solid, a precast slab – with its hollow core voids – uses a little over half the concrete. Cement use is cut by one-third per m³ of concrete, thanks to the much more effective compaction process used in the factory. Even steel use is reduced – as it is prestressed before the concrete is poured, requiring about 10-15kg less steel per m² of floor slab. Even that's not all – because the precast hollow core floors are so

The world has a love-hate relationship with concrete. On the positive side the raw materials for concrete are plentiful, and the production of concrete foundations and structures are extremely cheap. But on the negative side concrete's contribution to global CO₂ output is 8% – or a hard-to-imagine three gigatons of CO₂. Each and every year.

There is a general consensus that this level needs to be cut in order for the world to meet the obligations of the Paris Agreement, COP26, etc. The problem is that there are no readily available (and affordable) alternatives to concrete. Replacing concrete with steel, bricks or wood is not economic, and used in the quantities globally needed would create their own environmental problems. (E.g., Finland would need to cut down every tree in its heavily wooded country in just a few years if wood were to replace concrete.)

So concrete is easy to criticize but hard to replace. And while efforts are being made to make the concrete supply chain cleaner – by developing CO₂-free steel for rebar, for instance, or not using coal-fired kilns in making cement clinker or replacing cement by e.g. fly ash – these are unlikely to move the needle on concrete's gigantic CO₂ problem.

Given the above, if someone told you that there was a technology that existed today that could create concrete buildings with 25% less CO₂ footprint you'd think the world would jump at it. Well, it does – and it isn't.

much lighter, less concrete is needed in the foundations. And the number of internal load bearing walls can also be considerably reduced.

The list of benefits of using precast manufactured concrete elements over in situ poured concrete goes on. The ability to sandwich insulation into the process not only keeps heating bills down in winter – but can drastically cut air conditioning (and all its CO₂ output) in hot climates.

Waste is a big problem of concreting on site – whereas in precast any spare material can be recycled back into the production process. Unlike in hot climates, where large quantities of water are needed to protect recently poured concrete, no additional water is needed in a factory-controlled precast environment.

A breath of fresh air

Pollution is not just CO₂ – up to 25% of air contamination in major cities is from dust attributed to concrete construction techniques. With precast manufacturing the potential to improve inner city air quality is huge. Finally, not only can using precast floors and walls cut the construction build times by a third, the fact that the elements meet rigid quality control and can be lifted and fitted into place (often without the need for scaffolding) improves site safety and building lifetime safety.

Putting our house in order

Despite all its advantages over in situ, precast concrete manufacturing is not perfect, and we are working to lower our own carbon footprint. To that end, at Elematic we have recently met the requirements for ISO14001, which is helping us improve our environmental performance through more efficient use of resources and reduction of waste – and lowering our own CO₂.

We appreciate that most of the CO₂ created from our precast technology comes from its in-use phase with customers. To that end we offer a range of services to help them measure their carbon footprints and create action plans to reduce them. Measuring a plant's carbon footprint is the first step to low-carbon element production.

To determine the carbon footprint of a construction product, the carbon footprint of the production process must be known: including the emission effects of the energy and raw materials used, and the footprint of manufactured concrete elements. Our reports help identify the most effective ways to reduce precast factories' carbon emissions.

In our day-to-day work it's our task to make the production of precast elements as efficient as possible – reducing material, energy, time – and CO₂.

At the heart of this modernization is process automation and Plant Control, a suite of software that combines precast process optimization with the latest IT. We come to Bauma with a whole range of innovations to help our clients do more with less. Looking ahead, Elematic is also helping to fund the LOIKKA project, a joint venture aiming to sharply

reduce greenhouse gas emissions from the concrete industry. As part of the project, we will test low-carbon precast concrete elements. The transition to low-carbon concretes poses a productivity challenge for precast concrete plants: how to maintain output when low-carbon concretes dry more slowly than conventional concretes (up to double the time). Elematic's customers have hundreds of factories around the world. If we can help them make the transition to low-carbon concrete, it will have a big impact on the climate.

Protecting the climate needs a higher priority

So, if precast concrete production is so good in so many respects, why isn't it more popular? Sadly, the answer is that contractors mostly win tenders by being the cheapest, not the most environmental. Added to that, no one in the construction value chain is responsible for a building's CO₂ output. Among major economies only China is incentivizing the use of precast construction techniques. This is the solution – only through new legislation will the environmentally damaging cycle of opting for in situ concrete be broken.

The irony is that in situ concrete's great claim-to-fame – being the cheapest option – isn't really true. When you consider the shorter build times, lower workforce requirements and lower waste, precast is easily comparable with in situ construction.

With the climate continuing to heat up, the technology to radically cut CO₂ output from concrete construction exists today. ☺

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CARE FOR OUR COASTLINES

Fibertex manufactures geosynthetic sand containers (GSCs) which are used in the construction of efficient protection structures for coastal protection, erosion control, dune revetments and slope stabilisation, as well as for emergency protection in floods.



“As coastal erosion becomes more prevalent, due to rising sea levels and changes in global weather patterns, it has become increasingly important to have well-engineered, durable and easily manageable coastal protection structures in place,” says Burger Fourie, Technical Sales Engineer at Fibertex SA. “Although using large sandbags as structural components of revetments is not new in environmental protection, Fibertex has made a substantial investment to design and manufacture a robust but soft GSC system, as an alternative to conventional rigid revetment structures. These robust GSCs are a lightweight and workable geosynthetic substitute for traditional revetment systems utilising rock and even seawalls using concrete and reinforcing steel.

“The function of a GSC is to allow the free passage of water through the porous structure of the fabric and into the sand it carries, to absorb wave energy, while retaining the sand fill in the bag. This is unlike hard concrete structures, which predominantly protect by means of wave energy reflection, which could most likely have a negative long-term impact on adjacent structures.

“Fibertex FiberRock GSCs were used for coastal rehabilitation at Umdloti beach in KwaZulu-Natal, over five years ago. The robust structure is still sound and highly effective in protecting the coastline.”

GSCs consist of a strong porous base fabric, which is mechanically needle-punched together with a coarse anti-abrasion and vandal resistant (AVL) cover layer. This robust fabric combination offers a flexible structure that is able to retain a coarse fill medium – like sand – while allowing the free passage of water.

Fibertex AVL geotextile sand containers, which are manufactured from highly UV stabilised virgin Polypropylene (PP) fibres, can withstand the effects of repeated wave attacks in harsh coastal environments and are the perfect soft solution to beach rehabilitation and coastal protection. Geotextiles used in the manufacture

of GSCs are required to withstand the effects of different environmental conditions from the geotextiles used for conventional separation, filtration, drainage and protection.

The Fibertex team has given particular attention to critical factors in the development of this system, including abrasion, perforation, puncture and UV resistance, tensile strength and elongation, as well as permeability and drainage.

GSC material selection is critical to the long-term stability of the entire structure. In the case of coastal protection applications, where high energy bi-directional flow conditions are encountered, needle-punched staple fibre (SF) geotextiles are preferred. They have proven to be durable and the staple fibre geotextiles do not delaminate under the harsh flow conditions expected from wave action.

Fibertex has selected virgin Polypropylene fibre, with excellent frictional and low density characteristics, as the basis for manufacturing its GSC fabrics. Polypropylene has better performance to weight ratio than other more dense polymers, such as Polyester. Although Polyester is a strong, durable polymer, Polypropylene is preferred globally in the manufacture of heavy grade/voluminous GSC fabrics.

Other important properties for appropriate product selection include the design of the revetment structure, where environmental influences such as wave velocity, wave amplitude, wave period and wave direction need to be taken into account.

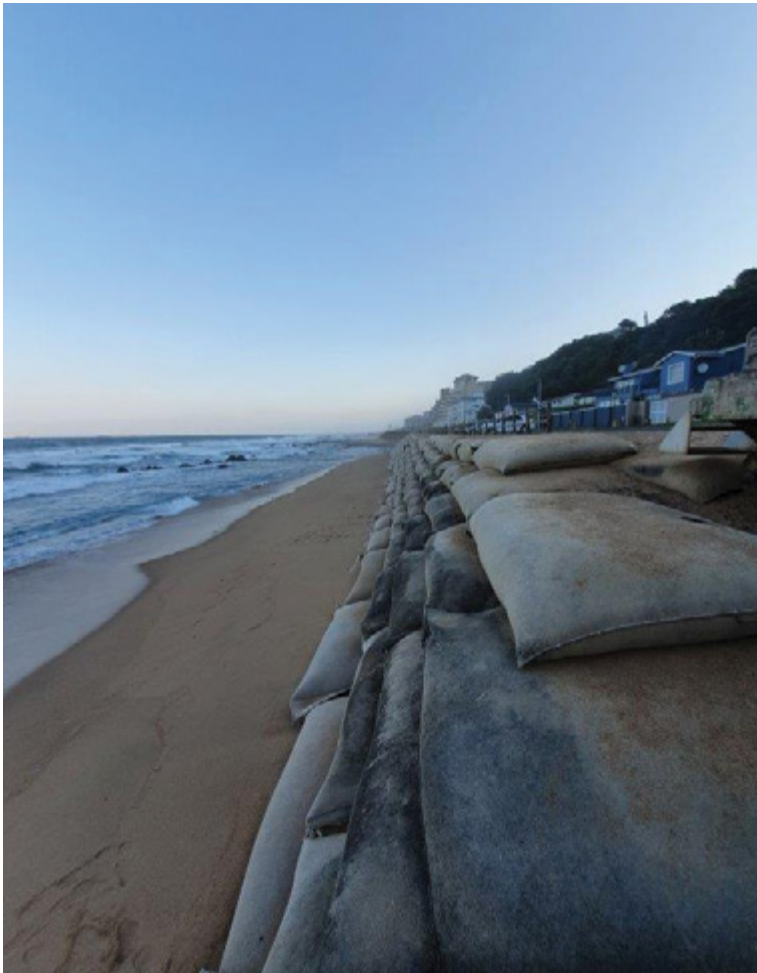
Size selection of GSCs for each application is also critical. Smaller GSCs might be sufficient for less harsh conditions, but direct wave attacks often require a larger, more stable GSCs. The correct installation procedure and optimal filling and closure of GSCs prevent free movement of the bag, to ensure the long-term stability of the structure.

Fibertex GSCs, which are available in sizes between 200 kg and 4 000 kg, can be used in riverine, lagoon and coastal protection works, depending on specific environmental and engineering requirements of the designed structure.

Fibertex SA has produced GSCs for local projects, as well as large scale revetment structures in Africa, the Indian Ocean Islands, as well as in Europe and Australasia.

High-performance Fibertex materials – which comply with stringent quality, environmental and health specifications - play an important role in specialist sectors, including acoustics, automotive, bedding, building, composites, concrete, filtration, flooring, furniture, geotextiles, medico and wipes.

Fibertex products are manufactured to consistent quality standards at all production facilities globally and are supported by a technical advisory and back-up service. ©



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JET DEMOLITION AND EDIFICE ENGINEERING COLLABORATE ON SUPERTECH TWIN TOWER IMPLOSION IN INDIA

Demolition specialist Jet Demolition has successfully imploded the Supertech Twin Towers in Noida, Uttar Pradesh near the capital New Delhi. The controlled implosion took place at 14:30 on Sunday 28 August 2022, reports Jet Demolition Contracts and Project Manager Kate Bester (bottom right). The project was a collaboration between Edifice Engineering, a demolition company based in Mumbai, and Jet Demolition, marking the second time that the two companies have collaborated in India.

The successful implosion of the Apex and Cayenne towers (103 m and 97 m respectively) followed India's Supreme Court ruling ordering the illegal structures to be demolished. This follows on from the success by the two companies in their previous collaboration in January 2020, when three high-rise structures were imploded within 24 hours. "What makes Apex unique is that not only is it the tallest building ever to be imploded in India, but also one of the top 15 tallest buildings to be imploded globally," reveals Jet Demolition Director Joe Brinkmann (top left).

The detailed planning and implosion preparation was especially challenging due to the close proximity of the towers to neighbouring buildings, in addition to their robust construction, able to withstand high-magnitude earthquakes. Test blasting revealed that unusually high explosive loading was required to reliably fail the shear walls. "These shear walls fell into the class of 'highly unforgiving' when it came to attempts at explosive-driven rupture," explains Brinkmann.

Due to the 3 516 kg of explosives required to successfully fell the structures, the impact and potential for structural damage to surrounding buildings was a significant concern. There was heightened anxiety among authorities and stakeholders that the adjacent building at a mere 9 m away, beset with structural degradation, would be further weakened and collapse from implosion-induced vibration.

Dozens of columns were strengthened, beams were back-propped, and an array of crack gauges was installed to monitor prominent structural cracks – but no movement or crack growth was induced by the implosion. Nearby buildings were draped with geotextile curtains to minimise window breakage. "Minimal superficial impact, with a small number of windows cracked, and an 8 m section



of brick boundary wall to contend with after the implosion, is an extremely satisfying result," stresses Brinkmann.

After decreeing that the demolition proceed rapidly, the Supreme Court remained involved in the leadup to the implosion, receiving feedback from all stakeholders and providing updated instructions as the project progressed. At peak, over 400 persons prepared the building for implosion, many of whom had families and their own residences within close proximity to the Supertech Twin Towers. "Despite being nervous about the implosion, we were welcomed and supported by the local community, who entrusted their homes and livelihoods to us," says Brinkmann. Prior to implosion, the surrounding structures housing over 5 000 residents were temporarily evacuated, with the support



of a 650-person police presence.

As for clean-up operations, the intention is to recycle all materials resulting from the implosion. "Over 68 000 tonnes of concrete rubble are expected to be crushed and reused, with liberated rebar sent to foundries for recycling. A large portion of the project cost is being recovered from the sale of the rebar, indicative of exactly how strong these buildings were," points out Brinkmann. Clean-up and recycling operations are being led by Edifice Engineering, with an anticipated completion date of December 2022.

Citing the project as one of the most challenging ever undertaken by Jet Demolition, Brinkmann concludes: "Edifice Engineering and India have joined the 100 m implosion club under extremely demanding conditions." ©

ABOUT JET DEMOLITION

Jet Demolition has been undertaking industrial demolition works since 1994, and is the leading, largest, and most technically advanced demolition company in Africa. It offers in-house, full-range demolition services, including advanced mechanical solutions and controlled implosions. It actively pursues ongoing development of skills and equipment suited to the changing needs of the industry.

Jet Demolition is a technically based company, with various staff members holding MSc, BSc, and BTech Degrees, as well as National Diplomas, in various engineering fields. This expertise gives it the technical foundation to successfully engineer solutions for large and complex demolition projects, and furthermore fuels its drive to deliver quality projects safely. Jet Demolition strives to offer its clients innovative and technical solutions to demanding demolition challenges.

IKUSASA GETS 6 STAR STAMP FOR SUSTAINABILITY EXCELLENCE



The Ikusasa building in the Oxford Parks precinct in Rosebank – completed by leading black-owned contractor Concor earlier this year – has just been given six stars by the Green Building Council South Africa (GBCSA).

Built by Concor in just 12 months, Ikusasa is a pioneer in sustainable building standards. The 6 Star Green Star SA Office V1.1 Design Certification from the GBCSA is considered as World Leadership status. In both its construction and operation, Ikusasa reduces water use, energy consumption, process waste and pollution. The building is occupied by blue chip company Anglo American's Global Shared Services, who recently recognised Concor by awarding a Certificate Award of Excellence to the company.

Earning this accolade required Concor to apply its client's sustainable designs and its own stringent quality systems. Among its construction procedures, for instance, Concor conducted a hazardous materials survey on the site before demolishing existing buildings. The company ensured the responsible removal and disposal of any asbestos, lead or polychlorinated biphenyls found on the site.

Concor applied a stringent Environmental Management Plan (EMP) in line with its ISO 14001 accreditation. It also put in place a rigorous Waste Management Plan (WMP) which saw 70% of demolition and construction waste being re-used or recycled rather than going to landfill. Waste was separated at source, preventing contamination between different waste streams so that waste could be recycled more cost effectively. Together with the Hazardous Waste Management Survey, Concor was able to uphold critical environmental standards.

The building's environmental performance includes conserving water and energy. Water efficiency has been optimised by using options like low-flow tap fittings, dual flush toilets, as well as water sub-metering for uses such as irrigation and bathrooms. Water-wise irrigation methods and smart sensors cuts plant irrigation by half. Air is used in the heating, ventilation and cooling system rather than water, further reducing consumption.

To achieve a Green Star South Africa Net-Zero Carbon Level 1 score, Ikusasa generates all the energy required by the base building. This is achieved by harnessing renewable energy, with a solar photovoltaic generation system

on the roof. Energy efficiency is enhanced through sub-metering, which tracks the main areas of consumption. Where an energy use exceeds 100 kVA, it is metered separately. This allows users can benchmark usage targets and apply strategies to bring down energy consumption. ©

Built by Concor in just 12 months, Ikusasa is a pioneer in sustainable building standards.



IRENE LINK AND AVBOB TAKE A STEP TO A BRIGHTER FUTURE

One of South Africa's most iconic and respected companies took its first, momentous step into a shared future together with the Irene Link Precinct. Work has begun on AVBOB'S new head office at the innovative Precinct situated in Centurion, Irene.

AVBOB will move their headquarters to the Irene's multi-use precinct in December 2023, ending a 30-year tenure in the Pretoria CBD, where they occupied two buildings for their 800 employees. Their new head office will be the latest development in the Irene Link Precinct, which, according to the Owners Abland Property Developers, The Giflo Group and SOM, the precinct is a "naturally connected" development, encompassing commercial, retail, residential and lifestyle amenities in one location.

The 11 500 m² AVBOB head office – which will be the fourth building in the 75 000 m² precinct situated just off the Botha Avenue exchange on the N1 – is designed to not only meet the requirements and aesthetic storey of the funeral services giant, but will be energy efficient, with a four-star Green rating. As it will flank the main entrance to the development and complete the "visual and conceptual gateway into the precinct, it needed to be bold and iconic and set the tone for the precinct architecture and philosophy".

"We have seen over the last few years how the line between work and home life became increasingly blurred, which is why creating a precinct where we can link the hustle of business and the harmony of the quality of life is both obvious and necessary in the new 'normal'," said Grant Silverman, marketing and lease director at Abland. "It is vital to ensure the wellbeing of employees, which, in turn, ensures the wellbeing of our tenants and, thus, their businesses.

"Irene Link strikes the perfect balance between work and play, integrating 75,000 m² of developable commercial space comprising of 15,000 m² of prime convenience retail, as well as 60,000 m² of P-Grade office space, to create a highly productive working environment on the doorstep of

everyday essentials. With educational institutes, parks and residential nodes close by, it is not only the future of how we will live, but the present."

While the AVBOB head office will feature cutting-edge design, it will have a visual dialogue with the architecture of the precinct. Building A, which was completed in 2019, features aluminium louvres, Building B, which was completed in 2020, has floating concrete boxes, Building C, which is currently under construction and will be completed in the first quarter of 2023, will feature a curved glass wedge floating above a landscaped podium. AVBOB's building, D, is a "curvilinear building with no beginning and no end".

AVBOB outlined several criteria: the quality of building, environmental ratings and efficiency and local facilities available to employees. They are investing around R400-million into the building.

"It will be an extraordinarily striking building visually, with no hard edges or corners," said Silverman. "At its heart is a four-storey atrium, with bridges, escalators, green walls and public spaces. It will feature a 'walking track' concept around the entire facade where desks will sit back at least two-metres from the edge. This will not only ensure employees are not bothered by sun glare, but will be able to walk around the facade to interact with colleagues and other hubs in the business."

AVBOB's head office will also feature roof terraces to offer incredible spaces "for tenants to breathe and congregate with incredible views over Irene".

"It's an honour and incredibly satisfying to work with a 104-year-old iconic South African company such as AVBOB. It tells us that the future of the office and lifestyle is changing in a way that will strengthen not only AVBOB as a business, but the local communities and South Africa as a whole." ©

BUILDING SOUTH AFRICA UP WITH THE RE-INTRODUCTION OF BUILDERS CEMENT

Builders Cement, a locally manufactured private brand from one of South Africa's leading DIY retailers, will officially re-launch nationwide at the end of August 2022. Available exclusively at all Builders stores in the country, this local cement brand offers customers exceptional quality and value.

"We know how much our customers trust the quality of our Private Brand products, and that combined with our favourable pricing structure, and local manufacturing, makes Builders Cement the right product choice for South Africans," says Munier Solomon, Marketing Operations Manager at Builders. "Another factor is that this cement can be used for a variety of applications as it is a multipurpose cement.

These include road projects, general building, brick-working, concrete pot manufacturing and other art interests such as sculpture," adds Solomon.

Builder partners with local manufacturer

To produce and supply the cement, Builders has partnered with local cement manufacturer, Cemza. Based in the Eastern Cape, Cemza in partnership with global producer, Heidelberg Cement, is the largest manufacturer of quality cement.

There will be two locally produced variants available to customers at all Builders stores, both of which comply with the ISO 9001 and 14001 standards. The 32.5N bag will be available first and can be used for several applications including domestic concrete work to large building projects, as well as being cost effective for all masonry and plaster applications.

A key feature is the fineness of this product which improves workability and cohesion. Later in the year Builders will roll out the 42.5N, which can be used for domestic general use and major developments, building projects, civil and construction concrete, mortar and plaster applications.

"The current cement landscape provides Builders with a strategic role to play due to the competitive market and pricing strategy in the industry, as the demand for core construction products continues to increase across the commercial, property, and infrastructure sectors. Our capability to produce high volumes at an affordable price means all customers can reduce their operational costs without compromising on the quality. Through our partnership with Cemza, we can also guarantee consistent supply," adds Solomon.

Builders Cement is easy on the environment

Concrete is the most consumed substance after water, and it requires high amounts of energy to produce. The environmental impact results in a carbon footprint that accounts for approximately 5% - 8% of global CO₂ emissions, according to the International Energy Agency (IEA).

Cemza's products have lower carbon footprint due to vertical roller mill technology used in their advanced grinding mill in the country. This is due to the enhanced extender (limestone/ slag) substitution of anything between 35 - 70% in a range of their products.

This makes Builders Cement an environmentally friendly product. In addition, it is an innovative offering for customers and businesses who face high operational costs and price increases across the construction sector. It is produced locally, therefore offers better value for customers by saving them money and time. ☺

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FIBRES CAN ADD SIGNIFICANT STRENGTH TO CONCRETE

Including stiff natural or synthetic fibres in the concrete mix can significantly augment the strength of concrete, says Bryan Perrie, CEO of Cement & Concrete South Africa (CCSA).

Perrie says concrete made with Portland cement is relatively strong in compression but weak in tension which can be overcome not only by the usual insertion of conventional rod reinforcement but also by the inclusion of enough stiff fibres in the mix. The fibres alter the behaviour of the fibre-matrix composite after it has cracked, thereby improving its toughness.

Perrie says for the effective use of fibres in hardened concrete:

- The fibres must be significantly stiffer than the matrix;
- The fibre content must be adequate;
- There must be a good fibre-matrix bond; and
- The fibres must have a high aspect ratio, i.e. their length must be in the correct relation to their diameter.

There are natural and synthetic types of fibre with steel and glass versions the most commonly used:

Steel

Steel fibres have been used in concrete since the early 1900s. The early fibres were round and smooth and the wire was cut or chopped to the required lengths. The use of straight, smooth fibres has largely disappeared and modern fibres have either rough surfaces, hooked ends or are crimped or undulated through their length.

Modern commercially available steel fibres are manufactured from drawn steel wire, from slit sheet steel or by the melt-extraction process which produces fibres with a crescent-shaped cross section.

“Typically, steel fibres have equivalent diameters (based on cross sectional area) of from 0,15 mm to 2 mm and lengths from 7 mm to 75 mm,” Perrie states. “Carbon steels are most commonly used to produce fibres but fibres made from corrosion-resistant alloys are available. Stainless steel fibres have been used for high-temperature applications.”

Some fibres are collated into bundles using water-soluble glue to facilitate handling and mixing. Steel fibres have high tensile strength (0.5 – 2 GPa) and modulus of elasticity (200 GPa), a ductile/plastic stress-strain characteristic and low creep.

Steel fibres have been used in conventional concrete mixes, shotcrete and slurry-infiltrated fibre concrete. Typically, content of steel fibre ranges from 0,25% to 2% by volume. “Fibre contents over 2% by volume generally result in poor workability and fibre distribution, but can be used successfully where the paste content of the mix is increased and the size of coarse aggregate is not larger than about 10 mm.”

Steel fibre-reinforced concrete containing up to 1,5% fibre by volume has been pumped successfully using pipelines of 125 to 150 mm diameter. Steel fibre contents up to 2% by volume have been used in shotcrete applications using both the wet and dry processes.

“Steel fibre contents of up to 25% by volume have been obtained in slurry-infiltrated fibre concrete. Concretes containing steel fibre have been shown to substantially

improve resistance to impact and show greater ductility of failure in compression, flexure and torsion. The elastic modulus in compression and modulus of rigidity in torsion are no different before cracking when compared with plain concrete tested under similar conditions. Steel fibre-reinforced concrete could, because of its improved ductility, find applications where impact resistance is important. Fatigue resistance of the concrete is reported to be increased by up to 70%.

“The inclusion of steel fibre as supplementary reinforcement in concrete could assist also in the reduction of spalling due to thermal shock and thermal gradients. However, the lack of corrosion resistance of normal steel fibres could be a disadvantage in exposed concrete situations where spalling and surface staining are likely to occur,” Perrie adds.

Glass

In the form first used, glass fibres were found to be alkali reactive and products in which they were used deteriorated rapidly. However, alkali-resistant glass containing zirconia was successfully formulated in the 1960s and was soon in commercial production. Alkali-resistant glass fibre is used in the manufacture of glass-reinforced cement (GRC) products, which have a wide range of applications.

“Glass fibre is available in continuous or chopped lengths. Fibre lengths of up to 35 mm are used in spray applications and 25 mm lengths are used in premix applications. GRC products are used extensively in agriculture; for architectural cladding and components; and for small containers,” Perrie explains. ☺



SKYRIDERS THROWS A LIFELINE TO A MAJOR FINANCIAL INSTITUTION

A permanent horizontal lifeline system from Honeywell has been successfully installed at a major financial institution in Rivonia, Johannesburg by leading rope access specialist Skyriders Access Specialists. “It has been a great project from the point of view of demonstrating our flexibility and determination to complete it successfully. We promised true and were going to deliver no matter what,” comments Marketing Manager Mike Zinn.

Challenges faced over the duration of the three-year project included the initial discovery that the structure Skyriders proposed to bolt its system onto was inadequate for the task. This meant a special interface had to be designed between the building and the Honeywell lifeline system, all while keeping within tight budgetary constraints.

In addition, a lack of as-built drawings for the entire campus where the financial institution is located meant that each bracket had to be designed from scratch. “In very few places was there one bracket type that was effectively duplicated numerous times. It was literally a case of a new bracket every single time,” stresses Zinn. The project was also impacted by the COVID-19 lockdown in that there was an initial hold-up at the Honeywell factory and subsequent shipping and port delays due to global supply chain constraints.

The Honeywell lifeline system was opted for by the client

to allow third-party maintenance contractors to carry out inspection and repair work on the roofs, gutters and tiling of the entire campus, which has an older slate roof requiring constant upkeep. Skyriders assisted its client by installing temporary lifelines to allow essential maintenance to proceed uninterrupted while the main project progressed.

Skyriders had installed the original lifelines at the campus, which have to be inspected routinely according to regulation in conjunction with an engineer. This system had reached the ends of its service life and needed to be replaced.

The financial institution subsequently put out a tender for a new fall arrest system and Skyriders was successful in its bid for the state-of-the-art Honeywell system. “The specific issue was that off-the-shelf systems were not quite working in certain areas of the campus. Hence the engineer assisted us to design a hybrid system that could be integrated seamlessly with the Honeywell product,” highlights Zinn.

This is a growing niche market for Skyriders, which has already undertaken similar projects for other major financial institutions. “Blue Chip clients demanding stringent adherence to all the necessary regulations and legislation with regard to health and safety can rest assured that we have the flexibility and expertise to provide the best solutions possible,” concludes Zinn. ©

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OVERCOMING MAJOR CHALLENGES IN CLAREMONT

Keller Geotechnics SA has been at it again in Claremont, Cape Town. 1 on Osborne is located in Claremont, right opposite Cavendish Square. With the company's many years of experience, it was selected to provide the solution to deliver a five-level basement with a depth of up to 16,5 m in clay conditions.

Scope of project

The site is located on the corner of Osborne and Cavendish Road in Claremont, directly opposite Cavendish Square mall, yet ideally located just outside of the Claremont hub. The site's footprint is approximately 1 000 m² and Keller Geotechnics SA was tasked to deliver a 16,5 m deep basement.

Keller Geotechnics SA's project scope included CFA soldier piles along the perimeter, capping beam construction, bulk earthworks, lateral support consisting of gunite arches, anchors and waler beams, as well as a civils scope where it had to lay the sub-soil drainage required for the basement.

As deep as it gets

This type of basement construction posed a number of challenges with regard to both the general design and the design of the lateral support requirements," says Contracts Manager, Daryn Cloete.

"The soils on this site consist of a 3-4 m layer of transported silty sand beneath which is highly decomposing granite consisting of weak clay in the form of kaolin. This extends to a considerable depth of 20 m. A perched water table rests on top of these kaolin clays and is visible within the first 2 m from natural ground level," he explains.

"One of the major difficulties on this project was the restricted access to the site, with only two access and exit points for materials, both exiting onto the very busy Cavendish and Warwick Roads in the Claremont CBD. This was exacerbated by the small footprint of the site, combined with the depth of the basement. All of these severely limited our ability to provide suitable access ramps for the heavy plant," Cloete explains.

"From a geotechnical perspective, the central challenge was that the very low shear strength of the kaolin – in which ground anchors had to be installed on this project – has a limiting effect on the maximum possible anchor loads. This, combined with the disintegrating qualities of the kaolin when exposed to ground water, results in maximum anchor capacity of 450 kN."

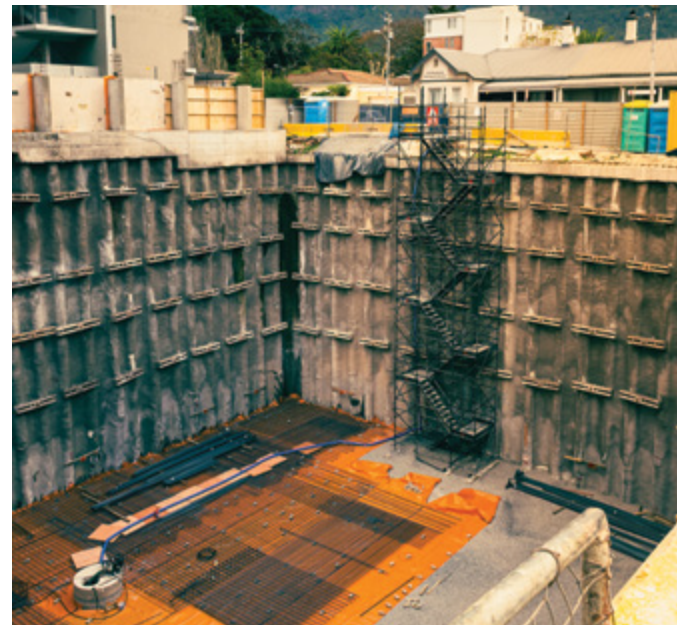
Results of the challenging ground conditions

It is well known that lateral support movements can be considerable in these soils. In addition, the perched water table added to the challenges. This had to be constantly managed to ensure that the in situ soils would not become saturated, which would make the work platform inaccessible or unstable.

As the lateral support progressed, the perched water table was caught behind the gunite arches and transported to excavation levels by drains. This required constant dewatering in order to prevent the disintegration of the



The basement shows white kaolin clay to final level, with restricted excavation techniques.



Access staircase for slab steel preparation.

kaolin clay into a slumping slurry. "Key to the success of the project was the creation of a suitably hard standing area and a dewatering system at the final level to provide a safe work platform for the installation of the civils scope and permanent drainage," explains Cloete.

"While there have been many challenges on this project, we have been able to move ahead efficiently. The excellent relationships we have with our client, professional team and contractors has been critical to the success of the project," concludes Cloete.

Keller Geotechnics SA has an experienced design-and-construct team, especially in this geographical area. In the face of severe challenges it has successfully provided a lateral support design-and-construct solution that it has developed over the years. ©



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CARL PULFRICH AWARD 2022 PRESENTED TO PROF. DR. CHARLES TOTH

Leica Geosystems, part of Hexagon, is pleased to announce that the Carl Pulfrich Award 2022 has been presented to Prof. Dr. Charles Toth for his outstanding contribution in the field of geospatial science and engineering. The Carl Pulfrich Award honours cutting-edge innovations and developments in geodesy, photogrammetry and Earth sciences.



has made major contributions to the geospatial industry and academia. In addition, he has served our scientific community for many years in leadership positions of the ASPRS and the ISPRS.”

The tribute was given at the Carl Pulfrich Award Ceremony 2022 during the Photogrammetric Week at the University of Stuttgart.

The academic Earth imaging community was encouraged to submit nominations for the biennial award. Nominees were considered based on their experience in photogrammetry, remote sensing activities and contributions to advancing all aspects of the Earth imaging field. Applied work involving hardware systems, software solutions or innovative service activities was also considered.

“I am deeply grateful to receive the Carl Pulfrich Award among so many notable nominees and to join a distinguished group of prior recipients. This accomplishment is a significant milestone in my professional life, and I want to express my heartfelt gratitude to the team who selected me to receive this award,” Toth said.

The seven-member jury selected Toth out of a number of qualified nominations. Toth works as a research professor at the department of civil, environmental and geodetic engineering at the Ohio State University, United States.

Toth was born in Hungary, where he earned his Master of Science and PhD degrees in electrical engineering from the Technical University of Budapest in 1977 and 1980, respectively. In 1997, he completed his second PhD at the same university in geoinformation sciences. Toth has made several significant contributions to geospatial science and engineering. Most importantly, he is known worldwide for his visionary advancements to mobile mapping, and his seminal contributions to research in sensor georeferencing and digital imaging technologies. Publishing more than 400 journal and conference papers, and several book chapters, Toth has an outstanding scholarly record. He also received numerous awards, including the 2009 ASPRS Photogrammetric Award, 2005 and 2015 United States Geospatial Intelligence Foundation Academic Achievement Award, the 2016 ISPRS Schwedfsky Medal, Ohio State College of Engineering Lumley Research Awards, and various best papers awards.

The chairman of the 2022 jury, Prof. Dr.-Ing. Uwe Sörgel says, “I am pleased about the recognition of the important work of Prof. Dr. Charles Toth in the fields of photogrammetry, laser scanning and mobile mapping. He

About the Carl Pulfrich Award

The Carl Pulfrich Award is prestigious for recognising cutting-edge innovations, hardware and software developments, and integrated systems design in geodesy, photogrammetry and the Earth sciences. Launched in 1968, it is announced biennially and attracts nominations and recommendations for candidates from all over the world. The biennial award honours the memory of Dr. Carl Pulfrich, a scientific staff member at Carl Zeiss from 1890 to 1927. During his tenure, Pulfrich directed the design of the first stereo photogrammetric and surveying instruments from Zeiss. Initially launched by Carl Zeiss, Oberkochen, then relaunched by Z/I Imaging and Intergraph, it was adopted by Leica Geosystems in 2011. For more than four decades, the Carl Pulfrich Award has recognised the many contributions of scientists worldwide. ©

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AECOM CHAMPIONS DIVERSITY AND DEVELOPMENT AT LHWP PHASE II



*Eric Van Sciver,
Project Manager,
AECOM.*

The World Day for Cultural Diversity for Dialogue and Development in May not only highlights the richness of the world's cultures, but also the essential role of intercultural dialogue for sustainable development. Global trusted infrastructure consulting firm AECOM believes that an inclusive culture is a dynamic, active, and intentional environment that increases individual and organisational performance by creating opportunities for all employees to achieve their full potential.

With the adoption of the 2030 Agenda for Sustainable Development by the UN in September 2015, and the resolution on Culture and Sustainable Development adopted by the UN General Assembly in December 2015, the message of the World Day for Cultural Diversity for Dialogue and Development is more important than ever. The 17 Sustainable Development Goals can best be achieved by drawing upon the creative potential of the world's diverse cultures and engaging in continuous dialogue to ensure that all members of society benefit from sustainable development.

AECOM fosters a workplace free from discrimination, harassment and provides equal opportunities in all areas of employment. A key aim for the business is ensuring all employment practices are objective and free from bias, are based solely on work criteria and individual merit and meet the broader company objectives.

In celebration of the UNESCO World Day, AECOM is highlighting its long-term involvement with Phase II of the Lesotho Highlands Water Project (LHWP), a transboundary water resource management scheme under development by the governments of Lesotho and South Africa.

The water-transfer component of LHWP Phase II consists of the construction of the 165-m-high Polihali Dam in the Mokhotlong district of Lesotho. AECOM is overseeing the design and construction supervision of a portion of the advance infrastructure known as the Polihali Western Access Road (PWAR).

This includes a new 55 km road (PWAR) and the rehabilitation of the 96 km Northern Access Road, which will provide a permanent access road to the new Polihali Dam site. Major construction elements of the 23-month contract include three new concrete bridges from 60 m to 90 m long, 15 new major culverts, gabions and reinforced concrete retaining walls.

With a total of 50% of women working on this project, Project Manager Eric Van Sciver notes how the female professionals working on-site have made a significant contribution to the project and he identifies the positive impact diversity has on AECOM projects. He says: "They have all played an instrumental role in the team and have had a major impact on our success. We are stronger, smarter, and better because of our differences. Drawing from a wealth of diverse backgrounds and experiences unlocks better collaboration across our company and better enables us to understand our clients and each other."

In line with AECOM's Sustainable Legacies strategy, all projects strive to leave positive and lasting social impacts. On this project, one aspect of this included liaising with the local Basotho community, keeping them informed of progress and ensuring their ongoing buy-in into this major infrastructure project, one of the largest of its kind in the world. Thandiwe Siyakatshana, an inspector on the western portion, says that being in a different country also meant a different way of working.

"We interacted with the local community a lot, as it is not only the technical and engineering scope of a project



AECOM's scope of work benefited the local community by linking it to a clinic, church and schools in the remote area.

and community members have never seen construction activity of such magnitude before. Our hope is that some become inspired by what we are doing and pursue careers of a similar nature. Our team also got involved at a local community level by assessing specific needs at various schools and arranging donations for a shoe drive, for example. It was a combined effort of the entire professional team, including contractors, consultants, and subcontractors,” says Karlushka.

Karien van Heerden, an assistant resident engineer, adds that up-and-coming young professionals were earmarked for on-site training and have subsequently assumed responsibility for some of the digital tools deployed on the project, including drones and GIS. “Our Basotho appointed secretarial assistant learned a lot about the innovative technologies that we adopted,” she points out. A personal achievement for Karien was accumulating sufficient practical experience while on the project to complete her professional registration as an engineer.

Noting the above women’s achievements, Eric adds: “All three women went above and beyond their duties to assume responsibility for other aspects of the project. These women, and all the women working on this project, are proving that this industry is no longer a male-dominated sector.” Commenting on the progress to date, Eric says practical completion of AECOM’s scope of work is expected towards year end. “This is only a small part of phase two of the overall project. There will be activity in the region for the next three years easily with the construction of the dam and the tunnel itself,” he concludes. ☺

of this magnitude that is important, but also the softer issues of liaison, empowerment, and sustainability,” says Thandiwe.


Karlushka Mothilal, an inspector for the construction supervision of the concrete and layer works and contract administration, highlights that AECOM’s scope of work is of huge benefit to the local community. “The PWAR road links the local community to a clinic, church, and various schools in the area. In addition, the road design gives the children a safer and improved terrain to walk to school every day,” says Karlushka. “Many of these children

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SA'S DAMS ARE FILLING UP, BUT IT'S AN INVESTMENT IN THE FUTURE

As many of South Africa's major dams filled to capacity during last summer, we could breathe a sigh of relief. But we can't become complacent. South Africa is considered a dry country because of our unevenly distributed rainfall. Many of us get our water from dams and rivers that capture the rain.

By: Chetan Mistry, Strategy and Marketing Manager, Xylem Africa

According to the Water Research Commission, South Africa has over 500 government dams, holding a combined quantity of 37 000 million cubic metres of water (or 15 million Olympic swimming pools) and around 4 000 privately-owned dams. We invest in South Africa's future by managing these dams and their sources and supporting the infrastructure that connects that water with communities.

A dam's many uses

Dams are vital for social progress: the world spent over USD2tn in the 20th century to create large dams and reservoirs, a figure reported by MIT's Mission 2017: Global

Water Security group. They cover many important uses, such as irrigation, water supply, energy, and flood control. Dams are instrumental to modern society, covering many different needs:

- **Irrigation:** up to 40 percent of farmlands irrigate using water from dams (MIT).
- **Energy:** hydroelectric power generates 5 percent of SA's electricity, a figure that will grow with renewables (Journal of Energy in Southern Africa).
- **Water supplies:** most of the water used by local communities come from surface water. (UN Water)
- **Flood control:** Major dams, such as the Vaal dam, help control water flow after major downpours.

Dams are investment accounts for water. Most of South Africa's rainfall would end up in the oceans, yet dams capture up to 70 percent of downpours, storing vast quantities of water to support surrounding communities. (SANCOLD)

Managing SA's dams

But they are not inexhaustible. Unless well-managed, dams can run dry or become contaminated. As cities such as Cape Town and Chennai have experienced recently, it's an enormous concern when dams levels get very low. The best way is to treat our dams as the investments that they are.

There are several actions South Africa can focus on to improve and maintain water availability:

- **Support infrastructure maintenance:** A considerable number of local dams don't provide enough water to surrounding communities because the water can't reach them. Improving infrastructure maintenance and monitoring can improve water delivery. Modern equipment and digital management solutions make maintenance more predictable and affordable.
- **Invest in modern treatment:** Treatments to make water consumable can damage the environment, including dam ecosystems. Investing in new treatment technologies such as ozone and UV significantly reduce water contamination without raising prices.
- **Reduce non-revenue water:** Roughly 40 percent of water in South Africa does not generate revenue due to leaks or inadequate metering data (Water Research

Commission). Municipalities can raise significantly more revenue if they use new methods such as acoustic leak detection and wireless meter readings.

- **Promote water savviness:** Growing towns and cities consume more water, but nearby dams can't increase overall volumes to match. Promoting savvy water use will reduce the pressure on water supplies.
- **Recharge water sources:** Most of South Africa's water comes from the surface - dams, reservoirs and rivers. But a substantial amount emerges from underground sources, also called groundwater. We can maintain and improve those resources through strategic water planning, reducing water pollution, and recharging aquifers.

South Africa has many dams, and they can support our water needs. With sufficient investment in maintenance, planning, and responsible water use, we can ensure our dams keep on storing this valuable resource.

Xylem, the world's leading pure-water solutions company, provides solutions that improve maintenance, management and costs - including power-saving variable speed pumps, UV and ozone water treatment, and big data water management solutions. These solutions can be retrofitted to existing sites, reinvigorating and expanding South Africa's water prospects.

We can rejoice that dams are filling up again. But we mustn't forget the fresh memories from drought-stricken parts of the country or that some areas are still suffering from drought. Water can run out, and even the largest dams can turn into mud puddles. ☹

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In 1971 New Holland Construction produced its first L35 skid steer loader which was the first vertically moving skid steer loader equipped with the Super Boom® arm. The New Holland L323 series skid steer loader, launched in 2020 is one out of seven skid steers in the 300 series range. An ergonomically designed cab offers class-leading space and comfort which significantly limits operator fatigue, which in turn reduces errors during applications. The see-through area on top of the cab offers a clear view of the bucket, even at full height. A glass enclosure allows 360-degree visibility with minimal obstruction to the operator's line of sight, providing a better view of the surroundings and the bucket edge. The L323 model provides easy rear door access to daily fluid and filter checks, and the 300 series skid steer loaders allow for minimised downtime by providing user-friendly upkeep. In addition, the in-cab display screen affords the operator engine data, performance information, RPM, fuel level, battery voltage, oil and engine temperatures, as well as service schedule updates.

Customers in both the agricultural and construction sectors can benefit from the improved design which offers superior visibility, greater height and reach, a simple operator interface, and enhanced productivity for any job. The robust design boasts an enlarged bucket closure angle allowing for better material retention which enhances application efficacy. With a net power output of 68 hp and operating loads of 3 350 kg, the cycle times are faster, and the operation is smoother enabling the operator to load heavier cargo while operating with more power. The dual-range transmission on the 300 series provides travel speeds up to 17 kph which saves time on site between applications. The loaders are uniquely designed and manufactured to cater to an array of site-specific needs which include and aren't limited to loading, lifting, pushing, and digging. The best-in-class geometry featured in the 300 series

skid steers includes the patented Super Boom® which enhances capabilities during loading and carrying applications. The Super Boom® in conjunction with a superior hinge pin height ensures a stable frame, increased height reach, and discharge range – as the arm extends upwards, the load is lifted forwards instead of backward towards the operator. This allows for a higher reach to efficiently load and unload materials in hard-to-reach spaces. Ensuring stability on rough terrain is essential for optimal productivity, a longer wheelbase, which is the longest in its category, simultaneously guarantees comfort and stability on uneven terrain.

The L323 series builds on the strengths of its predecessors which offers an enhanced ergonomic interior as well as advancements in exterior features, providing the durability and performance operators have come to expect from a skid steer. The redesigned 300 series skid steer loaders offer customers excellent productivity in severe conditions, in addition to reliability they are able to face any operation regardless of the terrain. The L323 skid steer loader also provides users with the option of utilising interchangeable attachments, such as a hydraulic hammer. Attachments can be interchanged with ease thanks to the Klac self-locking system. Its compact design respects original kinematics and doesn't require any maintenance operation, granting the best productivity of your machine. Customers are seeking on-site equipment that is both multi-faceted and multi-functional and the re-engineered New Holland L323 series skid steer loader has progressed to cater to an evolving market.

New Holland Construction sells and supports a full line of construction equipment around the world and through the New Holland dealers, customers have access to a true professional partner with world-class equipment and aftermarket support, industry-leading warranties and flexible financing. ©

FUCHS DRIVES SUSTAINABILITY AND SMART LUBRICANT SOLUTIONS

In addition to developing smart lubricant solutions to meet the challenges of its customers, FUCHS LUBRICANTS SOUTH AFRICA focuses on economic, environmental, and social sustainability. “We strive for sustainability objectives not only across our entire value chain, but because we want to take responsibility for our impact on society and the environment,” says Esther Seabi, Transformation Director and Local Sustainability Officer.



Esther Seabi, Transformation Director and Local Sustainability Officer.

Seabi explains that sustainability is a strategic pillar of the company. This, in turn, has two major goals: Achieving carbon neutrality and giving back to society in terms of achieving sustainable development objectives. In addition to our global strategy, South Africa has its own specific initiatives.

A local sustainability team includes representatives from every department that identifies initiatives on a yearly basis in support of realising these broad goals. For example, initiatives for this year include rainwater harvesting and renewable energy, as well as a project to insulate all piping in the main plant to prevent energy losses, while diverting waste to landfill is a focus in terms of waste management.

A highlight was the net zero design of FUCHS' new local head office. “Our expansion was particularly exciting in terms of sustainability because of the emphasis on passive design elements such as using shading, sunlight and building orientation to reduce heating and cooling requirements,” says Seabi. “We have successfully completed our Round 1 assessment with the Green Building Council of South Africa to have the new head office certified as

a net zero carbon building.” Another key focus in terms of sustainability is FUCHS' own product range. New small packs for the automotive sector with a reduced environmental impact have been introduced globally. The new bottles contain at least 30% post-consumer recycled (PCR) content and are 100% recyclable, while the lubricants themselves are produced in a CO₂ – neutral plant.

This is in line with the FUCHS Group's sustainability strategy aimed at carbon neutrality based on the ‘avoid, reduce, compensate’ principle. The strategy has been under development for a decade. “Our products are specifically designed to assist our customers to be more sustainable in their operations. Applying good quality lubricants means a reduction in energy consumption, whether fuel or electricity,” says Seabi.

In terms of its broader community development focus, FUCHS has purely philanthropic contributions aimed at assisting local community support organisations and other projects geared to promote sustainable development and black economic empowerment, which are developmental in nature.

“My focus is more on those developmental projects aimed at capacitating local communities to boost their participation in the broader economy,” says Seabi. This takes the form of skills development, bursaries, and external study assistance, all based on merit and financial need. Looking at skills development in particular, the main focus is on helping reduce youth unemployment.

While the B-BBEE generic scorecard target for learnerships is 5% of the total workforce, FUCHS' head count in this regard is more than double that at present. “Our learnership programme has been very successful in supporting our own business needs and that of the broader industry, given our track record of converting these into full-time employment opportunities, either with

ourselves or other companies,” says Seabi.

FUCHS also assists Small and Medium Enterprises (SMEs) to access more business opportunities. “SMEs are important generators of employment, which is why we not only promote their development, but advocate for their inclusion in our own supply chain.”

Seabi points to a maths skills project that FUCHS is driving in a range of schools, including Daveyton, Brakpan and five in Tembisa. “We periodically review the latest research on challenges around education. One issue we feel needs to be addressed is the accumulated skills deficit due to poor foundational instruction in maths skills. As learners progress through the educational system, this foundational deficit snowballs and its impact on learning becomes more pronounced”. FUCHS' intervention in this regard is therefore focused on bolstering maths competency in the lower grades.

Skills prioritised by the company at present range from chemical to mechanical engineering and even commercial subjects such as finance, human resources, and supply chain management. A major focus is internal staff development, with all employees engaging with their managers on a yearly basis to identify career development goals which informs training interventions that need to be implemented.

The Fuchs Foundation Trust was established to promote socio-economic transformation by empowering economically marginalised individuals and communities. The trust, in turn, sponsors individuals and community projects. Part of FUCHS' transformation strategy is to provide study assistance for external candidates to build its own talent pipeline and support broader economic goals. To this end, it sponsors eligible candidates yearly, based on funding availability and according to certain criteria. ©

MAXIMISE YOUR BUSINESS AND FLEET POTENTIAL THROUGH CTRACK'S 24/7 BUREAU SERVICES

Whether a business utilises a fleet of five vans or 500 trucks, it is extremely complicated to run such an operation without telematics technology and fleet management software that goes hand in hand with that hardware.

However, this software is only as useful as the person controlling it; the effective management of fleets and the data that goes along with it needs to be done by a person with sufficient training in order to get the most out of your fleet management system, enjoy the benefits and save on costs. Depending on the size of your fleet and how your business is set up, employing a dedicated person for this role might not be a practical or feasible solution.

While Ctrack offers several software solutions that allow owners or fleet managers to look after their own fleet management requirements, including the recently launched Crystal, the Ctrack Bureau Service enables customers to pair Ctrack's world-class telematics technology with an expert fleet manager at a minimal cost.

Ctrack's Bureau Service is a fully fledged fleet intelligence service Centre, offering a wide range of services, which provides you with hindsight, insight, and foresight for your fleet operations.

"Use of Ctrack's Bureau services allows customers to ensure that they are getting the absolute best out of our tried and tested hardware and software solutions and that their fleets are being run in the most effective and productive way possible," says Hein Jordt, Chief Executive Officer of Ctrack Africa.

Ctrack's Bureau Centre monitors and analyses movements, incidents, and alerts meticulously, providing analytical reporting and support to optimise fleet operations.

Highly experienced telematics consultants interrogate and interpret vehicle data to provide the insights and actions needed for future cost reductions and operational improvements. With this information business owners will be able to implement best practice methodologies that streamline operations, save costs and focus on the core business.

Reports are tailor-made to your needs and can give a high-level overview if that is all your business needs or a thorough analysis of any data stream if that is required. Utilising Ctrack's Bureau Service is a quick and easy way to streamline your fleet operation and ensure that you get the most out of your movable assets without the need for additional staff count and infrastructure.

The way your vehicles are used has a massive effect on your bottom line and having expert eyes on them all the time is a sure way to secure fleets and reduce fuel and maintenance costs.

In the background, these experts monitor and analyse movements, incidents and alerts and provide the customer with reports that are easy to act on. In essence, Ctrack's Bureau service gives you the right data needed to make the right decisions.

The benefits of a 24/7 Bureau Service include the fact that

an expert always has eyes on your assets and how they are being used, ensuring tighter control and immediate action against predetermined parameters.

These controllers pay particular attention to schedule adherence and fuel consumption, ensuring that your fleet is run as efficiently and cost-effectively as possible. Direct communication with drivers ensures swift action in the event of any deviations or transgressions and ensures that you nip trends in the bud before they become a habit and long before unnecessary resources are wasted.

The benefits for operators are multifaceted and include emergency response, panic alarms, and tamper alarms that give them the protection and backup they need in an environment fraught with risks. A bodyguard service and even air response are available to help mitigate imminent threats.

Fleet operators now demand visibility and control, resulting in standard telematics visibility no longer being a suitable solution on its own.

Ctrack offers a number of camera solutions for the monitoring of various aspects of vehicle usage including fatigue and ADAS monitoring, front and rear cab facing and trailers cameras that allow for total visibility of your asset.

These camera solutions offer Live Video streaming, and give Fleet managers the ability to view footage around incidents or other data inputs such as accelerometers or speed events and then act accordingly. However, the number of alerts and footage that needs to be viewed can be overwhelming.

To assist with sifting through all this data, the in-cab camera system can be paired with Artificial Intelligence (AI) software. As an example, this sophisticated AI software filters through the data gathered by in-cab cameras and only reports on the transgressions defined by the fleet manager, instead of on every transgression. In essence the AI takes over a large portion of the legwork that was previously the responsibility of the end user.

This results in better quality data that can more easily be used to take action. AI can filter through thousands of alarms and only highlight those that are of critical importance to the fleet manager, be that in house or as part of the bureau service. The bureau service operators will still investigate all alarms, however the AI assists in highlighting the most important ones.

"In an environment where running costs are always rising, the efficient and effective management of fleets is imperative to the success of a business that relies on moveable assets. Ctrack's Bureau services take the guesswork out of fleet management and ensures the best results," concludes Jordt.

Ctrack's Bureau services are offered in four levels, allowing fleet and business owners to select a package that best suits their needs and budget.



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