

# CONCRETE

Journal of the African Cement and Concrete Industry

# trends



## Leaders in dust extraction technology

In this issue:

Dust extraction technology

Spotlight on cement manufacture

BIM focus: case study & survey

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Volume 20 No 1 February 2017

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### CONCRETE trends

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**Leaders in dust extraction technology**

**In This Issue:**  
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*PowerCore® dust collection technology from Donaldson outperforms traditional bag-house collectors. See page 14.*



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# How will we resolve these contradictions?

The beginning of any year is typically greeted with a slew of predictions and of summaries. There are forecasts of trends for the coming year – trends in everything from infrastructure to fashion, from critical issues to the most frivolous fancies.

The summaries are the more sobering, taking a backward look at the past year. And for the construction industry in South Africa this has been a year that is best forgotten.

The very authoritative report: *KPMG Emerging Trends in Infrastructure 2017* (downloadable at <https://home.kpmg.com/au/en/home/insights/2017/01/emerging-trends-in-infrastructure.htm>) spotlights 10 global trends, many of which underscore a drive for more responsible leadership, both from the public and private sectors, to improve approaches to funding, developing and operating infrastructure.

“Political agendas and social expectations are changing. Power is shifting and technology is disrupting everything.” said James Stewart, KPMG’s Global Infrastructure chairman and a partner with KPMG in the UK. “And infrastructure is at the centre of this evolution. The development and interaction of many of these trends could very well transform the way governments, business and users interact with and invest in infrastructure.”

KPMG, like GM CEO Jeff Immelt, is adamant that technology and digital solutions will drive productivity across all sectors and will change radically the way businesses operate.

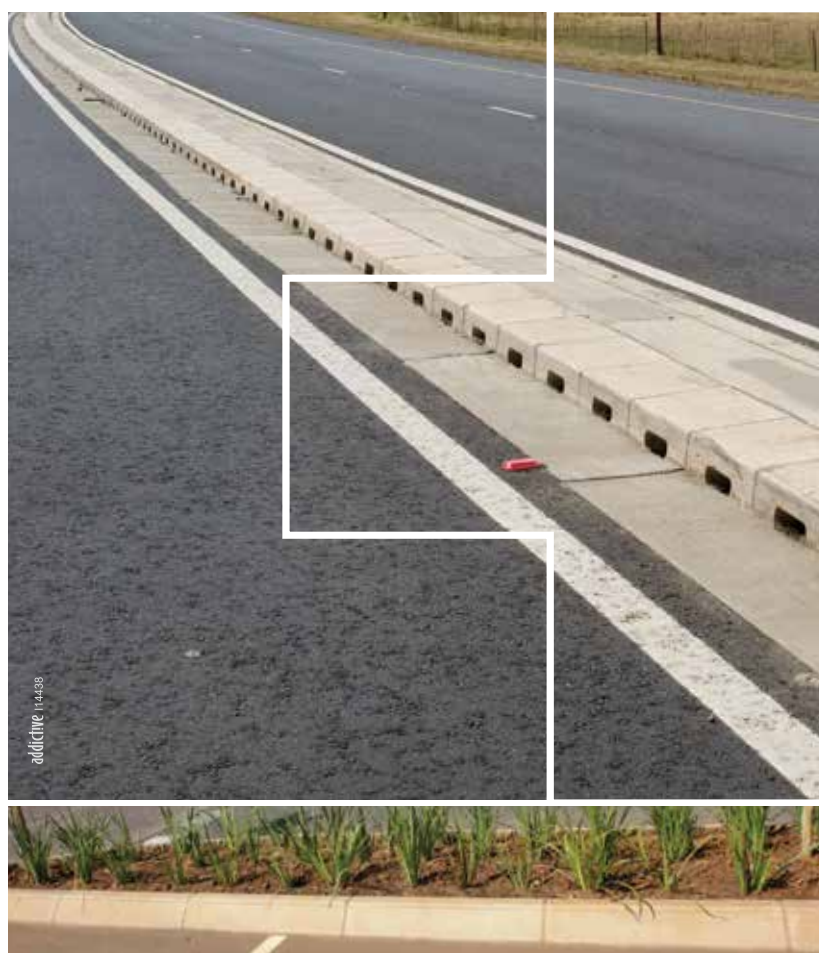
Transnet CEO Siyabonga Gama, who is partnering with GM to develop digital solutions for the transport sector said: “If we can just move from the 17% intra-African trade to 30%, it will unlock so much value in the number of jobs that can be created. The continent should be boosting regional trade in light of the anti-globalisation sentiment rising elsewhere in the world.”

However, much will depend on African governments liberalising and facilitating cross-border trade. And therein lies the conundrum. The world was shocked by the rising tide of protectionism. Brexit and the election of Donald Trump are proof positive that the borders of many countries are closing to ‘outsiders’.

African governments across the continent have been working hard to facilitate and improve the regional flow of goods and services. But this has been countered by concerns for job losses and very real security fears in the face of terrorist attacks on targets worldwide.

How these contradictory influences play out in 2017 will be a source of great interest. We can only wait and see.

Gill Owens



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# New MD and Country Cluster Head for BASF in Southern Africa

**B**ASF has recently announced the appointment of Benoit Fricard as managing director of BASF South Africa and the Country Cluster Head for Southern Africa.

Fricard, who completed a Betriebswirt (FH) Diploma and a Master's Degree in Economics as well as an MBA, joined the organisation in 2002 and has demonstrated exemplary leadership skills in each position he has held – most recently as Director of Performance Materials, BASF South America.

In 2016 BASF reorganised its market area focus on the African continent. BASF's African operations have been divided into four country clusters, Southern Africa; East Africa; West Africa and North-West Africa. As Country Cluster Head for Southern Africa, Fricard will lead the operations in the region focusing the strategic plan for operational excellence, and local customer centricity. He is based at the BASF offices in Midrand, South Africa.



*Benoit Fricard as managing director of BASF South Africa and Country Cluster Head for Southern Africa.*

## About Cluster Southern Africa

BASF was established in South Africa, which is the hub into Sub-Saharan Africa, 50 years ago. Headquartered in Midrand, Johannesburg, the BASF Group in South Africa consists of five companies with main locations in Johannesburg, Durban, Port Elizabeth and Cape Town. BASF has five

production sites, including a world-class automotive emissions catalysts production site in Port Elizabeth and a dispersions production plant located in Durban, which is producing and exporting acrylic dispersions. Other sites include the construction chemicals production site in Westonaria as well as an industrial coatings site in Vanderbijlpark.

Since 2013 the BASF Agricultural Specialties, formerly Becker-Underwood, which is situated in Durban, also forms part of the South African business profile. BASF has a staff complement of approximately 1000 people in South Africa. In 2015 BASF Zambia Ltd, a sales organisation, with focus on the agriculture and mining business, was inaugurated in Lusaka, Zambia. ■

**Further information at:**  
[www.basf.co.za](http://www.basf.co.za),  
 on [facebook.com/BASF.Africa](https://www.facebook.com/BASF.Africa) and on  
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## SARMA GM is 2016 Concrete Achiever of the Year

**J**ohan van Wyk, the general manager of the Southern Africa Readymix Association (SARMA), was recently named Concrete Achiever of the Year for 2016 by the Concrete Society of Southern Africa's Inland Branch.

Presented at the branch chairman's breakfast, the award was made after nominations from the region were put forward and subsequently put to the vote. Inland branch chairman, Roelof Jacobs, commended Johan for his invaluable contribution to the growth of readymix concrete, as well as his promotion of concrete and the Concrete Society of Southern Africa.

He added that it was a fitting award considering that Van Wyk will take over the reins as Inland Chairman in March 2017.

"For me it's a humbling experience to be counted among some of the real concrete

heavyweights who have been awarded the honour in the past. Concrete is the most widely used construction material and I am passionate about concrete being done right the first time. Education and training is a passion of mine and I live to transfer skills to everybody that has quality concrete in mind," said Van Wyk on receiving the award.

"Readymix is the perfect way to use concrete as it provides a more structured way to achieve high quality concrete; and that's why I think regulation of the readymix industry will give us better, more affordable concrete and more durable structures in future," he said. ■

**More information from**  
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*Johan van Wyk, MD of SARMA, was named Concrete Achiever of the year for 2016.*

## Prof Mark Alexander to edit latest edition of 'concrete bible'



Prof Mark Alexander.

The Concrete Institute (TCI) has announced that Professor Mark Alexander, who at the end of 2015 retired from the Department of Civil Engineering at UCT, will edit the 10th edition of the world-renowned and popular 'concrete bible', *Fulton's Concrete Technology*.

Bryan Perrie, the managing director of TCI, says Prof Alexander has all the credentials for the new revision of what is widely regarded as the definitive handbook on concrete technology.

"Mark has been very involved in lecturing for the Advanced Concrete Technology course presented by the TCI's School of Concrete Technology since the early 1990s. He has also been heavily involved in writing and

reviewing chapters of previous editions of *Fulton's Concrete Technology* – his first being the sixth edition in 1986. TCI is therefore proud to announce that Mark has agreed to edit the 10th edition of *Fulton's* which we hope to publish in 2018."

Professor Alexander was chairman of the TCI's forerunner, the Cement & Concrete Institute from 2011 to 2013.

In a special TCI tribute to him at an international symposium, *'The Mark Alexander Symposium'*, in Cape Town in mid-November 2016, Perrie said Prof Alexander had always supported the Institute and hopefully TCI would be able to continue supporting the concrete research initiatives started by Prof Alexander for many years to come.

"TCI would like to thank Mark for his contribution to concrete technology research in South Africa and internationally, as well as his support of the Institute over many years. TCI wishes him well with his retirement – a stage of his life that promises to keep him busier than ever," Perrie said at the symposium attended by delegates from five continents who came to South Africa to celebrate Prof Alexander's role in the development of concrete technology globally. ■

**More information from Bryan Perrie, Tel: +27(0)11 315 0300  
www.theconcreteinstitute.org.za**



### Book Review

## Marine Concrete Structures, Design, Durability and Performance

*Edited by Mark G Alexander, Professor Emeritus, University of Cape Town, South Africa  
Woodhead Publishing, 2016, ISBN 978-0-08-100905-5, 485 pp.*

The associated design, performance, durability and maintenance of Marine concrete structures is a rapidly evolving and critical area of interest to engineers, technicians and other related professionals.

The developments in this area have been significant, but have not previously been presented in a structured format. This book will be a useful volume for the relevant practitioners undertaking the design, construction and maintenance of marine concrete structures as it provides a concise, logical analysis of the challenges faced, together with solutions that can be employed in ensuring the durability of marine concrete structures.

The introduction provides a summary of the importance of concrete in the marine environment, and the requirements for a durable concrete design. It gives an excellent overview of the characteristics of the marine environment, exposure classes, cement, aggregate and concrete uses and types, standards, critical advice on material selection, and specifications and guidelines for the design of these structures.

The book comprises of three subsequent parts, providing a seamless transition from design and specifications, to performance and properties of concrete, to practical case studies on marine concrete and durable marine concrete design.

The book provides an excellent collation of thought provoking facts and insights into the durability of marine concrete

structures. It adds significantly to one's overall understanding of marine concrete durability, the potential pitfalls and solutions that can be employed to ensure the durability of marine concrete structures. It further provides useful and germane cross references which can assist in deepening one's understanding in particular areas.

This book will be an indispensable reference book for clients, engineers, designers, contractors and concrete technologists involved in designing and constructing any type of marine concrete structure.

#### Dr H K J Macdonald

*C. Eng, Pr. Eng, Ing. P. Eur, FSAICE, FSAAE, FICE, FAArb, MCSSA, MSPE. ■*

### Apology

In the August 2016 issue of *Concrete Trends*, we published editorial presenting the FCB Horomill® grinding plant implemented by Fives at the Teresa plant in the Philippines. In this article, we published incorrect information regarding the value of the contract. We apologise for this misleading information.

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# What to expect from Southern Africa's construction industry in 2017

By Soren du Preez, Content Director, Hypenica (Pty) Ltd.



**W**ith 2016 having brought us a year of unexpected contrasts across the globe from Brexit to the election of the 45th President of the United States and from falling commodity prices to waning GDP growth across Africa, there are now diverse global realities impacting the African continent in general and Southern Africa's construction industry in particular. Here are the top 5 trends to watch that will impact Southern Africa's construction industry over the next 12 months:

1. **South Africa's political economy:** While the miraculous transformation of South Africa from past to present democracy is hailed worldwide, in recent years its political economy has been under pressure. The deterioration of government finances has placed added strain on the economy, pushing up the country's debt burden to close to 50% of gross domestic product (GDP). A rising debt burden coupled with irregular practices at high levels of public administration and lack of transparency, has contributed to a lack of investor confidence bringing South Africa to the critical junction where two major ratings agencies have listed the nation just one notch above junk status. The local construction industry is now calling for increased visibility from government administrations on spending and on the public sector infrastructure delivery pipeline. "For 2017, I hope that the South African politics will see a change for better. I hope to see accountability at public offices and a commitment to principles of democracy, equality and transparency," offers Paimaan Byron, regional engineer from the National Homebuilders Registration Council of South Africa.
2. **Spatial transformation:** South Africa's National Development Plan (NDP) identifies spatial transformation as one of its key objectives and neighbouring countries are following suit. At a technical level, the introduction of many new building, planning and environmental regulations require expert technical and scientific input at the early stages of architectural design. The project design process is therefore moving towards a cyclic and iterative rather than linear model which will translate into the spatial transformation of the built environment in the medium to long term.



3. **Development of water-related infrastructure:** In order to further unlock opportunities for industrialisation across the Southern continent, a renewed emphasis on water infrastructure development will be integral in 2017, especially in light of water shortages across the region. Governments, investors, development finance institutions (DFIs) and more will pool their efforts towards the development of asset management drainage systems, wastewater works, water efficiency products to mitigate water loss and desalination plants. Strategic water impact projects should continue to crop up throughout 2017 creating growing demand for expertise in the development of water-retaining and fluid-excluding structures.
4. **Building information modelling (BIM):** Building information modelling is an innovative technology and process that is transforming the way buildings are designed, analysed, constructed and managed across the globe. "The time for us to rethink our quality control systems is now and for us all to benefit from information technology that is constructed and developed efficiently for a construction environment," says Vaughan Harris, executive director of the BIM Institute in South Africa, "3D Modelling is just part of the BIM process and will only drive transformation if it's combined with wider and deeper support from the industry, including behaviour, culture, transparency and processes. The BIM Institute is transforming the face of construction technology, standards and processes for solution providers, professionals and experts across Africa's construction industry."
5. **Demand for green cement:** The global market for green cement is expected to grow to US\$38.1 billion by 2024 from US\$14.8 billion in 2015. Green cements reduce the carbon footprint of construction activities through the substitution of cementitious industrial wastes, such as fly ash from coal-fired power plants and slag from the steel and iron processing industry as a replacement for traditional cement. Demand for green cement in Africa will provide an increasingly lucrative market over the next few years due to growing trends in sustainability and energy efficiency for both buildings and infrastructure. This year will witness an increased demand from local African marketplaces for more sustainable products in the local built environment. ■

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## CSSA's 2017 Fulton Awards entries "most for many years"

The Concrete Society of Southern Africa's (CSSA) 2017 Fulton Awards has attracted a bumper crop of entries in all of the six entry categories. Says CEO, John Sheath: "It is gratifying to see so many exciting and innovative entries. The judges are going to have a hard time choosing the winners and the Awards weekend in June will, as always, be a fun-filled opportunity to celebrate and to network with colleagues."



John Sheath, CEO of the CSSA.

As a celebration of excellence and innovation in the design and use of concrete, the CSSA's Fulton Awards are often dubbed the 'Oscars' of the concrete industry. The awards are made for the concrete structure or innovation and are presented to the entire team that has been responsible for producing the structure or developing the product or system.

The Fulton Awards are a tribute to the late Dr. 'Sandy' Fulton who was a recognised world authority in concrete technology. His was a truly outstanding contribution to the basic understanding of concrete as well as to its improvement and development. Dr. Fulton will be particularly remembered for his work in developing the Portland Cement Institute (today The Concrete Institute) which, under his guidance, gained a reputation for unbiased technical advice.

In the Awards' over 30-year history, high-profile projects such as Van Staden's Bridge, Katse and Mohale Dams, Groote Schuur Hospital, Nelson Mandela Bridge, Constitutional Court, Soccer City Stadium and the Berg River Dam have received awards for excellence. Projects need not be large, and many smaller projects have displayed incredible innovation in design and construction, producing fine

examples of what is possible with this unique building material.

The local construction materials and solutions provider, PPC, is once again the Anchor Sponsor for this year's Fulton Awards, and, in the words of John Sheath, CEO of the Concrete Society: "While sponsorship of the Fulton Awards presents an opportunity for PPC to build its brand and network with customers and prospects, we also know that PPC is passionate about concrete in all its forms, from jewellery to dams, and has no hesitation in sponsoring our awards in this way. We greatly appreciate their support – past, present and future".

The judges for the 2017 awards are:

- Bryan Perrie: MD of The Concrete Institute and a Non-Executive Director of the Concrete Society
- Stephen Humphries: Executive Director, Nyeleti Consulting
- Daniel van der Merwe, Professional Architect, PPC

A unique feature of the judging process is that the judges visit the sites of each submission in order to fully evaluate them. The factors considered include: functional suitability; overall appearance; harmony with surroundings; design in relation to concrete; innovation, ease of construction, quality of finish and workmanship.

The categories in 2017 are: Buildings up to 3-Storey; Buildings more than 3-Storey; Infrastructure; Flatwork; Architectural Concrete and Innovation in Concrete.

Judging will have been completed by the middle of March and thereafter, plans and organisation of the Awards function will take place in earnest. In what has almost become a tradition, the awards ceremony is again being held during a special weekend, from 2nd to 4th June, at the Champagne Sports Resort in the Drakensberg.

"This unique occasion is open to the whole industry to enjoy a full weekend of activity and entertainment, including the formal gala evening when the winners will be announced. Join us, it will be a great event," concludes Sheath. ■

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## Quarries to uphold good governance

**W**ith the trend towards non-accountability in the South African political landscape, the formal quarrying industry is calling for companies within the industry to maintain their impeccable reputation for honesty and good governance.

Nico Pienaar of the Aggregate and Sand Producers Association of Southern Africa (ASPASA) said that its producer members are responsible for supplying more than half the materials required on conventional construction sites and, as a result, should continue to act as sentinels of ethical business dealings within the construction industry.

Any corrupt or suspicious business activities should be reported all the way up the command chain within businesses – up to director and CEO, so that these can be dealt with at a senior level between company management and the relevant authorities.

“We also support calls for our CEOs to pledge support for firm financial governance across all spheres of Government and the private sector to reassure investors and ratings agencies. The message is simple: Do the right thing; stand by what is right; and reject what is wrong.

“In the quarrying industry there are many potential areas where fraud and corruption takes place in plain sight. Some may feel powerless to stop such flagrant acts as municipalities buying sand and stone from illegal quarries or even themselves establishing illegal borrow pits, or the misuse of power by mine



*Nico Pienaar of the Aggregate and Sand Producers Association of Southern Africa (ASPASA).*

inspectors to further their own agendas – but we can if we stand together.

“We must state ‘no more’, it stops with us and we will no longer tolerate it. We stand by the rule of law, we uphold our constitution and the Bill of Rights. We support the Office of the Public Protector and pledge to uphold a vibrant democracy with rights to have freedom of expression and equal protection from the law. We need to create jobs but this can only be done within a framework that is fair and predictably regulated,” says Pienaar.

Pienaar urges the quarrying industry to also stand against injustice and the misuse of the justice system to ignore

evidence or to manufacture evidence to further malicious or politically motivated interests. “Stamp out corruption at all levels, resist threats of violence and violent protests. Companies and CEOs must fight irrational and erratic policymaking and self-seeking behaviour across all sectors.

“This is a call to action to member companies’ CEOs and leaders, and also their entire workforces, to uphold honest business dealings, thereby supporting the sustainability of the entire construction industry and its related supply chains. What we do today will have a direct effect on all our futures,” Pienaar concludes. ■

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## SCT now offers online e-learning

**T**he Concrete Institute’s School of Concrete Technology (SCT) will be offering two internationally-respected advanced correspondence courses as online e-learning courses.

John Roxburgh, lecturer at the SCT, says that the high-level SCT41 (General Principles of Concrete Technology) and SCT42 (Practical Applications) courses have been specifically designed to prepare a candidate to sit the Concrete Technology & Construction Stage 2 and Stage 3 examinations set by the Institute of Concrete Technology (ICT) in London.

“The SCT’s e-learning will give delegates from anywhere in South Africa or the rest of world more scope for interaction and progress monitoring between participants and the SCT



than traditional correspondence training. The online courses have been structured to ensure that all the content is covered section by section, with the participant required to reach a level of competency in each before being allowed to proceed. Employers will also be able to monitor the progress of their employees during the course which will include a two-day workshop at the SCT premises in Midrand,” Roxburgh stated.

“We encourage those planning to study for the Advanced Concrete Technology (ACT) diploma programme, to be offered by the SCT in Midrand in 2018, to prepare by enrolling in the e-learning courses and writing the ICT exams in May 2017. A pass in both these courses is a prerequisite for acceptance into the ACT programme,” he added.

A new one-day course, SCT15 Concrete for Batchers and Batch Plant Staff, will be offered in 2017 by SCT in partnership with the Southern African Ready Mix Association (SARMA). The course will be administered by SARMA and offered in Johannesburg, Durban, Port Elizabeth and Cape Town.

Roxburgh said the SCT offered on-site concrete technology education anywhere in South Africa or across its borders. ■

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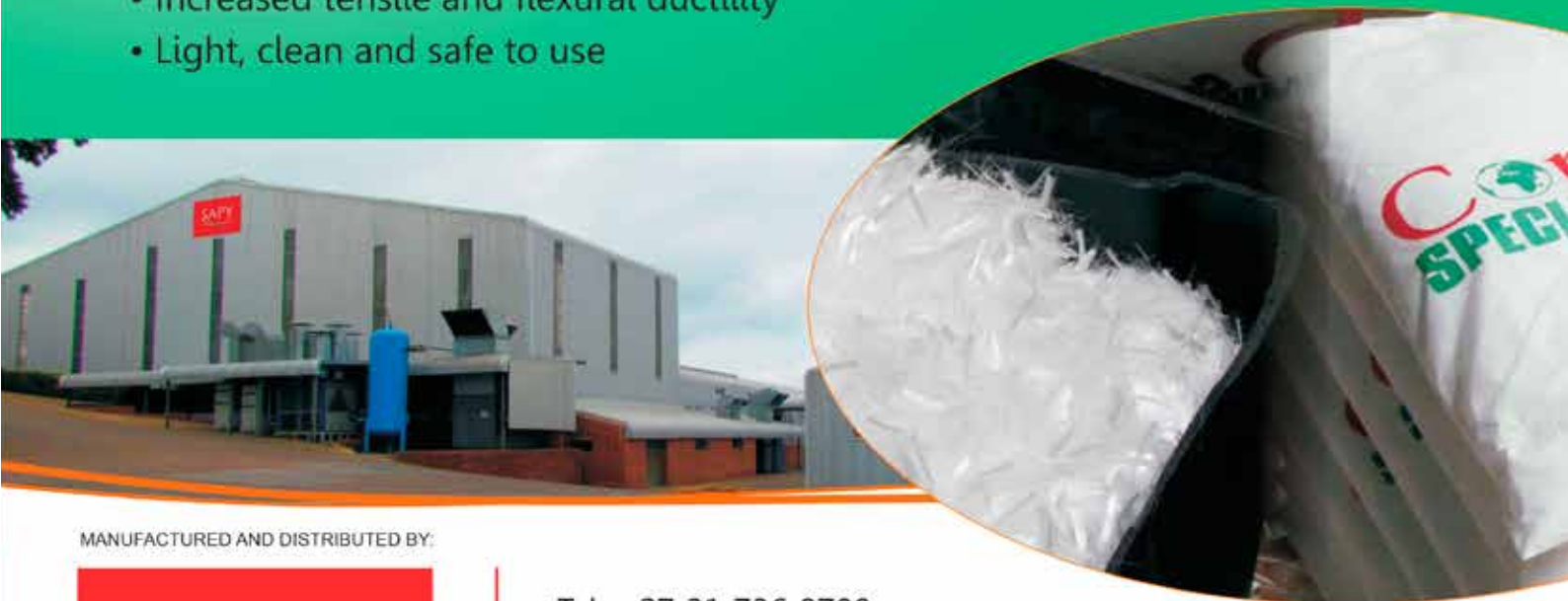
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# China leads charge to promote Sub-Saharan infrastructure

By Mark Allix

A range of foreign operations are expected to begin investing in Sub-Saharan infrastructure development, with Chinese construction companies firmly in the dominant position.

BMI Research, a Fitch group company, says that the region will provide investment opportunities across several sectors which include transport, power and industrial construction. In its outlook for Sub-Saharan African infrastructure in 2017, it says as governments work to overcome logistical shortcomings to support infrastructure development better, China will continue to dominate financing flows to the region and provide support for project financing, construction and operations. BMI says this comes as China presses ahead with international expansion plans to offset overcapacity in its domestic construction industry. African governments welcome the cheap credit lines offered by Chinese companies. The slump in commodity prices has slowed economies such as Nigeria, Angola and Mozambique. Prices have started firming since 2015, but the timing for a full recovery of the global minerals sector remains uncertain.

According to a report on Chinese enterprises in SA by the SA-China Economic and Trade Association, China's investment in the country had reached about \$13bn by the end of 2015. Meanwhile, investment from a range of foreign players will also support regional construction industry activity. The BMI says the outlook for the expansion of the Sub-Saharan Africa construction industry "is more positive for 2017," after regional growth in 2016 dipped to its lowest rate in almost 16 years.



"We are forecasting an expansion of 4.8% in real terms over 2017, keeping Sub-Saharan Africa as the third-fastest growing construction market globally," said Marisa Lourenco, infrastructure analyst at BMI Research and the report's author. African governments' commitments to develop regional networks to overcome logistical shortcomings would continue to provide opportunities in the transport and power sectors, she said. "We believe East Africa offers the most growth potential in this regard owing to a packed project pipeline and progress made thus far," Lourenco said. ■

Source: *Business Day* – <https://goo.gl/KLylvM>

## Uganda to begin \$2.3bn rail project this year

Uganda has announced plans to start building a \$2.3bn standard gauge railway between its capital and the Kenyan border later this year, dropping an earlier demand that Kenya first complete its line between the border and the port of Mombasa.

The 273-km electrified track, which will link Kampala and the Kenyan border town of Malaba, will be built by China Harbour Engineering (CHEC) and is scheduled to be completed in the middle of 2020.

Kasingye Kyamugambi, the project's coordinator, told Uganda's New Vision website that land acquisition was 60% complete and efforts were being made to buy the remaining plots by February.

As with Kenya's standard gauge railway, the work is being funded by China's Export-Import Bank. The size and terms of the loan have not been made public, but it was reported in 2014 that \$8bn would be sought.

Uganda is seen as a good credit risk owing to the recent discovery of an oil field in the Lake Albert basin estimated to contain 1.7 billion barrels of recoverable reserves. According to Bloomberg, this will net the Ugandan government around \$43bn over the next 25 years.



*The developing East African regional rail system (GCR).*

President Yoweri Museveni said the railway would halve the cost of getting a 32-tonne container to Mombasa, from \$3,500 by road, to \$1,650 by rail, and would cut the journey time from 21 days to one.

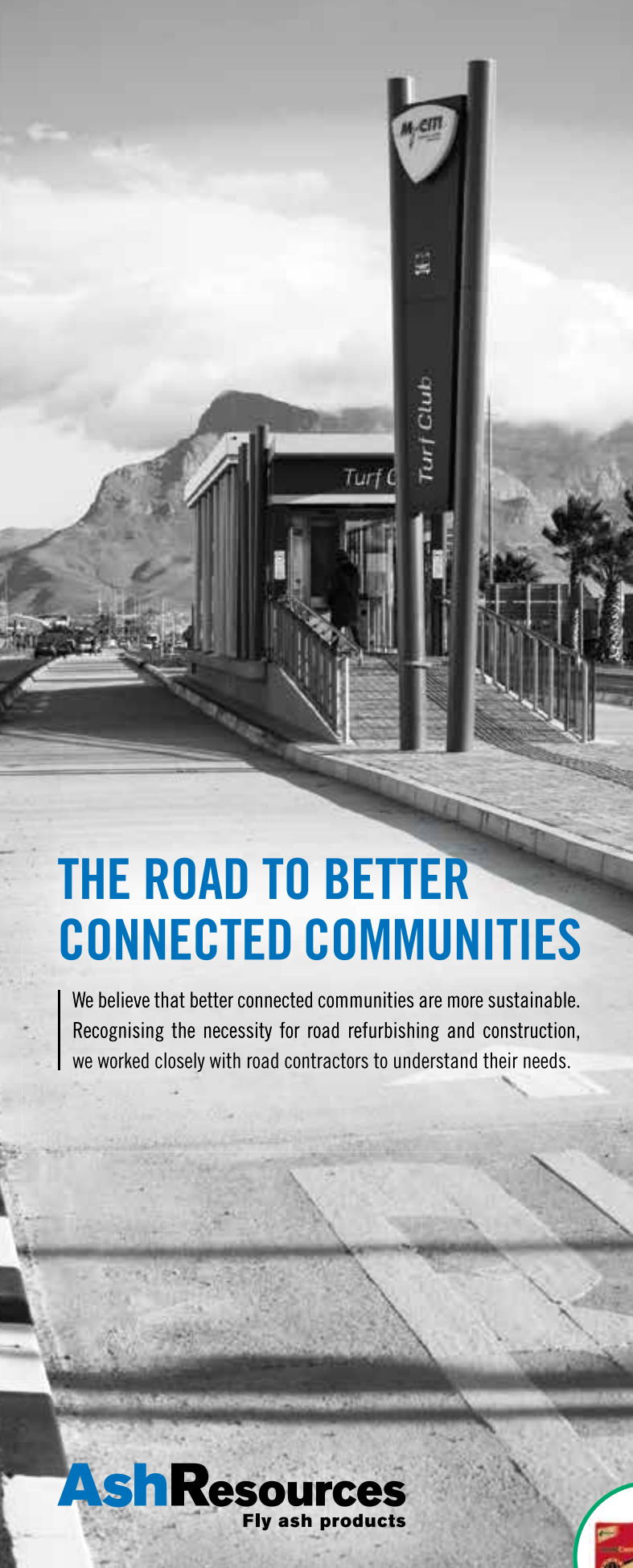
At present, more than 95% of all freight movement in the region is by road, which is described as being "expensive, unsafe and unreliable". The 5% carried on rail uses a dilapidated colonial-era metre gauge system.

The East African regional rail system is intended to provide a link between the densely populated and fast growing Great Lake states of Uganda, Rwanda and Burundi and the Indian Ocean ports of Mombasa and Dar es Salaam.

Later phases will involve a north-south line to the west of the lakes, connecting the Burundian capital of Bujumbura and Kampala.

There may also be a third east-west line between the future port of Lamu and Juba in South Sudan. Other extensions will take the system through the Democratic Republic of Congo to Angola, although this is still a fairly distant prospect. ■

Source: <https://goo.gl/33I8JK>



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# Steven Holl Architects designs library and campus masterplan in Malawi

By Patrick Lynch

Steven Holl Architects have revealed plans for a new library and campus design in Malawi, which coincides with the project being approved by The Miracle for Africa Foundation. To be constructed of local stone, bamboo and concrete, the library will provide 6,132 square metres of study and gathering space for use by the community.



The 6,132-m<sup>2</sup> library is organised via a section that provides maximum reflected light to the interior with optimum solar PV collection on the roof structure.

The library has been organised using a tiered section that will provide maximum reflected light to the free plan interior space, with meeting rooms and archives housed within glass, humidity-controlled enclosures. A rain collection pool in the centre of the plan will direct visitors to the main circulation desk and bounce rippling reflections throughout the building in a 'cloud-like light.'

The project's signature element, the building's curving, prefabricated ductile concrete roof, will further bounce natural light through the space, creating what the architects call a 'field within a field', while PV panels on the rooftop will provide energy for the library. Around the building perimeter, local bamboo will be utilised to create a patterned screen to filter light and create a shaded arcade encircling the structure. The library will be the first construction within a new campus

masterplan, whose morphology draws its inspirations from the paintings of a Malawi batik artist.

"There is very great excitement about this project as an artistic masterpiece, and about the solar energy concept as it works with maximum light, ventilation, and humidity control, said the client, Y. K. Chung, the chairman of the Miracle for Africa Foundation.

"I am truly astonished at the consideration and interpretation of Malawian batik art, the reflective pool, waves in a field of light, and the philosophical axes of the campus. This project is historic, the library will be an iconic marker for a great moment in the architectural history of Malawi and for all of Africa; especially Malawi, which has been away from modern civilization for so long."

Known as 'The Warm Heart of Africa,' Malawi is one of the smaller countries on the African continent by area, containing a population of 16.7 million people. It is also among the world's least developed countries, with a GDP per capita of only \$381.40. The Miracle for Africa Foundation was founded to serve the people of Malawi and Africa by expanding healthcare, education, and agricultural opportunities. ■

**News and image courtesy of Steven Holl Architects**  
<https://goo.gl/WY47BB>

## Zimbabwe: Harare mulls concrete roads

Harare is migrating to concrete roads arguing that the traditional asphalt ones are prone to cracks and potholes. The city's road network is in bad shape with potholes making life difficult for motorists. Efforts by council to



Zimbabwe's roads are like death traps. Photo: The Herald.

repair the roads have failed as the potholes emerge soon after maintenance work. Acting Town Clerk Josephine Ncube said: "We will be introducing our first concrete roads very soon."

"Concrete roads require very little maintenance and the advantage we have is that we have capacity as there is a lot of cement readily available in the country as compared to bitumen which we are currently importing from South Africa at higher prices."

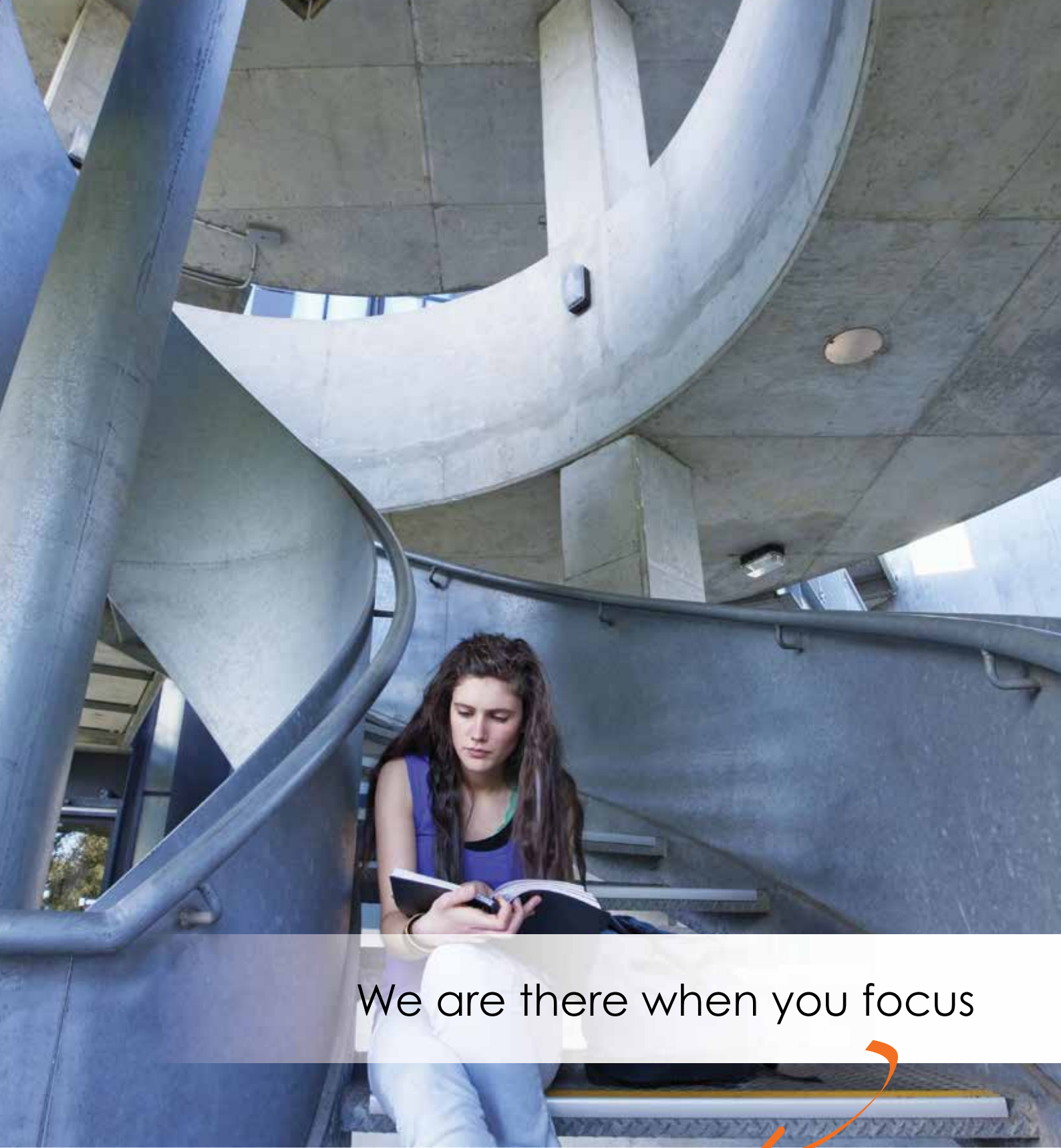
Ncube said research indicated that well-designed cement roads require little or no maintenance well beyond their 40-year design lives. Research also shows that concrete roads are not damaged from oil leaks like asphalt roads.

"There are now dangerous potholes even in the city centre," Ncube said. So dangerous have the roads become that motorists often ram into each other as they try avoid the potholes.

Harare Mayor Bernard Manyenyeni recently advised motorists to drive at 60 km per hour on city roads.

The city is in the process of procuring road maintenance equipment after Government approved its \$30 million borrowing powers. ■

**Source:** <http://allafrica.com/stories/201701250086.html>



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# Cement dust solutions for Africa

Despite the slow economic growth of recent months, infrastructure development continues to fuel the demand for cement in many African countries. However, the cement industry is also responsible for an estimated 5% of the world's greenhouse gases released into the atmosphere.

With sustainability ranking high on the list of many of the continent's emerging economies, finding the right designs and products to meet or exceed current and future emissions regulations is key to industry success.

Since the early 1970's, Donaldson Filtration Systems has been a trusted service provider to Africa's cement industry, installing over 300 filter units across the continent. PPC Ltd, AfriSam, Lafarge, Sephaku Cement (subsidiary of Dangote Cement) and NPC are amongst the long list of cement manufacturers who benefit from Donaldson's extensive and growing range of products.

More than 20 years later, Donaldson remains committed to the design of high-quality materials that capture velocities high enough to eliminate emissions but low enough not to pull valuable product out of the production stream.

## Leading the field

Designing, manufacturing and installation of filtration systems are Donaldson's core competencies. The sustainable objective of the project engineers is to deliver products of high quality with increased efficiency in line with the protection of the environment and resources. We are offering, from one source, the construction of new dust collection systems, the modernisation and upgrading of existing systems in plants as well as maintenance, engineering and service.

"At Donaldson we remain focused on our core mission namely; to offer our valued customers cost effective filtration systems that will enhance equipment performance and protect the environment. Donaldson is a technology and solutions driven company committed to leading Africa and the world in the design and manufacture of filtration systems," says Jacques Cato, General Manager of Industrial Air Filtration at Donaldson.

## Dalamatic Bag Filters – proven solutions

The versatile Donaldson® Torit® Dalamatic series of dust collectors deliver a powerful solution for nearly any dust filtration application. These collectors are available in different sizes and come in two models: the Dalamatic Cased (DLMC) which is a standalone collector that can be ducted to many different applications and the Dalamatic Insertable (DLMV), a versatile collector that can be inserted into various applications such as bins, silos, bunkers, storage vessels or transfer points. Both models are continuous-duty dust collectors designed to handle the most difficult product recovery applications. Envelope-shaped bags maximise the amount of media in a given space and provide continuous filtration of high dust concentrations even with small filter surfaces.

## Modular Baghouse – flexible design

Due to their modular design, the Modular Baghouse dust collectors are not only suitable as new systems, but are also ideal for retrofitting or converting existing dust collectors. The sectional design allows for a variable filter bag assembly with tiered filter lengths for each section. High level dust inlets guarantee an effective separation even with difficult dust and high raw gas concentrations as well as with a low differential pressure.

## Donaldson Downflo® Evolution (DFE) cartridge collector

In addition to the extensive Donaldson range of bag filter units such as flat bag and tubular bag technology, Donaldson also offers a complete range of cartridge filter units. With innovative technologies like the new Donaldson Downflo® Evolution (DFE) cartridge dust collector, PowerCore® dust collectors and highly efficient filter media like Ultra-Web®, Dura-Life® and Textratex®, Donaldson sets the benchmark in air pollution control. With these new technologies, Donaldson

can guarantee lower emissions, a cleaner environment and higher efficiency when compared to current filter media in the market.

Donaldson, the originator of the cartridge collector, launched the DFE cartridge dust collector in South Africa in June 2016, 30 years after the first cartridge collector was supplied in Africa. The breakthrough performance of the DFE family of cartridge dust collectors is the result of Donaldson's relentless drive to improve its products and exceed customer expectations.

Donaldson put decades of industry experience to work to produce a new, best-in-class dust collector capable of reducing equipment size and the number of required filters by up to 40% compared to a typical cartridge collector. A smaller collector helps lower the initial purchase price, reduces filter replacement costs, and opens up valuable manufacturing floor space. This state of the art collector, coupled with Donaldson's industry-leading Ultra-Web® nanofibre filtration technology, is truly an intelligent design.

The DFE's game-changing dust collection performance is achieved through a combination of design features that result in significant customer benefits. One of the main features is the Intelligent Drop Out Zone, where pre-separation of heavy dust particles takes place, resulting in reduction of dust load onto the filter media, lower pressure loss, and minimal filter element abrasion.

The DFE provides breakthrough cleaning performance, with the new MaxPulse Cleaning System, resulting in improved filtration capacity without sacrificing filter life or taxing compressed air consumption. Typical pulse-jet cleaned dust collectors deliver only a fraction of the compressed air energy to clean the filtration media. The MaxPulse Cleaning System minimises energy loss by focusing on the cleaning air's exact path and delivers uniform cleaning energy to all effective filtration media.



Left: Downflo® Evolution (DFE) 5-30 Model.  
Right: Downflo® Evolution (DFE) 2-4 Model.





*PowerCore® filter packs are easily replaced without the use of any tools.*

### **PowerCore® – smaller, smarter collectors**

PowerCore® dust collection technology from Donaldson outperforms traditional baghouse collectors and does so in less space: one 7" x 22" (178 x 559 millimetres). In one extremely small and powerful package, the PowerCore® dust collector handles high airflow, high grain loading, challenging particulate and fits into the smallest places. The filter change out is remarkably quick, easy and clean compared to the process for traditional bag filters. PowerCore® dust collectors combine award-winning PowerCore® filter packs with a new proprietary compact pulse cleaning system. This proprietary combination delivers high filtration efficiencies not usually found in baghouse filtration.

PowerCore® space-saving dust collectors are available as stand-alone models that can be ducted to many different applications, as well as bin vent models used on applications like silos, conveyor transfer points, conveyor discharges, blenders and mixers. Compared to traditional baghouse collectors with similar airflow capacities, PowerCore® CPC dust collectors are up to 50% shorter. The comparison to traditional bag-style bin vents is even more dramatic. CPV bin vent collectors are almost 70% shorter than other bag-style bin vents and effectively address the frequent challenge of tight space limitations.

### **Aftermarket: replacement parts**

Donaldson has a dedicated team responsible for aftermarket spares and provides a range of parts and filter media. Get cleaner air with advanced Donaldson replacements cartridges and bags. Our Ultra-Web® nanofiber replacement cartridge filters and Dura-Life® "twice-the-life" replacement bag filters are engineered with proprietary, higher performance industrial air filter media that improves efficiency, saves energy and extends cartridge filter and bag filter life. Our cartridge and bag filters are the 'Cure for the Common Collector', and they are available for Donaldson and most other brands of dust collectors. Donaldson's replacement parts are designed to guarantee the highest level of performance of your dust collection.

### **New technology = ease of maintenance**

Due to the unique design of the PowerCore® and DFE cartridge range of filter units, no special tools are required to replace filter elements. Donaldson continually raises the bar in bag filter technology, providing the widest range of bag filters for any baghouse collector, with specific filter media suited for abrasive dusts, high temperature, moist and or oily

dusts, as well as explosive and conductive dusts.

The cement industry needs to embrace new technology and innovation to improve productivity whilst containing operating costs. Real gains require that cement manufacturers work more closely with suppliers to identify shortfalls and encourage accelerated research and development programmes to cover the gaps. The cement plants will ultimately benefit directly but will also provide an important catalyst for critical technology advancements across industry.

Donaldson's focus is on value-added technology, exceptional service and simplified product maintenance to ensure that customers can optimise production through the use of reliable and customised filtration solutions. ■



*Tetratex® and Dura-Life® bag filters are available as replacements for all brands of baghouse collectors.*



*Downflo® Evolution (DFE) filter change out in a downflow collector*

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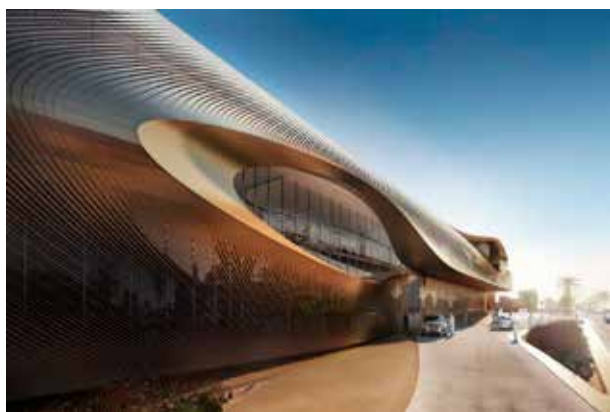
## Zaha Hadid Architects wins competition for Saudi cultural centre

By Patrick Lynch

**Z**aha Hadid Architects has won a competition for the design of the Urban Heritage Museum Administration Centre in Diriyah, Saudi Arabia. The centre will serve as the head office of the Heritage Museum, an educational institution established to preserve the historic UNESCO world heritage sites of Diriyah and the surrounding Wadi Hanifah valley.

The 8,780-m<sup>2</sup> building will contain a permanent exhibition gallery, library, lecture hall, and student/adult educational spaces, and will also serve as the home of a new scientific institution aimed at conducting field research and documentation of the many archaeological sites in Diriyah.

The project design draws inspiration from Diriyah's status as a natural oasis within the harsh Wadi Hanifah valley and greater



Najd central plateau. This context is translated architecturally by organising facilities around a central atrium containing a prominent water feature, and the intrusion of four 'scooped green oases' into the otherwise solid-seeming building volume.

The building envelope itself will consist of a double-facade inspired by the thickness of the rammed-earth construction of Diriyah's historic buildings: an outer perforated skin that shields the building from the sun and an inner curtain wall to preserve views out to the natural surroundings.

"The design relates to Diriyah's local vernacular, not through mimicry or a limiting adherence to references of the past, but by developing a deeper understanding of its traditions and composition – expressed in a contemporary interpretation informed by the same natural forces that defined Diriyah's historical architecture," explain the architects in a press release.

"True authenticity resides in the balance between tradition and ever-evolving innovation. This has been integral throughout the project's design process."

The Centre hopes to become a new piece of the nation's evolving cultural heritage initiative, as it becomes both a new tourist and educational destination as well as a hub for research programs than can be taken on by scientists and academics from all over the world. ■

News via Zaha Hadid Architects.

All images © Methanoia. Courtesy of Zaha Hadid Architects

Source: <https://goo.gl/Lpr5CD>

## David Adjaye to be Knighted by Queen Elizabeth II

**G**hanian British architect, David Adjaye OBE, principal of Adjaye Associates, will be Knighted by Her Majesty Queen Elizabeth II for his services to architecture at an investiture to be held in 2017.



The Central Chancery of the Orders of Knighthood at St. James's Palace, who administer the Knight Bachelor awards that will be bestowed upon the architect, described Adjaye as "one of the leading architects of his generation and a global cultural ambassador for the United Kingdom."

In September 2016 Adjaye celebrated his 50th birthday and, at the same time, completed the largest project in his career: the Smithsonian Institution's National Museum of African American History & Culture on Washington D.C.'s National Mall. The practice also won the competition to design Latvia's first Museum of Contemporary Art and were announced as the master plan architects for the major San Francisco Shipyard redevelopment. Most recently, the firm was shortlisted to design the UK's National Holocaust Memorial.

Adjaye was also awarded the prestigious London Design Medal and the Eugene McDermott Award in the Arts. ■

Source: <https://goo.gl/35PziV>

# Twisting Shanghai Tower world's best new skyscraper

By Adam Williams

**G**ensler's Shanghai Tower is the world's second-tallest building and has been declared to be the world's best skyscraper by information specialist Emporis in the results of its Annual Skyscraper Awards.

The mixed use mega-tall skyscraper reaches a total height of 632 metres and twists a full 120 degrees in order to mitigate the effect of the punishing winds at such heights.

Lauded by Emporis for its elegant design and its energy-efficiency features, the US\$2.4-billion Shanghai Tower is a very impressive building.

The foundations alone required an entire fleet of trucks pouring concrete for 63 hours straight.

A total of 106 Mitsubishi-designed elevators travel at speeds of up to 20 metres per second to move people around the mammoth structure in a reasonable time.

A double-layered glass skin serves to improve the building's insulation and wind turbines power all the external lighting. Rainwater is also collected and used for the air-conditioning and heating systems.



*The Shanghai Tower has an elegant design that twists a full 120 degrees to mitigate the effects of punishing winds (Credit: Connie Zhou).*

Making use of Building Information Modeling (BIM) software sourced from Autodesk, the design team was able to analyse wind resistance and seismic loads of progressive iterations of the building's design and eventually achieve what Gensler estimates is a design that used 32% less material than a conventional tower of the same size.

Moscow's Evolution Tower by RMJM Edinburgh and Kettle Collective is the second place runner-up. This building twists too, but does so more dramatically. As it rises, each of the neo-futurist skyscraper's 53 floors twists a full three degrees compared to the preceding floor.

Its design was said to have been partly inspired by Moscow's iconic Saint Basil's Cathedral and reaches a total height of 246 metres.

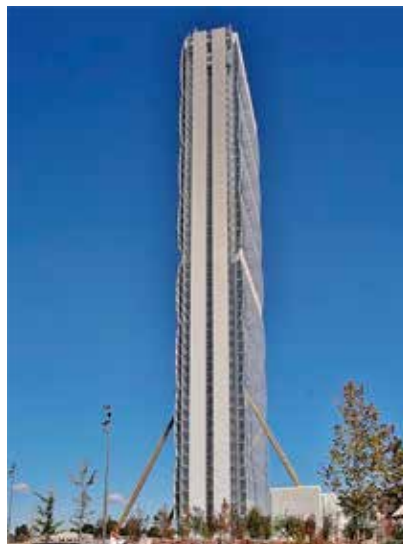
Visit the website below to see the remaining eight runners-up for the Emporis Skyscraper Award, including an

NYC skyscraper modelled after a trashcan and another in Austria with an unusual multi-coloured facade. ■

**Source: Emporis / <https://goo.gl/5NuMEk>**



*Moscow's Evolution Tower is the second-place runner-up.*



*Milan's El Dritto was placed third.*



*Jiangxi Nanchang Greenland Central Plaza took fourth place.*



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# Dubai to get first floating houses, made in Finland and shipped by sea

**A** swanky new waterfront development in Dubai will feature the UAE's first floating houses, plus restaurants and a yacht club that also bob on the waves – all made in a factory in Finland and 'sailed' to the Gulf later this year. Finnish firm Admares has been awarded Phase One of the Marasi Business Bay development in Dubai featuring 10 houses said to be the UAE's first-ever homes on water with pedestrian and boat access.



These and two restaurants and a yacht club floating on the Dubai Water Canal will be joined eventually by a 700-berth marina and an onshore shopping, leisure and office complex comprising the development led by Dubai Properties.

Admares will supply 10 pre-manufactured luxury homes, two restaurants and a yacht club for Marasi Business Bay.

Admares, a pioneer of floating real estate, was awarded the contract after supplying a new 5,000-tonne deck — also shipped from Finland – over the water for Dubai's iconic sail-shaped hotel, the Burj Al Arab Jumeirah.

The company said on 24 January that it began production of the floating buildings in October last year, with all of the manufacturing and outfitting to be finished in Finland before transportation by sea to Dubai in the third quarter of this year.

"Our objective is to create unique, innovative and environmentally friendly real estate products, utilising ground breaking, multi-disciplinary offsite construction technology," said Admares CEO Mikael Hedberg.

The development on the Dubai Water Canal will have a 700-berth marina and an extensive onshore shopping, leisure and office complex.

Abdulla M. Lahej, Group CEO of Dubai Properties, said of Admares: "Their use of innovative technologies and unique construction techniques to deliver this type of pioneering structure will ensure that these unique homes on water, and the surrounding promenade, parks and marina, will be one of the most sought after residential destinations in the city."

The voyage to Dubai will have many nautical twists and turns. The flotilla of house boats would 'sail' from Finland southeast through the Baltic Sea, skirting Denmark to enter the North Sea, and go through the English Channel into the Atlantic Ocean.

Hanging a left through the Strait of Gibraltar it would travel the length of the Mediterranean before wending its way through Egypt's Suez Canal. Travelling then south through the long, narrow Red Sea, it would emerge into the Gulf of Aden. Proceeding into the Arabian Sea along the coasts of Yemen and Oman, it would hang another left northeast into the Gulf of Oman, then squeeze through the Strait of Hormuz into the Persian Gulf, where Dubai lies to the southeast along the UAE coast. ■

**Source:** <https://goo.gl/x1fCYH>



# Construction begins on world's tallest religious building

By Patrick Lynch

Construction is underway on a 213-m-tall Hindu temple in Uttar Pradesh, India that, upon its completion, will be the world's tallest religious building. Designed by Indian firm InGenious Studio, the structure (named Vrindavan Chandrodaya Mandir) will surpass the Ulm Minster in Germany, the current tallest church at 162 m.

The earthquake-resistant structure will rise 70 tiered stories and cover an area larger than St. Peter's Basilica in Vatican City, and will house a variety of religious and cultural facilities – as well as a theme park filled with attractions.

"Attractions planned in the theme park would be like park rides, animatronics, light, sound and special effects as well as the Vraja Mandal parikrama shows and laser shows," project director Narasimha Das said.

Vrindavan Chandrodaya Mandir will be dedicated to the Hindu deity Lord Sri Krishna, who scripture states grew up in Vrindavan. The temple will be surrounded by additional social and residential facilities, set into a 30-acre forested area planted to recreate the 12 forests of Braj.

Current work is concentrated on the building's 55-m-deep foundation, which will contain 511 columns. ■



Courtesy of Vrindavan Chandrodaya Mandir, InGenious Studio

Source: <https://goo.gl/JC1RSN>



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# Massive CRB walls stabilise warehouse building platform

**A**veng Infraset's RidgeBloks® have been used for the construction of two exceptionally large concrete retaining block (CRB) walls which were essential components in securing a bulk-fill terrace and a large post-tensioned concrete surface bed at Tunney Ext 12 in Germiston. The surface bed supports a warehouse and distribution centre built for earth-moving-equipment giant, Komatsu.

Variable geology and sloping land presented an exceptional set of challenges in the successful execution of this project.

The CRB walls were specified by the project developer, Investec Property, and were designed by Verdi Consulting Engineers (Verdicon) in collaboration with international consulting giant, Hatch. Local earthworks contractor, Power Construction, was engaged for the civil work and Valcal International constructed the retaining walls.

The lower wall, 450 m long and topping 13 m, was built to face off and secure the bulk-fill terrace above, maximising the space available for development. The upper wall, 436 m long and 15 m high, stabilises the embankment which rises above the building platform. It was a cut-and-fill operation which involved the blasting and excavation of large quantities of rock.

Verdicon MD, Trevor Green, said that besides creating additional usable space, the advantage of CRB walls is their modularity which makes them sufficiently flexible to accommodate ground movement while retaining structural integrity.



*Aveng Infraset Landscape Products sales manager, Brennan Small, stands in front of the 13-m section of the wall in-fill.*

"By contrast it takes only minimal movement for reinforced concrete or brick walls to crack while an equivalent wall in reinforced concrete is typically several times more costly. We specified Aveng Infraset's RidgeBloks® for the Tunney project primarily because they are solid, unlike most other blocks on the market which are hollow, and their interlocking design prevents them from sliding, a distinct advantage.

"As both of the walls exceed a height of 10 m, they were constructed in a closed-face configuration for the first 3 – 5 m and in open-face thereafter. The lower retaining wall was built after the earthen terrace had been constructed.

"Power Construction battered the bulk earthworks platform at 45°, while the lower wall was built at an angle of 70°. During its construction, Valcal International benched the embankment to avoid the creation of a preferential failure plane. In addition, we specified geosynthetic reinforcing at a ratio of 70% to wall height which was installed at every third layer of RidgeBloks®," explained Green.

The cut wall section consists mostly of rock from several different geologies and is topped by ± two metres of soil. Although global instability was not an issue, numerous wedges (jointing) in the rock face meant that over time pieces of rock would dislodge and fall.

Rock bolts and mesh could have been used to secure the upper wall but Verdicon opted for the CRB option. Besides costing slightly less, it avoids the ongoing maintenance issues which the former option would have entailed. This wall was built at an angle of 75° using a minimum of 1m geofabric and stabilised fill compacted at 150-mm layers. Above the rock a more traditional geogrid installation of 50% to 60% wall height was applied.

Aveng Infraset Landscape Products sales manager, Brennan Small, says that the scope and scale of the Tunney project is one of the more spectacular examples of the versatility, structural integrity and cost-effectiveness of Aveng Infraset's RidgeBloks®. ■



*A portion of the completed wall in-fill.*

**More information Brennan Small,  
Tel: +27(0)12 652 0000 / [www.infraset.com](http://www.infraset.com)**

# Rocla initiative and quality sourced during 2016

Public sector infrastructure spend for South Africa is budgeted at approximately R865.4 billion over the next three years, with much of it focused on infrastructure for schools, healthcare facilities, roads and transport developments or upgrades, energy, water and sanitation provision. Rocla, part of the IS Group of companies, has played an important role in the supply of quality infrastructural products as well as the development of new self-build sanitation units for rural communities during 2016.

In 2016 Rocla launched the Rocla Thuthukisa Sanitation Initiative (TSI) 'Community Cast' system. "The communities that urgently require toilet units are often found in rural and outlying areas of the country. Accessing these areas is difficult and many areas have no infrastructure or access to electricity. Therefore we at Rocla developed this unique TSI in order to overcome these obstacles while at the same time creating community empowerment," said Andre Labuschagne, product development manager at Rocla.



Thuthukisa means 'to share', and during 2016 Rocla's focus was on developing the 'Community Cast' toilet unit that can be simply manufactured by local community entrepreneurs or SMMEs and be ready for use within two weeks. The resulting waste material can be recycled into practical items for everyday use.

"Rocla believes that the 'Community Cast' toilet system meets the needs for clean sanitation facilities across the country, while providing skills and employment to local communities at the same time" said Group Communications and Marketing manager, Guinevere Thomas.

Rocla is one of South Africa's leading manufacturers of precast concrete products for infrastructure projects. All of Rocla's products are ISO 9001/2008 certified and have the applicable SANS recognition. ■

**More information from Guinevere Thomas,  
Tel: +27(0)11 670 7733 / [www.technicrete.co.za](http://www.technicrete.co.za)**

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# New offices for Echo Floors



*The Echo Floors reinforced hollow-core factory in Muldersdrift.*



*Reinforced hollow-core slabs prior to delivery at Echo Floors' storage yard.*



*One of six new duplex cluster homes at the Brandi-Ann residential estate in Roodepoort being built by Renico Construction using Echo Floors reinforced hollow-core slabs for the upper floor sections.*



*The living area in one of six new duplex cluster homes at Brandi-Ann residential estate in which the smooth-soffit finishes of Echo Floors' reinforced hollow-core slabs are attractively displayed.*

The sales and marketing, engineering and accounting arms of Echo Floors have been relocated to the Echo Group's headquarter premises in Chloorkop, Gauteng. The Echo Floors factory, which has manufactured reinforced hollow-core floor slabs since 1983, will continue to operate from Muldersdrift with a full administrative and management staff complement.

The Echo Group's sales and marketing director, Melinda Esterhuizen, explains that incorporating Echo Floors' sales and technology arms into Echo's headquarter structure means that Echo Floors' clients will enjoy improved levels of technical input and quicker turn arounds.

"Echo Floors project enquiries are now all being channeled through our HQ engineering department which means we are better able to advise which product or combination of products is best suited to each project.

"Echo Floors has always produced the traditional reinforced slab which is generally used for building houses, townhouses, clusters and high-density housing, where the floor spans tend to be shorter. When deployed correctly, it is more economical than the prestressed hollow-core slab.

"Offering longer spans, prestressed slabs are designed to support heavier loads and can be used without internal load-bearing walls. In addition to the residential market, prestressed slab applications also include commercial and industrial structures which vary between three-to-seven storeys, and are used on community structures such as schools, clinics, office buildings, car parks and shopping centres.

"Merging the engineering function of Echo Floors into the Echo Group structure has made it easier for us to provide input on the design and engineering as well as construction phases of our Echo Floor clients through what we call our Total Solutions approach.

"The success of any hollow-core slab project essentially rests on the pre-planning and if we get involved in the planning stages, we are better able to bring our specialised knowledge to bear, matching the quality of our product offering with an equally high level of engineering input. This realises better building design, cost-efficient slab deployment and savings for our clients.

"Our Total Solution approach means that we remain involved until all the hollow-core elements are brought to successful completion. This approach provides the professional team with added flexibility and confidence, knowing we are always on hand to assist with any changes or fine-tuning, either during the design or construction phases," says Esterhuizen.

The Echo Group's prestressed slabs also have several other applications besides flooring. These include: basement parking walling; warehouse walling; culvert covers for attenuation tanks; reservoir construction and security walling. ■

**More information from Melinda Esterhuizen,**  
Tel: +27(0)11 589 8800 / [www.echo.co.za](http://www.echo.co.za)

### About Echo Floors

Established in 1983, Echo now boasts more than 30 years of experience in the design, manufacture, delivery and installation of hollow-core floors and walls, reinforced hollow-core concrete floor slabs and prestressed hollow-core concrete floors, security and retaining walls. Our precast hollow-core flooring solutions and advanced concrete slab technology sets us apart as an industry leader. We continue to expand our knowledge and services, ensuring solutions of the highest international standards.



# Quality pipes for Diepkloof sewer upgrades

The maintenance of infrastructure is critical for the well-being of communities, particularly water and sewage piping, which, if left eroded and non-functional, can be the cause of an unsanitary environment.

In February 2016 work commenced on the upgrading and installation of a new sewer line in Diepkloof Zones 5 and 6 due to constant sewer line blockages and pipe erosion. Rocla pipes and associated products were chosen for this 10-month project.

Facing challenges such as a rise in the water table that required nine hours of continuous pumping daily and a subsoil drainage of approximately 19 mm of bedding stone, the total line length of 2.4 km was completed in December 2016.

“Due to the previous sewer line having been eroded due to exposure to raw sewage and the site having been used as a dumping ground, we had to choose replacement pipes that offered good quality in addition to a long lifespan. Rocla recommended their 13-mm pipe with a sacrificial layer and we believe it is the best pipe for the purpose,” said Dennis Makwarela, managing member of Mavu-Ashu Civil Construction, the contractors on the Diepkloof project.

“In total, we sourced 2,715 piping product and associated supplies from Rocla, comprising RJ pipes, rubber rings, man holes, cover slabs and concrete lids for this project and at no time were we let down by Rocla. Their supply and service was always within our required turnaround time and the technical and sales support service was excellent,” said Makwarela.

Michelle Venter, sales representative for Rocla commented: “This was a project that needed products of a superior quality due to the nature of problems experienced in the past. It is not cost-effective to have a local municipality constantly being called out to unblock the same sewer line. Closer inspection



revealed pipe breakdown and therefore the upgrading and replacement were called for. We have a reputation for supplying not only good long-lasting product but also of sound technical advice and support to site contractors.”

Rocla is Southern Africa’s leading manufacturer of precast concrete products for infrastructure, including pipes, culverts, manholes, poles and various other related products.

All Rocla products are ISO 9001/2008 certified and have the applicable SANS recognition. The company has sophisticated Quality Management Systems which are continually monitored and upgraded to ensure standards are maintained.

Rocla is part of the IS Group of companies which includes Technicrete ISG and Ocon Brick. ■

**More information from Guinevere Thomas,  
Tel: +27(0)11 670 7733 / [www.rocla.co.za](http://www.rocla.co.za)**

## The flexible Enviro-Wall solution

Technicrete’s Enviro-Wall is a cost-effective and simple gravity retaining wall system that is suitable for earth embankments, bridge abutments, cut slopes, landscaping of cut and fill areas around buildings, a protection for steep channels and river banks as well as culvert inlets and outlets.

Constructed from dry stacked interlocking, precast blocks, the simplicity of the Enviro-Wall design enables the blocks to be easily and quickly laid to form an effective retaining wall system. Opening or closing the spacing between the blocks means that the Enviro-Wall structure configuration can be altered so that



in the open arrangement cavities between adjacent blocks can be filled with soil, enabling the moisture in these spaces to promote rapid plant growth. It can also be installed as a solid engineering structure.

Differing visual effects can be achieved by a reversal of the block which gives a smoother or textured face or a combination of the two.

Due to the extensive mechanical lock, as a result of the profile shape, between blocks in the vertical plane, Enviro-Wall is the preferred option for walls requiring reinforcement in the form of horizontal geogrids.

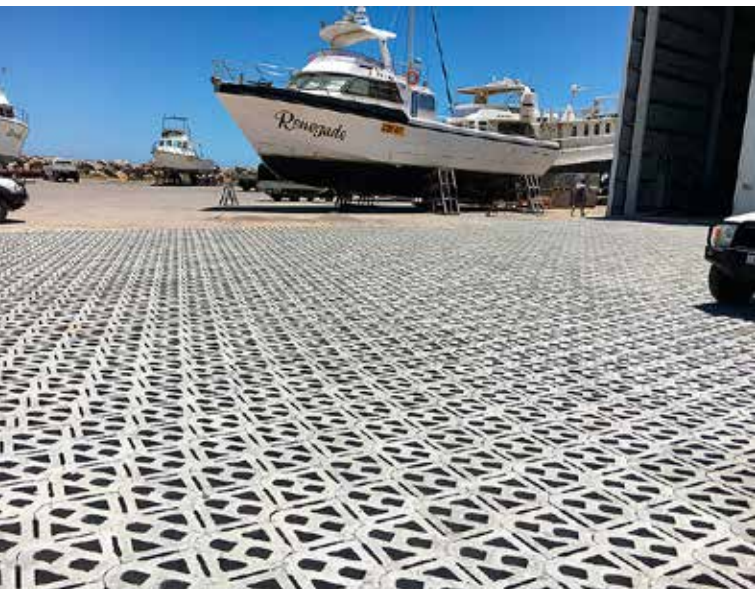
Suitable for supporting a wide range of embankment heights, the wall is able to accommodate both concave and convex alignments down to a small radius of curvature and the Enviro-Wall can accommodate moderate ground settlement. With the custom designed Base Block, the angle of the inclination of the wall can easily be set at 70 degrees, but can be varied should site conditions require different angles.

The Enviro-Wall blocks are available in 275 mm x 300 mm standard sizes with a block mass of approximately 23kg. Technicrete ISG is part of the IS Group which also comprises Rocla and Ocon Brick. ■

**More information from Guinevere Thomas,  
Tel: 011 670 7733 / [www.technicrete.co.za](http://www.technicrete.co.za)**

# Innovation with Terracrete in Australia

The small town of Esperance is situated near the southern tip of Western Australia and Terraforce products (Terracrete hard lawn pavers, L11 and Terralite blocks) are selling well in the area, via the local Bunnings, the largest building warehouse chain in Australia.



One of the examples of innovative planning and excellent workmanship during the installation process is showcased in the neat finish and innovative design of a Terraforce L11 and Terracrete paver combination retaining wall at a local community clinic in the city centre.

Designed by Lionel Trotman, of Cartman Designs, Esperance, the wall features a six-row-high round-face wall of L11 blocks, topped by a slope stabilised with Terracrete hard lawn blocks to create a permeable eco-surface. The L11 blocks were packed with soil infill and the backfill compacted progressively as the retaining wall was raised. For stability, two rows of geogrid, clamped between the blocks were installed.

Says Ian Mumme, director, Wrinkly Tin and Cladding, who assisted Dixon Construction during installation: "The wall was started off vertically closest to the road, abutting against an existing brick wall, by packing the blocks in stack bond, filled with concrete and reinforced with one 16-mm rebar. The wall then follows two corners, all the blocks concrete filled and reinforced with steel rebar, to create a recess to accommodate and protect an existing utility control box. To change over from the stack bond pattern to the stagger bond of the main wall, a few blocks were cut with an angle grinder to the required shape.

The slope above the wall was then trimmed to line and level and Terracrete hard-lawn blocks, that are usually used for driveways, parking areas and strip roads, were packed by hand in a circular pattern. Finally, the project was rounded off with a fence and some planting along the top of the wall and in the openings of the Terracrete blocks."

Another milestone Terracrete block surface was installed in Geraldton, Western Australia, eight years ago and has proven so successful that two additions to the project have been completed in 2010 and 2013.

Manufactured by The Blockmakers, the product offered the desired cost effectiveness, ease of installation along with environmental compatibility. The advantage of ending up with a permeable eco-friendly surface was the prime motivator for specifying Terracrete apart from the positive cost implications.

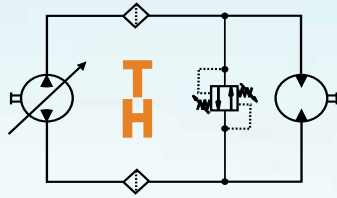
For this Terracrete permeable paver installation, initiated by Geraldton Boat Lifers Ltd and designed by consulting engineer, Sam Nejad, the hard lawn blocks were reinforced by EPC Barchip to allow them to handle the weight of a 300-ton boat lifter moving at about 5 km per hour at their new boat lifting facility. Over the years the blocks have shown no sign of deterioration and wear and there have been minimal maintenance costs to the owners.

This particular eco-surface, installed by local contractor JD's Landscaping, has impressed the owners of the facility so much that they just recently added another section of hardstand to the area in November 2016. The pavers are capable of withstanding a whopping 300T load – (100-ton boat lifter, and a 200-ton boat).

For over 35 years Terraforce, the Cape Town-based precast manufacturer has maintained a strong foothold in South Africa while expanding into the international markets. ■

**For more information on Terraforce products in Western Australia <https://goo.gl/L2JQbF>**

**For more suppliers in other countries <http://www.terraforce.com/suppliers-installers/>**



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## Meet the 2017 Global Advisory Panel

Every year the African Construction and Totally Concrete Expo elects an Advisory Panel of elite industry experts representing a cross section of professionals from the built environment. The panel's role includes advising the organising team on the latest industry trends, challenges and discussion issues, thus creating an event developed by and for the industry.

Invaluable input from the Global Advisory Panel ensures that the event format and content will drive the future of education and knowledge for the African built environment. ■



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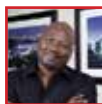
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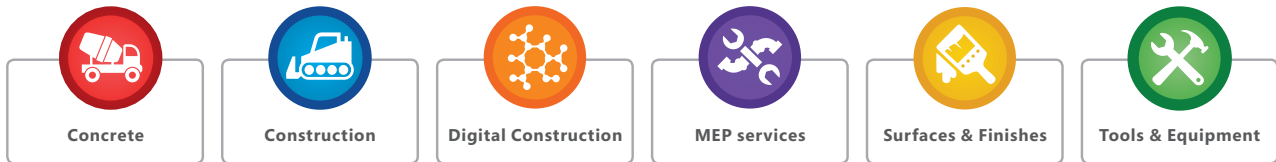
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## Submit your nomination for the prestigious Women in Construction Awards 2017!

**N**ow in its fifth year, the Women in Construction Awards has evolved as the leading African platform for the recognition and celebration of women in the construction, cement and concrete industry.

The awards, which comprise both individual and organisational categories, acknowledge the increasingly important role women play in the industry and will be decided by an esteemed judging panel of industry experts who will assess nominations in the following eight categories:

### Individual categories:

- Pioneer in Innovation Award
- New Starter of the Year Award – Under 30
- Woman Architect of the Year Award
- Woman in Concrete: Lifetime Achievement Award
- Young Entrepreneur / Rising Star Award - Under 40

### Organisational categories:

- Most Innovative Women Training Programme Award
- Excellence in Career Development Award
- Excellence in SMME / Enterprise Development Award

Nominations are open to individuals and organisations across all sectors of the industry active in Africa, so what are you waiting for? These awards provide a unique opportunity to participate in industry transformation and support the development of women in the construction workplace in Africa!

Interested individuals or organisations can view the criteria and submission requirements for each category on [www.womeninconstruction.co.za](http://www.womeninconstruction.co.za). Anyone can nominate a candidate, organisation and self-nomination is also allowed.

**Nominations close at 5pm on Friday 31 March 2017.**

For more information contact Athi Myoli

☎ +27 21 700 5506 ✉ [athi.myoli@womeninconstruction.co.za](mailto:athi.myoli@womeninconstruction.co.za)

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# The concrete alternative in road building

By Muyiwa Lucas

In 2014, Nigeria was estimated to have lost N300 billion to bitumen importation. Now, with biting foreign exchange scarcity, dwindling revenue and prevailing economic recession, experts have called for the use of concrete to build roads rather than bitumen.

Led by Lafarge Africa Technical Services engineer, Bukola Adebisi, officials of cement manufacturer, Lafarge Africa, made presentations to members of the House of Representatives Committee on Roads.

Adebisi described the sorry state of the asphalt roads and the drain they constituted on government revenue. "Flexible asphalt-paved roads make up more than 99.9% of all paved roads in Nigeria today. With the massive investment in the cost of maintenance, repair and reconstruction of these roads, a shift to a more sustainable alternative is inevitable," he noted.

In 2015, the budget for the Federal Ministry of Works was N100 billion, but only N11 billion was approved for the ministry. The then Minister of Works, Mike Onolememe, said Nigeria needed a yearly investment of N600 billion minimum to meet the Vision 20:2020 targets for roads and road infrastructural development, and to increase paved roads from 65,000 km to 200,000 km by 2020.

Variability in global oil prices over the last decade has considerably increased the cost of bitumen, reducing the cost differential between rigid and flexible pavement.

Since the backward integration policy of the Olusegun Obasanjo administration in 2002, the cement industry has seen installed capacity increase to 4.025 million metric tons (MMT) and, with the second production line of Lafarge Africa Plc at Mfamosing in Cross River State coming on-stream in August 2015, the total national installed capacity has increased to 4.275 MMT.

With the massive cement production capacity locally, the comparative cost advantage will set in, making concrete roads more economical. At present, the average cost of paving a square metre of road 50 mm thick for asphalt is  $\pm$ N5,493.07 compared with 150-mm-thick concrete, said to be at 3% differential.

To prove this point, Lafarge Africa Plc is currently involved in constructing two concrete roads at Cross River and Gombe states. "We are not only advocating the usage of concrete in the construction of pavement for roads, but are adopting it because of the sustainability aspects and the much lower maintenance," Adebisi said. "Rigid pavement is no longer an alternative, but the way to go in sustainable road development."

Adebisi said Nigeria must take a cue from other developed countries that have already succeeded in concrete road construction process. "About 60% of the USA interstate road system is concrete, according to the United State Federal Highway Administration (FHWA)."

He listed the advantages of concrete roads.

**Not susceptible to deformation with daily temperature cycle variation**, leading to rutting under heavy vehicular loading. Thus concrete pavement needs minimal maintenance over its life cycle, which is three times that of comparable flexible pavement.

**Costs less for road users:** Concrete roads provide a better rolling resistance for heavy trucks due to non-deflection under loading because of the pavement rigidity, thereby reducing energy consumption by up to 20%. Better long-term performance means fewer interruptions and lower costs.

**Resistant to oil and lubricant damage:** Concrete pavement is resistant to damage from oil, lubricants and many other chemicals that could easily cause extensive damage to flexible pavement.

**Reflects more light:** The light reflective index of concrete increases the reach of vehicular headlamps, enabling better visual awareness. This reduces lighting costs and accidents.

**Recyclable and 100% per cent re-usable:** Concrete can be used as aggregate in new concrete pavements, base materials for new roadways, or for other uses, including erosion control and flood prevention.

**100% local supplies:** Concrete pavements are typically produced from abundant supplies of locally available resources, such as rock, sand, cement, and water. Modern concrete also incorporates waste materials, such as slag and fly ash, contributing to sustainability.

In a 99-year comparative cost life cycle cost analysis by the American Concrete Pavement Association (ACPA), despite a 15% difference in initial investment on concrete pavement compared with asphalt, by the end of the analysis period the cost differential is over 230% more for the asphalt pavement.

The President of the Nigeria Institution of Estate Surveyors and Valuers (NIESV), Patunola Ajayi, said recent studies reveal that Nigeria was losing about N80 billion yearly due to the deplorable condition of roads across the country.

Dangote Cement chairman, Aliko Dangote, agreed: "It is cheaper to construct a concrete road, which will last 50 years, than to do a bitumen road. If you build a bitumen road, it will have to be adequately maintained unlike a concrete road that is very durable and maintenance cost is near zero," he advised. ■



Lafarge Africa and Dangote Cement are leading the campaign to move to concrete for construction of roads in Nigeria.

Source: <https://goo.gl/6uXt2N>



# Chinese city gets world's longest aerial cycle way

The city of Xiamen in south-east China has just completed the longest aerial cycleway in the world. The path is a 4.8-m-wide four-lane carriageway stretching for 7.6 km with 11 exits connecting to six public transport hubs.

Xiamen's commuters do not have to have a bike to use the system, as it comes with 355 cycles for hire, and has 253 parking spaces for private bikes on seven platforms.

Much of the pathway is beneath the elevated road used by the city's rapid transit bus line, which gives shelter on rainy days. For safety, the paths have 1.3-m guardrails and 30,000 lights to illuminate the path at night.

There will also be a "multi-sensor monitoring technology" and gates that will close if the cycleway is becoming too crowded.

The structure, which will be operated by the Xiamen City Public Bicycle Management Company, was designed and completed in six months. According to China.org, city authorities say the bike lane will be opened to the city's 3.5 million citizens in the near future.

Other cities have considered the idea of aerial bike routes. In 2011 UK firm Exterior Architecture floated the idea of a 220-km SkyCycle system located over railway lines. The idea reportedly had the backing of Network Rail and Transport for London, but came to nothing – partly as a result of its £8-bn price tag.

A more modest piece of engineering was added to Eindhoven in 2012: the Hovenring which floats above a busy roundabout,



One of the cycleway's bridges (Xiamen Network)

suspended from a 70-m tall pylon. The design was later copied by Stavanger in Norway.

Copenhagen built the Cycle Snake system in 2014 as a meandering path above the Fisketorvet shopping centre. ■

Source: <https://goo.gl/9QzoKZ>

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# Flowing red ribbon bridge completed in China

By Joe Quirke

**A** red undulating bridge designed by Dutch firm Next Architects has been completed in Changsha, the capital of Hunan province in south-central China.

Known as the Lucky Knot, the bridge is 185 m long and 24 m tall. It offers a variety of routes across the Dragon King Harbour River to Changsha's rapidly developing New Lake District. The bridge connects multiple levels at different heights,



such as the river banks, the road, the park as well as the interconnections between them. It also offers views of the river, Meixi Lake, Changsha and the surrounding mountain ranges.

The Lucky Knot Bridge can also display an LED lightshow, aiming to become an attraction in the "light route that traces the path of the Dragon King Harbour River".

John van de Water, partner in Next Architects Beijing, said: "The shape of the Lucky Knot was inspired by the principle of the Mobius ring, as well as by the Chinese knotting art. In the ancient decorative Chinese folk art the knot symbolises luck and prosperity. The final shape of the bridge is the result of literally and metaphorically knotting all these routes together." The bridge was designed by Next's Dutch and Chinese offices, which Next said combined the Dutch team's expertise in infrastructure and water management and the Chinese team's perseverance and knowledge of the local context.

Jiang Xiaofei, partner in Next Architects Beijing, said: "The Lucky Knot is more than a bridge and a connection between two river banks. Its success lies in bringing cultures together, and in the structure's fusion of history, technology, art, innovation, architecture and spectacle." ■

Source: <https://goo.gl/FiEziB>

## Glow-in-the-dark bike path lights the way in Poland

By Stu Roberts

**T**wo years ago, Studio Roosegaarde created a glow-in-the-dark bike path in Eindhoven, Netherlands, helping to light the route in an exciting way. Inspired by that, a materials technology centre in Lidzbark Warminski, Poland, has followed suit, with equally dazzling results.

The Materials Technology Centre, TPA Gesellschaft für Qualitätssicherung und Innovation (TPAQI), explained that it first drew attention to the Eindhoven bike path at a local road forum event. The underlying concept was floated as a potential option for creating something that would reflect the beauty of the surrounding landscape.

Work began about a year ago, with laboratory tests into how the glowing effect would be created. A variety of different materials and colours was tested, with the aim of creating something that would look great but would also increase safety for cyclists and pedestrians.

Ultimately, a fine aggregate which contained inorganic luminophores (light-emitting constituents) was chosen. The phosphorescent material is 'charged' by sunlight and emits a blue luminescence, which becomes visible in the dark. A layer of this aggregate was applied to a trial 100-m section of an existing asphalt bike path and, for additional safety, this was covered with a layer of small stone grit.



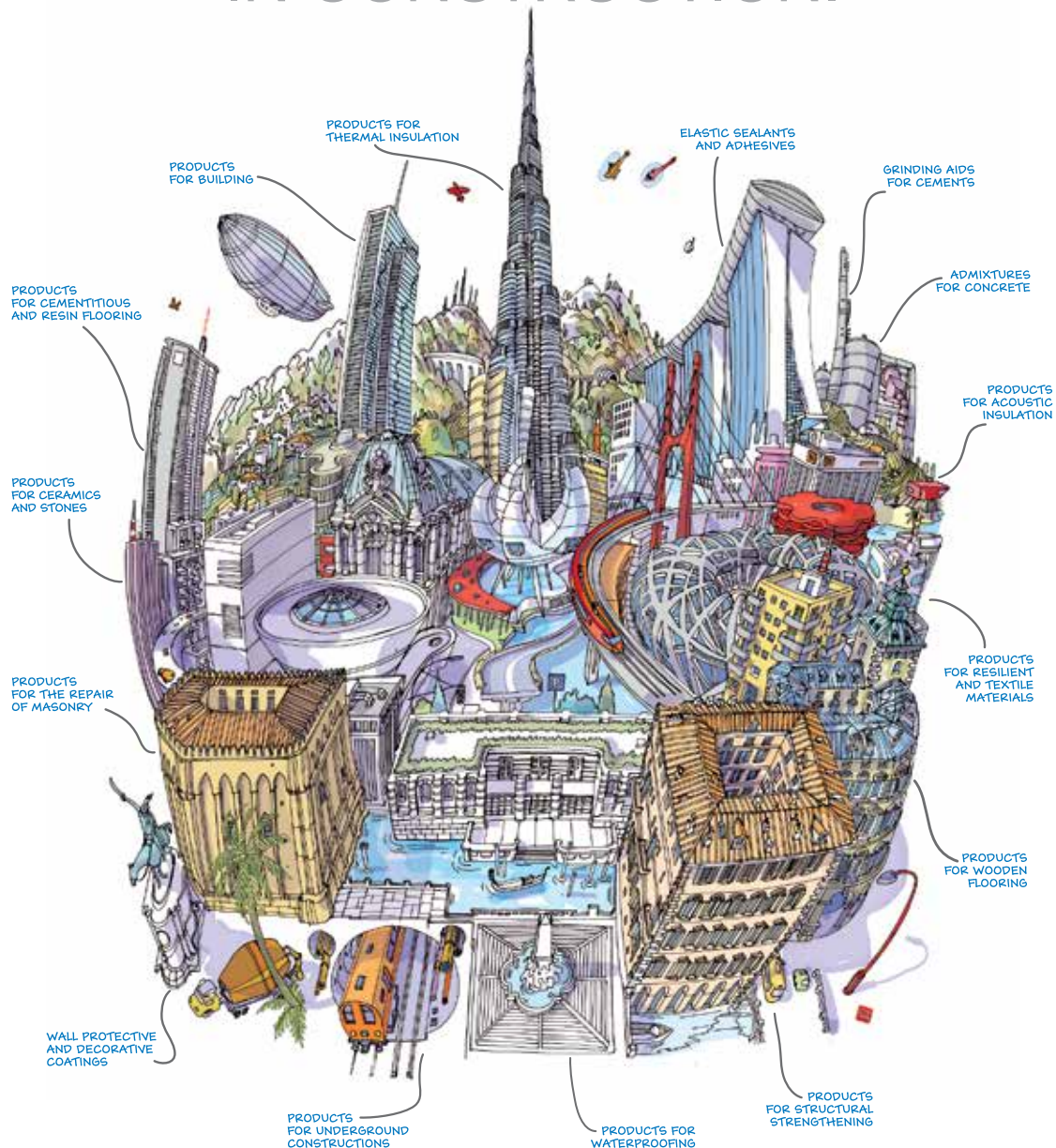
TPAQI says exposure to 30-60 minutes of daylight is enough to make the path glow for at least eight hours overnight. It believes the material should retain its glowing properties for about 20 years. As part of the trial, the durability of the glow-in-the-dark section is being observed under real-world conditions.

The project was completed at the end of September 2016. ■

Source: <https://goo.gl/fU1wpY>

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# Why fibre-reinforced concrete is the better way to go

While the use of fibres to reinforce concrete is by no means new, CHRYSO's partnership with the Adfil Construction Fibre division of the UK-based Low & Bonar Group has led to a growing range of polypropylene fibres to suit every application.

Adfil is also doing development work with South African company, Oxyfibre, who has treated and supplied fibres to CHRYSO Southern Africa for nearly 20 years. Oxyfibre has developed patented surface technologies and nano-technologies for polypropylene fibres, thereby offering the construction and mining markets bespoke fibre solutions for every application.



*Plastic shrinkage cracking and plastic settlement cracking can, on occasion, penetrate the full depth of the slab. CHRYSO Micro Fibres provide effective crack control in concrete during the pre-hardening phase.*



*CHRYSO Macro Fibres were used for all the surface beds for the basement and parking areas at the ZA Hospital's consulting rooms being constructed by Mike Buyskes Construction.*

This has further increased the benefits this technology offers contractors and builders in any project requiring concrete, while significantly reducing the amount of reinforcing steel that is required.

Benefits include fibres' ability to minimise plastic shrinkage and plastic settlement cracking – problems causing major expenses for remedial measures or even greater costs for slab replacement. While CHRYSO Micro Fibres provide crack width control during the pre-hardening phase, CHRYSO Macro Fibres control cracks in the concrete once it has hardened.

CHRYSO Micro Fibres address plastic shrinkage cracking by forming a three-dimensional bond with the concrete matrix; this 'holds' the matrix together and prevents early micro-cracks from widening into serious cracks that would expand if unchecked and threaten the integrity of the slab. These fibres improve the rheology of the concrete mix, preventing the segregation of fine cement and sand particles – and excessive bleeding – which could lead to plastic settlement cracking.

With less bleed, there is more water available for the hydration process that improves bonding within the cement matrix. This helps to reduce curling in screeds, and improves the ductility of concrete – its ability to elongate – creating more durable concrete and reducing concrete cracks.

To improve post-cracking behavior, CHRYSO Macro Fibres are anchored in concrete on both sides of the crack, effectively 'sewing' the two sides together preventing the crack from widening. These fibres therefore also increase ductility, as well as the load-bearing capacity of concrete.

While CHRYSO Macro Fibres are not a replacement for structural reinforcement, they are a good alternative to mesh reinforcement; this is because costs are lowered, less labour is required and construction time is reduced by avoiding steel fixing. There are also savings on storage and transport, and fewer health and safety hazards associated with the handling, cutting and placing of mesh.

Fibre reinforcing also improves the durability of concrete in a number of ways. To resist corrosion, CHRYSO Fibres make concrete less permeable, preventing water and harmful chemicals from penetrating the concrete. To make concrete more resistant to abrasion, these fibres improve concrete strength by helping to maintain a low water/cement ratio. They also promote the efficient hydration of cement and improve the bonding of the cement matrix – delivering a more durable concrete surface.

Impact resistance is another characteristic that benefits from CHRYSO Fibres, due to the high level of energy absorbed in the de-bonding, stretching and pulling out of fibres after the cement matrix has cracked. The concrete also becomes more resistant to freezing and thawing, as the fibres prevent the influx of water; when water penetrates concrete pores and then freezes, it will expand and damage the concrete. CHRYSO Fibres are a reliable replacement of air entraining agents, which are designed to create tiny air bubbles in concrete to better accommodate freeze-thaw conditions.

CHRYSO's Micro Fibres also contribute to safety when concrete is subject to fire or very high temperatures – when high-density concrete in high-rise buildings and tunnels could explode. This explosive spalling occurs when moisture in the concrete is unable to escape due to the lack of porosity, building up steam pressure. In contrast, these fibres melt at



To improve post-cracking behaviour, CHRYSO Macro Fibres are anchored in concrete on both side of the crack, effectively 'sewing' the two sides together preventing the crack from widening.

160°C to create millions of voids and channels in the concrete through which the steam can escape – releasing otherwise dangerous levels of pressure.

Including CHRYSO Fibres in concrete makes for a more cohesive mix through mechanically binding the cementitious material together, reducing waste and avoiding any balling and clogging in pumps and pipes. When used in shotcrete or plaster applications, the fibres improve the material's bond to the relevant backing material, as the reduced bleed makes more water available to interface for better hydration of the cement.

Through its technical expertise, CHRYSO Southern Africa can tailor the right fibre-reinforced concrete mixes in its laboratories, by selecting the most suitable fibre and optimising the fibre dosage to suit the particular application. CHRYSO will also be able to utilise a design service offered by Adfil for concrete slabs and precast concrete elements. This programme looks at certain parameters specified by engineers and fibre dosages for cost effective and optimum performances. ■

**More information from Kirsten Kelly,**  
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## Ancient roots

Fibres have been used as reinforcement for thousands of years; horsehair was once used to strengthen mortar for mud huts, while the Egyptians used mud mixed with straw to bind dried bricks when building the pyramids.

Asbestos became widely used between the early 1900s and the 1950s, until its health risks were realised; this led to the development of composite materials, with fibre-reinforced concrete as a topic of interest.

The 1960s saw the evolution of steel, glass and synthetic (e.g. polypropylene) fibres, and ongoing research continues to enhance the quality of fibre-reinforced concrete.



[www.elematic.co.za](http://www.elematic.co.za)



# Bamboo is the new steel



**R**neelam Manjunath is a true-blue revolutionary whose methods are sometimes even called radical. After all, she is promoting the use of bamboo as a replacement for steel in construction.

Proving that this is no tall claim, Manjunath says that bamboo has replaced 70% of steel and wood in the structures she has designed.

Founder of Bengaluru-based Manasaram Architects, Manjunath is a veteran of more than a hundred projects which she has designed using bamboo as the principal material.

“Green and sustainable construction in India is not an option anymore; it is the only way left if we want the human race to survive,” says the architect. Bamboo is as strong as steel. “Bamboo has a tensile strength that rivals steel and its weight-to-strength ratio surpasses that of graphite,” says Manjunath, who is also founding

member and managing trustee of the Centre for Green Building Materials and Technology (CGBMT), Bengaluru.

“One column of bamboo produces enough oxygen for one’s lifetime. It also helps to save the planet from the effects of climate change because of its unrivalled capacity to capture carbon,” she explains.

## Why use bamboo in construction?

It can be used in structural applications such as columns, beams, walls, roofs and staircases. It has a tensile strength that rivals steel. It can replace 70% of steel and wood in construction. It can slow climate change because of its capacity to capture carbon. Bamboo has multiple applications.

Manjunath has worked with bamboo for 16 years and has used it to make walls, beams, columns, doors, windows, roofs, railings, fencing, staircases and boundary walls.

In the projects she has designed across the country, bamboo has completely replaced steel and concrete for columns and beams. It has also been used to make precast walls and roofs.

“The slab is cast with bamboo fibre reinforced concrete, which is lighter than conventional concrete,” says Manjunath, whose firm has notched up yet another achievement by being the only one that represented India at the Venice Architecture Biennale’s exhibition ‘Time-Space-Existence’ in 2016.

Bamboo is also sustainable. The crusader for sustainable architecture says her first project was a VIP pantry for Raj Bhavan in Bangalore, in 2000. “The governor, Ms Rama Devi, wanted it to be made with bamboo. The versatility of bamboo and the freedom in designing due to its properties and workability fascinated me.

One can construct almost any type of building with it, from a toilet to metro stations, stadiums and airports,” reveals the architect and recipient of the World Architecture Community award (2013), Lafarge Invention Award (2011) and nominee for the Aga Khan Award for Architecture (2013). She was also recognised at the International Bamboo Conclave, 2014.

A graduate from the Government College of Architecture in Lucknow, Manjunath is currently working on housing projects at Aditi Greenscapes in Bengaluru. Other major projects to her credit are the Bamboo Centre, Agra; CGBMT headquarters – Sustainability Institute, Bengaluru; one of the metro stations in Bengaluru; the cafeteria at the Petroleum University in Gandhinagar, Gujarat; and the National Bamboo Centre in Rajaborari, Madhya Pradesh.

## Promoting bamboo among students

The greatest challenge to promoting bamboo in construction is its perception as a temporary structure, Manjunath points out. “Also, the bamboo sector is not ready to take on financial and other risks to promote the material even though India is the second-largest producer of bamboo in the world, she says. Manjunath believes that she can make a lasting difference by introducing budding architects to this very simple yet revolutionary material. Ruing that it is not yet part of the curriculum in architecture and engineering colleges, she is promoting the various applications of bamboo through vocational courses and by participating in exhibitions and lectures across the world. She is also working with her alma mater, Dayalbagh University, to start a nation-wide skills development programme for the bamboo sector. ■



Read more at: <https://goo.gl/czqwkC>

## German Future Prize 2016: fascinating carbon concrete

**A**n alternative to steel reinforced concrete has won the German Future Prize 2016, edging out inventions of pinpointed laser light and efficient motors.

Since 1997, the German Future Prize nominates three teams per year for an inventors' award. But only one team was awarded this trophy on November 30th. German President Joachim Gauck awarded the three brains behind carbon concrete the German Future Prize for innovation. The award is endowed with €250,000 (\$264,000) in prize money along with a highly sought-after trophy.

Steel reinforced concrete is great for construction: it guarantees fire safety, durability and security. However, it also has some weaknesses. One very big one: the steel reinforcement that's in the centre of the concrete structure can corrode if water manages to seep in.

That's one of the reasons that many bridges from the 1960s and 70s are now losing stability and will have to be replaced in the coming years. Weather, and the impact of heavier and more trucks than the bridges were built for, have left their toll on the structures.

Three professors from the Technical University Dresden in the eastern German state of Saxony have invented carbon concrete as an alternative to steel reinforced concrete. Instead of the traditional iron rods, the concrete contains carbon fibres. Those fibres are even more durable than steel and don't cor-



rode. Therefore, it is possible to build much slimmer structures that will last much longer.

The inventors are all from the same university, but they come from very different institutes. Manfred Curbach is the head of the Institute for Concrete Construction (Institut für Massivbau). Chokri Cherif heads the Institute for Textile High Performance Materials (Institut für Textilmaschinen und textile Hochleistungswerkstofftechnik). And his colleague Peter Offermann, though retired from the institute, remains active as a researcher. ■

**Source:** <https://goo.gl/RUfxWC>

## Sika® WT Series



### THE NEW ALTERNATIVE IN WATERTIGHT CONCRETE

The crystalline admixture enables concrete cracks to self-heal and therefore block water, even when under extreme hydrostatic pressure. And it will continue to reactivate whenever water is present.

Benefits of using Sika® WT-200P in waterproof concrete:

- Increase in service life of the construction
- Significantly improved durability and sustainability of the hardened concrete
- Ensured watertightness without other expensive measures
- Reduced maintenance costs
- Enhances the self-healing properties of concrete and promotes the ability to heal concrete cracks

[www.sika.co.za](http://www.sika.co.za)



BUILDING TRUST



# Eco Readymix brings 'green' to concrete

In an industry first, AfriSam has released an environmentally responsible concrete range, Eco Readymix that combines high-performance cement with carbon-neutral mineral components to achieve excellent cementitious properties.



The performance of the Eco Readymix concretes is far superior to concrete made from pure cements.

The carbon footprint of this concrete has been reduced by between 46% and 51% compared to typical industry concrete, depending on the compressive strength. The Eco Readymix brands – Starmix, Foundation Mix and Retainer Mix – are developed to suit the particular construction application.

“As part of our efforts to conserve the environment, AfriSam has perfected the art of producing composite cements using additives as partial replacement for cement,” Victor Bouguenon, marketing manager at AfriSam, says. “Not only does this practice of recycling by-products from other industries minimise harm to our environment, but these additives enhance the performance of cement and offer advantages over ordinary portland cement.”

The additives include limestone, fly ash – a by-product of coal-fired power stations – and ground granulated blastfurnace slag from the steel industry. These products behave like pure cements in the presence of cement or lime.

“While pure portland cement has served industry well for over a century, it has now been superseded by composite cements,” says Bouguenon. “Despite their low carbon footprint, the performance of the Eco Readymix concretes is far superior to concrete made from pure cements. Further, AfriSam is able to produce ultra-high-performance Eco Readymix concretes with compressive strengths of above 70 MPa.”

He says AfriSam’s years of research and development in cement products – and in particular its C-Tech technology – give the company’s products a number of distinct advantages over pure cements.

“These include improved workability, reduced heat of hydration, reduced susceptibility to chemical attack, and increased erosion resistance,” he says. “They are also less permeable, so are more corrosion-resistant, and they continue to gain strength over time.” ■

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## Artist Benedetto Bufalino unveils a disco ball cement truck

By Christopher Jobson

Thanks to French artist Benedetto Bufalino, you can now dance the night away at a construction site turned night club with the help of his new Disco Ball Cement Mixer.

The truck was parked from December 8-10, 2016 in Lyon, France where bright spotlights pointed at the truck turned the streets and building facades into a swirling dance party.

The spectacle apparently grabbed the attention of quite a few passersby who stopped to take photos and film the otherwise mundane work site that was transformed for a few hours each night.

Bufalino is well known for his unconventional approach to urban interventions, frequently installing active aquariums into phone booths and creating a variety of public art pieces in unexpected places. ■

Source: <https://goo.gl/MwF8dy>







# I NEED ADVANCED ADMIXTURES TO COMPLETE THE MOST DEMANDING PROJECTS.

Every construction is special. Using the right concrete admixtures doesn't just make great building projects easier to realize. It is often essential to transform challenging designs into reality in the first place. Master Builders Solutions by BASF offer technical expertise combined with just the right products - like MasterGlenium SKY. This unique concrete admixture imparts the required properties, enabling it to be pumped up to heights exceeding 600 meters, without compromising its durability and safety. With MasterGlenium SKY, you rise to every challenge.

For more information, go to [www.master-builders-solutions.basf.co.za](http://www.master-builders-solutions.basf.co.za), or call Tel: +27 11 203 2405.

 **BASF**  
We create chemistry



# Unique EkhayaBag for fuss-free building

Continual and customer-focused product development has made Lafarge South Africa the market leader in innovative building materials. Understanding the needs of home and small business owners and their building projects, the Lafarge Readymix team recently launched the revolutionary EkhayaBag product range. A first for the South African construction market, the product offers convenient premixed small quantities of mortar and concrete delivered to site in bags, ready to use.

With the trend to higher residential densities, including estate living, Lafarge recognised the difficulties of delivering and handling bulk sand and stone: the EkhayaBag was the ideal solution for smaller projects. This half cubic metre (500-litre) bag of product is delivered to site ready to use – no unsightly piles of sand and stone, no additional water or mixing is required, avoiding wastewater run-off into residential drains, thereby resulting in cleaner job sites.

“The EkhayaBag’s name is derived from the isiZulu term ‘Ekhaya’, meaning ‘At home’. It is at the heart of our company’s ambition to provide solutions for Building better communities,” says Lafarge’s Aeysha Lalla, construction specialist. “Using our unparalleled technical expertise, we have developed EkhayaBag to simplify building projects for our customers.”



With the half cubic metre of material delivered to site ready to use, unsightly construction sites are a thing of the past.



The EkhayaBag product range includes:

- **EkhayaBag concrete:** available in two grades, which remain workable for up to six hours to ensure customers have ample time to place and finish the concrete:
  - The 20 MPa grade is formulated for non-structural applications such as domestic foundations, garage and house floors
  - The 30 MPa grade is a structural concrete, which can be used for industrial floors (e.g. workshops), concrete walls and columns
- **EkhayaBag mortar** is used for laying masonry units such as bricks, blocks and stone. The product may be ordered in any of three workability grades to suit the customer’s project programme:
  - The 12-hour mix is for use the same day

- The 24-hour mix can be left overnight and will still be usable the next day
- The 48-hour workable mix is convenient as it can be used over two days

- **EkhayaBag Artevia™ Colour** is a range of pigmented decorative concrete in sandstone, mahogany and charcoal colour tones. This attractive product is ideal for indoor or outdoor floors, as well as driveways, braai areas, swimming pool surrounds and patios. In addition to its good looks, Artevia™ Colour is a strong, low-maintenance concrete with integral colour pigment that will not fade or wear off.

One EkhayaBag contains 0.5 m<sup>3</sup> (500 litres), or approximately 1200 kg of product. To know how many bags to order, customers merely calculate the volume of concrete required in cubic metres – for example, to lay a floor slab multiply the length in metres by the width by the thickness and divide the result by 0.5 m<sup>3</sup>. To calculate the amount of mortar depends on the type and size of masonry unit being used: a convenient chart obtainable from Lafarge will easily indicate the required quantity of mortar.

The EkhayaBag products conform to the requirements of the National Home Builders Registration Council and the materials used comply with all the relevant SANS specifications in line with the standard high quality building material products from Lafarge South Africa.

“We are the very first building materials company in South Africa to provide this service for customers and their smaller construction projects,” comments Aeysha Lalla. “By combining our global building material experience and technology with a deep concern for the needs of our local communities, we keep innovation at the forefront of our business.” ■

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# Plug&Grind®: the best solution for small markets, small investment and low risk

By Moisés Rodríguez Núñez - Sales Manager

In May 2012 Cemengal patented worldwide the concept of Plug&Grind®, a portable and modular grinding station, and started promoting it internationally. The first promotion was in Ghana and today, over 25 units have been sold all over the world. The models available are:

**Plug&Grind® Classic** was launched in 2012 and a few months later the first units were sold in Kenya and Saudi Arabia. This model can produce 12+tph of cement and FOB delivery is only 6 months.

**Plug&Grind®XL** – Market demand for a bigger modular and portable solution led to Plug&Grind® XL, launched in 2014 and captured the attention of new clients. Some large cement producers became customers. Plug&Grind®XL can produce 30+tph of cement, with an extremely short FOB delivery of 7 months.

**VP&G®** - Cemengal and FLSmidth have collaborated on Vertical Plug&Grind®, with an OK™ mill 19-3. This model produces 40tph and could be on site and producing cement in less than a year.

The new VP&G® has:

- 6 containers for raw material reception and dust precipitation: similar to Plug&Grind® XL.
- VRM: Pre-assembled in modules. Erection in situ.
- 3 process modules: similar to Plug&Grind® XL
- 3 containers for auxiliary and peripheral equipment: hot gas generator, oil central units, electrical & control room, air compressor room: similar P&G® XL.
- 5 auxiliary containers: bucket elevator, conveyor belt, support tower and process ducts preassembled.

**Plug&Burn®** - This very new model, while following the concept of the original Plug&Grind®, is now fully designed to use alternative fuels in the clinker lines. There are three models.

1. Liquids and Waste Oils: This installation has a storage capacity of 2x125m<sup>3</sup> and can inject these liquids in the kiln at from 1tph to 5 tph.

2. Sludge: This model is designed to inject sludge at the pre calciner and can work with different sludges such as paint, waste oil and water treatment sludge.
3. Impregnated Fuel: This model has been designed to be very flexible in terms of using an impregnation support like sawdust, paper or carton and to mix these with a liquid, oil and sludge.

Three different wastes can be used such as solids, liquids and sludge giving, with all of them, the right calorific value the kiln will need.

Two different prepared alternative fuels product will be ready to be injected to the main burner < 10mm or a lump fraction < 50 mm to be injected in the kiln inlet.

Cemengal and the client would together assess the client's needs and propose the ideal solution for that specific clinker line.

**Plug&Grind® X-treme:** Our latest model to arrive on the market is able to produce close to 400,000 tpy of cement. This means a production rate of 50tph following the same concept of the original Plug&Grind® Classic.

For this model, we have used the very latest technology in classifiers. This classifier is the XP4i from Maggoteaux. This new XP4i allows us to reduce the size of the filters and therefore the size of the whole grinding station.

It means that jumping from 30tph to 50tph, we remain with the same footprint, the same civil works, the same delivery time, and the same working force with only a small increase in the final price.

Today, the majority of the clients are willing to install this Plug&Grind® X-treme, due to all the advantages it has.

The 25+ units sold worldwide enable our clients to be close to their market with a low risk investment which produces cement in a very short time.

**Plug&Grind®** is the only modular and portable plant on the market. The original idea has been, and still is unbeatable. ■

**More information from**  
**email: [moises.nunez@cemengal.com](mailto:moises.nunez@cemengal.com)**  
**[www.cemengal.com](http://www.cemengal.com)**



# Enter a new dimension with Loesche CCG

Loesche, the pioneer and pacemaker in grinding, brings to market a new way of producing cement on a small scale. The Loesche Compact Cement Grinding (CCG) plant is globally recognised technology in its most compact form.

There are no construction projects without cement, and no cement without Loesche vertical roller mills (VRM). Grinding of cement clinker and granulated blastfurnace slag in vertical roller mills is a technology introduced by Loesche. Since the first Loesche vertical roller mills came onto the market in 1928, countless numbers of them have been used in the cement

industry across the world. Today, more than 2,000 Loesche mills are in operation worldwide.

The extensively proven Loesche VRM is also the core of the new CCG plant. Loesche's CCG provides its technological features in the most compact form, thus making them available in small but growing markets and in remote areas where there is a demand for locally produced cement.

### The Loesche CCG: the intelligent concept for maximum flexibility

Usually time, cost and scope are the main constraints in business decisions. Often projects can't be realised because they take too much time, investment or risk in general. Now, Loesche's CCG boosts your decision-making process, providing you with decisive advantages

Your production can start up in less than a year, putting you and your products on the market. Thus, you can enter existing markets quickly and test new markets at low risk and investment, as the complete plant is relocatable with little effort and expense.

The Loesche CCG's intelligent concept of plant enhances your flexibility during operation. You can process all types of raw materials and change output products easily and quickly to meet changing market needs. All kinds of additives can be used to ensure that you are able to produce cement at a low cost and protect the environment by using natural resources and reducing the CO<sub>2</sub> footprint of your plant. Its design is maintenance-friendly to ensure that you have maximum plant availability.

### The plant that is much more than just a plant

Loesche's CCG is not just a plant for manufacturing cement. It is your complete business model for cement production and your declaration of independence from transportation routes, times and costs.





With on-site production, just where the building material is needed, you can turn projects that weren't previously economically feasible into reality. And when you start a new project at another location, simply take the Loesche CCG with you: the complete plant can be relocated in a few weeks.

### Loesche is your long-term partner

You don't have to be a highly experienced professional in the field of cement production to take full advantage of Loesche's CCG. From initial planning to start-up operation and beyond, Loesche accompanies and supports you according to your needs and wishes. We can even run your CCG plant for you.

Providing services worldwide, our international team of Loesche specialists can provide services across the whole lifecycle of the plant. We will supervise the installation and commission your plant until you have reached the guaranteed capacity and quality of your product.

Furthermore we can audit, inspect, review and improve your plant process or maintenance activities on a regular basis and even provide you with all required spare parts. As a result, you will always have a state-of-the-art plant operating at maximum efficiency.

Of course, we also like to share our professional knowledge with you and your employees: Loesche offers state-of-the-art technical training which can be held either locally at your site, supra-regionally in your country or centrally at Loesche.

Tailor-made operation and maintenance packages enable you to concentrate on cement manufacture and sales and the core functions of your business

Contact us for more information and support. Our widespread service network is ready to assist you with sales support in virtually all regions of the world. ■

**For further contact data, please visit us at [www.loesche.com](http://www.loesche.com)**

### Proven features of Loesche mills

- High energy savings
- High output rates
- Product change during operation within a few minutes
- All types of raw materials can be used
- All types of cement can be produced
- 2000 mills in operation
- Guaranteed output and specific energy consumption

### Specific advantages of Loesche CCG

- Short time-to-market: production start-up in less than a year
- Maximum flexibility to react to market requirements

### Loesche: a worldwide presence

Loesche is an export-oriented company, established in Berlin in 1906, which is, to date, run by the owner. Today the company is internationally active with subsidiaries, representatives and agencies worldwide. Our engineers are constantly developing new ideas and individual concepts for grinding technologies and preparation processes for the benefit of our customers. Competence is achieved through our worldwide information management. This ensures that current knowledge and developments can also be used immediately for our own projects. The services of our subsidiaries and agencies are of key importance for analysing, processing and solving specific project problems for our customers.

# Gebr. Pfeiffer ready2grind: already up and grinding since January 2017!

*The world's first modular system with a vertical cement mill is yet another technological first from Gebr. Pfeiffer*

**B**ased on well proven Pfeiffer MVR mill technology, ready2grind is the perfect, compact grinding plant for the production of any type of cement. The world's first ready2grind with a vertical cement mill has been operational since January 2017. After the largest mill across the globe, this is another technological first from Gebr. Pfeiffer. Being always 'Ahead of the game' Pfeiffer puts innovations into practice with an unerring instinct.

## Maximum flexibility with Pfeiffer's unique ready2grind

Pfeiffer's modular mill solution for capacities of up to 70 t/h enables usage in any place, bringing cement producers closer to their customers. This compact system is suited to producing any type of cement required – perfect for local cement producers and market entrants as well as for large construction companies aiming to expand their position by manufacturing cement on the spot.

The intelligent container design enables the ready2grind plant to be transported and mounted fast and efficiently with manageable costs – making it the perfect concept to respond to the changing needs of local cement markets at very short notice. The new ready2grind Modular System offers maximum flexibility thanks to its modular design which allows for quick market entry due to short building times.

All these advantages convinced our customer. Delivery could start early due to parts being available off the shelf. Pfeiffer is targeting the production of the first bag of cement in considerably less than one year. Many other cement producers are now realising the benefits of the Pfeiffer ready2grind unit.

Hence this is only the beginning. Several units that have been ordered are already in the shipping phase. For example, one unit on the way to Buga, Colombia is scheduled to go online in the first quarter of 2018.

## ready2grind advantages:

- Maximum reliability thanks to the proven Pfeiffer design
- Available in different plant sizes for capacities of up to 500,000 tpa cement
- Easy configuration by selection of different available modules
- Short erection times due to prefabrication in workshop allows the start of production in a very short time
- Energy savings of up to 40% compared to ball mills
- Low investment risk, immediate market entry, and also immediate pay-off
- Suited to small local markets far from large plants

## Gebr. Pfeiffer – a passion for grinding since 1864

Gebr. Pfeiffer, with headquarters in Kaiserslautern, Germany about one hour's drive in the south-west from Frankfurt/Main, specialises in the planning, design and manufacture of equipment for the grinding of cement raw material, clinker, granulated blastfurnace slag and coal for the cement industry as well as many other materials. Besides the vertical roller mills, Gebr. Pfeiffer SE manufactures special machines for the classification and drying of mineral bulk materials and the preparation of lime and gypsum.

Established in 1864, Gebr. Pfeiffer presently employs approximately 500 staff worldwide. With its main offices and central manufacturing facilities in Germany and subsidiaries in India, China, the U.S., Brazil, Malaysia and Egypt, plus representation and agencies all over the world, Gebr. Pfeiffer will be there wherever and whenever you need them. Their claim to be a leading company in the sector is substantiated by more than 2,800 Pfeiffer vertical mills installed worldwide.

Another technological milestone: Pfeiffer MVR 6700 C-6 – the biggest and most modern vertical mill for cement with 11,500 kW drive power is operating in Barroso, Brazil.

As a provider of complete solutions, Gebr. Pfeiffer offers innovative, market-oriented systems. With decades of experience and excellent consulting competence, Gebr. Pfeiffer is in a position to design the ideal plant to suit any customer's requirements. Good advice right from the start – whether it's about raw material characterisation, practical tests on special pilot plants, conception and planning of individual plants or wear analysis for mills in operation – Pfeiffer assists you with expert advice at any moment in time. The result: individual overall solutions from one source perfectly meeting your requirements.

Major clients are to be found in the building materials industry as well as in the chemical, refractory and ceramics industries. The majority of Gebr. Pfeiffer's sales are exports. ■



*The world's first compact grinding plant with a vertical cement mill in operation since January 2017.*

**For more information,**

**email: [info@gebr-pfeiffer.com](mailto:info@gebr-pfeiffer.com)**

**or visit the website at: [www.gebr-pfeiffer.com](http://www.gebr-pfeiffer.com)**

# Advanced air cannon design for improved material flow

**V**otorantim Cimentos, a leading cement, concrete and aggregate manufacturer, has specified 110 air cannons to facilitate material flow in two new plants nearing completion in Brazil.

From the early design stages, Votorantim's focus was on efficient material flow to maximise efficiency and reduce maintenance expenses. Company officials expect that the air cannons, equipped with high-efficiency valves, will prevent blockages that could slow production, while also helping to minimise air consumption.

Votorantim's engineers contacted Martin Engineering to conduct an audit of accumulations in the vessels and storage systems, and a joint effort was developed to determine the optimum solution, including air cannon design, nozzle selection and specific locations to maintain high throughput.

"The two primary components of an air cannon are a high-flow valve and a pressure tank," explained Martin Engineering national sales manager Rodrigo Trevenzolli. "The device works when compressed air in the tank is suddenly released by the valve and directed through a nozzle strategically positioned in the tower, duct, cyclone or other location."

Often installed in a series and then precisely sequenced for maximum effect, the air cannon network can be timed or computer-controlled to suit individual process conditions and material characteristics. Fast-acting valves can release the tank volume in less than 300 milliseconds, creating a high-magnitude force at the exit nozzle installed through the wall of the vessel or duct.

The timed discharge breaks down material accumulations and releases blocked pathways, allowing solids and gases to resume normal flow without intervention by maintenance personnel. Air cannon installation can be customised. Votorantim officials selected Martin Engineering for their air cannon work because of the very low operating cost of the company's equipment. "Compressed air is a relatively expensive source of energy," Trevenzolli commented. "As energy costs rise, so does the value of air cannon technologies that can reduce compressed air consumption."

Martin Engineering's newest cannon designs optimise compressed air use through advanced valve technology, with more efficient valves mounted on smaller tanks able to deliver higher discharge forces than less efficient valves mounted on much larger tanks.

Because larger tanks deliver longer blast durations from discharging greater air volumes, there's a temptation to assume that the larger tanks perform better. In reality, peak force is generated only during the first few thousandths of a second following the valve opening, so in applications requiring high output force to move material, the duration of useful energy is extremely short," Trevenzolli said.

The latest positive-action valves from Martin Engineering produce twice the blast force output of the valve generation introduced just a decade ago, while using about half the compressed air volume. If the two designs were set to deliver the same discharge force, the new valve would operate at about half the pressure of the preceding design. Firing only in response to a positive surge of air, the specially-designed valve allows the control solenoid to be positioned as far as 60 metres from the tank, keeping critical components away from harsh service environments.



110 Martin® Hurricane Air Cannons are installed in the two plants, covering preheater towers, additive silos and cyclones.

Crews collaborated on the installation in the two plants. In the Cuiabá plant, 56 cannons were installed, and 54 at Rio Branco.

Specifying the newest technology for air cannon networks results in reduced energy costs, improved system performance and increased uptime, with greater availability of compressed air for other processes within the plant. ■

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# PMSA helps Leo Bricks empower Soweto community

Leo Bricks of Soweto, Gauteng is an example of a successful woman-owned small business that has benefitted from quality equipment manufactured by PMSA.

With about 40% of Johannesburg's residents located in Soweto, Leo Bricks has a ready-made market for its bricks, blocks and paving. Selling direct to the public, owner Olga Maroga started her business single-handedly. "I had no background in the construction or manufacturing industry. Everything I learnt was self-taught. I started the business in 2007 by investing in a UNI plant from PMSA," she explains.

The UNI plant has a top-mounted feed silo with a manual discharge gate. The wall and floor of the V200 turbine pan mixer are lined with easily-replaceable wear segments, making the UNI plant maintenance-friendly.

The UNI plant is capable of producing 17,000 standard bricks in a nine-hour shift, using skilled workers. The plant can also be configured to produce chamfer pavers, interlocking pavers, and twin-cavity blocks.

Such was the success of the UNI plant that Leo Bricks subsequently invested in an RE-600 block machine from PMSA. This comprises a 7.5 kW hydraulic mould, tamper, feeder-box

and pallet-feeder operation with a 2.2 kW twin-shaft vibrator, overhead concrete silo, and adjustable cams for automatic filling of the feeder box. It can accommodate pallet sizes of 630 x 530 x 21 mm or 608 x 530 x 21 mm.

"In addition to the equipment itself, PMSA provided us with unmatched customer service by providing on-site training for all staff," Maroga notes. This was also supplemented by aftermarket support.

Leo Bricks focused initially on supplying bricks to the rapidly-growing area of Braamfischerville in Soweto. "There's a growing need for building and renovations by homeowners, creating a high demand for construction activities. Having been in the manufacturing business for nine years, Leo Bricks has managed to position itself successfully in the communities it operates in."

Maroga says Leo Bricks focuses exclusively on the residential market, rather than government projects or large developments for private contractors. "We are not looking for projects with limited timeframes. Neither do we want to limit the stock we are able to sell direct to the public, as this is our main market. The bulk of our everyday customers are in close proximity to our business."

What gives Leo Bricks the leading edge in this highly-competitive sector of the building industry is the quality of its products, due to the world-class equipment supplied by PMSA. "Being able to guarantee product quality and consistency has allowed us to grow exponentially, as the bulk of our customers are repeat orders," Maroga explains. Leo Bricks establishes close relationships with many of its customers, even carrying out follow-up checks to gauge customer satisfaction.

To continue along its current growth path, Leo Bricks is looking to extend its product range to include pavers. PMSA equipment will again come to the fore, helping this well-established business expand even further.

Commenting on challenges faced by women in construction, Maroga points out that breaking into this male-dominated industry is no mean feat. "There is still a misperception that women cannot be good business people, especially in a manufacturing environment. Therefore you have to work twice as hard as the men do."

However, she is adamant that women can make a substantial contribution to this industry. "Keep learning more about your industry, because the more you know, the easier it gets. Always be hands-on; know how your business works; and become involved in every single process. Most importantly, build relationships with your stakeholders and customers, because they are the drivers of your business." ■

**More information from Quintin Booysen,  
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## About Pan Mixers South Africa (PMSA)

PMSA is a leading manufacturer of a wide range of concrete block, brick and paving machinery, turbine and counter-current pan mixers and batching plants for the concrete, refractory and ceramic industries. PMSA has been servicing the needs of local and overseas customers since 1976. PMSA brick-making machinery produces two million bricks a day in the Johannesburg area alone.



Owner of Leo Bricks, Olga Maroga



The UNI plant is capable of producing 17,000 standard bricks in a nine hour shift using skilled work.



# Rapid Hard for faster concrete product turnaround



Quick turnaround of moulds is key for concrete product manufacturers so they demand the early strength AfriSam Rapid Hard Cement delivers.

Producing concrete that has a minimum strength of 30 MPa in just two days is the key advantage of AfriSam's Rapid Hard Cement product, which allows concrete product manufacturers (CPMs) quicker turnaround times and confidence from one batch to the next.



also makes this cement brand ideal for post-tensioned and prestressed members, and allows for earlier stripping of formwork to speed up projects.

This product is much finer than other cements, resulting in an increased rate of hydration which produces a higher early strength. For greater durability, it can be further blended with mineral components such as

ground granulated blastfurnace slag, fly ash or condensed silica fume.

Dawneerangen says that this higher rate of hydration also makes AfriSam Rapid Hard Cement suitable for use in cold weather conditions, since the high levels of heat generated by hydration can offset the retardation effect that low temperatures usually have on concrete. This characteristic also delivers a cost saving to CPMs, by reducing the time that products must be subject to heat curing; most of these precast products are heat treated for a number of hours to facilitate the hardening process.

"In some applications, the performance of this cement reduces or even eliminates the heat curing stage, which could represent a substantial energy saving to the CPM," he concludes. ■

According to the AfriSam national sales manager, Amit

Dawneerangen, being in the 52.5R strength class gives AfriSam's Rapid Hard Cement a substantially higher early strength at the same age as competitors' products which fall into the 52.5N class and only needs to achieve 20 MPa within that time span.

"This allows the manufactured concrete product to be released from the mould sooner, speeding up the production cycle and allowing the CPM factory more efficiency," says Dawneerangen. "It is also vital that the strength performance is completely consistent, so that customers can time their processes with precision, and without danger of breakage due to products not having achieved the required early strengths when removing them from the moulds."

AfriSam Rapid Hard Cement is the result of significant research and development to ensure that it met the demands of the CPM segment, the makers of concrete products such as bricks, blocks, roof tiles and hollow-core slabs. In addition to precast concrete, the high early strength

**More information from Maxine Nel,  
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# Dow Corning sealants for final phase of 11 Alice Lane

Three renowned Dow Corning sealants supplied by a.b.e. Construction Chemicals were used for the curtain wall construction of the third and final phase of the imposing new 11 Alice Lane precinct in Sandton.

a.b.e., which is part of the Chryso Southern Africa Group, is the South African distributor of Dow Corning, which has its European headquarters in Belgium. The company is a global leader in silicones, and silicon-based technology, with a product range in excess of 7,000.

The panels for the flush-glazed unitised curtain wall system were mechanically fixed to the structure with Dow Corning DC 993 and – just 24 hours later – the gaps between the glazed units sealed with Dow Corning 813C to provide a weatherproof seal. A third Dow Corning product, DC 895 structural glazing sealant was used on-site, when required, for replacement of damaged glass.



11 Alice Lane and its impressive glazed façade for which a.b.e. Construction Chemicals provided the structural glazing sealants.

Grant Batty, a.b.e.'s national manager: Silicones, Sealants and Adhesives, says a.b.e. secured the 11 Alice Lane Phase 3 contract for the structural glazing sealants and weatherproofing in conjunction with its long-standing approved applicator, Façade Solutions, a leading Dow Corning Specialist-approved Quality Bond member. Dow Corning's Quality Bond system ensures that all QB members are fully trained and certified annually and guarantees that members have the required expertise in producing their state-of-the-art products, as well as installation skills. QB members benefit from specialised Dow Corning support, including joint calculation assistance, adhesion testing, application training, and regular a.b.e. quality control site inspections.

To supply the unitised panels required for the third phase of the Alice Lane project, Façade Solutions had to establish a 'mini-factory' five levels underground in the basement of the new building for the fabrication and assembly of the curtain walls' aluminium-framed glazed panels. The production facility called for a section of the basement's concrete ceiling slab to be cut out to accommodate the height of the on-site glazing facility's silicone pump and pipes. Façade Solutions' on-site mini-factory was audited by Dow Corning and then also received Dow Corning's Quality Bond approval.

"The benefits of installing unitised panels included speed of assembly, lower installation costs, and quality control within a climate controlled environment. The economic benefits particularly apply to large projects such as 11 Alice Lane. Unitised panels require less space on site for layout which is important in a heavily built-up area such as Sandton with its space and access limitations," Batty explained.

Dow Corning 993 and 895 structural glazing sealants have been widely used for the curtain walls of several impressive new high-rise buildings in Sandton, with many of the applications also carried out by Façade Solutions.

Some of the benefits of DC 993 and DC 895 include:

- Excellent stability through wide temperature ranges: from minus 50 to 150 degrees Celsius;
- Strong resistance to ozone;
- Odourless and non-corrosive curing;
- Stable component viscosity: no heating required;
- Suitable for new construction and retrofit in existing buildings; and
- Excellent weathering characteristics and high UV radiation resistance.

"Dow Corning 813C, which is being used as an exterior weatherproofing sealant, is a one-part, neutral curing, low modulus sealant suitable for interior and exterior applications, such as weather seals, expansion joints, and perimeter joints in buildings and other types of structures. It has a joint movement capability of +50% as well as -50% and provides strong, unprimed adhesion to various substrates, including glazed surfaces, concrete, masonry, brick, wood, and some plastics," Batty added. ■

**More information from Elrene Smuts,  
Tel: +27(0)11 306 9000/ [www.abe.co.za](http://www.abe.co.za)**

# Fish Water Flats WWTW gets Sika treatment

**S**ika's Concrete Repair and Protection System has won multiple international awards over the years, so it was no surprise that Africoast Consulting Engineers chose Sika for an extensive refurbishment project on the Fish Water Flats Waste Water Treatment Works (WWTW), in Port Elizabeth. Constructed in 1971, 300 metres from the sea, the WWTW treats 80% of Port Elizabeth's sewage and is the largest in the city. Serious deterioration of the concrete caused by high chloride levels prompted the local municipality to initiate this project. Sika's John Zehmke was on site to ensure smooth applications.

Ibhayi Contracting commenced the concrete repair phase with applications of Sikagrout-212 for repairs to the screeds in the digesters. This one-component, ready-to-mix, free-flowing, expansive grout is shrinkage-compensated and non-corrosive. It can be pumped or poured, will not segregate or bleed, and is pre-batched for quality.

SikaTop Armatec-110 EpoCem, which is a cementitious, three-component, epoxy resin compensated coating material, was applied as a bonding primer and reinforcement corrosion protection for all exposed reinforcement. Its many advantages include extended open times for repair mortars, excellent adhesion to concrete and steel, high shear strength and high resistance to water and chloride penetration.

As a high-strength repair and reprofiling system, Sika MonoTop-612 was applied to all spalled areas. With excellent workability characteristics including an adjustable consistency and high slump resistance, Sika MonoTop-612, a cementitious, polymer-modified mortar containing silica fume and synthetic fibre reinforcement, is particularly suitable for application on vertical and overhead surfaces and is sprayable by means of the wet spray method.

Sikagard-720 EpoCem, a micro mortar that is impervious to liquids and water vapour permeable, was used for pore sealing, levelling and finishing of the concrete surfaces. With better chemical resistance than a PCC mortar, it provides excellent protection of concrete in aggressive environments. Sikagard-720 EpoCem bonds extremely well to green or hardened concrete whether wet or dry, and allows for fast over-coating of Sika resin-based finish products.

As an aid to South Africa's socio-economic problems, Ibhayi Contracting employed several local SMME's to apply some of the Sika coatings. Once the project is completed, the Nelson Mandela Bay Municipality (NMBM) plans on a major upgrade to the Fish Water Flats WWTW.

The protection phase of the project involved three specified Sika products:

- Sika FerroGard-903 Plus, which is an economical, corrosion-inhibiting, surface-applied impregnation that penetrates the concrete to form a protective monomolecular layer on the surface of the reinforcing steel. Sika FerroGard-903 Plus not only delays the onset of corrosion but also reduces the rate of corrosion. It does not alter the water vapour diffusion properties of concrete, while its easy application enables use where other repair or prevention options are not viable.
- Sikagard-705 L was applied as a solvent-free, reactive impregnation to reduce capillary water absorption and for protection against driving rain and splashing on the vertical concrete surfaces. Silane-based with 99% active ingredient, Sikagard-705 L conforms to the highest international standards for hydrophobic impregnation thereby reducing the absorption of aggressive or deleterious agents dissolved in water

- Solvent-free Sikagard-550 W Elastic, a one-component, plasto-elastic protective coating with excellent crack-bridging properties. Based on UV-curing acrylic dispersion, it is water vapour permeable and provides high diffusion resistance against CO<sub>2</sub>, an important factor considering the harsh marine environment of the WWTW.



*Aerators being emptied.*



*Clarifiers - repaired with monotop spall repairs with 612, walls skimmed with 720 epocem, all joints done with pro 3icure, surfaces treated with 903+ and 705L.*

The waterproofing phase of the project involved applications of Sika's high-performance Sikadur-Combiflex SG System comprising a modified, flexible Polyolefin (FPO) waterproofing tape and Sikadur-31 DW, a thixotropic, two-part adhesive based on epoxy resins and special fillers. Adhesion between the tape and adhesive is so advanced that no on-site activation of the tape is required. Sikadur-31 DW is thixotropic and hardens without shrinkage. The very fast and easy-to-install Sikadur-Combiflex SG system, used for sealing all types of joints and cracks in a wide range of temperatures on dry or damp concrete surfaces, provides high UV and chemical resistance. By using various Sikadur epoxy adhesives, the system becomes extremely versatile, suitable for many difficult situations.

Once refurbished with Sika's Concrete Repair and Protection System, the Fish Water Flats WWTW will be upgraded to a world-class facility providing recycled water not only for the Coega IDZ, but also for irrigation purposes. This 'dual stream' supply of processed water will be of significant benefit to Port Elizabeth's drought-stricken areas. ■

**For more information on Sika products and systems, visit [www.sika.co.za](http://www.sika.co.za)**

# 117 Strand Street has BIM Ingenuity

By Vaughan Harris, Director BIM Institute

## BIM in action

A recent and interesting project in Cape Town is a new mixed-use development under construction in Strand Street (<http://www.117onstrand.com>) by developers Ingenuity Property Investments. 117 on Strand is hailed as a progressive transformation of one of Cape Town's inner city landmarks into a mixed-use block, comprising 5,200 m<sup>2</sup> of retail outlets, 5,500 m<sup>2</sup> of premium-grade offices and 117 apartments, taking inner city mixed-use living to "a new level of contemporary luxury".

With technology changing almost daily, the challenges facing the construction industry are multi-dimensional: as a mature and conservative industry, new techniques are often slow to be adopted and even when they are, the speed at which technology changes makes one's head spin.



## Understanding BIM

Those who have implemented BIM (Building Information Modelling), have realised there are many opportunities to use technology to improve what they already have. BIM only scratches the surface when delivered as an integrated set of

geometric models, data and documentation that builds over the life of a project to capture all related knowledge.

So, how do we get there? The BIM Institute sees the transformation in three strands to a BIM strategy: culture, process, and technology, and the opportunity is there to leverage these across all project stages.

BIM is about concept, design, manufacture, delivery, and operation. BIM alone delivers no value. It is the combination of a clear strategy, the right people and culture, the right technology, high-quality data and lean processes that creates the value. It's not only the use of the model throughout the process as a design and visual tool but it's also a communication and collaboration tool.

## Technology logistics

A digital architectural design strategy for 117 Strand Street needed to be jointly developed to increase the design and delivery efficiency of constructing a 61-m-high complex multi-storey concrete structure within a confined space in the heart of the built-up and busy city.

The collaboration between the architect (KMA Architects), structural engineers (De Villiers Consulting) and contractor (Group Five) is fundamental in delivering the project efficiently with minimal disruption. Such collaboration relies on a cloud-based information management system known as a common data environment (CDE) – often referred to as a construction document management system. The CDE makes processes more efficient and allows all members of the team access to a single source of the truth and for viewing the 3D model in the cloud. Having the Strand Street model in the cloud offers a host of advantages, giving the project team the ability to mark up changes, view and resolve any design issues and services clashes during the design stages, thus avoiding completely or greatly minimising these costly mistakes later during construction.

"It's all about getting the right information to the right people at the right time, and that is often easier said than done. Things that have been done manually on paper or through email now have to be understood algorithmically so that the business processes are clear, well-defined and easily accessed



via a secure online platform. Done right however, it can result in substantial time reductions with attendant cost savings. “Building information Modelling (BIM) tools will certainly help us drive time and budget savings on this project.” explains Paul van Rensburg, Group Five planner on the project.

Some level of manual intervention is still typically required at the moment to turn the output from one process into the input for the next process.

## Benefits with modelling on the project

**Virtual Reality.** The wealth of information that is easily accessible about project sites has expanded greatly with better mapping tools and images of Earth. Today, project starts include aerial imagery and digital elevation, along with laser scans of existing infrastructure, accurately capturing reality and greatly streamlining project preparations. With BIM, designers can have all of that input compiled and shared in a model – in a way that paper isn’t able to capture.

To get to the stage where designs are digitally computable in 3D has required a lot of effort and this is largely achieved through federated models, using batched transactions to take outputs from one system such as Revit to another. This is still some way from multidisciplinary teams using data simultaneously, performing different tasks in real time.

**One Version of the Truth.** With a shared Autodesk Revit model of 117 Strand Street, there’s less need for rework and duplication of drawings for the different requirements of building professionals. The model contains more information than a drawing set, allowing each discipline to annotate and connect their intelligence to the project. BIM drawing tools such as Revit and Autodesk Navisworks are faster than 2D drawing tools, and each object is connected to a database. The database aids such steps as the number and size of windows for quantity take-offs that automatically updates as the model evolves, providing quantity surveyors with projected bills of quantities information.

The Holy Grail is a common data environment (CDE), one where you have the ability to mine it so that you can pull things out of one system for use in another.

**Collaborative BIM.** Sharing and collaborating with models in a common data environment is easier than with drawing sets, due to greater functionality. Much of this added project-management functionality is now being delivered in the cloud, such as found in Autodesk’s BIM 360 Here, there are tools for different disciplines to share complex project models and to coordinate integration with their peers. Review and mark-up steps ensure that everyone has had input on the evolution of the design, and that all are ready to execute the final concept prior to construction.

**Maintain Control.** The Revit model-based workflow has features such as auto save, connections and project history so that users can be certain they’ve captured their time spent working on the model. The connection to the version history of the model’s evolution can help avoid disastrous disappearances or corruption of files that can seriously impinge on productivity.

**Simulate and Visualise.** With a total of 14,800 m<sup>3</sup> of concrete and 1,886,768 bricks in the modelled structure, Group Five will be using Autodesk Navisworks to simulate the 4D programme, providing intelligent information for the timing of the rebar delivery and readymix concrete pouring production on the project. Raw data is imported into Navisworks which will also give access to production schedules of the relevant components and help ensure the construction programme is on time. This could drastically reduce building running costs. Intelligence software applies physics and best practices rules to skills of engineers and architects involved on the project.



**Resolve Conflict.** Revit features help the architect automate clash detection of elements such as electrical conduits or ductwork within the building. By modelling all of these first, costly on-site clashes can be reduced. The model also ensures a perfect fit of elements that are manufactured off-site, allowing these components to be easily bolted into place rather than created on site.

**Sequential Steps.** With Autodesk Navisworks the team can use the data extracted from the estimating software and import the Excel data onto a set of animated sub-models for each phase during construction. The next step coordinates the sequencing of materials, and manpower requirements for a more efficient construction process.

**Take It With You.** With the added benefit of a model in 3D and that’s tied to a database, Ingenuity Property Investments have a great deal of intelligence at their fingertips. Combining this capability in the cloud, with Autodesk’s BIM 360 Field software, means that they have access to the model and project details from anywhere, on any device.

## In Summary

The past decade has seen a radical shift and transformation in the way things are designed and built. Whether you design, build or operate buildings, Autodesk BIM Solutions have certainly laid the path to help prepare businesses for a new digital construction era. ■

**More information at [www.biminstitute.org.za](http://www.biminstitute.org.za)**

## Project Team:

**Client:** Ingenuity Property

**Architect:** KMA Architects

**Engineers:** De Villiers Consulting

**Quantity Surveyor:** LDM Quantity Surveyors

**Contractor:** Group Five

**BIM Consultant:** Lourens Henning

# SA BIM Survey reveals local industry as technology laggard

By Vaughan Harris



Looking at construction projects in our major cities would give the impression that the construction industry is widening its vision and raising its game. Buildings are more innovative, our search for natural resources is taking us deeper and construction projects seem to be staying abreast of digital technology and processes.

Few would doubt that technology is integral to helping industry realise their goals by enabling enhanced design, procurement and construction. But one only needs to scratch the surface to see it is struggling to reap the full benefits of design software, data and analytics, 3D scanning, mobile solutions and automation in South Africa.

While some construction companies attempt to improve governance, health and safety, project controls and upskilling, traditional engineering, construction and project management still appear stagnant. Digital technology inevitably brings disruption, at a speed that is likely to increase, but many architectural companies still remain ignorant about new and improved digital design technology. The current construction industry downturn discourages any investment in upgrading systems and cash-strapped businesses continue to use their current software systems.

In this first-ever South African BIM survey, we've surveyed owners, architects, engineers and construction companies on a number of current issues to understand whether their views on BIM are aligned or whether there are obvious differences.

"The survey responses reflect the industry's conservatism towards Building Information Modelling technologies, with many survey respondents preferring to follow trends rather than taking the lead. Many who have adopted BIM technology have done so in a silo approach," says Vaughan Harris, BIM Institute executive director.

Only four construction companies responded to the BIM survey, even though invitations were sent to all the largest construction firms in SA. Can this disappointing response from contractors be because they are already at the sharp end of technology, are too busy keeping head above water or for some other reason?

The BIM report is based on 132 completed surveys and 85 incomplete surveys between September 12, 2016 and October 31, 2016. Most surveys submitted were from professionals and senior industrywide executives, with 39% working for major organisations with over 200 employees.

## Demographic responses

The survey was conducted online and respondents were primarily recruited by means of email invitations in the BIM members newsletter, a Zoho campaign, and also through links in social media.

As respondents were invited through digital media, it is unsurprising that many invites tend to be ignored. This report therefore is not a representative survey of the entire industry, but rather a glimpse at how leading organisations in South Africa are using technology in construction and the built environment. The majority of respondents came from Gauteng (45%), followed by Western Cape (31%), Kwa-Zulu Natal (8%) and 'other' (15%).

## Software preferences

Details in the full report, downloadable from the link: <https://goo.gl/AtRZ94>

Of respondents, 55% said they used cloud-based document management systems like Synergy Docwize, Asite and Key360, while smaller firms were still using cloud-based storage tools like Dropbox and Google Drive. Cloud solutions vary widely in their capabilities and while the latter two are free, they may not be as secure and BIM-specific as proprietary brands.

Software-as-a-Service (SaaS) tools are aimed at supporting BIM processes, multidisciplinary project-focused teams and are more commonly deployed by clients and large contractors.

Some respondents (16%) said that the use of cloud-based document management systems is hampered by South Africa's poor internet connectivity.

Of the asset management tools used, Archibus was the most popular – deployed mostly within the government sector. Of the 132 respondents, 66% preferred to see the IFC (Industry Foundation Class) format being used on JV projects.

The report found that 81% felt that BIM in SA requires a mandate by National Department of Public Works for it to be successful, while 5% said 'no' to a BIM mandate.

To understand the lack of BIM in construction in South Africa you only need look at the volume of projects that are doing some form of Building Information Modelling or 3D rendering.

The only case studies publicly available to date have been found on the BIM Institute website and in the Construction Software & IT Journal.

On future software intentions, the survey identified a lack of interest from international vendors – which stunts interest in BIM technology.

The global interest in BIM within the construction industry over the past five years has become one of the most ardently debated and encouraged processes. Everywhere you look you are bombarded by software vendors and BIM evangelists but not so within South Africa where very little interest is shown by international vendors. Will mandating BIM turn the tide? ■



**Full SA BIM Survey report 2016 (PDF) at**  
<https://goo.gl/AtRZ94>

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"innovative solutions, essential technologies"

Aluminium Doctor makes certain that their clients are provided with durable building envelopes by the company, employing international standards for engineering, design, suppliers, production, testing, and installation as well as offering excellent after-sales services. Their byline is: "From shopfronts to showers, we've got you covered."

Their vision is to become the leading supplier of architectural aluminium products in South Africa and its surrounding territories.

Transforming ideas and aspirations into reality is only part of what the company provides to assist their customers. They also serve to inspire ideas and to pave the way to attaining them. They

aim at being designers and consultants as well as providers of reliable building envelopes that will leave architectural imprints. Aluminium Doctor aims to improve the living standards of the people in the communities in which they operate – all the while

serving the environment in the best possible way

## Company Values

- TEAM WORK in all things
- QUALITY of all products
- INTEGRITY in all situations
- INNOVATION in all thinking
- RESPONSIBILITY in all actions■

**More information from Tel: +27(0)31 827 9496**

<http://aludoctor.co.za/contact-us/>

# Bird Control Services

Established in Durban 1987, Bird Control Services has become the market leader in bird proofing. For nearly 30 years we have employed our own, locally manufactured and developed brands, now industry benchmarks. We provide clients with guaranteed solution to messy birds on their buildings.



Our Vamoose Bird Repellent Gel is a clear, odourless and non-flammable gel which is applied to roosting and landing areas where birds create a nuisance. The gel is harmless to birds and humans, while also posing no danger to delicate factory environments. Vamoose Gel is manufactured using food-grade ingredients and has been trusted by 3000+ buildings in every industry over the past 26 years.

Vamoose Bird Repellent Gel relies on its stickiness to remove birds from treated areas. Returning to the roost, the gel's tackiness makes them feel they are being confined or under attack. They put out distress signals to other birds in the vicinity which deters them from returning. The physical reaction to the gel ensures the birds' new association of the area

with danger and keeps them away. Vamoose Bird Repellent Gel is guaranteed for two years against birds returning to treated surfaces.■

**More information from Tel: +27(0)31 767 1463**

[www.birdcontrolservices.co.za/](http://www.birdcontrolservices.co.za/)

# Corobrik: more than a manufacturer

From small beginnings, Corobrik has evolved into the major South African manufacturer of masonry, paver and concrete earth retaining systems.



Corobrik is committed to promoting the economic upliftment of its employees and the empowerment of disadvantaged

communities and individuals. Progress is being made through the Corobrik Staff Trust, Bursaries for children of Corobrik employees and Local Economic Development (LED) projects at all operations. All of these are promoting empowerment, contributing to social upliftment and creating employment opportunities for communities in close proximity to Corobrik.

Corobrik has a holistic plan, focusing on the three pillars of sustainability – economic, environmental and social, and the integrity of the Corobrik brand is sacrosanct.

Corobrik has been recognised in past PMR surveys as a leading brand of integrity, meeting customers' needs and expectations in terms of quality, value and delivery commitments and for its all-round competence in addressing South Africa's Broad Based Black Economic Empowerment requirements and socio economic and environmental imperatives.

Corobrik also sponsors product and people to help build 'sustainable' projects in disadvantaged communities ranging from housing for the unemployed, to new school facilities, community facility upgrade projects and hospital upgrades.

The donation policy focuses mainly on the donation of building materials that Corobrik manufactures to causes within previously disadvantaged communities in and around Corobrik's operations and makes financial contributions to charities supporting the needy.■

Corobrik is 'greening' the business, incrementally lowering the carbon footprint and improving eco-systems around Corobrik operations. Corobrik is also progressing towards ISO 14001 Environmental Management System certification at all Corobrik operations.

**More information from Tel: +27 (0)31 560 3111**

[www.corobrik.co.za](http://www.corobrik.co.za)



## Construction Computer Software

Since 1982, Construction Computer Software (CCS) has focused on supplying dedicated software solutions specifically designed for the Construction and Mining industries. In 2008, CCS and BuildSmart merged to join the strengths of the Candy Project Control system with the BuildSmart Cost Management system providing an integrated solution from first estimate to final accounts.

CCS has more than 14000 users in over 50 countries including many of the world's largest construction companies. Installations are serviced by CCS offices, distributors and toll-free telephone support in Great Britain, Australia, Germany, Hong Kong, New Zealand, Portugal, Singapore, South Africa, Thailand and the United Arab Emirates (Dubai) and Bahrain.



We pride ourselves on the service we deliver. All support personnel are only sourced from within the industry and have themselves encountered the problems and requirements of the industry. This allows them to give you expert advice relevant to the problem you might experience and how to apply our software to get the solution you require.

The system is continually being adjusted and extended to comply with the changing conditions in the construction industry, new computer technology and user requirements. ■

**More information from Tel: 0861 122 639,  
+27(0)12 684 6000  
<http://constructioncomputersoftware.com>**

## Durban Chamber of Commerce and Industry

Our stated mission is to contribute towards creating a conducive economic and business environment within eThekweni and beyond as well as providing services specifically relevant to small and large business in the region.

The DCCI is an independent, non-profit, non-political, subscription-based association dedicated to promoting a business-friendly environment in the eThekweni region. The Durban Chamber of Commerce and Industry is an extremely well networked organisation, with 157 years of experience. It is by far one of



the largest Chambers in Africa, recognised and respected by all leading Governments, Consulates, Embassies and other International Chambers of Commerce

We encourage the sharing of business and related happenings and events, accounts about how your Durban business has grown, how it reaches and benefits the larger community. ■

**More information from Tel: +27(0)31 335 1000  
<https://www.facebook.com/pg/DurbanChamber>**

## EnviroBuild offers greener flooring options

Approximately 160,000 tons of rubber tyres are discarded every year. Currently most of these go into landfill sites or are simply burnt, impacting very negatively on the environment.

Van Dyck and EnviroBuild are turning this problem into innovative new products for re-use. Van Dyck – a trusted name in sustainable flooring solutions – now manufactures all EnviroBuild products, which are 100% recyclable at the end of life.

The new products, which include 93% recycled materials, are a perfect fit with increasing demand for greener flooring options. EnviroBuild is the first company to produce eco-friendly rubber flooring in KwaZulu-Natal and one of very few in South Africa. The main component of EnviroBuild flooring is rubber crumb sourced from well-established tyre recycler, the Mathe Group.



Rubber flooring is suitable for a wide range of applications. It can absorb impacts and cushions falls, making it ideal for use in play areas, schools and retirement facilities. Together with increased grip, this also makes this rubber flooring particularly suitable for

use in gyms, dance studios and sporting facilities. It is also ideal for use around swimming pools and other wet areas. Rubber flooring is also suitable for industry and warehousing as it can withstand impacts as well as high footfall and the movement of heavy equipment. ■

**More information from cell: +27(0)87 353 6581  
<https://www.facebook.com>  
[Envirobuild-300394303481099/](https://www.facebook.com/Envirobuild-300394303481099/)**

**KZN** Conference ■ Trade Expo  
**CONSTRUCTION**

## Ellies

**E**llies is a diversified manufacturer and distributor of electronic products related to television reception including satellite and terrestrial aerial range. It is further involved in the manufacture and distribution of domestic and industrial audio electronic and electrical equipment under the 'Ellies' brands and satellite and associated equipment under the 'EISat' brand. Through Megatron Federal, Ellies is involved in infrastructural power in the fields of power generation, transmission and distribution.

The company has also entered the renewable energy and internet connectivity markets via satellite sectors through joint ventures with In-toto Technology Investments and Q-KON respectively.



Since our inception in 1979, our focus at Ellies has always been on providing quality products and exceptional service to you, the customer. We have spent the last 3 decades building a respected household brand and we are committed to continually improving our products and services and our aim is to match consumer needs with our leading technologies to deliver holistic solutions. Our products are backed by a full repair or replace 12-month warranty. Installers of EISat and related products are all required to be trained by Ellies and are all Ellies certified Installers. ■

**More information from Tel: +27(0)31 303 3298**  
**[www.ellies.co.za](http://www.ellies.co.za)**

## FEM: helping employers protect their workforce

**T**he Federated Employer's Mutual Assurance Company (Rf) Proprietary Limited was established as a mutual insurer in 1936 and, on the introduction of the Workmen's Compensation Act 1941, FEM was granted a licence to continue to transact workmen's compensation insurance for the building industry.

This insurance compensates employees or their dependants following an injury arising from occupational accidents and illness occasioned by industrial diseases. Its business operations are essentially confined to the insurance of employers against their liabilities under the Compensation for Occupational Injuries and Diseases Act 1993 and extend to any employer falling within Class V of the Commissioner's industrial classifications for the construction industry.

FEM is committed to creating a diverse workforce through the advancement of previously disadvantaged people,



women and employees with disabilities. The Company continues to make good progress on its employment equity plan.

The Company also continues to make progress on its long-term BBEE strategy and has a current BBEE rating of "AAA" (level two BBEE contributor).

FEM recognises policyholders who achieve excellence in health and safety which is judged by their meeting or exceeding very stringent criteria.

Most recently, FEM's policyholders have enabled it to establish a R750m education fund. The first initiative is partnering with Make A Difference (MAD) Leadership Foundation to launch the FEM Scholarship programme aimed at impacting business, education and leadership in South Africa. ■

**More information from Tel: +27(0) 11 359 4300**  
**[www.fema.co.za](http://www.fema.co.za)**

## Global Specialised Systems KZN

**G**lobal Specialised Systems KZN (Pty) Ltd, has operated in the specialised field of supply and distribution of building, thermal and acoustic insulation materials since 1987.

Most of our products are key to achieving the compliance of all buildings in terms of energy efficiency, health and safety, building and fire regulations. Our extensive range of fibreglass, mineral wool and polyester products for thermal, fire and acoustic applications is widely used in the construction, industrial, petro chemical, power generation, appliance and air conditioning market sectors.

Specialised Systems KZN (Pty) Ltd has for over 29 years supplied products and provided services to energy-efficient market sectors through our strategic alliance with all major supply collaborators in SA.

Our successful major projects include King Shaka International Airport, the International Convention Centre (ICC), Shoprite



Checkers Distribution Centre in Canelands, Mass Mart Distribution Centre in Riverhorse, Dube Trade Port and many more.

The company is fully compliant with the requirements set out for a BBEE contribution level of 6. GSS is a member of the Thermal Insulation Association of South Africa (TIASA), the Steel Frame Association of South Africa (SASFA), the Durban Chamber of Commerce & Industry (DCCI), and the Master Builders Association (MBA). Global Specialised Systems KZN has one branch situated in Jacobs, Durban. ■

**More information from Basil Hollister, MD,**  
**cell: 083 225 6860; Thys Visagie, GM, cell: 082 5732 478;**  
**and Glenn Hollister Business Development ,**  
**Cell: 082 891 3605. Website: [www.globalsystems.co.za](http://www.globalsystems.co.za)**

## GRAPHISOFT: igniting the BIM revolution

**G**RAPHISOFT® ignited the BIM revolution in 1984 with ARCHICAD®, the industry-first Building Information Modelling (BIM) software for architects.

GRAPHISOFT still continues to lead the industry with innovative solutions such as its revolutionary BIMcloud®, the world's first real-time BIM collaboration environment, EcoDesigner STAR, the world's first fully BIM-integrated 'GREEN' design solution and BIMx®, the world's leading mobile app for BIM visualisation. GRAPHISOFT has been a part of the Nemetschek Group since its acquisition in 2007. ARCHICAD is the leading BIM software

GRAPHISOFT  
ARCHICAD

application which is used by architects, designers, engineers and builders to professionally design, document and collaborate on building projects. Since its release over 30 years ago, ARCHICAD has been all about BIM.

GRAPHISOFT's vision is to entrench virtual building and its mission statement reads: 'Bring BIM into common practice for the design and realisation of buildings by enabling model-based workflow integration through innovative IT solutions.' ■

**More information from Tel: +27(0)31 764 1314**  
[www.archicad.co.za](http://www.archicad.co.za)

## Hardin Group

**H**ardin Group has been started by Ashlen Hardin and Raj Hardin.

Hardin Group is the trust that owns the following companies:

- Hardin Family Investment, which invests in businesses.
- Hardin Freight and Logistics handles trucking, air and ocean freight.
- Hardin Petroleum, an importer and wholesaler of commercial grade diesel and JP 54.



- Hardin Civils is involved with construction and building supplies.
- World Wide Importers, a company which imports and exports all goods

We at Hardin Group also invest in profitable businesses that lack financial backing.

We are current equal partners in several businesses in which we invested and have helped them grow. ■

**More information from Tel: +27(0)31 463 1026**  
<https://goo.gl/XSNpOI>

## International Slab Sales

**I**nternational Slab Sales (Pty) Ltd is a proudly South African owned wholesaler of quartz, granite and marble. The company's vision is to continue offering excellent service to their existing customers, while expanding further into the rest of the continent.

The company was founded in 2000 by directors Rudi Eggers, Bridgitte Raats and the late Dr. H. Eggers. It now has over 130 employees and practices equal opportunity employment – being careful to ensure that they're in the right relationship with SARS, with labour legislation and with other regulatory bodies.

Well-appointed staff members are the company's greatest assets, while entrepreneurial focus and a dynamic approach to business enables it to adapt to consumer and customer needs.



ISS maintains a fleet of company-owned trucks so that the company can provide a 24-hour turnaround time between ordering and delivery, ensuring that customers' businesses can operate efficiently. Sustainability and earth-conscious business are also important to the company and although ISS products are shipped to South

Africa from other countries and then transported inland by truck, the carbon footprint of all products is audited regularly. As part of the company's commitment to South Africa and future generations it is constantly on the lookout for ways to make the business more sustainable. ■

**More information from Tel: +27(0)11 822 1350**  
<http://interslab.co.za>

## Leica Geosystems

**R**evolutionising the world of measurement and survey for nearly 200 years, Leica Geosystems creates complete solutions for professionals across the planet. We serve professionals in many and varied industries, from the surveyor measuring land boundaries to the archaeologist preserving historical sites.

Our wide variety of trusted instruments and engaging software is used in a diverse mix of applications benefitting professionals all over the world.

Leica  
Geosystems

Our new iCON build solution is able to utilise objects from BIM models. It is intuitive object-driven software for construction layout in the MEP/BIM space. Moving from digitising to digitalisation, businesses around the globe are creating connected ecosystems using Leica Geosystems' products to do so. ■

**More information from Kendall James,**  
**Tel: +27(0)11 594 3900 / [www.leica-geosystems.com](http://www.leica-geosystems.com)**

## Maadima

**M**aadima is an enterprise provider of financial services that leverage our intellectual talent to deliver holistic financial solutions.



At Maadima we focus on delivering connected consumer ex-periences across all touch points, thus building customer loyalty.

The group is structured into two organic business units united to offer a full suite of services to our clients. The structure mirrors the service offering available to our global clientele.

Since 2008, the Maadima brand has been synonymous with financial services in business and public sector. Today Maadima has become the industry most convenient brand for our customers to obtain smart financial expertise.

We started out in 2004 with the idea of offering the construction and mining industry with outsourced services to clients who did not want to maintain a full time payroll and finance or HR department.

Our values and culture guide us to continually provide consistent and reliable service of a high quality and to build enduring relationships with clients. We offer dedicated account managers rendering services in all 6 South African Languages and our service standards conform to ISO 9001:2008. We are a BBBEE Level 1 Company.■

**More information from Tel: +27(0)11 019 3100**  
[www.maadima.com](http://www.maadima.com)

## Mambakofi for finest timber joinery

**T**he name Mambakofi comes from the Swahili word for the Chamfuta tree, a type of mahogany grown mainly in northern Mozambique and Zambia. However it is more commonly known as the lucky bean and is recognised for its beautiful red wood and the seeds, which if you collect are said to bring good luck.



Products are manufactured using traditional methods but adding a modern touch to ensure precision, perfect finishes and a quality product that will last for generations.

Mambakofi is also 100% committed to using sustainable resources as all timber purchased is either F.S.C. (Forest Stewardship Council) certified or V.L.O. (Verified Legal Origin) certified from responsible logging companies. Mambakofi's waste recovery programme is also very efficient with off-cuts being finger-joined together so that they can be utilised for grounds and sub-frames. Waste shavings and sawdust is

shipped off to be made into carbon which will in turn be used to power generators to create electricity.

Very little stock is stored at Mambakofi's premises as every window or door is uniquely manufactured to suit the client. This is done by a handpicked workforce that takes pride in every door or window that comes out of the factory keeping up our household name.

Mambakofi is at the very forefront of household thermal technologies as the use of seals and double-glazed windows help regulate indoor temperatures. These new technologies help with increased weather protection, noise pollution and with modern locking mechanisms – increased security.■

**More information from Tel: +27(0)31 736 1356**  
[www.mambakofi.co.za](http://www.mambakofi.co.za)

## OPTRON: improved productivity using innovative technology

**O**PTRON supplies advanced positioning solutions, which assist in maximising the user's productivity and overall profitability by revolutionising their work processes.



OPTRON supplies and supports products in most countries across sub-Saharan Africa, directly and indirectly with the assistance of a select network of resellers and agents. Our solutions integrate a wide range of positioning technologies including GPS, laser, optical and inertial technologies, coupled with the latest application software and wireless communication technologies.

At OPTRON we offer a variety of innovative and world-class training options designed to meet your needs and schedule. Training is part of our commitment to providing you with a total quality solution.

As part of our commitment to your satisfaction, OPTRON provides ongoing hardware support such as maintenance, repair and calibration.

Our certified service centre is equipped with the latest instrumentation and annual factory training of our service technicians ensure that you remain productive in the field.

Our dedicated support personnel offer remote telephone support to users in the field and the office, ensuring maximum up-time and efficient use of our solutions.■

**More information from: Tel: +27(0)87 357 7100,**  
**+27(0)31 566 6221 / [www.optron.com](http://www.optron.com)**

## Osborn Engineered Products South Africa

Osborn Engineered Products is a leader in the mining and quarrying markets, providing a full range of engineering products, including crushers, feeders, screens and idlers, and further specialises in skid-mounted crushing and screening plants. Osborn is a member of the Astec Industries Inc. group of companies – a leading American manufacturer of plant and equipment for aggregate processing, asphalt road building, pipeline and utility trenching.

Osborn also deals with the full manufacturing process from concept and installation through to commissioning. Osborn has a reputation as one of South Africa's foremost materials handling contractors and is devoted to meeting the needs of all its customers.

Having experienced impressive growth in the past five years, the company believes that customer satisfaction was a primary driver of this growth. Purchasing equipment from Osborn



is only the start of a long-standing relationship with customers.

Manufacturing is carried out at Osborn's head office and manufacturing facility in Elandsfontein, Gauteng, South Africa.

Osborn has a very comprehensive distribution network with sales staff working out of well-established branches in Cape Town, in Durban and in Witbank. Agents in Zimbabwe, Zambia, Namibia and Ghana handle international distribution.

Osborn's mission is: "To grow by designing, manufacturing and selling the most innovative, productive and reliable equipment for the industries we serve, along with unparalleled customer service". ■

**More information from Tel: +27(0)11 820 7600**  
**[www.osborn.co.za](http://www.osborn.co.za)**

## Pelican Systems

Pelican Systems supplies the building and construction industry with interior systems and solutions for commercial and residential buildings including ceilings, partitions, opening and flooring systems.

A family business founded by Rodney Gould, Pelican Systems has been operating successfully for more than four decades. We value the roles and responsibilities of all those who are involved in the building process and can offer a product and service solution based on years of dealing with the trade and a genuine understanding of the building industry.

Pelican Systems takes great pride in its ability to serve both large and small scale projects without compromising on the level of detail, commitment and passion.

Pelican Systems is an ISO 9001:2008 accredited company.



Our Vision To have a business with trusted brands, exceptional people who have a culture of continual improvement and service excellence that can continue to consistently make profits and add value to the industry and the community that we serve.

Our Values and corporate culture reflect integrity, reliability, flexibility, creativity and resilience.

Our head office is in Durban, with a branch in Pietermaritzburg. We have specialised ceiling and partitioning distributors in KZN, Gauteng and the Eastern Cape and are looking to set up a distribution network nationally and in Africa. ■

**More information from Tel: +27(0)31 563 7307**  
**[www.pelican.co.za](http://www.pelican.co.za)**

## SAWPA: promoting timber treatment and treated timber products

The South African Wood Preservers Association (SAWPA) is a non-profit association, formed in 1980, by the South African wood preserving industry, primarily to promote timber treatment and treated timber products. Commercially grown timber in Southern Africa is mainly of the Eucalyptus and Pinus species, neither of which is durable. Application of the correct chemicals can ensure that the timber is given predictable long-life performance. The Association is funded by treaters paying a percentage on purchases of chemicals.

With different regions in the country experiencing different wood preservation problems, and the need to address these problems on a regional basis, SAWPA formed Regional Committees across South Africa.



In addition to promoting the products and services offered by members, SAWPA is now promoting the standards in respect of which members' products and services are offered, and is actively involved in changes to standards and legislation.

SAWPA has evolved as the facilitator to the industry, becoming the link between members and the standards regulating authorities.

The Association has developed practical guidelines for safer practices in industrial wood preservation to help reduce the exposure of workers to dangerous chemicals and to reduce or prevent the release of pollutants to the environment. ■

**More information from SAWPA**  
**Tel: +27(0)11 974 1061 / [www.sawpa.co.za](http://www.sawpa.co.za)**

## Seitaodi She Consultants

**S**eitaodi offers a variety of Occupational Safety, Health, Environment and Quality (SHEQ) services to small- and medium-sized businesses. All our services are customised to meet the needs of each client.

The company also offers a reasonable fixed rate sheet for the services it offers clients.

Seitaodi strives to satisfy our customers through diligent service and quality. We are a focused provider of Occupational Safety, Health and Environmental services. We are a South



African-based consultancy, that offers fully regulated training, ISO: 18001, ISO: 14001 and ISO: 9001 system development, auditing and guidance on Occupational Safety, Health and Environmental services and more. ■

**More information from Phindile Mbele,**  
cell: 079 696 3138

email: [phindile.mbele@seitaodisheconsulting.co.za](mailto:phindile.mbele@seitaodisheconsulting.co.za)

## Sika helping to build for the future

**S**ika South Africa started trading in 1988 and regards itself as a "multi-domestic" company, putting the needs of its local customers at the very centre of its business activities. The company's products and systems, backed by comprehensive service packages, are carefully tailored to local market needs. On a local level, Sika always puts this sound business principle into practice.

Sika strives to provide value-added products and full solutions. Sika's products and systems are used in almost every aspect of modern living, from building bridges, dams, roads and harbours to high-rise buildings. When using Sika systems, quality, durability and sustainability are added to concrete.



Sika is a global company with a world-wide network of subsidiaries active in the fields of speciality chemicals for construction and industry. Sika is committed to quality, service, safety and environmental care. Our world-leading branded products are all proven solutions and are based on our core capability in all the following areas: Sealing, Bonding, Damping, Reinforcing and Protecting.

Each product and service reflects our commitment to the three core values that define our company: Innovation, Consistency, and Partnership. ■

**More information from Tel +27 (0)31 792 6500**  
[www.zaf.sika.com](http://www.zaf.sika.com)

## SSG Consulting and KEY 360

**P**retoria-based project and engineering management consultancy SSG Consulting has been in operation since 2008, serving a diverse client base, both locally and abroad.

The company specialises in the execution of mega construction projects in the infrastructure, mining, energy, water and petrochemicals sectors. Based on its broad experience, the company has recently become involved in smaller projects ranging from commercial ventures to IT projects.

As a result of its quest to innovate and attain business excellence for itself and its clients, SSG Consulting developed KEY360 Management Systems, a suite of business and project management software solutions based on cloud technology and corporate networking.



The company's four key focus areas are business and project management strategic consulting; project execution and specialist staffing; the SSG Academy, which offers practical project management training; and implementation of the KEY360 business and

project management systems.

SSG Consulting, whose premises are at 830 Petrus street, in Rietvalleirand, near Pretoria, employs 40 people and lists the provision of project control systems and staffing services for East Coast Infrastructure and Mott MacDonald among its recent major contracts. ■

**More information from Tel: +27(0)12 345 6779**  
[www.ssgconsulting.co.za](http://www.ssgconsulting.co.za)

## Tozer Events

**T**ozer Events delivers a complete solution for all components of event management, allowing our clients a one-stop-shop approach! We effectively budget, design, source, contract, produce and execute programmes providing creative solutions. Our programmes are always marketing-focused, in order to exceed clients goals and deliver excellent return on investment.

Our partner, Tozer Advertising, is an innovative South African Advertising Agency with offices in Johannesburg.



Tozer Advertisings' services include all aspects of corporate design, above and below the line advertising, advanced web design and development, Events and broadcast television commercials. We are at the very forefront of communication technology and have the lead-

ing edge in communication thinking and strategy. ■

**Event & Marketing enquiries, please contact:**

**Inken Gartrell, Tel+27(0)10 590 5537 / inken@tozer.co.za**

## Traviata Flooring for luxury vinyl and laminate flooring

**I**n an environment where many 'inferior' imports are flooding onto the market, Traviata Flooring is often asked this question: "Why should I specify Traviata?"

Traviata Flooring is passionate about customer service and satisfaction. Because of their 'no nonsense' approach, the company has grown into one of South Africa's largest importers and wholesalers of wood flooring products and systems.

Traviata Flooring is a privately owned company with over 10 years' experience in the flooring industry. During that time the company has built up strong partnerships with a number of the world's leading flooring product manufacturers. Those close



links and bulk purchasing power mean Traviata Flooring can offer great value for money to their customers. They also take care to ensure that all products are as environmentally friendly as possible.

Traviata Flooring products are sold and installed by trained and experienced national dealer networks. Our headquarters and the main warehouse are located in Meadowdale – close to OR Tambo International Airport. ■

**More information from Tel: +27(0)11 453 0296**

**[www.traviata.co.za](http://www.traviata.co.za)**

## Turnkey Hydraulics: over 30 years of service excellence

**T**urnkey Hydraulics is a leading supplier, designer and installer of hydraulic equipment in South Africa. We supply our services to a comprehensive array of clients, including the mining industry of South Africa. Since our inception in 1984 we have developed a name for service and product excellence. From advanced hydraulic power pack products to complex hydraulic solutions, we have the hydraulic systems you require.

Our hydraulics services are highly specialised and uniquely all-inclusive. With the Turnkey Hydraulics team's combined expertise, our clients are assured of receiving the best end results. Not only do we offer hydraulic solutions including hydraulic designs, hydraulic installation and hydraulic repairs, we also provide a unique solution that sets us apart from our



competitors. We offer an exceptional after-sales service and our committed and highly experienced Turnkey Hydraulics team will assist with any queries that may arise.

Having developed a name for excellence in the industry, we have acquired premier agencies that have enabled us to offer comprehensive and professional in-house solutions. We have consistent interaction and communication with these overseas principals, ensuring that we are up to date with current trends. All technological developments will be applied to our designs to ensure our clients receive only the highest standard of service. ■

**More information from Tel: +27 (0)11 827 8954**

**[www.turnkeyhydraulics.co.za](http://www.turnkeyhydraulics.co.za)**

## Universal Plywoods

Universal Plywoods are bulk stockists and bulk distributors of plywood panels, medium density fibreboard panels (MDF), oriented strand board panels (OSB), laminated veneer lumber (LVL), high density fibreboard panels (HDF), particle board (Chipboard) and all other types of engineered timber board products. With over 17 years of experience in the timber industry, The Company procures their stocks from the best mills available internationally. Each mill Universal Plywoods has partnered with was carefully selected for their quality, their reliability, their environmental policies and for their service back-up. Plywood is made from a minimum of three veneer layers which are then cross-glued together. Cross-glued veneer wood layers give plywood very good strength and dimensional properties.



For demanding applications, plywood can be coated using plastic or phenolic films or can be lacquered/painted and edges sealed to be resistant to moisture.

Plywood faces mainly determine the different types of grades of the panel and can be graded according to the number of knots, splits in the face veneers or the general appearance of the face veneers.

Universal Plywoods' customers are offered technical support, logistical support and supply chain efficiency as well as a total commitment to meeting their needs. ■

**More information from Tel: +27(0)11 310 9717**  
**[www.universalply.com](http://www.universalply.com)**

## Vodacom: 'Best network, best value, best service'

Vodacom is a leading African mobile communication company providing a wide range of communication services including mobile voice, messaging, data and converged services to over 63 million customers.

From our first roots in South Africa, we have grown our mobile network business to include operations in Tanzania, DRC, Mozambique and Lesotho. The mobile networks cover a total population of approximately 200 million people. Through Vodacom Business Africa (VBA), we also offer business managed services to enterprises in over 30 countries across the continent.



Vodacom is majority owned by Vodafone (65% holding) one of the world's largest mobile communications companies by revenue.

The company aims to deliver the very best customer experience; grow data, enterprise and new services as well as growing internationally; to make

our processes and businesses more efficient; build a diverse and talented team and transform society while also building stakeholder trust. ■

**More information at <http://www.vodacom.com>**

## Zeela Bricktiles transform plain walls

Zeela Bricktiles is an established tiling business, manufacturing, selling and installing tiles to produce a facebrick-finished wall without the wearisome efforts of using a full brick.

Zeela Bricktiles was established in 1991 and has become a household name with its professional Bricktile Cladding procedure that transforms a normal plastered house into one with a facebrick appearance.

The company's tiles are sliced from full clay bricks producing an eye-catching 9-mm tile which can be applied to walls, giving them a full facebrick finish.

Brick tiling an existing wall to achieve a facebrick finish is not only a cost effective and a quicker alternative to laying face bricks, it is also maintenance free, guarding against damp and weather as well as increasing property values.



Zeela Bricktiles is the only bricktile specialist in KZN and, most importantly, is the only company to provide a full installation service and offer a lifetime guarantee on its workmanship

(Terms and conditions apply).

The company's mission statement is: "To ensure longevity and profitability of our company through referral achieved by customer satisfaction in all areas including timeliness, attention to detail and service-minded attitude.

Outstanding service and quality workmanship have made Zeela Bricktiles the leader in the field. ■

**More information from Tel: +27(0)31 579 4201**  
**[www.zeelabricktiles.co.za](http://www.zeelabricktiles.co.za) or cell: +27(0)84 441 1435**  
**(Mustafa Sayed, Johannesburg)**



# Transforming Africa's infrastructure through SMARTER planning, design and delivery



In partnership with the Smart Cities Council and FTTH Council Africa, the first leg of the Smart Building and Infrastructure series of Summits will take place in Durban on the 22 February 2017 at the Durban Exhibition Centre.

We're honoured to welcome Vodacom as the presenting sponsor of the Smart Buildings and Infrastructure series of Summits 2017.

SMART Buildings & Infrastructure blends both the control systems (smart building technologies) elements as well as the fixed attributes (design, structure and materials) required for a smart building whether for new build or retrofit projects. The convergence of the two creates an extraordinary opportunity to get things right and achieve efficiency.

It is a perfect opportunity for you to showcase your products and services to decision-makers from the public and private sectors responsible for the design, construction and operation of infrastructure assets and the specification and procurement of major infrastructure assets who will all be in attendance.

## Reasons to attend

- LEARN about cutting-edge technologies and materials for new or retrofit smart infrastructure projects.
- NETWORK with a highly influential group of participants and learn from the leading case studies.
- HEAR how to develop a business case and roadmap to smart infrastructure.

- UNDERSTAND the opportunities for integrating smart infrastructure into your city projects – give input in the design and work with suppliers for better cohesion.

## Summit Facts

3 cities, 10+ countries, 50+ media and association partners  
60+ speakers  
20+ hours of networking  
100+ participating companies

An innovative programme for all three summits will feature and showcase key insights into emerging trends, confront the most pressing issues, discover solutions, explore technologies, debate a road map for a smart future and learn best practices in:

- planning for resilience
- designing for adaptability
- creating value
- delivering smarter buildings and infrastructure

Co-located with Africa's largest continental and regional expos:

- KwaZulu-Natal Construction Expo, Durban Exhibition Centre, 22 February 2017
- African Construction Expo, Gallagher Convention Centre, 24 May 2017
- Cape Construction Expo, Cape Town International Convention Centre, 15 August 2017

We look forward to working with you to transform the future of Africa's infrastructure through SMARTER planning, design and delivery! ■

## For more information contact:

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**African Smart Buildings and Infrastructure**  
**Tel: +27(0)21 700 4300**  
**email: Daniel.claassen@hypenica.com**



## Smart Buildings & Infrastructure

### KWAZULU-NATAL SUMMIT

**22 FEBRUARY 2017**  
Durban, South Africa

### AFRICA SUMMIT

**24 MAY 2017**  
Johannesburg, South Africa

### WESTERN CAPE SUMMIT

**15 AUGUST 2017**  
Cape Town, South Africa

# In parting, they called him many names...

*But the words were in praise of an exceptional concrete technologist – and person, writes Jan de Beer.*

In mid-November last year, concrete technologists from five continents converged on Cape Town for a special conference: The Mark Alexander Symposium – a tribute to Prof Mark Alexander who, after an illustrious career, has retired as Emeritus Professor of Civil Engineering at UCT.

In the special book produced for the occasion, his 'concrete comrades' paid tribute to Mark's role as their friend, mentor, role model, engineer, scientist, researcher, teacher, supervisor, crack-enthusiast (readers who know Mark will understand that this has nothing to do with drugs), deterioration detective (another long story...), man of faith, natural leader, generous soul, philosopher, and humanist. In fact they called him all sorts of things, including a polyglot and polymath (Google those – they're also compliments).



There were times in Mark's career when he needed to see the funny side of things – like his very memorable "Baptism of fire at the Klipspruit Outfall".

In delivering the Snape Memorial Lecture towards the end of 2015, Mark recalled his smelly introduction to the civil engineering profession at the Klipspruit Outfall Sewer (KOS) in Soweto. The young graduate was then employed by the Johannesburg City Engineer's Department, involved in the design of outfall sewers and associated structures.

After being taken to the KOS site at 4 am, he and his young colleagues were sent down manholes to see the sewer in low-flow periods. They were not warned that the night-spoil trucks would be discharging in manholes further up the sewer at the same time, so he recalled that heads popped up regularly from manholes all down the line as what kids today would call 'gross' loads went past them underground.

In this lecture, Mark explained why engineers are called 'conservative' by nature. "It's because if something goes badly wrong with the things we do, the consequences are normally horrendous. There is often loss of life and always huge loss

***"A successful man takes out of life more than he puts back but a worthy man puts back into life more than he takes out" Mark will always be remembered for what he put back." Dr Anton Rupert quoted by Dr Rod Rankine***

of capital. We are conservative by nature because our training also makes us so. To enter the public space, we in fact need a different mind-set altogether." Now you know why Trevor Noah and Barry Hilton prefer to avoid playing to an audience of engineers.

On a more serious note, Mark's comments in the lecture about a future when engineers could face replacement by computer programs should make us afraid, very afraid. He also described the current construction tendering system – increasingly based purely on lowest cost – as asking a group of heart surgeons for the lowest price for a cardiac by-pass.

In paging through the tributes by his peers and family in the commemorative publication, there are some wonderful anecdotes and noteworthy praise from people who have accomplished much in the profession. But, as so many have regretted putting work ahead of their family would testify, it's the comments from Mark's family that he should really take particular pride in.

His son, Ryan, fondly recalls that when he was a youngster with the family in the Rocky Mountains, a grizzly bear suddenly posed for the family camera on top of a cascading waterfall while on the lookout for salmon in the most picturesque of landscapes. A frantic search for Mark and that family camera found him snapping away – at cracks in their lodge's concrete walkway. Little did Ryan know that he was to follow in his father's civil engineering footsteps and would even be lectured on the subject by his Dad, a man he calls his 'special hero'.

Lyn, Mark's wife, before she met him thought cement was concrete, but Mark married her in 1978 anyway. Lyn soon learnt the importance of 7, 14, and 28 days – particularly after concrete cubes had been cast. She discovered that these days inevitably fell on Saturdays or public holidays. "I soon realised this was going to be a marriage with a difference – researchers are different," she says.

Mark's brother, Paul, paid tribute to Mark's faith: "public, clear and obvious but never superficial or imposing" and his sister, Denny Cole, saluting her brother's lecturing skills, bemoaned the fact that she was his worst student: he had failed to teach her mathematics in high school! His elder brother, John, lauded Mark for his commitment to the family.

The publication also includes praise from concrete colleagues, many of whom describe him as a "gentleman". All whose paths have crossed with Mark Alexander over the past three decades or more will concur. ■



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- 4 Become a part of the supply chain database in the smart buildings/ infrastructure sectors

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