

# CONCRETE

Journal of the African Cement and Concrete Industry

# trends

VOL 17 No 1 February 2014



Cement technology responds to a changing society

Six-star sustainability • Roads & Bridges • Nigerian Construction

hypenica



# PPC GIVES YOU STRENGTH BEYOND THE BAG



## EFFICIENT DELIVERIES

Intelligent deliveries for better building project management.



## MORE VALUE

Improved mix ratios make every bag go further.



## TECHNICAL SUPPORT LINE

Call 0800 023 470 and speak to one of our helpful technical experts.



## THE PPC BUILDER'S APP

Calculate quantities and find your nearest seller of PPC Cement. Download your free App at [www.ppc.co.za](http://www.ppc.co.za)



As a builder, your customers demand a lot from you. That's why you need a cement company you can rely on. At PPC, we're always exploring new possibilities and solutions that we can offer our clients so they can do the best job for all their projects. From a unique Builder's App for smartphones to on-site deliveries and our technical support line, PPC always gives you strength beyond the bag.



**PPC**  
**CEMENT**

OUR STRENGTH. YOUR VISION.

# CONCRETE trends

## contents

Volume 17 No 1 February 2014

Message from Gill Owens the editor .....	2
<b>Cover Story</b>	
Cement technology responds to a changing society .....	3
<b>Cement Industry News</b>	
NPC's green initiatives recognised .....	6
PPC grows its local capacity after acquiring Safika .....	6
Sephaku's cement is in the bag - and in stores! .....	8
Pan-African Cement Proficiency Testing scheme .....	9
Proud Partnership: Lafarge and Cargo Carriers' Owner-Driver Scheme .....	10
<b>News</b>	
PPC Builder's App nets silver at social media awards .....	12
Obituary: Professor Geoff Eustace Blight .....	12
Prestigious Award for Tarsus jointless industrial floor .....	14
M.B.A. North urges 'deeper look' at construction disasters .....	14
<b>Association News</b>	
ECSA: not just a regulatory body .....	15
Striving for excellence in concrete .....	16
<b>Industry Achiever</b>	
Dr Reinhold Amtsbüchler: an immense contribution recognised .....	18
<b>Africa Focus</b>	
Overview of the Nigerian construction industry: Ogun State experience .....	22
The seven marks of effective Government Contractor Compliance Programmes .....	24
Chryso Group's drive into Africa continues .....	26
Nigerian cement industry creates 1.6 m jobs .....	26
<b>Art &amp; Architecture</b>	
Six-star concrete sustainability .....	27
Concrete pushed to new levels at PPC Cement YCSA Awards .....	30
A South African first: Suzaan Heyns partners with PPC Cement .....	31
Lafarge Artevia™ awards showcase decorative concrete .....	32
<b>Roads &amp; Bridges</b>	
Rapid Cure concrete reduces road works on the UK's M25 .....	33
Life-cycle costs vital for road-building decisions .....	36
Calatrava's Sharq Crossing Bridge adds drama to Doha Bay .....	38
Supporting Finnish road construction .....	40
<b>Housing</b>	
Precast slabs from Elematic ideal for social housing .....	42
Build your house in 24 hours .....	43
Thin shell structures – an answer to the housing crisis? .....	44
<b>Readymix</b>	
New moisture measurement system improves concrete quality and control .....	45
SA follows trend towards readymix .....	46
<b>Precast</b>	
Prestressed hollow-core slabs build high-strength security wall .....	47
Precast panels add lustre to greenest office development .....	48
Vaal walls withstand severest flooding .....	49
Revisiting Palm Jumeirah .....	50
Over 17,00 tons of toilets to Amathole .....	51
<b>Products &amp; Services</b>	
Bayferrox pigments helped create concrete 'tree trunks' .....	52
Hydraulic fluid cuts energy needs by 11% .....	53
Innovative synthetic fibres as a substitute for steel fibres .....	54
Birkenmayer's HB68: growing confidence in Harare .....	55
Sika product impresses engineers at new power station .....	56
<b>Education &amp; Community</b>	
NPC's investment in Early Childhood Education .....	60
Concrete Society launches online seminars .....	61
SAICE accredits unique AfriSam course with CPD points .....	62
<b>THE LAST WORD</b> .....	64



Cover picture:  
AfriSam supplied  
92,000 m<sup>3</sup> of concrete for  
construction of Gauteng's  
latest shopping centre –  
Cradlestone Mall in Mogale  
City. AfriSam High Strength  
Cement, further enhanced  
with ground granulated  
blastfurnace slag, was the  
most effective solution.

Concrete Trends is the official quarterly journal of the African Cement & Concrete Industry and is officially endorsed by



7 Bell Crescent, Westlake Business Park, Tokai • PO Box 30875, Tokai, 7966, SA • Tel +27(0)21 700 4300 • Fax +27(0)21 702 4340

PUBLISHING DIRECTOR: Errol Bryce e-mail errol.bryce@hypenica.com

EDITOR: Gill Owens e-mail gill.owens@hypenica.com

ADVERTISING: Anne Colley +27(0)82 321 8312 / anne.colley@hypenica.com, Vuyisa Mfobo +27(0)73 630 2438 / vuyisa.mfobo@hypenica.com

DESIGN, LAYOUT & PRODUCTION: Elise Jacobs e-mail elise.jacobs@hypenica.com

REPRODUCTION & PRINT: CTP Printers Cape Town

Hypenica accepts no responsibility for any opinions or statements in this publication. Consequently no person connected with the publication of this journal will be liable for any loss or damage sustained by any reader as a result of action following any statements or opinions expressed herein.



hypenica

ISSN 1560-2710



# It's "interesting" times in Africa

To say that things in the sub-Saharan cement market are "hotting up" would be an understatement. A few months ago, Vis Shankar, group executive director and CEO of Standard Chartered PLC in the UAE, said: "It's time for Africa. Improved stability and a rising consumer class are shaping the country's revived fortunes."

Well, this is certainly reflected in cement-industry activity on the continent. While South African cement producers are aggressively pursuing their stated goal of drawing more revenue from beyond the country's borders, and Dangote Cement is opening factories all over Africa (and on other continents), speculative eyes are being turned towards South Africa.

International magazine, *Global Cement*, said in a summary of 2013's big stories: "Competition in sub-Saharan Africa is set to intensify when Nigeria's Dangote Cement opens its first cement plant in South Africa in early 2014. It is the first time Africa's two largest cement producers, Dangote and South Africa's PPC, will produce cement in the same country. Future clashes will follow across the region as each producer increasingly advances toward the other."

However, circumstances make strange bedfellows and one area of perfect agreement is opposition to imports. PPC has again highlighted the continuing threat of imports from Pakistan and, in 2012, Dangote led a successful campaign to cut foreign imports. "Irrespective of demand for cement,

adding Dangote to the anti-cement import lobby in South Africa might well make space for a new producer."

And there are new producers waiting in the wings.

Funded by China's Jidong Development Group, the China-Africa Development Fund and a South African cement company, the Mamba Cement project will be a greenfield development situated in Limpopo. Mamba will be the first cement plant in Africa able to generate waste-heat-driven energy and will also create at least 300 jobs locally.

ARM Cement Ltd., Kenya's second-largest producer, only awaits its directors' approval for its plan to construct a South African factory. Mafikeng Cement, in which ARM has a 70% stake, aims to build a plant with daily capacity of 3,000 metric tons.

With all this manufacturing activity happening at a time when infrastructure spend in South Africa is in the doldrums, the question is whether we are about to see an oversupply – or even a glut – of cement.

All over the continent we are, as the Chinese saying goes, "Living in interesting times."

Gill Owens, Editor

You don't become the *aldest* without being the *best*.



L13, L18, L22 Terracrete Terrafix 4x4 Multi L11, L12, L15, L16

[WWW.TERRAFORCE.COM](http://WWW.TERRAFORCE.COM)

for more information on the available product range

- Obtainable in different sizes and colours
- Reversible units for variations on elevation
- Variable setback allows featuresque appearance
- Design flexibility - complex corners, curves and stairs possible
- Choose between round, straight or rock face finish
- Hollow core: plant supportive and fully permeable

Call **TERRAFORCE** on (021) 465 1907 for more information



**TERRAFORCE**. 30 years and still going strong.

WC: CRS: (021) 875 5151 | George: Mobicast: (044) 874 2268 | PE: Deranco Blocks: (041) 933 2755 | Bloem: Lambu Beton (051) 435 3590  
 East London: Terraforce EC: (043) 745 5000 | Pietermaritzburg: Corobrik: (033) 397 0949 | Durban: Corobrik: (031) 560 3111/3222  
 Gauteng: Remacon: (011) 393 5504 | Windhoek: Namwall: (061) 23 9800 | Upington: Poort Beton: (054) 338-6447  
 Swaziland: Millito: 073 563 8188 | Vredenburg: Van Dyk DCM: (022) 713-1244 | Natal South Coast: Port Shepstone Precast: (039) 682 3323  
 Piketberg: Fick Cementworks: (022) 913 1921 | Nelspruit: Lyrapro: 073 563 8188 | Lesotho: Lesotho Brick: (266) 223 14570



# Cement technology responds to a changing society

The built environment has always evolved in response to the changing needs of society and, to support this evolution, cement technology has continued to advance. The 20th century concept of so-called 'pure' portland cement is rapidly becoming obsolete with the development of technologically advanced composite cements better suited to the present century's needs.

"Our challenge is to balance the demands of evermore sophisticated businesses and industries against a fragile environment under increasing pressure," Grant Nesor, AfriSam's sales and marketing executive, says. "We cannot afford to produce cements with conventional technologies that generate large quantities of carbon dioxide emissions, when we can use more technologically advanced composite cements offering additional advantages."

AfriSam has become a globally recognised leader in the production of these advanced composite cements that harness by-products from steel manufacturing and coal-fired power stations, together with chemical activators, to improve traditional portland cement characteristics and performance.

"For the past two decades, we've invested extensively in research and development into producing these advanced cements, replacing environmentally unfriendly clinker and dramatically reducing our carbon footprint," Nesor continues. "AfriSam has also poured considerable capital into upgrading our production facilities to manufacture these advanced composite cements."

"We've been able to reduce our clinker factor from a world average of  $\pm 90\%$  to an average of 60%, with a clinker factor

as low as 35% when using the particularly environmentally friendly Eco Building Cement."

"Using by-products like silica fume, pulverised fly ash and ground granulated blastfurnace slag, we manufacture cements that produce concrete with reduced heat of hydration and porosity, improved strength, durability and chemical resistance. Slag binds with chlorides in coastal environments, protecting reinforcing steel from corrosion. A lower heat of hydration means better control of heat generation during bulk pours with reduced thermal cracking and porosity. Producing advanced composite cements enables us to better control and improve consistency in the performance of concrete."

"We continue to refine our range of advanced composite cements in response to both customer and market requirements, with our finger consistently on the pulse of the latest scientific advances," he says.

Today AfriSam produces a full range of branded composite cements, including All-Purpose, High-Strength, Eco Building Cement and Rapid Hard Cements, as well as customised blends for customers with specific requirements.

## Technological advances

There is much discussion around the use of extenders in concrete and, to ensure that concrete containing significant quantities of extenders is uncompromised in strength and integrity, extensive knowledge and experience is essential. AfriSam is able to leverage its vast experience in concrete manufacturing and successfully applying composite cements with advanced chemical admixture technologies.



*AfriSam has invested extensively in research and development as well as upgraded its production facilities to produce environmentally responsible advanced composite cements.*



Cement extenders are environmentally attractive. Primarily, the use of extenders significantly reduces the equivalent carbon dioxide per ton of cement. AfriSam's 'green cement' uses extenders like milled slag, fly ash and limestone to reduce the amount of clinker needed. Using these extender materials is an excellent example of environmental synergies between industries, since much of this material would otherwise end up in landfills.

The expected shift towards civil infrastructure projects and the reduction in residential and building projects is likely to markedly affect the required properties of cement in



*AfriSam's Centre of Product Excellence in Roodepoort works closely with customers to develop and test products to ensure that they suit particular and specific applications.*



*Civil infrastructure projects, such as the N7 Melkbos and Atlantis Interchange in the Western Cape, require specialist concrete products with superior handling and placing characteristics.*



*All AfriSam's production processes and materials, as well as final products are put through rigorous and ongoing quality assurance tests to ensure nothing short of the best for our customers.*

future. Nesar predicts an increased demand for cements that complement the high-quality concrete used in infrastructural work. He says this will lead to a call for more specialised products with superior handling and placing characteristics.

**Centre of Product Excellence**

AfriSam's Centre of Product Excellence at its Roodepoort plant is responsible for quality assurance and provides support services to all AfriSam operations and customers. This team, working closely with the Construction Materials product technical team, regularly assesses and enhances concrete mixes to provide the most appropriate solution for customers, effectively optimising cement and concrete technology, in both cost and materials.

"Typically a technical consultant would meet the customer, assess the specific application requirements and then initiate laboratory test work. Based on the results, recommendations are given to the customer. The advantage of this approach is that the data has been validated in a laboratory, minimising risk on site. Site personnel can be confident that the end product will have the necessary integrity and that quality has not been compromised. We therefore regard our product laboratory as an important part of customer support, providing substantial benefit to our customers," Nesar states.

This service is provided free of charge and is considered an integral part of AfriSam's value strategy and commitment to customers. Many customers are aware of the environmental impacts of construction materials and are increasingly specifying environmentally friendly concrete for their structures. A high percentage of these contracts call for readymix concrete and AfriSam's readymix business unit is equipped to provide solutions that comply with environmental requirements.

AfriSam's Centre of Product Excellence also works closely with customers to develop and test products to ensure that they suit particular specifications and applications. In addition, the Centre has developed cements with remarkably low carbon dioxide footprints.

The Centre supports all AfriSam business units' scientific and technical needs, responding to queries from plant personnel and sales teams, and fields regular requests from customers.

Extensive analyses and forensic investigation of products are conducted to pre-empt any shortcomings or weaknesses, to determine the reason for any exceptions and to develop solutions using high-tech analytical facilities.

To uphold industry standards, AfriSam collaborates with several leading universities, reviews projects for the National Research Foundation and assists MSc and PhD students with their theses. Company specialists also provide critical professional input to numerous technical work groups and industry boards, serve on relevant committees of the South African Bureau of Standards, the Concrete Institute and the Association of Cementitious Manufacturing Producers.

"All our production processes and materials, as well as our final products, are put through rigorous and ongoing quality assurance tests to ensure nothing less than the best for our customers," Nesar explains. "The South African cement market is fiercely competitive and we continue to seek innovative solutions to gain new customers and retain existing customers.

"All these developments are part of our in-house Customer Value Management initiative implemented to unlock value for our customers. The initiative is gaining real traction across the industry and we regard this as a significant achievement and proof that we're making headway on our journey to delivering a new level of service to our customers," he concludes. ■

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



# ***Dynamon SR***

*Tailored solutions for the Readymix Industry*

- ✓ **Exceptionally long workability retention**
- ✓ **High water reduction and potential for improvement of mechanical performance**
- ✓ **High quality and improved durability of reinforced concrete works**

In Southern Africa, the readymix concrete sector has become more specialized and is developing into a highly professional industrial niche. To meet the need for reliable raw materials and optimum performance, Mapei introduces the DYNAMON SR range, specifically formulated for the readymix concrete market.



Contact us:  
+27 11 552 8476 or [info@mapei.co.za](mailto:info@mapei.co.za)



[www.mapei.co.za](http://www.mapei.co.za)  
**MAPEI**<sup>®</sup>

ADHESIVES • SEALANTS • CHEMICAL PRODUCTS FOR BUILDING



## NPC's green initiatives recognised

Working with local communities is a strategic value enshrined in NPC's environmental culture. This close relationship ensures that the company is transparent and willing to understand the demands of the local community.

At a recent function hosted by the Yellowwood Conservancy, two awards were made to NPC.



Ravi Shummugam and Mathura Brijlall.

As a company NPC, a member of InterCement, was recognised for its contribution to observing and maintaining the Yellowwood Conservancy principles and projects in three local industrial operations.

In his personal capacity, NPC's Ravi Shummugam was acknowledged for his support and contribution to conservation. This award served to recognise his diligence and the sacrifice of his personal time to encourage and stimulate conservation in the local community. These acknowledgements are significant as they recognise that a social partnership with the surrounding communities can be of benefit to everyone.

NPC has played a major role in bringing community members together by hosting monthly meetings which have been instrumental in promoting the conservancy awareness campaigns at the local Yellowwood Park Primary School.

NPC has contributed prizes to encourage local student participation as well as rewarding labour week awareness. It has afforded local school children an opportunity to visit NPC, sparking off the creation of the Yellowwood Junior Conservancy and provided the local community with Shummugam's expertise and services to advise on green issues.

His was the final comment: "My thanks to NPC for their backing and for the freedom to support the local community, to learn more and to impart this knowledge to school learners. These students are the leaders of tomorrow." ■

**More information from Bavashnee Naidoo,  
Tel: +27(0)31 450 4492 / [www.npc.co.za](http://www.npc.co.za)**

## PPC grows its local capacity after acquiring Safika

PPC says its acquisition of Safika Cement Holdings has been approved by the Competition Tribunal, which will add to the growth of its South African footprint.

Safika currently produces over 20 million bags of cement annually. PPC's acquisition of a 69.3% stake in Safika Cement



Safika currently produces over 20-million bags of cement annually.

Holdings for R377-million was unconditionally approved by the Competition Tribunal, the company said.

PPC said the transaction, announced in August, will enhance the company's South African footprint.

Safika owns five blending facilities and one milling operation that produce blended 32.5N cement under three brands: IDM Best Build, Castle and the Spar Build-It house brand.

Ketso Gordhan, PPC's chief executive, said the value-adding Safika transaction would ensure that PPC's strategy gained further impetus.

The company's strategy is to expand its revenue from the rest of Africa to 40% by 2016 from about 20%. But Gordhan said the deal was in line with its plans to grow its local capacity too, ahead of the planned infrastructure projects.

PPC is looking to Zimbabwe, Mozambique, Ethiopia, Rwanda and the Democratic Republic of Congo, where it presently has projects, to bring in growth.

At the moment, more than 20% of PPC's revenue comes from these projects. ■

**More information from Nomzamo Khanyile,  
Tel: +27(0)11 386 9309 / [www.ppc.co.za](http://www.ppc.co.za)**



## You see us everyday without recognizing us

Did you know that Grace Construction Products' technology is inside some of Southern Africa's most significant structures? These projects are strong and beautiful, because they use construction materials and specialty construction admixtures developed by Grace Construction Products. One of the largest construction materials suppliers in the world, Grace Construction Products has been serving the needs of the international construction industry for more than 70 years. With presence in South Africa, and an infrastructure of technical laboratories, plants and sales personnel, the company provides high quality & customer-focused products, and world-class technical service and support at local level. If you want to know more about us, go to [www.graceconstruction.com](http://www.graceconstruction.com)

**Performance has a name**

# GRACE

Construction Products

**Additives for Cement Processing  
Concrete Admixtures and Fibres  
Products for Architectural Concrete, (Pieri®)  
Products for Light and Heavy Precast Concrete  
Waterproofing Systems  
Fire Protection Products  
Specialty Mortar Systems (BETEC®)**



# Sephaku's cement is in the bag – and in stores!

**S**ephaku Cement, South Africa's customer-focused cement producer is pleased to announce that it has dispatched its first bags of cement to customers across Gauteng, Mpumalanga and Limpopo. From its current offering of 50-kg bags and bulk orders of Sephaku 32 and Sephaku 42 to its technical solution support and customer service, the company is in a position to deliver quality from start to finish.

Pieter Fourie, chief executive of Sephaku Cement said, "Building cement operations from the ground up has given us the opportunity to ensure that we use the most high-tech cement manufacturing equipment. We can dictate product quality rather than be dictated to by existing operational constraints facing some producers."

"We want to ensure that every customer gets the best from our cement. We will assist technically from the start when a customer is deciding which class of cement is needed," he added. The company's value-driven service approach is backed by product testing and special mix design support provided by its Technical Laboratory based at its Delmas plant. Furthermore its 6,000 ton per day clinker facility near Lichtenburg in the North West Province is nearing completion.

The founding team successfully navigated financing and development of their R3.2-billion company and projects through the global recession. Instilling confidence through their 200 years of combined experience in the cement industry and 'can do' approach, Sephaku emerged with shareholding of 64% by Dangote Cement, Plc, the largest producer of cement in Africa, and 36% by of JSE-listed Sephaku Holdings, together with local debt funding of R1.95 billion.



*Striking livery makes Sephaku's bulk tankers very distinctive.*

Sephaku Cement's momentum in producing cement is well under way. "We are fully prepared and ready to serve our customers in a way in which they have not been served before in this market," concluded Fourie, whose leadership team all talk of the importance of delivering a 'wow' factor, from the way in which their people – right up to Fourie – are accessible, proactive and decision-focused. ■

**More information from Shalini Ammon,  
Tel: +27(0)12 684 6300 / 072 631 0386  
[www.sephakucement.co.za](http://www.sephakucement.co.za)**



*Sephaku's bagged cement trucks will become an increasing presence on the road network.*

# Pan-African Cement Proficiency Testing Scheme

The German BAM Federal Institute for Materials Research and Testing in collaboration with the German Metrology Institute (PTB) are organising an Africa-wide Proficiency Testing Scheme for 2014 on the testing of cement. The Pan-African Cement Proficiency Testing Scheme (PACE-PTS) is the second Africa-wide proficiency testing scheme after the first in 2012/2013, where 26 private and public construction materials testing laboratories from 20 African nations were registered.

The testing programme comprises testing of the major chemical and physical properties of cement in accordance with EN 196. The PACE-PTS is open to private and public laboratories in Africa and the registration is open until March 15, 2014.

Testing the quality of cement is an important task to ensure the safety of construction. Many laboratories in Africa are specialised to perform the necessary chemical and physical tests. Participation in proficiency testing schemes helps assure consistent testing quality, providing a tool for self-assessment against pre-established criteria and offering a tool for a neutral inter-laboratory comparison. Furthermore, the participation in a proficiency testing scheme helps prove a laboratory's



competence to customers. Participation in proficiency tests is, additionally, a precondition for accreditation to ISO/IEC 17025.

The PACE-PTS combines the tool of a proficiency testing scheme with networking and training activities in Africa. Besides the statistical analysis of the testing results, a final workshop will be organised for all participants to discuss the results and the way forward. Within the scope of the workshop, training activities will also take place. These are financially supported for public laboratories within the framework of the German Development Cooperation. ■

**Further information can be found at:**

**<http://goo.gl/9krD11>**

**Registration can be conducted via [cement-pt@bam.de](mailto:cement-pt@bam.de)**



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





# Proud Partnership: Lafarge and Cargo Carriers' Owner-Driver Scheme

It was a proud day for five owner-drivers when they received the keys to their spanking new truck-tractors from Lafarge South Africa. An intensive process of selection, concentrating mainly on driving skills, transportation experience and safety, qualified them for the Lafarge Cement business line's small business development scheme. Cargo Carriers will mentor the new small enterprises and offer technical support out of their national depot structure.

Lafarge South Africa is the local presence of the international Lafarge Group, the world leader in cement and the largest cement producer on the African continent. The Group is also an industry leader for sustainable development and is committed to helping communities around its operating sites improve their quality of life. A particular focus is improved education, along with artisan training and small business development.

To provide the transport expertise for the Owner-Driver Scheme, Lafarge South Africa joined forces with its long-term transport supply partner, Cargo Carriers. Lafarge arranged finance for the owner-drivers to purchase the truck-tractors, while Cargo Carriers will supply and retain ownership of the trailers. The truck-tractors and trailers are striking in Lafarge's eye-catching green and white livery, together with the company's 'Building better cities' branding.



*The start of a new life: four of the five proud owner-drivers who received keys to their new truck-tractors as part of Lafarge South Africa's small business development scheme.*

"We believe our Owner-Driver Scheme is a win-win initiative," said Lafarge's Tim Nelson, supply chain manager – Cement. "It not only offers the opportunity of a new future for the drivers but we gain loyal drivers who will be good brand ambassadors for the company when interacting with our customers."

***"To provide the transport expertise for the Owner-Driver Scheme, Lafarge South Africa joined forces with its long-term transport supply partner, Cargo Carriers."***

Cargo Carriers' marketing director, André Jansen van Vuuren, commented: "This Owner-Driver Scheme fosters true participation in building South Africa and the economy. It is about a continuing partnership; where the drivers are empowered to determine their own success and future, while simultaneously leading to increased productivity and service levels."

The five drivers will be based at Cargo Carriers' Lichtenburg Depot and have contracted to undertake bagged cement deliveries in the Free State, Northern Cape and North West Province. A key condition for participation in the scheme is the requirement to comply at all times with the rigorous Lafarge South Africa safety standards for driving and maintenance of the vehicles.

"We are delighted to have Cargo Carriers as our partner for the Owner-Driver Scheme," says Nelson. "The project creates the nucleus of five small businesses, operated by individuals who have the character, passion and potential to be entrepreneurs." ■

**More information from Charlene Lamb,  
Tel:+27(0)11 657 0000  
[www.lafarge.co.za](http://www.lafarge.co.za)**



## **Become a SARMA member**

The Southern African Readymix Association represents the interests of the readymix industry, promotes the use of readymix concrete and acts as a forum for member companies.

SARMA now offers members access to a Quality Management System covering standard operating practice for readymix plants, as well as training and discounted rates for expert assistance with implementation, internal audits and ISO 9001-certification issues.

**SARMA's vision  
is to make readymixed concrete  
the construction material of choice,  
and quality is the cornerstone**

**Tel 011 791 3327**

**office@sarma.co.za [www.sarma.co.za](http://www.sarma.co.za)**

# TOTALLY CONCRETE

## EXPO

Shaping the future of concrete in Africa

2014 OVER 60%  
SOLD OUT!



**3300+**

visitors to the expo

**700+**

VIP delegates at the conference

**150+**

expert speakers

**120+**

exhibiting companies

**40**

participating countries

**25**

African countries represented

**50+**

Media and association partners

**R2 million+**

worth of pre-event advertising  
and marketing coverage

## Substantial growth opportunities

for cement and concrete suppliers  
in Africa's construction industry!

### BE FIRST IN MIND

for major projects to win more  
tenders in Africa

### MEET THE RIGHT PEOPLE

to conclude months of partner and  
supplier interaction in just 2 days

### DEVELOP NEW BUSINESS

opportunities with Africa's leading  
contractors, engineers, architects,  
projects owners and designers

**27 - 28 May 2014,**  
**Sandton Convention Centre,**  
**Johannesburg**

Pre-conference seminars: 26 May 2014

Site visits: 29 May 2014

Concrete Week: 26 - 29 May 2014

**Book your space today for access to  
project tenders opening up in Africa's  
high growth markets!**

**Call +27 21 700 4300 and quote code: EA100**

Platinum sponsor:

**PPC**  
**CEMENT**



Gold sponsor:

**LAFARGE**

Silver sponsor:

**AfriSam**  
Building Our Future Together

Bronze sponsor:

**PMSA**  
Concrete Equipment  
Solutions and Technology

[www.facebook.com/TotallyConcrete](http://www.facebook.com/TotallyConcrete)

[@totallyconcrete](https://twitter.com/totallyconcrete)

<http://linkd.in/XnbnNB>

<http://bit.ly/XFjmz>

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

hypenica



# PPC Builder's App nets silver at social media awards

**P**PC Ltd's Builder's App scooped the silver award in the 'Most Innovative App' category at the 2013 New Generation Social & Digital Media Awards.

The 'Most Innovative App' category recognises Apps offering extensive functionality; enable efficient use of various applications and are pioneers of innovation in the field of development.

"We are thrilled our PPC Builder's App won this award in our first year of entry. This is an affirmation of how our hard work and dedication has paid off. It also confirms that we are the leaders in innovation in the cement and concrete industry – as we are in other fields," says Sibongile Mooko, GM Marketing Services at PPC.

The PPC Builder's App, a first-to-market mobile application, was developed by Digital Solutions and launched in mid-2013.

The App offers users the ability to effectively measure how many cement bags are needed for any specific job.

Builders also have access to useful tips from an established knowledge base that assist in obtaining maximum value from their work, as well as tools that assist on the job, notably

the weather watch tool, which reports on current weather conditions, allowing builders to comprehensively plan their projects to avoid unfavourable conditions.

The app also has a 'Where to Buy' feature to determine the closest store according to the builder's current location and gives directions. Finally, the PPC App offers a handy spirit and surface level function.

Yaron Assabi, Founder of Digital Solutions Group says: "The PPC Builders' App is really to simplify the builder's life and add value to their work and we are proud that the App has been recognised for its innovation."

Mooko continues: "At PPC, we offer strength beyond the cement bag, as this application ensures that we are there for our customers every step of the way".

During 2013, PPC Ltd was recognised with a number of awards, reflecting a group concentrating on its role in society and its responsibility to stakeholders. ■

**More information from Nomzamo Khanyile,  
Tel: +27(0)11 386 9309**

***"The PPC Builder's App, a first-to-market mobile application, was developed by Digital Solutions and launched in mid-2013. The App offers users the ability to effectively measure how many cement bags are needed for any specific job."***

## Obituary Professor Geoff Eustace Blight

**G**eoff Eustace Blight, Professor Emeritus of Civil and Environmental Engineering in the field of Geotechnical Engineering and Construction Materials passed away on 7 November 2013. He spent most of his working life at Wits University and was well-respected by his colleagues, students, industry leaders as well as by scientists and academics throughout the country and around the world.

Professor Blight (PrEng), an A-Rated researcher, held five doctoral degrees, and was considered one of the world's leading thinkers in Geotechnical Engineering. He held BSc(Eng) and MSc(Eng) from Wits. He completed his PhD in Soil Mechanics and his DSc(Eng) in Geotechnical Engineering at London University, before returning to Wits. In 1985, he obtained his DSc(Eng) in Materials Engineering from Wits and another DSc(Eng) qualification from the University of Cape Town. In 2001, he obtained a D.Eng. degree from Wits focusing on the Application of Research in Practice.

With over 330 papers published in accredited journals, Professor Blight was internationally renowned as a re-

searcher of the highest standing. He authored and also co-authored several books.

Professor Blight was the only South African to be awarded the J James Croes Gold Medal for innovation in research by the American Society of Civil Engineers in 1975. He was also the only South African chosen as a Cross Canada Lecturer by the Canadian Geotechnical Society, and was selected by the British Geotechnical Society as a 'Rankine' lecturer in 1997. Nanyang University in Singapore selected him as a 'GRC Lecturer' in 1997 and in 2003 he was commended by the Italian National Group for the Prevention of Hydrogeologic Hazards for research on flow failures of tailings dams.

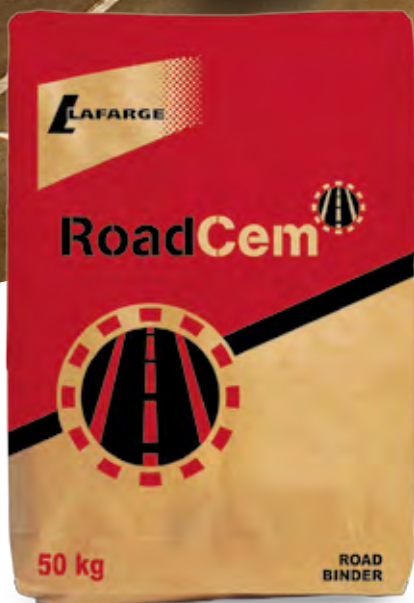
He was elected Fellow of the Royal Society of South Africa in 1991 and as a Founder Member of the South African Academy of Science and the South African Engineering Academy that same year.

Elected a Life Member of the American Society of Civil Engineers in 2000, Professor Blight also received the President's Award for Exceptional Service to the Waste Management Profession by the Institute of Waste Management of Southern Africa in 2002. ■



Build Better Stronger

# THINK ROADCEM



## ROADCEM

Innovation is one of our key strengths

- Value added solutions
- Products that support sustainable construction
- Processes and products which reduce CO<sub>2</sub> emissions

**LAFARGE**  
Building better cities™



## Prestigious Award for Tarsus jointless industrial floor



Accepting the award, from left, Mike Stanley, Nic De Carvalho, Peter Norton, Brian Norton and Chris Stanley.

Industrial flooring expert Concrete Laser Flooring (CLF) has received the Highly Acclaimed Award in the Specialist Contractors category at Construction World's Best Project 2013 Awards Ceremony.

The project for which the award was received is the 18 000-m<sup>2</sup> jointless industrial floor for Tarsus in Woodmead Johannesburg. The first of its kind in Africa, the floor was constructed utilising CLF's recently launched Prime Composite jointless flooring system. CLF has been granted exclusive rights for the system by the worldwide patent holder, Swedish-based Primekss. Essentially it is a high-strength composite floor that consists of a high saturation of steel fibres and shrinkage-reducing admixtures that ensure it can be entirely jointless without compromising on strength, while utilising up to 50% less cement than in industry standard floors. ■

**More information from Tel: +27(0)11 704 5557  
www.concreteflooring.co.za**

## M.B.A. North urges 'deeper look' at construction disasters

The quality of construction work is merely one of several vital issues to consider before building should be allowed to start on major projects such as the Tongaat Mall, which recently collapsed during construction, cautions Doug Michell, manager: construction health and safety at Master Builders Association (MBA) North.

"As construction, health and safety practitioners, we tend to look mainly for non-compliance legal issues which, in this incident, appear to be many. But we should also be looking deeper into the root causes, such as designer competencies, construction programmes, contractor selection, and the competency and extent of authority of construction supervisors," Michell adds. "A tragic event like this will have repercussions with quality issues and the possible long-term safety of the tenants in other completed buildings."

"The collapse of the Mall left two people dead and 29 injured and placed an undesirable discredit on the entire construction industry," Michell states, noting that there was no Master Builders SA member involved in the construction of Tongaat Mall.

Phumudzo Maphaha, the Department of Labour's manager Occupation Health & Safety: Construction, has been appointed Presiding Inspector for a Section 32 hearing. These inquiries are usually appointed by government against parties whose negligence results in occupational injuries and the death of workers.

"According to reports, the developer, interviewed after the



*Doug Michell, construction health and safety manager of MBA North.*

accident, suggested it was 'normal' practice for developments to begin before proper permissions are secured. However, until the findings of government investigations are published, we can only speculate about causes of the accident, but there have been reports suggesting that construction continued despite a procedural work stoppage ordered by building inspectors. Eye-witness accounts also suggest that there was no formwork in place below the concrete slab and a site worker, who escaped injury, allegedly stated that there was no scaffolding in place under soft concrete.

Michell says proposed amendments to the government's Construction Regulations will require that a client applies for a construction work permit before work can commence. "But the question remains whether the municipal, building and construction regulations and permits now in place will avert a similar incident in future. Because of the additional prescriptive requirements, unscrupulous contractors may be further

encouraged to avoid bureaucratic 'red tape' by providing generic documentation that will not address the relevant issues the regulation calls for. The intention of the construction work permit is for relevant baseline risk assessments, and specific health and safety specifications, to be submitted with the application for the construction permit," Michell adds. ■

**More information from Doug Michell,  
Tel:+27(0)11 805 6611 / www.mbanorth.co.za**

## ECSA: not just a regulatory body

**O**ur surroundings prove how much engineers and the profession have contributed to society. About 99% of what one sees was designed, optimised, and inspired by engineers. Most of what we take for granted today would be impossible without them. Sound structures of every kind – from chairs to skyscrapers – depend on engineers.

The Engineering Council of South Africa (ECSA) is a body which looks after the interests of engineering professionals. Although most professionals associate ECSA with regulations compliance, this is just one of the functions offered to members. "While ECSA's core function is to register engineering practitioners as professionals, ECSA also administers the code of conduct for registered persons as well as accrediting engineering programmes at Universities and Universities of Technology," said Cyril Gamede President of ECSA.

"Engineering professionals are committed to staying abreast of new technical developments and to holding the profession to standards of excellence. ECSA ensures that these concerns are addressed through proactive engagement with universities and training institutions to keep engineering programmes up to date and meeting ECSA standards. In addition, ECSA publishes advisory case studies to educate members on best practice," said Gamede. "Another of ECSA's roles is to work closely and strengthen relationships with the government by offering advice



*Cyril Gamede President of ECSA.*

on engineering issues such as infrastructure development and improvement," explained Gamede.

ECSA also conducts roadshows to grade six and seven high school students to educate young learners about the benefits of an engineering career. "We need more engineers in the South African engineering pool," stresses Gamede.

"Engenius, ECSA's primary tool and programme to promote the profession to learners, is targeted at primary and secondary school learners, seeking to consolidate efforts to develop engineers by centralising national programmes, materials, products, initiatives and a calendar of events for those interested in the field."

ECSA is currently conducting a series of Repositioning Roadshows for engineering professionals country-wide to motivate them to register and enjoy the benefits of ECSA membership. Roadshows have been held in Free State, Western Cape and Mpumalanga. "Our next roadshows take place in Limpopo and the Eastern Cape early in 2014. We look forward to meeting our colleagues and discussing the benefits of ECSA registration as well as critical issues affecting the Engineering profession," concluded Gamede. ■

**More information from Lillian Mlambo,  
Tel: +27(0)11 607 9500 / [www.ecsa.co.za](http://www.ecsa.co.za)**

# WE'RE OPEN FOR BUSINESS

At first glance you'd probably think we're referring to supplying cement. But that's only part of what we do. Our main business is about building customer relationships that eventually grow into lasting friendships. Where our customers are comfortable speaking to our staff and management because of our friendly hands-on approach. This is the type of "can do" attitude that gets things done, and we're proud to introduce it to the industry.

Call us on **0861 32 42 52**  [www.sephakucement.co.za](http://www.sephakucement.co.za)

## OUR NAME'S IN IT



**Sephaku**  
CEMENT



# Striving for excellence in concrete

The Concrete Society of Southern Africa NPC (CSSA) is a non-profit, public-benefit organisation – a ‘community’ of individuals (some through their companies) who seek to stay abreast of the latest technology and thinking in concrete and concrete-related matters. The Society, through its national and regional network, offers seminars, site visits, publications, student support, excellence awards, CPD accreditation for engineers, and creates business opportunities for its members.

In this way the organisation achieves its overall mission of promoting excellence and innovation in the design and use of concrete, providing a forum for networking and technology



*The Inland Branch for example, holds an Annual Concrete Boat Race Day, which in 2013 featured almost 100 concrete boats racing on Germiston’s Victoria Lake. This drew more than 1,000 people, including many students from local Universities. Added to this, the Concrete Cube and Egg Protection Device Competitions, the Annual Golf Day and an interactive website, make being a member of the CSSA very fulfilling.*

transfer between its members and the Society’s local and international affiliates.

The CSSA membership comprises over 700 individuals who are passionate about, or at least have a great interest in, concrete, as well as more than 50 Companies that focus on the specification, supply or use of concrete and see the benefits of being associated with such a Society.

Topics vary, depending on the availability of appropriate speakers and, where construction projects have concrete placing in progress, site visits are usually arranged. These are well supported as members are exposed to ‘concrete in action’.

CSSA events not only enable members to exchange information on the latest in concrete technology, but also encourage valuable networking between a wide range of industry stakeholders.

National events, often two-day seminars or conferences, will regularly feature overseas experts who share knowledge and experience from other parts of the world.

Although primarily a technical organisation, CSSA does arrange some ‘fun’ activities.

The prestigious Concrete Society Fulton Awards are held every second year and are integral to recognising, honouring and rewarding excellence in concrete design and construction. These coveted concrete industry ‘Oscars’ have a long history of involvement in many major projects completed in southern Africa. A highlight in the CSSA calendar, the Awards held traditionally over a weekend in the Drakensberg, culminate in a glittering gala function.

On a branch/regional level the Concrete Achiever Award and Branch Chairman’s Award are presented to individuals who have made a significant contribution to the promotion of concrete or to the team of a project worthy of recognition. ■

**More information from Tel: +27(0)12 348 5305  
www.concretesociety.co.za**



*CSSA promotes excellence primarily through organising, at both national and regional levels, seminars, technical meetings and site visits. Each of the four regional branches has their own calendar of events which includes monthly technical meetings and mini-seminars.*





# China International Block and Brick

Technology & Equipment Exhibition 2014  
Date: March 1st-3rd, 2014 Venue: China Import & Export Fair Pazhou Complex



**Directed by**  
Ministry of Housing and Urban-Rural Development  
of the People's Republic of China (MOHURD)

**Sponsored by**  
China Municipal Engineering Association

**Supported by**  
Provincial / Municipal / Autonomous Wall Materials Innovation Offices



 **Guangzhou Grandeur Exhibition Services Co., Ltd**

Tel: +86 20 2894 5347 Fax: +86-20-8257 9220  
Contact: Y.Y Chu Email: sales9@grandeurhk.com

<http://www.bbtee.net/en/>





## Dr Reinhold Amtsbüchler: an immense contribution recognised

**A**t the annual Concrete Society of Southern Africa (CSSA) Inland Branch Chairman's Breakfast in November 2013, the Concrete Achiever of the Year Award was presented to Dr Reinhold Amtsbüchler, recently retired manager of Lafarge South Africa's Quality Department Southern Africa (QDSA).

Presenting the award, chairman of CSSA's Inland Branch, Hanlie Turner, said: "It gives us enormous pleasure to present Dr Amtsbüchler with this award as a mark of the esteem in which he is held by our industry. He has had a huge influence on the South African concrete fraternity."

Dr Amtsbüchler retired on 1 July 2013 after dedicating 31 years to Lafarge South Africa. In 1996 he established and, until his retirement, was in charge of Lafarge QDSA's SANAS-accredited Civil Engineering testing facility at Industria, Johannesburg, which boasts 17 years of continuous accreditation.

The facility provides technical and laboratory support for the Lafarge South Africa cement and fly ash operations, as well as for other members of the industry. QDSA also assists Lafarge operations in sub-Saharan Africa with special testing requirements, quality and process-related training and projects.

Amtsbüchler graduated at Vienna University in 1973 with a Civil Engineering degree and obtained his Doctorate in Technical Science from Innsbruck University in 1993. He started his working career with consulting engineers in Austria and South Africa, and as a project engineer in Iran. Since 1976, Dr Amtsbüchler has been a registered Professional Engineer in South Africa.

He also worked as group concrete technologist for a major readymix company in Austria, before returning to South Africa in 1982. Joining Ash Resources as technical manager, he

played a major role in establishing a sound fly ash business in southern Africa and export opportunities in the Middle East. His association with the local cement industry began with Blue Circle South Africa, which subsequently became Lafarge South Africa Holdings.

Dr Amtsbüchler has been involved in concrete mix design for many major concrete projects, as well as in the development of innovative cementitious products, in particular fly ash-based cements. Some notable projects include Katse Dam and other Lesotho Highlands Water Projects (his Technical Doctoral thesis was used for the tunnel lining technology of the shotcrete and shuttering techniques); Mozal Aluminium Smelter; Maguga Dam in Swaziland; Lesotho's Metolong Dam and projects throughout Namibia, Mozambique, Botswana and Lafarge South East Africa countries (Tanzania, Malawi, Zambia and Zimbabwe).

Two recent examples of his wide-ranging contributions to the industry were the development of concrete mixes for Metolong Dam in Lesotho, which resulted in incorporating a Lafarge CEM II Low Heat cement in place of traditional CEM I, and his aggregate assessment and development of a concrete mix for the aggressive environment at the Kasane Sewage Works project in Botswana.

Dr Amtsbüchler's technical expertise has always been especially valuable through his ability and willingness to communicate his knowledge and wise counsel. One of his greatest legacies will be the dozens of chemistry and engineering graduates that have acquired the skills and passion for cement and concrete under his mentorship. ■

**More information from Charlene Lamb,  
Tel: +27(0) 011 657 0000 / [www.lafarge.co.za](http://www.lafarge.co.za)**



*Concrete Achiever of the Year, Dr Reinhold Amtsbüchler, receiving his award from chairman of the Inland Branch of the Concrete Society of South Africa, Hanlie Turner.*



# CIVILUTION CONGRESS 2014

MORE THAN JUST A CONFERENCE, IT IS AN ENGINEERING REVOLUTION  
EMPERORS PALACE, JOHANNESBURG, SOUTH AFRICA  
6-8 APRIL 2014



Civilution is a mass movement of engineering professionals – an engineering revolution in which engineering practitioners reinstate strategic, technical and intellectual leadership.

**We invite you to join the movement. Secure your spot today.**

## KEYNOTE SPEAKERS INCLUDE:



**Nazir Allil**  
CEO of the South African  
National Roads Agency



**Thuli Madonsela**  
Public Protector of  
South Africa



**Trevor Manuel**  
Minister in the Presidency;  
National Planning Commission

For bookings contact:  
Project Manager – Liza Monteiro  
E: liza@confco.co.za  
T: +27 11 465 0334  
W: www.civilutioncongress.com

  
**Civilution  
Congress**  
Engineering Revolution





# Be first in mind for major projects in Africa's high growth markets

Cement **65%**

is responsible for **65% to 75%** of the construction sector in Africa

Blended cement will continue to gain market share accounting for **up to 75%** of new product demand creating new opportunities in the African built environment of tomorrow

**75%**

Africa's road access rate is only **34%** and transport costs are **100% higher** than the rest of the world

**Bumper growth underway in Africa's cement, concrete and construction industries**

Closing Africa's infrastructure gap is expected to cost **US \$360 billion** between 2011 and 2040, with significant investments required by 2020

**95% growth** in Nigeria's cement industry between 2005 -2012

**95%**

**US \$40 BILLION** US \$40-billion = loss on GDP a year due to inadequate infrastructure in Africa

**HUGE CEMENT POTENTIAL**

**60%**

Kenya has seen a **60% increase** in cement consumption per capita

DRC currently consumes only **16kg** per capita vs the global average of **400 kg** Deal making activity in infrastructure and commercial real estate development **up by 80%** in 2013

**US \$940 million**

US \$940 million will be invested in the cement industries in **South Africa, Zambia, and Zimbabwe** by 2018

**South Africa's construction sector is forecast to attain an average annual growth rate of 3.6% between 2013 and 2022**

**Stake your claim in Africa's booming construction industry!**

+27 21 700 4300

+27 21 702 4340

daniel.bloch@hypenica.com

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

# Totally Concrete brings sustainability and innovation to the African construction marketplace

Infrastructure spend is increasing across Africa and the Totally Concrete Expo, taking place in Johannesburg from 26 to 28 May 2014, is Africa's leading platform for access to major projects across the continent. With over 4000 participants from more than 25 African countries, the Totally Concrete Expo connects the entire cement and concrete ecosystem with public and private sector project owners and investors to promote construction project completion on budget and on time.

In Southern Africa alone cement consumption is predicted to increase to more than 18.1 million tonnes by 2018. The South African government plans to spend in excess of R4 trillion on a massive state-led infrastructure drive over the next 15 years and with new manufacturing plants being built in the DRC, Zambia and Zimbabwe, business prospects for construction, cement and concrete are brightening across the southern continent, with the rest of Sub-Saharan Africa not far behind.

In 2014, the Totally Concrete Expo sets the pace for African development by bringing together the leading industry experts that are driving sustainability through innovation in the marketplace. Santie Gouws, managing director of Concrete Growth in South Africa will discuss how concrete is now contributing to green market power solutions with a case study on concrete wind turbine masts. Eng. Wolfram



Schmidt, researcher in the Department of Safety of Structures at the Federal Institute for Materials Research and Testing in Germany (BAM) will share the findings of an Africa-wide cement competency testing programme and David Lambertin, director at the Centre d'Énergie Atomique (CEA) in France will offer the latest information on geopolymer applications for nuclear developments.

Totally Concrete provides participants with the tools and knowledge to complete projects of all sizes on budget and on time and delivers the next generation skills and technology needed to construct the Africa of tomorrow. ■

 **FREE EXPO TICKET!** Pre-register online as a visitor before 31 March and save R200! Quote code: CT01

# AFRICA'S LEADING CONSTRUCTION EXPO

## Meet

the right people and conclude several months of customer interaction in just a few days



## Showcase

your products and solutions to project managers, designers, engineers, property developers and government agencies



## LEARN

about the latest cross-border tender opportunities to help you prepare to win your next major construction and infrastructure project



**Limited exhibition booths and sponsorship opportunities remain!**

To secure your participation at the only Pan-African construction event contact:

Mario Haddon, Business Development Manager  
✉ [mario.haddon@hyopenica.com](mailto:mario.haddon@hyopenica.com) ☎ +27 21 700 4341

Rashaad Essop, Business Development Manager  
✉ [rashaad.essop@hyopenica.com](mailto:rashaad.essop@hyopenica.com) ☎ +27 21 700 4356

**AFRICAN  
CONSTRUCTION EXPO**

**26 – 28 May 2014,  
Sandton Convention Centre, Johannesburg**



# Overview of the Nigerian construction industry: Ogun State experience

\*Salau M.A and \*\*Olonade K.A.

\*Dept. of Civil & Environmental Engineering, University of Lagos, Akoka, Nigeria

\*\*Dept. of Civil Engineering, Obafemi Awolowo University, Ile-Ife, Nigeria

The strategic position of Nigeria as the most populous country in Africa, abundant in construction materials, with large expanses of land as well as an aggressive pursuit of infrastructural development, are major drivers for attracting more construction activities. The construction industry is a multi-billion-dollar business in Nigeria. Although the construction industry contributes only 3.2% of the Gross Domestic Product (GDP), as reported by Global Construction Perspectives, the rate at which it is growing, if sustained, could surpass China by the year 2020. Almost all the 36 states of the Federation vote substantial portions of their budgets for infrastructural development. One of these is Ogun State.

Ogun State is located in the extreme South-West of Nigeria. Its land area is 16,409.26 km<sup>2</sup> and on the west it abuts the Republic of Benin, on the south, Lagos State and a 20-km stretch of the Atlantic Ocean, on the east, Ondo and Osun States. To the north it abuts Oyo State. Its border with Benin and Lagos, the economic hub of Nigeria, makes it a potentially cosmopolitan state with a substantial economy.

Ogun State has never, since its creation in 1976, seen such unprecedented infrastructural development as experienced in the last two years. In his bid to re-build the state, State Governor, Senator Ibikunle Amosun, has awarded a number of projects to foreign and indigenous construction companies. Some projects have been completed and commissioned, while many are ongoing.

## Completed and ongoing projects

The first-ever six-lane Ita-Eko-Okesokori-Totoro road and four-lane concrete flyover bridge at Ibara Junction commenced



Construction of 6-Lane flyover bridges at Sapon and Itoku to feed 10-lane Boulevard from Lafenwa to Sapon, Abeokuta.

**“Concrete is being used extensively in all the projects. Areas where concrete, reinforced concrete or precast concrete are used include bridges and flyover bridges; road kerbs, walkways, drainage etc.”**

and was commissioned within a year (2012). Pedestrian bridges were strategically located along the road as were road signs, traffic lights, walkways, drainage, and medians with flowerbeds. The road is used as a model for what is now known as ‘Ogun Standard’ roads.

An impressive list of roads at varying stages of completion include the 10-lane boulevard from Lafenwa to Sapon, which is divided into 2-3-3-2 lanes with two six-lane flyover bridges at Sapon and Itoku; the 7-km Sagamu-Benin Express Junction/Oba Erinwale Junction road, 4.8-km Ilo Awela road in Ota, 8.7-km OGTV-Brewery junction road, 6-km Moshood Abiola Way, 34-km Lafenwa – Ayetoro road, 9-km Ojere-Asero road, 5.6-km Somorin-Ajebo road, 2.2-km Abiola Way Junction-Muda Lawal Stadium, 850-metre Moriamo Olorombo road, all in the state capital (Abeokuta).

Other roads being modernised by the Ogun State government are the 100-km Ilara-Ijohun-Ilase road, 25-km Ilishan-Ago Iwoye road, 29-km Mowe-Ofada-Ibafo road, 9-km Ejinrin-Oluwalogbon junction in Ijebu Ode, 12-km Magboro Underpass road and the Isheri road.

In the course of constructing these structures, some residential buildings and markets were demolished. Twenty two-bedroom flats are being constructed to compensate those affected by road construction at Omida. Ten ultra-modern market complexes are also being built at Itoku, Sapon, Omida and locations outside the state capital. Additionally, about 2,234 classrooms were refurbished, 878 new classrooms and a number of model schools are under construction.

## Design and build: foreign and indigenous participation

Both foreign and indigenous contractors were involved in the construction of these projects. Contractors such as China Construction Engineering Construction Company (CCECC) and P.W. Nigeria and others, were responsible for the design and building of all bridges, flyover bridges and major roads. Other contractors handling projects include Messrs Hi-Tech Construction Company, Borini Prono, First August, Siktobs and Zebra Gold. However, all the building projects are designed and built by indigenous firms.

To ensure compliance with standards and specifications, indigenous consulting firms were engaged in supervision and

the Engineering Regulation Monitoring (ERM) team of COREN who monitored construction at regular intervals, were mainly Nigerian engineers.

Concrete is being used extensively in all the projects. Areas where concrete, reinforced concrete or precast concrete are used include bridges and flyover bridges; road kerbs, walkways, drainage etc. It is worth mentioning that most of the materials used for the construction were sourced within the State. The ongoing construction works have created over 50,000 jobs for different categories of personnel – from professionals to very unskilled workers.

### Construction Materials

Availability of materials is critical to growth in the construction industry, and Ogun State is blessed with excellent raw materials. In the State, there are two major cement factories, Dangote Cement Plc and Lafarge Cement Plc that produce over 10 million metric tonnes of cement annually. In addition, two other brands of cement, Purechem and Gateway, are bagged in the State.

Fine aggregate is usually sourced in substantial quantities from the Ogun River and large tracts of land in the State, and coarse aggregate (granite) is quarried at a number of locations. In fact, most construction materials used in Lagos State are sourced from Ogun State, stimulating the State's economy.

### The Future is bright

Future prospects for the construction industry in Nigeria and Ogun State, in particular, are excellent. Apart from a large number of indigenous construction firms, many foreign companies have identified this potential and are investing. Recently, Ogun



*Construction of shopping facilities is ongoing all over Ogun State.*

State Government and a Chinese Construction Company, Citic Construction Ltd., signed a Memorandum of Understanding (MoU) for construction of 2,000 housing units. The Governor emphasised that the development was part of the government's efforts to provide affordable housing and enhance urban renewal. It is an understatement to say that Ogun State is being re-built. ■

## A name truly cast in concrete



®

### HOLLOW-CORE CONCRETE FLOORING

#### ECHO PRESTRESS (Pty) Ltd.

(Prestressed Hollow-Core Floors)

Private Bag 1, Edleen 1625

Tel: 011 589 8800

Email: echo@echo.co.za

Fax: 011 589 8955

www.echo.co.za



#### ECHO PRESTRESS DURBAN (Pty) Ltd.

(Prestressed Hollow-Core Floors)

P.O. Box 40726, Red Hill, 4071

Tel: 031 569 6950

Email: echokzn@echo.co.za

Fax: 031 569 6974

www.echo.co.za

#### ECHO FLOORS (Pty) Ltd.

(Reinforced Hollow-Core Floors)

P O Box 706, Muldersdrift, 1747

Tel: 011 662 4600 / 083 602 0966

Email: floors@echofloors.co.za

Fax: 086 667 2037

www.echo.co.za



#### TOPFLOOR

(Prestressed Hollow-Core Floors)

P O Box 41, Maitland, 7404

Tel: 021 951 7700

Email: info@topfloor.co.za

Fax: 021 951 7790

www.topfloor.co.za





# The seven marks of effective Government Contractor Compliance Programmes

By Benjamin B. Tymann

With the new year beginning, now is a good time for government contractors to evaluate how well-positioned their organisations are to deal with regulatory and other compliance challenges that may arise in 2014. Most importantly, particularly for multinational contractors doing business in Africa, is the aggressive enforcement climate around corruption, business fraud, and anti-competitive practices. Investigations under the U.S. Foreign Corrupt Practices Act, the UK Bribery Act, SA's Prevention and Combating of Corrupt Activities Act, and those spearheaded by the SA Competition Commission are just some examples of serious enquiries that can create lengthy, disruptive and costly distractions for businesses targeted by such probes. The best antidote for these headaches is a comprehensive compliance programme to effectively detect and deter incidents of potential wrongdoing.

In times of cost cutting, some companies regard investments in preventative initiatives like compliance programmes as a luxury they can't afford. But the risks of having a compliance programme that enjoys only lip service far outweigh any short-term fiscal benefit. Indeed, for the last few years, the U.S. Justice Department, by its own description, has been "declaring war" on 'paper [compliance] programs', and in their settlement negotiations has been giving credit to those companies whose compliance programmes were effective in uncovering incidents of wrongdoing that they then self-reported.

Is your corporate compliance programme truly equipped to operate effectively in response to an enforcement action — or, better yet, to prevent or minimise such a crisis in the first place — or are you relying on an under-resourced 'paper programme'?



The following checklist will provide a useful primer to help make that assessment.

1. Does my company have an up-to-date ethics and compliance programme in addition to a compliance officer and/or compliance department to enforce it? If the answer is "No", your firm is running afoul of the most basic best practices in governance and compliance, and may be in violation of legal obligations for government contractors under a variety of jurisdictions' procurement regulations as well.

2. Is my chief compliance officer free to give independent compliance reports to the board? At a minimum, he or she should possess such independence, even if not following the



best practice of directly reporting to the board or the audit committee.

3. Do my employees receive regular, meaningful training on compliance topics relevant to my industry? If not, not only will your programme be ineffective in deterring non-compliance, but in an enforcement action government investigators may hold your 'paper programme' against you.

4. Has my company conducted an independent, confidential compliance assessment? Contractors must understand any actual or potential violations

of law occurring in their organisations, then remedy them. Additionally, staying abreast of the regulatory risks unique to a contractor's particular industry or business model is a proactive step that will pay dividends in the future. A compliance assessment by counsel is the best way to find and fix these vulnerabilities in a manner the company can control.

5. Does my company have an internal mechanism for reporting complaints (e.g. a hotline) that is publicised to employees and that tracks complaints to their resolution? As a basic component of any sound contractor compliance programme, a well-managed, credible hotline often results in internal complainants going to company officials first, rather than straight to the authorities as a whistleblower. Just make sure the mechanism works, and that legitimate complaints are not met with inaction or, worse, retaliation (whether overt or subtle).

6. Upon discovery of a credible allegation of wrongdoing, does your company have a protocol for conducting a prompt, thorough, and confidential internal investigation that will (1) find the facts, (2) contain the problem, (3) yield recommended remedial measures, and (4) assess disclosure obligations? Internal investigations invariably occur in a high-anxiety setting, but they must be handled with extreme care and foresight to accomplish these four goals. If the matter later becomes the subject of a government investigation, a well-managed internal investigation that promptly corrected the problem will serve a contractor well when the government is assessing company culpability.

7. Does my compliance programme have visible support from the top of the organisation, are sufficient resources devoted to it, and are compliance standards enforced with consistency? It's all about whether your compliance programme has credibility — both in the eyes of your employees and of government investigators.

In sum, government contractors with the objective of preventing — rather than simply reacting to — a compliance crisis need to be prepared by implementing an effective compliance programme. If you are a contractor who is able to answer "Yes" to each of the seven questions on this checklist, congratulations, you are well on your way to achieving that objective. ■

**Benjamin Tymann is a partner at the international law firm Greenberg Traurig, LLP. He regularly advises multinational companies doing business in Sub-Saharan Africa on compliance and investigations matters.**



[ Solid.  
Since 1979 ]

Pioneers in the development of fly ash product solutions, more effective cement formulations and high performance concrete mix designs for the construction industry. Solidly at it since 1979.

**AshResources**  
Fly ash products



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

**Green engineering  
with fly ash**



## Chryso Group's drive into Africa continues

The Chryso Southern Africa Group in 2013 succeeded in its drive to expand its activities into Sub-Saharan Africa – a development that will continue in 2014, says CEO Norman Seymore.

The Chryso Southern Africa Group is one of 14 Chryso subsidiaries worldwide. Chryso Algeria is the newest and Seymore, in addition to being CEO for the Chryso Southern Africa Group, is also the Executive Vice-president of Chryso globally.

Seymore says that during 2013 a significant upgrade was completed at the Mauritius manufacturing facilities of a.b.e. Construction Chemicals, part of the Chryso Southern Africa Group. "Chryso sales and distribution for Mauritius are being supported by a.b.e.'s Mauritius activity," he added.

He says that in 2013, the Chryso Southern Africa Group saw a continued improvement in market conditions from a demand perspective. "Our margins, however, remained under pressure, driven mainly by the weakening of the Rand vs the Euro and Dollar, which has a significant impact on the formulation costs for both a.b.e. Construction Chemicals and Chryso products due to the imported raw materials. Nevertheless, both Chryso and a.b.e. introduced new products to assist customers to maintain or improve cost performance ratios in this very competitive market."



*Norman Seymore, Chryso Southern Africa Group CEO, says the Group expects 'steady improvement' in local market conditions in 2014.*

The new a.b.e. powder plant was commissioned in Boksburg in March 2013, and the Isipingo site has undergone a substantial revamp with all asbestos being removed from the site, as well as investment in upgrading production and packaging. The Isipingo upgrade includes expanded laboratories and R&D facilities for a.b.e..

"For 2014, we are expecting a steady improvement in market conditions locally and we will continue to adapt our product to offer value to our customers, while also adapting our formulations to support our commitment to sustainable product development and construction methods. In this regard, in 2013 we launched our patented 'dustless' cementitious products.

"Referring to safety, we expect to meet our targets regarding accidents 'with and without lost time'. Chryso South Africa has maintained both the ISO 9001 and OSHAS 18001 accreditation on all its sites in South Africa while ISO 9001 certification is

imminent for both the a.b.e. Isipingo and Boksburg sites. All a.b.e. sites will also be audited for OSHAS 18001 certification during the first quarter of 2014," Seymore adds. ■

**More information from Kirsten Kelly,  
Tel: +27(0)11 395 9700 / [www.chryso-sa.co.za](http://www.chryso-sa.co.za)**

## Nigerian cement industry creates 1.6 m jobs

*By Odinaka Anudu*

Following unprecedented growth of the Nigerian cement manufacturing sub-sector that has seen it become the largest in sub-Saharan Africa (SSA), the industry now engages 1.6 million Nigerians, Olusegun Aganga, minister of industry, trade and investment, has disclosed.

This follows from the backward integration policy of the Federal Government and a ban on locally discovered mineral, gypsum, both of which have buoyed job creation in the industry by attracting an additional \$8 billion of investments and facilitating a production capacity of 28.5 million metric tons in 2013.

"Information from the cement manufacturers shows that the total investment in cement is between \$7 billion and \$8 billion, and they employ ±1.6 million people," Aganga said recently when interacting with the Indian business community in Lagos.

The industry is likely to create more job opportunities for unemployed Nigerians in 2014, given that the government's production target has risen to 39 million metric tons this year, from 28.5 million achieved in 2013. This could be attributed



*Olusegun Aganga.*

to the export drive initiatives marshalled out for the sector, aimed at satisfying local demand of between 18 and 20 million tons as well as meeting international demands.

"We have had a major success in the cement sector. This year, it should be about 39 million metric tons, and we should have one of the largest, if not the largest cement factory in the world in Nigeria," he said.

The job creation success story in the cement industry is expected to be replicated on other sub-sectors. This is in line with the Federal Government's Industrial Revolution Plan, a recent policy geared towards revamping and fast-tracking the growth and development of various industries, Aganga said.

"The impact of the cement sector's success story will be felt more with the inauguration of the new Mortgage Refinancing Institution that will support building and construction in housing. The housing sector has a lot of potential in terms of job creation," Aganga concluded. ■

**More information from <http://goo.gl/kxW2Yh>**

# Six-star concrete sustainability

By Daniel van der Merwe, Architect, PPC Ltd

The new ground-breaking Alan Gray Headquarters, known as the No 1 Silo Building, has set new standards in efficient and sustainable Architecture. The first 6-Star Green Star-rated building in Cape Town, and the second in Africa, it is a most intelligent and advanced building in terms of the integration of operational systems. Adjacent to the nearly completed Green Star-rated No 2 Silo which will be mixed-use retail and residential, they cluster around the historic Grain Silo to complete the Silo Precinct. At 87 m tall, this iconic 1921 landmark is being retrofitted into the Zeitz Museum of Contemporary Art Africa. When completed, Zeitz MOCAA will be a leading international contemporary art museum, housing the world's foremost collection of contemporary art from Africa and its Diaspora. The Silo precinct confirms the V&A Waterfront as the premier property asset in Africa and an international leader in sustainable development and 'green' best practice.

According to V&A project manager Mark Noble, professionals were chosen for their understanding of first principles, and worked as an integrated team. Vigorous research into relevant technologies began in mid-2000. "Our intention was never to produce 'green bling' or 'cut and paste' solutions but to conclude with a resource-efficient building using workable technology that also extracts maximum operational savings," says Alan Gray representative Michael Smith. David Green, V&A Waterfront CEO concurs: "We both wanted the best building



The building's design allows maximum transparency and openness.

to suit our common vision, and agreed on a supportive landlord-tenant partnership that would unpack sustainability's reputational, financial, environmental and social benefits."

MLC Quantity Surveyors' Alan Nenguke explains that Green Buildings make financial sense in the long run. According to their calculations for a standard premium-grade office building, the extra cost for the resource-efficient design (RED) building would be repaid through operational savings within 11 years. Intangible benefits include increased productivity and better health.

*continued on page 28*

## EROSION PROTECTION SOLUTIONS



erosion protection | precast products

paving | concrete masonry

drainage | kerbs

retaining walls

**An engineered erosion solution that can withstand even the most severe climatic conditions.**

- Armorflex offers environmental protection
- Labour intensive and cost effective
- Complete erosion protection (even when placed under water)



**Design**

Anja Mischewski van der Merwe from VDM Architects says design was driven by the Client's visionary and forward-thinking approach, and planning had to strengthen the company culture of collaboration. "Individuals who collaborate are creative and transfer knowledge; consequently indoor and outdoor boundaries had to dematerialise to allow maximum transparency and openness with clear unobstructed views. Private offices were not allowed, not even for top management. Private conversation pods and social spaces interrupt otherwise completely open-plan workplaces." Transparency is further enhanced by an atrium that ensures deep natural light penetration and visual connections from inside and outside the building.

Nadine Harris from Collaboration Interior Design Consultants says Green Star requirements were exceeded by specifying interior materials such as flooring, soft furnishings and other finishes with low VOC (volatile organic compounds) and formaldehyde levels. Only certified FSC timber such as sustainably harvested bamboo was used and all fluorescents were specified to avoid high-frequency flicker. The building utilises efficient lighting fittings with a DALI lighting system that adjusts internal lighting according to daylight intensities and occupancy levels.

**Innovation**

Arup's Jaco Kemp says that key architectural and engineering solutions are aimed at maximising carbon neutrality, limiting energy requirements, promoting self-sufficiency, and using low-maintenance, durable, sustainable and recyclable building materials. Efforts were made to reduce PVC, cement and virgin steel in construction. Ninety percent of all structural steel used is recycled steel. During construction green boarding was used and, with the contractor's support, on-site recycling virtually eliminated building waste.



*The soaring atrium is flooded with natural light.*

According to Kemp, the architectural concept called for large glazed facades to maximise views and daylighting but solar control and heat gain proved challenging. This was compounded by glare from sea and sky with the building being right on the harbour's edge. The solution was installing a 700-mm-wide double-skin high-solar-performance glazing system on the most vulnerable north-eastern and north-western facades. Blinds inside the double skin are controlled by light sensors monitoring daylight intensities – opening and closing to ensure occupancy comfort and static lighting levels. Heat captured in the glazing cavity is ventilated to the outside through natural convection, and in winter hot air is captured to form a warm blanket, adding to energy savings. Contributing to the 6-star rating was the grey water recycling plant which, together with rainwater harvesting and waterless urinals, substantially reduces water consumption.

"Air conditioning is one of the biggest energy consumers, so we took special care to design a holistic and innovative integrated system," says Kemp. "Cooling is achieved by drawing in seawater from the harbour through a titanium plate heat exchanger system. The sea water, at between 14-16°C, is used to cool the chiller plant as it rejects heat from the building and heat exchangers assist in reducing electricity costs and water consumption through eliminating traditional cooling towers. The AC is supplemented by an underfloor displacement ventilation HVAC system which has zero ozone depletion potential in the open-plan office spaces. By adding solar thermal panels and heat pumps for hot water and heating in winter, the team managed an estimated 60% energy reduction over the minimum SANS 10400 requirements. Installing an integrated BMS (integrated building management system) ensures optimal operational efficiencies across services and adjusts according to occupancy and weather changes. This enables greater energy efficiency and allows consumption monitoring so that different systems can be integrated and adjusted to increase future savings.



*Private conversation pods and social spaces interrupt completely open-plan work areas.*

The green roof reduces the heat load and protects the waterproofing. A rooftop breakaway area is surrounded by low-maintenance indigenous planting with drip irrigation and LECA soil pellets which absorb and retain moisture to minimise water consumption. There is also a herb garden which supplies the canteen, with all green waste being recycled back through composting units.

#### Concrete contribution

Structural concrete was used with 30, 50 and 60% substitution of cement with a highly reactive PPC slag. Replacement levels depended on the structural members concerned. Using PPC's high-performance CEM1 52,5 N as host cement ensured that further cement reductions could be made. The consultants claim that an overall saving of 60% cement usage was achieved. According to the architects, the precast concrete panelling was designed as a feature and to balance the glazed facades. Used to dress the cavity walls, they also distinguish the two service cores and western façade as distinct architectural elements. Precast concrete was the preferred material to ensure a durable and no-maintenance cladding. Over a 1000 m<sup>2</sup> was installed by Concrete Units in 180 concrete panel sections, 120 mm thick. Of these 132 were precast using Reckli Tigris formliners to create a textured effect and the rest had a smooth-face finish. Another advantage of precast concrete was its flexibility in that panel sizes could vary from 2,6x3,7 m to smaller plinth units using the same finishes and material. In keeping with the project's sustainability ethos the carbon footprint of the panels was further reduced during manufacturing by using only recycled reinforcing and a 20% extender content (PPC slag) with PPC's CEM I 52,5N (OPC) and white cement added to create the desired colour. Justin Arendse of Sutherland Engineers says a combination of steel sub-frames, corbels and dowels was used to anchor individual panels to the façade. By casting steel dowels into the bottom of each panel, they could be epoxied into the vertical guides of the panels below. These assist with the continuity of the joints, thereby transferring wind loads to the corbels. High-density polyethylene (HDPE) shims wedged between the floor ledge and the corbels ensure that panels were perfectly aligned before grouting took place. Concrete has given this cutting edge building its distinctive features; again proving that concrete is not only the contemporary aesthetic, but the preferred material when it comes sustainability. ■

**More information from Daniel van der Merwe on email: [daniel.vandermerwe@ppc.co.za](mailto:daniel.vandermerwe@ppc.co.za)**

**Total gross floor area (GFA):** 18 723 m<sup>2</sup>

**Car parking area:** 13 850 m<sup>2</sup>

**PROJECT TEAM:**

**Project Manager:** Mace Management Services Pty Ltd

**Architects:** van der Merwe Miszewski & Rick Brown

**Quantity Surveyors:** MLC

**Sustainable design and building review consultants,**

**Mechanical & Wet Services:** Arup

**Structural Engineers:** Sutherland Engineers

**Main Contractor:** WBHO Construction Cape CC.

**Cement and slag suppliers:** PPC Ltd

**Readymix suppliers:** Ciolli Readymix

**Concrete precast suppliers:** Concrete Units

**PRO TILE<sup>®</sup>**  
EQUIPMENT

**ROOF TILE  
MANUFACTURING  
MADE EASY**

**Superior engineering  
giving our customers the  
leading edge worldwide**

**Free  
basic guide on  
successful concrete roof  
tile production**

**Concrete roof tile equipment  
Manufactured by  
Jessop & Associates (Pty) Ltd**  
Tel: +27 16 421 2521 Fax: +27 16 421 2539  
[www.protile-equipment.com](http://www.protile-equipment.com)



# Concrete pushed to new levels at PPC Cement YCSA Awards

Concrete reached new heights at the 2013 PPC Cement Young Concrete Sculptor Awards (YCSA). Innovation, technical excellence and strong conceptual presentation were attributes of the 123 entries submitted – 25% up on 2012 and the highest number to date.

Emerging victorious, Josua Strümpfer, was awarded the R50,000 first prize and the title of Best Fine Art Sculpture on Exhibition for his artwork, *Kunsarbeid*. Judges praised its complexity of design and execution. Strümpfer said: "The labyrinth symbolises our life's journey. Our lives are metaphorically and literally channelled by cement structures."

Winner of the Functional Art Award was St. John Fuller for *PUG*, a fully functional pinhole camera, based on the original camera obscuras. The precision necessary to construct the camera without any leakages stunned the competition judges.

Donovan Leach, technical marketing manager at PPC and Technical Judge for YCSA said, "I'm in awe of what the artists are doing with concrete. They continue to push concrete to its limits and explore it."

The Fine Arts runner-up award of R25,000 went to Bongani Dlamini and Ncedani Fobo. Their collaborative artwork, *The unfair servant*, was applauded by the judges for raising thought-provoking questions around society



Josua Strümpfer, was awarded the R50,000 first prize and the title of Best Fine Art Sculpture on Exhibition for his artwork, *Kunsarbeid*.



The Fine Arts runner-up award of R25,000 went to Bongani Dlamini and Ncedani Fobo.

in South Africa. Merit Awards of R5,000 went to Adriaan Petrus Diederichs for his delicate piece, *Hand tot mond*, and to Nicholas Prinsloo for *The lights of Arcadia*. A Certificate of Recognition was awarded to Gavin John Risi for his work, *Metaphorical African*.

PPC's Facebook fans voted for their preferred PPC Cement YCSA winner. Setlamorago Mashilo was voted Fan's Favourite for *Mabu a u tswitswe*, and walked away with R5,000.

For the second year Stuttaford Van Lines made regional selection possible by sponsoring packaging and transportation of the works from national selection points Pretoria. This sponsorship makes YCSA more accessible to artists.

PPC Cement YCSA remains a platform for emerging artists to realise their vision through the medium of concrete. The competition started as one of PPC's centenary celebrations 22 years ago. Held in partnership with the Association of Arts Pretoria, it is the longest-running competition of its kind in the country.

PPC's public relations manager, Nomzamo Khanyile said: "For PPC, this niche art competition remains a celebration of the rich and varied artistic talent in South Africa. We are honoured to sponsor a competition that has benefited so many aspiring young artists, providing an opportunity to continue making a difference that goes beyond the bags of PPC cement products," she said.

Evert van Engelenhoven, the inaugural winner of 2012's Functional Art Category, created original pieces of concrete jewellery for thought leaders in the industry. These included Business Art South Africa CEO, Michelle Constant, designer Suzaan Heyns and trends analyst Dion Chang.

"We look forward to next year's competition. YCSA grows from strength to strength and we look forward to seeing artists, designers and innovators push the boundaries of concrete to new heights," concluded Khanyile. ■

**For more information, contact Nandi Hilliard,  
Tel: +27(0)12 346 3100 / email: [artspta@mweb.co.za](mailto:artspta@mweb.co.za) or  
PPC on [www.ppc.co.za](http://www.ppc.co.za)**

## A South African first: Suzaan Heyns partners with PPC Cement

Johannesburg-based designer Suzaan Heyns' partnership with PPC Cement has resulted in an on-going art installation and transformation of her Melrose Arch store. Born from their 2012 *Reimagine Concrete* collaboration, the alliance between Heyns and PPC Cement has succeeded in creating a one-of-a-kind sensory space and experience.

The project called *Concrete Evolution*, unveiled on 29 November 2013, sees Suzaan Heyns' Melrose Arch store evolve into an ever-changing installation space, showcasing the artistry behind the clothes and art and fashion through various mediums.

"Concrete opened a new world for me. It's an interesting medium with astounding versatility," said Heyns.

With sculptor Sybrand Wiechers and design duo Sobeit Studio she is transforming her store into an art installation.

"Working with PPC is an incredible journey. It's interesting to see a big corporate being this open to innovation," Heyns said. "PPC does not dictate what I can and can't do, but gives me free rein under an incredible support structure. This approach pushes creative people to go further, to innovate, leading to new avenues of design exploration."

"Our collaboration with Suzaan Heyns showcases how innovation and creativity can build new frontiers for both industries. The result is functional concrete design that pushes the boundaries of what we've thought possible. It's a new era in the concrete age and one we want to embrace," said Richard Tomes, MD Cement RSA.



*The necklace made for Suzaan Heyns.*

Heyns, Dion Chang, and Michelle Constant were named PPC's thought leaders and Evert van Engelenhoven, 2012 YCSA Functional Art winner, designed and crafted concrete jewellery for each one. Heyns' necklace, *The strongest link*, has a circular concrete pendant with cotton and silver links. Heyns said: "Evert captured what I do by using cotton in the links; my things are quite robust and this piece speaks to that." ■

**More information from Nomzamo Khanyile,  
Tel: +27(0)11 386 9309 / [www.ppc.co.za](http://www.ppc.co.za).**

# Corestruc

C O R E S T R U C

Corestruc are the industry leaders in South Africa at providing more cost effective design and construction methods in shorter time schedules.

Corestruc's main business is the design and construction of precast concrete structures in South Africa and Neighboring Countries for reservoirs, office blocks, industrial warehouses, shopping centre's etc.

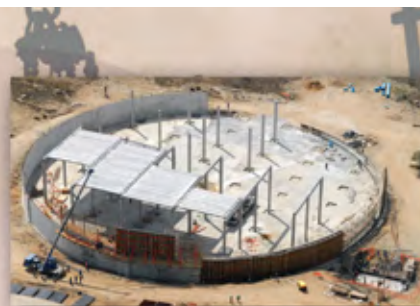
Tel 087 232 2462

Cell 082 565 1427

E-mail [info@corestruc.co.za](mailto:info@corestruc.co.za)

Fax 087 232 2463

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





# Lafarge Artevia™ awards showcase decorative concrete

The third of Lafarge's Artevia™ Decorative Concrete Awards was presented in November 2013. The awards, sponsored by Lafarge South Africa's Readymix concrete business line in a partnership with Chryso Southern Africa and Lanxess, showcase the excellence of construction projects using Artevia™ decorative concretes.

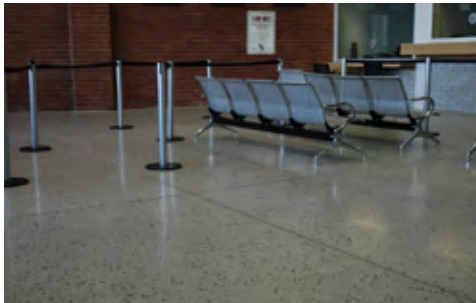
Lafarge South Africa is the local presence of the international Lafarge Group, the world leader in building materials. The new brand signature 'Building better cities' pledges Lafarge's commitment to help create sustainable, durable and beautiful cities and rural developments using innovative Artevia™ decorative concretes.

Entries were submitted in three categories: Category A: Artevia™ Colour & Print; Category B: Polish, and Category C: Artevia™ Exposed. The 21 entries were judged on innovative use of Artevia™, finish quality, aesthetics and architectural appeal. Judges were Lafarge's Anathi Zitumane, Chryso's Kirsten Kelly, and Hugh Fraser from Paragon Architects.

The overall winner of the 2013 competition was Johannesburg-based, Ocean Side Trading for House Bozwana in Mooikloof, Pretoria. The architect was Nico van der Meulen Architects. Presenting the R40,000 travel voucher, Anton Combrink, Lafarge Readymix business line GM said, "In this house, various concrete finishes were used: the natural, silky look of Artevia™ Polish created a stylish impact for the entrance, stairs and entertainment areas, while Artevia™ Exposed was employed in the driveway for its gravel-textured appearance and low maintenance. On the stairs and entrance areas, Artevia™ finishes were set off to dramatic effect by natural off-shutter Lafarge Agilia™ concrete combined with steel."



*Horticare's Steyn City Golf Course project won the Artevia™ Exposed category.*



*Manenberg Civic Centre's light-coloured floors won the Artevia™ Polish Award for QS Concrete Grinding & Polishing.*

Winner of Category B, the Artevia™ Polish award, was Cape Town-based, QS Concrete Grinding & Polishing for the Manenberg Civic Centre. The same company was overall winner in 2012 and, presenting the R20,000 travel voucher, Combrink said: "In addition to its extremely pleasing appearance, the light-coloured Artevia™ Polish floors helped reduce lighting requirements and improve thermal efficiency."

Category C winner was Horticare for their use of Artevia™ Exposed in the Steyn City Golf Course for paths, walkways, bridges and paved areas around the clubhouse. Nicolas Wolf, Chryso Southern Africa's MD, presented the R20,000 travel voucher prize. Artevia™ Exposed was used to create a slip-resistant, durable gravel-like finish, in combination with Lafarge Hydromedia® porous concrete for fast groundwater drainage.

Wolf also awarded a R20,000 travel voucher to Category A winner, Melt Wahl, for their use of Artevia™ Colour for Cape Town's Bus Rapid Transit Project. "Using red-pigmented concrete to demarcate bus lanes was innovative and quality was of an extremely high standard." Hugh Fraser presented

R20,000 travel vouchers to two architectural firms: Nico van der Meulen Architects for the decorative use of Artevia™ Polish in House Bozwana, and Boogertman and Partners for incorporating Artevia™ Exposed in the Steyn City Golf Course.

Panmixer South Africa received a special commendation for their HTC Showroom where coloured and polished tilt-up panels demonstrated the potential of Lafarge Artevia™ decorative concretes. ■

**More information from Charlene Lamb,  
Tel:+27(0)11 657 0000 / [www.lafarge.co.za](http://www.lafarge.co.za)**



*Winner of the Stylish Interior Award was Ocean Side Trading for House Bozwana, Mooikloof, Pretoria where Artevia™ Polish created the finishes.*



# Rapid Cure concrete reduces road works on the UK's M25

By Grant Prior

**A** new concrete repair technique being trialled by Connect Plus on the UK's M25 highway is cutting delays for drivers by 80%.

The joint venture between Balfour Beatty, Skanska, Atkins and Egis is using Rapid Cure concrete which cuts the time needed for motorway lane closures from 1,500 hours per year to just 300. Connect Plus has adapted the technique from the aviation industry where it is used for repairing airport pavements.

Rapid Cure works by introducing a superplasticiser and a curing accelerator to the concrete mix which makes it set much more quickly.

Connect Plus has also introduced other techniques to reduce the duration of concrete repair works including pre-cutting the old concrete and preparing it with lifting eyelets for quicker removal and the use of quick-drying heated tents.

The complete process now takes one overnight closure compared to the previous full forty-eight-hour closure. The new method also improves safety for road workers as they are



*The new technique in action.*

exposed to live traffic for less time.

Around 4% of the UK's motorway network is made of concrete – including nearly 10% of the 400-kilometre M25 network.

The Connect Plus' supply chain framework partners include Jackson Civil Engineering, Balfour Beatty, Osborne, Skanska, Lafarge Tarmac and Aggregate Industries.

Particular expertise was provided by designer Parsons Brinckerhoff, concrete mix specialists, Grace Construction Products and volumetric mix plant suppliers Axtell and PJ Davidson.

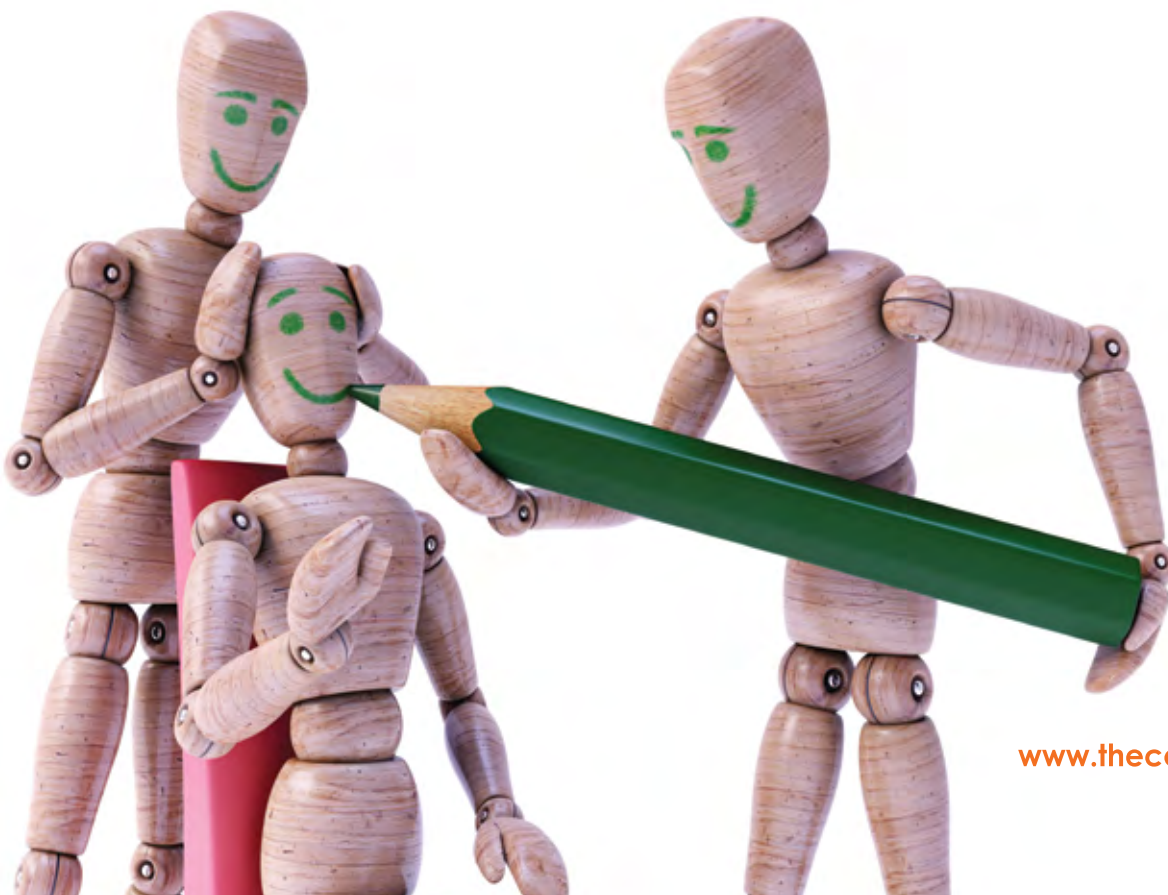
Tim Jones, chief executive Connect Plus said: "Motorway closures for the replacement of failed concrete bays are a significant cost to us, our customer and ultimately the road user.

"We've been developing the Rapid Cure concrete innovation over many months and it has enabled us to reduce carriageway closure hours by seven weeks this year alone." ■

**More information at <http://goo.gl/oNDu9s>**

## We rise by helping others...

The Concrete Institute provides technical solutions  
in concrete.



THE CONCRETE  
INSTITUTE

[www.theconcreteinstitute.org.za](http://www.theconcreteinstitute.org.za)

+27 11 315 0300





**R·M·D**  
**KWIKFORM**

SOUTH AFRICA

### **Regional Branches**

Centurion, Cape Town, Durban, Bloemfontein, Nelspruit and Maputo

Tel: 012 681 0360

[www.rmdkwikform.com](http://www.rmdkwikform.com)





Excellence in formwork and scaffolding engineering solutions



Supplier of the Year 2013



# Life-cycle costs vital for road-building decisions

The initial cost of concrete roads compared with asphalt alternatives often misguidedly influences decision-makers in charge of infrastructural development, says Bryan Perrie, The Concrete Institute's MD.

Perrie says only considering the initial cost of new roads omits an important factor: the ultimate useful lifetime of and maintenance required for such roads. "It is important to employ mathematical and probabilistic models to assist decision-makers taking strategic long-term decisions in the context of budgetary restrictions," he comments.

The Life-Cycle Cost Analysis (LCCA) assesses the long-term return of alternative investment options by considering the total and final costs to both the road owner/manager and the road user. From the LCCA, an option can be sourced that has the lowest long-term cost – but still achieves the desired performance.

Perrie says to assess the whole-life costs of new roads, the following factors must be considered:

- Construction costs, which include agency costs for administering the project, consultants' fees for design and supervision, and the contractor's total costs;
- Maintenance costs that include annual routine maintenance and periodic treatment such as joint resealing and overlays;
- Residual value: the value of the contribution the new road would make at the end of the analysis period to the next life cycle of the road;
- Vehicle operating costs and normal travel time costs. These increase as road conditions deteriorate prior to major rehabilitation. The rate of increase will differ for different road types and strategies;
- Road-user delay costs caused by the unavailability of the road;
- Road construction delay costs. "Where the road will be placed on an existing operational road alignment, there's usually traffic disruption. If the road type chosen affects the duration of the work, the increase

in vehicle operating and travel time costs for each alternative should be estimated," says Perrie;

- Road maintenance delay costs. Choosing road alternatives requiring frequent major maintenance, makes associated road-user costs significant;
- Accident costs. "These should be evaluated where the road type and maintenance strategies may result in road deficiencies causing accidents," Perrie explains.

"One problem with a deterministic approach to LCCA is that it uses single values for inputs and calculates a single value for outputs. The American Federal Highway Administration's new approach uses a probabilistic-based risk analysis in road design incorporating the variability of each input by combining the variability of the individual inputs to generate a more probable LCC cost. The results then give a whole distribution on what possible values could be."

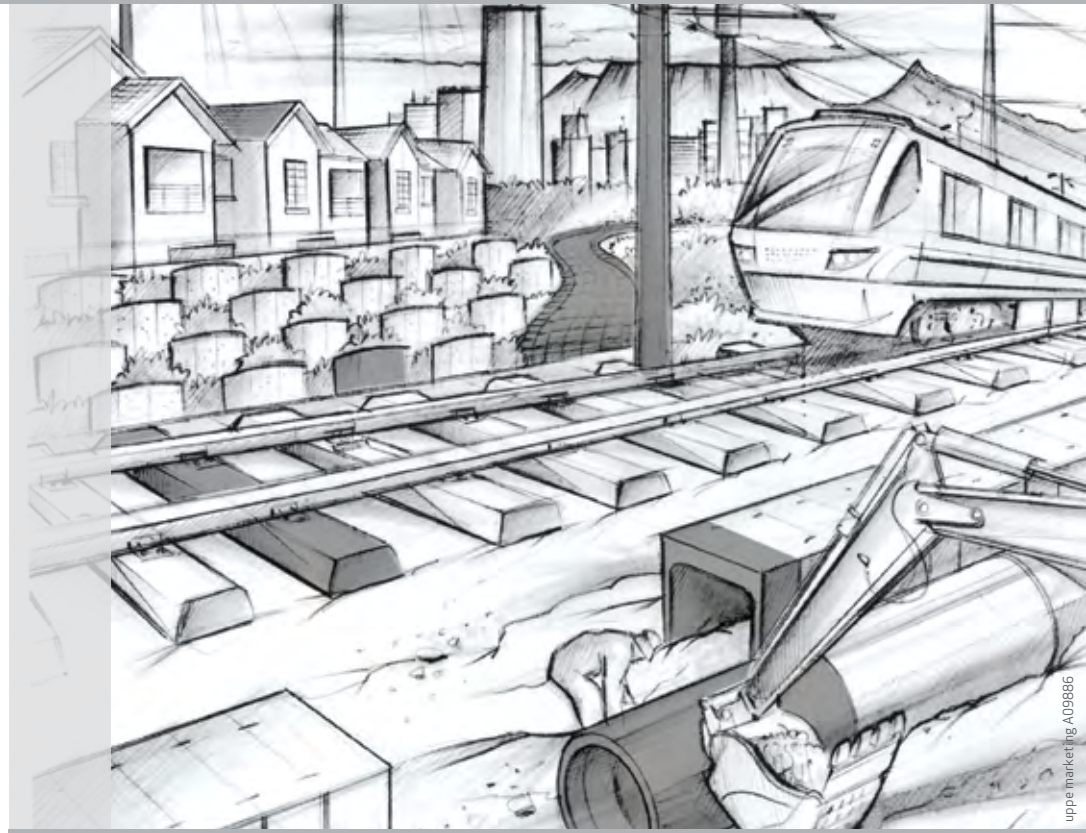
The Cement & Concrete Institute used a similar approach when formulating the award-winning 'cncPave' mechanistic design procedure for concrete pavements.

"The importance of using accurate maintenance costs in an LCCA is illustrated in a rehabilitation contract on the N3 outside Pietermaritzburg for which an analysis of costs using concrete and asphalt alternatives was made in 1984. The initial costs were based on the average of the three lowest tenders. In this analysis, the concrete road option was 18% more expensive than asphalt. Despite this, concrete was selected. Fifteen years later, a Present Worth of Costs (PWOC) analysis – incorporating the actual maintenance costs incurred on the road over 15 years – showed that concrete was only 1.3% more expensive. "This clearly illustrates the importance of employing accurate maintenance data when using life-cycle cost analyses to assess various road-building material options," Perrie emphasises. ■

**More information from Bryan Perrie,  
Tel: 011 315 0300 / [www.theconcreteinstitute.org.za](http://www.theconcreteinstitute.org.za)**



Concrete roads, both large and small, play an important role in infrastructural development, says The Concrete Institute.



# BUILDING DURABLE INFRASTRUCTURE WITH PRECAST CONCRETE PRODUCTS

Aveng Manufacturing Infraset produces a diverse range of precast concrete products to world-class quality standards and actively contributes to SADC infrastructure development. Our range includes concrete pipes, culverts, manholes, special precast products, various types of pre-stressed railway sleepers, turnouts, maintenance-free railway electrification masts and poles, paving blocks, retaining wall systems and roof tiles.

**Aveng Manufacturing Infraset's admired heritage is founded on innovation, technical and service excellence.**

Aveng Manufacturing House  
TEL: +27 (0)11 876 5500  
FAX: +27 (0)11 872 1713  
EMAIL: [infrasetinfo@infraset.com](mailto:infrasetinfo@infraset.com)  
[www.infraset.com](http://www.infraset.com)

PIPES • CULVERTS • MANHOLES:  
GAUTENG – TEL: +27 (0)11 876 5100  
CAPE TOWN – TEL: +27 (0)21 908 1156  
KWAZULU NATAL (PIETERMARITZBURG) –  
TEL: +27 (0)33 387 2236

RAILWAY SLEEPERS • POLES &  
MASTS  
NATIONAL – TEL: +27 (0)11 813 2340

PAVING • RETAINING WALLS • ROOF TILES  
ROSSWAY (MIDRAND) – TEL: +27 (0)12 652 0000  
KWAZULU NATAL (EFFINGHAM) –  
TEL: +27 (0)31 569 6900

INTERNATIONAL BRANCHES

SWAZILAND – TEL: +2682 518 4236 | ZAMBIA – TEL: +260 21 131 1838



# Calatrava's Sharq Crossing Bridge adds drama to Doha Bay



Santiago Calatrava has designed a beautiful series of three bridges called Sharq Crossing for Doha Bay in Qatar. Connecting the city's cultural district south to Hamad International Airport and the West Bay financial district, the bridges are interconnected with subsea tunnels that undulate above and below the water. An elevated park above the car lanes brings lush greenery and a unique view for pedestrians, surrounded by the waters of Doha.

Designed in his iconic style, the beautiful Sharq Crossing gracefully arcs just outside of Doha's busy skyline, adding a gentle curve over the water. The multi-billion dollar scheme will alleviate traffic flow problems within Doha, a consequence of the city's increase in population and car ownership. The bridges will help manage Doha's traffic, diverting 2,000 vehicles per hour per lane, effectively maneuvering them in a direct northern-southern route.

Spanning 9.65 km in total, the bridge will add an important artery to the area's roadways. The system will not only help local traffic in the growing city, but also prepare Doha for the World Cup that will be hosted in Qatar in 2022 .

The bridge will also add much needed green space to the city with a beautiful sprawling elevated park that juts out over the water and incorporates vibrant areas of recreation. The double-decker West Bay Bridge brings a High Line style park to the city that is accessible by elevated walkway. The park will include a tree-lined promenade as well as recreational and hospitality facilities that lead to a multi-tiered park at the end of the bridge. The park's direct connection to Doha's business district will invigorate the retail shops around the base of the bridge.

Calatrava's grandiose Sharq Crossing Bridge will add a landmark and public work to Doha's booming skyline.

Qatar's government officials have announced that construction of Doha's 'Sharq Crossing' is to commence in 2015, five years after Santiago Calatrava initially floated plans for the project. The project is scheduled for completion by 2021. ■

*Images by Maher Attar courtesy of Santiago Calatrava.*

**The article was compiled from articles that appeared in Archdaily, Inhabitat and designboom.**



# LAYHER ALLROUND® SHORING TG 60



## Fast.

Easy and rapid assembly thanks to lightweight and symmetrical frames with proven Allround connection technology.

## Flexible.

Perfect compatibility with Allround equipment permits adaptation to every situation.

## Safe.

Safer upright assembly thanks to integrated advancing side protection.

## Economical.

With a more than 30 % time saving in comparison with structures made from individual parts, economic success comes quickly.



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

**Layher.** 

More Possibilities. The Scaffolding System.



# Supporting Finnish road construction

**F**inland, the 'Land of the Thousand Lakes' has always depended heavily on timber and the use of wooden shorings has a well-established tradition. So scaffolding construction company, Telinekataja Oy, demonstrated a pioneering spirit when it built a 16-m-high shoring for a road bridge over the E 75 using Layher's new Allround Shoring Frame TG 60. This European highway from Norway to Greece incorporates 18 new bridges currently under construction, including the E 75 road bridge across a valley.

The Allround Shoring Frame TG 60 is an innovative supplementary component to Layher's Allround equipment, and each of its standards can sustain loads of up to six tons – and its integrated rosettes make it fully compatible with all Allround components. With the modular Allround system, extremely strong shorings can be built rapidly and efficiently, thanks to fewer and lighter parts and its proven wedge head connection technology. It is also very safe because erectors always have side protection as a result of the assembly sequence – even without safety guardrail systems. The versatility of the product contributes to its high efficiency; the bay lengths of the shoring towers can be adapted, depending on the Allround ledgers used, to the actual load and configuration dimension of the formwork supports. The use of Allround ledgers also obviates the need to measure out the individual towers based on the planning requirements for each project.

Layher's on-site service team provided the Finnish scaffolding construction team with ideas for more effective use of this newly developed product. Experienced and expert assemblers from Eibensbach lent their support, despite icy temperatures of  $-25^{\circ}\text{C}$ . These temperatures also made the foundation work for the shoring more difficult, since the surface had to be cleared of frozen soil and replaced with crushed stone. For exact height alignment of the 16-m-high scaffolding, timber sections created an even surface for the base plates. For the 70-m-long and 13-m-wide structure, the scaffolding erectors chose a combination of Allround Shoring Frames TG 60 – for absorbing heavy loads in the area of the bridge walkways – and Allround equipment for supporting roadway slabs.



Concrete pumps place concrete into formwork supported by Layher's Allround system.



Allround equipment can be used in icy conditions, down to  $-25^{\circ}\text{C}$ .

Safeguarded by all-round side protection, the erectors built the lower tower sections upright to about six metres. All further levels were preassembled on their sides, and swiftly placed by crane – testimony to their high fitting precision. The continuous

diagonal bracing using Allround diagonal braces ensured a high overall stiffness without using tubes and couplers. An Allround stairway tower provided access, and upper levels were widened to create ideal working conditions using Allround brackets. This was effortless since all Allround expansion parts are

compatible with the new Allround Shoring Frames TG 60.

Allround equipment offered the Finnish scaffolding company potential new markets and the construction company great flexibility. Allround shoring was adapted to circumstances with the same precision as one-off structures made of timber. Thanks to experienced scaffolding erectors, it was also considerably faster. The flexible use of standard Allround system components rather than one-off timber structures also helps preserve Finland's forests. Although this 'green gold' has been ruthlessly exploited, the Finnish government is today increasingly committed to sustainable forestry.

For more than 60 years, Layher has been the undisputed pioneer for top-class scaffolding systems 'made in Germany'. With its ideas, this future-looking and highly innovative company has continually been giving vital new impulses to scaffolding construction and profoundly influenced developments. With its bolt-free wedge head connection technology, Allround Scaffolding has become a synonym for modular scaffolding. Layher has presented a further milestone at this year's Bauma: Allround Lightweight – the new dimension of scaffolding. But Layher not only means high-quality scaffolding, protective and event systems, rolling towers and ladders: it is also a dependable partner of customers from scaffolding, crafts, construction, industry and the events business when it comes to outstanding services. Every day, more than 1,500 highly qualified and motivated employees are creating more possibilities for customers – at the highly automated headquarters in Gueglingen-Eibensbach or at the sales subsidiaries in more than 30 countries all over the world. ■

**More information from [www.layher.com](http://www.layher.com).**



# 50 YEARS AGO WE BEGAN BUILDING THE FUTURE

## TODAY, WE STILL ARE.

Form-Scaff is proud to have contributed to the development of our nation for the past 50 years. Through our products and expertise we have played our part in many of the country's iconic construction and civil engineering projects.

From highways to high-rise, power stations to football stadiums, dams to airports, we were there. Perhaps our greatest achievement is the development of our people into a world-class team that is respected both locally and internationally. They are the foundation on which we will build the next 50 years.





## Precast slabs from Elematic ideal for social housing

Delivering social housing projects for the public sector is different from delivering private-sector projects, as deadlines are driven by political imperatives rather than programming. Construction products which can be installed quickly and accurately, like precast hollow-core concrete floor slabs from Elematic South Africa (ESA), therefore make good sense when needing to meet looming deadlines.

ESA is currently supplying 10,000 m<sup>2</sup> of hollow-core concrete slabs to City Deep Green, a social housing project under construction in City Deep, Johannesburg. Being developed by Johannesburg Social Housing Company, Joshco, City Deep Green is one of several similar projects under way at the present time.

As Gauteng continues expand and job-seekers flood into the province, the need for decent accommodation keeps increasing. Many old hostels in and around the city have been converted into social housing for families coming from other areas, but the shortage is still dire. The City Deep area, always a central node for labour, has a serious housing shortage. Joshco has therefore been developing City of Johannesburg-owned properties to create rental housing stock. Families earning less than a stipulated income per household qualify for a subsidy to rent these homes, which will not be sold and will remain Joshco's property available for rent.

The Motheo Construction Group – an established BEE construction company generating 90% of its turnover from government work – is the main contractor at City Deep Green. Completion of 328 units is set for May 2015. The project has been constructed in phases as funding from various donors becomes available. The current phase requires delivery of 220 housing units by June 2014.

Units are constructed in four-storey, walk-up blocks and will be one- and two-bedroom homes with basic finishes. Highly engineered raft foundations have been used because of the site's ground conditions. These have been followed by structural brickwork and then precast Elematic slabs on three levels. Finally, the structures will be roofed with IFR sheeting.

Motheo Construction Group's John Whiteman says the project engineer specified precast hollow-core concrete slabs as they are faster to erect than cast in-situ concrete floor slabs. "ESA was appointed on its known ability and its price. Quality



*Two blocks at City Deep Green, Johannesburg, being built by the Motheo Construction Group using Elematic hollow-core slabs.*

and efficiency of erection are deciding factors on a job like this," he says. "The accuracy of the slabs and the finish are always good, the slab soffits are neat and the v-joints fit together without gaps, resulting in a good-quality, aesthetically pleasing finish," he commented.

ESA and Motheo are currently also working together on another Joshco project in Soweto, so reliability and an open working relationship have been key.

ESA manufactures its hollow-core concrete slabs at its ISO 9001-accredited facility on the East Rand. "Our in-house engineers ensure that the product specifications meet the correct requirements for each project and the slabs are manufactured accordingly. Dedicated installation teams transport the slabs to site and install them. Our SABS certification assures clients of the quality of our products," says Craig Webber, director at ESA.

The Motheo Construction Group and ESA agree that they have worked well as a team to overcome challenges and keep the project on track. ■

**More information from Craig Webber,  
Tel: +27(0)11 423 2700 / [www.elematic.co.za](http://www.elematic.co.za)**



*At City Deep Green, 328 units are scheduled for completion by May 2015.*

# Build your house in 24 hours

**W**ith 3D printing, imagination is the only limit. There are robots to help around the house, so why not a robot to build our homes? Wait no longer.

Now there is a nifty tub of electronics to do just that, build a house from scratch, and fast.

A machine developed in the United States can build a 232-m<sup>2</sup> home layer by layer in a single day.

University of Southern California's Professor Behrokh Khoshnevis has designed the giant robot that replaces construction workers with a nozzle on a gantry, which squirts out concrete and can quickly build a home according to a computer pattern.

"The technology, known as Contour Crafting, could revolutionise the construction industry and slash the cost of home-owning," Khoshnevis explains.

"It could even be used in disaster relief areas to build emergency and replacement housing."

How does it work? The Contour Crafting system is a robot that automates age-old tools normally used by hand. These are wielded by a robotic gantry that builds a three-dimensional object. Strong walls are built layer by layer using concrete with automatic reinforcement. The system also adds plumbing and electrics during the building process.

"It will also be possible to create curved walls and architecture that is exotic and beautiful," says Khoshnevis.

Furthermore, Prof Khoshnevis believes that the technology could be applied beyond our planet. "Contour Crafting technology could build safe, reliable, and affordable lunar and Martian structures, before the arrival of human beings," his website reads.

The technology was part of the Consumer Electronics Show in Las Vegas which highlights the enormous growth in robotics.

The end of builders? The implications for builders with this new technology are, of course, a major concern. But Prof Khoshnevis says "the reality is that a lot of new jobs can be created in this sector as well."

So can the Contour Crafting robot move from its research lab and into the real world? "If you can build a wall, you can build a house," the Prof says.

But though National Inventors Hall of Fame named Contour Crafting one of the 25 best inventions in 2006, it is still being tested.

So don't go ditching your builder just yet. ■

**Visit msnUK for more on this story.**



*An artist's impression of how a Contour Crafting house would look.*



Pipes that **last** for more than a lifetime

**The world is changing around us – everyday.** Technological advances demand ongoing upgrades and solutions, upkeep and maintenance, but not ROCLA pipes. Because superb design and leading-edge manufacturing processes ensure that ROCLA provides the truly permanent piping solution.

ROCLA is ISO 9001:2008 certified and has the SABS mark of approval on all applicable products.

**ROCLA**  
OUR DIFFERENCE IS CONCRETE

Contact ROCLA now on  
Tel: (011) 670-7600 or  
Fax: 086 675 8985  
Web: [www.roclaproducts.co.za](http://www.roclaproducts.co.za)



# Thin shell structures – an answer to the housing crisis?

South Africa faces a serious dearth of low-cost housing. According to the Department of Housing, the backlog is in excess of 2.1 million homes and the current delivery is approximately 250,000 dwellings per year. The enormity of the problem has driven researchers to develop a housing system that is affordable, yet functional and robust.

The evolution of structures has progressed from trial-and-error to structures with a scientific, experimental and



Placement of catenary guides.



Cement-stabilised soil bricks were used to construct the dome.



A prototype dome supports the weight of three adults.

theoretical basis. Over time, the engineering profession has developed an understanding of structures, expressed in mathematical or physical forms. Technical abilities have expanded exponentially, with the development of new structural materials and shapes. Although structural optimisation has been intensely researched for many years, the engineering profession seems to be oblivious of the important role of shell structures, and in particular, catenary shells.

In physics and geometry, a catenary is the curve that an idealised hanging chain or cable assumes under its own weight when supported only at its ends. The curve has a U-like shape, similar to a parabola. Catenaries and related curves are used in architecture and engineering, in the design of bridges and arches, so that forces do not result in bending moments.

Natural forms are structures that are shaped and possess characteristics that are optimally resistant to local environmental conditions. Natural structures seem to be genetically programmed to withstand a host of environmental conditions. They are, in a most brilliant way, resistant to locally imposed forces.

Traditional houses in Southern Africa are generally rectangular clay/cement brick dwellings with tile or corrugated steel sheeting as the roofing system. To make the home more affordable, developers have cut back on the quantity and quality of materials, sacrificing strength which has led, in many instances, to inferior homes.

The proposed alternative structure is also made of brick, but is dome-shaped. This type of shell structure is inherently strong by virtue of its shape and requires significantly less material compared with conventional structures. The proposed thin-shell structure, a prototype of which has been built at the University of the Witwatersrand, is constructed with cement-stabilised soil bricks – a feature that would also make it attractive from a sustainability viewpoint.

Shell structures are highly efficient, provide incredible strength and use minimal materials. These characteristics make shell structures an ideal shape for low-cost housing. In addition, cement-stabilised soil bricks are an eco-friendly material as cement, the most extensively utilised construction material in South Africa, serves to stabilise local soils. This new type of brick is an economical and favourable solution for low-cost housing because bricks can be produced on site with local labour and relatively simple equipment. This has the added benefit of creating employment opportunities.

Low-cost housing and natural forms should be coupled and implemented in our designs.

The prototype dome structures constructed demonstrate the use of these materials as well as the structural strength achieved. The shell thickness is 50 mm and is completely unreinforced, the resistance being based on the compressive strength of the bricks. Although it is ultra-thin, the shell is capable of resisting the load of three adults.

Is this the solution to the housing shortage? ■

***This summarises a paper presented at the Global Issues in Concrete Construction seminar at Bauma Africa 2013 by Prof. Mitchell Gohnert, School of Civil and Environmental, Engineering, Univ. of the Witwatersrand, Johannesburg, South Africa***

# New moisture measurement system improves concrete quality and control

The new state-of-the-art Ludwig FL-Mobimic SlimLine microwave moisture measuring system and wireless Bluetooth transmission system consists of a microwave moisture measuring probe with an integrated temperature sensor, transmitting unit and receiver module.

The system was developed in-house by Ludwig in mid-2012, and is exclusively distributed in the local market through Pan Mixers South Africa (PMSA).



Readymix truck with a receiver module (above) and below, ready-mix truck with an external receiver.



Ludwig Moisture Control's MD Manfred Ludwig says: "As the smallest microwave moisture probe of its kind, Mobimic SlimLine is a new generation of wireless measuring. Just 29 mm high with a diameter of 75 mm, the probe can be placed effortlessly into confined spaces. This design breakthrough enables precise humidity monitoring in process flows – something previously impossible with wired sensors."

"Data captured by the probe is transmitted through an industrial-grade Bluetooth connection. The combination of the probe with a transmitting and receiving unit enables the Mobimic SlimLine to be used in stationary mixers with a rotat-

ing mixing drum, ready-mix trucks and moving bulk containers. It can also be used in drying and mixing processes," Ludwig explains.

A major challenge in moisture control is that users are often unaware of the exact water content of their aggregates. "Accurately controlling the water and moisture content facilitates energy savings, increased productivity and improved quality of the concrete products manufactured," he adds.

PMSA's marketing and sales manager Quintin Booyesen says the company has been an authorised Southern Africa distributor for Ludwig for several years. "We have worked closely with Ludwig Moisture Control to make the company's range accessible to the local market. We also provide customers with the latest product training, as well as comprehensive after-sales and technical support."

Although the Mobimic SlimLine wireless moisture measuring system is a niche product, Ludwig is optimistic that the company will obtain measurable market share in Africa, because of the expansion of the precast and ready-mix industries locally and also in southern Africa. "Expansion of these industries has prompted an increased demand for better-quality concrete and greater control during concrete manufacture, as well as delivery in the ready-mix sector. The Mobimic SlimLine system has a proven track record internationally for achieving these objectives, and I have full confidence that similar results will be realised in Africa."

Booyesen says PMSA's 2014 strategic imperatives include offering monthly industry-specific training sessions at PMSA's showroom and sales facility. "To add greater value to our existing product offering, we will be hosting various concrete industry experts from our suppliers in Africa and Europe to provide guests with product-specific workshops and training." ■

**More information from Quintin Booyesen,**  
Tel: +27(0)11 578 8700  
[www.pmsa.com](http://www.pmsa.com)



Concrete Equipment Solutions and Technology

## Brick & Block Machines

PMSA is the largest manufacturer of brick, block and paving making machinery in Africa. Offering start-up to fully automated plants, from 7,000 to 165,000 bricks per day.



RE 1400

Static plants available  
Up to 105 000 pavers per day  
Up to 165 000 bricks per day  
Semi- or fully automatic



VB4X

Static plants available  
Up to 63 000 pavers per day  
Up to 100 000 bricks per day  
Semi- or fully automatic



VB1X

Mobile or static plants available  
Up to 31 500 pavers per day  
Up to 60 000 bricks per day  
Semi- or fully automatic

Full range of moulds available



© 2014

Contact us today

Tel: +27 11 578 8732  
[sales@panmixers.co.za](mailto:sales@panmixers.co.za)  
[www.pmsa.com](http://www.pmsa.com)



# SA follows trend towards readymix

**S**outh Africa's building professionals are increasingly turning to readymix concrete as the advantages of using professionally mixed concrete become ever clearer.

Last year over 50% of local building and construction projects were completed using readymix. The increase is also in keeping with global trends where the use of readymix concrete has steadily climbed to the point where approximately 90% of all concrete used in countries like the USA and across Europe comes from readymix suppliers.

Locally, demand for readymix concrete has led to a dramatic increase in membership of the Southern Africa Readymix Association (SARMA), as readymix suppliers uplift standards and work to obtain accreditation from this highly-regarded industry association. Since 2007 SARMA has been instrumental in improving the quality of readymix concrete and has adopted health, safety, environmental and quality standards that are comparable with the best in the world. It also plays a leading role in promoting use of readymix concrete and raising awareness of issues affecting the entire industry.

## Word is spreading

"The local readymix industry is in good shape and is getting better and smarter every day. Our members are leading the way in innovation and are constantly adding products to their offerings tailored to new building techniques and new requirements from the construction industry," explains SARMA general manager Johan van Wyk.

"Increased membership with accompanying improved funding allows us to extend our reach and raise awareness of the benefits



*Readymix can be placed exactly where it is needed and eliminates the need for site mixing.*

of readymix concrete among professional associations representing contractors, architects, civil engineers and government."

With stricter building practices and the widespread uptake of sustainable building methods, Van Wyk expects the upward trend to gain momentum and anticipates much greater use of readymix for residential building, including affordable housing, to speed up project completion.

## Key drivers

Worldwide, factors influencing increased use of readymix include the ability to specify unique mixes and ensure consistent quality while dramatically speeding construction progress. It also enables redeployment of labour to more meaningful tasks – creating streamlined workforces.

Overall price is an important factor when considering costs pertaining to man-hour savings, reduced requirements for on-site mixing and construction equipment. Elimination of secondary operations, such as on-site testing and storage, helps to bring costs in line with site-mix operations, while post-construction clean-ups are simpler and environmental impact is minimised.

Van Wyk says in the past local contractors were prone to underestimate the cost of site-mixed concrete and made calculations based on a per-bag of cement basis only. More recently, cost pressures from rising equipment, fuel and labour prices have brought about a mind shift and companies nowadays are making far more detailed calculations in assessing overall costs, as well as efficiencies required per project.

## Makes cents

"When these calculations are done, the case for readymix concrete is usually obvious as the benefits are clear. In many ways the adoption of readymix reflects a move towards greater professionalism and the adoption of global best practices by the local industry.

"From a management viewpoint it is far easier to exactly specify a product, order it and receive it on the day it is to be used than having to order sand, stone and cement and storing them until such time as they will be used. With readymix being delivered at a specific time, specialist workers can be made available so that they can work the concrete immediately upon delivery.

"Most importantly, if the company uses a professional readymix supplier, they are able to benefit from the supplier's specialist knowledge and have concrete designed to exactly meet workability and strength requirements for a particular project. They can even supply designer mixes with special properties for high-tech building and architectural applications," Van Wyk says.

## Still the best

He concludes that concrete is the most widely used construction material in the world. It has the right properties to satisfy modern requirements for energy efficient building, while providing designers with a material that is freely available and sustainable to support environmentally responsible building practices.

"We therefore foresee a bright future for the use of readymix in South Africa and would recommend that companies traditionally making use of site-mixing operations engage with our members or make contact with us to explore potential benefits of using readymix concrete." ■

**More information from Johan van Wyk,  
Tel: +27(0)11 791 3327 / [www.sarma.co.za](http://www.sarma.co.za)**

# Prestressed hollow-core slabs build high-strength security wall

**E**cho Prestress has erected a security wall built with its own prestressed hollow-core concrete slabs at its prestressed hollow-core factory in Chloorkop, Gauteng. Constructed in two sections, the wall is 275 m long and at its highest point, reaches 5.4 m. A 0.6-m section of the wall is buried below ground. The walls comprise five tiers of interlocking slabs that measure 6 m x 1.2 m x 150 mm, which were placed horizontally and secured into position between vertical steel columns.

Echo Prestress marketing director, Melinda Esterhuizen, says there are several advantages to this type of walling, speed of construction being one and cost being another.

"Building a security wall using prestressed hollow-core slabs is considerably more economical than an in-situ wall offering the same properties; an in-situ wall would take two to three times as long to build with no advantage gained in strength or durability. Moreover, precast walling has no requirement for shuttering or propping, on-site curing, formwork or grouting, and the construction rate is  $\pm 50$  linear metres per day (eight hours)," explains Esterhuizen.

The Echo wall comprises 50-MPa concrete, so even jack hammers couldn't break through it. "Intruders cannot scale it, dig under it or break through it without making a great deal of noise over a very long time."

Esterhuizen says that soil conditions determine what type of foundations are

required for this walling and whether slab placement should be horizontal or vertical.

"Clay, collapsible soils, high-water tables etc require horizontal installations, whereas better soils are best suited to vertical applications. However, wind and impact resistance also influence the placement decision and some horizontal installations require piling. Impact resistance also determines wall height and slab depth.

"Stormwater drainage must always be properly engineered and weep holes, generally 100 mm in diameter, should be placed strategically to ensure good drainage."

Esterhuizen added that all precast security walls also have green attributes.

"The concrete slabs and steel support columns are 100% recyclable and are reusable. The wall itself has a long life span, is maintenance free, and other than occasional cleaning, no maintenance is required. However, the steel columns do need rust protection."

Esterhuizen concluded by saying that a key to the success in constructing this type of security wall is a close working relationship between the design, engineering and construction professionals.

Echo offers design solutions for both precast flooring and security walling applications. ■

**More information from  
Melinda Esterhuizen,  
Tel: +27(0)11 589 8800 or  
cell: 083 605 0077.**



Sections of recently completed prestressed hollow-core slab walling at the Echo Prestress factory in Chloorkop.



**Concrete Equipment  
Solutions and Technology**

## Self-Loading Concrete Mixers



DB 460 CBV



**TAKE  
CONTROL OF  
YOUR CONCRETE**



## Easy-to-Manoeuvre Four Wheel Drive True Batching Plant



PMSA supplies the all new Fiori CBV (Concrete Batching Vehicle).

**Make Certifiable Concrete,  
Anywhere, Anytime.**

© 2014

**Contact us today**

**Tel: +27 11 578 8732  
sales@panmixers.co.za  
www.pmsa.com**



# Precast panels add lustre to greenest office development

Over 1 000 m<sup>2</sup> of precast concrete panelling has been used to clad part of the external façade of No.1 Silo, South Africa's latest and largest green office building. Completed in September at Cape Town's V&A Waterfront and spanning 18 000 m<sup>2</sup>, it is also one of Africa's most advanced sustainable buildings.

Incorporating numerous green-design attributes, recycled waste and heat, use of seawater in the cooling plant, and a roof garden, it is one of only two buildings awarded a six-star design rating by the Green Building Council of South Africa.

Developed by the V&A Waterfront, No.1 Silo's architectural team comprised Van der Merwe Miszewski Architects (VDMMA) in association with Rick Brown + Associates. Other members of the consulting team included Mace (Project Managers), MLC (Quantity Surveyors), Sutherland Consulting Engineers (Structural Engineers), ARUP (Façade, Wet Services and

Rational Fire Engineers), Collaboration (Interiors Architects). Most of the development was clad with double glazing, automatically controlled blinds which track the sun, and an external single-glazed skin.

The precast concrete panelling was supplied and installed by the Concrete Manufacturers Association's (CMA) member, Concrete Units.

According to architect Karien Trengove, of VDMMA, the panelling was specified to dress 280-mm masonry cavity walls on the building's two service cores and western façade, and to distinguish them from the glazed façade of the atrium and office floors. Both textured and flat panels were specified for aesthetic reasons and to give unique identities to the structure's various functions.

Concrete Units supplied 180 concrete panel sections, 120 mm thick, 132 with textured (Reckli Tigris) façades and 48 in flat smooth-face finishes. The former were used on the service cores – the east core measuring ± 128 m<sup>2</sup> and the west core 738 m<sup>2</sup>. They were manufactured in 17 dimensions, the smallest spanning 1,590 x 1,750 mm and the largest 1,705 x 4,295 mm. The smooth-face panels were supplied in eight sizes and clad a 320-m<sup>2</sup> directional wall on the western façade. The largest measured 2,650 x 3,760 mm and weighed 3.4 tons. Smaller smooth panels were also used at the base of the west core to create a plinth line at ground level.

Sutherland Consulting Engineers' structural engineer, Justin Arendse, said a combination of steel sub-frames, corbels and dowels were used to anchor the individual panels to the façade sub-structure or protruding concrete slab edges.

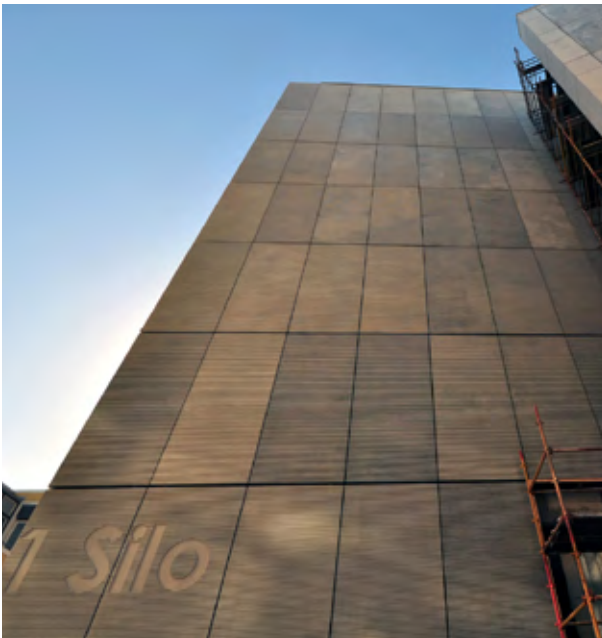
"Each panel was lowered from the roof using a purpose-made six-ton crane and a four-man cage because the project's tower crane could only lift one ton at the end of its reach. Lifting and lowering the sections into position required meticulous care and coordination between the cage team and crane operator and generally only three panels could be installed each working day," commented Arendse.

Two 12-mm galvanised steel dowels were cast into the bottom end of each panel. Designed to be epoxied into the guides of the panels below, they provided a vertical connection between each panel facilitating continuity through panel joints and transferring wind loads to the corbels at each level.

Two further dowels, 20 mm in diameter and also galvanised, were cast into the supporting ledge and epoxied into the panel corbels to lock the corbels into position after grouting had been completed. They also acted as guiding pins during installation. High-density polyethylene shims, wedged between the floor ledge and the corbels, ensured that panels were perfectly aligned before grouting took place.

"The overall carbon footprint of the panels was reduced during manufacture by using recycled reinforcing and a slag cement extender sourced from the Saldanha steel mills. Once the moulds were stripped, the panels were tilted into a vertical position and then stored on an A-frame steel rack before delivery to site," says Trengove.

"Far from dull and boring, this panelling demonstrates how, correctly designed and applied, concrete facades can be extremely attractive." ■



Textured concrete panelling graces the western core of No.1 Silo.



Workers attach chains to a textured concrete panel prior to lifting by a specially manufactured crane. The protruding corbels can be clearly seen on the panel's inner face.

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

# Vaal walls withstand severest flooding

**W**ith the ever-present potential for flooding along the Vaal River and Vaal Dam areas, waterfront properties are constantly at risk of being washed away or damaged. Yet one property which installed a retaining wall constructed from Technicrete's Earthform garden blocks in 2009, is still standing intact, despite the massive floods of 2010 and 2011.



*The Technicrete Earthform retaining wall built by Jannie Odendaal has weathered massive floods and emerged unscathed.*



Jannie Odendaal built his new house with a water frontage on the Vaal River between Christiana and Bloemhof on the North West Province's N12 Treasure Route. Realising that Vaal Dam was a main water catchment area and the upstream Dam held 2,600 million cubic metres of water, he wisely sought a product to construct a solid retaining wall, and chose Technicrete's Earthform.

Odendaal said "I am not an engineer and have no technical knowledge of re-

taining walls and how to erect them. I selected Earthform simply because the accompanying pamphlet gave me very easy-to-understand instructions on how to install the garden blocks.

Four of us erected a retaining wall, three metres from the level of the water to a height of over six metres and in a circular design, which we believed would help ease water pressure in the event of a flood".

"We always knew that we needed drainage, and left 15-mm spacing open for that. The sand was compacted tightly on the embankment and, 2,000 Earthform garden blocks later, this enormous retaining wall was in place. The first major flooding occurred a year later, and again in 2011 there was even greater flooding when they had to open the sluice gates, releasing water at 3,400 cubic litres/second. Neighbours' properties were washed away, embankments and retaining walls collapsed – but we were left standing, completely intact. What a testament to Technicrete's product that it survived potential damage from two of the worst floods ever seen here."

Technicrete's Earthform garden blocks, while aimed at the DIY market, can also be used by landscaping contractors and property developers and offer an attractive solution for garden features and steep walls. Earthform is a low-maintenance product and vegetation

can be easily planted inside the block. Blocks can be stacked up to eight layers high on stable ground. The blocks weigh 23 kg and are 320 mm x 290 mm x 180 mm in size, and come in autumn, grey and plum colourings. An installation guide is available. ■

**More info from Malebusa Sebatane,  
Tel: +27(0)11 674 6957  
[www.technicrete.co.za](http://www.technicrete.co.za)**



**Concrete Equipment Solutions and Technology**

PMSA is Africa's largest manufacturer of a complete range of quality concrete equipment, providing solutions and technology. PMSA offers full back-up, support, training and spares throughout the African continent.



**SPS712**

**Concrete Roof Tile Machine**

Tile production capacity from 3,000 to 5,000 tiles per nine-hour shift (depending on plant configuration).

**Full range of plants available from 3,000 to 60,000 tiles per nine-hour shift**



**Full range of roof tile profiles available**

© 2014

**Contact us today**

**Tel: +27 11 578 8732  
[sales@panmixers.co.za](mailto:sales@panmixers.co.za)  
[www.pmsa.com](http://www.pmsa.com)**



## Revisiting Palm Jumeirah



A successful product is one that is used extensively and stood the test of time. At Palm Jumeirah, the artificial palm-frond island in Dubai, United Arab Emirates, the Terraforce walls and staircases are now seven years old and have fully met the client's expectations.

The Palm Jumeirah, Palm Jebel Ali and Palm Deira are three 12-square-mile man-made islands that were reclaimed off the coast of Dubai. Dubbed the 'Eighth Wonder of the World' and billed as the world's largest land reclamation project, the islands have created new cities with vast numbers of residential, leisure and entertainment areas.

Fourteen thousand labourers worked 24/7 to finish the first of three palm-shaped artificial islands, Palm Jumeirah, by 2010. It is an offshore city, with 60,000 residents and at least 50,000 workers in 32 hotels and dozens of shops and attractions.

Made possible by the wide continental shelf off the Dubai coast, and the relatively shallow depth of the Persian Gulf, Palm Jumeirah was constructed from about 94,000,000 m<sup>3</sup> of sand dredged from the bottom of the Persian Gulf. The sand fill was placed directly onto the (typically) 10.5-m-deep seabed using bottom dump dredgers. Above sea level, the top 3 m of the reclamation was achieved using 'rainbowing,' a technique in which the sand fill was sprayed – using GPS-guided dredging ships – over the surface of the emerging island.

Of particular interest, seven years on, was a re-visit to the 4x4 Multi step staircases and terraced retaining walls providing erosion control for the beaches on the fronds and easy access to the lagoons for residents. Home owners along the fronds have landscaped the retaining walls fronting their homes according to their specific tastes, creating a spectrum of creative possibilities that read like a *Countless ways to landscape and plant your Terraforce walls* manual. Any concerns about plants being unable to thrive in the harsh coastal climate were patently unfounded.

Presently Dubai is experiencing an upswing of construction and Bryan Newby, Terraforce consultant from Namibia, who is currently supervising the installation of a Terraforce seawall, complete with precast foundations below mean sea level, says: "Terraforce products are well received here. Now that the recession has lifted, the blocks are increasingly being specified, mainly because of their plantability and versatility." ■

**More information from Tel: +27(0)21 461 4939  
www.terraforce.com**

# Over 17,000 tons of toilets to Amathole

**A**gainst a backlog requirement of 180,000 toilets, the Amathole District Municipality issued a tender for concrete panel toilets to be manufactured and installed in a very poor and rural part of the Eastern Cape, Amathole. Rocla Sanitation won the first phase of the tender and has currently delivered to site 17,500 of the 25,000 toilets required by June 2014.

With the average concrete panel weighing 102.5 kg, and a complete toilet weighing 705 kg, this entire project will have approximately 17,875 tons of concrete panelled toilets available for residents – making it the largest single project Rocla Sanitation has undertaken.

Simon Wells, business manager: Sanitation at Rocla said: “The project started in March 2011 and, wanting to offer local opportunities for employment – 70% of the 200 locally employed people are women – we opened a dedicated factory in Butterworth and utilised local resources. This factory will remain operational until the project is completed in June. We also provided extensive on-site training for local labourers.”

“Amathole is quite a mountainous area making deliveries in bakkies at times treacherous, yet at times innovative, by using donkeys to carry the concrete panels to site. The panels, which are light and easy to handle, have been manufactured from a newly patented concrete technology, with all components



having hand grips, enabling top structures to be erected in 15 minutes. The community, we believe, are happy with the aesthetics of the toilet structures. A second tender is currently being adjudicated and we are extremely optimistic that we will be successful with this second phase,” said Wells.

The Rocla Sanitation concrete toilets can be relocated by households and are deemed the most suited for the Expanded Public Works Programme. The concrete panels are designed to have only six panels making up the structure, which is a huge plus for the quality and longevity of the product. They offer relatively large interiors (900 mm wide x 1100 mm deep x 2000 mm high), conforming to all relevant

standards and offer the safety of a dual opening locking system (i.e. they can be opened from the inside while being locked from the outside).

From manufacture to installation – depending on logistics and contractor timescales – takes 10 days including concrete curing time. This is a huge step forward for the community who, in the past, had no access to clean water or hygienic sanitation. The project is being funded under the Municipal Infrastructure Grant Programme. ■

**More information from Malebusa Sebatane,  
Tel: +27(0)11 674 6957 / [www.rocla.co.za](http://www.rocla.co.za)**

## Concrete at its best.

Head Office: Johannesburg: 011 672 0847  
Branches: Cape Town: 021 981 2197,  
Durban: 031 569 1200  
[www.wackerneuson.com](http://www.wackerneuson.com)



**WACKER  
NEUSON**



# Bayferrox pigments helped create concrete 'tree trunks'

A range of Bayferrox pigments, produced by Lanxess Inorganic Pigments, was extensively used in the design and construction of Plaza de la Libertad, a new landmark and iconic structure in Medellin, in central Colombia.

Lanxess Inorganic Pigments, based in Germany, is one of the largest pigment suppliers to the global construction industry. Chryso Southern Africa is the sole distributor of Lanxess inorganic iron oxide pigments for South Africa and has a colour laboratory in Jet Park that can measure colour strengths of pigments, and help customers colour-match available concrete masonry production lines at competitive rates

Medelin's 12,000-m<sup>2</sup> Plaza de la Libertad features two towers (24 and 17 storeys high) resembling tall tree trunks, designed to blend in with the surrounding forest's tree trunks and bark. The design concept of architect and interior designer, Alejandro Toro Posada – liberally featuring concrete coloured with Bayferrox pigments – also employs the building's wings as branching structures emanating from the giant 'trees'.

The structural elements of Plaza de la Libertad are based on a temperature-regulating and extremely weather-resistant concrete coloured with 60 metric tons of Bayferrox 918 LOM yellow pigments in the main building, and seven metric tons Bayferrox 130 M (red) and 318 M (black) pigments in the auditorium. A major benefit of using integrally coloured concrete is that the façade will require no follow-up maintenance.

Designer Posada adds: "Furthermore, the facades have been designed to conserve resources, reducing conventional air conditioning and lighting costs by around 40%."

The avant-garde building accommodates government institutions, a business hotel, TV studios, businesses, cultural centre, open-air theatre and exhibition halls. Described as a 'place of expressive power', it has won top prize in a major international competition organised by the National Association of Architects.

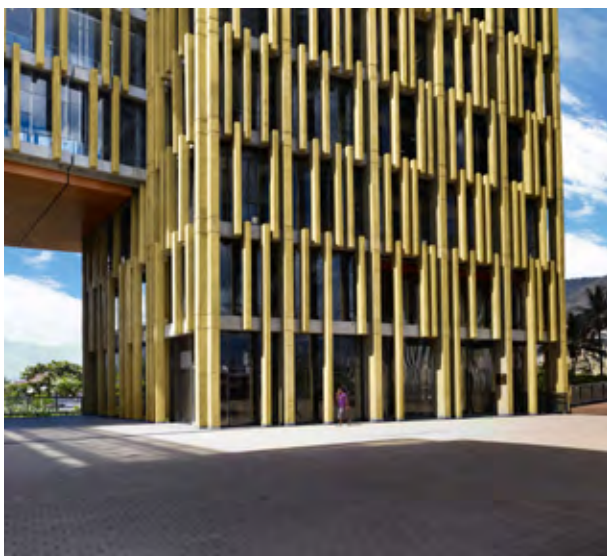
Hannes Engelbrecht, Chryso S.A. business manager: Concrete Aesthetics, says there are some vital factors to

consider when producing pigmented concrete:

- Cement: Portland cement's colour can vary significantly – from light to dark grey. This can influence the final colour of pigmented concrete. "That is why it is important to use the same cement throughout. The higher the cement content, the more intense the colour," Engelbrecht explains.
- Aggregates: The colour of aggregates also influences the ultimate colour, so the aggregate's surface area must be completely coated with pigmented cement paste for colour uniformity.
- Mixing water: Water dilutes the colour of pigments in the mix and excess water evaporates from concrete, leaving pores that scatter incidental light and lighten the colour of the pigment.
- Formwork: The type, colour and condition of formwork can influence surface colour. Formwork with different absorption rates will create surfaces with different colour shades.
- Dispersion: The pigment must be mixed with the aggregate before the cement is added.
- Temperature during drying: In higher temperatures, fine crystals develop in the cement matrix and determine how the light falling on the concrete is scattered. Smaller crystals produce lighter pigment.
- Efflorescence: Admixtures with high levels of calcium chloride can cause primary efflorescence.

All Bayferrox pigments are UV-stable and comply with quality standards EN 878 (the use of pigments for colouring building materials), and ASTM C979 (pigments for integrally coloured concrete), and carry the CE quality mark on their packaging. ■

**Copies of Chryso's leaflet, *Pigmented Concrete*, can be obtained from Hannes Engelbrecht on Tel: +27(0)11 395 9700 / [www.za.chryso.com](http://www.za.chryso.com)**



*The imposing twin-towered Plaza de la Libertad, Colombia which, using concrete coloured with Bayferrox pigments, shows "human kind in harmony with the environment."*

# Hydraulic fluid cuts energy needs by 11%



From left to right: Gustav Radloff (Energy Cybernetics), Adnaan Emeran, Anton Allner and Herman van der Westhuizen (Engen Petroleum).

**E**ngen Lubricants, a leading marketer of cutting-edge locally-manufactured and also imported lubricants, has recently introduced Hydrokin ESF, a hydraulic fluid with excellent energy-saving properties, to its customers in the South African and SADC markets.

### Less input energy

Anton Allner, who is Engen's Industrial Lubricants strategy manager, says the numerous sectors that consume hydraulic fluids (including mining, engineering and energy) can save up to 11% on their machines' power use by merely changing fluids.

He says the small amount of energy consumption needed with Hydrokin ESF is due to its better sealing performance at all operating temperatures around machine parts including pumps, pistons and rings – the result of a viscosity index improver (VII).

"A better viscosity index enables the oil to stay more fluid at lower temperatures and more viscous at higher temperatures while still meeting all its performance requirements, thereby reducing machines' input energy requirements," says Allner. "This 'stay-in-grade' performance of the fluid is central to its enhanced ability."

### Local proof

Allner says many lubricant marketers claim to have energy-saving products,

but Engen's claim is based on local trials – not just additive-supplier data. It is these trials that have demonstrated more than 11% savings in electricity consumption, as well as a 4.5% reduction in maximum power demand of machines.

Further indirect cost benefits can be realised through increased machine production output and in the longer life of machine components and fluid (due to the lower operating temperatures).

### Innovation at your service

Allner says hydraulic power is used in dozens of industries to precisely control the movement of machinery and material, yet these industries have little experience in effective design and maintenance of hydraulic power systems for greater efficiencies.

"Hydraulic power can be a far more competitive technology choice if the fluid design is allowed to demonstrate its significant energy and cost savings for companies and the customers they serve. Engen has the technological innovation and value-based partnerships to unlock energy efficiencies in hydraulic systems without sacrificing performance, thus contributing to the success of our customers' operations." ■

**More information from Anton Allner,**

**Tel: +27(0)11 480 6320**

**Anton.Allner@engenoil.com**

**Dealers in Surveying & Construction Materials Testing Equipment Since 1985**

**Concrete Test Hammer**



**H/D Cube Moulds**



**Rebar Locator**



**SPECIAL!**

**2000kN Compression Machine**



**from R65 500**

**PROTSURV**  
GEO CENTRE (PTY) LTD

t: (27)11 976 2070

f: (27)11 976 3733

e: sales@protsurv.co.za

w: www.protsurv.co.za

28 Boomkruiper Street  
Birch Acres Ext.7  
Kempton Park  
Johannesburg, SA



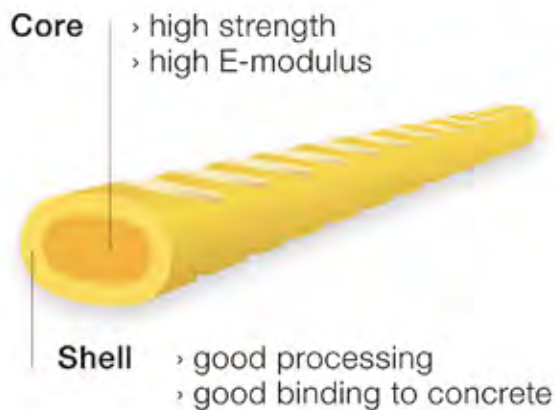
# Innovative synthetic fibres as a substitute for steel fibres

The bi-component macro-fibre Concrx exhibits the same creep behavior as steel fibres.

For many years steel-fibre-reinforced shotcrete has been used successfully in the tunnelling industry. The drawbacks of steel fibres – difficult and time-consuming handling because of their weight; their high rebound rate; damage caused to shotcrete equipment (nozzles, hoses); as well as corrosion and the danger of injuries due to fibres on the surface – have been accepted due to the lack of alternatives. Although the available synthetic macro-fibres (not to be confused with synthetic micro-fibres) can minimise or even eliminate the above problems, they could not yet replace steel fibres due to the creep properties of synthetic materials.

## Definition of “creep”

Creep is a time-dependent deformation under permanent load. This becomes most important in cracked fibre-reinforced concrete because, in this state, the fibres are under constant stress. But just as one steel type cannot simply be compared to another (there are soft wires, high-strength wires, galvanized, non-galvanized or even Zinc-Alu-coated



Detailed view of a Concrx fibre showing the textured surface.



The fibre bundles ensure fast and homogenous distribution in the matrix.

***“Since the launch of the Concrx fibre, several projects have been completed – all to the full satisfaction of both customers and construction companies.”***

wires) there are also substantial differences between synthetic materials. The determining factor for the creep behavior is not only the fibre material itself, but also its structure and, importantly, its effective concrete bond.

## The bi-component, high-performance macro-fibre Concrx as a solution

Some years ago a research project supported by the Swiss Government (KTI) was initiated to develop a synthetic ‘high-performance fibre’ which does not have this creep problem. After extensive trials and experimentation yielded a positive result – creep with the macro-fibre Concrx was practically eliminated. This is due to its unique, bi-component fibre construction, the increased degree of crystallinity and Young’s modulus and the incorporation of special additives. In addition the surface was textured to further improve bond between concrete and fibre.

## Creep performance tests

Long-term tests undertaken by the prestigious EMPA (Swiss Federal Laboratories for Materials Testing and Research), showed that this new fibre actually prevents creep. Under constant load the surface structured bi-component Concrx fibres showed a small increase in crack width. Under load levels in the range of the occupancy rate indicated for fibre concrete the increase in crack width is negligible. In prism tests no critical values were shown after a year, even when the load was doubled. Meanwhile the test continued and more than 365 days have passed without any problems.

In the square panel test (dimensions according to EFNARC) residual loads with more than 60% of the carrying capacity (maximum load capacity of deflection 2 mm) were permanently maintained without any significant increase in deformation.

All of this is possible because of the unique composition of the bi-component Concrx fibre and its optimally structured surface.

## Developed in the laboratory, proven in practice

Since the launch of the Concrx fibre, several projects have been completed – all to the full satisfaction of both customers and construction companies. There are many reasons for this: processing is extremely easy, the fibre bundles guarantee a fast and homogenous distribution throughout the matrix, the machines are not damaged and the fibres themselves are resistant to aggressive ground-water and corrosion. ■

**More information from Bart Schoevaerts,  
Cell: +27 845 132 732 /bart.schoevaerts@geobrugg.com**

# Birkenmayer's HB68: growing confidence in Harare

New Zimbabwean client, Vaka Concrete, required a high production rate, versatility, quality and adaptability to a range of products. Birkenmayer supplied a complete state-of-the-art block-making solution – the HB68.

"Currently the HB68 is the largest brick/block making machine in Zimbabwe and we are proud of our investment and what we are getting out of it," says Tawanda Muindisi, MD of Vaka Concrete. "We are achieving ±100 000 bricks per eight-hour shift, but in future we'll produce 130 000 bricks per day."

The HB68 is so far the largest machine Birkenmayer has exported into Africa. As Vaka Concrete wished to become a leading brick manufacturer and dominant player in the economy, an easily manageable machine with high output capabilities was essential.

The HB68 is easy to operate via the PLC system, which enables the HB68, the RV19 EIRICH mixer and batching system to run simultaneously and automatically. The EIRICH mixer ensures consistent mix quality, minimum wastage and higher productivity. The PLC system facilitates automated control of mix quality and production rates, limiting error by

eliminating manual input. 'Recipes' for a wide range of clients' products are stored in the PLC enabling a quick mix changes for different brick, block or paver production. Because of the HB68's efficient cycle time, Birkenmayer supplied a double-gantry system along with the out-feed conveyor for transport and off-take of completed product from machine to outdoor curing area.

"The advanced machine brings a lot of efficiency to the manufacturing system," says Muindisi, "and it is exciting to know that parameters can be adjusted online from South Africa. The machine is very user friendly, requires minimum maintenance and comes with a full back-up of spares."

Birkenmayer handled transport to Harare and completed installation in only three weeks. Vaka Concrete operators received on-site training to ensure confidence in operating the HB68.

Vaka Concrete's investment has been well received by the community and dignitaries. ■



*Birkenmayer recently exported their largest brick/block making machine, the HB68, into Africa for Zimbabwean client, Vaka Afrika.*

**More information from Monika Howarth,  
Tel: +27(0)11 970 3880-8  
[www.birkenmayer.co.za](http://www.birkenmayer.co.za)**



## SIKA® VISCOCRETE® TECHNOLOGY - FOR HIGH PERFORMANCE CONCRETE

Sika® ViscoCrete® technology brings several innovative options to concrete mix design. A major characteristic is the capability to substantially reduce the water content of a mix. Achievement of lower water / cement ratios results in dramatically enhanced durability, as a result of remarkably low concrete permeability.

### VISCOCRETE® FACTS:

- Water reduction with high initial workability
- Increased flowability
- Enhanced durability
- Absorption speed
- Early strength development with sufficient workability time
- Compatible in high temperature climates
- Slump retention without retardation and fast strength development
- Stability / viscosity
- More economical
- Enhanced sustainable features

#### Sika Customer Service:

Tel: 031 792 6500 | Fax: 031 700 1760  
Email: [headoffice@za.sika.com](mailto:headoffice@za.sika.com)  
Website: [www.sika.co.za](http://www.sika.co.za)



SABS  
ISO 9001

SABS  
ISO 14001

SABS  
OHSAS 18001

BUILDING TRUST





# Sika product impresses engineers at new power station

In May 2013, a large Sika project commenced at Eskom's Medupi Power Station in Lephalale, Limpopo. Nyeleti Consulting Engineers specified numerous specialist Sika products for repairs and protection of various areas of the plant. Contractors, BKV Holdings in a JV with Multi Contracts Specialists, were subcontracted to apply Sika products, which included supporting products for substrate preparations and final coating products from the Sikagard and Sikalastic 800 range of products.

For general crack repairs, Sikadur-52 ZA, a low-viscosity injection liquid based on high-strength epoxy resins, was



*Nyeleti Consulting Engineers specified numerous specialist Sika products for repairs and protection of various areas of the plant.*

***On completing and inspecting the sump floor, engineers were so impressed with this system that they decided to use Sikalastic-841 ST as the primary coating system for all major areas at the plant, instead of the product originally specified.***

used. It forms an effective barrier against water infiltration and corrosion-promoting media, as well as structurally bonding the concrete sections together. For filling severe pinholes, blowholes and crack repairs, the thixotropic, structural two-part adhesive and repair mortar, Sikadur-31 CF Normal, was applied. It is easy to mix and apply, impermeable to liquids and water vapour, suitable for dry and damp concrete surfaces, has very good adhesion and chemical resistance and hardens without shrinkage.

SikaGard-720 EpoCem, a three-part, epoxy-modified, cementitious fine-textured mortar was used for reprofiling and as a moisture barrier. This excellent protection of concrete, particularly in aggressive chemical environments.

Once surface preparations were complete, engineers chose the Sikalastic-841 ST system to coat a 200-m<sup>2</sup> external sump floor. The area was primed with Sikafloor-161, which provides good penetration and bond strength. To reduce pin holing and create a better mechanical key, a layer of Sikadur-931 Sand was applied over the primer.

Sikalastic-841 ST was then machine-sprayed over the sump floor. This elastic, pure polyurea membrane, suitable for waterproofing and anti-corrosion applications, is UV resistant and provides excellent crack-bridging properties. It is applicable in temperatures from -15o to 70o and performs in constant temperatures from -30o to 120o. With 100% solids and zero VOC, it is suitable for a wide variety of applications. Its fast reactivity and cure time allows for almost immediate return to service.

On completing and inspecting the sump floor, engineers were so impressed with this system that they decided to use Sikalastic-841 ST as the primary coating system for all major areas at the plant, instead of the product originally specified. Areas include the water treatment plant, all internal and external sumps, all primary containment areas, backwash trenches and pump stations 1 and 2; the fuel oil off-loading area and the fuel oil storage areas.

Sikalastic-844 XT was also used. A modified polyurea membrane with very similar properties to Sikalastic-841 ST, it offers seamless protection of concrete or steel exposed to high acidic or alkaline chemical concentrations.

Acid dosing areas in the water treatment plant were coated with Sikagard-69, that provides excellent performance in highly corrosive, chemical and abrasive environments. Designed for industrial use at elevated temperatures, its fast-curing, trowel-grade consistency allows return to service within 24 hours.

This huge project is still ongoing with almost 10 000 m<sup>2</sup> having already been coated with Sika's products. Once fully operational, Medupi Power Station will be the fourth largest coal plant in the world and the world's biggest dry-cooled power station. ■

**More information at [www.sika.co.za](http://www.sika.co.za)**

# Corefil™ SPECIALITY FIBRES

www.corefil.com

**Corefil™ PP Fibre is specially manufactured as a concrete additive to limit plastic shrinkage and control early cracking in cementitious products and can be used in:**

- Commercial, Industrial & Residential Floor Slabs
- Bridge Decks
- Precast Concrete Products
- Plasters & Mortars
- Thin Panels
- Secondary Structural Reinforcement
- Architectural Finishes
- Refractory Casting Moulds
- Marine & Hydraulic Structures
- Shotcrete

## Benefits of Corefil™

- Low cost secondary reinforcement
- Reduces concrete cracking due to plastic shrinkage and settlement
- Reduces setting time
- Improves impact & abrasion resistance
- Increased flexural strength
- Light Clean and Safe to use
- Protects primary reinforcement by inhibiting surface cracking
- Decreases concrete permeability

*Official Supplier For  
Lafarge ReadyMix Fibre Concrete*



MANUFACTURED AND DISTRIBUTED BY:



welcome2colours.com

Tel: +27 31 736 8700  
Fax: +27 31 736 1589

49 Eaton Road  
Hammarisdale, 3700  
sales@corefil.com  
www.corefil.com







**THIS IS WHAT REIMER CONCRETE MIXERS DO ALL OVER THE WORLD. CONTINUOUS CONCRETE PRODUCTION OF HIGH QUALITY CONSISTENT CONCRETE UP TO 50M<sup>3</sup> PER HOUR. FILLING & KEEPING MANY DRUM TRUCKS BUSY.**

## MIX WITH THE BEST

*Flexible, accurate, profitable volumetric mixing*

Reimer Alliance International has been at the forefront of mobile mixing technology for over 40 years. World-renowned for their grassroots product development programs, Reimer Alliance leads the way in state-of-the-art hydraulics and mobile mixing innovation.

With several base mixer models to choose from and capacity to produce up to 9.2 cubic meters in a single load with variable production rates up to 60 cubic meters per hour. One Reimer can do the work of several drum mixers and a static batch plant.

### WITH REIMER YOU CAN:

- Control production and **ON-SITE MIXING**
- Shorten set-up time
- Reduce manpower
- Eliminate hot/stale loads
  - **YOU NEVER HAVE TO CLEAN A DRUM**
  - **YOU CAN LOAD THE DAY BEFORE**
  - **UNUSED AGGREGATE IN BINS CAN BE RE-USED, NO WASTE!**

Cost control associated with Reimer means potential additional revenue opportunities for a business. Wind farm developers, pool building contractors, home builders and even commercial and residential decorative concrete contractors can all benefit from adding a volumetric mixer to their equipment list.

### HOW IT WORKS:

Sand, stone and cement are loaded into specially-manufactured bins. The polyethylene tank is filled with water for mixing and cleanup. Once ready to pour, the operator simply adjusts the dual aggregate flow gates to ensure the correct amount of sand and stone are delivered to the mix.

A proprietary cross-member delivery chain with a bolt-on rubber conveyor belt delivers the precise amount of aggregate to a high-speed auger. Cement is

accurately dispensed and as the cement and other materials enter the mixing auger, water is introduced to provide the required slump. The auger, manufactured with hardened wear plates, completes the mixing action. The full-function wireless remote control gives a single operator the freedom to stand in a convenient location and make adjustments to the conveyor belt, auger and discharge rate with ease.

### APPLICATION ADVANTAGES:

Reimer Mixers are calibrated to deliver highly accurate mixes to any engineered specification and comply with the standards set forth by the Volumetric Mixers Manufacturers Bureau and ASTM C685 and C685M-00. Reimer's customers continually find new ways to use their mixers and some have even dubbed them 'material mixers' because they're used in so many applications that go beyond concrete production.

**REIMER IS A SPONSOR AT THE TOTALLY CONCRETE EXPO 27 – 28 MAY 2014. PLEASE LOOK AT OUR 12 MINUTE VIDEO ON OUR WEBSITE.**



For more information contact:  
 Tel: +27 12 667 3597  
 Fax: +27 12 667 3362  
 Email: [info@reimersa.co.za](mailto:info@reimersa.co.za)  
 Website: [www.reimersa.co.za](http://www.reimersa.co.za)  
[www.mixwiththebest.co.za](http://www.mixwiththebest.co.za)

Reimer is an associate member of



In association with:



[www.go-consult.co.za](http://www.go-consult.co.za)



**TOTALLY CONCRETE**  
**EXPO**

VISIT US ON BOOTH 304/305

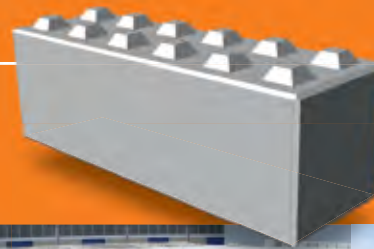
**BETONBLOCK**<sup>®</sup>

**CONCRETE BLOCK MOLDS + CONCRETE =  
BETONBLOCKS UNLIMITED !!**

**CONCRETE  
BLOCK MOLDS**



**OUTPUT**



160 x 80 x 80 € 1.475,-  
180 x 60 x 60 € 1.275,-  
150 x 60 x 60 € 1.125,-

160 x 80 x 40 € 1.150,-  
160 x 40 x 80 € 990,-  
160 x 40 x 40 € 940,-

**CONCRETE  
SLAB MOLDS**  
200 x 200 x 16 € 895,-



**CLAMP € 1.850,-**



**BLOCK-TURNER € 3.350,-  
LIFTING BEAM € 350,-**

**WWW.BETONBLOCK.COM**

Headquarters Holland | T +31 (0)72 503 93 40 | F +31 (0)72 503 92 61 | info@betonblock.com



## NPC's investment in Early Childhood Education

Over the years, Early Childhood Development centres and crèches have been an important channel for early stimulation of young children. It is a sad reality that, due to lack of resources and capacity at these centres and crèches, many children in the communities where NPC operates do not receive the necessary stimulation and early childhood education.

Like other areas of education in KwaZulu-Natal, Early Childhood Education (ECD) faces a number of complex issues that caregivers must overcome during their daily interaction with the children.

NPC has recognised the contribution these ECD centres make despite the challenges and the limited resources. They have also recognised how much more could be achieved with a little support and development opportunities.

NPC's investment in this area has made a tremendous impact on the lives of children in over 25 crèches and ECD programmes in Newcastle, Durban and South Coast.

Last year NPC made a meaningful contribution to eight crèches in communities where they operate – Insindisweni Crèche, Sqalo Crèche, Mbalenhle Crèche, Esididini Pre-primary and Crèche, Khayelihle Crèche, Mankuntshane Crèche, Kwa Nositha Crèche and Siyaphambili Crèche. More detail on two of the most significant projects is given below.

Insindisweni Crèche has an enrolment of over 50 children between the ages of one to five years. It has two caregivers and a Grade R teacher, who is also the Principal of the crèche. The crèche is located in a rural informal settlement of Bhubhoi Location in Port Shepstone. While they are faced with many

challenges, the Principal, Mrs Evelyn Dlamini, is very positive about what they achieve despite their limitations. She says: "Because we understand the circumstances of our kids' families, we always have to look for ways of helping them by getting funding support!. Crèche fees are often a challenge for parents of children at this crèche."

In 2013, like many of NPC's crèches, Insindisweni urgently needed outdoor equipment. The company donated a jungle gym and the much-needed kitchen equipment to prepare meals for the children.

Esididini Pre-primary and Crèche is located at Riversmeet Village in Newcastle. The crèche has over 250 children enrolled, from Grade 000 to Grade R. Esididini faces the major challenge of a shortage of classrooms; however the large enrolment is evidence of the high standards of stimulation provided by caregivers and teachers. While Esididini is not the only pre-school in the area, school transport (taxis) comes from various locations of Madadeni Township and Riversmeet village bringing children to Esididini because of the excellent education provided.

NPC donated a Wendy classroom to the crèche for their Grade 0 class. The Principal of the Pre-school says they are very grateful to NPC for this donation, which came at a very good time because one of their classrooms had recently been blown away! "It's been very difficult for our teachers as the children were very overcrowded in the remaining classrooms" she adds. ■

**More information from Bavashnee Naidoo,  
Tel: +27(0)31 4504492 / [www.npc.co.za](http://www.npc.co.za)**



## Concrete Society launches online seminars

**T**he Concrete Society of Southern Africa (CSSA) has embarked upon a joint venture with Hypenica to make technical presentations from its national seminars available online. These will be marketed through the Hypenica online shop.

First in the series will be presentations from the national seminar held in October (TECON 2013) featuring the many aspects of specifying and testing concrete.

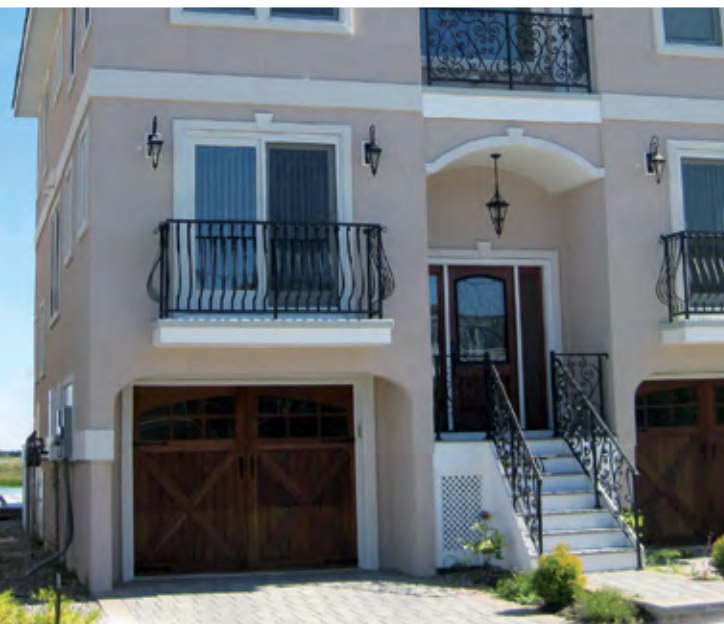


John Sheath, CSSA CEO, explained that this new initiative offered all built environment stakeholders an ideal opportunity to hear the latest developments in concrete technology and practice from industry experts – which they would previously have been unable to access had they missed attending the seminar. “It is fantastic that we can utilise the innovative, online resources of Hypenica in this way, said Sheath, “and it means that our seminar material will be accessible to anyone, no matter where they are located”.

The presentations can be purchased as individual modules, or as a complete seminar at a more competitive price. Each module purchased and viewed carries CPD accreditation for professional engineers registered with ECSA. ■

**More information at <http://goo.gl/CCJZCe> or contact Adrienne Taylor on [adrienne.taylor@hypenica.com](mailto:adrienne.taylor@hypenica.com)**

## Building future Prospects with *Birkenmayer*



### *Reliable block machines for small and large plant applications*

**B**irkenmayer block machines with their internationally comparable robust machine frame design and vibration technology, feature impressive output capacities and higher quality product at reduced production prices.

**With a secondary feed unit option for coloured topping of pavers, which eliminates the need for colouring throughout, substantial savings in pigment costs can be obtained.**

#### Benefits of Birkenmayer block machines:

- Affordable
- Low maintenance costs
- Simple operation
- Durable
- Reliable





# SAICE accredits unique AfriSam course with CPD points



Mike McDonald, manager of AfriSam's Centre of Product Excellence.

A course on good concrete practices and cement manufacturing devised by AfriSam has been qualified by the South African Institute of Civil Engineers (SAICE) to be presented as part of its CPD (Continuous Personal Development) initiative. The new course was reviewed by an external academic and accredited with 0.4 CPD points.

Mike McDonald, AfriSam product manager, says the new course is a first for the South African engineering world in that it is the first time an industry role player has offered a course of this calibre to the professional engineering fraternity free of charge.

"We recognise the need to invest the knowledge we've accumulated in these fields into the professional arena where it will best impact current and future industry standards," he comments. "This is solid, hard-won technical know-how that we

want to add to the industry's knowledge base. We aim to present the course on a monthly basis at company sites and invite interested parties to contact us to make the necessary arrangements." The four-hour concrete practices and cement manufacturing course is primarily aimed at architects, quantity surveyors and civil engineers and will be presented to groups of between seven and 20 people. Course content includes cement specifications, concrete technology, durability issues and a look at the full cement manufacturing process.

For more information or to book this course, contact Amit Dawneerangen on telephone number 011 758 6000 or email [technicaltraining@za.afrisam.com](mailto:technicaltraining@za.afrisam.com). ■

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

## konkrete MBP

MOBILITY IN CONCRETE TECHNOLOGY

### KONKRETE BLASTER

### MOBILE BATCHPLANT

**First of its kind in SA**

**Non entry, robotic concrete removal system for truck mixers**

- NO HUMAN ENTRY • HIGH PRESSURE WATER BASED CLEANING
- ALL MIXERDRUM TYPES • EXTENSION OF LIFE SPAN OF MIXERDRUM
- CONSTANTLY MAXIMUM LOADING CAPABILITY • NO CHEMICALS
- CO<sub>2</sub>-EMISSIONS REDUCTION ± 2200 KG / YEAR / TRUCKMIXER
- FUEL SAVINGS ± 1000 LITER / TRUCKMIXER / YEAR

**Exclusive agents and distributors for  
EUROMECC ITALY in Southern Africa**

**Turnkey solutions through mobile concrete products, ship loaders, marine terminals and silos**

- REDUCE INSTALLATION TIME ON SITE • ERECTION DONE WITHIN 24 HOURS AFTER DELIVERY TO SITE
- IDEAL MOBILE PLANT FOR CONSTRUCTION COMPANIES AND/OR READY-MIXERS THAT REQUIRE A GOOD LEVEL OF PERFORMANCE OF THE SYSTEM AND ESPECIALLY THE QUALITATIVE CHARACTERISTICS OF THE CONCRETE
- MOBILITY IN CONCRETE TECHNOLOGY

[www.konkretglobal.com](http://www.konkretglobal.com)





Explore



Africa - The Market Of The Millenium

17<sup>th</sup>  
**BUILDEXPO**  
**AFRICA 2014**  
**INT'L. TRADE EXHIBITIONS**

**Building, Construction,  
Water Technology,  
Mining Equipment  
& Machinery**

**KENYA**

02 - 04 May, KICC, Nairobi

**KENYA**

08 - 10 May, MCC, Dar-es-Salaam



**Exhibitors From 35 Countries**  
**Visitors From Over 12 African Countries**



Level 25, Office No. 2514, Monarch Office Tower, POB 333840, One Sheikh Zayed Road, Dubai, UAE  
Tel: 00 971 4 3721421 | Fax: 00 971 4 3721422 | [response@expogroup.net](mailto:response@expogroup.net) | [www.expogr.com](http://www.expogr.com)



EXPOGROUP Supports The "GO GREEN" campaign across the globe. So do we request you. Grow a plant every weekend and enjoy it grow !



# Concrete imprints cement movie stardom

*Hollywood's 'wet cement' legacies attract 2 million visitors every year, writes Jan de Beer.*

Nothing lasts long in Hollywood. Movie stardom comes and goes in a flash, musicals and westerns have ridden off into the sunset, and wedding anniversaries seldom equal the number of surgical makeovers. But – thanks to concrete – at least one feature of Tinseltown has survived for nearly nine decades.

Since 1927, around 250 film idols have (forgive the pun) cemented their status by creating hand- and footprints in the forecourt of Grauman's Chinese Theatre, a movie theatre created by showman, Sid Grauman, with screen legends, Douglas Fairbanks and Mary Pickford. Today, space for new imprints, autographs and greeting messages, is limited and only superstars – selected by a special committee – are invited.

Stories vary regarding the origin of the imprints, which attract over two million visitors a year, but it's clear that it all happened quite accidentally.

The cinema's official programme says silent movie star, Norma Talmadge, accidentally stepped into the wet pavement. Grauman came up with the concept and immediately persuaded Mary Pickford to put her dainty foot in it too and attain lasting fame.

Anyway, the so-called 'wet cement' ceremonies have become major publicity vehicles for the theatre, with the media always assured of the best spot to photograph some bizarre versions of the event.

In 2007, the three young Harry Potter stars placed their hand, foot and wand prints in the wet concrete; Groucho Marx left an

imprint of his cigar; John Wayne his fist; and the hoof prints of the horses of cowboy stars, Roy Rogers, Gene Autry and Tom Mix were immortalised with the personal imprints of their masters (Rogers' 'six-gun' was also dunked in the wet concrete).

There are even imprints of the signature noses of Bob Hope and Jimmy Durante (hopefully drawn), the legs of Betty Grable (also presumably sketched), the blades of Sonja Henie's ice skates; Al Jolson's knees (readers will recall that he invited 'Sonny Boy' to climb on to them), and in 1995, Whoopi Goldberg clipped off her braids and deposited them in the wet concrete while the cameras flashed frantically.

Some of the greetings left by the stars include Arnold Schwarzenegger who – next to his size 12 boots – somewhat prophetically scribbled "I will be back!" (he sure was when his marital infidelity made news later); Clint Eastwood wrote "You made my day!", and Humphrey Bogart predicted that "You will never die until I kill you!".

Marilyn Monroe, wearing a plunging neckline for the press cameras, dotted the letter "i" in her first name with a large rhinestone. Predictably, that was soon nicked by an over-zealous fan who today could probably sell it for millions – if willing to own up to the theft.

Monroe, by the way, asked if she could also immerse her bottom in the concrete but the Grauman committee thought that would be a bit much. ■



*In September 2013, Sandra Bullock became one of the latest movie icons to perform the 'wet cement' ceremony.*





TBWA HUNTYASCARIS DURBAN \30460

**YOUR SUCCESS CAN OFTEN  
BE DETERMINED BY THE  
BACKING YOU GET IN LIFE.**

As leaders in the cement, concrete and aggregate industry since 1964, who better than NPC to back you, and take your construction to where you want it to be.

For more information, contact us on +27 31 450 4411 or visit [www.npc.co.za](http://www.npc.co.za)



**The original strength**



# Concrete Crack Control



## CHRYSO® Structural Fibre



**CHRYSO** – a global leader in concrete technology – offers a range of synthetic fibres to the construction industry.

The **CHRYSO® Structural Fibre** is a macro fibre that provides the following benefits to concrete:

- Post-crack control strength similar to mesh reinforcement
- Reduces the occurrence of plastic shrinkage and plastic settlement cracking
- Enhances long term durability of concrete

For fibre-reinforced concrete, **CHRYSO** has the technical expertise to assist you with your concrete mixes, optimise the fibre dosage according to the required performance, and choose the correct fibre to suit any application.

Contact your **CHRYSO** representative today.

**CHRYSO Southern Africa (Pty) Ltd.**

Gauteng (Head Office):

26 Malcolm Moodie, Crescent, Jet Park

T: +27(0)11 395 9700 | F: +27(0)11 397 6644 | W: [www.chryso.com](http://www.chryso.com)

Sharecall facility: 0861 CHRYSO

**CHRYSO**  
CHEMICAL SOLUTIONS FOR THE  
CONSTRUCTION MATERIALS INDUSTRY