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Journal of the African Cement and Concrete Industry

trends

VOL 18 No 2 May 2015



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Cover:
 Story on Page 18
 PPC offers its clients
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CONCRETE trends

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Page 20 - Abu Dhabi's Central Market designed by Foster and Partners was inspired by traditional architecture.



Page 22 - Zaha Hadid's Heydar Aliyev Centre, in Azerbaijan. The concert hall's dramatic curves improve its acoustic properties.

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When the going gets tough, the tough get going

How often have we heard these words without even thinking where they came from?

Well, the proverb is variously attributed to Joseph P. Kennedy (1888-1969), the father of (U.S.) President John F. Kennedy and to US football coach Frank Leahy, who used it as his personal motto.

The saying comes in different forms, but the one I feel is most appropriate for us here in South Africa today is: "When the times are tough, the tough see opportunities."

Because there is no doubt that the times are tough in South Africa today ...really tough.

In compiling the Deloitte's 2015 South African Restructuring Outlook Survey, researchers canvassed the country's 30 most prominent restructuring professionals from a selected mix of Commercial Banks (27%), Development Finance Institutions (21%), Lawyers (12%), Business Rescue Practitioners (21%) and other key professionals (19%).

The survey's findings show that 73% of restructuring experts in South Africa expect to see an increase in the number of distressed companies seeking business rescue over the next 12 months.

And this is where the part of the saying "The tough see opportunities" becomes particularly relevant. Those brave individuals who can see beyond the miasma of depression and negativity are the ones who will thrive.

They are the ones who can take the bold step to change what they are doing and to look at their situation from a different perspective. At a time when the things we have been doing no longer work, it is foolish to believe that continuing to do the same things will produce a different outcome. This is the time for new and innovative approaches to business. It is the time to restructure – our mindset, our business, our priorities.

This is also where the contacts we have, the networks we have established can help us see beyond our problems and stalled thinking. These are the times when being around stimulating people with new ideas can make all the difference. And finding the stimulus is not as difficult as it might seem. Attending lectures and conferences, trade fairs and expos, can help us find new ideas. Enthusiasm is very contagious, and the excitement of a bustling show can work wonders to stimulate innovative thinking.

If you are reading this while you are at Totally Concrete and African Concrete Expos, you are in the right place – the opportunities to network with experts and colleagues are all around you. New opportunities come through new engagement and inspiration is there for the taking. For those looking to the rest of Africa, TCE East and West Africa later in the year would be ideal places to make those new and important contacts.

Gill Owens, Editor



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Need advice on your concrete? Our technical experts are available for consultation throughout Southern Africa.

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Leading civil engineering bodies now members of The Concrete Institute

South Africa's three leading civil engineering bodies have become the first Associate Members of The Concrete Institute, based in Midrand, Gauteng.

Bryan Perrie, MD of The Concrete Institute, says the new Associate Members – who will serve on the Institute's board are:

- Consulting Engineers South Africa (CESA);
- The South African Forum of Civil Engineering Contractors (SAFCEC); and
- The South African Institution of Civil Engineering (SAICE).

These Associate members will be represented on The Concrete Institute Board by Lefadi Makibinyane (CESA), Webster Mfebe (SAFCEC), and Manglin Pillay (SAICE). The three cement producers, Lafarge, Sephaku, and AfriSam, who founded The Concrete Institute in 2013, are the main board members who will work closely with the new Associate members.

This marks the start of implementing the Institute's mission, stated in 2013 on its establishment following the closure of the Cement & Concrete Institute, to concentrate its technical and educational services not only on the cement and concrete industries, but to also include complementary organisations in the building and construction sectors.

Perrie says The Concrete Institute welcomes these respected civil engineering bodies as Associate Members. "Civil engineers play a vital role in the building and construction industry. They are responsible for planning, designing and building all the

infrastructure that adds quality to South Africans' lives. This is a major step towards enabling The Concrete Institute and its members to speak with one voice to assist government in the implementation of the National Development Plan to benefit employment and the general economy."

SAFCEC was founded in 1939 as the South African Federation of Civil Engineering Contractors and re-registered in November 2013 as the South African Forum of Civil Engineering Contractors. The Forum has played a major role in developing South Africa's infrastructure.

Consulting Engineers South Africa (CESA) is universally regarded as "The Voice of Consulting Engineering in South Africa". CESA actively promotes members' joint interests and provides quality assurance for clients. Over 500 firms, employing more than 23,300 staff, are registered CESA members.

As the South African representative of one of the world's oldest construction professions, SAICE seeks to advance professional knowledge and improve the practice of civil engineering. SAICE has a proud history spanning more than a century with over 12,000 professional members, making it the largest body of its kind in South Africa by a substantial margin.

Perrie said The Concrete Institute was hoping to co-opt other building and construction bodies with similar missions onto its Board. ■



Bryan Perrie, MD of The Concrete Institute, says three leading civil engineering associations have joined the Institute.

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

New training and development manager appointed by SAPITA

Pogiso Matlala has been appointed to the new position of training and development manager of the SA Paint Industry Training Institute (SAPITI), the training arm of SAPMA (the South African Paint Manufacturing Association).



Matlala's duties will include planning, developing, promoting and co-ordinating SAPITI's accredited training programmes for the coatings industry.

Deryck Spence, the executive director of SAPMA, says Matlala has been engaged to generally "promote a culture of training

and upliftment within the South African coatings sector.

He will head SAPMA and SAPITI's interaction with government organisations such as the Chemical Industry Education and Training Authority (CHIETA), assist SAPMA members in developing Work Skills Development Plans to qualify for training grants, represent SAPMA on training and development committees and forums as well as employer associations, and develop and maintain a computerised student registration process. The year 2015 will be extremely important for SAPITI and Matlala will play a key role in the growth planned for our training institute this year," explains Spence. ■

**More information from Deryck Spence,
Tel: +27(0)11 615 1195 / www.sapma.org.za**

a.b.e. to continue growing despite strong competition

Despite very strong competition, a.b.e. Construction Chemicals' sales growth in 2014 is expected to continue this year, driven by the launch of new products, inroads into Africa, and significant market share gains, says Norman Seymore, international vice-president of a.b.e.'s holding company, the Chryso Group, and locally, CEO of both a.b.e. and Chryso Southern Africa.

Speaking at a Chryso Group Safety Day at a.b.e.'s head offices in Boksburg, Seymore said a.b.e.'s profit margins remained under pressure due to unfavourable exchange rates and the high import content in the company's product range. "However,



At a.b.e. Construction Chemicals's annual Safety Day in Boksburg, three staff members spoke about their job responsibilities and priorities for 2015. From left: Warren Delaney, technical manager; Elrene Smuts, communications manager; and Laurence Mashiloane, costing and pricing controller.

a.b.e.'s Export Division is performing strongly in Sub-Saharan Africa and the Chryso Group will have an office in Kenya this year to support a.b.e. and Chryso's East African development.

"As the Chryso Group's exports are growing faster than the local market, we are launching our products in Angola and are also looking at developing business in Nigeria this year. We will also be strengthening our business in Mozambique and Zambia by employing dedicated sales staff there to support our traditional distributors," he stated.

"Furthermore, a.b.e. will launch several important products in 2015 – a vital part of our growth strategy of offering more solutions to customers."

Seymore said a.b.e.'s Polyurea segment now supplied products that completed the company's range for waterproofing, flooring and coatings, and that the other segments of the company's operations had also performed well, particularly the flooring sector where growth had surpassed budget estimates and expectations.

"a.b.e. is continuing to invest in expansion and improved manufacturing plants. In addition, a.b.e. has created Product Segment Forums to replace the traditional product managers' roles. The Forums comprise staff representing the retail, construction, technical and marketing departments to ensure that all areas of the company are supported.

"Our commitment to safety of all staff members remains of paramount concern – reflected by the Group's annual worldwide Safety Day on March 17."

Seymore said a.b.e. Construction Chemicals intended to have all operations ISO9001-compliant during this year and all its branches OSHAS18001-accredited by the end of 2015. ■

**More information from Elrene Smuts,
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New executive director of CMA appointed

Frans Minnaar has been appointed executive director of the Concrete Manufacturers Association (CMA) with effect from March 2, 2015.

Minnaar, who has many years of experience in quality assurance for precast concrete products, succeeds Wally Armstrong, who held the post for the previous two years.

Minnaar spent over 10 years with the SA Bureau of Standards (SABS). He qualified as a civil engineering technician while there and worked as a standards inspector and ISO auditor – one of the first ISO auditors in the country after the international ISO Quality System Certification Scheme had been adopted by SABS in South Africa.

While at the Bureau he also served in several senior management posts relating to civil engineering.

His subsequent work involved quality assurance and management for a number of precast concrete manufacturers. For 16 years (over two periods) he operated independent



Frans Minnaar, the CMA's new executive director.

quality assurance consultancies, with clients that included prominent precast concrete product manufacturers as well as Eskom and the mining industry.

One of his first tasks at the CMA is the preparation of a quality management systems guidelines booklet to assist members and prospective members to establish their own systems. Another will be to establish and launch an accreditation assessment scheme to help members meet the quality, health & safety and environmental regulations that are applicable to their businesses.

Minnaar has also set his sights on establishing an independent test laboratory to serve the industry. "Broadly speaking, I am aiming to extend the range of services offered to our members wherever possible. We are working closely with members to establish what they require." ■

**More information from Frans Minnaar,
Tel: +27(0)11 805 6742 / www.cma.org.za**

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Paul Olivier new MD of Jeffares & Green

Paul Olivier has been elected Managing Director of Jeffares & Green Engineering & Environmental Consulting, from 1 March 2015. He has been with the firm for 30 years. Olivier graduated from the University of the Witwatersrand in 1982 with a B.Sc. Civil Engineering, obtained a Diploma in



Business Management in 1987 followed by a Master's degree (cum laude) from the University of Pretoria in 1990.

In 1993 Olivier was instrumental in forming Dynatest Africa, a specialist pavement engineering and equipment company jointly owned by Jeffares & Green and Dynatest International. He has been CEO of Dynatest Africa since inception.

This was followed, in 1997, by the formation of Specialised Road Technologies, a pavement surveillance and asphalt testing company, in which his was a leading role.

Olivier has gained wide respect for his knowledge of pavement design and materials as well as for the management of pavements in all types of road networks and performance-based contracts. He is frequently involved in investigating the premature failure of pavements and acts as an expert witness in arbitration cases.

On his new position, Olivier comments: "I am looking forward to the challenges in leading our 93-year-old, proudly South African-owned company through the current era of our young democracy, where the need for our services and expertise in developing, rehabilitating and maintaining our infrastructure and protecting our scarce water resources is immense." ■

**More information from Charmagne Denny on
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Fly ash given rightful status in USA

With some excellent news from the USA, the New Year started positively for the status of fly ash with reference to South Africa's proposed environmental management regulations," says Tshepiso Dumas, MD of Ash Resources. "After six years of intensive investigations and legal battles, the USA Environmental Protection Agency (EPA) has ruled that coal fly ash is non-hazardous."

In South Africa, the approach adopted by the National Waste Management: Amendment Bill, approved by Parliament on 28 February 2014, is similar to that of the EPA. The Bill addresses some of the challenges of waste management by removing 'by-product' as a category and amending the definitions of 'waste', 'reuse' and 'recovery' to provide more clarity and certainty. Recognition is being given to waste that is being put to beneficial use, and 'Schedule 3' of the Bill contains a comprehensive list of what constitutes 'waste', divided into hazardous and general waste. Professor Richard Kruger, president of the SA Coal Ash Association said: "The Amendment Bill is definitely a step in the right direction."

The EPA's ruling is hugely important. It establishes a very comprehensive set of federal regulations for responsible disposal of CCRs (Coal Combustion Residues such as fly ash, Flue Gas Desulfurisation [FGD] Gypsum, and bottom ash) and, provided fly ash meets specific criteria, it will be exempt indefinitely in the USA when beneficially reused and encapsulated in concrete, paving materials, wallboard and other construction products.



"The USA declaring coal fly ash to be non-hazardous is excellent news," says Ash Resources MD, Tshepiso Dumas.

"The EPA's ruling results from extensive study on the effects of coal ash on the environment and public health. It classifies coal ash as solid waste (similar to household waste) instead of a hazardous material. It also establishes the first-ever national USA standards for disposal of coal ash from coal-fired power plants," states Professor Kruger.

The EPA regulations address risks from coal ash disposal and set technical requirements for CCR landfills and surface impoundments. They also support responsible recycling of CCRs by distinguishing 'safe beneficial use' from 'disposal'. Beneficial use is the reuse of coal ash in a product to replace virgin raw materials and is encouraged for its positive environmental, economic, and product benefits: reduced use of natural resources; lower greenhouse gas emissions; reduced cost of coal ash disposal; improved strength and durability of products.

"In South Africa, our approach to waste management considers issues such as our desperate need to expand employment opportunities," adds Dumas, "However, it is significant that much of our thinking is aligned with the EPA. We believe emphatically that our processed fly ash should not be legally classified as 'waste', is definitely not hazardous and should not be subjected to complicated regulations." ■

**More information from Natalie Johnson,
Tel: +27(0)11 657 2320 / www.ashresources.co.za**

PPC sponsors prestigious Fulton Awards

South Africa's leading cement supplier, PPC is the Anchor Sponsor in the Concrete Society of Southern Africa's (CSSA) 2015 Fulton Awards.

Twenty-four submissions have been received for this year's Fulton Awards, which is presented every two years to recognise "excellence in the use of concrete" in projects on the African sub-continent.

The entries are judged in four categories: Civil Engineering Structure, Building Structure and Architectural Concrete – with each including sub-categories for projects up to and in excess of R100-million in value.

The fourth category, Innovation in Concrete, aims to attract new ideas in projects or initiatives where totally new materials, techniques, technologies, applications, design and analysis concepts or procedures, using concrete as the principal material, have been developed and implemented.

Alta Walker from PPC explains: "The Fulton Awards is considered the 'Oscars' of concrete and is arguably the most prestigious award that a project team can receive in the built environment. The Awards have been associated with the celebration of achievements in the South African building

industry for decades. As a company, we remain passionate about investing in initiatives and projects that advance excellence in concrete. Our support of the Awards shows that we constantly strive to bring our customers innovative, industry-first products and services."

The Fulton Awards originated as a tribute to the late Dr Sandy Fulton for his outstanding contribution to the understanding of concrete, its development and its improvement. The first Fulton Awards were held in 1979 and the event has grown to be one of the highlights on the industry's calendar.

PPC was the supplier of the cement for the De Hoop Dam project in Limpopo which won awards in both the Civil Engineering Structure and Sustainable Concrete categories at the 2013 Fulton Awards, epitomising the company's commitment to the advancement of concrete in South Africa.

The winners this year will be announced at a Gala Dinner during the Fulton Awards Weekend from the 5-7 June 2015, at the Champagne Sports Resort, Drakensberg. ■

**More information from Andrea Meyer,
cell: +27(0)72 261 7588 / www.ppc.co.za**



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Ambitious plan unveiled to create a new Egyptian capital

By Adam Williams

Architecture projects don't come much bigger or more challenging than building an entire new capital city from scratch, but that's what the Egyptian Government, Skidmore, Owings & Merrill (SOM), and international group of investors, Capital City Partners Limited, intend with the Capital Cairo project. The recently-proposed city, seven times the size of Paris, and twelve times bigger than Manhattan, would measure about 700 km² and be home to over seven million residents.

Planning of the as-yet unnamed city is being led by SOM, and if it goes ahead, it would be located to the east of the current city of Cairo and serve as something of a pressure valve for the existing capital's ever-growing population. The new city would create an estimated 1.5 million new jobs.

"While we are at the earliest stages of design, the new city will be built on core principles that include places of education, economic opportunity, and quality of life for Egypt's youthful population," says SOM's Philip Enquist, who is the Partner in Charge of Urban Design and Planning at the firm.

"This new city will be designed and built in harmony with nature as a showcase of what is possible when building environmentally sensitive developments."



The city would include some 40,000 hotel rooms, a large park that could comfortably accommodate London's Hyde Park six times over, a theme park that dwarfs Disneyland, and a 4.2-million-m² retail area. The seat of government would be moved to the new city, and the city's design would be relatively flexible and capable of future growth. A large renewable energy farm is mentioned for the project

too, but there is no more information as yet on what form this would take (solar power might be a good bet, considering its location in the desert).

The slated infrastructure really brings home the scale of the challenge. For example, the city would include a 20,000-km-long water and sewage network, a 10,000-km road network, 100 km of bridges and tunnels, and a 16 km² international airport. It would also require a mind-boggling 20 million cubic metres of water every day.

The BBC quotes Egyptian Housing Minister Mostafa Madbouly as saying that the project will cost US\$45 billion and take between five and seven years to complete. ■

Sources: The Capital Cairo, SOM

<http://www.gizmag.com/capital-cairo-egypt-som/36648>

Tanzania to construct a US\$ 15bn rail network

Tanzania is set to construct a US\$ 15-bn new rail network that will see the country's transport infrastructure improve and help in the country's stated objective of becoming a regional transport hub.

Tanzania transport Minister Samuel Sitta confirmed the reports and said: "This will be the single biggest project ever to be implemented by the Tanzanian government since



Railway construction operations

our country's independence." The development will include construction of a 2,561-km standard gauge railway that will see the connection of the port at Dar es Salaam with Rwanda and Burundi. The cost of this section has been estimated as US\$8bn.

Part of other works will include construction of two railway lines that will join Dar es Salaam to the coal, iron ore and soda ash mining regions in the South and North, which will cost an estimated US\$7bn.

This mega rail project will see Tanzania's port of Dar es Salaam competing with its neighbouring country Kenya's own port of Mombasa. In East Africa, the two ports are the major gateways to the area where fuel, tea, coffee, consumer goods and other necessary imports and exports are transported. South Sudan and the Great Lakes region also benefit from these ports.

By 2020, Tanzania is aiming to raise the capacity handled by the port of Dar es Salaam from 14.6m tonnes a year to 28m tonnes. ■

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Ethiopia earns US\$13m from cement exports

The Chemicals and Construction Inputs Development Institute has announced that Ethiopia has made US\$13m in nine months from cement exports. Solomon Yohannes, cement and



Construction of Dangote Ethiopia Cement plant at Muger in Ethiopia

related industry development director with the institute, said last month that the exported cement went to Kenya, Djibouti, Somalia and Sudan. The cement came from 21 cement factories run in the country, of which 80% are owned by Ethiopians.

Two cement factories are also under construction in the country, including Dangote's, which is expected to come online this month. When completed, the factory is also expected to boost the total cement production from 12 million tons annually to 14.5 million tons annually.

Dangote's factory being built in Ethiopia, the largest of its kind in East Africa, is being constructed by Chinese firm Sinoma International Engineering. Dangote has previously announced plans to also expand to the Middle East and Latin America. ■

<http://goo.gl/EfXIVX>

AfDB's support is advancing many climate-smart initiatives in Africa

By: Sashnee Moodley

Through its climate investment fund (CIF), the African Development Bank (AfDB) now supports one regional and 25 national investment plans across the African continent.

The AfDB supported countries by implementing projects in investment plans through the CIF's clean technology fund, forest investment programme (FIP), pilot programme for climate resilience and programme for scaling up renewable energy in low-income countries (SREP).

Its recently-released 2014 annual report, 'Financing Change: AfDB and CIF for a Climate-Smart Africa', revealed that an additional \$500-million in funding was provided by AfDB and CIF – for a total \$2.1-billion – for 16 projects already under way in 11 African nations.



The AfDB had also provided funding for renewable-energy solutions in nine other poor countries. Of the \$8.1-billion global CIF portfolio, 34% was allocated to Africa.

"Through the AfDB CIF portfolio, we are beginning to witness countries seeing economic transformation take place by incorporating low-carbon and climate-resilient solutions as an integral part of their ongoing business of development," AfDB environment and

climate change manager Kurt Lonsway said in a statement.

The AfDB expected these projects to result in transformational impacts not only in climate-related sectors but also in a range of development sectors. ■

<http://goo.gl/JDdwMc>

US\$3.2bn railway line will connect Uganda and South Sudan

Uganda is planning to construct a US\$ 3.2bn standard gauge railway line that will join Kampala through Malaba to Nimule in South Sudan. This will be part of the Standard Gauge Railway construction project already under way to connect a number of East African countries.

The railway project in Uganda has received a major boost following the signing of Engineering Procurement Construction (EPC) agreement last week by Uganda's president, Yoweri Museveni, and China Harbour Engineering Company Limited (CHEC). China has approved financing the 476-km line, which includes providing detailed designs of the railway.

Museveni said that once the railway line is complete, cargoes from the ports will be transported at a faster and cheaper rate.

The Standard Gauge Railway construction project was agreed on by four countries; Kenya, Uganda, Rwanda and South Sudan and it will be a vital infrastructure project for the formation of the Northern Corridor.

China Communication Company is undertaking construction of the Kenyan part of the Standard Gauge Railway, in a project that will see 40% of work sub-contracted to local companies. ■

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Contractors must register with National Construction Authority to work in Kenya

Contractors who are operating or wanting to undertake construction operations in Kenya are required by law to register through the National Construction Authority (NCA), which is constituted under Act No. 41 of 2011 Laws of Kenya.

The National Construction Authority (NCA) is mandated to clear builders and contractors to eliminate rogue contractors and malpractices in Kenya's building and construction industry. The authority, which has recently started inspecting construction and building projects around the country to ensure high quality of work and close projects posing health risks and collapse hazards, is expected to provide the regulatory framework for registration and renewal of contractors.

Qualification as a contractor in Kenya

Register with Registrar of Companies: Each contractor is required to hold a certificate of incorporation from the Registrar of Companies in Kenya. This will mean they register

as a legal company in the country as a limited liability, sole proprietorship or as a partnership company.

The National Construction Authority will also require that one of the technical directors of the registered company has a technical qualification, has skills or possesses experience in a field related to construction. All the directors must also forward their CVs to the National Construction Authority.

Valid PIN, VAT and Income Tax compliance certificates, and Bank Account: Contractors applying to operate in Kenya must also prove tax compliance by submitting these documents to National Construction Authority.

The bank account should be opened under name of the contractor company and evidence for the existence of the bank account is required. Foreign contractors are issued with permission to operate for a specific period and will be required to prove that they are in the country to undertake that project. They may not undertake another project after the one specified is completed and will need to submit an affidavit with the authority giving assurance that this will not happen.

Foreign contractors wanting to operate in Kenya are also required to submit a commitment to transfer skills to locals as determined by National Construction Authority.

A Certificate of Registration is issued on registration as a contractor in Kenya.

Contractor classification/grades

NCA regulations allow a contractor to register in one or more categories according to the class of construction works to be undertaken. The NCA categories, from NCA1 to NCA 7, are determined by the value of the projects as well as whether they are for buildings or for roads and other civil works.

Registration fees

In order to register, local contractors in Kenya will be required to pay a fee of Ksh10,000 – 50,000 depending on their NCA category. License renewal costs are between Ksh5,000 and Ksh10,000. Between Ksh5,000 and 10,000 will be required for the annual license renewal.

Foreign contractors wanting to register with NCA to operate in Kenya are required to pay a registration fee of Ksh100,000 and must undertake only tenders they win. Those registering under a temporary registration will need to commit to sub-contracting 'not less than 30% of the value' of the contract to local contractors.

Foreign contractors are not cleared for the NCA1 category, in an attempt to protect local contractors from foreign companies. ■

Application documents are available from NCA's website <http://www.nca.go.ke/index.php/contractors-center/contractors-resource-center>

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CMA announces Awards for Excellence 2016

The Concrete Manufacturers Association NPC (CMA) has announced that its Awards for Excellence competition will be run during 2015/16. PPC, the leading supplier of cement in southern Africa, will be the anchor sponsor of this very prestigious competition.

According to Echo Group managing director, Monique Eggebeen, who chairs the CMA's Awards committee, the purpose of the awards is to recognise excellence in the use of precast concrete and to honour those professionally associated with its diverse applications.

"This is the pinnacle event in the precast concrete construction calendar and it presents an outstanding opportunity for CMA members, both large and small, to showcase their products and to establish themselves as trendsetters in the use of precast concrete," says Eggebeen.

The competition is open to all providing the precast products entered for the competition were made by a CMA member. Entries must be submitted by no later than October 16, 2015.

There are six award categories in this year's competition: Aesthetics Commercial; Aesthetics Residential (Private Single Dwellings); Community Upliftment; Technical Excellence; Innovation; Precast for Life.

Entries will be judged on the contribution precast concrete elements make in one or more of the competition categories, i.e. the same project could be entered into more than one category. For example, a township paving project could contest several categories.

Six floating trophies will be presented to winners of the nominated categories and commendation awards will be made to three runners-up per category providing these entries meet the standards of the judges.

Trophies and commendation awards will be presented at a gala dinner ceremony to be held at Summerplace, Johannesburg, on 23 April 2016. ■

Entry leaflets, which cover the rules of the competition, and entry forms can be downloaded off www.cma.org.za. Any queries regarding the competition should be referred to John Cairns on Tel: +27(0)11 431 0727 / 079 884 7986 / jcpaving@gmail.com.



Winners of the CMA's 2012 Awards for Excellence competition.

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Concrete training: beware of imitations

The Concrete Institute's School of Concrete Technology (SCT), for decades trusted as the most authoritative provider of concrete technology training in South Africa, warns: "Beware of the increasing number of opportunistic training touters now popping up in South Africa."

John Roxburgh, lecturer at the SCT, says the School places a high priority on staying at the forefront of concrete technology and continuously upgrades courses accordingly. The School is also able to draw on the input of local and overseas experts to enhance the technical content of its courses. "Relying only on tried and tested sources of training is vital now that more and



Training in progress at South Africa's most respected concrete technology training institute: The Concrete Institute's School of Concrete Technology.

more unproven training consultants are pitching aggressively for corporate business."

The Southern African Readymix Association (SARMA) recently issued a warning about supposed top-flight, high-priced concrete training workshops being marketed to the industry that contain information not relevant to the local market and not recognised by any of the local industry's representative bodies. In some cases claims of course accreditation have proved to be false and the academics advertised as trainers knew nothing about these courses.

Roxburgh says the emergence of bogus training initiatives is not surprising. "Concrete is by far the most widely used construction material worldwide and, because of its durability, eco-friendly qualities and economic benefits, the demand for more skills and advanced training in the industry is increasing. But remember that training is technique- and climate-specific, so training based on overseas conditions and techniques could actually be counter-productive to South African companies."

He recommends that only training, workshops, or seminars endorsed or run by The Concrete Institute, The Concrete Society of Southern Africa, SARMA, local universities, or SA companies or associations serving the local concrete industry should be supported.

Roxburgh says South African companies stand to gain immediate benefits from sending staff to SCT courses. "Their staff members will return with a thorough knowledge of concrete concepts, best practices, latest trends and leading-edge technologies. This translates to an increase in concrete quality, productivity, and 'getting it right first time' – all of economic advantage," he explains. ■

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

SARMA: predicting growth beyond 2020

SARMA (Southern Africa Readymix Association) predicts a slow and steady recovery in the construction industry over the next five years with gradually returning business confidence driving new investments in the industry and in its key suppliers.

As the largest supplier of materials for construction projects, the readymix concrete industry is seeing more investment in the market in anticipation of more buoyant and profitable



Readymix concrete allows for some innovative building techniques to be used to meet Government's promise to build 1.5 million houses by 2020.

times. Large cement suppliers have already acquired some of the major readymix companies and talks are afoot for more acquisitions and mergers.

The optimism is based on positive factors entering the market – increasing numbers of plans being passed and easier access to mortgage bonds. In addition, Government's anticipated NDP spend and its promise to build 1.5 million RDP houses up to 2020 (at over R30-billion per annum), is proving to be an incentive for investment in the building materials industry.

A recent BMI report commissioned by SARMA and the Aggregate and Sand Producers Association South Africa (ASPASA), found that though the tough market conditions since the worldwide recession have had negative effects on the readymix industry, positive growth signs and returning investment are, however, lifting market sentiment.

"Another positive outcome of the recent recession is the trend for businesses to return to quality and specification of quality produced materials. In our industry there is increased cooperation between professional bodies who are working towards specifying that only accredited building materials be used on site to avoid possible disasters in the event of structural failure. ■

More information from Johan van Wyk, Tel: +27(0) 791 3327 / www.sarma.co.za

ASPASA calls for aggregate standardisation

Aggregate grading specifications are being reviewed by representative bodies to move the southern African construction industry towards tighter specifications that can be uniformly adopted by all sectors.

The Aggregate and Sand Producers Association of Southern Africa (ASPASA) is leading the review process to set a common grading system for ordering or specifying aggregates for any purpose. At present buyers can quote SANS, TMH or other specifications when ordering materials, leading to confusion among suppliers and users alike.

Nico Pienaar, director of ASPASA says: "Different professions have adopted their own standards and this leads to problems wherever projects overlap or where responsibility for projects is shared among companies who use different standards.

"It may also disadvantage suppliers who produce aggregates graded in accordance with opposing standards and have equipment geared to producing aggregate to these standards."

Speaking at an ASPASA-convened workshop, civil engineer Jacques Smith of GoConsult says that formalisation is required and appropriate tests and training developed to ensure these standards are accepted and implemented across the board.

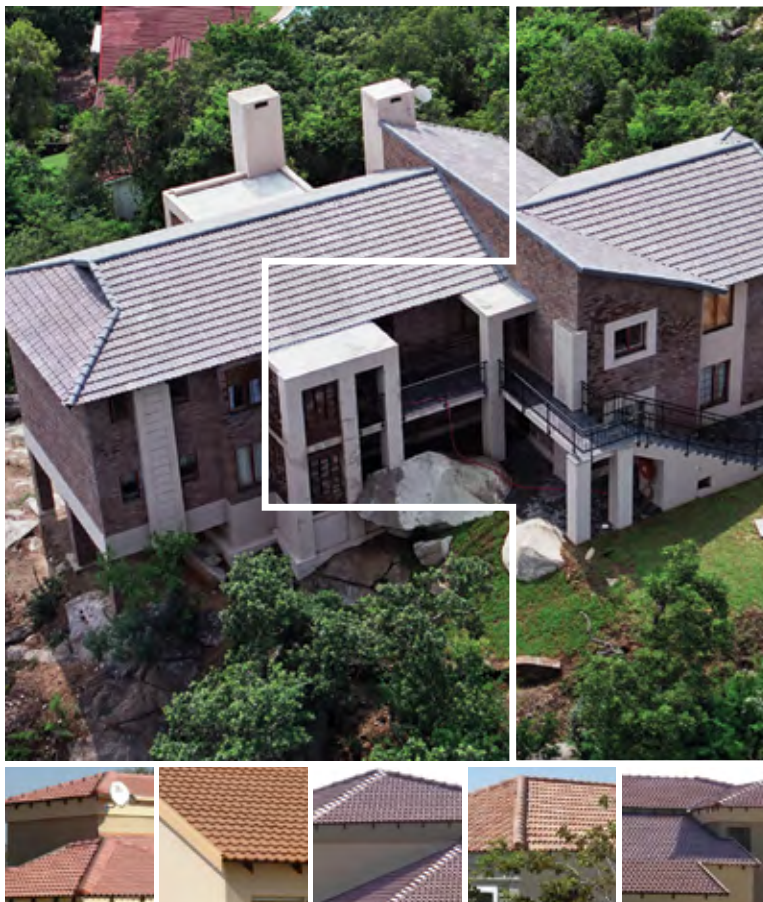
"Sampling methods need to be agreed and all sampling should be done in collaboration between the supplier and parties specifying the materials. With the right processes and procedures it becomes easier to comply with clients' requirements and also to keep records of what was supplied.

"The adoption of uniform standards is the only way to ensure materials of consistent quality are produced. The association is investigating use of a neutral professional laboratory in the



event of disputes arising, to ensure fairness," Pienaar continues. "We therefore urge all professional bodies in all industries including consulting engineers, civil engineering contractors, civil engineers, architects and specifiers to support ASPASA's attempts to ensure constant improvement in the supply of aggregates," Pienaar concludes. ■

**More information from Nico Pienaar,
Tel: +27(0)11 791 3327 / nico@aspasa.co.za,
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Successfully promoting paint for 77 years

Despite operating in challenging times, the South African Paint Manufacturing Association (SAPMA) is expanding its operations and succeeding in its mission to promote the coatings industry as a responsible supplier of products and services, says SAPMA executive director, Deryck Spence.



Deryck Spence, executive director of SAPMA, says the Association plays a crucial role in promoting the coatings sector in challenging times.



SAPMA has been in existence for 77 years and its Manufacturing Members produce about 85 to 90% of all South African paints and coatings.

Associate Members are drawn from companies supplying raw materials, various goods and services to the paint industry. SAPMA membership has also been extended to the retail industry to ensure that those involved in the distribution and sales of paints and coatings to consumers and the general public also belong to SAPMA.

Finally, membership is now open to paint contractors who abide by the Code of Conduct and Ethics Standards of SAPMA.

SAPMA's Code of Conduct – which is mandatory for members – calls for honest dealings with customers and the public; truthful advertising and labelling; fair competition; and conducting operations in a lawful and environmentally responsible manner.

The Association strictly enforces its Code of Conduct and has not hesitated in suspending the membership of those proven to be non-complying members.

In its quest to remove all harmful leaded paint from South Africa, SAPMA has harnessed the support of a growing number of retailers and contractors.

SAPMA is also cooperating with the government to restrict the use of pesticides and biocides in the paint industry, and has called for increased control of methanol included in lacquer thinners.

SAPMA is playing a major role as the coatings industry's representative in dealings with government and this increasingly close cooperation has enabled SAPMA's training arm, the SA Paint Industry Training Institute (SAPITI), to offer an ever widening range of accredited paint technology courses, including distance learning modules, and short learning programmes.

The introduction of online interactive training is a recent initiative. The training is provided nationwide for all members of the coatings sector, including paint retailers and applicators.

"The Consumer Protection Act and Extended Producer Responsibility make it imperative for retailers and paint applicators to ensure that their staff is trained to the highest level of proficiency to protect consumers from irresponsible product and benefit claims. This is where the SAPITI training plays a vital role in protecting SAPMA members from damaging litigation," Spence explains.

Guidance on a wide variety of other industry-specific matters such as transport and storage of hazardous goods, packaging and labelling requirements, and advice on how to claim training levies and gain BBBEE points, are just a few of the other benefits SAPMA offers members.

Membership of SAPMA also provides access to strategically important industry statistics, liaison with standard-setting bodies, and free subscription to SAPMA's 'Coatings SA' quarterly journal.

SAPMA, in collaboration with the Oil & Colour Chemists' Association (OCCA), also stages the major Coatings for Africa symposium and trade exhibition every two years.

Coatings for Africa 2015 – the biggest of its kind yet staged in Africa – is being held at Sandton Convention Centre from May 11 to 13. ■

**For more information from Mandy Linossi,
Tel: +27(0)11 615 1195 / www.sapma.org.za**

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For PPC, concrete is only the first step in the customer journey

South Africa's leading cement supplier, PPC Ltd prides itself on offering its clients more than just cement. This has led to a modus operandi the company calls "strength beyond the bag", as it passionately invests in meaningful initiatives and projects that advance its clients' and the entire industry's excellence.

Recently PPC ran a campaign to encourage its customers to share their success stories. PPC has selected eight of these clients who will receive free PR, online and mobile marketing opportunities, and a 3x2-m stand to exhibit at the Totally Concrete expo, which includes a full delegate pass to the Totally Concrete Conference.

Sibongile Mooko, general manager: marketing services at PPC says, "This is a fantastic opportunity for our clients to really give their business a boost. As PPC, we are in a privileged position to elevate our clients at Totally Concrete, and we look forward to being a part of their success stories for years to come."

Here are some of their stories:

16 E Tona Sand and Bricks

When Lesedi Ledwaba from 16 E Tona Sand and Bricks in Pretoria took over her father's business, it was not easy for her to break into a male-dominated industry, especially with so little experience. But she always kept hope for better days alive.

"I started contacting different cement factories, trying desperately to get the best products for my clients," says Ledwaba. "But it felt like I was fighting a losing battle because the factories were giving me hardware selling prices as my cost price. This was going to essentially kick me out the market."

However, all was not lost for Lesedi. One fateful day in 2013, she decided to visit the Concrete Expo in Sandton and was immediately drawn to the PPC exhibit.



Vincent Manama of Lefika Concrete Products says PPC cement enables him to manufacture consistently good products.

"I always wanted to work with the nationally renowned company, so it was my lucky day when I met PPC Rep January Sethibe. After we exchanged numbers, he was on my site the following Monday. It felt like I had won the lottery," exclaims Ledwaba.

Not only has PPC helped her sell quality products, but the company even brought a container on site, allowing her to not only store product, but also draw a lot of attention and bring in new business. But it didn't stop there.

"My customers used to complain about brick breakages, but then PPC gave me training to show me how it is done. They have really changed my life."

"Strength doesn't come from what you can do. It comes from overcoming things you once thought you couldn't. Thank you PPC," says Ledwaba.

To her, strength beyond the bag is all in how PPC treats its customers. "I've worked with a lot of big companies but I don't get the same treatment that PPC gives me. They keep checking up on me and when I order I know I am guaranteed cement the next day. They really do care about their customers."



Gallant Stone relies on PPC cement to place high-quality floors – with no comebacks or repairs.

Revelstone Cape Pty Ltd

From their very small beginnings in an underground cellar in Muizenburg, using only bags of PPC Rapo cement, Revelstone quickly gained a good reputation for innovative products and personalised service. With solid growth came the ability to purchase its own factory in 2001, where the company has been thriving ever since.

"With our expansion, we had to move from using bags of PPC cement to ordering bulk," says Revelstone founder Andrew Cyprianos. "PPC took the increase of business to heart and placed three silos on our premises in order to accommodate for bulk deliveries. PPC even went as far as to

supply and install screw conveyers to help us cope with the increase in production.”

Today, thanks to ongoing investment and innovation, coupled with continuous support from PPC, Revelstone is proud to call itself a manufacturer of a world-class cast stone product that is truly a viable alternative to real stone.

“PPC has been our cement supplier from day one,” says Cyprianos. “There is definitely an element of trust that has been built over the years, and we believe in their product 110%. We have always had their backing, from concrete to all our marketing ventures. The support we get in terms of technical support is something we only get from PPC and you won’t just find that anywhere else.”

Gallant Stone

As a company that specialises in decorative concrete flooring, wall plasters and various decorative indoor and outdoor items, it is extremely important to have the correct strength and durability. For this to happen, all concrete mixtures need to be exact when it comes to ingredients. It is for this reason that Gallant Stone, based in Northriding, Johannesburg relies heavily on the PPC OPC cement. For Gallant Stone, PPC’s products have allowed the business the confidence to produce great-quality flooring with no comebacks or repairs needed.

“We use large amounts of the product in all of our ranges and we are yet to be disappointed. The staff are always helpful, friendly and professional with dependable deliveries,” says Natalie Laverman, office manager at Gallant Stone.

“We have been using this product in our mixes for many years now and can say with certainty that it only makes for a good recipe for success,” says Laverman. “The service we receive from PPC is outstanding and nothing is too much trouble for them, from the admin, to finance, to sales. We look forward to a bright future with PPC and many more years of this wonderful working relationship.”

The company began its journey with a staff complement of 30, and has now more than doubled that number to 67.

Lefika Concrete Products

Lefika Concrete Products (Pty) Ltd believes that their company is a true reflection of what the PPC “Strength beyond the bag” campaign stands for.

As a company that only began in 2011, they have gone from strength to strength through the use of PPC Surebuild cement, which has improved the quality of their own products dramatically at a very reasonable cost (in comparison to other tried and tested brands).

“Based in Eikenhof, our company uses PPC cement as a primary raw material for the production of kerb stones and paving blocks which helps in the consistent and efficient curing rate in the production process of our products,” said Vincent Manama from Lefika Concrete Products.

What does Strength beyond the bag mean

Over many years, PPC has clearly demonstrated that its commitment to its clients goes well beyond cement, always going out of its way to help its clients’ businesses thrive, no matter the challenge.

As far back as 1948, PPC established a Technical Services and Development department to provide technical support and a range of in-house services in analytical chemistry, chemical engineering, physical and concrete testing, metrology, geological analyses and research and development for the entire PPC group.

These facilities provide invaluable services for the group, and also for PPC customers and the whole cement industry.

Mooko says, “By bringing innovative, industry-first products, services and solutions to our customers, we help them excel at their jobs. Simply providing a quality product is not enough for us, it is just the starting point.” ■

**More information from Andrea Meyer,
Mobile: +27(0)72 261 7588 / www.ppc.co.za**



Lesedi Ledwaba, seen here with her father, says PPC has helped to make 16E Tona Sand and Bricks a success.

Architectural concrete: some notable international projects

By Daniel van der Merwe, Architect, PPC Ltd

Considered an aesthetic high-quality material, concrete is increasingly employed for more than just building construction. Thanks to the continual development of new and improved technologies, concrete is becoming a firm favourite for building facades. Concrete has turned into a 'must use' trendy material.

The World Architecture Festival is the world's largest international architectural event. Besides a bevy of 'super star' architectural speakers at the conference, the event also includes the biggest architectural awards programme and exhibition in the world. In October 2014 the author joined over 2,500 architects from 65 countries at WAF2014 in Singapore. The trend towards an increased use of concrete for decorative, sustainable and low-maintenance facades, surfaces and sustainable solutions was very much in evidence among the architectural projects submitted for the awards.

Central Market, Foster and Partners

Abu Dhabi's Central Market is one of the oldest sites in the city. Inspired by the traditional architecture of the Gulf, this scheme aimed to reinvent the market place, giving the city a new civic heart.



During very hot days, spaces can be enclosed by sliding roof screens to control indoor temperatures.



The market's upper levels are landscaped to provide enormous public spaces.

The architects say they used the traditional souk as inspiration which involved creating a sequence of public routes and squares in which the barriers between inside and outside are dissolved. Open at night as well as during the day, these new spaces provide an important central venue in the city during festivals and celebrations and are cooled naturally when conditions allow. During very hot days, the spaces can be enclosed by roof panels that slide into place to enable the internal environment to be better controlled.

The perforations in the roof and interior panels – a pattern developed with a scholar of Islamic arts – continue outside, wrapping the podium building in a textured facade. The design of the panels is based on octagonal forms, which reference both traditional zellij tilework and more recent research into mathematical geometry.

The Souk has an in-situ concrete structural frame, but its external envelope is more daring, using glass-fibre reinforced concrete (GRC) screens inspired by Arabesque patterns and art. The precast pigmented concrete is a reddish colour to match the colour of the sand in the UAE's Liwa Desert, and was made by a local workforce that used a traditional process of moulds to make the screens rather than mechanised western processes. The GRC screens are hung from a curtain walling system that runs around the full circumference of the building.

Most of the flat roof, with the exception of the opening section and a number of sunken terraces, is landscaped to create a vast public space. To ensure thermal control, concrete was used both in situ and as precast concrete slabs and then fitted with paving slabs or screeds and plant boxes. This creates a rooftop terraced garden space for outdoor dining and other social activities.

Heydar Aliyev Center, Zaha Hadid

According to Zaha Hadid, the plaza, as the ground surface, becomes a large public open space which rises to envelop an equally public interior space and define a sequence of event spaces dedicated to the collective celebration of contemporary and traditional Azeri culture. "Elaborate formations such as undulations, bifurcations, folds, and inflections modify this plaza surface into an architectural landscape that performs a multitude of functions: welcoming, embracing, and directing

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The design of the Heydar Aliyev Center establishes a continuous, fluid relationship between its surrounding plaza and the building's interior.



The sinuous curves of the concert hall add to its acoustic properties and create a dramatic space.



The Farming kindergarten in Vietnam aims to teach children to grow their own food. Above: structure completed and below, the concrete roof under construction.



visitors through different levels of the interior. With this gesture, the building blurs the conventional differentiation between architectural object and urban landscape, building envelope and urban plaza, figure and ground, interior and exterior," she explains.

Fluidity in architecture is not new to this region. "In historical Islamic architecture, rows, grids, or sequences of columns flow to infinity like trees in a forest, establishing non-hierarchical space. Continuous calligraphic and ornamental patterns flow from carpets to walls, walls to ceilings, ceilings to domes, establishing seamless relationships and blurring distinctions between architectural elements and the ground they inhabit," says Hadid.

The architect's intention was thus to relate to that historical architecture through a contemporary interpretation of its rhythms and sculptural aspects.

The Heydar Aliyev Center consists of two collaborating systems: a concrete structure combined with a space frame system. In order to achieve large-scale column-free spaces that allow the visitor to experience the fluidity of the interior, vertical structural elements are absorbed by the envelope and curtain wall system.

The space frame system enabled the construction of a free-form structure and saved significant time throughout the construction process, while the substructure was developed to incorporate a flexible relationship between the rigid grid of the space frame and the free-formed exterior cladding. Glass-fibre Reinforced Concrete (GRC) was chosen as the ideal cladding material as precast concrete panels to accommodate the plasticity of the building's design while responding to very different functional demands related to a variety of situations: plaza, transitional zones and envelope.

Farming Kindergarten, Vietnam. Vo Trong Nghii Architects

Historically Vietnam has been primarily an agricultural country. However rapid urbanisation is increasingly depriving Vietnamese children of learning the skills of growing their own food and their relationship with nature. Farming Kindergarten was designed to counter this trend

Located next to a big shoe factory, and designed for 500 children of the factory's workers, the building is conceived as a continuous green roof, providing food and agriculture experience to children, as well as an extensive playground open to the sky.

The in-situ cast concrete roof slab was designed to accommodate living roof planters in a triple-ring shape drawn with a single stroke, encircling three courtyards inside as safe playgrounds. This enabled an experimental vegetable garden to be planted and be maintained by the children under supervision of their teachers to transfer the growing skills of their forefathers.

The building is made of a continuous narrow strip with two side operable windows which maximise the cross ventilation and natural lighting. Using concrete facilitated the green roof's acting as an effective insulation barrier, and the precast concrete louvres for plants as shading, while encouraging air flow through the interior spaces. Factory wastewater is recycled to irrigate greenery and flush toilets.

The kindergarten is operated without air conditioners in the classrooms despite being located in a tropical climate. According to a post-occupancy record issued 10 months after completion, the building saves 25% of energy and 40% of fresh water compared to baseline building performance, reducing its running cost greatly.



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Concrete domes branch out from supporting columns like leaves of desert palms.

Queen Alia International Airport, Jordan. Foster and Partners

Amman is one of the oldest continually inhabited cities in the world – the airport’s design resonates with a sense of place and local architecture, particularly in the domed roof, which from the air echoes the black flowing fabric of a Bedouin tent. In addition the architects extensively borrowed motifs from traditional Islamic architecture to generate shapes used throughout the building.

In response to Amman’s extreme climate, where summer temperatures vary markedly between day and night time, the building is constructed largely from concrete, the high thermal mass of the material providing passive environmental control. The tessellated roof canopy comprises a series of shallow concrete domes, which extend to shade the facades – each dome provided a modular unit for construction. The domes branch out



The dramatic concourse is glazed on all sides, allowing views of aircraft.

from the supporting columns like the leaves of a desert palm and daylight floods the concourse through split beams at the column junctions. Echoing the veins of a leaf, a geometric pattern based on traditional Islamic forms is applied to each exposed soffit.

The terminal is glazed on all sides to allow views of the aircraft on the apron and to aid orientation. Horizontal louvres shade the facades from direct sunlight – to eliminate glare, the louvres become concentrated in more exposed areas close to the columns. The pigmented concrete structure incorporates locally sourced sand and aggregates as part of economical and sustainable strategies to reduce the embodied energy of the building. This creates a building which harmonises not only with its cultural and historical context but also with the colours of the surrounding desert sands. ■

More information from the author on email:
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Floating homes to offer semi-submerged living in Dubai

By Chris Wood

Developer Kleindienst Group is planning to construct 42 floating properties as part of the Heart of Europe development in Dubai. Technically classified as a boat, the Floating Seahorse offers an entire floor of submerged living, providing clear views of marine life beneath the gentle waves of the Persian Gulf.

The Floating Seahorse boats will be moored offshore from the St. Petersburg and Main Europe Islands, a short boat ride from the coast of Dubai. The "marine style retreats" offer a floor space of 158 m².



A total of 42 properties will be constructed, each comprising three floors, two of which are above water level and one of which is below. The central, sea level floor will consist of an open plan living area, fully-fitted kitchen and dining area, while the upper floor offers an outdoor shower, mini bar, kitchenette, informal bed and glass-bottomed jacuzzi. The master bedroom and bathroom are fully submerged on the lower floor, with large windows providing a clear view of the marine life in the surrounding coral reef.

The boats, which were designed and developed in Dubai, will be constructed in partnership with Dutch Docklands. The company joined the development in 2011 at a problematic time following the global financial crisis and rumours that the man-made islands were sinking back into the sea. The floating solutions are claimed both more cost-effective and more environmentally friendly than the existing man-made landmasses, and offer a more secure investment opportunity.

The new villas will be constructed in local dry docks before being shipped out and positioned in the water. Work will start on the luxury floating homes in the second half of 2015, with the first villas scheduled for completion some time in 2016. ■

Source: The Heart of Europe
<http://goo.gl/E9QaOn>

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A 21st century solution to our problems

How smart technology is changing the concrete industry for the better

By Sarah McGuire

John Oliver, the host of HBO's Last Week Tonight has been vociferously exposing problems in America free of television censorship thanks to the paid television network on which the show is hosted.

During the segment aired on March 8th he exposed poor state of America's infrastructure by comparing it to that of a Lego set. He pointed out that although infrastructure may not be the most glamorous and 'sexy' topic, it is vitally important to the economy. Using his incisive wit, he was able to shine a spotlight on an unpopular subject and make Americans realise they are dealing with a serious issue.

Although faulty dams and bridges pose life threatening consequences, simple infrastructural deficiencies such as potholes have also been responsible for fatalities. The 21st century has seen innovations and advancements across all industries, and the concrete industry has been no exception. However, the industry has been slow to respond to and take advantage of the opportunities presented.

Potentially the most groundbreaking advancement in the industry is 3D printing and its capacity to revolutionise the construction of infrastructure. In November 2014, Loughborough University, London, signed an agreement with Skanska UK and architecture firm Foster + Partners to develop and commercialise 3D-printed cement and concrete structures. The objective is to have architects create their projects and have them developed at the touch of a button. The new technology enables architects to develop and print more complex designs that would otherwise be extremely difficult to create with conventional concrete practices. Other universities such as the University of California, Berkeley have also made remarkable innovations in 3D concrete printing. A structure built using 3D technology at UC Berkeley has been named 'Bloom' and will be disassembled soon to be sent to Thailand for display, and is set to do a tour of South East Asia six months later.

The structure is nine feet tall containing 840 pieces, each one different from its 839 counterparts. While these new advances in 3D printing in the concrete industry are exciting, an important factor to keep in mind is ensuring these new structures are safe and sustainable.



An example of concrete infrastructure in America not being repaired or sustained.

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Another major enhancement to the technology used by the concrete industry is currently defying conventional ways of testing for sustainability and durability. The most common form of concrete testing is the Rapid Chloride Permeability Test, also known as an RCP test, but new research breakthroughs show that testing the electrical resistivity in a concrete slab is not only more accurate and timely, but there are also many applications because of the vast number of parameters it can test for.

The first method to test the electrical resistivity is the Uniaxial method, done by placing a concrete slab between two electrodes with moist sponges at the points of contact for best results. AC current is applied to the sample and the potential between the electrodes is measured.

The other method is the four-point (also known as Wenner probe) method in which four electrodes are lined up, evenly spaced. The two inner electrodes measure the electrical potential V created when the exterior electrodes apply an AC current I to the concrete.

Both of the test methods are very effective but have yet to be properly recognised as being a reliable means of testing electrical resistivity.

Giatec Scientific, a Canadian-based company specialises in test methods for electrical resistivity, but has also incorporated smart technology into their devices to adapt to consumer trends.

The advancements in the industry are influencing new practices and thus, new businesses, but they are also enabling old companies to capitalise on the technology and change their business models. Progress Builders, a San Jose, California-based company has recently announced the release of a new



'Bloom' the 3D printed structure created by the University of California Berkeley.

application, available on iOS software devices. This not only allows users to filter through contractors, it also allows them to build profiles and create a project portfolio, evidently taking advantage of the social media age to improve their businesses. Similar to some pizza chains that allow customers to customise their order online, this application has been able to condense all information required for a project and have a consumer tailor their needs at the touch of a screen.

This process will cut immense labour and opportunity costs, and this general idea is being seen in many business practices.

Another concrete company, Dufferin Concrete, has launched a mobile application named U-Track to keep a location record of concrete pour deliveries. When dealing with perishable concrete mixes it is imperative to have an updated record to hand, and will provide a value-added component of their service to clients.

The construction industry as slowed down since the exponential increase from 1970-2000, but there is still much room for growth and innovation. The industry is changing rapidly and in order to stay current with the times, it is becoming ever-increasingly important to adjust to the advancements and exploit new technology.

Although there are learning curves involved, adaptation will also give industries, governments and research institutions a great competitive advantage.

It is time to take advantage of the software applications and new technology available as one step towards solving the problems associated with the industry as a whole.

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About the author

Sarah McGuire is the manager of International Relations at Giatec Scientific Inc. in Canada, but is active in the marketing and sales initiatives as well. She is in the process of completing a Bachelor of Commerce at the University of Ottawa and has a passion for entrepreneurship and innovation. To inquire about dealer opportunities with Giatec Scientific inc. or for more information about the company, contact Sarah at dealers@giatecscientific.com ■

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How far has Nigeria gone in ensuring sustainable construction?

By Kolawole Adisa Olonade, (Engr. PhD)

Department of Civil Engineering, Obafemi Awolowo University, Ile-Ife, Nigeria

Sustainability is a key concept

The need to protect the built environment in the face of infrastructural development has been the objective of many nations, regardless of their economy. Concerted efforts are being made to counter the negative impact of human activities on the environment.

Some industries are beginning to reduce the amount of fossil fuels consumed or find alternative fuels and design new techniques aimed at reducing carbon dioxide emissions. Nevertheless, if any success is to be achieved, the construction sector must focus on finding workable solutions.

The construction sector is a major emitter of greenhouse gases. During construction activities, large quantities of natural resources are consumed. Water is used extensively, much waste



Shopping mall units in Kano.



Word Trade Centre in Abuja.



Hotel & Convention Centre in Onitsha.

Engr. Dr. Kolawole Adisa Olonade has a PhD in Environmental and Civil Engineering (Materials and Structures) from University of Lagos, Nigeria.



is generated, and a wide range of ecosystems is destroyed. Due to the negative impact of the construction sector on the environment, there are increasing demands from the public to ensure sustainable construction – requiring new methodology for building design, construction, maintenance, regeneration and conservation. One aspect to be considered in the context of sustainable construction is the environmental impact from the extraction and production of the materials used.

Nigeria offers the greatest construction opportunities on the African continent

If the growth rate of the construction sector in Nigeria (regarded to be 18.08%), is anything to go by, then it has the potential to surpass China by the year 2020. Though contributing about 3.2% of Gross Domestic Product (GDP), the construction industry is a multibillion dollar business in Nigeria.

A survey by the Nigerian National Bureau of Statistics (NNBS) on the cost of construction materials consumed between 2010 and 2012 indicates that, apart from a slight drop in cost of gravel/granite between 2010 and 2011, there is a steady growth occasioned by increased construction activities in the country. Presently, massive construction works are on-going in every part of the country. What could have been responsible for this rapid growth in construction in Nigeria?

The need to provide infrastructural facilities for the teeming population is one of the major impetuses for the unprecedented construction activities going on in the country. Secondly, Nigeria is blessed with natural construction materials such as granite, sand, water, timber etc., including large deposit of calcium carbonate, a major raw material in cement manufacture.

Currently, the annual cement production capacity in the country is put at 29.75 million metric tonnes (mmt) with great potential to increase. Another catalyst that aids the construction sector is the ever-increasing size of a middle class with the expectation that everyone must have his/her own building.

Despite the giant strides made by the government to provide the infrastructure needed, there is still a huge gap between demand and supply. For instance, housing deficit has been widely reported as 16 – 18 million units, with an estimated N60 trillion (about USD266.7 billion) needed to bridge the gap. Recently, the Federal Government created a new Ministry of Lands, Housing and Urban Development with a mandate to provide about 54,500 housing units across the country. The road network is also grossly inadequate with only 30% paved. In tackling this menace the government resolved to disburse a sum of N921.4 billion (USD4.1 billion) in addition to N1.4 trillion (USD 6.2 billion) that has been spent to complete about 195

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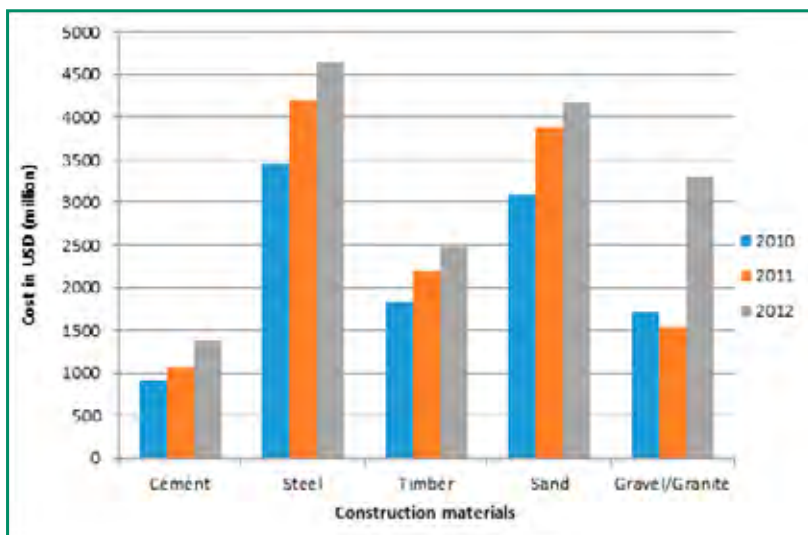
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road projects, which were under construction across the country. Several other areas of infrastructural development require similar attention, such as waterways, airports and railways, for the country to achieve the goals of Vision 20:2020. All these are indicators of the fact Nigeria could potentially be one of the biggest construction markets in the world.

Is the Nigerian construction sector sustainable?

Sustainable construction means responsible supply, operation and maintenance of buildings (or any other infrastructure) that meet the needs of their owners and users over their lifespan with minimal unfavourable environmental impacts, while encouraging economic, social and cultural progress. This definition was developed during the Marrakech Task Force Sustainable Building and Construction workshops in 2007.

But to what extent has the construction sector in Nigeria fulfilled the criteria of this definition? Have all the buildings in Nigeria served their intended use within their expected lifespan? Does the construction sector minimise its negative impact on the environment?

Reports of incessant building collapses in the country are indicators that much is still needed in sustaining our construction activity. Where buildings collapse, rubble from the collapsed building is disposed of indiscriminately, posing a threat to the environment. The Nigerian construction sector still relies heavily on traditional construction materials which are not sustainable as wide expanses of the ecosystem are destroyed due to extraction and production of materials used for construction. The impact of quarrying of granite and sand on the environment as well as the air pollution resulting from cement production is substantial. Unless drastic efforts are made to counter the negative aspects of our construction practices, more harm than good will come from our quest for infrastructural development.

Sustainable construction materials are available in abundance in Nigeria

The cost of construction materials is increasing daily because of high demand, scarcity of raw materials, and high energy costs. From the standpoint of energy saving and conservation of natural resources, the use of alternative construction materials is now of global interest. Different solid wastes, generated in large quantities by industry and agriculture, are being used as full or partial replacement for conventional materials in many developed countries. This includes wastes such as fly ash and

rice husk ash which are used as pozzolans to partially replace cement in concrete.

Being an agrarian country, Nigeria generates extremely large quantities of agricultural waste, the effective disposal of which is a major challenge. Urbanisation and industrialisation has also created unprecedented amounts of industrial waste. For instance, Nigeria is the biggest producer of cassava in the world. In processing cassava either for industrial or domestic uses, large quantities of cassava peels are produced. Similarly, corn cobs, Bambara groundnut shells, and coconut shells are agricultural wastes, the ashes of which research has shown, are potentially pozzolanic and could be used as a partial cement replacement.

Furthermore, in Nigeria's industrialisation drive steel mill industries have been established, which produce steel slag as a by-product.

Steel slag, along with building rubble, is lying unutilised while studies have shown that these materials could be used as aggregates in concrete production.

Why is Nigeria not tapping these resources?

Unlike in most developed countries, Nigeria has no policy on the use of wastes in construction. Where any policies exist, they have not been enforced. However, it appears that Nigerian Building and Road Research Institute (NBRRI) is making a concerted effort to address the problem. The NBRRI launched cement-stabilised brick technology with which it recently built classrooms at the Pastoral Resolved Centre of the National Commission for Nomadic Education (NCNE). The use of waste materials reduced the cost of construction dramatically. Nevertheless, more needs to be done to utilise available alternative construction materials.

Nigeria must wake up to ensure sustainable construction

For Nigeria to ensure sustainable construction a holistic approach must be adopted. The government, as a matter of urgency, must create appropriate means for implementation of research results while a realistic national policy for scientific research in the sustainable construction materials must be developed. A synergy between the universities where sustainable materials are being researched and their counterparts, the research institutes, should be encouraged. It is hoped that if everything necessary is done, Nigeria could be point of reference in sustainable construction.

About the Author

Engr. Dr. Kolawole Adisa Olonade has a PhD in Environmental and Civil Engineering (Materials and Structures) from University of Lagos, Nigeria. He is a member of Nigerian Society of Engineers and registered with the Council for the Regulation of Engineering in Nigeria (COREN). He is also a member of Technical Committee of Sulphate Testing Resistance of RILEM. Dr. Olonade's research activities involve utilisation of various wastes in Nigeria for production of cement-based products, contributing to the reduction of construction cost and improving environmental sustainability. ■

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Murray & Roberts pioneers the latest developments in concrete technology

The Murray & Roberts Group is pioneering the latest developments in concrete technology in its ongoing effort to become a carbon neutral construction company.

Research initiatives include the long-term testing of geopolymer concrete at Transnet's City Deep Container Terminal in Johannesburg, a contract undertaken by Murray & Roberts Infrastructure for client Transnet Capital Projects.

"We have been able to carry out an enormous amount of testing on these slabs," Cyril Attwell, Murray & Roberts Construction, group concrete & research manager, says. "What we are doing is conducting trials for future applications of geopolymer concrete."

Characteristics being investigated include durability and abrasion resistance. "The abrasion resistance is far higher than that of normal concrete because it does not use water as its critical mass," Attwell says. He explains that geopolymer concrete refers to alkali-activated material. "The production of geopolymer concrete in civil construction projects is fairly recent."

Murray & Roberts is also looking at the application of geopolymer concrete in mine infrastructure, with a current trial taking place at the Matla Brine Ponds project. However, one of the biggest potential applications of geopolymer concrete is to control nuclear radiation."

Attwell says that research at the University of Sheffield, UK, used geopolymer concrete to neutralise the highly radioactive casings of nuclear fuel rods by binding the radioactive substances within the concrete material itself. This makes geopolymer concrete ideal for South Africa's estimated R1 trillion nuclear-build programme.



Cyril Attwell, Murray & Roberts Construction, group concrete & research manager.



Casting geopolymer concrete at Transnet's City Deep Container Terminal in Johannesburg.

On the City Deep project, Transnet Capital Projects stipulated that Murray & Roberts Infrastructure had to recycle the old concrete paving broken out of the site.

About 86% of the old concrete pavements were broken up and reused, amounting to about 123,840 m³ of the total 144,000 m³ of concrete. This far exceeded the client's requirements.

"We are currently designing a geopolymer concrete that can be cured by utilising carbon dioxide, with the added benefit of this material acting as a carbon sink as it traps the carbon dioxide in the geopolymeric form. This means the concrete becomes much stronger far more quickly," Attwell says.

Other research initiatives include the development of a 'coral concrete' for marine environments.

"We are looking at applying an electrochemical process to our marine concrete that removes carbon dioxide from the ocean and binds it with calcium oxide to form calcium carbonate or coral around any concrete structures. The growth achieved is about 5 cm a year, which works well to protect such structures against mechanical wave action and corrosion," Attwell says.

Another focus area is Advanced Re-Crystallisation (ARC) technology, which refers to the optimisation of the arrangement of atoms and molecules in a solid and amorphous state with concrete. "At present Murray & Roberts is the only construction company applying ARC technology on a regular basis," Attwell says. ■

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Ash Resources rises to the St Helena challenge



Basil Read's special vessel prepares to discharge equipment and containers of Ash Resources' fly ash. (Photo courtesy of Basil Read)



DuraPozz® is contributing to designing improved workability concrete mixes. (Photo courtesy of Basil Read)

South Africa's leading fly ash producer, Ash Resources, has an impressive track record of supplying its high-quality fly ash to far-flung projects. This includes the Burj Khalifa tower in Dubai and the Naga Hammadi Barrage on the River Nile in Egypt, but a tiny island in the middle of the Atlantic heads the stakes for challenging logistics.

St Helena is a remote island in the southern Atlantic Ocean, over 2,000 km off the coast of Africa – almost halfway to South America – which acquired fame as the place of Napoleon Bonaparte's exile from 1815-1821. Goods are currently transported to the island on the vessel, RMS St Helena, which takes six days to travel from Cape Town. However, the winds of change have finally touched this fascinating speck on the map of the world.

To make the island community more self-sustainable by promoting tourism, the British Government is funding the construction of an international airport. Main contractor, Basil Read, awarded Ash Resources the contract for the supply of an estimated 3,500 tons of its classified siliceous fly ash, DuraPozz®. Ash Resources was the only supplier able to guarantee delivery of product that met the customer's needs in the required time frame.

"DuraPozz® is contributing to designing improved workability concrete mixes that produce the dense, durable concrete required in this marine environment. It imparts sulphate resistance and also resistance to chloride-induced corrosion," comments Basil Read's project director, Jimmy Johnston. "Another key benefit of DuraPozz® is that it helps to control the heat of hydration in mass pours."

"This is particularly important for the production of Core-loc® concrete armour units in the Basil Read precast yard for the breakwater of the permanent wharf being constructed at the island's Rupert's Bay."

Delivery to St Helena is a challenging exercise with the bulk of the construction equipment and materials being shipped on Basil Read's vessel, NP Glory 4, out of Walvis Bay in

Namibia, with the remainder sailing on the RMS St Helena from Cape Town.

"The DuraPozz® journey begins with Ash Resources' Lethabo plant filling 1,25 ton bulk bags and loading them into standard 20-foot containers under considerable time pressure to meet vessel stack dates," says Andrew McKeen, infrastructure civil development manager – Lafarge South Africa.

The Ash Resources' logistics team rails the containers to Cape Town and arranges for them to be sent either by sea or by road to Walvis Bay in Namibia.

There, they are loaded on the Basil Read vessel, which sails a regular 4,600-km round trip from Walvis Bay to St Helena and back on a twenty-day cycle.

Construction of the airport is gathering momentum with the recent completion of the 8-million cubic metre fill for the end of the runway, and pouring of the runway concrete under way together with construction of the terminal buildings. A bulk fuel installation is close to the commissioning phase. The first-ever flights into St Helena are scheduled for July 2015 to undertake the calibration of the airfield's navigational aids and Air Traffic Control equipment. This will be followed by the inaugural commercial flight in February 2016.

"The design, build and operation of St Helena Airport is a unique project that has brought into play the skills of Basil Read's blasting, mining, civil engineering, roads and building resources, augmented by our design and logistics teams," says Jimmy Johnston.

"The support of supplier Ash Resources has been exemplary, not only from a consistent high-quality product perspective but also by the fact that they have not once missed a shipment stack date. It is a privilege to be involved in such a prestigious project that will change the future for St Helena by making it more accessible to the rest of the world." ■

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Westbrook mega-development launches in Port Elizabeth

Master developers, The Amdec Group, whose current property portfolio places the company among the country's largest independent property developers and investors, are transforming an undeveloped swath of land in Port Elizabeth into a shiny, new 'town-meets country' neighbourhood.

The R7-billion mega development will transform a formerly derelict and isolated 128-ha pocket of the city, conveniently situated on a main arterial route north of the Old Cape Road and located in close proximity to Baywest Mall.

Named Westbrook and located 12 km west of the Port Elizabeth CBD, the new neighbourhood has been aptly named both as a result of its positioning and the many watercourses to be found within the suburb.

Backed by the experience and expertise of Amdec's 26 years of developing South Africa's most successful places to live, work and play, Westbrook will comprise 3,500 residential homes spread across nine residential villages. Each village will provide a variety of homes, apartments and townhouses, a retirement estate, medical centre, 'town centre' and an already established private Curro school.

"When you create a suburb from scratch," explains Amdec development director, Cobus Bedeker, "you are able to forge a 21st century mixed-use community; to perfectly create appropriately scaled homes for young and old alike – and to determine what public spaces they want to spend time in and what amenities are important to them." He continues: "We have an amazing opportunity here and we're thrilled to be able to unlock it. This will have a sizeable impact on the region!"

Catering to a variety of lifestyle needs, and supporting the 'new urbanism' principles of previous successful Amdec devel-

opments, the heart of Westbrook will feature a 160,000-m² mixed-use node housing a leading medical facility, comprehensive retail offering and business park. All this, plus the added convenience of a 'walk to work' reality, with over 40,000 m² of premium office and commercial space connected by lush parklands, criss-crossed with pedestrian and cyclist-friendly lanes and pathways.

"As part of our vision to change the way people live in PE, we're looking to create spaces and places that will uplift and inspire the human spirit. This means new homes, fresh designs, innovative ways of living and viewing life," says Bedeker. "The suburb will comprise 30 hectares of open space that ideally lends itself to expansive parks, picturesque walkways, bicycle paths and children's play areas – the things that promise to make this suburb so unique."

Four of the nine planned residential estates (including The Ridge) will be launched on this sprawling development over the next 12 months. Each will cater to a wide spectrum of real estate needs – with house prices ranging from R 800,000 to R2 million.

The Westbrook village retail centre will also be launched shortly, and the already existing Curro school will experience further expansion to provide a school offering preprimary to matric classes. Twenty-four-hour Westbrook security patrol vehicles will circulate both within and around the perimeter of the estate, visitor access will be managed through state-of-the-art CCTV and all Westbrook estate access points monitored by Westbrook security guards. ■

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Westbrook will be developed on a formerly derelict 28-ha area of the city.



L13, L18, L22



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Tables provide the right solution in Swakopmund

Construction projects are alive and well in Namibia, and currently, the skylines of Windhoek, Walvis Bay and Swakopmund are changing rapidly.

A major contributor to these changes is Platz am Meer, a N\$400 development being constructed for Safari Developments, in Swakopmund. Designed by MDM Architects in association with MDW Architects, the total project will consist of a 20,000-m² retail centre, covered and rooftop parking, 40 luxury residential units, and recreational facilities by way of a new small-craft slipway.

Namibia Construction, one of the leading local construction companies in Namibia, is the appointed contractor and recently completed the first milestone of the new waterfront, the Breakwater and Sea-wall. They are now on track to meet the next milestone – the completion of the Retail Centre.

This concrete structure has a footprint of 20,000 m², requiring 10,000 m³ of concrete and 800 tonnes of reinforcement. The first-floor slabs are designed as coffered slabs at a propping height of 4.5 m.

"Namibia Construction has had to deal with a number of challenges on this project, including an extremely demanding construction programme," said Riaan Coetzee, the company's construction manager.

Doka South Africa rose to the challenge and offered a solution using Dokaflex Tableforms in conjunction with coffers

supplied by Namibia Construction. "We have used Doka in the past, on a number of our projects, and have been impressed with the solutions offered, the back-up service provided and the quality of the products. This project proved to be no exception and choosing Doka was the right decision," Coetzee explained.

For Doka South Africa the challenge was getting the site staff to buy into the concept of tableforms with coffers, as quickly as possible, as, although they had previously worked with Dokaflex, they had never done what the company was proposing. And certainly not on wheels!

"We decided to pre-assemble two Tables and the corresponding beam formwork in our Cape Town yard and make a video of the components being moved and erected by a team of two people using a shifting trolley," says Dave King of Doka. "It was extremely important that the video showed local people, to emphasise the fact that Doka systems are global and can be utilised anywhere in the world."

Armed with this video and the standard 'user information' books, Doka's regional technical manager and a site supervisor went to Swakopmund to train the NC site staff in the pre-assembly of the table forms and then the erection of the entire system using the video as a live demo. This proved to be an enormously successful means of training.

The Tables were prefabricated on site by Namibia Construction's own formwork teams, under Doka's supervision, and the teams received further training in the moving and erection of the formwork.

"This training was a key factor in achieving the productivity required," site engineers Gerrit Schrader and Stefano Strappazon confirmed.

"The on-site training gave the site staff confidence in the system right from the start. We knew the system would work and it has. Our planned cycle time for the slab formwork was 10 days for 650 m², and we actually are achieving a cycle time of only six days."

Each table covers an area of 10.5 m² and, using a Doka shifting trolley, takes about 15 minutes to move into position. The connection of the floor props to the Tables is a fixed connection which means the props can be loaded by another 10 Kn, thus creating better access under the supported floor for following trades. Generally Dokaflex weighs about 50 kg/m² which is significantly lighter than more traditional systems and adds to increased productivity.

Doka South Africa is represented in Namibia by GardTech Construction Supplies who have a sizeable, and well-stocked yard in Windhoek to assist in providing the necessary back-up on an everyday basis.

However, it's not just formwork systems that produce high quality and productivity, it's a total team effort. Site supervision and quality of housekeeping play a major role in ensuring high productivity, and the Platz am Meer site bears tangible testimony to that philosophy.

A walk around the site uncovers a passion for cleanliness and tidiness. Very little material is seen lying around, and if there is, it is in easy-to-move bundles and pallets. "If it's not needed, take it away until it is," is the clear instruction and the resultant pristine site speaks for itself. ■



Shifting trolley makes light work of moving Tables as does the unrestricted access.



Finished product – free of clutter.

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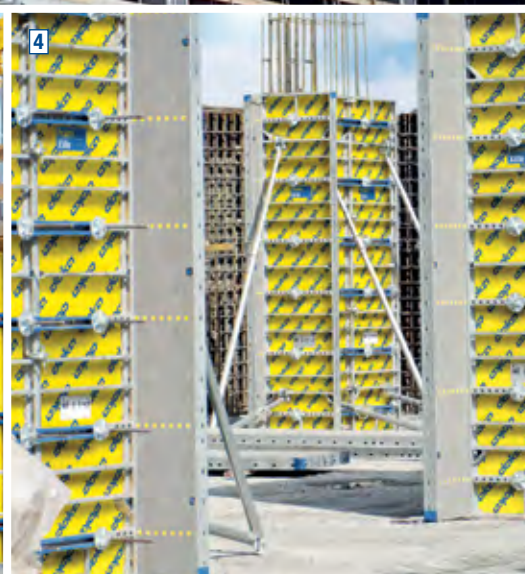
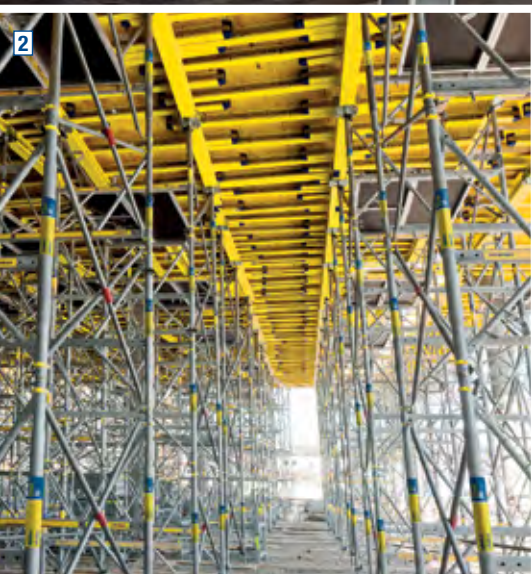
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Innovative bridges earn Corrie Meintjes a lifetime award

Very recently, Corrie Meintjes, senior partner of Jeffares & Green Engineering and Environmental Consulting, was honoured with the prestigious Branch Chairman's Award for a lifetime's achievement for innovation in expanding the use of concrete by the KwaZulu-Natal Branch of the Concrete Society of Southern Africa.

This is a lifetime achievement award, so special that this is only the fifth time it has been presented over the last 18 years. The award is made extremely judiciously to ensure that the merit of the award is maintained.

Meintjes has been involved with design and construction of many bridges during his career, but the two most notable bridges recognised by the award are the innovative prestressed concrete ribbon bridges – one over the Mkomaas Valley and the other the pedestrian bridge over the Metolong Dam.



Launching the precast segments of the Metolong pedestrian bridge.

Mkomaas Valley footbridge

The Mkomaas Valley in KwaZulu-Natal (KZN) was the remote setting for the first prestressed concrete ribbon bridge built in Africa. The single-span bridge boasted a clear span of 150 m, equalling the then world record for this type of footbridge.

Corrie Meintjes had been approached by the KZN Provincial Department of Transport to “think out the box” and produce an innovative design to prevent the swaying motion associated with the cable or suspension-type bridges which the people of the area were averse to using.

After extensive research Meintjes came across the concept of a prestressed pedestrian bridge, used in Czechoslovakia during World War II and rarely applied outside the Balkans.

The Mkomaas River Bridge consists of a ribbon of precast concrete elements that are suspended from cables tensioned between abutments. The elements are joined and compressed in the long direction of the bridge by tensioning a second set of cables placed in ducts through the elements.

Such compressive strength not only provides continuity in the deck but also compensates for tensile stresses resulting from live loads.

His proposal of using this concept for the Mkomaas River Footbridge was met with enthusiasm from his client and hence the first prestressed concrete ribbon bridge was designed and built on the African continent.

The Metolong Dam Pedestrian Bridge

When Meintjes was appointed to find a solution for a pedestrian bridge to cross the valley chasm that would be filled with water from the Metolong Dam, he proposed the concept of a prestressed concrete ribbon bridge similar to the Mkomaas Valley footbridge, except that this was a multi-span bridge where the Mkomaas Bridge was a single-span structure. A visit to the Mkomaas Valley was enough to convince the client.

The bridge deck is continuous over two spans 102 m and 127,5 m long respectively. The total walkway length, including the approaches over the abutments is 249 m. The central support of the bridge consists of a 35-m-tall reinforced concrete pier, seated on top of a sandstone cliff 15 m above the river bed.

Construction of the Metolong Dam Pedestrian Bridge was completed in December 2013.

It was only the second prestressed concrete ribbon bridge built in Africa and the first multispan bridge of this kind on the continent.

Meintjes designed the entire structure, with the exception of the rock anchors which were designed by a geotechnical expert. He was often on site during construction to give direction and expert advice.

Corrie Meinjes has received many awards – personally, or for projects he designed and supervised:

- 1980 SAICE Award of Merit for an elevated reinforced concrete reservoir in Botswana
- 1986 SAICE Pietermaritzburg Regional Award and a Commendation from Fulton Awards Committee for the 600-m-long multiple-arch Mhlahlane River Viaduct on the Broodsnyersplaas to Richards Bay Coal Line.
- 1989 SAICE Pietermaritzburg Regional Award for the Manning Avenue incrementally launched bridge in Pietermaritzburg.
- March 2007 Concrete Society of Southern Africa's Concrete Achiever of the Year for the design of the first pre-stressed concrete ribbon bridge on the African continent



The completed Mkomaas River Bridge.



On the Mkomaas River Bridge from back: Rolf Schutte, NPC; Corrie Meintjies and Ingrid Eweg.

- This bridge also received the Concrete Society of Southern Africa's (CSSA) 2007 Fulton Award for Design Aspects, the South African Association of Consulting Engineers Award for projects under R5 million and the runner-up of the SAICE Award for Excellence.
- 2007 CSSA Fulton Award for Aesthetic Appeal for the Bosmansdam Rd Footbridge in Cape Town.
- 2014 SAICE Pietermaritzburg Regional Award for Technical Excellence and the SAICE National Awards for Best International Projects and for Structural Engineering Excellence for the Metolong Dam Pedestrian Bridge.
- 2014 CESA Aon Award for Best International Project, also for the Metolong Dam Pedestrian Bridge. ■

More information from Charmagne Denny,
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New Houghton office block: 77 foundation piles installed



Gauteng Piling site staff performing a checking operation to ensure that the rig's flight is drilling at precisely the correct underground point. A thin peg is then placed in position at the bottom of the pile to guide the flight point to the exact drilling point to ensure optimum vertical boring.



Gauteng Piling site manager, Kobus Geyer (right) and the site foreman, Alfred Phiri, in discussion at one of the completed piles for the Houghton office block.

Gauteng Piling was entrusted with the provision of foundation piling for a new luxury office block development in Eighth Street, Houghton (fronting onto Oxford Road), currently being built and developed by the Barrow Group.

Ivan Schlapobersky of M/Architects in Illovo, who designed the building which will feature close to 2,900 m² of office space, says the site on which the new upmarket office block will be located was previously a residential property. "The house was demolished and had been vacant for some time. Great care is being taken to preserve existing trees on the periphery of the site," Schlapobersky stated.

Kobus Geyer, site manager for Gauteng Piling, says the foundations for the four-storeyed office block (with double parking basement levels) on a site of over 1000 square metres, called for 77 auger cast in-situ piles, varying between 14 to 18 m in depth. The diameter of the piles varied: 27 are 500 mm in diameter, 11 are 600 mm, 19 are 750 mm, and four are 1100 mm in diameter.

Auger cast in-situ piles are formed by drilling holes into the ground, placing steel reinforcement into the holes, then filling the holes with concrete. In built-up residential areas, such as Houghton, auger cast piles cause minimal disturbance and are generally favoured for environmentally sensitive sites.

Steel reinforcement employed for the piles consisted of seven high tensile strength steel bars (7Y32), 32 mm in diameter; and spirals of mild steel, 8 mm in diameter with a 200-mm pitch. The rebar cages inserted into the piles were 950 mm in diameter and 4.33 m in length.

"In addition to the 77 foundation piles, in November 2014 – prior to site excavation and earthworks in January this year – Gauteng Piling provided 13 earlier piles to provide lateral support for a retaining wall against the site's neighbouring property to the north," Geyer added. "The piles will eventually form part of a retaining wall, sprayed with Gunite, a mixture of cement, sand, and water, through a pressure hose to produce the strong 'lining' of the retaining wall.

"Such a specially-designed bored pile retaining wall system makes it possible for developers and contractors to make maximum use of available space in excavated structures with underground levels. The bored pile solutions minimise the need for additional support measures and maximise the available excavation," Geyer explained.

Gauteng Piling employed two rigs for the piling project for the Eighth Street site (which is adjacent to Oxford Road): a Williams LDH digger with 5,5t-m torque, and a Soilmec hydraulic drilling rig.

Two prominent Gauteng Master Builders are closely linked with Gauteng Piling. The company was established in 1996 by former MBSA and MBA North president, Nico Maas (current chairman of GP), and is now run by MD, Hennie Bester, who has served as president of MBA North for an unprecedented three-year spell from 2011 to 2013.

Gauteng Piling has in the past 18 years completed over 1,500 projects to become one of the major players in the piling industry in Gauteng. The company now has a fleet of 20 auger drilling machines, two cranes, two bore rigs, four Grundt hammers, and two lateral support machines. ■

**More information from Hennie Bester,
Tel: +27(0)11 465 7751 / www.gautengpiling.co.za**



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EAST AND WEST AFRICA'S THRIVING INFRASTRUCTURE PLANS HERALD THE VALUE OF CEMENTITIOUS MATERIALS

Cement consumption has seen steady growth in both East and West Africa which has been supported by their governments' infrastructure expenditure and private residential construction.

The latter in particular has been a big driver in West Africa. According to the latest estimates by the Government in Lagos, the country will have to build 20 million new homes to cope with the influx of people moving from the countryside to the cities, while double-digit growth in property prices in Dakar has been recorded for past few years. Ghana's construction sector accounts for nearly 11 percent of its overall GDP, with Accra becoming a hub of real estate construction activity.

The World Bank estimates that Kenya's economic growth will be a massive 7 percent thanks to the substantial infrastructure investments made towards achieving Vision 2030 – to develop the country's infrastructure and increase commercial real estate and residential housing (at a targeted rate of 200,000 homes per annum). In Tanzania, the construction and real estate sectors continue to be two very exciting and rapidly developing sectors of the Tanzanian economy.

With infrastructure accelerating across East and West Africa, the importance of concrete cannot be underestimated.

Cement production capacity in East Africa is forecast to soar to 17 million tonnes per annum over the next four years, as construction industry growth out-paces economic expansion. In West Africa production of cement is expected to surpass consumption during 2015. Nigeria's annual production is expected to jump from its current 22million tonnes to reach as much as 58 million tonnes – if all the key players conclude their short-term expansion plans.

“In Tanzania, the construction and real estate sectors continue to be two very exciting and rapidly developing sectors of the Tanzanian economy.”

It is against this very exciting backdrop that Concrete Trends magazine and Concrete.TV are pleased to be hosting the second Totally Concrete West Africa and Totally Concrete East Africa conferences and expos in Lagos and Nairobi later this year. These forums aim to promote tailored and regional approaches to the production and use of cement and concrete – particularly for large-scale infrastructural and residential applications.

“As infrastructure needs continue to drive demand for construction projects across the continent, industry stakeholders face new challenges to deliver infrastructure targets. The Totally Concrete series of events will not only fill a vital role for skills development and technology transfer, but will

address the challenges of unlocking new business opportunities for both local and international construction stakeholders.

Concrete Trends looks forward to participating in these forums and reporting on developments in these fast-growing regions,” says Gill Owens, editor of Concrete Trends magazine.

These unique showcases will provide unprecedented opportunities for everyone involved with construction to access developments in the East and West African cement and concrete industries in a unique setting, providing prestigious visibility, interactive networking and hands-on learning.

Visit www.totally-concrete.com for additional information.

QUICK FACTS WEST AFRICA

<p> 42.5 grade cement is the new cement standard for general purposes in Nigeria</p>	<p> 9.1% is the real GDP growth rate of Cote d'Ivoire in 2013</p>
<p> 4 months is the time required to register land titles in Senegal</p>	<p> 1 million tonnes of cement is the additional capacity that Ghana added to its annual production in 2014</p>

QUICK FACTS EAST AFRICA

<p> 4 million tonnes Domestic cement demand, currently stands at between 3.5 to 4 million tons and has been growing at an average annual rate of 10 % over the past five years.</p>	<p> US\$ 17 million Approximate value of the approved building plan value by Nairobi County's department of Planning Compliance from Jan – Sept 2014</p>
<p> US\$ 20 billion p.a The Growth and Transformation Plan (GTP) 2010-15 will provide revenue opportunities for contractors in the order of US\$20 billion per annum</p>	<p> 600 000 tonnes Estimated cement production by Rwanda's sole cement producer</p>

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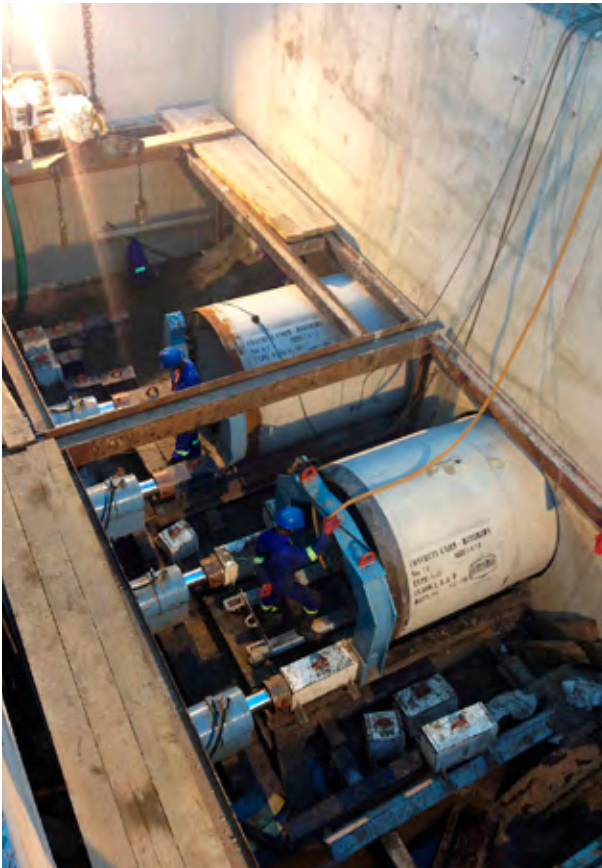
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Watertight concrete pipe succeeds in difficult pipe-jacking project

A precast concrete jacking pipe with watertight joints developed by Concrete Manufacturers Association member Concrete Units at the request of Franki Africa, the leading geotechnical engineering company in Africa, has demonstrated its effectiveness in a jacking contract Franki is currently engaged on at Durban's Bluff area.



The start of two of five 100-m long concrete pipelines forming part of the new stormwater drainage system being established in the Transnet Freight Rail Reserve in Durban's Bluff area.



Some of the watertight pipes specially designed and manufactured by Concrete Units for Franki Africa.

Franki's requirement was for jacking pipes with leak-proof joints. It required them for use in pipejacking projects where it was necessary to jack below the water table.

Concrete Units designed the new pipe in consultation with Pretoria-based pipes design specialist company Pipes. Franki has successfully deployed the pipes in several jacking contracts in the Western Cape since Concrete Units started manufacturing them in 2012.

The latest contract is one of the most difficult below-the-water-table jacking contracts the company has undertaken in recent years. Awarded by eThekweni Municipality's stormwater division in August last year, it is an upgrade of the stormwater drainage at the Transnet Freight Rail Reserve near to the Wentworth Station.

This area, which is situated at the lowest point of the Bluff area, has been subject to heavy flooding for many years due to the inadequacy of the existing drainage system. The railway lines that give access across the reserve to the shunting yards at Wentworth Station, as well as all the adjacent buildings, are often flooded.

The new system being installed by Franki consists of five 100-m long pipelines installed side-by-side under the railway lines, with two large in-situ cast concrete chambers at each end to evenly distribute the stormwater flow into and out of the pipes.

The construction of the chambers and of a new culvert that ties into the existing stormwater system form part of Franki's contract, which is scheduled for completion in June this year.

"The challenge here is that the pipes are to be installed 6 m below the ground water level, where the ground consists of running sand with a consistency of soup," commented Byron Field, Franki's Contracts Manager for pipe-jacking projects.

Preparation prior to the jacking has consequently been a prolonged process, involving the installation of a de-watering system along the full length of the jacks and sheet piling around all the new chambers and culvert works.

Having pipes with watertight joints was shown to be even more critical in this case than in the previous contracts in which they have been deployed. "The sand is so fine that it would have flowed through the joints of ordinary jacking pipes," Field said.

The pipes used for the Bluff contract were manufactured and supplied by Concrete Units' Meyerton plant, whereas the pipes used in the earlier contracts in and around Cape Town were manufactured and supplied by the company's Cape Town facility, which initiated their development.

The joint design in the new pipe represents a departure from the in-the-wall joint (ITWJ) design of most conventional jacking pipes. The new pipe has a butt-ended joint with a steel band cast into it to provide a close fit for the receiving pipe-end, which is equipped with an O-ring to seal the joint. The tight tolerance of the joint in the new pipe also improves its alignment characteristics compared with the alignment of conventional products.

For the Durban Bluff contract Concrete Units' Meyerton plant manufactured and supplied Franki with a total of 500 m of 1470 internal diameter pipes in individual pipe lengths of 2,4 m. ■

**More information from Frans Minnaar,
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Combining construction with healing in Dubai



Waterwise plants soften a wall at the Al Jalila Children's Hospital, Dubai.

THE Al Jalila Children's Specialty Hospital, an initiative of His Highness Shaikh Mohammed bin Rashid Al Maktoum, Vice-President and Prime Minister of the UAE, and Ruler of Dubai, is not only dedicated entirely to children but was also designed by combining innovative design and construction with the healing process.

Says Al Maidoor, DG of the Dubai Health Authority (DHA): "The hospital will be the first-of-its-kind facility in the region offering super-specialty and multi-spectrum paediatric care. It will offer all necessary paediatric services, under one roof, for newborns up to 16-year-olds in the UAE and the region.

"Nearly half the total area has been dedicated to gardens and landscaping, including a 'healing garden.' Use of natural light and greenery is aimed at improving indoor air quality, reducing noise and creating a pleasant environment.

"The hospital incorporates energy-saving features, including sustainable construction techniques to reduce energy use, an active wall façade system to reduce indoor ambient temperature, and rooftop gardens for greater insulation. The hospital will use recycled water for irrigation."

Italian architects and engineers Studio Altieri International selected Terraforce for landscaping on hospital grounds. This is a South African-developed hollow-core, plant-friendly concrete retaining wall system and Consent LLC is the Terraforce Licensee in the UAE region. The

system produces a living wall, as the interlocking blocks' unique hollow-core design allows plants to become a part of the wall. By using water-wise plants and a good irrigation system, a sustainable, yet durable green wall can be created. At Studio Altieri's request, Consent proposed wall designs to meet earth retaining and noise reduction requirements on the site. The design, a unique variation for Terraforce, was put together by Bryan Newby, a Namibian-based specialist Terraforce installer, Simon Knutton, a Johannesburg-based consulting engineer, and the Terraforce head office in Cape Town. Once the proposal had been accepted, Al Aamal Construction Co. LLC was appointed as the sub-contractor who, with guidance from Bryan Newby, started the installation of the wall in 2013.

As the wall progressed, the innovative facade of this Terraforce wall design came into play, by reversing and moving forward slightly every third row of blocks, a plant supportive pocket was created that could also accommodate an efficient, easy maintenance dripper irrigation system. From these pockets, water-wise plants would drape over the blocks, softening the near-vertical wall with curtains of lush greenery.

Says Holger Rust, Cape Town-based founder of Terraforce, after he visited the site February 2015: "This must be the most efficient irrigation system ever. The exposed pipe is hidden by the plants (*portulacaria afra*) within three months. Each plant has a dripper and water for each plant can be accurately controlled with a timer and wastage reduced to a minimum. The system is extremely maintenance-friendly and repairs are a breeze."

As the wall increased in height, back-fill was brought in, compacted to specification with reinforcing layers of high-strength geo-grid every second course, to the final height of up to 8 m. Near the top and mid-way up the walls, a non-woven geo-textile cut-off filter layer was installed.

Bryan Newby remained in Dubai for some months, working with the team mainly at night to avoid the intense summer heat. Later Sinan Awad took over the supervision of the contract, which is still on-going. ■

More information from
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Reusable elements in concrete design, a vital component of sustainability

In a recent article, Bryan Perrie, MD of the Concrete Institute said: "There is growing concern worldwide about wastage of materials such as concrete, wood, gypsum, metals, bricks, glass, plastics, and salvaged building components. Yet there is tremendous potential to recycle many elements of the construction cycle."

Terraforce's concrete retaining wall and erosion control systems can be regarded as a sustainable product. It is a hollow-core and closed-faced system which, once installed, allows for maximum water absorption and plant growth.

In the Western Cape, Klapmuts Concrete and Cape Retaining Systems, Terraforce concrete retaining block manufacturers and contractors, are also committed reducing their carbon footprint. Like most Terraforce manufacturers locally and abroad, Klapmuts acquired their own crusher to re-use all broken and reject products.

Says Johan van Wyk, CEO of Klapmuts Concrete: "We recycle all reject blocks as well as blocks that are damaged during the splitting of rock-faced blocks. We accept 'clean' building rubble (no timber, plastic, metal, etc.) from builders and the rejects from another block manufacturer in our area. To ensure that the rubble can be used in our products without comprising quality it is graded by a SANAS-accredited laboratory."

Approached in 2013 by Nelson Glass, a major processor of plate glass in Cape Town, Van Wyk was immediately interested in their proposal to use crushed, recycled glass in their concrete block mixes.

Keith Clarke, manager of Re-Use Glass, Nelson Glass' new department dedicated to recycling glass debris and cut-offs, explains: "The idea of recycling glass was conceived in 2012, due to mounting concerns over wastage and the cost of dumping glass cut-offs at landfill sites by glass companies. Subsequently I was commissioned to conduct a feasibility study over nine months to establish the viability of such a plant."

After two years of planning and red tape Nelson Glass invested in a crushing plant. Van Wyk said: "As Nelson Glass cannot use the crushed glass themselves, they were looking for possible buyers of the product, and we saw an opportunity to be involved in the recycling initiative."

At Nelson Glass, the raw material (glass off-cuts or broken glass) is collected from most major processing companies. This is done by placing waste skips at companies' premises which, when full, are collected by Nelson Glass and taken to the recycling facility.

The broken glass collected is recycled through a crushing and screening process which converts it into reusable chips or sand that can be supplied to the building industry for manufacturing concrete products, replacing virgin sand and stone.

Klapmuts Concrete began working with crushed glass late in 2014. Crushed glass

samples were sieved and compared with regular fine aggregate; blocks were produced and compression tests done.

Surprisingly the crushed glass particles do not have sharp edges and can be handled exactly the same way as normal aggregates."

From these results and studies done in the USA, it was determined that glass can be used in masonry products, but compressive strength decreases as the percentage of glass increases. Thus it was decided to use crushed glass in limited quantities in almost all Klapmuts Concrete's products.

Klapmuts currently uses two products – a coarse product that compares favourably with standard 6-mm stone and a dust very like crusher dust.

Says Van Wyk: "The mix designs were very carefully adjusted to accommodate these products without jeopardising the strength of the blocks. The finishes of the products are exactly the same as with normal aggregates except that the rock-face blocks now have a slight twinkle on the rough face. "

The bottom line is that glass waste that would have ended up in a landfill as a hazardous and non-degradable by-product of the glass industry is transformed into a useful, eco-friendly substitute, reducing the carbon footprint of both Klapmuts Concrete and Nelson Glass respectively. ■



**More information from Klapmuts Concrete,
Tel: +27(0)21 875 5151 / www.klapmutsconcrete.co.za**

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Precast bridge deck planks solution for Colchester Bridge

The needs of architects and civil engineering contractors for specialised construction products and materials change as infrastructure projects become more technologically advanced while at the same time having to remain cost effective. Rocla, part of the IS Group, South Africa's leading manufacturer of precast concrete products, is geared to offer innovative solutions to challenging projects of all kinds.

Rocla recently received a request for precast deck planks for installation on the recently constructed Colchester



Rocla tailor-made the planks for the bridge to the customer's specification.

Bridge. The new bridge was built parallel to the existing bridge which crosses over the Sundays River and took six months to complete.

Graham Howell, sales consultant for Rocla, Port Elizabeth said "This was the first time Rocla had been tasked with supplying these precast bridge deck planks, but upon receiving the specifications, we made specially designed moulds. This amounted to 2,640 planks that were 2150 x 300 x 75 mm in size."

"Rocla's sophisticated and very strategically located manufacturing plants ensure that all our customers' requirements are fully embraced, even if the contract calls for non-standard newly designed product. Concrete product expertise and guidance has always been the cornerstone to our success and this was evident with the Colchester Bridge project where the supply of precast concrete planks was a new venture for us, but having seen the successful installation of the precast planks, we are now able to supply this product to other bridge-related construction projects, and tailor the design of the planks to meet requirements," said Howell. ■

**More information from Malebusa Sebataane,
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Successfully assembling an 'orange'

Skanska is building the iconic Patricia and Phillip Frost Museum of Science in Miami. The planetarium is in an area adjacent to the museum.

Unlike most planetariums, which are constructed inside an existing building that serves as a structural framework, the planetarium adjacent to Miami's Patricia and Phillip Frost Museum of Science, will have a concrete orb that will support itself – which made constructing it a logistical challenge.



To maneuver the pieces, The Skanska team brought in a specialised 550-ton hydraulic crane with a superlift.

To create this very unusual planetarium, the Skanska USA team had to assemble 32 concave precast concrete orange-peel-like pieces – weighing nearly 23,000 kg per panel – to form a full-dome planetarium. The operation required 24-hour-a-day/seven-day-a-week work over two-and-a-half weeks to precisely place and connect the segments.

The team had been planning this extremely challenging operation for months before. The operation began with erecting a massive, 15.25-m-tall centre shoring tower and setting a precast dome cap, which was 100% welded off before any of the 'orange-peel' segments could be rigged and lifted into place.

The shoring tower was necessary as the segments couldn't support themselves until all 32 were maneuvered into position with a 550-ton crane. Once the centre pieces were in place, the Skanska team installed the orange-peel perimeter segments opposite one another in a counter-clockwise rotation to avoid lateral load on the dome cap. This sequence required erecting the panels during the day and connecting the panels at night to be ready to erect new panels in morning and maintain schedule.

The team erected panels during the day and connected the panels at night so they could be ready to erect new panels in morning and keep to their deadlines. ■

<http://goo.gl/tqILCp>

Removing stains from concrete surfaces

The Concrete Institute is often asked how to remove stains from concrete. Bryan Perrie, MD of the Institute, offers advice on removing fungal growth, efflorescence, and chewing gum from concrete driveways.

Fungal growth: Wet the concrete surface, apply chlorine bleach, scrub vigorously, and rinse thoroughly. "Dead fungal residue will usually be noticeable in a few days. Brush this off with a stiff bristle broom and repeat the bleach process, if necessary. Alternatively, use a high-pressure water cleaner to remove fungal growth, broom chlorine bleach over the surface and rinse well with clean water," Perrie advises.

Efflorescence: Remove excess salt deposits with a stiff bristle broom. If this is not satisfactory, scrub with clean water and rinse the surface. To remove any remaining deposits, the concrete should be treated by acid cleaning. "However, handle acids with extreme care. Diluted hydrochloric acid, chlorine bleach or chemically based cleaning agents can be hazardous, particularly to your skin. Always wear protective clothing, especially gloves, and work only in well-ventilated areas," says Perrie, issuing a warning.

"To remove efflorescence, only diluted acid should be used: one part hydrochloric acid to 20 parts of water is recommended.



An attractive concrete driveway can be kept stain-free using the correct procedure, says The Concrete Institute.

When diluting acid, always add the acid to the water, and never the reverse."

The surface to be cleaned should then be saturated with water. The surface should be moist, but without any free water, before applying the acid solution. The diluted acid should be allowed to react on the concrete surface for ±15 minutes. The surface should then be thoroughly rinsed and scrubbed with clean water. "Repeat the process at least twice or until all traces of the acid solution have been removed."

Chewing gum: If chewing gum dropped on a concrete surface has been smeared by footprints or car tyres, solidify the gum with ice cubes and scrape off as much as possible. Then apply a poultice (cat litter or a similar inert absorbent material) saturated with methylated spirits. Apply the poultice and allow to dry. "This should turn the gum residue brittle, making it possible to remove it with a stiff bristle brush. Finish by washing the area with hot soapy water, and rinsing with clean water. Alternatively, scrape off as much chewing gum as possible and remove the rest with a solvent such as amyl acetate." ■

More information from Bryan Perrie,
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Phase 2 of MTN's Centurion data centre takes shape using Echo prestressed slabs.

Echo prestressed slabs and cell phone technology connect at MTN Data Centre

The 21st Century has seen South African construction professionals making increasing use of precast hollow-core slabs for the construction of multi-storey buildings and for the extension of existing structures. The MTN Data Centre, Phase 2, which necessitated the addition of a second floor to MTN's Data Centre in Louwlandia Centurion using Echo prestressed slabs, is an example of the latter.

Completed in February 2012, Phase 1 comprised a 3,000-m² single-storey structure which was roofed with Echo prestressed slabs. Phase 2, begun in January 2014, entails the construction of a second storey which is being built on the prestressed slab roof of Phase 1. Once again prestressed hollow-core slabs, in this instance covering an area of about 2,600 m², were used for the roofing. The main contractor on both phases was Grinaker-LTA and DSM Consulting Engineers was the engineering consultancy on the second phase.

Morten Jerg, contracts director of Grinaker-LTA, says that the benefit of using precast slabs as opposed to in-situ concrete is that it speeds up construction times and causes minimal disruption.

"We have used Echo slabs on many occasions. They enable us to do away with formwork and propping, not to mention long curing times, and in some instances, having to pour concrete in wet weather. We also like their smooth soffits."

The prestressed roof slabs used on both phases were 250 mm deep and varied between spans of 2,2 m and 11,5 m. They were designed to carry live loads of 10 kN/m² and dead loads of 2,5kN/m² and were mounted on precast inverted T-Beams measuring 420 mm deep and 630 mm wide. The design and manufacture of the beams were outsourced by Echo. Andreas Rehwinkel of ENCON did the design and Civilcon

handled the manufacturing. The beams and the slabs were installed by Echo using 80- and 200-ton cranes. The former were placed on 6.5-m-high reinforced cast-in-situ concrete columns.

Most of the columns were cast with additional rebar which protrudes about 1,5 m through the Echo prestressed slab roof. These may be used at a later stage as stub columns for supporting solar panels or other plant on a suspended steel grid.

After all the slabs had been placed, a lightweight politerm screed-to-falls, ranging between 75-400 mm, was installed. It was covered by a second 40-mm screed to take a dual layer of waterproofing. Once the new roof was semi-sealed, Grinaker LTA was able to remove the screed on the roof of Phase 1.

DSM consulting engineer, Mike Silberman, commented that the new roof had been designed in close collaboration with Echo Group engineer, Daniel Petrov who, he said, had been extremely helpful and contributed substantially to ensuring the success of the project.

"Due to the number of services and penetrations through the new roof, an in-situ concrete slab had been investigated as an alternative to the prestressed slab solution.

"However, the amount of propping required for an in-situ slab and the high loading on the existing slab precluded this choice and this is why we opted for prestressed concrete slabs," said Silberman.

Echo Group marketing director, Melinda Esterhuizen, says precast hollow-core slabs are to the construction industry what cell phones are to modern communications – fast, flexible, multi-functional and cost-effective. ■

**More information from Melinda Esterhuizen,
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SABS Mark for Mapei admixtures an industry first

Mapei South Africa's Concrete Admixture product line was recently awarded the SABS Mark. The SABS certification covers the market-leading range of liquid admixtures for concrete, mortar and grouts that the company manufactures locally. "This is a particularly noteworthy accolade as Mapei South Africa is the first admixture producer in South Africa authorised to display the Mark," says Mapei South Africa's general manager – commercial, Antony Offenberg.

"The SABS Mark is the visible expression of the SABS Product Certification Scheme aimed at providing consumers with third-party guarantees that the quality and reliability of the approved product will be fit for the designated purpose and meet the appropriate standard.

"In the past we have supplied our concrete admixtures to a number of notable projects, and the Dynamon brand is widely recognised. Now, not only can the performance of the products speak for themselves, but the specifier and user of the products can be assured that the product is manufactured and performs to the South African National Standards," Offenberg adds.

Through this initiative, Mapei has introduced the local construction industry to

international best practices in specification and performance of the correct admixture for the application at hand. It also displays Mapei's commitment to ensure that the product supplied will perform to the standards set by the SANS specification, and the customer is guaranteed the promised product performance on a consistent basis.

Mapei South Africa will continue to introduce the local construction industry to the benefits of the advanced Mapei additives, sealants, adhesives and also concrete performance chemicals. Mapei's range of products and solutions covers industrial, commercial and residential applications, from the smallest DIY jobs to major project sites.

Over the firm's 77-year history, the key pillars of Mapei's success have been its investment in research to drive innovation, the development of a comprehensive product range that provides solutions for virtually all building needs, and the focus on producing eco-sustainable products certified by the leading environmental authorities worldwide. ■

**More information from
Candice Santana,
Tel: +27(0)11 552 8476,
www.mapei.co.za**



Mapei South Africa supplied admixtures to the Green star rated Portside building in Cape Town

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BASF in South Africa celebrates company's 150th anniversary with an interactive programme



BASF provided 15,000 m² of Mastertop 1332 to Green Point stadium, Cape Town to enable floors to handle heavy foot traffic.

The year 2015 is a landmark for BASF marking 150 years since its founding in Germany in 1865. It began by developing and producing dyes, followed by ammonia to make fertiliser and then by plastics. Since then, the company's portfolio has developed continuously, and today the product range covers a wide spectrum of industries from chemicals, plastics, performance products and crop protection to oil and gas. BASF has operated internationally since its beginnings, supplying customers in almost every industry with products and solutions, and supporting them with research and innovations.

This anniversary also pays tribute to the creativity and determination of employees, past and present who, for 150 years, have achieved the right balance between risk-taking and responsibility.

Since BASF is a science and research-based company, the anniversary celebrations needed to be more innovative and progressive. A prerequisite was that the anniversary concept be connected to BASF's strategy and corporate purpose: 'We create chemistry for a sustainable future.' This statement epitomises what has made, and continues to make, BASF successful. It encompasses three key concepts: We develop innovations; we do this together with others; the solutions we develop help make the future more sustainable.

Laurent Tainturier, senior vice president for EUE region, including CIS-Middle East-Africa explains: "Today's requirements and society's expectations are complex. Our focus remains on improving people's quality of life – but not at the expense of future generations. One principle guides our research: sustainability. We treat resources with care and respect and strive to strike a balance between economy, environment and society."

Collaboration to innovate

BASF has always had an innovative and collaborative culture. The company continues to work closely with the university researchers, scientists and chemists who have provided the cornerstones for our research.

However, today's joint endeavours involve many more disciplines. A wind power turbine, for example, requires a

team of researchers, developers and market experts. It is not only about improving material properties, but ensuring they fit and work together optimally. Within BASF, staff need to work across different divisions and combine the knowledge of many experts.

Joan-Maria Garcia-Girona, vice president, and head of BASF in South and Sub-Saharan Africa explains: "Our anniversary offers an opportunity to go beyond these proven collaborations. New methods of communication and different self-awareness have changed people's expectations. We want to initiate something new with our anniversary and find new ways of working together – both within BASF and with people outside the company. We see the Creator Space™ programme as an ideal opportunity to bring BASF closer to our target groups."

BASF's global and local anniversary programme is envisaged as a virtual laboratory – the Creator Space™ programme, in which we can try out new ways of working together over the next year and beyond – within BASF and with other stakeholders. It is interactive and enlivened by the ideas and discussions of its visitors. Ideas and solutions from virtual discussions are incorporated into other collaborative and co-creative anniversary activities such as the Creator Space Tour, being hosted in India, China, USA, South America, Spain and Germany.

The South African anniversary programme

The South African anniversary programme includes interactive events throughout the region, involving scientists, customers, business partners and employees. The widely varying activities will focus on the three strategic global topics: energy, food and urban living.

About BASF in Africa

The BASF Group has been active in Africa for 90 years, exporting products to Kenya from its headquarters in Ludwigshafen, Germany, since the late 1920s.

Today, the BASF Group has over 1,300 employees in Africa (excluding the oil and gas business). In North Africa, the company is represented in Egypt, Algeria, Morocco and Tunisia. The key industries are construction, textiles, agriculture, automotive and the health care and plastics sectors.

In 2011 BASF opened a business hub in Nairobi, Kenya, followed in 2012 by a business hub in Lagos, Nigeria. Recently a BASF Construction Chemicals admixture plant has been inaugurated in Nairobi, Kenya, with a further admixture production site planned for Lagos in 2015.

About BASF, South Africa

BASF has been active in South Africa for over 45 years. Headquartered in Midrand, Johannesburg, the BASF Group in South Africa consists of seven companies located in Johannesburg, Port Elizabeth and Cape Town. BASF has six production sites and, in 2012, invested in an acrylic dispersions production plant in Durban. The local employee complement is around 1,000 people. ■

For further local information visit www.basf.co.za

Chryso admixtures used successfully in SCC trials at Rocla of Roodepoort

Chryso Southern Africa's CHRYSO® Optima 203 and CHRYSO® Quad 20 admixtures have been used successfully in producing self-compacting concrete (SCC) at precast product manufacturer Rocla of Roodepoort. CHRYSO® Optima 203 is a new-generation, high-range water-reducing/superplasticising admixture based on modified polycarbonate technology. CHRYSO® Quad 20 is a stabiliser, which features a unique formulation to increase the viscosity of cement paste, with a limited impact on concrete slump and flow.

"CHRYSO® Optima 203 is formulated primarily to achieve high workability with a very wide range of cements, which lends itself to the sophisticated requirements of SCC mix design," Kabelo Sepotokele, technical sales representative at Chryso Southern Africa, says. Apart from SCC, applications include readymix concrete, plastic or fluid concrete and high-performance or very-high-performance concrete. CHRYSO® Quad 20 enhances the robustness of flowable concrete. It increases the cohesiveness of the concrete without affecting the slump, as well as making the mix more resistant to changes in water content.

CHRYSO® Quad 20 is normally used in conjunction with a superplasticiser in the Chryso range, and is highly efficient at low dosages of 0.3% to 0.5%. "Another benefit is it retains water in the mix for later use during the hydration process," Sepotokele says. There is also no impact on air content or strength. The increased flowability and placeability of the concrete translates into a better finish and robustness.

"Our admixtures result in a superior SCC that delivers all the advantages of this high-performance concrete," Sepotokele says. "This is critical for a precast manufacturer like Rocla, which produces large volumes of complex products."

Jason Roberts, a civil technologist at Rocla Roodepoort, explains that globally precast product manufacturers use SCC as an alternative to conventional vibrated concrete (CVC). With extremely high workability, (flow is measured rather than slump), SCC does not require post-cast vibration, which means greatly reduced noise levels in the precast yard. "SCC does all the work for you; you just cast it. The end result is a precast element exhibiting a generally superior surface finish, provided that the design mix is correct."

Rocla's expert team of concrete technologists included George Evans, technical specialist at PPC; Warren McKenzie, Murray & Roberts Centre of Concrete Excellence and Eddie Correia, Brenton Brouard and Sepotokele, all from Chryso



Jacking pipes with a 2,250 mm diameter at Rocla's precast manufacturing facility in Roodepoort.

Southern Africa. Evans, together with Chryso Southern Africa, was responsible for designing the mix.

Roberts says that Rocla began experimenting with SCC in 2012, mainly due to the complex forms it had to replicate for several of its products. The company called on the expertise of PPC and Chryso Southern Africa when it wanted to change its concrete mix design. "We had to look at redesigning our SCC mix when we changed material supplier. You cannot simply change the cement and sand and expect to get the same product. SCC is a lot more sensitive," Roberts says.

Chryso Southern Africa now supplies six of Rocla's 12 plants with a range of products, from superplasticisers and accelerators to mould release oils. Sepotokele attributes the success of the project to the close working relationship between Chryso Southern Africa and Rocla. "Our aim is to provide tailor-made solutions for the specific applications and requirements of our clients. Working with progressive clients such as Rocla also serves to advance concrete technology in South Africa," Sepotokele says.

"Chryso Southern Africa is a market leader in concrete and cement admixtures and ancillary products. Due to the latest developments in admixtures, modern concrete is now attaining unparalleled levels in important areas such as mechanical performance, workability and durability," Sepotokele concludes. ■

More information from Murray & Roberts Infrastructure, Tel : +27(0)11 456 1000 / www.construction.murrob.com

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Seattle Great Wheel Pier – Seattle, Washington, USA where Hycrete was used in the concrete pilings and slab to provide maximum corrosion and durability protection for the concrete. Hycrete has been shown to extend the time to corrosion of steel in concrete by 50-100 years.

Hycrete's hydrophobic pore-blocking admixtures shut down capillary absorption in concrete, reduce concrete permeability and coat steel reinforcement, significantly reducing the transport of water and deleterious chemicals through concrete and protecting reinforcement in concrete. The effect is unequalled concrete durability and structural useful life. By effectively reducing permeability, Hycrete provides a trusted solution in even the harshest marine and coastal applications experiencing constant exposure to water and chlorides. Hycrete's admixtures have been extensively tested in government and third-party independent studies by leading testing bodies such as the U.S. Army Corps of Engineers.

Hycrete's admixtures have been shown to dramatically extend the useful life of concrete structures, reducing long-term maintenance costs and saving builders and owners time and money. Hycrete's liquid admixtures are advanced polymers that are easy to dose into concrete and are made in the USA. Also, as Hycrete is in the concrete itself as it is poured, the potential construction delays that are associated with membrane application may be avoided.

Hycrete's solutions save money, provide unmatched durability, and can accelerate construction timelines. In addition to its use in commercial applications, Hycrete has proven to be a trusted solution for providing long-term durability in industrial buildings and infrastructure exposed to water and dissolved chemicals, such as chlorides and sulfates. ■

More information from www.hycrete.com on project case studies and testing, or to request a project quote.

A.SHAKepoxerite construction chemicals

A.SHAKepoxerite is a wholly owned and proudly South African company. All their products are manufactured in Germiston and Westonaria, and most raw materials are sourced from within the country. Materials and finished products are QA (Quality Assurance) tested and include: release oils, admixtures, curing compounds and repair mortars and finishes for concrete; epoxy flooring systems; grouts and adhesives; epoxy coatings; waterproofing systems and also resin anchors.

As a Division of A.SHAK (Pty) Ltd, A.SHAKepoxerite work in close collaboration with the technical expertise gained over the years, also adding their unique areas of expertise to the mix. Since the 1950s, A.SHAK (Pty) Ltd has specialised in manufacturing and supplying building industry chemicals.



Through the years they have developed new products for the retail sector, supplying the renowned Plasterkey to the hardware industry.

Originally civil engineering contractors, Epoxerite was established in the late 1970s and, through necessity and innovation, developed a range of products that was used for concrete repair, general civil and building applications.

Some years ago, Epoxerite Products cc separated from its holding company and restructured its business model to develop a product range that effectively competed with major brands in the market. Their products now include epoxy adhesives, specialist grouts, coatings for renderings and flooring, amongst others.

A.SHAKepoxerite is endeavouring to become the premier construction chemicals supplier in Africa. Building strong partnerships with local agents and those in other African countries ensures that a regional knowledge base as well as a manufacturing and supply chain is maintained. These are all crucial elements contributing to establishing a successful and sustainable international operation.

A.SHAKepoxerite is nevertheless small enough to give a personalised service and big enough to meet the challenges of large construction projects. They are easily approachable and very accommodating, believing in establishing strong relationships via construction chemical solutions. ■

More information from Tel: 0861-127425 (ASHAK) or +27(0)11 822-2320 / www.ashakepoxerite.co.za

“Make us your preferred supplier of iron oxides in the construction industry”

Rolfes Pigments is a subsidiary within the Industrial Chemicals arm of the Rolfes Group of companies which is strategically positioned in various industries, locally and internationally, as a provider of industrial, agricultural, water and mining chemicals.

The company has taken on a new look with a change of logo from Rolfes Colour Pigments International to Rolfes Pigments which was launched to the public in December 2014. This division manufactures and distributes a number of organic and inorganic pigments to many industries which include the construction market, the ink and plastic industries as well as the coatings market, supplying not only pigments but also additives, in-plant and point-of-sale dispersions.



Ian Maas, Business Unit manager, Rolfes Pigments.

Rolfes Pigments has well equipped laboratories staffed by qualified technicians who assist customers with product development. Technical and sales staff are skilled to address customer needs either at the customer's premises or at the company's laboratories – providing them with a strategic advantage over their competitors.

ISO 9001/2008 accreditation ensures consistent product quality and service levels. The plant's infrastructure and equipment, as well as the range of technology available on site, enables a manufacturing capacity of up to 5,000 tons of pigment per annum. Other facilities on site enable the company to manufacture a number of other chemicals locally.

The staff and management team at Rolfes Pigments are well qualified and experienced in the chemical and pigment industry. The company's reach extends to exporting products into global markets previously dominated by multi-nationals. Their representation of leading companies in the South African market and their strategic international technology partnerships play a major role in ensuring the company's long-term sustainability. ■

More information from Ian Maas,
Tel: +27(0)11 874 0620,
www.rolfesza.com



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Sanika waterproofs Johannesburg's Turbine Hall



Sanika Waterproofing specialists recently completed the concrete waterproofing of the basement car park at Turbine Hall using Kryton Krystol Technology.

Turbine Hall had been experiencing vast amounts of water ingress through cracks in the basement car park, causing extensive damage to the cars parked below. This meant the waterproofing of this basement had to be done quickly, professionally and without too much interruption. Normal waterproofing membranes were not an option as this would mean removing the paving above the basement car park, and would be too expensive.

With Sanika Waterproofing specialists being the approved applicators for Kryton in Southern Africa, they were awarded the project to repair the basement car park using the Kryton Krystol Crack Repair System.

Unlike other concrete crack repair applications, the Kryton Krystol Crack Repair System protects from any direction, even



Sanika Waterproofing specialists recently used Kryton Krystol Technology to waterproof the Turbine Hall's basement car park.

against high pressure and can be applied to either side of the concrete. It is an 'in-depth' concrete treatment that is applied as a slurry, spray or dry-pack to the surface of existing concrete structures. In the presence of water, the special chemicals in the Kryton Krystol will react with the concrete to grow millions of long, needle-shaped crystals deep into the concrete mass.

These crystals permanently block and prevent the passage of water through capillary pores, micro-cracks and joints. The concrete itself becomes the waterproof layer and the surface treatment is not required to remain intact for the system to be effective. As a result, the Crack Repair System is extremely durable and will last the lifetime of the concrete.

Other benefits of Kryton Krystol technology include:

- Completely eliminates the need for costly and labour-intensive surface-applied membranes
- Is ideal for below-grade applications, reservoirs, basements and pipelines and can withstand high hydrostatic pressure
- The waterproofing is not affected by surface wear or abrasion and will never require re-application
- Only Kryton self-seals micro-cracks up to 0.5 mm and stops water egress and ingress
- Safe for the contact with potable water Certified by NSF to NSF/ANSI Standard 61 Drinking Water System Components
- Kryton offers the best-in-industry warranty that guarantees that Krystol-treated areas of a structure will remain watertight during the warranty period. ■

More information about Kryton Krystol Technology from Sanika Waterproofing specialists on Tel: +27(0)11 425 3061, www.sanika.co.za

Sika opens admixture facilities in the UAE and Reunion

Sika is continuing its dedicated and successful expansion strategy with the opening of a new mortar manufacturing facility in Dubai and a concrete admixture plant on Réunion. With these openings, Sika is responding to growing demand in both markets and strengthening its relationships with existing customers.

Paul Schuler, Sika regional manager EMEA, emphasises the importance of the new production facilities in the United Arab Emirates (UAE) and on Réunion: "The new facilities are important milestones for Sika UAE and Sika Indian Ocean, allowing us to produce and supply our innovative, high-quality and environmentally-friendly products to satisfy the evolving requirements of our local clients. With the plant in UAE, we further accelerate the implementation of our global mortar strategy in the EMEA region. With 31% growth in 2014, mortar is Sika's strongest-growing product area as well as one of the key elements of our Strategy 2018."

Since 2008, the company has been producing its innovative range of concrete admixtures, additives and compounds in the UAE and provides customers in the region with building adhesives, high-performance grouts and repair mortars. The new mortar manufacturing facility is located at Sika's local premises in Dubai Investment Park and complements the mortar production of the company's existing facilities in Bahrain and Saudi Arabia. Besides its local production plants, Sika UAE



also has warehouse facilities in Dubai and Abu Dhabi to store products manufactured by Sika companies worldwide in order to support markets on the Arabian Peninsula with a full range of solutions to meet their specific requirements.

On Réunion, Sika has been active for 20 years through its subsidiary Sika France. The new production facility for concrete admixtures covers the needs of local construction companies and helps realise large-scale construction projects such as the new highway 'Route de Littoral.' ■

More information from Dominik Slapping,
email: slapping.dominik@sika.com / www.sika.com



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a.b.e. Polyurea coatings applied to several new projects



a.b.e.'s VIP Polyurea Quick Spray Industrial coating was applied as lining to the concrete surfaces of a new children's water park at The Kingdom holiday resort in Pilanesberg.

a.b.e. Construction Chemicals' VIP Polyurea coating has been applied as lining for several new concrete and steel surfaces throughout South Africa.

a.b.e., which is part of the Chryso Southern Africa Group, holds an exclusive agreement with VIP (Voelkel Industrie Produkte) in Germany for the local sale and distribution of the German company's respected range of protective coatings and joint fillers. Produced in Munich, VIP Polyurea coatings have been internationally hailed as a 'new revolution in coating technology' and have set new benchmarks in terms of durability, protection, ease of application, and turnaround times.

Noel Abendroth, a.b.e. Polyurea Performance Coatings Division manager, said VIP Polyurea Quick Spray Industrial coating was recently applied to:

- A new children's water park at The Kingdom timeshare development in Pilanesberg
- Biofuel tanks and silos for Bosch Projects in Bapsfontein
- Concrete walkways at Ashburn apartments in Cape Town
- Launder and clarifier tanks at a major chemical plant at Secunda

"For all these projects, VIP Polyurea Quick Spray Industrial, hot spray, two-part coating was applied as protective lining. VIP Polyurea Quick Spray Industrial is a fast-setting, 100% solids coating/elastomer which has an intricate pore density that provides excellent corrosion protection to all substrates. The product reacts within seconds and once cured, leaves a flexible, durable and rough surface. It is suitable as protective coating for virtually any surface including concrete, steel, wood, polystyrene, fibre-glass, and plastic. The coating is applied using high-pressure, heated plural-component spray equipment and can be applied at any thickness and in various colours," Abendroth stated.

For the new water park at The Kingdom, a.b.e. supplied the coating in a blue colour to applicators, Diamond Linings,

which has a fully equipped mobile unit and extensive Polyurea experience in the waterproofing, mining, marine, civil, and flooring sectors. A total surface area of about 800 m² was coated. The completed water park, already in operation, was developed by Rocky Waters, Durban-based specialists in customised water parks and slides, garden features and ponds, as well as rock pools. VIP Polyurea Quick Spray Industrial has also been chosen as lining for two further water parks to be developed in North West Province by Rocky Waters.

The product was applied to line new silos designed by Assentoft Silo, a Danish specialist manufacturer of silos and tanks for farming and industrial purposes. The silos were built by Bosch Projects at Boskop, near Bapsfontein. "For this project, a.b.e. again supplied the Polyurea product, this time in a grey colour, to Diamond Linings. The silos are used for the conversion of cattle manure and waste foodstuff into biofuels. At the same venue, Diamond Linings applied VIP Polyurea Quick Spray to seal the seams of galvanised metal tanks that contain high-concentrate chemicals. A total of about 400 m² of the coating was required," Abendroth said.

a.b.e.-approved Cape Town applicator, Thermoseal, applied VIP Polyurea Quick Spray Industrial to about 1,000 m² of concrete passages at the Ashburn residential apartment block in Claremont, Cape Town. "The coating, specified as part of the refurbishment of the six-storey apartment block, not only protects the concrete surfaces but also ensures that the walkways, leading to the front door of the various flats, are not slippery," he explained.

Finally, VIP Polyurea Quick Spray Industrial was supplied to Hindle Mason Projects, Randburg-based concrete repair and rehabilitation specialists, to replace the rubber linings and provide chemical and abrasion resistance to 18-m-diameter water-retaining concrete launder tanks, and 24-m-diameter steel clarifier tanks, at the gas production plant at Secunda. ■

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

Keeneyes International poised for growth in Africa

Keeneyes Industrial Corp. was founded in 1974 in Taiwan. We are a reputable independent chemical distribution company with customers in over 40 countries.

The company is headquartered in Taipei with multiple offices throughout China and a network of associates around the world.

In 2014, Keeneyes opened a branch office in Johannesburg, South Africa to expand the company and brand into Africa and with the intention of establishing Keeneyes as a reputable distributor, aiming for the goal of success in Africa.

We are known for providing first-class services to our customers based on our business principles of service excellence and our high-quality products being offered at reasonable and stable prices.

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- Coating additives (paint and ink)
- Special intermediates for pharmaceuticals, pigments, dyes
- Specialty fine chemicals

Keeneyes is poised for further growth to provide customer service throughout the global market. With our continuing investment in having high-calibre professionals and technology, we look forward to building closer relationships between suppliers and consumers.

Keeneyes combines financial stability, excellent customer service, and a professional team to win loyal suppliers and customers in more than 40 countries. Facing the challenges of a competitive global market, transparent information, and product nationalisation, we believe in aligning our company mission to pursue "Innovation, Excellence, Integrity, and Trust" to provide the highest-quality service for our customers. ■

If you have any questions or need more information, please feel free to contact Rex Hsu via e-mail: rex_hsu@keeneyes.com.tw, or telephone: +27(0)11 510 0340. You can also visit our website www.keeneyes.com.tw for more information.



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Concrete construction chemicals

The LATICRETE portfolio of concrete construction chemicals is designed to improve the long-term durability, performance and appearance of concrete surfaces and work hand in hand with the complete line of the company's concrete protection and repair solutions.

The company offers a full line of products including curing and sealing treatments, floor hardeners and densifiers, polished concrete systems, and stain protection products that work together to ensure concrete floors are safe, resilient, and easy to maintain.



LATICRETE's floor treatments work together to ensure concrete floors are safe, resilient and easy to maintain.



In 2014, LATICRETE expanded this line of products with the acquisition of L&M™ Construction Chemicals. L&M Construction Chemicals is a diverse line of concrete construction chemicals, including coatings, sealers, construction grouts, patch and repair mortars, and colour hardeners for polished concrete. These brands complement LATICRETE DRYTEK® to offer unparalleled integral colours, textures, and finishes with high-performance coatings, over-layments, and restoration solutions that give owners exceptionally attractive, durable and decorative floors. LATICRETE decorative finishes deliver vivid colour and gloss with high impact and wear resistance, quick turnaround, and low maintenance.

Please contact the LATICRETE Africa representative Joedi Brown at the email address jsbrown@laticrete.com for more information on the L&M Construction Chemicals product line.

Resinous decorative finishes

The LATICRETE portfolio of resinous decorative finishes for concrete floors offers unparalleled integral colours, textures, and finishes with high-performance coatings, overlays, and restoration solutions that give owners exceptionally attractive, durable, decorative floors.

LATICRETE decorative finishes deliver vivid colour and gloss with high impact and wear resistance, quick turnaround, and low maintenance.

In 2014, LATICRETE added to this line of products through the acquisition of HP SPARTACOTE®.

HP SPARTACOTE offers a full line of patented high-performance polyaspartic concrete floor coatings. The product line has superior abrasion resistance, next-day return to service, UV stability and the ability to install in wide range of temperatures.

Please contact the LATICRETE Africa representative Joedi Brown at the email address jsbrown@laticrete.com for more information on the HP SPARTACOTE product line.

LATICRETE® SUPERCAP® system

Finally, there is the revolutionary LATICRETE SUPERCAP System – a time-saving, cost-effective method for finishing new concrete or capping existing slabs by combining a

LEED-contributing, UL GREENGUARD Gold Certified, low-alkali, self-levelling, cement-based technology with a computer-controlled mobile blending unit (pump truck).

This proven lean tool provides benefits right from the start of concrete placement. With the ability to blend 13,608 kilograms per hour and deliver material up to 50 storeys high, this revolutionary system benefits the entire project by providing predictable results that save time, money, and improve overall quality of the projects.

As a leading manufacturer of globally proven construction solutions for the building industry, LATICRETE has the concrete construction industry covered. ■

For additional detail on LATICRETE products and systems, be sure to visit www.laticrete.com or contact Joedi Brown, Email: jsbrown@laticrete.com For information on the LATICRETE SUPERCAP System, please visit www.laticretesupercap.com.

Chromaflo Technologies invests in Africa

Chromaflo Technologies is one of the largest independent global suppliers of chemical and pigment dispersions to the thermoset composites, architectural, industrial paint and coatings industries. Their diverse technical and custom manufacturing capabilities provide colour solutions to meet the most complex requirements.

Chromaflo Technologies is based in Ohio, USA, and Africa was the only continent on which Chromaflo was not represented. From 5th January 2015 with the acquisition of the Kreate Group, Chromaflo Africa was formed.

Kreate Africa now has access to the unrivalled financial, technological and knowledge assets within the Chromaflo global company. This has necessitated a move to larger premises (currently being sought) and will improve the efficiency and capacity of the current facility. The acquisition brings international expertise and extensive new laboratory and factory equipment to current Kreate customers, plus the services of the previous Kreate Group technical director – Toine Meuwissen – to South Africa.

Gary Kelly, MD of Kreate Africa, stays on as MD of Chromaflo Africa and is extremely upbeat about the acquisition, seeing a huge future for Chromaflo in Africa.

With current production limited by resources, such large-scale growth as has been experienced over the past four years has been constrained, but is set to change during 2015. New and exciting markets with high technological and commercial benefits from a broad product portfolio will be entered. Opportunities in Africa will be exploited to ensure Chromaflo



Gary Kelly, MD Chromaflo Technologies Africa and right Scott Becker, president & CEO of Chromaflo Technologies

South Africa becomes a major player for colour system technologies throughout the African continent.

Scott Becker (president and CEO Chromaflo Technologies) commented: "Having not had a manufacturing presence in South Africa, the acquisition of Kreate by Chromaflo Technologies provides us with a very new and stimulating market. ■"

**More information from Tel: +27(0)11 839 3695,
gary.kelly@kreate-africa.com**

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Mapei, first choice for refurbishing Orlando West church roof



Multi-Dex 2000 recently refurbished the 9,000-m² roof of the UCKG church using Mapei products.

Multi-Dex 2000 (Pty) Ltd is a family-run business based in Edenvale, Gauteng, with a proud track record for insulated waterproofing systems throughout Southern Africa. Refurbishment projects include assignments for major corporations such as SA Breweries, Eskom, Growthpoint Properties, Monte Casino, and the SA Reserve Bank.



Multi-Dex 2000 used Mapei's Polypaint Alu when refurbishing the dome-shaped roof of the UCKG church in Orlando West.

Multi-Dex 2000 is an approved applicator of Mapei South Africa's products and has benefitted from Mapei's training schemes. Mapei South Africa is highly regarded for its on-site technical support, and provision of proof of line certification. Multi-Dex 2000 averages around 35,000 m² of waterproofing a month and recently completed refurbishing the 9,000-m² roof of the Universal Church of the Kingdom of God (UCKG) in Orlando West, Soweto.

"We have tackled a number of difficult projects but this job was especially interesting and challenging," says Warren Botha, director of Multi-Dex 2000 (Pty) Ltd and youngest son of the founder of the company. "We were working 18 metres off the ground and experienced delays as a result of high winds that made it unsafe to handle the sheets of insulation and torch-on waterproofing. Added to this, the roof was dome-shaped and presented a 35 to 50-degree gradient that was difficult to measure let alone work on! In spite of this, we still managed to complete the project in seven weeks. For the final protective finish, we used Mapei's Polypaint Alu, which is easy to apply and gives reliable and exceptionally good results."

Mapei's Polypaint Alu is a versatile water-based, effective silver paint designed to protect talc, sand and granulated bituminous polymer membranes, as well as unprotected liquid bituminous coatings, from UV sunlight. "We have been using Mapei products for about three years now," comments Botha. "We regularly use the silver protective paint, the Mapelastic cementitious waterproofing mortar products, as well as other waterproofing products in their comprehensive range. Mapei's products are outstanding and have proved to be far superior to the majority of products in the local market." ■

**More information from Candice Santana,
Tel: +27(0)11 552 8476 / www.mapei.co.za**

Specialists in industrial flooring and construction chemicals

Technical Finishes has been a leader in the field of surface preparation and protection since 1989. The company specialises in industrial flooring materials for the commercial, industrial and residential markets, while offering a full range of construction chemicals to the construction market.

The company offers a wide range of epoxy, polyurethane and vinyl ester systems as well as cementitious, decorative wall coatings with waterproofing capabilities.

Technical Finishes has also developed corrosion resistant systems for protecting concrete and steel.

Technical Finishes' products comply with industry-specific legal requirements, e.g. food and beverage manufacturers, wineries, distilleries, pharmaceuticals, automotive manufacturers and more.

Technical Finishes employs over 100 people nationally and serves the entire local market through its branches in Gauteng, Cape Town, Durban and Port Elizabeth, as well as through an agency in Mpumalanga.

With three fully-equipped, SABS ISO 9001-certified manufacturing plants in Gauteng, KwaZulu-Natal and the Western Cape, Technical Finishes locally produces and supplies products efficiently and to high standards. Its team of dedicated, highly competent and qualified industrial chemists stays abreast of new market developments to serve an ever-changing industry. Technical Finishes continually invests in research and development, and provides ongoing training and skills development for staff.

Technical Finishes offers exclusive product training to approved applicators, as well as technical support training to smaller clients handling residential and commercial flooring applications. Site support and training are also offered to all construction and building contractors. ■

**More information from
Technical Finishes,
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Floor screeds crack as contractors cut corners

The lowering of standards in the construction industry has been under the spotlight for over five years; and for good reason. Failures, some of them major and incurring injury and loss of life, have led to huge wastage in human and material resources. It is a dangerous development which is alarming to reputable manufacturers, contractors and construction-related institutions.

An example of what happens when standards are side-stepped to win contracts, the floor screeds of a large mixed-use retail and residential development in Johannesburg's CBD have cracked extensively, soon after completion.



These pictures show examples of screeds on precast flooring slabs which have cracked due to an essential component, steel mesh, having been excluded during their construction.



The main contractor had excluded steel mesh, an essential component when placing screeds on precast flooring, as the precast supplier had misled him, saying that his slabs did not need mesh in the screed.

The main contractor has now been replaced and a painstaking process of removing the flawed screeds and replacing them using approved building practice has begun. Apart from the cost of replacing these screeds, the completion of the whole development has been delayed by several months, resulting in a loss of rental income.

Commenting on this incident and the flaunting of standards in general, Bryan Perrie, MD of The Concrete Institute (TCI), says: "There is a price to pay and often it's the client who pays it, as proving culpability is an expensive, time-consuming and often fruitless exercise. Therefore, getting it right the first time using tried and trusted standards and specifications endorsed by institutions such as TCI, the CMA (Concrete Manufacturers Association), the NHBRC, the CSIR, and SABS, is in everyone's interest. Industry professionals like architects, quantity surveyors and civil engineers should insist that proper specifications are followed, to the letter.

"Nonetheless, as this screed failure amply demonstrates, contributions made by professionals are sometimes found wanting. It is thus important for property developers to become acquainted with building standards and specifications and insist on their implementation. Alternatively, they should see to it that the professionals they employ will do so. If not, they are behaving irresponsibly, both to themselves and their prospective tenants," says Perrie.

These views are supported by Echo Prestress, South Africa's largest manufacturer of precast hollow-core slabs and a member of the CMA.

Echo sales and marketing director, Melinda Louw, says any hollow-core or beam and block precast slab supplier who claims that mesh is not a requirement when pouring screeds on floor slabs, especially in exposed areas such as balconies, walkways, roofs and tiled areas, is being deliberately misleading.

"The construction industry in general and contractors in particular should be extremely wary of such claims which ultimately sully the reputation of the whole precast slab industry. We therefore encourage any user to contact us about any aspect on the proper installation of precast flooring, especially when confronted with performance claims which appear to flout good building practice. Our screeding procedures, which include details on screeds for balconies, roofs, walkways and car parks, is available free and offers sound technical advice. Moreover, more detailed and technical screed information is available from TCI which has published a brochure entitled *Sand-cement screeds and concrete toppings for floors*. Screeds are also covered in a National Standard SANS 10109-2.

"In most instances, especially when Echo Prestress flooring slabs are used, a simple 40-mm levelling screed is all that is required. However, in buildings with large floor areas, movement jointing should be specified by a consulting engineer to avoid cracking." ■

Anyone interested in obtaining the screeding procedures leaflet from Echo Prestress should contact André Combrink on +27(0)11 589 8800. For copies of TCI's screeding brochure, call +27(0)11 315 0300 or download it off www.theconcreteinstitute.org.za

World Premiere! Swedish Scanmaskin launches the new way to grind



This is world news! The new Scan Combiflex 800DSP represents something new that the industry has never seen before," says Scanmaskin president, Claes-Göran Bergstrand. Scanmaskin is now launching a completely new system, guiding the operator through the job and to an optimal final result.

Saves time, money and environment

The concrete floor grinding and equipment manufacturer, Scanmaskin, has decided to make life easier for the contractors by developing the new Scan Combiflex 800DSP. Scanmaskin is launching a new type of SMART floor grinding and polishing machine which the manufacturer considers to be a complete innovation for the industry.

Scan Combiflex 800DSP is the optimal helper. The machine guides operators through the whole process thanks to the new integrated computer which gives accurate guidance to the operator through the control panel. Through sensors, the operator receives feedback and warnings when tool wear is too high or when the tool is worn out. The sensors continuously measure the wear or thickness of the tool.

"For us Scan Combiflex 800DSP is a real revolution in the industry and we are really excited to introduce it," says Claes-Göran Bergstrand. ■

More information from
Geoff Mclea,
Tel: +27(0)21 552 8566
www.mactool.co.za

Visitors will find
Scanmaskin at the
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- Claes-Göran Bergstrand, Scanmaskin President

The machine, via an integrated computer, gives the operator accurate guidance through the control panel.



Sensors continuously measures tool thickness and alerts the operator when tool wear is too high or when the tool is worn out.

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Lambson's Hire establishes a Concrete Surface Preparation Division

Any new or existing concrete surface or structure requires concrete surface preparation. After thoroughly researching this sector Lambson's Hire has established a Concrete Surface Preparation Division.

This supports the company's philosophy of offering the latest technology to best meet its customers' needs, says Devin van Zyl, Lambson's Hire CEO.

"Following an on-site assessment, our Concrete Surface Preparation team can easily advise customers on the appropriate equipment for specific applications," Van Zyl explains.

The equipment range available from Lambson's Hire's Concrete Surface Preparation Division is aimed at improving customers' productivity and cost effectiveness. For example, the 125-mm handheld concrete grinder offers a more productive option for use in multi-storey buildings and for concrete stairways," Van Zyl notes. The range from the Concrete Surface Preparation Division currently includes the 65-kg Meteor 250 single-disc electric floor grinding machine (250 mm grinding width), and the 160-kg Satellite 480 triple-disc planetary machine (grinding width 480 mm), available in electric and petrol options. Easy to use and highly manoeuvrable, they are ideal for all concrete preparation tasks.

Van Zyl emphasises that meeting OHSAS (Occupational Health & Safety Advisory Services) requirements for South African construction sites, involves hiring a dust collector. "These are not commercial vacuum cleaners, but are purpose-



A 60-litre dust collector from Lambson's Hire will ensure that companies comply with all environmental regulations.



The Satellite floor grinding machine has a grinding width of 480 mm.

built machines capable of catching and collecting even the finest concrete dust." Lambson's Hire offers two models, both chosen for their performance.

The company's Concrete Surface Preparation Division product range includes a three-headed scabblers weighing 4.7 kg, with a 2,800 blow-per-minute rate and an 11-headed scabblers, weighing 72 kg capable of covering 30 m²/h at a depth of 6 mm, at 2,200 blows per minute.

To maximise performance of this specialised equipment on hire, Lambson's Hire's Concrete Surface Preparation Division also offers customers assistance with on-site commissioning.

Van Zyl warns that inappropriate selection or use of concrete surface preparation equipment can significantly impact a contractor's bottom line. Should the required finishes not be achieved, necessitating work to be redone, additional labour, hire and consumable costs will be incurred.

"With the construction industry under pressure to perform and reduce operational costs, it is essential that contractors utilise fit-for-purpose equipment. This is why we made a significant investment in the appropriate equipment to meet this need," Van Zyl says.

Lambson's Hire's team regularly visits international exhibitions to stay abreast of the latest trends and developments. "We have access to our equipment principals overseas for technical input whenever necessary, and our team undergoes regular training on new products."

"Lambson's Hire has always been at the forefront of progress. It is our philosophy to offer only superior-quality equipment suited to our harsh African conditions and capable of achieving the best results for hire.

"We will continue to create speciality divisions in future. This will enable us to pass on the latest technology to our customers, and increase our service levels and value proposition. Our ultimate aim is to drive down our customers' costs and boost their bottom line," Van Zyl concludes. ■

**More information from Devin Van Zyl,
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Industry-first 'green' floor concrete introduced

AfriSam and Concrete Laser Flooring (CLF) have collaborated successfully in introducing an industry-first environmentally-friendly floor concrete by replacing cement in the mix design with more fly ash, activated slag and admixtures. In typical concrete mix designs, 20% to 30% of the cement is replaced with extenders. In this new concrete, up to 70% can be replaced with the activated slag and fly ash, with the addition of admixtures to achieve superior quality and increased strength.

"Such development is put through a rigorous research, design and testing process to ensure that our customers can have the benefit of a superior-performing concrete that is also kinder to the environment," Amit Dawneerangen, national multi-product solutions manager at AfriSam, says.

"A major trend within the industry is the move towards 'greener' concrete, based on the understanding that producing cement draws on finite resources and that we need to make concrete that uses less cement. There is a growing demand for this from environmentally aware property developers, who are driving the trend for 'green' buildings," Peter Norton, managing director of CLF, says.

With its main focus on new solutions and innovations, AfriSam is also joining forces with CLF in producing low-shrinkage concretes for floors. "Through this speciality design mix, less shrinkage occurs, which significantly reduces cracking in floors. We are currently in the process of researching, designing and testing this product. The goal is to achieve the best performing product, with the lowest shrinkage that also gives our customers the best possible value," says Dawneerangen.

Tilt-up construction is another method the two companies have successfully collaborated on in projects such as a 10,000 m² building in Pomona. The method utilises the floor of a building as a casting bed for wall panels, which are then simply lifted into position by a crane. Another option is for the wall panels to be cast at a precast yard and then transported to site.

According to Norton, this was a very successful project. "After we cast the floor, we were then requested to cast the walls as well. Such a project would traditionally have used 2,000 m³ of concrete only, but in this instance that figure doubled to 4,000 m³.

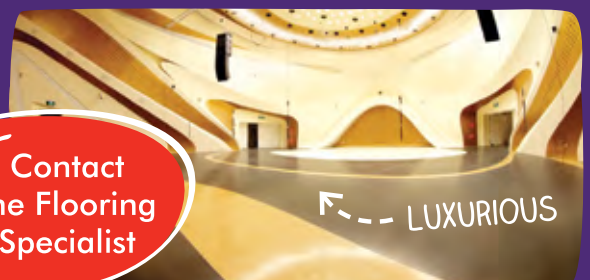
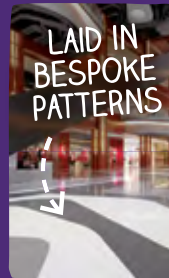
"However, the cost of the additional concrete used is offset not only by the dramatic decrease in construction time (which results in significant savings in labour and other input costs) but also by a marked improvement in the quality of the finished structure," Norton concludes. ■

**More information from Maxine Nel,
Tel: +27(0)11 670 5893 / www.afrisam.com**

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Precast floor slabs slash months off Madeira Isles construction time

Elematic SA's precast hollow-core concrete slabs have once again proved their worth when it comes to time-saving and efficiency on a building project. The Benoni-based manufacturer has supplied 30,500 m² of concrete slabs for Madeira Isles – a massive housing project in Danville, Pretoria – and has helped reduce the construction time by six months.

Madeira Isles is a 500-unit development covering a total of 40,700 m² of floor area. It is made up of 14 apartment blocks comprising four floors each. The apartments are divided into 56 three-bedroom units, 388 two-bedroom units and 56 single-bedroom units. All units have been developed for the rental market. The project broke ground in November 2013 and is on track for completion at the end of April 2015.

Boutel Projects is the main contractor on the project and has been responsible for the contract as a whole on behalf of the client, ESS. Boutel has been in operation in its current form since 2013, but grew out of a large and well-established plastering and tiling firm. By introducing experienced directors, management and staff, Boutel's founder – Americo Pimentel – positioned the firm to be able to take on medium-sized commercial construction projects with a view to building a reputable construction company.

When Boutel was appointed to build Madeira Isles, the original plan was to use traditional concrete slabs for the flooring. "We were concerned about the speed at which the project had to be done," explains Pimentel. "For us to complete the project in the specified time period, we realised that we had to go the precast route – that was when we contacted ESA to get involved in the project negotiations."

He adds that the biggest challenge the contractors were going to face on site was that two other trades needed to complete their work first, in order for the precast slabs to work as intended. "There was brickwork to be done and the steel structure had to be completed to support the precast concrete. The biggest challenge with both of these trades was to maintain accurate measurements on each floor and to keep

the building square," Pimentel continues. Because ESA's slabs are manufactured at its factory off site and are produced to exact tolerances, there was little room for error on site.

Despite these challenges, work progressed as planned and six months of construction time have been shaved off the original expected completion date. "Using ESA's products gave us substantial time savings, and the quality of the product is excellent," says Pimentel. "This is the second project that Boutel Projects has completed with ESA, and the working relationship has proved mutually fruitful."

Craig Webber, director at ESA, says that his company's intention right from the outset has been to deliver a top-quality product and service to clients and to develop long-term working relationships. "We are proud to be able to take on a project of this magnitude and deliver benefits for our clients. We look forward to working on more projects with Boutel," he says.

About ESA

Elematic South Africa (Pty) Ltd manufactures precast hollow core concrete slabs for the South African market. Elematic is a well-established international brand. The company was established in Finland in 1959 and has since set up precast production plants in more than 70 countries worldwide. As part of the Consolis Group, which focuses on research and development in cement and precast concrete products, Elematic is backed by extensive knowledge and experience. Elematic South Africa supplies the latest available technology in precast concrete products. Its state-of-the-art production facility on Gauteng's East Rand is ISO 9001-certified and all its products carry the SABS mark of quality. ■

**More information from Craig Webber,
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Using Elematic SA's hollow-core slabs reduced construction time by six months at Madeira Isles in Pretoria.

Flooring marvel Mondéco Crystal launched in Africa



Architects across Africa can now utilise the aesthetic advantages of the seamless resin terrazzo system Mondéco Crystal to create eye-catching and bespoke floor surfaces, that are also durable.

The new system, launched by Flowcrete South Africa, complements the resin flooring specialist's premier Mondéco collection of decorative resin flooring. This range has been designed to provide hard wearing floors for large-scale commercial developments that combine luxurious looks with vital performance advantages.

Mondéco provides architects with a wealth of creative possibilities. An innovative application technique allows for vibrant colours to be installed in unique and intricate designs across wide swathes of flooring. Glittering aggregates are incorporated within the Mondéco material to create a shimmering lustre across the floor's surface.

Mondéco Crystal differs to other Mondéco systems as light-reflective glass aggregates are added into the system. The stylish, glistening effect that this creates has seen it installed in prestigious leisure developments around the world, including in one of Beijing's latest landmarks, the Galaxy Soho shopping centre, where the floors themselves are a feature.

The world-renowned architect Zaha Hadid chose Mondéco Crystal for the Galaxy Soho project, as its design flexibility and high quality finish was ideal for creating fluid patterns of eye-catching colour across the floor that mirrored the building's flowing architectural lines.

Flowcrete South Africa has also reformulated its Mondéco Earth system. This solution integrates flint and granite aggregates into brightly coloured epoxy to create vivid floors with an attractively patterned finish. The silver-ion based antimicrobial agent Polygiene® can be distributed throughout a Mondéco Earth floor, empowering it with the ability to eliminate up to 99.9% of bacteria.

The robust nature of Mondéco means that it will retain its visual appeal despite the challenging everyday conditions within large commercial facilities, which typically includes heavy foot traffic, food and drink spillages, hot water washes and impacts. Its seamless, impervious surface also makes a Mondéco floor easy to clean, this will avoid dirt and contaminants turning into unsightly blemishes and stains. ■

**More information from Verity King,
Tel: +27(0)31 461 3411 / www.flowcretesa.co.za**



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Concrete convenience for Africa

Well-resourced, Putzmeister South Africa is a reliable provider of one-stop concrete solutions to construction sites in sub-Saharan African countries

Driven by the philosophy 'African solutions for African needs', South African-based manufacturer of concrete pumps, mortar machines, industrial pumps and truck-mounted transit mixers, Putzmeister South Africa, is able to meet the exact requirements of mega infrastructural projects in sub-Saharan Africa.

While most South African suppliers engage local agents, Putzmeister South Africa's Rudy Myburgh tells *Concrete Trends* that their organisation works more efficiently by dealing with sub-Saharan Africa clients directly from South Africa.

"As soon as we sell a machine to a customer a relationship starts. We believe that a product is only as good as its after-service. Hence, we ensure that every machine that we have sold is functioning perfectly.

"When a customer experiences a problem, we often use telephonic troubleshooting. However, when we can't solve it that way, we send someone. We have several travelling technicians on hand," he says.

Putzmeister offers a very comprehensive after-sale service to its customers in Africa and its warehouse in Honeydew, Johannesburg, has a steady supply of replacement parts.

Practical solutions

Through experience and timeous market research, Putzmeister has succeeded in developing a market outside South Africa, says Myburgh.

"We realised that, while technology that works in South Africa is generally accepted, it is not always practical. That's why, with our factories, we have developed low-tech Africa-specific machines that have simplified hydraulics and electronics making fault finding easier. The products are simple, manually operated and are generally diesel-driven – convenient for parts of Africa where there is little or no access to electricity," he explains, adding that although low-tech, the products are made to Germany quality specifications in accordance with ISO 9001 standards.

With guaranteed availability of machines and spares from its factories, Putzmeister is able to meet demand in any country within their allocated region.



Tailored turnkey package

Putzmeister's unique approach to African needs is also reflected in turnkey packages that are tailor-made for its customers. Putzmeister South Africa supplies the batching plants where concrete is produced, and truck- and trailer-mounted concrete pumps and concrete truck mixers for a complete concrete solution that meets customers' needs exactly.

"With regard to Africa, we have had to diversify and broaden our product spectrum to create a convenient one-stop-shop service," explains Myburgh.

On the local front

As buildings in Cape Town and Sandton become higher and more complex, the requirements for pouring concrete are increasing. The material must be transported as quickly as possible to each point of the structure being constructed – and with minimal effort. This cannot always be achieved with truck-mounted concrete pumps because their possibilities and ranges are limited. An effective and extremely efficient alternative is to combine stationary concrete pumps from Putzmeister and the MX range Stationary Booms. This successful combination bypasses distances effortlessly and ensures precise and very efficient concrete placing on the site. The MX modular system facilitates almost unlimited variations by using different combinations of booms and substructures with differing attachment points and self-climbing capabilities.

"These MX placing booms will soon be part of the Sandton skyline for the coming months as construction continues", Myburgh says. Putzmeister feels that the MX placing booms system will become an integral part of any high-rise building project.

Remarkable growth

Putzmeister's unique African approach has paid off, with tremendous growth experienced in countries such as Namibia, Botswana, Mozambique, Malawi, Zambia, Tanzania, Kenya and the Democratic Republic of Congo (DRC). Its recent supply contracts include Dar Es Salaam-based projects – the Pension Towers and the Port Authority Building which will be the tallest buildings in the area once completed – the I-Towers Phase 1 and 2 in Gaborone, Botswana, and the expansion of various mines in the DRC and Zambia.

Myburgh believes the company's success in implementing German machines in Africa has been facilitated by the success of Putzmeister products in projects globally. "The fact that our brand is well known often opens the door for us," he says.

He adds: "What works to our advantage is that every construction project in Africa needs a concrete pump. Further, we are the only group that can supply a truly turnkey project in sub-Saharan Africa including the Indian Ocean Islands (Madagascar, Reunion, Seychelles, and Mauritius)."

With the South African construction and infrastructure sector currently stagnant, Putzmeister hopes to capitalise on steady demand for complete concrete solutions in sub-Saharan Africa.

Putzmeister will be present at Bauma 2015 at NASREC in Johannesburg from 15-18 September 2015 to increase their footprint. ■

**More information from Rudy Myburgh,
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To serve, to improve, to create values



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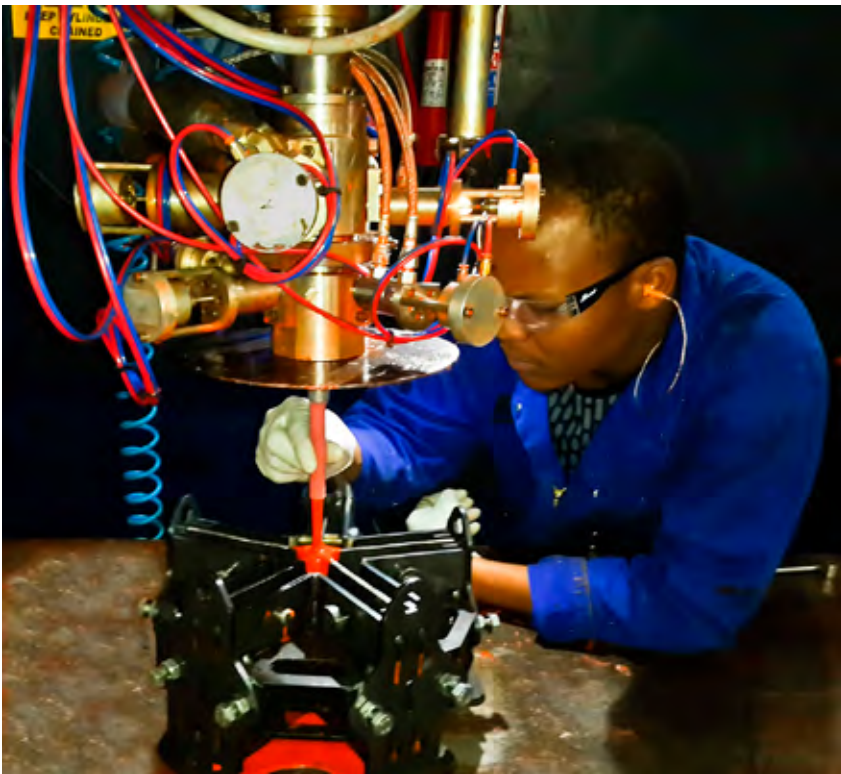


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Custom work cell can mould conveyor belt cleaners



The work cell combines all the elements necessary to generate mixed, colored urethane with the forming and curing process.

In a move designed to deliver global product availability and consistency with the fastest possible response to customer orders, Martin Engineering has announced the design of a custom moulding cell for its polyurethane conveyor belt cleaners. By mixing, forming and curing its own designs in the modular work station – rather than subcontracting the production – the company is completely controlling the entire process, allowing one-day turnaround on most orders and even same-day shipping. As a result, customers from any region in the world can benefit from rapid deployment of belt cleaners meeting the highest standards for quality control.

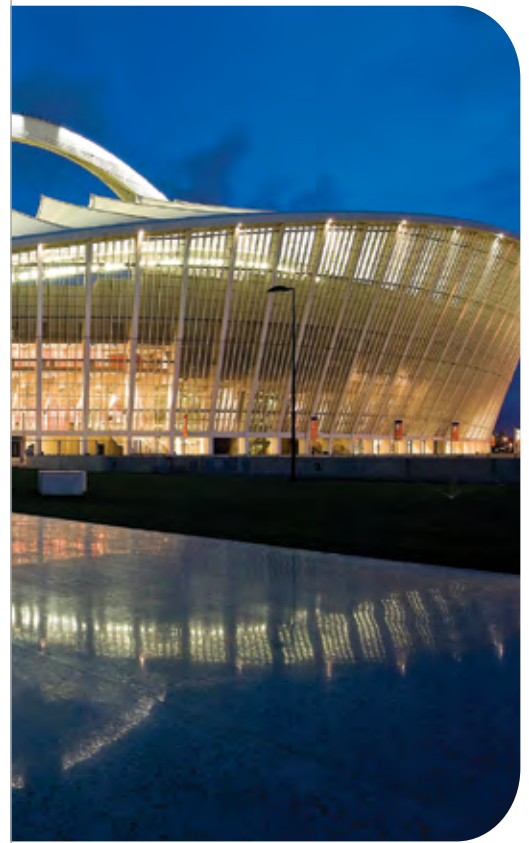
“We’re one of the few manufacturers that designs and moulds its own belt cleaner blades,” explained Global Engineering manager Paul Harrison. “We’ve been manufacturing them in the USA for many years. With this modular work cell, we are now able to replicate the same manufacturing process in any of our business units, ensuring that we provide consistently high-quality products and quick delivery times virtually anywhere in the world.” The work cell combines all the elements necessary to generate mixed,

coloured urethane with the forming and curing process that is specific to Martin Engineering products.

Harrison explained that by custom-engineering the process from the ground up, the design group solved many of the problems inherent in urethane moulding in other regions of the world. “The work cell is voltage- and frequency-independent,” he said. “It will function effectively whether the power source is in the USA, South Africa, China or the UK.”

Further, the new process features a universal power supply that will store enough energy to prevent a total shutdown in the event of a brown-out or temporary power interruption. In the past, a power interruption would cause materials in the mixing head to gel, requiring a large investment in manpower to clean the urethane out. This process includes emergency procedures, allowing the equipment to function long enough for operators to extract the material and shut down and prevent extended periods of downtime. ■

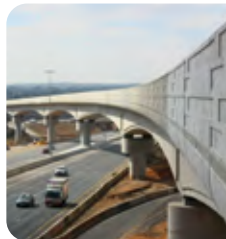
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STIHL takes on any challenge

When it comes to the challenge of tackling rock-hard materials on site, there can only be one logical option – the globally acclaimed brand name for tough and top-performing power tools – STIHL. This German-based manufacturer with a history dating back to 1929 is known for its investment in research and development. This consistently leads to ground-breaking innovations in its comprehensive range of products, which cater to the diverse needs of various users, from handymen to specialist workers.

Designed for the demanding conditions of professional use, STIHL concrete cutters and cut-off machines make light work of any cutting task, slicing through concrete, stone, masonry, pipes and asphalt. There are a number of STIHL cut-off machine models for user-choice depending on the requirements of the particular job.

The convenience of cordless

The STIHL TSA 230 is a classic example of STIHL's clever designs and practical applications. Light, small and easy to work with, this is the first battery-powered cut-off machine with a 230 mm cutting wheel. Despite weighing less than 4 kg without the battery, the TSA 230 has a powerful cutting performance and is able to smoothly slice through tiles, bricks, pipes and metal with ease.

The standard-fitted water connection and optional vacuum adapter ensure clean, dust-free cutting, plus the STIHL cordless design offers the convenience of battery power with the benefits of reduced noise levels and zero emissions. These user- and environmentally-friendly features make the TSA 230 ideal for working inside in enclosed spaces or outdoors in noise-sensitive areas. This cordless cut-off machine has transformed construction work and is also suitable for roofing, pipe-laying and interior decor projects: wet or dry. It starts at the touch of a button and the ergonomic handle allows the machine to be smoothly guided to a depth of 70 mm for precise, accurate cuts.

The ultimate on-site beast

The STIHL GS 461 concrete saw combines the renowned cutting features of any STIHL chainsaw, the original power tool on which the STIHL legend is based, with enhanced features that make cutting through concrete faster and easier. Designed with the rigours of construction and renovation work in mind, the GS 461 concrete cutter is designed for free-hand cutting of concrete with reinforcing, natural stone, sewage pipes (concrete, ductile iron) and general masonry. The GS 461's

impressive power-to-weight ratio and smooth handling add to its manoeuvrability, making it perfect for cutting in tight spots or when working against a 90-degree corner.

The GS 461 is equipped with the low-emission, fuel-efficient and environmentally-friendly STIHL 2-MIX engine, and features an effective anti-vibration system for added user comfort during operation. The GS 461 guide bar features built-in water channels that aim forward to precisely provide water to the chain, while standard fittings include side-mounted chain tensioning, a decompression valve, STIHL ElastoStart, a water- and wear-resistant starter cord, a long-life HD2 filter to catch even the finest dust particles to prevent damage to the machine, and a toolless bayonet fuel cap for easy and upright refuelling. Optional features include the 36 GBM diamond concrete cutter chain with pre-sharpened diamond segments for wet-cutting stone, and the Rollomatic G guide bar with hardened chain track and water channels that even wash the sprocket nose. This, the first STIHL concrete saw, has a masterful ability for precision cutting with accuracy and power. The GS 461 offers easy handling, a practical and ergonomic design and efficient water usage, making it a typical high-quality STIHL product.

Working in tandem for a premier performance

Teamwork is the secret to any winning performance, and when cutting larger openings through tough materials you need the combined cutting skills of both a STIHL concrete cutter plus a STIHL cut-off machine. For example, corners can be pre-cut (pierced) using the concrete cutter, to be followed by the long, straight cuts which are made by the cut-off machine. Make light work of a major task – use two high-delivering cutting tools, complementing each other for the ultimate in precision and power.

Where to find STIHL

Like any top quality product, you won't find STIHL power tools at chain stores and supermarkets. The STIHL philosophy is to deliver top-class service with its top-class products, which is why STIHL relies on a nationwide chain of specialist dealers to sell its products. This ensures that every STIHL product is sold along with expert guidance on how to use and maintain the item, plus a guarantee of sustained after-sales service and back-up support. ■

**More information from Nadine Green,
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DDE launches Pentruder cutting equipment in South Africa



Demolition and Drilling Equipment (DDE), a specialist demolition and drilling equipment company, has been appointed the sole supplier in South Africa of Tractive's Pentruder range of Concrete Cutting Systems. Manufactured in Borlange, Sweden, the Pentruder range consists of hydraulic or high-frequency concrete wall saws, core drills and wire saws. Known as the Modular Concrete Cutting System, the equipment offers unmatched flexibility and versatility, with it being possible to use the same power pack, motor, and track system for wall sawing, core drilling as well as heavy-duty wire sawing.

Although relatively unknown in South African concrete cutting and coring circles, Pentruder equipment has developed a very loyal following amongst top concrete cutting and coring professionals in the US and Europe, where high quality and top performance are paramount. Ninety percent of Pentruder equipment components are produced in-house on state-of-the-art production equipment.

This unique in-house manufacturing process enables almost complete control over quality and standards. Regardless of

quality and performance however, DDE realises that, without committed and proper local product support, Pentruder will not gain the same following here as it has in other parts of the world. DDE will therefore be supplying and supporting all Pentruder products from its head office in Jet Park, Johannesburg. The full range of spares, accessories, warranty and technical support will be offered locally to ensure minimal downtime.

DDE are also the current sole distributors of the Brokk range of demolition robots, used extensively in specialised demolition projects worldwide. A Pentruder wall saw in combination with a Brokk demolition robot is a perfect setup for any concrete cutting and coring organisation looking to go about precision concrete demolition in a new, innovative, and more profitable way. Visit us at the upcoming Totally Concrete Expo where we will have the Pentruder and Brokk combination on display. ■

For more information contact Robin Jackson on +27 82 413 1991 or robin.jackson@ddequip.co.za or visit our website at www.ddequip.co.za.



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Milan moves, with Cifa

The K41 XRZ sets a fast pace on the Tangenziale Est Esterna di Milano (TEEM), Milan Outer Eastern Bypass

Without a doubt, one of the most important ongoing infrastructural interventions in Italy today is the TEEM construction site, Milan Outer Bypass, which passes east of the city and is destined to relieve the current extreme traffic congestion in the Greater Milan area, improving traffic flows to the east and south of the city. The bypass, together with BreBeMi, to which it's connected through a highway junction (already completed), is also one of the pillars in support of EXPO 2015, the World Exposition that this year was held in Milan, starting from May 1st. The project is regarded as being of strategic importance, as evidenced by the inclusion of TEEM in the list of works that make up the Trans-European Transport Network.

The project will also provide a financial boost, creating 28,000 jobs at a time of economic slump and by indirectly generating a further €6 billion. The area in question is listed by the OECD as one of the 40 most industrially and financially important territories in the world, thanks to the sizeable contribution it makes to the GDP of Italy (over 10%).

Could Cifa miss such an important jobsite event? Certainly not! Indeed, many of our machines have worked and are still working along the 32 km of the TEEM layout; among these we chose to introduce to you a truck-mounted concrete pump, the K41L XRZ, working along Lot B of TEEM, one of the first sections to be completed.

Concrete casting on the construction site is managed by Icea, which has been following, for several years, all the production, transportation and placing of all mixes (from cemented mix to special concretes for specific applications) on behalf of the lot's main contractor, Arco TEEM Consortium, of which Impresa Pizzarotti & C S.p.A. of Parma is part.

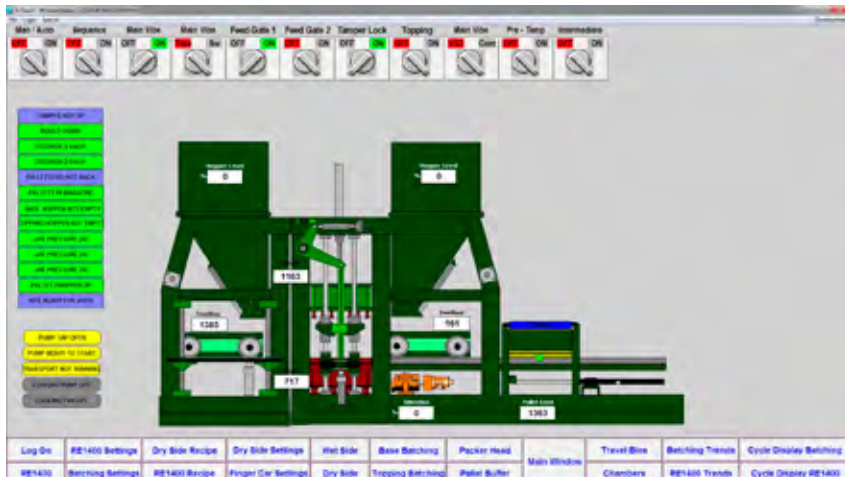
At the time of our visit, Icea was working on casting the base of a large laminating rain-water tank; involving casting of around 700 m³ of concrete. The enterprise of Belpasso (Catania province) chose our K41L XRZ truck-mounted pump, fed by an array of Cifa mixers that ensured a continuous flow of concrete from the company's production plant to the casting site. Since the foundation was wide, the K41L XRZ was chosen by Icea for its versatility and productivity (140 m³/hour), as well as for its horizontal reach (over 35 m) guaranteed by the five-section boom.

In his statement, Icea's owner, Angelo Di Fede, expresses his extreme satisfaction of the K41L XRZ and for the unfailing jobsite assistance provided by one of the most important service and spare parts centres in Italy, Effretti (that also follows sales in its area): "We have been working with Cifa machines for many years and I must say that we have never had any problem with machines (of any kind) we have in the fleet. Ordinary maintenance interventions and small problems on the jobsite have always been solved by an efficient and prompt assistance service. We place much importance on maintenance, which we pass on to specialised assistance centres, since we believe that always having efficient machines is the key to guaranteeing exemplary jobsite productivity as well as complying with the time limits (which are very tight here) our customers demand. We are specialists in the concrete production chain and, as such, we must be able to guarantee that those who choose us for a turnkey service will have no problems. In this Cifa, with its machines and its assistance service, gives us outstanding support." ■

For more information, visit www.cifa.com



New technology improves efficiency on tried-and-trusted equipment



Part of the SCADA system which displays graphics of machine operation and increases productivity.

Cape Brick remains the longest-running manufacturer of the most energy-efficient and environmentally-friendly quality concrete masonry products in the Western Cape, and is committed to customer service excellence and product innovation.

A major contributing factor to this ongoing success is maintaining long-standing relationships partners such as Pan Mixers South Africa (PMSA) – the largest supplier of concrete brick, block and paving making machinery in Africa, which has remained the equipment supplier-of-choice to Cape Brick’s Philippi manufacturing plant for over 15 years.

Cape Brick MD Anthony Gracie says the company recently added a supervisory control and data acquisition (SCADA) system, which serves the mixing and block plants on an integrated platform. “The SCADA system displays visual, animated graphics of machine operation, machine parameter control and data capture. It has proven to be indispensable as its advanced and interactive efficiency increases daily production by between 10 and 20%.”

Another innovative PMSA concrete solution supplied recently to Cape Brick is the FL Ludwig wall scraper mounted probe, which ensures highly-consistent water dosing in the mixture, producing more predictable concrete.

“The most important thing in this industry must be the predictability of the concrete, as the plants are susceptible to changes in moisture content. If the water is consistent, the concrete will be too,

and this tool enables precise humidity monitoring in process flows, which ultimately results in the plants running more consistently,” Gracie explains.

PMSA sales and marketing manager Quintin Booysen says: “PMSA prides itself on its equipment standards and long-lasting business relationships. This is reflected in the fact that our relationship with Cape Brick continues to grow, even after 15 years.”

Gracie indicates that Cape Brick experienced a 30% growth in turnover in 2014, and anticipates similar success in 2015. “The industry is looking good, and we are remaining competitive by maintaining a high output of a diverse range of superior-quality products. PMSA has been a vital partner in our ongoing success,” he concludes.

About Pan Mixers SA

Pan Mixers SA 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. Pan Mixers have been servicing the needs of local and overseas customers since 1976. PMSA brick-making machinery, in the Johannesburg area alone, produces 2,000,000 bricks per day. ■

More information from Quintin Booysen,
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www.pmsa.com



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Within Fives, the Cement | Minerals business line has developed pioneering technologies such as the FCB Horomill®, the FCB TSV™ Classifier and the FCB Zero-NOx Preca in order to reduce energy and water consumption, gas emissions and the carbon footprint of its customers' plants. These latest technologies have been implemented in numerous plants, including in Egypt (Beni Suef), in Mexico (Hermosillo) and in the Philippines at the Teresa and Norzagaray plants, which are currently in the start-up phase.

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Scope of work:

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- Modifications to the existing No.1 production line for the raw material preparation
- Implementation of the complete new No.2 line
- Supply of proprietary equipment



Fives proprietary equipment:

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Capacity: 85-125 tph (Teresa) & 106 tph (Norzagaray)

Scope of work:

Turnkey contracts

- Raw material feeding: clinker through connection to the existing circuit, additives by truck dump, fly ash by pneumatic unloading
- Mill feed bins
- Cement grinding workshop fitted with one **FCB Horomill®** 3800 and one **FCB TSV™ Classifier** 4500, associated with a **FCB Aerodecantor** dryer and a **TGT™** filter
- The cement transport system to the silos and the cement silo (Teresa)
- The control and supervision system and the electrical sub-station dedicated to this new grinding plant



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HAVER & BOECKER ROTO-PACKER® ADAMS® stands for environmentally friendly packing of powder-type goods into sealed, compact and weather-tight PE bags. The Form Fill Seal (FFS) system has already made a name for itself in the cement industry and can be recommended for increasing plant performance, mainly through its technical improvements. The advantages offered by this type of packaging have been appreciated and welcomed by customers in every industry.

“Our customers are reporting market share increases due entirely to the new packaging. They have recognised the opportunity to differentiate their products through their packaging. The compact and extremely clean-looking PE bag increases end-user confidence in the brand itself. The bag appears more distinctive and thus has a direct and very positive impact on the image of our customers,” says ADAMS® product manager, Sebastian Südhoff.

The FFS bags are not only clean and tightly sealed, but their compact size also facilitates space-saving transport and storage. Material loss is prevented, impacting positively on both the environment and the wallet. It guarantees a cleaner logistics chain and considerably extended storage times – an enormous advantage for hygroscopic materials. In addition, outdoor storage, which involves minimal cost, is now possible.

When it comes to marketing, plastic bags have a significant plus-point in that they can be format-printed in multiple colours over the complete surface, e.g. photographic prints, product information and bar codes.

In addition to the high packing speeds of modern packing plants, ease of operation and noise protection are also important features. The complete encapsulation of the HAYER ADAMS® equipment keeps noise levels low as well as resulting in considerable dust reduction.

A significant increase in performance has led to greater acceptance in the cement sector. After its market introduction, the ADAMS® was improved so that it could meet the toughest customer demands for speed and product variety. While in the beginning speeds of 1,200 bags/hr could be reached in an environmentally friendly way with powder-type products, today speeds of up to 2,000 bags/hr are possible.

With the ROTO-PACKER® ADAMS MINI, which is based on the proven ADAMS® technology, HAYER & BOECKER has expanded the packing weight spectrum so that packages of 1 to 10 kg can now be filled for the first time. It reaches speeds of up to 600 bags/hr at steplessly selectable weights of 1 to 10 kg. Today filling into bags made from a tubular film or into every type of pre-manufactured bag is possible. And by using an additional module, the bags can be formed directly from a flat film within the ROTO-PACKER® system. ■

More information at www.haverboecker.com or www.packyourpowder.com



The ROTO-PACKER® ADAMS MINI small-bag packing machine, based on the proven ADAMS® technology, fills powder products into compact PE bags, reaching speeds of up to 600 bags/hr at steplessly selectable weights from 1 to 10 kg.

SA French's tower cranes for major South African dam project



Potain tower cranes played an important materials handling role in the construction of De Hoop Dam.

Potain tower cranes will dominate the horizon on a Department of Water and Sanitation's (DWS) project to raise the Clanwilliam Dam wall by 13 m. This will be the largest dam construction project undertaken by DWS after the De Hoop Dam project, where Potain tower cranes were also deployed. Clanwilliam Dam is a showcase for local supplier SA French in using tower cranes for such complex civil engineering projects.

SA French, a division of Torre Industrial Holdings, will supply an MD 485 tower crane, which is adaptable to different job sites because of its modular design and efficient load handling capabilities. Its Optima controls enable smooth speed changes and high productivity. SA French will also supply a Potain MC310 crane. The 25-t Potain MD 485 tower crane will pour the bulk of the concrete at the Clanwilliam Dam, supplemented by the Potain MC 310 for smaller lifts.

The MD 485 tower crane was used very successfully at the De Hoop Dam project. The crane has been dismantled and transported from Limpopo Province to Clanwilliam Dam in the Western Cape. SA French's extensive experience at De Hoop will

facilitate the construction process at Clanwilliam and help drive down the overall cost for the client.

"The methodology of using tower cranes for large dam construction is well established, and much of the knowledge and experience we gained at De Hoop and other DWS dams will be easily transferrable to Clanwilliam," says Quentin van Breda, MD, SA French. The latest project will increase the Full Supply Level (FSL) of Clanwilliam dam by raising the wall by 13 m, providing an additional 70 million cubic metres of water a year to downstream farmers.

SA French's strong customer focus was demonstrated in its recommendation that simultaneous erection of the two tower cranes would save the client time and money. The company will have a team on site for the commissioning process, while DWS will use its own operators. "Part of our in-house offering is to train any certified operators that the client may require," Van Breda says. ■

**More information from Quentin Van Breda,
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For the concrete processing sector, WAMGROUP® offers a comprehensive range of feeding and conveying equipment such as screw feeders or belt conveyors. To transfer microsilica (silica fume) contained in FIBCs to storage silos, SBB-type FIBC dischargers are used to pneumatically convey the material into the silo. The POWPUMP™ powder Injector continuously feeds powdery material from a hopper into an air flow without allowing any air to flow back into the screw feeder.

To ease material flow inside the silo, WAMGROUP® offers a variety of flow aids such as vibrating aerators, electric and pneumatic vibrators, and external pneumatic hammers.

To safeguard the silos, WAMGROUP® also recommends an electronically controlled silo safety package that comprises an air-jet-cleaned silo venting filter, a pressure meter and a maximum/minimum level indicator. This system, supplied in component form, prevents overfilling and excess pressurisation, thus avoiding damage to the silo, to the venting filter or to other accessories. It also reduces the risk of dust emission. In addition, pressure relief valves and innovative pipe elbows are available to complete the range.

WAMGROUP® also provides a series of components for pneumatic conveying lines, including polymer-cast pipe elbows, pinch valves and dust collectors.

To handle the disposal of processing waste, the CONSEP® concrete reclaimer supplied by WAMGROUP® enables the recovery of residual concrete and wash-water from truck mixers or concrete pumps, making it possible for concrete manufacturers to comply with environmental standards, particularly those referring to environmental impact, prevention of contamination and recirculation of the waste-water and aggregates in concrete plants.

For this sector WAMGROUP® is able to offer state-of-the-art standard solutions using the most sophisticated production technologies available today.

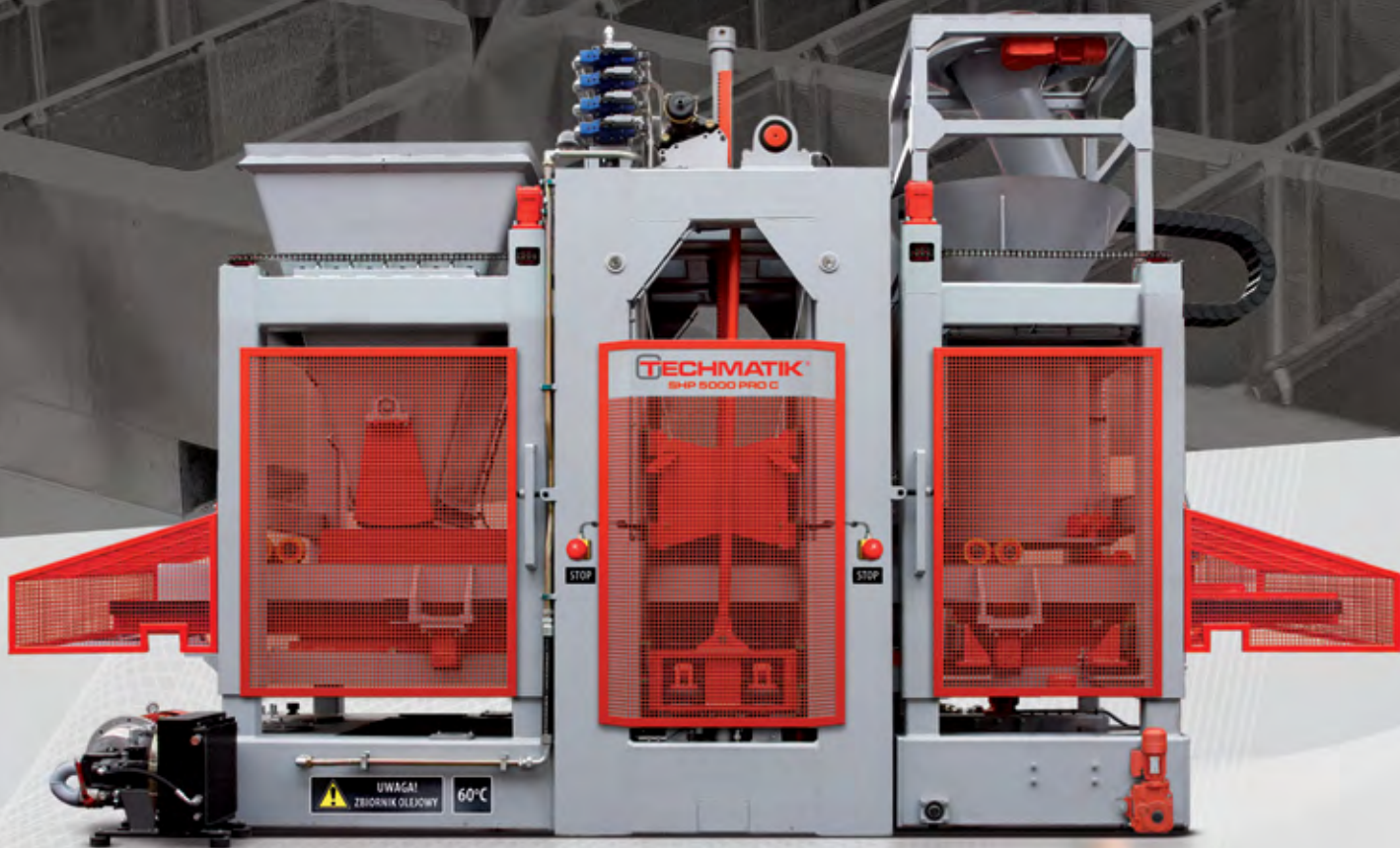
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Help shape the future of concrete in Africa

Serve on the 2016 totally concrete expo advisory board

The Totally Concrete Expo 2016 advisory board is designed to assist in driving an impartial, yet informed dialogue on the rapidly evolving industry.

The advisory board will extend the influence of the conference by providing insights in the trends and breaking news in the cement, concrete and construction industries on behalf of the conference as well as offering guidance in the overall programme development.

Comprising senior executives from a cross-section of organisations from all parts of the world, who are active in Africa's concrete and construction industries, the board'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.

Some of the benefits of being an advisory board member include:

- Acknowledgment of membership on all conference materials including a photo a biography on the event

website, in Concrete Trends Journal and in media releases sent globally

- Complimentary access to the event
- An opportunity to grow your profile and the ability to network with professionals from all parts of the world

The organising committee of the 2015 Totally Concrete extends a big thank you to the 31 seasoned industry professionals who served on the 2015 advisory board, and so generously volunteered their time to help construct the 100+ speaker strong conference programme.

They worked to ensure that the quality of the content provided to attendees was high-level, relevant, and timely. We thank them for their dedication that was critical to the success of the conference!

Should you be interested in serving on the 2016 board please contact Soren Du Preez: soren.dupreez@hypenica.com, Phone: +27 21 700 4300

Totally Concrete Expo 2015 advisory board members

- **Dr Reinhold Amsbuchler**, Technical Consultant, Lafarge, South Africa
- **Cyril Attwell**, Group Concrete and Research Manager, Murray & Roberts, South Africa
- **Hennie Botes**, CEO, Moladi Construction, South Africa
- **Ismail Carr**, Marketing and Communications Executive, Gauteng Partnership Fund, South Africa*
- **Obert Chakarisa**, CEO, South African Institute of Architecture (SAIA), South Africa
- **Itumeleng Dlamini**, Executive Director, Master Builders South Africa, South Africa*
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- **Dr Mohammed Alhaj Hussein**, Head of Training and Research, Saudi Green Building Council, Saudi Arabia
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- **Daniel van der Merwe**, President, Gauteng Institute of Architecture, South Africa
- **Taco Voogt**, Technical Director, Concrete Manufacturers Association, South Africa
- **Eugene van Vuuren**, Structural Engineer and Stadium Consultant, South Africa
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Pilosio: the name for customised solutions

Pilosio provided an exceptional solution for casting the hollow circular columns on the construction site for the St. Anna and St. Sebastian Hospital, Caserta.

Complex architectural works present a challenge to more than just the architects and structural engineers. Often, bold, elaborate projects require a detailed study of innovative construction methods as well as a great deal of planning relating to the equipment necessary for their construction.

An interesting example is the solution designed by the Pilosio technical team for the construction of the hollow circular pillars on the site of the hospital in Caserta, where over 4,180 m² of interior space has been created to house 500 patients.



The Hospital of St. Anna and St. Sebastian has 13 large pillars, known as the 'Centuriatio', which are four storeys high and support the floors of the hospital wings. The cavity inside the pillars allows wiring to be passed through it giving a practical solution to the problem of technical compartments.

The hollow pillars' total height is 18 m, with an outer diameter of 2 m and an internal diameter of 1.40 m. Since the casting process was scheduled for the summer, the internal temperature of the 'steel pipe' of the formwork could have reached a temperature of 50°C. For this reason the construction company required an ad hoc solution for the safety of the workers. Taking this problem into consideration, Pilosio designed a solution to ensure that no worker had to carry out any routine work inside the formwork during the operations of arming, disarming and handling.

The external formwork is made from two half-shells, while the internal structure is a single mould, with six conical semi-circular elements connected to each other through a 'conical sledge system' that allows the automatic removal of the entire formwork with a construction site crane.

Once the necessary period for the conglomerate to take has passed, the removal of the internal formwork is very simple and safe: lifting the internal formwork with a hook, the six component parts slide over one another, reducing the circumference, and so allow the complete removal of the formwork, without any of the workforce having to enclose themselves within the pillar.

If for any reason, access to the interior is necessary, an integrated ladder system has been provided that is embedded and welded onto the formwork structure as well as a safe working platform at the base, also useful as protection from any falling objects.

The system was used with climbing platforms for the casting process in five successive stages, and the formwork reused a total of 52 times

This solution has a double advantage. Firstly: rapid execution due to the quick operation of disarming and rearming with the use of cranes to lift and remove the whole formwork. Secondly: a high safety level since all the work is carried out externally. The formwork was made directly in the Pilosio metal workshop, where all the mounting and handling testing was done to individualise any eventual critical points.

Besides this special system, Pilosio also provided the following equipment:

- To make partition walls with moulds of circular pillars incorporated in the walls, special formwork that was designed to be reused for the casting of circular pillars of 60/70 cm diameter.
- P300 standard formwork for the construction of vertical walls, stairwells and elevator shafts.
- SVELT circular formwork for the construction of curved walls.
- LINEAR formwork system for floor slabs with steel props and aluminum props for areas at greater heights.
- T28 TOWERS for making cantilevered floors at elevated heights.
- Service access towers in multidirectional MP of 150x250 cm. ■

**More information from Manuela Zanier,
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mob: +39 340 1027759**



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Mayday's Syntesi 350 mixers incorporate innovative features

Mayday Equipment has supplemented its range of Syntesi electrically-driven concrete mixers with petrol-driven variants. This move underlines the company's commitment to safety compliance on the mines where the Syntesi mixers are used.

A great deal of attention was paid to detail during the engineering of the Syntesi 350 concrete mixer. "This has resulted in several innovations, including optimum stability of the drum while loading material. The traditional drum lock mechanism, which is found on concrete mixers, has been completely eliminated from this design. In addition the elimination of the ring gear and pinion gears used to rotate the drum significantly reduces the cost of maintenance.

The Syntesi 350 uses a direct drive Honda GX160QX, which helps reduce the overall cost of the machine and results in lower maintenance costs.

Adding to the safety features is the emergency stop switch located on the outside of the engine cabin, which allows the operator to quickly and easily cut the engine when required. The machine is designed for use in the most demanding environments. With the mixing drum constructed in high resistance forged steel and the powder coated framework, the Syntesi 350 is built for optimum reliability and robustness.



In addition, the patented transmission system with gearbox and high resistance Poly-V belt is enclosed in the drum support arm housing to provide maximum protection from sand and other aggregates. The drum paddles are bolted on to make replacement easier and the drum itself is more resistant to the breakage that is typical where welded paddles are included. Another design element is the large-bottomed drum with counter-bottom, special paddle geometry and low drum speed. All of these elements result in a more uniform, well-blended mixture.

Effortless drum tilting, when working with capacities from 280 to 345 kg, is provided through the gearbox and the large worm screw tilting wheel. The Syntesi 350 is lightweight, yet sturdy and reliable. Operation is focused on noise reduction, with noise emission levels of lower than 75 dB(A).

This mixer is the result of extensive research and design and will be a welcome addition to any rental or end-user fleet of mixing equipment.

Also in Mayday Equipment's range of concrete mixers, are the mortar mixer models ranging from 56 lt to 120 lt. These are ideal for small building sites or refurbishment work. ■

**More information from Nina Mason,
Tel: +27(0)11 614 2023/4 / www.maydayequipment.co.za**

Upgraded angle grinders maximise safety and productivity

The upgraded Bosch GWS 13 and GWS 17 classes of professional angle grinders in the 'Power & Protection' range are the ideal tools for professionals with a core focus on maximising safety and productivity.

Bosch Industrial Power Tools SA senior brand manager Juergen Lauer notes that the new GWS grinders are far superior to their predecessor models due to their much improved productivity and user protection.

"The GWS 13-125 CI or CIE and GWS 17-125 CI or CIE models boast powerful 1,300 and 1,700-watt motors respectively and are well equipped with additional safety features."

A 'Soft Start' feature reduces the start-up torque to protect the motor, while 'Constant Electronic' technology keeps the selected speed constant and optimises cut quality. To further improve control and lower user fatigue, an anti-vibration auxiliary handle reduces vibration by 40 percent.

To minimise threat of injury caused by dangerous tool kickback, the innovative 'KickBack Stop' safety feature is prompted by microprocessor triggers in the event of a disk



jam. User safety is further enhanced by the restart protection that prevents an uncontrolled start-up after power interruption, and by a burst-proof blade guard with tool-free adjustment.

The CI models are best suited to heavy duty applications, such as cutting steel pipes and profiles, while the CIE models are suitable for working on various materials, including concrete, stone and tile. Both incorporate variable speed

pre-selection, allowing the user to match working speed to the material being cut.

The longevity of this superior range is ensured with a redesigned housing cover to improve ventilation and dust protection, while overload protection shuts off the tool to reduce over-heating and motor damage. "Maximum safety and productivity over extended time are guaranteed," concludes Lauer. ■

**More information from Juergen Lauer,
Tel: +27(0)11 651 9600 / www.bosch.co.za**

Atlas Copco and Gesan partner to expand Predictable Power

To become 'First in Mind, First in Choice' in power generation, Atlas Copco and industrial generator brand Gesan have joined forces. Atlas Copco can now provide Predictable Power solutions to a very wide range of industries. The company will offer industry-specific products through a network of expert dealers.

"Atlas Copco is a strong, global brand and Gesan has a reputation for delivering quality industrial power solutions. With the addition of the Gesan product line, Atlas Copco provides Predictable Power for customers in a wider range of industries than ever before," explains Ben van Hove, vice president marketing portable power with Atlas Copco Portable Energy. "Product development to optimise cost-efficiency, performance and operation is our primary focus."

A brand within the Atlas Copco group since 2011, Gesan will become a dedicated Atlas Copco product line. "Gesan has an outstanding reputation with our industrial customers and we are proud to continue using the Gesan name within our Atlas Copco product portfolio," says Van Hove. The Gesan line generators will have their own design in line with the Atlas Copco product branding. Unit names will follow the Atlas Copco naming standards, and all existing Gesan products were renamed by the end of 2014.

Atlas Copco will operate a dual market approach. Atlas Copco generators for industries such as oil and gas, construction, mining and rental are sold through the Atlas Copco customer centres. Atlas Copco Gesan solutions are distributed via a dealer



Atlas Copco and industrial generator brand Gesan are joining forces.

network that will cover segments such as healthcare, data centers, telecom, manufacturing, government and transportation.

"Our goal is to get the right products to the right people using the right channels and our dealers still offer installation, project management, maintenance and service. What is more, we're actively looking to expand our dealer network," explains Atlas Copco Gesan Line business development manager Jose Antonio Gomez.

"Sharing our knowledge and expertise has improved our product portfolio, providing new, productive and efficient solutions for our customers." concludes Van Hove. ■

**More information from Kathryn Coetzer,
Tel: +27(0)11 821 9019 / www.atlascopco.co.za**



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Tough and versatile, WINGET 2B and 4B Series site dumpers offer reliability and simplicity for a long, productive life on any construction site. Both series include hydraulic tipping and are fitted with a rugged and durable Lister Petter air cooled diesel engine (available with hand or electric start). Heavy duty axles with oil immersed multi-plate disc brakes maintain braking efficiency and minimise maintenance in site conditions.

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WINGET

Engen gas engine oils help to put waste gas to work

Recognising the new impetus on the use of waste gases as a source of energy, Engen Petroleum, the country's Coolest Petrol Station brand, is wowing front runners of this increasingly popular and environmentally clean technology with its comprehensive range of lubricating oils for engines running on waste gases – gases, which would otherwise contribute to global warming or unpleasant odours by being released into the atmosphere.

So many gases

According to Engen Lubricants business manager, John Kennedy, numerous waste gases are found in nature and as by-products of industrial processes, including natural gas, biogas (landfill and sewage gases), coal seam gas (coal mine and coal bed gases), and furnace gases (from steel, ferrochrome, ferromanganese and calcium carbide production plants).

"Instead of being an environmental burden, these gases can run gas engines of various designs for specialist tasks including gas transmission, power generation, conversion into less harmful substances and many other applications," says Kennedy.

So many uses

So, for example, methane produced by waste sites can be burnt in gas engines to generate power, while simultaneously being changed into carbon dioxide that is far less harmful for the environment.

Other applications include converting sewage to methane for running engines; converting carbon monoxide produced by steel works to carbon dioxide; and recovering gas from farm waste such as vegetation and refinery waste water.

Kennedy says after all these wastes have been passed through a 'digestion' process to produce the gas used in gas engines, the other by-products are completely safe fertiliser and water that can be used for irrigation.

Meeting complex demands

The Engen range of premium quality gas engine oils (GEOs) has been formulated with the latest technology to meet the complex demands of gas engines and the fuels with which they operate," says Kennedy.

"Gas engines require lubricants formulated specifically for them, to meet the high demands of gas engine designs, operating conditions and environmental factors," he adds.

Well-formulated gas engine oil takes the following into account:

- Ash content and composition – Gas engines rely solely on lubricant ash to lubricate between the hot valve face and seat. Engen oils contain ash levels in narrow concentration

bands to optimise performance and prevent damage: too little can lead to increased wear while too much can cause guttering, torching and detonation of deposits.

- High resistance to nitration and oxidation – Gas engine oils must be able to handle high levels of oxidation and nitration as a result of high operating temperatures because of factors including the high burning temperature of methane compared to liquid fuels.
- Fuel type – Fuel gases differ in composition depending on their origin and can contain impurities which can harm engines. Gas engine oils need to be specially formulated to minimise wear and corrosion due to impurities in the fuel gas.

Horses for courses

Based on new detergent technology, an optimised anti-oxidant system and superior quality base oil, Engen's premium-quality gas engine oils are ideally suited for use in three main applications.

1. Engen GEO BL-40

Engen GEO BL-40 is designed for use in landfill gas (LFG) and biogas (digester) applications. Featuring low ash content, this oil provides outstanding performance in modern higher BMEP engines, especially those prone to ash sensitivity and detonation, and has demonstrated extended drain capabilities when compared to competitor products.

2. Engen GEO LL-40

Recommended for use in spark-ignited gas engines burning natural gas, Engen GEO LL-40 has been designed to meet the more stringent requirements of modern engines. Expect outstanding performance, wear protection and extended oil drain capability in the latest generation gas engines, both stoichiometric and lean-burn.

3. Engen GEO N-40

Engen GEO N-40 has been designed to provide the highest levels of engine protection as well as optimised performance.

"Engen has seen that this source of energy is becoming very popular, and we are proud to say we are ready to provide its unique lubrication oils requirements," says Kennedy. ■

**More information from Gavin Smith,
Tel: +27(0)21 403 4312, email: Gavin.Smith@engenoil.com**

Silicon Technology: producer of silica fume for the SA market



Recently Silicon Technology (Pty) Ltd. in South Africa has formed an alliance with Norchem, Inc. a leading producer of silica fume. This partnership has opened up opportunities to offer silica fume of the same high standard and quality as the Norchem product that has been available in the global market for more than 40-years. Siltech is producing silica fume that meets the ASTM C-1240 standard and is available to a variety of applications in the South African market and nearby markets.

“High-strength concrete, enhanced with silica fume, provides architects and engineers with greater design flexibility.”

From its inception in 1975, Norchem, and now Siltech, has been at the forefront of the development and manufacture of silica fume products. Norchem answered the construction industry’s need for a high-performance concrete admixture by becoming the first company in North America to develop and market silica fume. We want to bring the same transformation to the South African marketplace.

For 40 years Norchem has built a strong reputation for their outstanding technical expertise, superior customer support and the highest level of quality. Norchem silica fume is in use all over the globe

by many of the world’s most respected construction companies and in a broad range of other cementitious applications including concrete roofing tile, gypsum and cement wallboards, fibre-cement products, refractories, oil-well grouts and cementitious repair products.

High Performance Concrete (HPC), containing silica fume, greatly enhances durability. HPC produced with silica fume delivers increased toughness and increases resistance to abrasion, corrosion from chemicals and life-cycle cost efficiencies. Highway bridges, parking decks, marine structures and bridge deck overlays are subject to constant deterioration caused by rebar corrosion, abrasion and chemical attack. Silica fume will protect concrete against deicing salts, seawater and abrasion from road traffic. Rebar corrosion activity and concrete deterioration are virtually eliminated and maintenance costs are eliminated.

High-strength concrete, that is enhanced with silica fume, provides architects and engineers with greater design flexibility. Traditionally used in high-rise buildings for the benefit of smaller columns (increasing the usable space), high-strength concrete containing silica fume is often used in precast and pre-stressed girders, allowing longer spans in structural bridge designs. ■

More information from Silicon Technology (Pty) Ltd,
Tel: +27(0)34 377 7210,
E-mail: info@siltech.co.za



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ALCO-Safe helps keep the Liviero Group OHS compliant

The Liviero Group is South Africa's largest privately owned multi-disciplinary construction company, and consists of multiple specialised operating companies: Liviero Building, Liviero Civils, Liviero Mining, Liviero Drill & Blast and Liviero Plant. This enables the Group to deliver construction and engineering solutions in the civil engineering, building and mining sectors. Liviero has been involved in several notable projects, including the Gautrain and the FNB Soccer Stadium.



ALCO-safe drug testing equipment.



ALCO-safe DDS2 full kit.

As a construction company, the Liviero Group is bound by the Occupational Health and Safety (OHS) Act, which stipulates zero tolerance of intoxication in the workplace. Without a standardised means to regularly test for alcohol and drug use onsite, Liviero risked non-compliance with the act.

"After conducting due diligence, we identified ALCO-Safe as our supplier of choice. Their reputation in the market is outstanding, and their equipment, while it may carry an initially higher capital outlay, is of the best quality and will last for many years," explains Tania Bezuidenhout, SHEQ manager at Liviero Civils.

ALCO-Safe supplied the Group with Lion AlcoBlow devices, Lion Alcometer 500P units and Concateno portable Drug Detection Systems (DDS).

These solutions are used in conjunction with each other to deliver a comprehensive drug and alcohol screening solution that enhances safety on site while improving compliance and ensuring all workers are fully sober for maximum productivity.

Employees are tested at the site entrance using the AlcoBlow device, which delivers high-speed pass or fail testing without the need for a mouthpiece or physical contact between the subject and the device.

It can also be used to test the air above liquids for the presence of alcohol, ensuring no contraband substances are brought on to site.

If employees 'fail' this first point of entry test, they are taken to the site office for testing with the Alcometer. This device gives an accurate reading of the level of alcohol in the test subject's breath, and also provides a printout of all of the subject's details and levels of intoxication.

Employees are then tested one final time to ensure that no foul play or unfair practice occurs, and then appropriate action can be taken. The DDS system is used to conduct random onsite drug testing in addition to the annual physical checkups performed.

This highly portable system can be taken to the different sites, making it very cost effective. In addition, it uses saliva samples rather than urine, which means it is non-invasive and does not require any special testing considerations. Using one swab, the DDS can test for the presence of five commonly abused narcotic substances.

"The construction industry can be dangerous, and compliance with the OHS Act is of the utmost importance when the lives and safety of workers is potentially at stake. Utilising a combination of testing equipment, Liviero is creating a safer workplace for all employees, while reducing risk and ensuring compliance with the OHS Act," says Rhys Evans, director of ALCO-Safe.

In addition to supplying the equipment, ALCO-Safe also conducted appropriate training for all safety officers as well as site agents and several contracts managers. By including higher-level authorities such as managers, Liviero ensures that no unfairness or unorthodox practises occur, and that all tests are conducted correctly to ensure accurate results. The success of the screening practices deployed by Liviero can be seen in a greater feeling of safety onsite, as well as in improved compliance with OHS. ■

**More information from Rhys Evans,
Tel: +27(0)12-343 8114 / www.alcosafe.co.za**

TAL's modernised laboratory augments quality and research

TAL recently modernised its laboratory through the acquisition of additional state-of-the-art equipment which will allow for increased research and testing of its products for the South African market. The new equipment will be housed in a custom-built facility located at TAL's head office in Olifantsfontein, Pretoria.

The technical laboratory features four separate testing facilities ensuring TAL's products meet international standards and are fit for use in local conditions.

"We ensure that all our procedures are in line with our ISO 9001:2008 quality management system certification, which means that in addition to testing done for South African conditions, our products also have to adhere to international European norms," says TAL's technical executive Obert Rukato.

TAL manufactures products locally at three plants and its laboratories develop products that are specifically compatible with the harsh South African climatic conditions. By testing each product batch manufactured individually and conducting regular in-process quality checks on its products, TAL ensures that



the products of the correct and consistent quality are released into the market providing customer's with peace of mind.

"The new equipment enhances our research capabilities and the efficient testing of products, emphasises our commitment to research and quality," says Rukato.

TAL is ISO 9001:2008 quality management system certified and its products are designed, manufactured and tested to TAL standards, assuring customers that products will perform to specification.

New products are continuously developed and benchmarked to meet EN Standards and all current products are tested regularly against this benchmark.

"The additional equipment will only add to our credibility of being able to provide technically advanced construction adhesives and chemicals to the rest of the continent," says Chaitan Manga, general manager at TAL. ■

More information from www.tal.co.za or the TAL Technical Advisory Service on 0860 000 825



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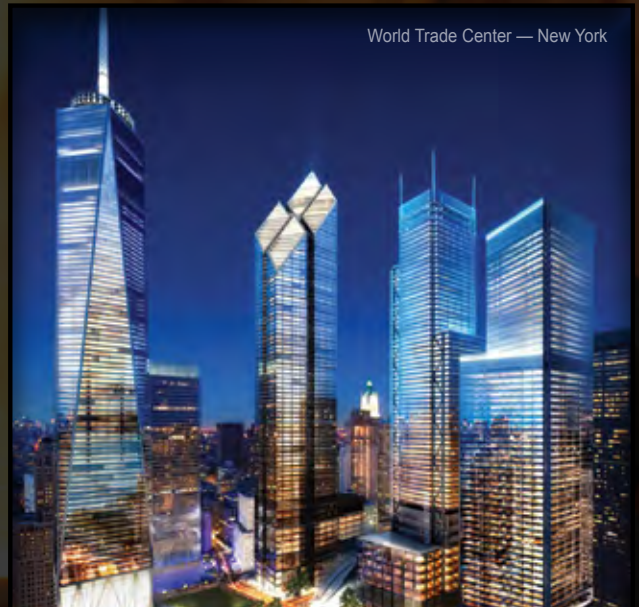
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Lafarge Hydromedia™: the dry surface solution



Hydromedia™ porous concrete has made a vast improvement to the Orange Babies Montessori Preschool playground in Midrand.

For some years now, Lafarge South Africa has been partnering development projects with the New Jerusalem Children's Home and the Orange Babies Montessori Preschool, which is on the same property. A problem that needed attention for some time was to find a solution for the Orange Babies' play area. It was largely bare ground and, after play-time, the staff was always confronted by extremely dirty children: either dusty ones or, after rain, very muddy ones!

Approached for help, Lafarge South Africa had the ideal solution in its unique Hydromedia™ porous concrete. Lightweight and durable, the versatile Hydromedia™, is available in a variety of colour options, while its rapid stormwater draining characteristic creates a drier, safer, slip-resistant surface, ideal for a playground. Lafarge's Readymix team supplied and placed 16 m³ of Hydromedia™ and 6 m³ of standard grey concrete, as part of the company's ongoing Corporate Social Investment (CSI) support for the Children's Home.

"Hydromedia™ is increasingly in demand for playgrounds," comments Lafarge South Africa's Shane Campbell, Hydromedia™ product manager. "Hydromedia™ solves a wide range of stormwater drainage problems, such as better walkways for residential and commercial properties, drier parking areas and safer surrounds for swimming pools."

The New Jerusalem Children's Home is a 24-hour residential care centre in Midrand, Gauteng, which addresses the needs of traumatised, abandoned, orphaned, abused and HIV-positive children, from birth to 18 years, from the surrounding communities. The Home was opened in 2000 by two sisters: Anna and Phina Mojapelo. The sisters share a commitment to sustainable development in common with Lafarge South Africa and promote 'green' practices. They built parts of the home from recycled containers and have a permaculture garden to supply the children and local community with fresh vegetables.

In 2012, Lafarge Gypsum provided materials to fit out the

containers and Lafarge Cement donated cement, furniture and teaching materials for an extension to the classrooms of the Orange Babies Montessori Preschool. In 2014, a major project of the New Jerusalem Children's Home was a bakery to provide the children with a source of essential vitamins and minerals, as well as a nutritional food, which could also generate income for the Home from sales to the local community. Lafarge South Africa built the bakery and arranged the purchase of modern baking equipment, together with a training course on how to use the new bakery.

"The play area for the children was previously particularly bad," says Esther Seabi, Lafarge South Africa's Transformation Manager. "Hydromedia™ has made a vast improvement and the youngsters love it! In no time at all after a storm, the surface can safely be played on again. Lafarge is proud to have helped the Orange Babies Preschool with this highly effective solution for their play area problem."

About Lafarge South Africa

Lafarge South Africa is the local presence of the international Lafarge Group, a world leader in building materials. The company is well positioned to help construct better homes and better community facilities in cities that are more desirable and sustainable surroundings for children to grow up in. This is because of its major local market position in cement, ready-mix concrete, aggregates, plasterboard and interior fitting solutions. Lafarge South Africa firmly believes that as a responsible company, it must help address the challenges of our society and, through various CSI initiatives, it plays an active role in the development of the communities in which it operates. ■

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'Youth in Construction' Expo fills gap in career guidance

In the absence of career guidance at South African schools, initiatives such as the 2015 Youth in Construction Expo in Johannesburg have become absolutely vital to promote the image of the building and civil engineering industries, says Dr Deon Landmann, education, training and transformation manager of Master Builders Association (MBA) North.

The 2015 Youth in Construction Expo, held at the Sci-Bono Discovery Centre in Newtown, Johannesburg, was a major success and exposed thousands of secondary school learners to the wide variety of career opportunities in construction. MBA North has played a key role in the initiative, in collaboration with the SA Forum of Civil Engineering Contractors, the SA Institution of Civil Engineering, the Consulting Engineers South Africa, and FET Colleges. The annual expos support the Department of Public Works' National Construction Week.

"MBA North has been a driving force behind the Youth in Construction Expo since it started six years ago. Over 40,000 learners have been exposed to career opportunities in the construction industry not only in Johannesburg, but also at exhibitions in Cape Town, Durban and Kimberley. With the building sector experiencing serious skills shortages, MBA North feels promotional events such as this are crucial in helping to recruit the future workforce – and leaders – of the industry. Because career guidance is no longer provided at schools, it is up to the industry to attract the youth to our industry," Dr Landmann stated.



Henk Delen (centre, in blue shirt), Education, Training and Transformation Officer at MBA North, with some of the exhibition stand staff and secondary school learners at the 2015 Youth in Construction Expo in Johannesburg.

He said over 3,500 learners from 32 schools and FET colleges had attended the 2015 event. Representatives from various construction industry companies and training institutions manned exhibition stands to publicise career opportunities to enthusiastic students at the Expo. Talks and hands-on activities enabled learners to see, touch, feel and appreciate the broad spectrum of exciting possibilities offered within the industry. ■

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Anglo American support the NDP through the EIP

Start-up entrepreneurs have graduated from Anglo American's Entrepreneur Internship Programme, (EIP), which reflects Anglo American's commitment to supporting Government's National Development Plan through job creation and supplier development.

The programme was developed to enable high-potential entrepreneurs and established business owners to help hone their skills over a period of 12 to 18 months, to create high-impact, and sustainable businesses that will offer employment opportunities to their communities.

Now in its second phase, the EIP has achieved an 80% success rate, and has supported 28 existing businesses, including six



Four of the six start-up entrepreneurs who completed the EIP. From left: Patrick Mkhonto, Phineas Malesela Letsoalo, JC Visser and Phakamisa Tyali.

start-ups and 22 established businesses through the Anglo American Zimele Sebenza Fund.

The EIP programme, conceptualised in the company's Supply Chain department together with Aurik Business Incubator, combines business development support with industry exposure, mentoring and networking.

Together these empower individuals to bring their ideas to market, or grow existing businesses to the next level. The EIP also enables entrepreneurs to learn how they can be incorporated into supply chains, including that of Anglo American. Moreover they are also exposed and connected to potential funding opportunities to help grow their businesses.

The programme focuses on practical and tangible support, which includes ongoing mentoring, monthly meetings with an integration facilitator, and practical advice.

The 22 existing businesses on the programme will continue receiving business development support until completion in mid-2015. The six start-up entrepreneurs who have completed the formal part of the EIP are: JC Visser, Specialised Plant Maintenance; Mmachidi Thobejane, Leaner Greener Fleet; Pakamisa Tyali, Dilokile Kanna Trading and Projects; Patrick Mkhonto, Mkhonto Financial Services; Phineas Letsoalo, PureChem Flux and Tshepo Mongale, Dehydraude Technik.

Saleh Mayet, head of finance at Anglo American in South Africa said, "We are proud of the work being done through the EIP. The programme develops practical skills which yield tangible results. We believe the programme goes beyond most training programmes as we are both enabling the creation of jobs and establishing sustainable businesses." ■

More information at www.angloamerican.com

Turner & Townsend mentorship promotes women-owned construction company

National women-owned and managed construction company, Isithembiso Suppliers, has achieved international ISO quality standards which enable the organisation to be more competitive, particularly when tendering for projects in the oil and gas industry. The company operates nationally and is especially active in the Saldanha and surrounding areas. Isithembiso was identified by PetroSA as one of 15 suppliers on their Women Enterprise and Supplier Development Programme, which seeks to ensure that women suppliers of PetroSA benefit from supplier development by helping build their businesses to be successful, sustainable and competitive. The development programme helps minimise compliance risk and develops a culture of quality within the suppliers' business processes.

Global construction and management consultants, Turner & Townsend, were appointed to enhance the skills and capabilities of the employees of these women-owned businesses. They assessed the skills needs of Isithembiso Suppliers and developed a training plan which culminated in Isithembiso's processes and systems being aligned with

the globally recognised ISO 9001:2008 quality standards. In addition the year-long mentorship programme has resulted in Isithembiso being upgraded from a level 3 BBBEE company to a level 2 business.

Rachel Ramedupe, a consultant for Turner & Townsend, who led the programme for Isithembiso said: "Since 2008 Turner & Townsend has had a successful working relationship with PetroSA on supplier enterprise development, with our past experience with suppliers in the construction and oil and gas industries providing us with a competitive advantage."

Says managing member of Isithembiso, Ntsikie Mgayiya: "We joined the programme at a critical time, when current clients required that our company's systems and processes be aligned with those of ISO 9001:2008 quality standards. Turner & Townsend was quick to understand our objectives and priorities and made positive, quality contributions to our business processes." ■

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The pour that made the Guinness Book of Records

In Downtown L.A., a seemingly endless concrete pour lasted over 18 hours, writes Jan de Beer.



Patricia and Philip Frost Museum of Science aquarium took 150 people, 131 concrete trucks and 25 hours to pour concrete for the aquarium's massive tank.



Turner construction set a new record for the longest continuous concrete pour for the Wilshire Grand Center in Los Angeles - 18.5 hours.

You don't expect dozens of entries about concrete in the Guinness Book of Records, but last year a major American construction company literally poured itself straight into this publication's noteworthy pages: Turner Construction Company set a world record for the longest continuous pour.

For the construction of the foundations of the new luxury Wilshire Grand Center in Los Angeles, Turner poured concrete, non-stop, for 18.5 hours.

The marathon pour started at 4.45 pm on February 15 (presumably the company wanted its employees to get over their passionate proceedings on Valentine's Day), when more than 200 Turner trucks made about 14 trips each to deliver 16,500 cubic metres of concrete for the 335-metre-high skyscraper's five-metre-thick foundations. That, according to Turner's calculations, created a foundation filled with around 37 million kilograms of concrete! When the pour was complete on Sunday, February 16, Turner's staff heaved a huge sigh of relief – and the Guys from Guinness immediately confirmed that the new record had been established.

As readers of *Concrete Trends* would know, you simply don't pitch up for work to achieve such a prolonged pour. Extensive pre-planning and coordination were called for to achieve a pour that normally would have taken some weeks to complete. Scott Borland, vice president of Turner Construction, said afterwards that although time-saving was an important goal, the fact that the concrete was poured at once, rather than in segments, meant that the company was able to create an "incredibly strong foundation for this iconic tower." The foundation is set on bedrock known as the Fernando Formation; this siltstone has been compressed by an ocean that formerly covered the area and is the perfect base for a building.

Turner Construction received the contracts for both the demolition of the former hotel on site and the construction of the new tower building. The company's record pour broke the previous world record of 16,000 cubic metres of concrete poured in a continuous pour set during the construction of the

Las Vegas hotel, The Venetian, in 1999. The workers probably would have groaned if their dearly beloveds had asked: "Shall I pour you a cup of coffee?" once home from their ordeal.

Wilshire Grand Center is a 335-metre-high skyscraper under construction in the Financial District of Downtown Los Angeles. The tower will become the tallest building in Los Angeles and the tallest west of the Mississippi River upon completion. It will be part of a mixed-use hotel, retail, observatory and office complex, expected to revitalise downtown Los Angeles and the area surrounding the building. The development of the complex is estimated to cost about R10 billion.

America a few months later witnessed another marathon concrete pour which, by size, was much smaller than the volume of the record-breaking effort in LA, but but – because of the extraordinary precision required – lasted an extra eight hours while pouring almost the same volume of concrete continuously.

This epic 25-hour pour took place in December 2014 to create a massive tank at a new Miami aquarium. Skanska, one of the world's leading construction companies, needed 150 staff members, 131 concrete trucks, and three days of fire drills to prevent potentially catastrophic failures, to pour close to 1,000 cubic metres of concrete for the Patricia and Philip Frost Museum of Science's state-of-the-art aquarium.

Skanska hit only one hiccup during the 25-hour pour: a concrete pump and conveyor belt went down for 30 minutes – but there was a Plan B in place so the pour was not interrupted. And, just in case Plan B did not work, the project team had a Plan C in the wings: a wrecker truck standing by to pull out the failed pump and replace it.

On completion next year, the new aquarium tank will look like a giant camera lens, tilted on its side, and visitors will walk below it to look at the fish swimming overhead. While probably incurring some stiff necks, the crowds will be blissfully unaware of the stiff task Skanska faced to complete a mind-blowing engineering feat.

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