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The Gorgeous Green House in Durban was a winner in the Afrisam-SAIA Sustainable Architecture Awards. See page 14.

A prize-winning house in Cape Town.

Precast concrete enhances Mayfair’s landscaping.

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We are, at last, heeding the call

That the world is finally taking seriously the urgent need for environmentally friendly measures to reduce greenhouse gas emissions and generate energy is reflected by the International Energy Agency (IEA) significantly increasing its five-year growth forecast for renewable energy because of the ‘turning point’ in 2015, when a record 153 GW of new renewables capacity was added globally.

In its Medium-Term Renewable Market Report, the agency forecasts renewables growing 13% faster between 2015 and 2021 than was expected in its 2015 forecast. By 2021, global renewable electricity capacity is forecast to grow by 42%.

“About half-a-million solar panels were installed every day around the world last year and in China, which accounted for about half the wind additions and 40% of all renewable capacity increases, two wind turbines were installed every hour in 2015, an almost incomprehensible number!”

And renewable energy is not just powering our homes and businesses, it is employing people – lots of them. An International Renewable Energy Agency (IRENA) report Renewable Energy and Jobs – Annual Review 2016 estimates that over 8.1 million people worldwide are employed by the renewable energy industry – up 5% from 2015. Also, a global estimate of jobs supported by large hydropower adds 1.3 million direct jobs worldwide.

IRENA estimates that doubling the share of renewable energy in the global energy mix by 2030 – enough to meet global climate and development targets – would result in 24 million jobs worldwide.

Locally too, the move to environmentally conscious practice is gathering momentum. This year saw the number of GBCSA Green Star Certified buildings rise to 200, while a report by the GBCSA, the Association of SA Quantity Surveyors and the University of Pretoria debunked the widely-held assumption that building green is monumentally expensive. It does, in fact, cost on average only 5% more than conventional buildings.

Finally, research at the CSIR by leading energy scientist Dr Tobias Bischof-Niemz shows that new solar and wind-generated energy is 40% cheaper than new coal-generated energy and that wind and solar could supply the bulk of South Africa’s power needs at the lowest cost.

In a country where sun and wind are available in abundance, we are moving inexorably to a greener way of life and I, for one, applaud it.

The team at Concrete Trends and Hypenica would like to thank you, our readers, advertisers and contributors, for your continued support and join me in wishing you all a happy, healthy and peaceful festive season. Our wishes too, are that the coming year will be one in which everyone can thrive.

Gill Owens
MBSA elects first black president

Bafikile Bonke Simelane has been elected as the first black president of Master Builders South Africa (MBSA). His appointment was announced at the annual MBSA Congress held recently in Durban.

Of his landmark election, Simelane says, “It is a significant personal and professional milestone for me, but more importantly it is a clear and unequivocal indication that the MBSA is serious about transformation at every level. I hope that my election advances ‘meritocracy’, dispels some of the negative perceptions of the industry and breaks down barriers preventing black professionals and executives from being elected into such leadership positions.”

He hopes his appointment will be an inspiration to aspirant black students, graduates and professionals. “They all need to know that all you have to do is dream, believe in yourself, be resilient and surround yourself with people who affirm and validate you irrespective of your socio-economic profile or circumstances. I hope this milestone can find resonance amongst young black youths, both male and female, from all of South Africa’s townships so that they can be attracted to a career in construction management in particular and in the built environment in general.”

After matriculating from Davey High School, Daveyton, Simelane obtained a National Diploma in Building from the Cape Peninsula University of Technology followed by a Bachelor of Technology in Construction Management from the University of Johannesburg. He began his career at Murray and Roberts in 1995, followed by a short stint at Abcon Construction. In 2001, he joined the firm Development & Engineering Consultants (DEC) as a project manager and subsequently became a director. In 2009 he was appointed as a director of Focus Project Management. Today he is the group corporate services director for the NMC Construction Group which he joined in 2012.

He is also a member of the SACPCMP Council, many other subcommittees and a member of Western Cape CIoB. He was also vice-president of the Association of Construction Project Managers and his experience in the industry spans over a period of 18 years.

During his term as MBSA President, he hopes to continue the MBSA’s focus on transformation and skills development. “I commit to working with other like-minded industry bodies to tackle some of our industry’s and the country’s most pressing challenges,” concludes the new MBSA president.

More information at http://www.masterbuilders.org.za

Greenhouse gases from cement production: new stats

A good story to tell: cement production represents only 1% of U.S. GHG emissions says Bill Palmer

For years the ‘conventional wisdom’ has been that greenhouse gas emissions from the production of portland cement were about 5% of the total GHG emissions. A review of the 2015 data generated by the EPA’s Greenhouse Gas Reporting Program (GHGRP), however, conveys a different story.

All large emitting facilities in the U.S. are required to report their emissions each year. In 2015, there were 8,003 facilities in nine industries that reported with direct emissions totalling 3.05 billion CO₂ equivalent metric tons. An equivalent metric ton means that other greenhouse gases are converted into an equivalent amount of CO₂.

According to EPA estimates, that 3.05 billion metric tons is about half of the total U.S. greenhouse gas emissions.

Small point sources like automobiles, homes, and small industrial facilities are not required to report. Cement production is always at ‘large emitting facilities.’ There were 95 reports from cement production facilities in 2015, which represents nearly every cement plant in the U.S. Total 2015 emissions from cement manufacturing were 68.8 million metric tons. If we say then that total GHG emissions in the U.S. were 6.1 billion metric tons, then the emissions generated by cement production represent only 1.13% of the total.

Now, without doubt the mining of aggregate and the production and delivery of concrete generate some additional greenhouse gases. And cement plants in developing and third-world countries are less efficient and more polluting than U.S. plants (the Portland Cement Association says that worldwide the manufacture of cement generates about 3% of global GHG emissions). But when you consider the benefit to society of concrete and the long life-cycle and sustainability of concrete structures, this is a small price to pay. We need to be out there telling this story!

Source: https://goo.gl/pmV107
During the World Green Building Week 2016 (26 September to 2 October), the Green Building Council South Africa (GBCSA) announced that 200 buildings had now received Green Star SA certifications.

Brian Wilkinson, CEO of GBCSA, said: “Green building is part of the solution to global warming and the real hero in the fight against climate change. The increase in pace in green building in SA has been phenomenal. Support and innovation from across the industry has accelerated our green building movement and more green buildings make meaningful and significant positive impacts on our built environment.”

Now in its 10th year of operation, the GBCSA is one of 74 members of the World Green Building Council, which exists to inspire the property industry to design, build, operate and tenant better, greener buildings. GBCSA operates in the commercial, residential and public sectors, striving to preserve the planet for future generations through advocacy, membership, certification and training.

Established in 2007, the GBCSA awarded the country’s first green certification in 2009. Fifty buildings had Green Star ratings by April 2014, 100 by 2015 and today, GBCSA has reached the milestone total of 200.

The 200 Green Star certified projects – spanning 2.8 million square metres (400 rugby fields) – achieve the combined annual savings of 280 million kilowatt hours of electricity. This equals powering 19,500 households for a year and taking massive pressure off South Africa’s very strained power grid.

They also save 336 million kilograms of carbon emissions per year – equating to taking 84,000 cars off the roads. Green buildings also save 260 million litres of drinking water annually, equalling the water requirements of about 100 million people per day for one year.

The financial benefits of owning and operating green buildings are compelling. The recently released IPD South Africa Annual Green Property Indicator shows that commercial green buildings deliver meaningfully higher returns than do more conventional buildings. They also consume around 35% less electricity and 42% less water per square metre of occupied space.

At the United Nations’ Conference of the Parties (COP21) in December 2015, GBCSA pledged to introduce a net zero building certification scheme, and is targeting 2,500 commercial green building certifications – which represents around 10 million square metres of gross building area – and 10,000 residential green building certified homes in South Africa by the year 2020.

https://goo.gl/BW0kNs
The Concrete Manufacturers Association Certification Services (CMA CS) has undertaken its first complete initial assessments and certified a number of products on behalf of its maiden client, Bosun Bricks.

Initial assessments were undertaken to test compliance with SANS specifications on a number of different precast concrete products manufactured by Bosun Bricks and that need certification to meet engineering and architectural specifications. The CMA CS Mark of Approval is the first non-SABS mark to be used in the concrete industry since legislation was changed to allow multiple certification authorities to undertake certification of SANS standards.

Born from the need to professionalise the certification of products within the precast concrete industry, CMA CS was established under the wing of the Concrete Manufacturers Association (CMA). This arose from undue delays in issuing SANS certification from the current certification body that had the potential to harm member companies whose products needed certification to meet customer requirements.

Speaking on acceptance of the Mark of Approval, David Wertheim Aymes, MD of Bosun Bricks said that adherence to standards is critical and that the establishment of CMA CS is a step in the right direction for the concrete industry.

“SANS specifications are compiled by industry experts who deem them suitable for the type of product being manufactured. Thereafter it is the role of the certification agency to measure and certify that a product meets these standards, so that a Mark of Approval can be issued as proof of compliance to customers and end-users.

“We are pleased to have been the first to be certified and the process was similar to our previous SABS audits, but much more in depth. Bosun Bricks will heavily advertise its newly acquired Mark of Approval in the media, on packaging and all other areas of business with high visibility.”

Christo van Zyl, the GM of CMA CS, concluded that the new certification process is completely comprehensive, is undertaken by system auditors with industry knowledge and is done timeously to avoid manufacturers losing out on deals while waiting months for certification that should take days, or at most, weeks.

More information from Frans Minnaar, Tel: +27(0)11 805 6742 / www.cma.org.za
Motheo transforming into a fully-fledged construction group

Motheo, well-known as a leading provider of social housing, has launched a civils division as part of its ongoing transformation into a fully-fledged construction group.

The new civils division is headed by Archie Rutherford, former CEO and director of Ruthcon Civil Contractors, who brings a wealth of experience and knowledge to his latest role. The civils division specialises in construction of roads and earthworks, as well as installation of services such as water, sewer and stormwater reticulation. It has also established a formidable concrete division that specialises in all forms of structural concrete work.

“Motheo’s vision is to build a truly empowered, all-encompassing and black-owned construction company. We do not want to focus only on housing, we want to develop into a diversified construction group, involved in civils, building and housing,” Rutherford comments.

The new division has already clinched some major projects, including a factory for Gayatri Cans in Germiston, road-repair work for the Woolworths Distribution Centre in Midrand, and another contract to upgrade the on- and off-ramps at the Engen Blockhouse on the R59.

“For us to ramp up quite quickly, we are targeting major contracts, but in conjunction with JV partners. We have entered into various JVs with some of the leading listed construction companies. This will give us exposure to bigger projects, and also build our skills base,” Rutherford explains.

Motheo, which has a Level 9 GBPE and 9 CEPE rating from the CIDB, has a major competitive advantage in that it can price work independently on a national basis. The civils division has also applied successfully for full membership of the South African Federation of Civil Engineering Contractors (SAFCEC).

Rutherford adds that it has embarked on a major recruitment drive to lure the best skills in the industry and attract talented black graduates and professionals to a career in construction. “My goal is to deliver a black-owned and -operated civils division.”

This forms part of Motheo’s longer-term goal of becoming one of the biggest black-owned construction groups in the country. “The idea is for us to ultimately compete in the same arena as the other major listed companies. We want to become a significant player,” Rutherford elaborates.

About Motheo Construction Group

The Motheo Construction Group was established in 1997 by Dr Thandi Ndlovu. Motheo is a founder member of South African Women in Construction (SAWIC). During its 19-year history, the Group has developed into South Africa’s leading, mainly black female-owned and -managed construction company. Today it boasts six black female shareholders who have a 52% stake in the Group. A leading provider of social housing, it has been registered with the NHBRC since its inception.
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An arts and cultural centre with two huge cantilevered wings has been unveiled by Dutch architectural firm Groosman as the latest in a string of architectural developments in Kigali, Rwanda.

The Rotterdam-based practice worked with engineers Geelhoed Groupon on the design of Kigali Art and Culture Centre, which will be situated on the outskirts of Rwanda’s hilly capital. The cross-shaped block will be decorated with traditional geometric African patterns and will feature two cantilevered sections that overhang an elevated plaza.

Two further buildings – a hotel and office complex, and a housing block – will sit on the plaza, while a subterranean shopping centre will be built below.

The Kigali Art and Culture Centre is just one of several architectural projects that make up a new masterplan for the city, along with a children’s cancer treatment centre by Ghanaian British architect, David Adjaye.

The country is frequently described as a ‘land of 1,000 hills’ and the centre will sit at the intersection of the city and its surrounding wetlands and mountains.

“Our design concept for Kigali Art and Culture Centre is inspired by African art, crafts and culture,” said Groosman. “Very typical of this African identity is the use of patterns. These form the basis for our design.”

Like the facade of the cultural centre, the raised public square will be covered in symbolic patterns and divided up by a grid with sections measuring 50 by 50 metres, each with its own programme.

“This grid is the urban grid on which the buildings are situated,” explained the studio. “Each part of the grid has its own function; water (swimming pool), entertainment, playground, outdoor theatre, events area, park, stairs.”

Two 50-metre cubes will stand at diagonal corners of the square, while another segment of the grid will be occupied by an outdoor swimming pool. The cubic volume on the north side of the square will house a hotel and offices, while the block on the southern side of the square will be a residential complex.

Two of the cultural centre’s four wings will overhang the plaza, which is to have a car park situated alongside the shopping centre below its surface. The large cantilevered volumes will offer relief from the sun and rain, and views of the surrounding landscape for those inside.

“The cultural centre is designed so that it does not hinder in the public space,” explained the architects. “The rooms of the building hanging over the public square back and come together in an area of 50 by 50 metres.”

“The cantilevered portions leave the building space for cultural activities in the square and offer protection against the tropical climate,” they added.

The complex is the latest in a surge of architectural projects in the East African country, with others including a ‘drone port’ by British firm Foster + Partners, as well as Adjaye’s cancer centre. Both projects aim to improve access to medical treatment in the mountainous continent, where it is estimated that just one third of the population live within a mile of an all-season road, making it difficult to transport medical supplies to remote areas.

Adjaye, who has several projects under way in Africa, said that the continent offers an “extraordinary opportunity” for local and overseas architects.

Earlier this year US firm MASS Design Group announced its plans to start an architecture and design training centre in Kigali to help in addressing the “dearth of professional designers” across Africa.

Source: http://goo.gl/fvF3vj
Carlson Rezidor targets 23,000 plus rooms in Africa

The Carlson Rezidor group of hotels, which first entered Africa in 2000 when it opened its first Radisson Blu in Cape Town, is on track to achieve its target of more than 23,000 rooms open or under development in Africa by the end of 2020.

Rezidor’s president and CEO, Wolfgang M. Neumann says: “Today, Africa is our biggest growth market with a fully functional Area Support Office in Cape Town since 2016. Our footprint in Africa has grown to include 69 hotels open and under development in 28 countries, incorporating over 15,000 rooms.

“In the past 24 months Carlson Rezidor has signed a new hotel deal in Africa every 37 days and opened a new hotel in Africa every 60 days. We intend to keep up this momentum of signings followed by successful openings,” Neumann said.

Carlson Rezidor aims to open 15 or more hotels in South Africa and Nigeria alone by the end of 2020, incorporating its full brand portfolio, ranging from the Quorvus Collection, Radisson Blu, Radisson RED, and Park Inn by Radisson.

Andrew McLachlan, the senior vice president of Business Development Africa & Indian Ocean, adds that the challenges experienced in Africa are no different to those experienced in other emerging markets.

“To mitigate these risks, we offer hotel turnkey design and build contractors to ensure the owners and their teams have significant support to deliver each hotel.”

“Water and electricity are the two most expensive running costs in African hotels today and we are constantly looking at ways to design and operate our hotels to save costs and improve results, as part of our responsible business strategy,” explains McLachlan.

Notably, 77% of Carlson Rezidor’s hotels worldwide have been eco-labelled and the group has recorded a 22% energy saving since 2011 and a 29% water saving since 2007 across Europe, the Middle East and Africa.

Expanding its footprint into Africa also means creating employment for the local population in each country, with an emphasis on developing women to leadership positions.

Source: https://goo.gl/9l8vYs

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Source: https://goo.gl/9l8vYs
Kenya: Sh10 billion international airport to be built in Embu

A Sh10 billion international airport is set to be built in Embu, Governor Martin Wambora has announced.

He said his administration was working with the national government to extend the airstrip at Don Bosco and transform it into international standards, funded by a group of foreign investors.

He said a concept paper was already being worked on by the Ministry of Transport that will see the airstrip’s runway extended from the current 1.5 kilometres to four kilometres.

Wambora said the completed airport would have terminal buildings, warehouses, hangars, aprons and free trade zone. Construction would begin next year.

If completed, the Embu Airport will be Kenya’s seventh international gateway after Nairobi’s Jomo Kenyatta International Airport, Mombasa’s Moi, Kisumu’s Moi, Eldoret, Wajir and Isiolo.

Source: https://goo.gl/HToseh

Ethiopia: first electric railway in Africa launched

The First Chinese-built railway line linking the Ethiopian capital Addis Ababa and the port of Djibouti has been formally inaugurated. Covering a total of 752 km it is the first electric railway in Africa.

Built by the China Railway Group and the China Civil Engineering Construction Corporation, the railway is expected to open more routes and provide landlocked Ethiopia with a faster access to the port, and encourage industrialisation along its route.

The project itself is worth some US$4-billion, much of which has been financed through China’s policy banks.

Djibouti’s President, Ismail Omar, said: “The trip took six days by rail from the port of Djibouti to Addis Ababa, with this new electric rail it will take seven hours to transport goods and people between our two capitals. Our two nations have joined forces to rebuild this new railway and make it the new face of our prosperous relationship.”

Source: https://goo.gl/AOhRIF

Kenya launches construction of $1.5bn railway line

Kenya on Wednesday launched construction of a $1.5-billion railway project that will connect the capital to the Rift Valley town of Naivasha, the country’s presidency said.

The new Chinese-financed line being built by China Road and Bridge Corporation is an extension of a cross-country railway being constructed between the Indian Ocean port of Mombasa and the capital Nairobi.

That link is expected to reach Nairobi next year and open up to commercial services in mid-2017.

The two projects make up the first stage in a scheme that aims to extend to Uganda and other land-locked countries. The goal is to cut the cost of transport and boost trade, by replacing a slower, narrow-gauge line.

The project adds to a swathe of infrastructure deals in Africa won by Chinese firms. China has replaced the US and Europe as the main trading partner for many African countries and has bankrolled projects from infrastructure to energy as part of its growing commercial and diplomatic clout on a continent with some of the fastest-growing economies.

Kenya, Uganda, Rwanda and South Sudan have ratified a plan for a railway connecting Mombasa to Kampala, Kigali and Juba.

Source: https://goo.gl/8Ex1fG
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SAPMA can do little to alleviate the WHO's concern about lead in paint, says Deryck Spence, executive director of SAPMA.

The SA Paint Manufacturing Association (SAPMA) has advised the World Health Organisation that efforts to eliminate lead in paint in South Africa are constantly being thwarted by apathy from the South African government.

The WHO recently approached Deryck Spence, executive director of SAPMA, for input on plans SAPMA may have to celebrate the WHO globally-declared Lead Poisoning Prevention Week from October 23 to 29 which placed particular emphasis on eliminating lead paint.

In response, Spence advised the WHO that SAPMA regarded every single day as ‘Lead Prevention Day’ and that its members were fully aware of the dangers of lead in paint. Despite South Africa being the only country in Africa with legislation against lead in paint, the anti-lead efforts of SAPMA and its members were frustrated by the South African government’s Department of Health. “SAPMA has been trying for over a year to secure meetings with the Department of Health to introduce new legislation and urge the prosecution of offending manufacturers. Without active policing and prosecution of habitual users of leaded pigment in their paints, all SAPMA’s efforts and our country’s commendable legislation is worthless,” he informed the WHO.

“The latest cancellation of the SAPMA-Department of Health discussions, scheduled for November, clearly reflects the low priority this government’s department is placing on the elimination of lead in paint, and its potential hazardous effect on our population,” Spence added.

The WHO says that in 2013 lead exposure accounted for 853,000 deaths and 16.8 million disability adjusted life years (DALYs) due to long-term effect on health, with the highest burden in developing regions of the world. “Of particular concern is the role of lead exposure in the development of intellectual disability in children. Even though there is wide recognition of this problem and many countries have taken action, exposure to lead – particularly in childhood – remains of key concern to health care providers and public health officials worldwide,” the WHO states.

More information from Deryck Spence, Tel: +27(0)11 615 1195 / www.sapma.org.za
Small companies within the concrete industry should be incentivised to join relevant industry bodies in order to ensure that all people within the industry, as well as end-users’ interests are represented.

Speaking as the anchor sponsor of the recent Readymix Conference by SARMA, AfriSam’s Richard Tomes, said that industry associations play a vital role in setting standards and promoting the industry. These bodies also act as the common voice for the industry and it is therefore extremely important that all tiers of business be represented, from the smallest micro enterprises to the largest corporates and every size of company inbetween.

“If we can raise the entire standard of the industry and speak with a single voice across the entire range of companies and services, then we can get the public to agree that “they do good work” and we build the reputation of the industry from the bottom up,” said Tomes.

He added that closer working ties between construction sector bodies was also an encouraging step in the right direction as it promotes the raising of overall standards and professionalism. It also allows shared resources which opens doors for members of other bodies to share in “pooled” resources, such as training material, expertise, infrastructure, communication support and so much more.

Tomes praised SARMA for the work it is doing for the industry to improve professionalism and quality of materials and services.

“Concrete is a wonderful and versatile product that serves a far wider purpose than any one industry body. Rather it creates possibilities, for building education institutions, hospitals, transport and infrastructure of any shape and description. It creates “concrete possibilities” for all of us to enjoy.”

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

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Seven Awarded and four Commended projects in the 2015/2016 AfriSam-SAIA Award for Sustainable Architecture + Innovation were announced in Cape Town on 27 October.

The eleven projects chosen by the adjudicators were among 22 final qualifying entries selected from a record number of eligible submissions.

“The Awarded and Commended projects all demonstrate the three main criteria that the adjudicating panel was looking at – regeneration, reconciliation and restoration,” commented Richard Tomes, AfriSam sales and marketing executive. “These projects all make the world a better place by minimising the environmental impact of buildings. They also bear the hallmarks of great architectural and social design. Together they represent the very best in sustainable architecture and innovation.”

The importance of sustainable and innovative design practice in the South African built environment was confirmed across all four categories of the 2015/2016 AfriSam-SAIA Award for Sustainable Architecture + Innovation.

Sustainable Architecture saw three Awarded projects – the DEA Building by Boogertman+Partners Architects, Gorgeous Green House by Sagnelli Associate Architects and Oudebosch Camp Kogelberg by Architecture Coop.

These were joined by four Commended projects – Earthworld Architects’ iCat Eco Factory, Local Studio’s Outreach Foundation Community Centre, Daffonchio & Associate Architects’ Maboneng Precinct and WWF SA Braamfontein by Alive Architecture.

The Award for Research in Sustainability went to Designing for Hope: Pathways to Regenerative Sustainability, a book by Chrisna Du Plessis, while Paul Marais’ Otto Cottage was Awarded in the Sustainable Product/Technology category.

Finally there were two Awarded Projects in the Sustainable Social Programme category – buildCollectiveNPO with Carintha University of Applied Science’s BridgingMzamba and Architecture for a Change’s Malawi School.

The 2015/2016 AfriSam-SAIA Award for Sustainable Architecture + Innovation took place adjacent to the Zeitz Museum of Contemporary Art Africa, a project supported by AfriSam. It was attended by representatives of the most compelling architectural practices, social businesses and thought-leaders in the country.

“The awards are a resounding endorsement of sustainable and innovative design practice in the South African built environment,” concludes Tomes. “We have entered a new era in which sustainable design is becoming a non-negotiable, integral part of the building industry. Alongside significantly impacting the lives of those who use them, the Awarded and Commended projects provide fantastic inspiration for architects – and indeed for all those individuals and companies who are playing a part in our built environment.”

Adjudicators of the 2015/2016 Awards were Kevin Bingham (convener), Daniel Irurah, Llewellyn van Wyk, Sebasti Badenhorst, Eric Noir and Richard Stretton.
DEA Building (Pretoria, Gauteng) - AWARDED Boogertman+Partners Architects

The Department of Environmental Affairs building in Tshwane reflects the culture of the Department, the way they work and function and what they stand for in terms of purpose, beliefs and service to the country and the community. The project achieved a 6 Star Green Office v1 design rating. The design responds to an environmentally sensitive and sustainable architecture that is respected by international dignitaries, visitors and tourists, but is chiefly a source of pride and inspiration for the Department. The land parcel shape, orientation, and topography provided the opportunity to string a series of office wings along a north-south central spine, allowing the building to centralise support services along the spine, keeping the floor plates as open and multifunctional as possible. The orientation of the wings allowed for green spaces between the wings as well as allowing enough sunlight into the wings. The building hosts an extensive array of sustainable technologies, east/west orientation as well as a very highly developed building envelope insulation design.

Gorgeous Green House (Durban, KwaZulu Natal) - AWARDED Sagnelli Associate Architects

A client-driven green research project, The Gorgeous Green House encapsulates all green and eco gadgetry available in the market. This project shows just how strongly the client’s voice influenced decision making on sustainability. Special thought, consideration and research by the client allowed the design of the house to incorporate many sustainable features from rooftop gardens, green walls, evaporative cooling ponds, water harvesting, storage and recycling, and solar energy. Sustainable and environmentally friendly materials were chosen, including bamboo, recycled carpets and kitchen countertops. The house also boasts an fully integrated eco-system of bee hives, kitchens, vegetable garden and natural swimming pool with fish—all attracting over 40 species of birds, insects and wildlife to the property. This house is the ‘poster-child’ for sustainable living.

Oudebosch Camp Kogelberg (Kogelberg Biosphere Reserve, Western Cape) - AWARDED Architecture Coop

Kogelberg is tucked away in the mountains above Betty’s Bay, within a protected wilderness area in the Kogelberg Biosphere, a UNESCO World Heritage Site. This biodiversity hotspot has extremely high conservation value and is known as the Heart of the Fynbos. The jagged, folded mountain peaks cradle streams, rivers, seeps, and wetlands. These criss-cross the landscape creating habitats for 1,650 fynbos species. A careful path to crafting a sustainable, environmentally responsive and low-impact strategy for settlement evolved. The multi-disciplinary team mined, mapped, unravelled, uncovered and unpicked the site’s ecology. This began the journey to build a vision and grow the buildings from an understanding of the site.

The buildings are modestly scaled, lightweight, stilted, basket-like, with roofs planted and set on banded stone bases. These simple shelters reflect the natural qualities of the landscape. Hovering decks, terraced ground, large slide-away openings allow spaces to touch the mountainscape lightly. The palette of natural, local, renewable, low-embodied-energy, non-toxic materials and components develops the sustainable qualities of the project. Low-tech passive design principles underpin the crafting of the building envelope which is shaped for the shifting seasons. Open structures breathe crisp mountain air and bask in natural light.
**CATEGORY B: RESEARCH IN SUSTAINABILITY**

**Designing for Hope: Pathways to Regenerative Sustainability - AWARDED Chrisna Du Plessis**

“Designing for Hope represents a timely, important and necessary contribution to the literature that provides a powerful characterisation of current and alternative world views. It also offers a comprehensive coverage of the scope and emphasis of regenerative sustainability. Maintaining both a measure of criticality toward the nature of an impending set of environmental difficulties that must be navigated, and yet offering a positive, hopeful message and perspective again is not an easy task. Hes and Du Plessis have provided us with a positive and constructive path forward,” said Raymond Cole in an article published in *Building Research & Information*.

This publication resulted from collaboration between the Universities of Pretoria and Melbourne aimed at bringing together the theory and practice of an emerging regenerative design and development paradigm. It draws on an extensive literature review and over 50 interviews with practitioners and academics worldwide to present a number of theoretical approaches, supported by case studies that describe working from an ecological paradigm in the built environment.

**CATEGORY C: SUSTAINABLE PRODUCT / TECHNOLOGY**

**Otto Cottage (Maun, Botswana) - AWARDED Paul Marais**

This small house in Maun, Botswana, made of natural materials comprising rammed earth, timber and locally harvested reeds, demonstrates what can be achieved with natural materials in harmony with the environment, while being beautifully seductive. Using forms similar to those prevalent in the area, it draws a deliberate link to them. By reinventing traditional building materials, it points to a sustainable future building technology. The project minimised its impact by the extensive use of local and natural materials, and its ecological approach was to be energy, water and waste neutral. The house is not connected to either the local electricity grid, or the municipal water and sewerage, making it a 100% off-grid building. The implementation of green technologies was done by transferring knowledge from the architect to the local team of builders. Emphasis was placed on training unskilled labourers within specific trades through to the installation and construction phases of the rammed earth, solar installation, biological sewerage, water purification and permaculture of the site.

**CATEGORY D: SUSTAINABLE SOCIAL PROGRAMME**

**BridgingMzamba (Mbizana, Eastern Cape) - AWARDED buildCollectiveNPO with Carinthia University of Applied Science**

The community driven project ‘BridgingMzamba’ originated in the urgent need for and request by surrounding inhabitants for a safe crossing of the Mzamba River and included design and implementation of a 140-m-long suspension bridge in a collaborative manner.

Through a collective approach with users, students and experts, the production of knowledge, cultural exchange, skills development and responsibility is achieved for all participants. Design and technology was guided by reducing environmental impact, using available resources, implementing with laypeople and the barely accessible construction site. The Mzamba Bridge is now connecting residents of a catchment area of 30 km to educational facilities, health care, jobs and general food supply. Further, it serves as a landmark and potential tourist attraction in the area to enable future socio-economic development.

**Malawi School (Mchinji, Malawi) - AWARDED Architecture for a Change**

The design explores the possibility of the school as a covered canopy. It offers a larger covered area that provides shade, open, well-lit and ventilated spaces and becomes a visual icon. Shade netting, lightweight steel, local masonry and corrugated iron form the architectural language of the building. Masonry, handmade by local women on site, was used to create vertical louvres on the exterior of the classrooms to act as shading devices and structural support for the roof.

Refurbished shipping containers were used as these are structurally sound elements that have a dual function. Firstly as a transportable element, and secondly, as a shell and anchor for a new structure. Utilising locally manufactured materials gives the community a sense of ownership and softens the container as a foreign contextual element.

The building doubles as a community gathering space where local events are held and revenue is made allowing the school to be economically sustainable.

More information from Maxine Nel,
Tel: +27(0)11 670 5893 / www.afrisam.co.za
In the first quarter of 2016, Grace Construction Products and Darex Packaging Technologies will become GCP Applied Technologies Inc. – a global leader in these industries. Their global headquarters will move from Columbia, Maryland to Cambridge, Massachusetts, USA.

W. R. Grace & Co. will continue as a leading global supplier of catalysts and materials technologies. This separation is intended to enable both companies to grow faster, accelerate innovation and improve our service to customers by becoming more focused on our distinct market segments. While their products, service, and delivery will not change as a result of the separation, some transactional details of their business relationship will begin to change from January, 2016, ahead of the actual legal separation. These details will differ country to country, but may include some payer information details and their legal entity name.

In the coming months they will communicate with the appropriate members of their customers’ teams regarding these changes. In addition, a new blue logo and new name, GCP Applied Technologies, will be seen on promotional materials, packaging, invoices, and other transactional documents. This transition will continue over the coming months, so for some time Grace will be seen on many of their packages and some of their promotional material.

When the separation is official a new website, www.gcpat.com, will have all products in the same familiar user interface. The exact timing of the separation will be determined by financial markets and other factors, and is anticipated to be in the first quarter of 2016.

As they gradually change over product labels, product datasheets and specification documents, safety data sheets, packaging documents, and promotional materials, customers can be assured that all of these documents will remain in compliance with regulations and be easy to identify. The majority of the product names will remain the same, and for a period of time after the separation is effective, they will continue to bear the Grace name and trademark.

“We are excited about what lies ahead for our ability to serve the customers who have made our growth possible. More than ever, we will focus on the technologies and services that have contributed to the success of our customers in building many of the world’s most recognised structures”, says Deon van den Berg, General Manager of GCP South Africa.

More information from Tel: +27(0)11 923 4631 at www.gcpat.com
Integrating concrete into the landscape

By Daniel van der Merwe, Architect, PPC Ltd.

At the recent Corobrik SAIA Awards for Architecture 2016 gala function the best in South African architectural design was honoured and celebrated. Two award winning projects which used concrete structurally and aesthetically to establish a unique relationship between nature and building are featured in this issue.

Steyn City Club House, Steyn City, Johannesburg: Boogertman + Partners Architects

On the edge of Sandton, Steyn City Parkland Residence comprises some 2,000 acres of land currently being developed to create the largest parkland residence in South Africa.

"Today cities appear to be built to cater for the motor vehicle, but Steyn City is designed for people. Steyn City's network of pedestrianised pathways and cycle tracks thread their way through Steyn City, linking all residential dwellings with the numerous parks and dense woodland," says Giuseppe Plumari the developer.

The Steyn City Golf Course is an 18-hole championship Nicklaus Design. It is a par 72 over 7,000 metres from the championship tees. All the greens are built to USGA specification. The golf course has already been described as the ‘Augusta of South Africa’, and features an award-winning club house that takes full advantage of the natural contours of the surrounding landscape, and boasts a fully stocked Pro Shop, luxurious locker rooms and a high-tech gym.

Utilising local materials and labour, the building integrates with its surroundings and the indigenous landscape, creating architecture that is responsive, sensitive, functional and sustainable, while also making use of the latest available technology.

In line with growing trends worldwide which blur landscape and architecture, this project provides an ingenious landscape-architecture approach by partially submerging buildings in the Highveld landscape.

Concrete was the perfect choice for the project as it was the only material that enabled the creation of organic shapes, which fulfilled the ‘blend into nature’ concept. According to the Architects, an integral part of the design was the building’s large concrete green roof. A load-bearing cast-in-situ concrete slab created a living green roof, allowing the building to blend seamlessly into the landscape.

In addition, utilising the unique thermal massing qualities of concrete, the landscaped concrete roof helps to regulate the internal temperatures as it absorbs solar energy during the day and then shifts the load entering through the roof at night when the rest of the external loads are not present.

The concrete slab for the clubhouse lounge also acts as thermal storage and removes the peak cooling load of the west facing facade. This system is also more energy efficient than cooling/heating with an air-based system when the doors

The concrete ‘growing roof’ will help regulate the clubhouse’s thermal mass as it absorbs solar energy during the day and retains this load, to allow for evening absorption. Photo: Daniel van der Merwe

The grassland sweeps over the architecture and the building components fragment to enhance its connection with nature and achieve a harmonious symbiosis between nature and the architecture which nestsles within it.

Recycled stone from the nearby rehabilitated quarry and the site excavations allowed the Architects to create packed gabion panels between the concrete load-bearing frame structure. Photo: Daniel van der Merwe
are open. This allows the passive ventilation system to function optimally and for the building’s heating and cooling to be drastically reduced and evolve from traditional HVAC systems. Paying attention to sustainability issues was a priority to the Client and Architects. A strategy was to utilise local materials and labour where possible, with recycling of excavated material and the implementation of water conservation to further enhance the building’s sustainability. Design specifications ensured low energy LED lighting, heat pumps which reclaim and distribution heating, grey water utilisation, building waste was re-incorporated back as building material, greening of the architectural facades as well as the use of façade shading systems and high performance glazing. Using concrete as the main construction material assisted the building towards achieving it’s ‘green’ status.

79 Brommersvlei Road, Constantia, Cape Town, Western Cape. Architect: METROPOLIS

This house is situated relatively high up in the hills of Constantia. Here, the fall of the land starts to flatten out from the Table Mountain range in the west towards the Cape Flats relatively far away to the east. In a north-south direction, there are a series of hills and valleys all draining in an easterly direction. Topographically, the landscape offers the dramatic horizon line of the Table Mountain range to the west, with the possibility of distant views to the north, east and south.

The house in Brommersvlei Road is situated on a rehabilitated south-facing slope. The site is heavily wooded, with well-established trees. It all focuses on a mountain stream on the southern edge. The site is a subdivision of a larger piece of land, and it used to accommodate a tennis court and lawns. According to Jon Jacobson, the Architect, one of the priorities was to rehabilitate it and bring it back to, as close as possible, its near perfect natural condition, where fauna and flora can proliferate and where nature can reign supreme. The most precious aspect of the site is the southerly slope and views towards the mountain stream at the bottom thereof.

Integrating a new building within the existing site, respecting existing trees and the natural topography, to allow an integration of indoor with outdoor was another priority to Jon. “The light and tranquil building positions all place emphasis on man’s restorative relationship with nature. Nature is the ultimate ideal while the architecture of this house follows its rules” says the Architect. Much has been done to support this idea of weightlessness. For example: the in situ cast concrete roof is always lit from below; internal and external walls hardly ever touch it; ‘heavy’ elements like a stone-faced fireplace are hung from it and do not touch the floor plane; the floor level (base) hardly ever touches the ground; and the sky dome is invited in by means of skylights and gaps between vertical and horizontal elements. According to Jon, the house was designed to be experienced like a temporary and sometimes romantic nomadic tent on the landscape. In the philosophy of architecture, reference is often made to ‘Adam’s House in Paradise’

The green wall of trees surrounding the site, were seen as the living perimeter of the house, with the concrete in situ cast roof expressed as a long continuous inclined plane falling with the slope of the site and forming an evocation of tree canopy, over a free-flowing ground plane. The single storey structure hugs the ground plane and is glazed extensively, to establish contact with the outdoors all round. The street edge is protected by a massive concrete wall, which is designed to reflect road noise from the living areas.

Concrete is used extensively throughout the project, cast in situ concrete walls are allowed to reflect the rough textures of its timber formwork- a continuation of the idea of the forest setting expressed through the wood grain imprinted onto the concrete surfaces.

More information from Daniel.VanderMerwe@ppc.co.za
There may be a time in the United Arab Emirates (UAE) that floating homes become passé, but that time doesn’t appear to be now. Following the Floating Seahorse and the Waterlovt, New Living on Water is the latest outfit to offer a luxury waterborne residence.

Its take on the idea is said to have been “designed with uniqueness as the main underlying thought” and also to offer residents privacy, comfort and a connection to nature. New Living on Water envisages the units being used for hotels, as well as for private homes.

Each residence will be linked to the land by a car-jetty. Measuring 50-m (164-ft) long by 30-m (98-ft) wide, they are to have a rounded organic shape with a curved stainless steel roof. These characteristics will help to provide the privacy, enveloping a large terrace along one side out onto which all the interior rooms will look.

Each unit has three levels. The concrete basement level is split into two, with one half housing compartments for load balancing. The ground level comprises four bedroom-and-bathroom combinations, a working space, a living room and a kitchen, with every room boasting its own outdoor area. On the upper level there is a dining room with a balcony. New Living on Water says the interior layout can be tailored to the wishes of each client.

The units will employ an air-handling system to keep the units temperate, with the temperature able to be fine-tuned separately in each room. A heat-pump working in conjunction with the system will use surface water to facilitate heating and cooling, which is cited as one the sustainability-focused features of the homes, along with the use of low-impact, maintenance-friendly building and finishing materials.

It will be possible to connect the homes to on-land electricity and sanitation facilities, but also optionally possible for them to be entirely independent, with solar panel, drinking water supply and sewage water purification systems available for installation.

New Living on Water has launched at Cityscape Global in Dubai from September 6.

The unit on display will have around 1,500 sq m (16,000 sq ft) of interior space and 48 sq m (520 sq ft) of exterior space. Such a unit will reportedly cost in the region of US$11 million.

Source: New Living on Water

https://goo.gl/9v2Lfq
The Japan Art Association (JAA) has recently named the Brazilian architect Paulo Mendes da Rocha as being the winner of the 2016 Praemium Imperiale International Arts Award. Often credited as a founder of the Brutalist movement in São Paulo, 2006 Pritzker Prize Winner Mendes da Rocha was praised by the jury for his commitment to honouring “locality, history and landscape” in his projects and his ability to utilise “simple materials like concrete and steel to structure space to maximum effect.”

The very prestigious global arts prize was founded in 1989 to recognise “outstanding contributions to the development, promotion and progress of the arts” in the fields of architecture, painting, sculpture, music and theater/film.

Mendes da Rocha joins an illustrious group of architects who have been awarded the Praemium Imperiale, including James Stirling, Tadao Ando, Alvaro Siza, Richard Rogers, Jean Nouvel, Toyo Ito, Zaha Hadid, Peter Zumthor, David Chipperfield, Steven Holl, Dominique Perrault and Jacques Herzog and Pierre de Meuron.

The five 2016 Praemium Imperiale laureates include:

- Painting (and Photography): Cindy Sherman (USA)
- Sculpture: Annette Messager (France)
- Architecture: Paulo Mendes da Rocha (Brazil)
- Music: Gidon Kremer (Latvia)
- Theatre/Film: Martin Scorsese (USA)

The recipients were awarded at a ceremony in Tokyo on October 18, 2016. Imperial Highness Princess Hitachi, honorary patron of the Japan Art Association, and his wife Imperial Highness Prince Hitachi, presented each Praemium Imperiale winner with a specially-designed gold medal, along with a testimonial letter and a ¥15-million (approximately $143,000) prize.

The prize represents another recognition in a banner year for Mendes da Rocha after taking home the Golden Lion for Lifetime Achievement at this year’s Venice Biennale.

Source: https://goo.gl/ZT6jNT
A new office building currently under construction in Jeddah, Saudi Arabia, will offer one of the most innovative working environments in the region when it opens. The Abdul Latif Jameel Corporate Headquarters building is envisaged as an open-plan, social office that will house 2,300 staff when completed.

“The client’s vision was for the facility to provide various social interaction zones through a bright, open, and flexible layout. Such designs are uncommon in Saudi Arabia, where intense heat means that building designs are dictated by the need for thermal comfort, rather than space or brightness,” said architect Andrew Bromberg of Aedas.

To create the bright, open spaces in this challenging environment, Aedas oriented the L-shaped building so that the solid face of the building faces west, thus bearing the brunt of the intense afternoon sun, which can rise above 40°C.

Unique layout – and unique challenges

The building’s unique tapered L-shaped structure meant that Aurecon’s structural engineers had to devise a tailored support structure that would not compromise the design vision of an open-plan space.

“The L-shaped office areas are arranged in a manner which gives the architectural tapering effect – both legs of the L-shape are arranged slightly differently from the adjacent floors. This created an intriguing challenge in determining the column layout to suit the open plan office and also integrating it with the car park layout in the basement,” said Andy Mak, Principal Structural Engineer at Aurecon.

Aurecon’s engineers developed sophisticated models using Revit design software and worked to integrate that with Aedas’ models produced using the Rhino platform.

“We went through many iterations of overlaying the Revit model and the Rhino model to coordinate the optimum column arrangement,” continued Mak. “In the end we decided on inclined and kinked columns on one leg of the L shape. This worked very well with the interior architecture and also avoided major transfer beams in the floors.”

Linking form and function

“For architecture, the bridges are a key visual element in the atrium space. But they also provided the only route to get building services into the office space. Structurally we used the link bridges to anchor the L-shaped floors back into the large lift shafts, meaning that horizontal forces induced by the kinked columns and all of the seismic storey shear forces had to be channelled through the four link bridges on each floor,” said Aurecon’s Andy Mak.

Mak also noted that the strength and stiffness of the structure was provided by the use of high-strength reinforced concrete. However, for the building’s office floors, post-tensioned concrete was used, as it could better withstand the tension from the tapered columns, building a stronger connection between office floors and elevator shafts.

Soft bedrock needs strong foundation

Another significant challenge encountered by the Aurecon engineers during the building process was the absence of solid bedrock beneath the site.

Unusually for Jeddah, where bedrock is usually found at relatively shallow depths, the building sits on top of dense sand where the bedrock is more than 60 m below ground. The site is located at a dip in the bedrock where the Hijaz Mountains meet the Red Sea, and this site condition meant that long friction piles were required to support the loads of the building.

“To minimise the loads onto the piles, we conducted soil
structure interaction analysis, incorporating the piles and soil into our structural analysis model,” Mak explained. “This facilitated the design of a piled raft foundation system where 20% of the foundation load was shed from the piles into the ground bearing raft, delivering a more efficient design.”

Bringing a new working experience to Jeddah

When completed, the new headquarters building will be rise more than 100 m tall. It is located on the northwest corner of a 21-hectare site adjacent to a major traffic intersection in Al-Balad, the historic area in the city of Jeddah.

“This is a landmark development for Jeddah and a truly unique space in the region,” said Mak. “Bringing this vision from concept to reality has been an incredibly exciting and stimulating project. We look forward to seeing the building come to life as staff members move in and the community spirit takes hold.”

Abdul Latif Jameel is a Saudi Arabia-based diversified business with operations in over 30 countries. The company commissioned architects Aedas to design its spectacular new headquarters in Jeddah and global infrastructure advisory and engineering company, Aurecon was appointed as the structural engineers.

More information from Danielle Bond,
Tel: +61 3 9975 3138 / www.aurecongroup.com

About Aurecon

Aurecon brings ideas to life to design for a better future. Imagining what is possible, we turn problems into solutions.

We provide advisory, design, delivery and asset management services across a range of markets, in locations worldwide. These services include:
- Digital advisory and infrastructure advisory
- Building design, ground engineering design and infrastructure design
- Programme and project management delivery
- Asset management and geospatial systems

Understanding the value of expertise, we mobilise our global pool of talent to understand and solve the critical and complex problems you face. We seek to unravel complexity, create clarity and invent new value for you, our clients.

We use our thinking to provide innovative solutions. We bring ideas to life by partnering with you and using our innovation and expertise, with technology, to solve your complex problems.

Privately owned by employees, Aurecon formed in 2009 when Africon, Connell Wagner and Ninham Shand announced the formation of a new global group.
This phase of the refurbishment commenced in September 2015 with Stefanutti Stocks applying Sika’s high-performance Sika Rep LW used as a reprofiling mortar before application of Aurecon specified a number of Sika’s well-established products. Stefanutti Stocks awarded the contract to TDS Waterproofing. With Sikagrout-212 (7,500 litres) for general repairs to all walls concrete parking structure, prior to new asphalting, Stefanutti and a facade upgrade, the 133,000-m² Eastgate Shopping Centre now boasts a whole new image.

For the temporary waterproofing of the mall’s upper-level concrete parking structure, prior to new asphalt, Stefanutti Stocks applied Sika BlackSeal T-140 SG and Sika BlackSeal T-140 PG were the immediate systems of choice. Both products are sheet-waterproofing membranes (4 mm thick), based on APP (atactic polypropylene) modified bitumen, reinforced with polyester nonwoven fabric.

Sika BlackSeal T-140 SG has a sanded surface, while Sika BlackSeal T-140 PG has a plain bitumen surface and is flexible to 0°C. To ease the torch-applied installation, the reverse sides of both membranes are faced with polyethylene film. The system provides excellent tensile strength and elongation, high resistance to water vapour and good dimensional stability. With inclement weather and a prohibitive time schedule, this proved a challenging project for the contractor.

For the repairs to the mall’s extensive facade, consultants Aurecon specified a number of Sika’s well-established products. This phase of the refurbishment commenced in September 2015 with Stefanutti Stocks applying Sika’s high-performance Sikagrount-212 (7,500 litres) for general repairs to all walls and columns. Easy to use, with an adjustable consistency, this cement-based, fluid grout provides rapid strength development and high final strengths. It expands by gas generation while in the plastic state of curing, is non-corrosive as well as shrinkage compensated.

Sika Rep LW (200 litres), a one-component, non-sag, cement-based patching and repair mortar was used on all overhead beams and roof slabs. It is permeable to water vapour with a high resistance to freeze/thaw cycling and provides excellent adhesion. As an anti-corrosion reinforcement primer and bonding agent, Sika MonoTop-610 was applied to the concrete facade. With excellent adhesion to concrete and steel, the product meets ZTV-SIB requirements for corrosion protection. To achieve a uniform colour over the repaired areas, Sika MonoTop-620, a pore sealer and skimming mortar containing silica fume, was applied. These cementitious, polymer-modified MonoTop products are extremely user friendly with an adjustable consistency and are sprayable by the wet spray method. Both provide good mechanical strengths and resistance to water and chloride penetration.

Sikaflex PRO-3, a one-part, moisture-curing, elastic joint sealant with high mechanical resistance, was applied to all expansion joints. Solvent free and odourless, it provides bubble-free curing with a movement capability of 25%. Sikaflex PRO-3 is a multi-purpose joint sealant, suitable for interior, exterior and cold climate applications, and meets the most stringent international emission standards. Compared with previous polyurethane and silane-terminated polymer-based sealants, Sikaflex PRO-3 exhibits unsurpassed adhesion to porous and non-porous substrates and provides increased UV stability with a lower tendency for discolouration.

As a versatile anchoring adhesive for various applications of the project, Sika AnchorFix-3+ was used. An epoxy resin-based, high-performance, two-part adhesive, Sika AnchorFix-3+ is solvent-free and thixotropic and is used for fixing non-expanding anchors such as handrails, balustrades, railings and window or door frames. Advantages include a long open time, high load capacity and shrinkage-free hardening as well as being styrene free with low odour.

Several challenges experienced during this project included noise and dust pollution, as well as the inconvenience of working in a fully functioning mall with shoppers and traffic having to be accommodated. Nevertheless, the project was completed timeously and within budget with much credit being assigned to the sheer quality and ease of application of these Sika products.

In 1979, Eastgate Shopping Centre opened as one of Johannesburg’s first mega malls and, over the decades, remained a prime destination for residents of east Gauteng. Now in 2016, after completion of this massive refurbishment, involving Sika’s state-of-the-art products, Eastgate has been transformed into one of the largest, most prestigious malls in the region.

More information on Sika products and systems at www.sika.co.za

Sika Rep LW used as a reprofiling mortar before application of new surface coatings.
Aveng 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 Infraset’s admired heritage is founded on innovation, technical and service excellence.

SEVEN WAYS TO LASTING INFRASTRUCTURE
A special protective coating system supplied by a.b.e. Construction Chemicals was used for the repair of 16 massive wheat silos in the harbour of Port Louis, Mauritius.

Luis Ferreira, business development manager: exports for the Chryso Southern Africa Group – the holding company of a.b.e. – says a.b.e. durakote WB was applied in four coats to the 40-m-high silos of the leading Mauritian flour producer, Les Moulins de la Concorde Ltée.

The towering silos, with a collective storage capacity of 40,000 tonnes, form a focal point and landmark of the Port Louis harbour. Adjacent to the concrete silos on Quay D is the Les Moulins de la Concorde mill to which the wheat is discharged from the silos for processing.

Ferreira says a.b.e. duracote WB (water-based) is a high-performance flexible aliphatic acrylic polymer coating with high crack-bridging properties. The system comprises duracote WB primer, a powerful penetrating organic carrier coat that incorporates acrylic resin and silane-siloxane molecules that form a reactive hydrophobic primer barrier coat that chemically bonds to the substrate.

duracote WB itself is a pure aliphatic acrylic polymer protective topcoat with high elastomeric crack bridging qualities – the coating is capable of bridging a 0.3-mm dynamic crack at 20°C. The system forms a durable, decorative, UV-stable protective coating that inhibits the passage of water and aggressive water-borne corrosive contaminants from entering the pores of the concrete silos.

“duracote WB is particularly suited to structures exposed to harsh, aggressive atmospheric conditions and was the ideal choice for the repair and waterproofing of the marine-exposed silos,” Ferreira stated.

He said four coats of duracote WB were applied to achieve a 400-micron dry thickness on the silos. “Normally two coats offer sufficient protection, but because of the silos being right next to the ocean, an additional two coats were specified and applied for maximum protection,” he added.

Some of the other benefits of a.b.e.’s durakote WB system include:

- Forms a permanent barrier against the ingress of carbon dioxide, chloride ions, oxygen and water – the main contributors to corrosion;
- Tough, durable, weather-resistant and UV-stable decorative coating suited to the most adverse conditions;
- durakote WB coating system has the ability to breathe – and this allows water vapour to diffuse from the concrete pore structure;
- Improved dirt pick-up resistance;
- Low sensitivity to mould and algae growth; and
- Strong barrier to efflorescence.

“Finally, in addition to its protective qualities, the system also provided a highly decorative finish so the refurbished silos are now an attractive feature in a harbour that receives dozens of luxury cruise liners every year,” Ferreira added.

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

Work in progress applying a.b.e. protection near the top of the towering wheat silos in the Port Louis harbour, and the fully repaired structures which are a focal point of the ocean gateway to Mauritius.
Modern concrete roads offer environmental benefits, says TCI

Modern concrete roads are a far cry from the concrete pavements of old which are still in existence, but were designed long ago to very different design criteria to those employed today, says Bryan Perrie, managing director of The Concrete Institute.

Perrie says early concrete roads were laid using what are now regarded as obsolete techniques and equipment. Modernised designs, new construction methods, better surface finishing and sophisticated machinery mean that it is now possible to produce high-quality concrete pavement surfaces that satisfy the needs and objectives of road users, neighbouring communities, and road managers.

“There is no doubt that concrete pavements offer substantial environmental economic and social benefits. Concrete roads should be more widely regarded as the sustainable solution to South Africa’s road network. They are the natural choice for projects where performance, value, longevity, social responsibility and concern for the environment are paramount."

Concrete pavements, furthermore, offer a long service life which normally exceeds 30 years. In addition, concrete pavements require relatively little maintenance and repair and produce long-term savings in raw materials, transport and energy. The reduction in traffic delays caused by road works on concrete pavements also cuts fuel consumption and exhaust gas emission levels.

Perrie, in fact, believes that an important advantage of concrete roads which is not always apparent is the fuel saving such pavements offer for cars and goods vehicles.

“The National Research Council of Canada carried out a series of investigations which focused on various types of pavements and vehicles in different seasons of the year. Reduced fuel consumption by heavy trucks was observed in all phases for concrete roads when compared to asphalt pavements. The studies found that fuel saving on concrete pavements for empty and full tractor-trailer units ranged from 0.8% to 3.9% in four to five periods in the year, based on 95% reliable survey results. On this assumption, you are looking at an average fuel saving of 2.35% which is certainly not negligible and would represent an immense difference in overall fuel consumption as well as emissions of Greenhouse Gas over the lifetime of a busy freeway,” Perrie commented.

The Transport Research Laboratories in Great Britain carried out research to determine the effect of the rigidity of the pavements on fuel consumption. Here the reduced deflection of concrete roads resulted in a 5.7% reduction in rolling resistance, also providing fuel savings.

“Similar fuel economy results have been obtained from extensive research done in Sweden, Japan, and the American states of Texas and Massachusetts. Apart from the type of pavement, the evenness and surface texture of the road surfaces are important factors influencing fuel consumption.

“That is why the quality of the finished concrete surface plays such a crucial role: a good-quality and evenly-laid concrete pavement retains these qualities for decades whereas a concrete pavement with undulations or uneven patches will require difficult and expensive remedial treatment to obtain and maintain the desired ride quality.”

Perrie says sustainable concrete pavements make efficient use of natural resources and respect the environment during their entire life cycle. They provide services to society in terms of mobility, safety and comfort by means of judicious choices when it comes to design, construction, maintenance and demolition.

“The cement industry – so often criticised for carbon dioxide emissions emanating from its production processes – is extremely active in reducing energy consumption and in reducing the amount of non-renewable fossil fuels through the introduction of modern technology and equipment and using alternative fuels and co-combustion materials. “The use of industrial waste products such as tyres, solvents, waste oil, waste water treatment sludge and paint residues as alternative fuels in cement kilns can make a valuable contribution to reducing overall carbon dioxide emissions,” Perrie added.

More information from: Bryan Perrie, Tel: +27(0)11 315 0300 / www.theconcreteinstitute.org.za
Consisting of 46 concrete towers, the Gouda Wind Farm, situated in the Cape Winelands District, is one of the largest wind farms in Southern Africa, and the first to use locally produced precast concrete instead of the usual imported steel towers. For construction of these 100-metre-tall towers vast quantities of Sika products were supplied, including one that received the prestigious Fulton Award from The Concrete Society of Southern Africa. Jacques Reinecke, head of renewable energy for Sika SA, spearheaded the specification and installation of the Sika product as well as on-site training.

In September 2015, the Gouda Wind Farm, owned in partnership by the South African company, Aveng, and the Spanish renewable energy company, Acciona Energia, commenced operations with a generating capability of 423 gigawatt hours of electricity through which 200,000 homes will be powered per annum. It is estimated that the clean energy generated by this wind farm will prevent the emission of 406 million metric tons of carbon dioxide per year.

Sika products used in large quantities for the construction of the towers included Sikadur-31 CF (one ton per tower), Sealing Backing Cord (22km) and SikaGrout-295 ZA (30 tons per tower). Due to the extreme height of the towers, each tower comprises three precast concrete segments joined on site, one on top of the other. Each segment consists of four sections sealed and grouted together.

Horizontal joints on the tower segments were sealed with Sika EVA Backing Strip. This semi-rigid, closed-cell cross-linked construction foam is designed as a tough, flexible and resilient back-up support material for surface seals in load bearing joints. It can also be used as a bedding seal under precast concrete panels and to prevent loss of grout when joining precast concrete components.

Once joined together, the vertical and horizontal joints of the precast segments were sealed with Sikadur-31 CF and Sikadur-31 DW. Both products are moisture tolerant, thixotropic, structural two-part adhesives and repair mortars based on a combination of epoxy resins and special fillers. Easy to mix and apply, they are suitable for both dry and damp concrete surfaces and harden without shrinkage. They provide high initial and ultimate mechanical strength and are impermeable to liquids and water vapour. Sealing Backing Cord was placed into the expansion joints to regulate the depth of seal and to provide a solid backing onto which the sealants were placed.

Weathered concrete areas were repaired with Sika MonoTop-620, a cementitious, polymer modified, one-component pore sealer and leveling mortar containing silica fume. With an adjustable consistency, it can be applied by the wet spray method and provides excellent adhesion with good resistance to water and chloride penetration.

Grouting of all vertical cavities using SikaGrout-295 ZA, was completed by Derman Construction who used local labour trained by Jacques Reinecke and Anthony Webster, Sika technical sales consultant. SikaGrout-295 ZA is a one-component, ultra-high strength, cement based grout, specifically designed for use in the renewable energy field, under metal bases, between concrete segments and to fill cracks, gaps and large voids. Due to its good flow properties this is a pumpable grout that provides rapid strength development.

To ensure that SikaGrout-295 ZA could reach the horizontal joints on the 100-m-high towers, a pumping trial became necessary. The trial necessitated sending the South African manufactured grout to Acciona Spain where it was successfully pumped to a height of 120 m on an actual tower. SikaGrout-295 ZA not only passed the pumping trial, but was also awarded a fatigue test certificate for durability – the ultimate test on a product. The results of these tests now validate SikaGrout-295 ZA for worldwide use, a noteworthy achievement.

As a final accolade for Sika SA, this project at Gouda Wind Farm won the coveted Fulton Award for Innovation in Concrete. Since the emphasis on this huge project was to use local content and local labour, it surpassed all expectations, proving that local really is better!

For more information on Sika products and systems, visit www.sika.co.za
Lafarge South Africa recently became the only building materials company in South Africa to provide the construction industry with environmentally-friendly level C Global GreenTag® certified products.

Three of the company’s value-added global brands, Agilia™, Artevia™ and Hydromedia™, were all successfully certified by the internationally-recognised Global GreenTag® ecolabel at the end of June.

Green Star buildings offer reduced operating costs, achieve 5% higher rental income and the overall asset value increases by 12%.

This achievement places Lafarge South Africa at the forefront of green building in South Africa, contributing to sustainable development through energy conservation and protecting natural resources.

The Global GreenTag® certification standards are recognised in Australia, New Zealand, Malaysia, South Africa, Africa and SE Asia and in over 70 other countries across the world.

The global brands were scored against six main sustainability assessment criteria (and another 20+ life cycle and social criteria), namely:
- greenhouse gas emissions
- biodiversity
- health and ecotoxicity
- life cycle analysis
- synergy (product efficiency) and
- social responsibility and labour conditions.

“The effectiveness of our company’s green solutions is not only reflected in our rapidly growing track record of involvement in building projects with highly-ranked Green Star ratings registered by the Green Building Council of South Africa (GBCSA), but now also in our newly Global GreenTag® certified global brands,” says Alta Theron, General Manager: Readymix at Lafarge South Africa.

Designers who specify the global brands as finished surfaces, walls and floors will be able to do so easily and confidently as the research, analysis and reviewing of the product’s standards has already been done.

“We are able to provide architects and engineers with a wide range of well-integrated efficient building systems that not only contribute to energy conservation and lowering the carbon footprint of their designs, but also contribute to credit towards their Green Star interior rating,” adds Theron.

Green Star buildings have reduced operating costs, achieve 5% higher rental income and the overall asset value increases by 12%.

More information from Neo Callis,
tel: +27(0)11 657 1017 / www.lafarge.co.za

Expiration date for this issue: 31 March 2017

Lafarge South Africa leads by achieving Global GreenTag® certification

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A study by the Center for Health and the Global Environment at Harvard University has shown that green buildings have a positive link to higher cognitive function for workers.

The report notes that we “spend about 90% of our time indoors, and buildings have a unique ability to positively or negatively influence our health.”

Twenty-four professionals such as architects, designers and engineers took part in a six-day longitudinal study of cognitive performance and building conditions in Syracuse, New York.

Participants were exposed to conditions representative of “conventional and green office buildings in the U.S., as well as green buildings with enhanced ventilation.”

“Green buildings benefit human health while minimising energy consumption”

At the end of each day, participants were administered a cognitive test using a ‘Strategic Management Software Executive Decision tool’, which tests live decision making performance by simulating real-world scenarios. It has been used by more than 70,000 participants worldwide over the last six decades.

The method allowed researchers to understand any changes in cognitive function that might be attributable to building design features. On average, cognitive scores were 61% higher in green building conditions and 101% higher in enhanced green building conditions. The report notes that the findings have “far ranging implications for worker productivity, student learning, and safety” and that green buildings benefit “human health while minimising energy consumption”.

Read more about the study at http://ehp.niehs.nih.gov/15-10037/#tab1

Source:  https://goo.gl/r9nKUv

We think better in green buildings, Harvard study shows

By Joe Quirke

A new analysis of the cost of electricity generated from various sources in South Africa shows new solar photovoltaic (PV) and onshore wind to be 40% cheaper than the costs associated with new baseload coal-fired power stations.

The analysis, conducted by Council for Scientific and Industrial Research (CSIR) Energy Centre head Dr Tobias Bischof-Niemz and energy economist Ruan Fourie, is based on information confirmed by the Independent Power Producer (IPP) Office, which oversees the procurement of new private generation capacity on behalf of the Department of Energy and the National Treasury.

The study reports that solar PV and wind prices bid as part of the yet-to-be-announced ‘expedited round’ of the Renewable Energy Independent Power Producer Procurement Programme fell to 62c/kWh from between 69c/kWh and 95c/kWh in the fourth bid window, with all figures normalised to an April 2016 rand.

The tariffs represent a sharp fall from the first competitive auction in 2011, when the contracted price for solar PV projects came in at 365c/kWh, while wind projects signed 20-year power purchase agreements at 151c/kWh.

Bischof-Niemz and Fourie have also made announced tariffs for the first two coal baseload IPP projects named as preferred bids on October 10, comparable with renewable IPP tariffs. They estimate that the comparable average contracted price from the 557.3-MW Thabametsi and 306-MW Kanyisa coal-fired projects will be 103c/kWh, rather than the sub-82c/kWh prices announced.

The upward adjustment is based on the fact that the bids were submitted in April-2014 rand and, thus, need to be escalated, using the CPI, to an April-2016 rand level.

“The result is that new solar PV and wind is 40% cheaper than new baseload coal,” Bischof-Niemz and Fourie assert. Their report reinforces a recent CSIR Energy Centre thought experiment, which urges a transition to an electricity mix built primarily on solar PV and wind and supported by ‘flexible’ technologies able to respond when the sun sets and/or the wind stops blowing.

The model shows that, in combining the 62c/kWh from wind and solar PV, with flexible solutions like gas, which are ‘pessimistically’ assumed to carry a cost of 200c/kWh, the outcome is a ‘blended cost’ of 90c/kWh. This is cheaper than both baseload coal (103c/kWh) and the 117c/kWh to 130c/kWh currently assumed for nuclear.

Source:  https://goo.gl/FqvoUs

CSIR study: new solar, wind is 40% cheaper than new coal
Jaco Kemp, sustainable buildings specialist at Arup, has won the 2016 Established Green Star Award by the Green Buildings Council of South Africa (GBCSA) for his continued contribution to the green building economy.

Kemp has been involved in the design of a variety of projects that have included hospitals, residential apartments, hotels, airport developments, industrial facilities, office and retail developments – not only in South Africa but also in Ireland as well as Australia.

“It is always an honour to be recognised for one’s contribution to building sustainability in South Africa, and I am especially proud to have been awarded the Established Green Star Award by the GBCSA. I have an absolute passion for sustainable design and development and the Silo district project at the V&A Waterfront in Cape Town is a leading example of sustainability on a district scale,” says Kemp.

The V&A Waterfront’s No. 1 Silo, the first building to be built in the district, was recognised with multiple national and international awards for its innovative green building design and was awarded the first 6-star ‘As Built’ rating in South Africa. No. 2 Silo, No. 3 Silo, and No. 4 Silo, No. 5 Silo and No. 6 Silo are all targeting Green Star ratings. No. 2 Silo was awarded the first Multi-Unit Residential v1 rating in South Africa, and Arup has worked with the GBCSA to develop custom tools for the No. 3 Silo and No. 4 Silo mixed-used development, and for the No. 6 Silo (a Radisson Red hotel), all of which are industry ‘firsts’.

“Arup’s mission is ‘to shape a better world’ and it is from this base that we position ourselves as designers, planners, engineers and technical specialists when we engage with the built environment. We appreciate that resilience can be used to find better ways to resolve the challenges facing clients by using our technical expertise to deliver bold, sustainable solutions which consider the whole-life costs and make commercial sense,” Kemp concludes.

More information from Candice Wakefield, Tel: +27(0)11 218 7882 / www.arup.com

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www.sika.co.za
Community leaders declare Noupoort Wind Farm officially operational

Noupoort Wind Farm has been officially declared operational by Mzwandile Toto, District Mayor of Umsobomvu Municipality. Situated in the Umsobomvu Municipal Area 10 km east of Noupoort in the Northern Cape, Noupoort Wind Farm spans 7500 hectares and comprises thirty-five 99-m-high wind turbines.

Dennis Solomon, plant manager for Noupoort Wind Farm (NWF) said: “We are honoured to be welcomed by the people of Noupoort who have been incredibly supportive of our project during its construction. It is now our chance to give back to the community during our 20-year operational period, where we will be investing through our economic development programmes.”

Commercial activity in Noupoort, previously heavily dependent on the railway, has dwindled due to declining rail activity. This makes the socio-economic and enterprise development initiatives particularly relevant to the local community.

During the inaugural ceremony, the NWF keys were officially passed from Aniqah Misbach, assistant project manager for Mainstream Renewable Power to Dennis Solomon, the new plant manager for NWF. Chris Antonopoulos, CEO of Lekela Power, the majority shareholder of the Project, proudly cut the ribbon to signify the official activation of Noupoort Wind.

“We focus on community investment to help create thriving and empowered communities including education, skills development, employment and enterprise, environment and energy investment,” said Chris Antonopoulos.

Noupoort Wind Farm is implementing various economic development projects, which include Capacity Building for existing and prospective entrepreneurs; local maths and science development programmes that incorporate science and computer labs as well as local Wi-Fi infrastructure.

NWF had announced the completion of all 35 of its wind turbine foundations in November 2015, ahead of schedule. “We can thank the 230 employees, who worked diligently to complete these foundations,” said Martina Flanagan, project manager of NWF.

Most labour came from the Noupoort community, in support of local employment and upliftment. “As part of our commitment to skills development and community development, we have provided local employees with steel fixing and concrete works training,” added Flanagan.

All material excavated for the foundations has been reused on the site, either as fill on roads or in preparation for the hard stands, adjacent to the foundations. Each turbine base is 19 metres in diameter, comprising over 45 tonnes of reinforced steel and 369 m² of 30-MPa concrete and the plinth required 23 m³ of 60-MPa concrete. This equals a total of 65 full concrete trucks per foundation.

NWF is ideally located with a great wind resource and is 11 km from the Eskom 132-kV overhead line into which the wind farm will loop. The 80 MW wind farm is expected to generate approximately 305,000 megawatt hours of clean, renewable energy to the national grid each year. At full capacity, it is expected to supply enough green electricity to power approximately 70,000 average South African homes and avoid ±300,000 tonnes of carbon emissions each year compared with traditional fossil fuel power plants.

Lekela Power, a JV between Actis and Mainstream Renewable Power, is a pan-African renewable energy platform, with over 1,300 MW of wind and solar power projects in its portfolio.

The Noupoort Community Trust, which owns a 5% share in NWF, has been equally funded by the Development Bank of Southern Africa and the Noupoort Wind Farm Shareholder.

Other members of the consortium that own NWF include: Thebe Investment Corporation; The IDEAS Managed Fund; Futuregrowth Asset Management; Genesis Eco-Energy in partnership with Lereko Metier Sustainable Capital.

All 35 turbines of this R1.9-billion, 80 MW wind farm are now producing clean renewable electrical energy and the project achieved its Commercial Operations Date on schedule and on budget.

Construction Milestones:
- Construction of the wind turbine generator foundations started in May 2015.
- All 35 turbine foundations were completed 20 November 2015.
- First turbine lifting completed in December 2015
- All 35 wind turbines erected by 30 March 2016.
- Energised the substation on 12 February 2016
- Energised the first turbines on 23 February 2016.
- COD achieved on 11 July 2016

More information on NWF website, www.noupoortwind.co.za
Greenfield Industrial Park achieves SA’s first industrial Green Star rating

Growthpoint Properties’ Greenfield Industrial Park in Cape Town has been awarded South Africa’s first-ever Green Star SA rating for an industrial property.

In a milestone achievement for green building in South Africa, Greenfield received a 4-Star Custom Industrial As-Built Green Star SA certification from the Green Building Council South Africa (GBCSA).

Engelbert Binedell, the Growthpoint Properties Industrial Division’s director, comments: “We are delighted Greenfield has become the country’s very first certified green industrial property. Growthpoint is proud to be part of creating a greener, more sustainable built environment for South Africa.”

Growthpoint owns or co-owns the largest portfolio of Green Star SA certified buildings of any company in South Africa, comprising 50 properties so far – a quarter of South Africa’s 200 properties independently certified to date.

Designed with sustainability in mind, Greenfield is a quality, efficient and up-market industrial park on a prime 3.4 hectare site in Airport Industria, near Cape Town International Airport. Greenfield includes 21,000 m² of space, designed to meet the needs of modern business.

Riaan Munnik, who is the development manager at Growthpoint Properties, explains: “Right from the start, we prioritised sustainability for Greenfield. As we progressed with the project, we realised it had the potential to achieve a groundbreaking Green Star SA certification.”

Green building consultants, Sally Mispion from Mispion Consulting and Francois Retief from Sow & Reap, collaborated with GBCSA to develop a custom new build certification for the industrial facility, which is a progressive approach to ensuring more building types can be certified by the GBCSA.

The custom process uses around 80% of existing Green Star SA tools, making minor changes to allow application to other sectors for which tools have not yet been developed. To ensure robustness and relevance, the custom process goes through an independent peer review before it is finalised as a rating tool for the specific project.

Architect Stuart Anderson from Loudon Perry Anderson Architects also played a significant role in ensuring the green building rating was achieved through architectural design that incorporates many sustainable design principles.

Greenfield’s features include sustainable energy from solar photovoltaic panels, with water-wise landscaping, waterless urinals, recycling, and low-energy light fittings. It creates a healthy, appealing working environment with staff breakaway areas and shower facilities for cyclists and runners.

Setting new benchmarks for sustainability in the South African industrial sector, Greenfield achieved full scores for energy efficiency for its rating. It will be a key pilot project for net-zero energy buildings in the country, because the base building (excluding tenant loads) produces as much of its own energy as it consumes in a year.

Binedell says: “We constantly pursue energy and water efficient projects to make our buildings more economical, sustainable and attractive to clients. With Greenfield, we have created a landmark industrial property that is respectful of the environment and saves its occupants money.”

More information at www.growthpoint.co.za
Where the world meets Africa’s concrete and cement industries in 2016

The 4th annual Totally Concrete Expo that took place on 9 - 11 May 2016 in Johannesburg, was an unique gateway into doing construction business across the continent’s high growth and high risk markets in 2016 and beyond. The subcontinent requires 40 million tonnes of new cement capacity alone in order to meet rising urbanisation and growth rates with the region’s population forecast to grow from 1.1 billion people in 2013 to 2.4 billion by 2050.

Both industry titans and new entrants into the local marketplace found value in the Totally Concrete Expo experience because the platform provided an outlet for construction business development alongside practical insight into managing daily operations in the African context. The event united the world’s leading pioneers of concrete, bringing together African and international expertise with more than 80 world-renowned expert speakers across eight co-located events that shared their expertise into new insights and aspects of concrete. Supported by more than 80 industry partners and with participation from more than 180 exhibiting companies, the Totally Concrete Expo is the only all-things cement and concrete event in Africa that provides the entire industry ecosystem with the tools and solutions to navigate Africa’s high growth markets and ensure ROI on projects of all sizes.

The 2017 edition of Totally Concrete Expo is Africa’s MEGA cement and concrete show that you cannot afford to miss!

Soren Du Preez
Programme Director
Totally Concrete Expo

Totally Concrete Expo is the African MEGA cement and concrete show that you have to be a part of! Don’t just take our word for it:

"Well done to you and the Hypencia team on organising such a successful show, and thank you once again for looking after the Concrete Society in such a special way."

John Sheath, CEO, Concrete Society of Southern Africa, South Africa

“I do believe that this exposure for Sephaku will have benefits for us, so thank you for the invite and the opportunity... I do believe that the main focus was both relevant and critical to the South African and African economies at this point in time.”

Steve Swanepoel, General Manager: Sales and Technical Support, Sephaku, South Africa

“The expo assists to facilitate deals and tenders that would normally take months to conclude. For example one of my clients, Buyang Doors, was able to sell all of her products she had on display in just two days!"

Rashaad Essop, Sales Portfolio Director, Totally Concrete Expo
The 4th annual Totally Concrete Expo that took place on 9 - 11 May 2016 in Johannesburg, was an unique gateway into doing construction business across the continent’s high growth and high risk markets in 2016 and beyond. The subcontinent requires 40 million tonnes of new cement capacity alone in order to meet rising urbanisation and growth rates with the region’s population forecast to grow from 1.1 billion people in 2013 to 2.4 billion by 2050. Both industry titans and new entrants into the local marketplace found value in the Totally Concrete Expo experience because the platform provided an outlet for construction business development alongside practical insight into managing daily operations in the African context.

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The 2017 edition of Totally Concrete Expo is Africa’s MEgA cement and concrete show that you cannot afford to miss!
Cement your place at Africa’s MEGA concrete show
Exclusiv Invitation

Concrete Trends readers are invited to apply to be part of the 2017 Totally Concrete Expo advisory board. This is an exclusive opportunity to influence and shape the content of Africa’s only concrete and cement show.

Please send your Curriculum vitae and motivation letter to the Programme Director, Soren Du Preez by 31 October 2016.

soren.dupreez@totallyconcrete.co.za

Exclusiv Invitation

Concrete Trends readers are invited to apply to be part of the 2017 Women In Construction Awards judging panel. As a member of the judging panel you have the privilege to honour and support women in the male-dominated cement, concrete and construction industries.

Please send your Curriculum Vitae and motivation letter to the Awards Director, Athi Myoli, by 31 October 2016.

athi.myoli@womeninconstruction.co.za

To participate in the expo contact  marcel.dutoit@totallyconcrete.co.za  +27 21 700 4300

As part of:
Rapid population growth has caused major demands for new infrastructure in many large cities. Africa alone has a housing shortage of several dozen million apartments. People need safer and more comfortable places to live, and the prices need to be reasonable. Precast construction is a cost-efficient, fast and sustainable building technology suited to large, high-quality housing projects.

In rapidly urbanising areas, land has become a scarce commodity. “Many governments aim to improve the situation by investing in infrastructure renewal. In Kenya, for example, the government is committed to ensuring every citizen’s access to affordable housing. Investing in precast technology means long-lasting, secure and comfortable homes for those in need,” says Ismo Kallio, Elematic area sales director, Africa.

Precast is a modular and efficient building system based on ready-made, factory-manufactured components and intelligent connections. “It is an industrialised way to construct cost-efficient buildings fast – and is optimal for large housing projects with a focus on productivity,” says Prakash Shah, head of technical support at Elematic.

Compared to cast-in-situ construction, precast uses less cement, water, steel and labour. Casting takes place in a safe and automated factory, which results in constant high quality and minimises waste.

Savings in concrete and energy: Precast performs well in hot climates thanks to its highly advanced thermal insulation properties. Precast concrete buildings absorb and store surplus heat and slowly release it back to the air. In countries where energy is in short supply, precast is an optimal solution as it saves energy and makes homes more comfortable. The hollow cores in precast floors can be used to form cooling systems that use up to 50% less energy than air conditioning.

The most common precast products include hollow-core slabs, wall elements, partition walls, building foundations with precast concrete piles, and beams and columns used for structural frames. Hollow-core slabs are slabs of prestressed concrete typically used in floors of multi-storey buildings. The longitudinal voids running the length of the slab make the structure light compared with a solid slab floor.

Sandwich walls are insulated precast concrete wall panels with two layers of concrete and a layer of insulation in between. Their quick installation speeds up the completion of the building. Controlled thermal insulation lowers a building’s operational costs in hot climates.

Design is key to the successful implementation of precast technology. The prestressed precast system adds flexibility to architectural planning. Hollow-core slabs allow for spans of up to 20 m, much longer than the typical 8 to 10 m used in affordable residential buildings.

Thanks to the longer span, there are fewer load-bearing walls – therefore most rooms in an apartment can be formed by partition walls according to individual needs. Precast buildings come in and unlimited range of colours or finishes.

Speed of construction with precast unbeatable. Depending on architectural complexity, a precast building can be constructed up to twice as fast as a cast-in-situ. Everything is planned carefully: the structural system, connection details, precast element design, and production. This eliminates cost uncertainty and residents know well in advance when it is possible to move in.

Modern precast technology is the fastest way to build high-quality affordable housing. In African countries, precast provides a way to design and construct a sufficient number of suitable homes speedily and at a reasonable cost.

Elematic is the leading supplier of precast concrete production technology worldwide. The company works in over 100 countries on six continents and supplies anything from single machines to production lines and complete precast plants.

Elematic South Africa (Pty) Ltd manufactures precast hollow-core concrete slabs for the South African market. Elematic is a well-established international brand. The company was established in Finland in 1959 and has since set up precast production plants in more than 100 countries worldwide. In Africa, Elematic has delivered precast plants to several countries including Angola, Ghana, Nigeria, South Africa, Tunis, Algeria and Morocco.

As part of the Consolis Group, which focuses on research and development in cement and precast concrete products, Elematic South Africa is backed by extensive knowledge and experience. Elematic South Africa supplies the latest available technology in precast concrete products. Its state-of-the-art production facility on Gauteng’s East Rand is ISO 9001 certified and all its products carry the SABS mark of quality.

More information from Craig Webber,
Tel: +27(0)11 423 2700 / www.elematic.co.za
New concrete pipe plant in Zimbabwe

Ascend Concrete (Pty) Ltd. is a total provider of precast concrete solutions based in Harare, Zimbabwe. They manufacture precast concrete products and have their own fleet of trucks to deliver the products to site. They offer flexible after-sales service and have highly skilled personnel to install their products on project sites.

In keeping with technological market trends and demand, Ascend Concrete in 2012 decided to expand their production capacity and to improve productivity with the strategic intent of exceeding customer expectations. In a bid to explore different production technologies and to get inspiration from other concrete producers, managing director and owner Antony Benesi toured concrete pipe factories in Scandinavia. Based on the outcome and experience from this tour, he decided to invest in a VIHY Multicast SCV 120 production plant from HawkeyePedershaab.

Since installation, the new machine has significantly enhanced product quality and consistency to product specification which has ensured that Ascend Concrete’s customers are supplied with reliable and high quality products. In addition to this, the VIHY Multicast SCV 120 with the unique vertical vibration system gives Ascend Concrete high flexibility and versatility, enabling them to introduce new products to the market – products which Benesi had seen on his trip to Scandinavia and which he was certain would add value to his Zimbabwean clients.

The plant was commissioned in 2014-2015 and Ascend Concrete now supplies concrete products of the highest quality to their markets.

Joint project development

Ascend Concrete and HawkeyePedershaab worked closely together throughout the whole project.

Antony Benesi explains: “I knew HawkeyePedershaab and their machines from previous experience, so I had no doubt they could supply the equipment I needed. But equally important they were a very valuable partner and an incredible source of information in the design phase of the whole plant.

Plant Description

HawkeyePedershaab’s scope of supply:

- VIHY Multicast SCV 120
- Mould equipment for 450-1200 mm pipes
- Mould equipment for 900-1050 mm manhole rings
- Automatic concrete batching and mixing plant
- Concrete laboratory equipment

VIHY Production Technology

VIHY production technology is based on vertically drycast production with vibration and hydraulic pressure as the compaction method and with immediate demoulding. Opposed to other pipe production methods where the concrete is cast horizontal and cured in the mould, the VIHY technology allows repeated use of the same mould every day.

This method has proven its superiority among pipe production methods by securing uniform compaction of all sections of a concrete product, and the low water/cement ratio required with this compaction method secures the possibility of creating a high cube strength (high-density concrete) with the minimum use of cement.

More information from Torben March,
Tel: +45 9645 4193 / email: tmo@hpct.com
www.hpct.com
Six new bridges and four new major structures (overpasses) will be constructed along Phase Two of the Polokwane Eastern Ring Road development which will align the N1-27 towards the south of Polokwane in order to ensure a more streamlined traffic flow on this very congested freeway. The N1 through Polokwane is the main route to Beit Bridge for entry into Zimbabwe and carries an enormous amount of consumer and freight traffic on a daily basis.

Rocla, part of the IS Group, was contracted to supply the culverts and interlocking joint pipes for this project due to its expertise in the manufacture and supply of these products.

“This project commenced in December 2015, and is scheduled to be completed at the end of 2018. The N1-27 will become a four-lane undivided dual carriageway between 10.5 km and 11.5 km and a four-lane divided dual carriageway between 11.5 km and 14.9 km which will give preference to traffic flow on the N1-27 Ring Road,” said Abri Lubbe, site agent for Basil Read the primary contractor.

“In addition, approximately 80 minor culverts are to be constructed on this ring road consisting of new culverts on the new road sections, on the extensions of existing culverts as well as replacing existing culverts with insufficient hydraulic capacity. The minor culverts are prefabricated culverts constructed on in-situ cast floor slabs. The sizes range between 900 x 600 Box Culverts (BC) and 1800 x 600 BC portal culverts and 2500 x1500 SAR Culverts.

“Diameter pipe culverts of 900 mm will also be constructed, and 900 mm diameter median pipes (approximately 930 m long) are to be constructed to address median drainage in cuttings,” said Lubbe.

“We have worked with Rocla before on a variety of projects, so we know the quality of their culverts and associated products – it is very good. We required wide range of culvert sizes to cover vastly differing lengths as well as the appropriate interlocking joint pipes, all of which appear on the Rocla product list but had to be supplied to our engineer’s specifications and delivered to site as required. The competency of the Rocla technicians in assessing and assisting and advising us on the correct technology and product selection was extremely helpful to have on this enormous project. The Rocla pricing was very competitive, and it is one of the key factors that stood in their favour,” said Lubbe.

Part of the Polokwane Eastern Ring Road project includes a bridge structure under the north-south bound B0260A with Ramp C serving to channel the river underneath and precast SATS culverts will be installed due to the load subjected by the amount of fill that will be constructed over the culvert. An estimated 180 no. of 0-5 m SATS culverts will be installed on Ramp C and 480 No. 5 m-10 m SATS culverts will be installed under the north-and south-bound carriageways.

Lubbe added “We were faced with an excavation challenge on the R4540 Roodepoort bridge as blasting demolition due to the tight location of the structure was not possible, so we had to excavate the road for 2.4 m below ground level in order for our work to progress.”

“This is a very large project that has been badly needed in the Polokwane area for some time, and we were pleased to have been selected by Basil Read to work with them on it” said Sarel Pretorius, Rocla sales representative. “Some of the challenges faced so far on this project have included accommodating the daily heavy traffic loads while work was in progress, and this was done with careful planning and re-routing in order to minimise the disruption to traffic flow.”

“I believe we at Rocla have so much experience in major municipal infrastructure developments and upgrades that we were able to offer valuable assistance to Basil Read on this Polokwane Eastern Ring Road project and, coupled with our technical and product expertise, it is a win-win partnership,” said Pretorius.

Rocla manufactures precast concrete infrastructural products through an extensive network of factories throughout South Africa, Namibia and Botswana. Rocla offers specialised precast concrete products for as infrastructure, such as pipes, culverts, manholes, poles and various other related products.

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

More information from Guinevere Thomas,
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The R61-million George, National Route 2, Section 7 project, initiated by the South African National Roads Agency (SANRAL), comprises approximately 8 km of walkways, fencing, retaining walls, a pedestrian bridge crossing the railway line, CCTV and lighting along the N2 between the Paaltsdorp Intersection and the George Mall.

Quite a few fatal accidents were reported on this section of the N2, which runs through a densely populated area, making it crucial to install fenced pathways to ensure the safety of pedestrians on their way to work, school or shopping.

The appointed engineers, SMEC SA, were tasked with designing a safe pedestrian pathway along the highway. With the hilly typography of the region, it was necessary to make use of retaining walls for the cut and fill slope parallel to the highway, to facilitate a stable foundation for the two-metre-wide footpath.

Some 8,500 m² walls were built to hold the paved route, using roughly 90,000 L11 Terraforce retaining blocks with integrated geotextile reinforcement fabric to counter any horizontal and vertical loads. All walls were also placed on a concrete base and each block was reinforced with vertical rebar and a 5% cement mortar mix. A Kaytech filter system was added to accommodate the wet ground conditions typical of this area.

Says Chris van Zyl, owner of Mobicast, a licensee for Terraforce products in the Southern Cape region: “Terraforce is a cost-effective alternative to other products. The ease of use together with the special reinforcement makes it superior to other earth retaining solutions. The completed structure is functional and adds aesthetic value to the area. Landscaping will still be done by the main contractor, Civils 2000.”

More information from Chris van Zyl, Tel: +27(0) 44 874 2268 / www.mobicast.co.za

Civtek chooses Technicrete products for new logistics warehouse

Building aesthetics and the need to conserve energy and natural resources are playing an ever-increasing role in the development of commercial buildings. The selection of products is therefore paramount to the success and final appearance of any project.

To meet the parking and landscaping aesthetic requirements, Civtek (Pty) Ltd, civil engineering contractors, chose Technicrete ISG pavers, kerbs and retaining wall products for City Logistics’ new warehouse based in Benoni, Gauteng. “Technicrete’s price, reliability and track record with Civtek made them a natural partner for us on this project,” said Raymond Metcalfe, contracts manager at Civtek (Pty) Ltd.

“The new warehouse facility for City Logistics comprised 10,750 m² of paved parking and roadways, and Technicrete’s 80-mm DZZ grey interlocking pavers were chosen for their suitability for heavy duty-areas because of their hard wearing surface overlay that is the best option for a logistics facility,” explained Metcalfe.

“Technicrete’s Figure 7 Semi mountable kerbstones were installed in 450 metres of driveways and parking and 6,210 Florawall units were fitted behind the kerbs so that seedlings, planted in over 550 m², could enhance the landscaping aesthetics of our warehouse.”

“The City Logistics warehousing project also comprised a retention dam, and after taking technical advice from the Technicrete ISG’s sales representative, Wayne Oliver, our engineer selected their Earthform retaining wall blocks to support the 150 m² surrounding the dam whilst still giving a pleasing and easy-maintenance finish,” said Metcalfe.

“Our Florawall units give uninhibited root and water penetration, which is needed for true plantability success. It is a good looking and practical product that will enhance any retaining application. It can be stacked up to six layers high provided the grounding is suitable and no additional loads are applied,” said Wayne Oliver from Technicrete ISG.

Oliver continued: “Our DZZ interlocking pavers and our range of kerbing are known for their longevity on projects that require a surface to withstand a heavy and high traffic flow such as industrial and commercial properties are subjected to.”

Technicrete ISG is part of the IS Group which also comprises Rocla and Ocon Brick.

More information from Guinevere Thomas, Tel: +27(0)11 670 7733 / www.technicrete.co.za
HawkeyePedershaab offers a range of productive and flexible production machines for concrete pipes and manholes.

HawkeyePedershaab is a world leader in providing productive and flexible solutions to concrete pipe producers. We are dedicated to use our knowledge and experience from around the world to bring new products and new technology to the precast concrete industry.

From simple machines to fully automated plants incorporating the latest in electronics, robotics, and control technology, HawkeyePedershaab furnishes a total family of solutions.

Our experienced professionals are uniquely qualified to review your needs and have this industry’s most extensive product line available to provide the technology most appropriate for your application.
Revelstone has supplied a selection of paving, tiling and cladding products for the landscaping and beautifying of Mayfair, a Rabie Property Group mixed residential and office park development in Century City, Cape Town. The project was jointly designed by Tim Hughes of Tim Hughes Architect and Michael Borgström of Archilab and the landscape architecture was handled by Jacques Dohse of Planning Partners. Big Ben Construction was the main contractor.

The Revelstone product suite was specified by the professional team to enhance external building façades and to provide linear aesthetic expression to two garden courtyards which form part of the development’s residential component.

“We used Revelstone’s Ravine and Kent Random Edge pavers to create linear bandings to contain and delineate the gravel sections and to provide stepping stones in some of the soft landscapes,” explained Jacques Dohse.

“A combination of Revelstone products was used to beautify the residential blocks’ external staircases.

“We chose Revelstone pavers due to their consistent quality and, because the pavers were loosely packed on a layer of Bidim rather than on a concrete haunch, the extra weight of the Revelstone pavers was an added advantage. Over time the courtyards will be fully hedged and this will add a further linear dimension to them,” added Dohse.

A combination of Revelstone products was used to beautify the residential blocks’ external staircases.

Ravine tiling was employed to finish off the top of the concrete balustrade and Worcester split cladding gave the balustrade walls a rock-like facade. The stair treads were paved with Ravine Bullnose pavers. Another smaller external staircase was tiled with Ravine Bullnose.

Commenting further, Dohse said the two garden courtyards were raised to be 700 mm to a metre below the finished patio level of the first residential block, and retaining walls were built around the perimeters.

“We felt that dropping the courtyard to the same level as the parking basement would have meant locating it in a sea of parking. Moreover, the value of the courtyards would have been lost to the homeowners because the gardens would have been situated two metres lower than the patio levels of the ground floor units.

“Raising the courtyards allowed direct visual interaction with the ground-floor units and gave us the elevation needed to create natural water features of ponds, waterfalls and streams. Rabie prefers its landscaped areas to be quite soft using lawn and indigenous plant life. However, the back ends of the courtyards at The Mayfair are shaded and this prevented us from grassing these areas. So we decided to create a hard landscaping experience using gravel and Revelstone pavers,” concluded Dohse.

More information from Alex Cyprianos,
Tel: +27(0)86 117 3835 / www.revelstone.co.za
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Lafarge South Africa launches EkhayaBag, another industry first

In a first for South Africa, Lafarge South Africa has launched the EkhayaBag, a readymixed bag of concrete for residential use or for small builders.

The readymixed mortar, concrete or Artevia colour comes in a 500-litre bag (equal to 0.5 m³ or 1,200 kg) and won’t set for up to 48 hours, depending on the building schedule.

The bag is intended for customers who don’t require large amounts of concrete, and who don’t have the tools or the inclination to mix it themselves.

“The EkhayaBag simplifies building projects as customers don’t always require big amounts of concrete for their projects. Using this product, customers also don’t need to purchase cement, sand or stone separately, as the EkhayaBag is delivered ready to use. No additional water or mixing is required, resulting in cleaner job sites,” says Alta Theron, general manager for Readymix at Lafarge South Africa.

‘Ekhaya’ means ‘At home’ in isiZulu. “Homes are a pivotal part of communities and at the heart of our company’s ambition of Building better Communities through our range of innovative products and solutions,” added Theron.

The EkhayaBag product range includes:
- EkhayaBag concrete: which is available in two grades and can be used for domestic foundations, garage and house floors to light commercial floors, concrete walls as well as columns.
- EkhayaBag mortar: available in a 12, 24 and 48 hours workable mix and can be used for laying masonry units such as bricks, blocks and stone.
- EkhayaBag Artevia® Colour: a range of pigmented concretes in sandstone, mahogany and charcoal colour tones that can be used for floors, driveways, braai areas, swimming pool surrounds and patios.

The bags can only be ordered directly from the Lafarge Customer Service Centre on 0860 523 274.

Says Theron: “We are the first building materials company in the country to provide this unique value proposition, once again proving that we put innovation at the forefront of our business, and that we are always aiming to provide solutions for our customers. “Homes are a pivotal part of communities and at the heart of our company’s ambition of Building better communities through our range of innovative products and solutions.”

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CHRYSO Equalis 250 hailed as an exciting move for contractors

The introduction of CHRYSO® Equalis 250 will give hard-pressed contractors a competitive edge in the local construction market. Since its launch only a few months ago, this innovative admixture has already set a new benchmark for concrete workability.

CHRYSO Equalis 250 allows concrete workability to be extended by up to four hours, without impairing early strengths.

Eddie Correia, general manager technical services for CHRYSO Southern Africa, says this 21st century admixture facilitates greater flexibility when placing concrete, allowing contractors to construct complex concrete structures with greater ease.

Construction sites today operate under numerous constraints, including stringent placement conditions such as control of the water/binder ratio, safety during formwork removal, delayed pouring and other stringent placement conditions.

In addition to this, project sites are often some distance from readymix plants and readymix trucks have to negotiate dense road traffic conditions, all of which add to the complexities of concrete mix design.

“Use of CHRYSO® Equalis 250 will allow large amounts of concrete to be transported and placed, without having to change the mix design as the admixture will keep the concrete alive from a slump point of view, without affecting the setting times,” Correia says.

The admixture also allows significantly increased amounts of accelerator to be used, without impairing workability retention. This allows the contractor to pursue extremely high early strengths.

“Significantly,” Correia says, “there is no other comparable admixture product available.”

Developed by CHRYSO’s Research Centre, CHRYSO® Equalis 250 is based on new patented polymer technologies. The development is in line with this leading cement additives and concrete admixtures producer’s drive towards green technology and the need to produce more extended concretes, enabling contractors to achieve a lower carbon footprint.

More information from Kirsten Kelly,
Tel: +27(0)11 395 9700 / www.chryso.com
In dry climate countries and wherever water is a scarce resource, FCB Horomill® offers the opportunity to grind cement or any other mineral without a drop of water.

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For ultimate sustainability, trust Fives ! www.fivesgroup.com
New CWA 10 integral waterproofer for Temba Waterworks Project

Construction chemicals specialist CHRYSO Southern Africa supplied its CHRYSO® CWA 10 integral waterproofing admixture at the Temba Waterworks project undertaken by Group Five Civil Engineering. The readymix supplier for the project was Chromecrete.

Deon Klopper, technical sales consultant CHRYSO Southern Africa, says that the contract award vindicated a lengthy testing process that ultimately resulted in “a few mixes and products” being approved. The most important of these was CHRYSO® CWA 10, an admixture formulated specifically for water-retaining structures. The total concrete work on the project was 17,000 m³, of which 14,000 m³ contained CHRYSO® CWA 10 in the mix.

Klopper explains that when CHRYSO® CWA 10 is added to concrete a chemical reaction with water results in the formation of long, narrow crystals that fill in the pores, capillaries and hairline cracks of the concrete.

“The crystals effectively block the pores rendering the concrete dense and waterproof, as well as making it maintenance free and durable,” Klopper says.

CHRYSO® CWA 10 is used mainly in concrete subjected to hydrostatic conditions. The dosage rate is typically 0.8% of the cementitious content of an approved mix design. CHRYSO® CWA 10 is compatible with many other admixtures and supplementary cementitious materials and it will not affect the workability or entrained air content.

“CWA 10 transforms an entire concrete structure into an impermeable water barrier with lasting integral waterproofing properties,” he says.

CHRYSO Southern Africa manufactures and distributes two integral waterproofing products, CHRYSO® CWA 10 and CHRYSO® Fuge B. These are added directly to the concrete mix at the time of batching. “Integral waterproofing is therefore a permanent solution as it is distributed uniformly throughout the concrete and not just on the surface,” Klopper explains.

The major benefit is that it reduces the permeability of concrete structures, making the concrete more durable. Concrete with a low permeability can significantly reduce the risk of frost damage, acid and sulphate attack, steel corrosion, alkali aggregate reaction and efflorescence. Klopper explains that CHRYSO’s integral waterproofing admixtures all reduce water absorption and/or the passage of water through the hardened concrete.

CHRYSO® Fuge B is a pore/capillary blocking admixture. It combines with components of the concrete, effectively forming deposits which line the walls of the pores and capillaries and as a result thereof water ingress is effectively eliminated. It is mostly used in non-hydrostatic conditions.

Although it is not classified as an integral waterproofer, CHRYSO® Pareflo 20 is used in bricks, blocks and roof tiles to specifically reduce efflorescence caused by moisture that conveys calcium hydroxide through the capillaries in porous concrete to the surface.

“These admixtures are a simple and effortless means to introduce integral waterproofing into concrete. They are added directly to the concrete, mixed and placed on site, with no need for surface preparation or excavation. This not only speeds up the construction process but reduces labour costs as well as improving quality,” Klopper concludes.

More information from Kirsten Kelly, Tel: +27(0)11 395 9700 / www.chryso.com
AfriSam dry mortar offers numerous benefits

The AfriSam Dry Mortar solution offers contractors a number of benefits in addition to time and cost savings. Using a pre-blended mortar mix will ensure optimum product integrity and consequently quality construction on a project.

Manual blending of a mortar is labour intensive and time consuming, and requires careful attention to ensure the correct ratios of sand and cement are used. Incorrect blending or mixing will certainly affect the final product and in the case of plaster result in cracking.

This Class II mortar has been specially engineered as a dual-purpose mix that can be used for both mortar and plaster work. It will achieve a minimum strength of 5 MPa at 28 days.

The SANS 50197-compliant AfriSam All Purpose Cement was selected as this cement offers a spectrum of functional attributes that provide customers with guaranteed quality performance in concrete, mortar and plaster applications. This advanced composite cement contains milled clinker as well as advanced mineral components and additives, and is therefore the ideal component for the AfriSam Dry Mortar product.

The innovative AfriSam Dry Mortar solution is being produced in partnership with Stick a Tile at a bespoke plant in Meyerton. Sand, quarried on the site, is dried to the requisite level, and blended with AfriSam’s All Purpose Cement in a controlled environment to produce this quality mix.

The fully automated plant has a 400-ton-per-day capacity and batch printouts are produced to verify consistency and ensure optimum quality. Samples of the dry mortar product are taken at regular intervals and tested at AfriSam’s Centre of Product Excellence to ensure compliance with the relevant SANS specifications.

The AfriSam Dry Mortar product is supplied in either 10-ton or 20-ton silos offering optimum flexibility as customers can then decide on the size needed based on individual project requirements.

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

PMSA celebrates 40 years of innovation and customer service

The leading manufacturer of brick, block and paving machines on the continent, PMSA celebrates its 40th anniversary this year. The OEM continues to focus on technological development, such as the introduction of its new Ultravibe vibrating system.

PMSA has been fine-tuning its internal processes and systems over the last five years, from automated tracking of spares and parts to a new CRM system. “We have expended a large amount of effort and energy on putting systems in place to enable the company to grow,” comments MD Walter Ebeling.

The company is now in an ideal position to focus on ongoing technical innovation, such as the launch of Ultravibe at Totally Concrete in May 2016. Not only can the new technology be retrofitted to its large range of existing machines, but it will also form the basis of a brand-new machine under development by PMSA. “This will be a large pallet, 1,400 by 1,100 mm production board machine incorporating all of our latest advances in its design,” Ebeling reveals.

“We undertook these latest developments to allow our customers to be more productive. The best means of achieving this is for your equipment to be more reliable. That is why we have been in business for 40 years, as we are continually improving our machines and technology,” Ebeling elaborates.

One example of PMSA’s ongoing product development is its new Eco range of automated handling systems. This gives customers the option of automated handling plants at a far more affordable price compared with the more costly top-of-the-range systems. The new Eco range includes forklift options as opposed to more conventional but higher-cost finger and transfer car systems.

“With the building and construction industry facing pressure from reduced margins and a lack of new projects, PMSA is ideally positioned to help its customers fine-tune their existing assets so as to boost productivity and final quality,” Ebeling stresses. “We are unique in the industry in being a specialist manufacturer that is able to cover the entire business spectrum, from establishing a business to boosting the bottom line through the application of appropriate technology.”

More information from Quintin Booysen,
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Walter Ebeling MD at PMSA.
Zero Cost of Ownership is the Mercedes-Benz Trucks’ promise

Over four years / 800,000 km Mercedes-Benz Trucks deliver fuel and maintenance savings with a competitive buy-back, thereby achieving Zero Cost of Ownership.

It doesn’t take a mathematician to know that any and all savings add up, and this is exactly what Mercedes-Benz Trucks has achieved by introducing the concept of Zero Cost of Ownership – thereby lifting the load off truck operators.

Unheard of fuel savings can be achieved as a result of Mercedes-Benz Trucks’ product innovations such as hypoid rear axles, direct drive transmission and the FleetBoard® driver and vehicle management systems. In addition, there is a TruckStore buy-back at competitive residual values and the Telligent® Maintenance will ensure that customers will enjoy incredible savings on services. All this means that, as an operator, every cent that was paid for the Actros 2646LS/33 DD is earned back.

“Earning back every cent you paid for your Mercedes-Benz Actros 2646LS/33 DD may sound too good to be true, but it really is possible. Our quest has always been to offer unmatched value chain offerings coupled with proven quality products. This is further demonstration of our commitment to achieving reduced Total Cost of Ownership and constantly improving fuel efficiency for our customers,” says Christo Kleynhans, product manager for Mercedes-Benz Trucks.

“Zero Cost of Ownership ensures that our customers benefit from the combination of product enhancements and value chain improvements that we offer.”

Using the Mercedes-Benz Actros 2646LS/33DD over four years or 800,000 km, the savings below can be realised:

- Fuel Savings: Fuel efficiency is a key topic for our customers, and comprehensive tests have proven that, using the Mercedes-Benz Actros 2646LS/33DD compared to the Actros 2644LS/33 HUB, a customer can achieve incredible fuel savings with a combination of hypoid axles and direct drive transmission.
- FleetBoard: when optimally utilised, this state-of-the-art vehicle and driver management system ensures that the operator benefits from significantly lower fuel consumption.
- Maintenance Savings: The cost of keeping a vehicle on the road plays a major part in determining Total Cost of Ownership of a vehicle, and with Telligent® Maintenance, maintenance costs can be dramatically reduced.
- Buy Back: A competitive Residual Value from TruckStore ensures that you get real value when returning your truck.

Over four years or 800,000 km, Mercedes-Benz Trucks achieved Zero Cost of Ownership by summing up all the contributions of the respective product enhancements on the Actros 2646LS/33D that achieve fuel savings, maintenance savings, and a competitive residual value. Combining the above-mentioned elements effectively equates to the customer net price on the Actros 2646LS/33DD, resulting in Zero Cost of Ownership.

More information from Sibusiso Mkwanazi,
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www.mercedes-benzsa.co.za
Built environment professionals are now placing greater demands on concrete to flow in a certain way and they are looking for better finishes.

Concretes using CHRYSO’s Fluid Premia 500 range have repeatedly met and even exceeded these requirements. The technology provides excellent water reduction properties that are necessary to obtain the targeted concrete flowability, optimal viscosity, excellent setting times and superior early strengths. The plasticiser also enables easy and consistent placement even in applications with congested reinforcement, while providing a very good quality surfacing after the concrete has hardened.

The foundation of Fluid Premia 500 range is CHRYSO’s Fill Free® technology system. It is a modified polycarboxylate ether-based superplasticiser technology that does not have thixotropic properties, aiding in producing a concrete that is cohesive, but with moderate viscosity.

Dr Pascal Boustingorry, interface physical chemistry team manager of CHRYSO, says the Fill Free® system was initially developed for CHRYSO’s precast concrete customers to help them overcome some of the challenges they were encountering with their self-compacting concrete (SCC) mixes. “They described their concrete as sticky, or heavy and, therefore, it would not flow very far from the casting point,” Boustingorry says.

“To find a solution we focused on thixotropy, which assesses the way in which the viscosity of the concrete increases over time. By using rheological tools and methods, we were able to formulate plasticisers to slow this down with minimal impact on early concrete strengths.”

SCC mixes which incorporated the CHRYSO Fluid Premia 500 range have continuously outperformed materials using other plasticisers in CHRYSO’s laboratories, using the conventional testing methods for precast applications.

Once the correct viscosity of the concrete has been qualified using a V-funnel it is poured into the gutter-maze, which simulates the abilities of SCC to fill elongated or complex forms.

Using CHRYSO Fluid Premia 500 range, the concrete fills the gutter maze quickly and with very little effort. Boustingorry has observed that with other products concretes require operator intervention to ensure homogenous and uniform casting. “Our tests have shown that concrete using the CHRYSO Fluid Premia 500 range allows for an excellent and consistent quality surface finish while reducing costs because no intervention is needed from the operator,” he says.

CHRYSO has shown that it has a solution for a market that wants more than just concrete workability, workability retention and strength.
Sika crystallises 100 years of waterproofing experience with the launch of their latest waterproofing innovation, Sika WT200 P ‘self-healing’ crystalline admixture.

The benefits of Sika’s WT Series have already been established on significant projects around the world. Sika WT-200 P is a new admixture powder that is added directly to the ready-mix load in the construction vehicle. This crystalline admixture enables concrete cracks to ‘self-heal’ and therefore to block water, even when under extreme hydrostatic pressure; and it will continue to reactivate whenever water is present.

The need for such a solution is critical as concrete is a porous material. The many pores or voids in concrete are created by excess water in the mix that is not used in the chemical reaction that hardens the concrete. Once the concrete is dry, external water finds these pores and seeps through.

There are many instances however where it is essential that water is unable to travel though concrete. Swimming pools, water-retaining structures, dams and wastewater treatment structures need to keep water in. Basements, parking garages, utility or plant rooms and tunnels need to keep water out.

When present in hardened concrete, Sika WT-200 P forms a non-soluble crystalline material throughout the pore and capillary structure and seals the concrete permanently against penetration of water or other liquids. In addition, the special formula and ingredients of Sika WT-200 P enhance the ‘self-healing’ properties of concrete.

The new Sika WT series in waterproof concrete delivers the following advantages:

• Service life of the structure is increased
• Durability and sustainability of the hardened concrete is significantly improved
• Water-tightness is ensured without other costly measures
• Maintenance costs are reduced

Sika WT-200 P is packaged in plastic buckets, each containing 6 x 1.75-kg bags. These bags are disposable so they can be thrown directly into back of the ready-mix truck. The dose rate is 1% by weight of cement.

For more information on Sika products and systems, visit www.sika.co.za

New Bosch drill bit easily breaks into reinforced concrete

Bosch Power Tools, with its 40 years of experience in design and in-house production, has introduced the new 6-mm SDS plus-5X for professionals, which allows the user to quickly drill into rebar – significantly increasing efficiency for projects.

Bosch Power Tools SA Accessories senior brand manager Campbell Mhodi says drilling in reinforced concrete is one of the biggest challenges when working. “When hitting rebar, the drill bit often gets stuck and breaks, even when immediately withdrawn. As a result, the user loses valuable time and money.”

The SDS plus drill bit is suitable for residential, commercial and construction industries. It is designed to handle daily intensive drilling in reinforced concrete, thanks to its innovative four-cutter drill head geometry with at least one cutting edge, which guarantees to continuously attack the rebar from any angle it hits. This prevents the drill bit from getting stuck in rebar, hence it doesn’t break.

The centre tip of the drill bit facilitates the start of drilling in concrete and ensures deep and stable centring. Its unique turn angle head design enables excellent dust removal when drilling. It boasts a four flute design to effortlessly transport dust out quickly, resulting in a higher drilling speed and less wear in the channels. The Tungsten Carbide head architecture and composition ensures better quality and performance in concrete with rebar than any two-cutter in the market.

More information from Campbell Mhodi, Tel: +27 (0)11 651 9854
www.bosch-pt.co.za/powertools
To meet and even to exceed our clients’ expectations, Fives has developed and implemented a cement grinding plant able to produce various types of cement, several of which have a high cement to clinker ratio, and is also able to use additives having a high moisture content. In addition, Fives FCB has taken environmental issues into account and has increased the usage of alternative fuels rather than fuel oil for drying of additives.

Fives provides a proven solution based on FCB Horomill® technology, enabling an efficient drying of additives within the process, thanks to its genuine arrangement of separated grinding and classification processes combined with a flash dryer within the circuit. In doing so, the complete system can produce the highest cement quality at the lowest cost.

This arrangement has recently been implemented and successfully commissioned in the Philippines at the Teresa and Norzagaray plants, which both had similar production targets.

**FCB Horomill® technology is committed to sustainability**

With its ability to grind any type of cement without water injection, with the lowest energy consumption, and the incorporation of a large amounts of additives, the FCB Horomill demonstrates its commitment to sustainability and protecting the planet and its resources.

These features make the Horomill synonymous with the lowest carbon footprint and, in addition, with a very low wear rate and high availability.

The advantages of FCB Horomill® system are:

- Energy savings;
- Low installed power;
- No water injection;
- Better product quality;
- Low wear rate and low maintenance costs;
- High reliability of parallel gear trains reducer;
- Full automatic mode, for start/stop operations as for switch of product;
- Same nominal capacity during the whole lifetime of wear parts;
- Low noise;
- Automatic preventive maintenance of the roller sleeve (optional).

More information from Loïc Pottier
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Email: loic.pottier@fivesgroup.com

The Norzagaray grinding plant in the Philippines.

FCB Horomill® in the Hermosillo plant (Holcim- Apasco, Mexico).

FCB Horomill® in the Teresa plant (Lafarge Republic Inc, Philippines).
South Africa’s housing shortage may be solved faster, cheaper, and environmentally friendlier. By mixing cement with polystyrene, and an additive – a technique that is widely used in Scandinavia and northern Europe – Selcrete wants to do just that. The company’s pilot project, phase one of a revamped daycare centre in Khayelitsha, recently became fully operational.

One of the problems at Noluthando daycare centre, which cares for over 265 children aged two months to six years, is that its timber structures don’t offer adequate protection against the summer heat, cold winters, and fires. “For phase 1, we have helped build a small utility hall, an administration block, and a starter kindergarten classroom using our product – blocks made of cement, expanded polystyrene beads, water, and a binding agent,” says Graeme Horwood, Selcrete’s CEO. “Twelve new structures will be built in total.”

Improved protection against fires, to which the densely populated township is prone, and superior insulation are two main improvements at Noluthando, Horwood says. “Selcrete makes a building two to three times better insulated compared to structures made of bricks and mortar. It offers better protection against fires and fungus too,” he says. “The product is thus very suitable for South Africa’s cold and often wet winters and hot summers. Selcrete is inspired by techniques used in Norway, a country where weather conditions are really extreme. If it works there, it works everywhere.”

Noluthando might be the first, it certainly isn’t the last Selcrete project. “We are negotiating a number of commercial and residential projects in Gauteng, KwaZulu-Natal, and also the Western Cape. In Knysna, we are currently building an upmarket residence. On behalf of Rotary for the Knysna Educational Trust, we are working on a social responsibility re-build in Khayalethu, a township near Knysna,” says Horwood.

Selcrete is relevant for the South African market because projects can be realised in half the time of conventional homes. This could translate to a 25% cost reduction, Horwood says. “It is an attractive solution for budget-conscious projects like Noluthando, or even for the low-cost housing sector, where quality, affordability, and time efficiency are very important factors. Delivery of low-cost homes in South Africa needs to take place, and quickly too,” he continues, referring to Stats SA’s latest General Household Survey.

Published in April 2016, the report suggests that 13.1% of South Africans live in informal settlements. “We can deliver better quality homes, and other buildings too, more efficiently and cost-competitively, while being better for the environment.”

Selcrete is a greener product due to the use of recycled polystyrene. “Because our blocks are made on site, they don’t have to be transported, saving energy and minimising carbon emissions,” he says. “Better insulation means that Selcrete buildings require less energy for heating and cooling. This has a positive impact on carbon emissions, but also on people’s financial situation,” Horwood says, noting that low income households typically spend more of their income on electricity than mid- or high-income households.

Mavis Mbaba, who founded Noluthando 22 years ago when she opened her home to 45 children who needed care while their parents were at work, is excited by the improvements to her daycare centre. She says: “These new buildings will change everything at Noluthando. From now on, the children can do activities in a safe environment, without the risk of fires. Fires are a risk when working in a wooden building. These new buildings don’t require as much maintenance as the wooden ones. Maintenance costs a lot of money. So yes, I am very, very happy indeed.”

More information from Graeme Horwood, 
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About Selcrete:
Selcrete was inspired by and named after the Selvaag Group. Founded in the 1950s by Norwegian engineer Olav Selvaag, the company pioneered innovative construction techniques that achieved substantial cost and time savings compared with traditional construction techniques. In December 2015, after four years of development, Selcrete received the Agrément South Africa stamp of approval.
Health and safety excellence are key drivers for Cargo Carriers

Cargo Carriers, South Africa’s premium transportation, logistics and supply chain service provider, ensures the health and safety of its employees and customers are nurtured and well managed. It forms a part of the Accountability value so passionately enshrined by founder Des Bolton back in 1956. This still holds true today, 60 years later, where health and safety awareness is highly visible in the company offices, boardrooms and branches. The Sasolburg, Secunda and Cape Town branches continually achieve a score of over 95%.

Companies dealing with technology, Cargo Carriers is a signatory to the Responsible Care programme of CAIA (Chemical Allied Industry Association), which promotes the safe handling and transportation of hazardous substances. The Sasolburg, Secunda and Cape Town branches have been rated as ‘preferred haulier’ in terms of the CAIA criteria. The Sasolburg branch continually achieves a score of over 95%.

Regular external and internal audits are conducted to ensure that high standards are maintained. Internal OHSAS 18001 (Occupational Health & Safety Assessment Series) compliance checks are also conducted bi-annually to confirm the logistics provider implements its own internal policies and procedures in its branches. External OHSAS 18001 accreditation is carried out annually and the SQAS (Safety Quality Assessment System) assessment is carried out every two years. Legal compliance experts also conduct audits to ensure the company is compliant.

Information gained assists the company in research and development of new and improved methodologies to ensure the haulier is constantly top of its game and providing the best for its employees and customers. Ongoing on the topic of health and safety. Regular communication, known as ‘Toolbox Talk,’ is shared with employees each week. Learning, improvements, successes and challenges are documented in this internally driven educational programme, which serves to foster a learning culture. Being in a practical business that poses obvious dangers, daily briefings are held at branches around the country.

This is where information about safety is discussed amongst drivers before setting out on their routes, ensuring safety is constantly top of mind. Branches are responsible for training their employees and ensuring they are in a fit state of health and that all safety compliance standards are met, maintained and surpassed.

Murray Bolton, CEO of Cargo Carriers believes in finding safe solutions for every customer’s need. The Cargo Way espouses strong values and a high work ethic. “Health and Safety are intrinsic to the Cargo Carriers culture. We are committed to ensuring a safe and healthy working environment for our most important asset, our employees; aligning to our value of Accountability,” concludes Bolton.

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BIM and your business

By Scott Chatterton, International BIM Lead for HDR Inc. & Director of CanBIM

Whether you’re a designer, contractor, sub-trade, or supplier, Building Information Modelling (BIM) has a role to play in your business.

Technology has been a major factor in the architecture, engineering and construction (AEC) industries throughout history and with the advancement of technology since the beginning of the digital age in the 1970s, computers and software have become ubiquitous. The advent of computer-aided design not only advanced the design and construction process, but also improved efficiency in construction and building performance.

Recently, we have taken another technological leap; BIM is dramatically impacting all aspects of the AEC industry. Since the late 1990s, designers – both in architecture and engineering – have been using 3D digital modelling to improve their processes. Designing today’s modern buildings would not be possible without BIM, as leaders in the industry take advantage of BIM’s visualisation and coordination benefits. Contractors quickly realised the benefits of BIM for construction management. Being able to construct a building digitally, prior to starting construction, has innumerable benefits. BIM is a valuable tool for construction sequencing, material quantification and cost estimation.

Regardless of your role in the AEC industry, BIM will touch all aspects of your business: your workflow, how you acquire projects and how you complete your delivered product.

There is no doubt the transition to BIM has its challenges, but the long-term benefits are significant. There are some tactics to consider when integrating BIM into your organisation:

- **Culture:** One of the biggest changes will be cultural. Moving to a digital environment requires a shift away from traditional processes, and people typically do not like change. Transition people slowly; give them plentiful training resources and make it clear that they have permission to learn.
- **Technology:** Your 386 computers running Windows 98 cannot handle BIM. It may be time to overhaul your network, including computers and software. Think of this overhaul as an investment in the future. Providing your people with the right tools will ease the transition to BIM.
- **Process:** Adopting BIM creates an excellent opportunity for revamping your entire workflow. Utilising BIM will create efficiencies and streamline your processes, allowing you to deliver a better product, faster.

Whether you are an organisation of 1 or 10,000, making BIM part of your work will fundamentally change your production. Embrace this change and commit to the integration process, and you will reap the rewards of a strong, efficient, modern business that is poised to take on all BIM projects.

**About Scott Chatterton**

Scott Chatterton is the International BIM Lead for HDR Inc. and sits on the board of directors for the Canada BIM Council. His extensive knowledge of BIM in the design and construction industry enables him to create and apply efficient design and construction practices using the latest BIM technology and techniques. As a result of his experience, Scott is a sought after author and presenter at BIM-related conferences, addressing ideas on BIM workflow, processes and protocols.
There is very little doubt that South Africa is set to become part of the global digital revolution. A recent report published indicated that South Africa has finally emerged to join the 37 countries in adopting the BIM initiative.

The BIM Institute came into task in May 2015 as an independent body to enable technical experts to discuss digital construction solutions that can be adopted by professionals working within the construction sector. The initial task of the BIM Institute was to promote the BIM Protocol through its various partners and steering committee members. The portfolio very quickly evolved with the investment from industry software vendors and other professionals to help support the BIM initiative for Africa.

The success of the BIM conference in March 2016 and the Construction IT Expo in May saw associations such as SAIA and ASAQS supporting the BIM process.

Now in our second year, the BIM Institute has evolved to include educational activities, owing to the growing knowledge needs of the construction sector. The key objective of promoting BIM at partnered events such our very own BIM BAM BOOM workshop (22 - 23 February 2017) and the Digital Construction Expo (23 - 24 May 2017) will be to explore solutions to optimise the effectiveness of digital design technologies within private and public infrastructure projects.

A key tenet to the Digital Construction Expo two-day event is for software vendors to exhibit and promote technical knowledge exchange between professionals, private and public sector participants in the built environment which will hopefully assist in closing the knowledge gap that exists between us and other first world countries.

More specifically the BIM BAM BOOM workshop in February 2017 is co-located with the Smart Building Conference and will provide a special BIM workshop platform to educate industry design professionals and members of National Department of Public Works and also other key decision makers on implementing international BIM standards and processes on projects in Africa.

This will also enable BIM members to engage and to recognise that public assets can be used as a test case and lead by example to the wider country objectives on these policy directives. The aim with both 2017 events is to identify an opportunity which speaks to all and starts sowing the seeds in delivering BIM on projects in Africa. The final overall deliverable is to also ensure opportunities are developed locally for professionals within our industry.

The BIM Institute is in an ideal position as a non-biased entity to create partnerships and together explore solutions to ‘optimise the effectiveness of digital technologies’ in unity with our international partners, Canadian BIM Council (CanBIM) and AEC (UK).

A key tenet to the BIM Institute is promotion of partners, software vendors and professionals, which will assist in introducing sustainable change and direct knowledge exchange. The participation of universities and institutions can also help us grow graduates and professionals in digital construction skills, paving the way for all to have a role in creating a digital construction path for the country and continent.

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Savings realised through Building Information Modelling

The saying ‘knowledge is power’ is a truism embodied in Building Information Modelling (BIM). A process involving the generation and management of digital representations of physical and functional characteristics of places, it is the embedded information that makes this technology so powerful.

Used in all design disciplines including town planning, geospatial and all build-related disciplines, Nicholas Karassavas, BIM Manager at Arup South Africa, explains: “The software packages differ from architectural drafting tools, such as AutoCAD, by allowing the addition of further information such as time, cost, manufacturers’ details, sustainability and maintenance information to the building model. Additionally, the information remains valid for the life of the building, which is showing substantial savings in facilities management and ultimately reducing risk in design, construction and finance management.”

In the conventional construction model, each discipline works in a silo and operates from its own two-dimensional linear drawing, often unaware of changes made in another discipline that may have significant impact on its own portfolio. To understand the value of BIM in contrast to the conventional model, Karassavas suggests imagining that a single unit (like a Lego brick) represents each element of the building, such as a light fixture.

“Each discipline attaches its ‘recipe’ to that brick. It could be the photometric details and electrical specs, the costs and supplier, the style, colour, model, etc. Inserted into the 3D model, the ‘brick’ immediately shows up any coordination issues, such as a column blocking the light or an air conditioning outlet in the same space. It also relays associated data such as quantity, position and other pertinent information required by the different players involved, from designing through to construction and then facility management.

“To understand the value of BIM in contrast to the conventional model, Karassavas suggests imagining that a single unit (like a Lego brick) represents each element of the building, such as a light fixture.

“A key saving from the contractor’s perspective is time. Only one model carries the truth and, because it is 3D and parametric, calculating elements into an accurate project plan removes the traditional delays caused by overlapping construction-sequencing details. For instance, scaffolding can be arranged one moment – currently, it is quite common for scaffolding to be erected, removed and then re-erected by another supplier for another aspect of construction,” says Karassavas.

Arup South Africa’s BIM expertise has strong support from the UK offices. Driven by architects, engineers and, in the UK, mandated by the UK government, BIM continues to grow worldwide. A survey held in April this year of 1,000 UK construction professionals, revealed that BIM adoption has increased from 13% in 2010 to 54% in 2015. Furthermore, early indications in UK government buildings have shown an 8% saving in construction costs and a 10% facilities management saving since 2010. However, further extrapolation points towards a 27% facilities management saving across the life of a building.

Speaking to delegates at the recently held ‘BIM Infinity and Beyond’ talks at Construction IT, Casey Rutland, associate director of Arup UK, commented, “BIM is an exciting and positive way of working that offers many different methods of collaboration on project design. Its success and innovation can best be described as ‘hitting a target with a sniper rifle’ as opposed to missing with a shotgun’, thereby reducing wastage throughout every stage of a development. The training can be intense and intimidating but none of these challenges are insurmountable and the benefits are immense.”

Arup’s projects across South Africa clearly demonstrate the benefits. Karassavas – himself an international guest speaker on BIM – explains: “For our clients, the savings come not only in the latter stages of a building’s life, but also in asset management throughout the lifespan. The BIM model can go so far as to identify all elements of a building – right down to the level of furniture – and tag it. Now if someone moves office, you simply move the elements on the virtual plan, and asset management becomes much easier.”

The future of BIM

“It’s exciting!” says Karassavas. “Virtual reality lenses will enable us to ‘see’ the 3D model on a table, as it would appear from the ground and, like so many sci-fi films, allow us to unpack and rebuild without any costs to produce the optimum building. These 3D models will eventually be stored in the cloud and will make future additions or alterations so much simpler to implement.”

Arup continues to be at the very forefront of the successful application of BIM, ably demonstrated through the recent ProjectOVE – a 35-storey, 170-m-tall BIM building in the shape of a human body. Additionally in 2015, Arup introduced a ‘BIM Maturity Measure Tool’ to measure the maturity and level of success of BIM implementation. This model enables assessments to be made based on how well different projects have been completed, with scope for comparing the statistics collected.

“BIM is going to make major shifts in the way people design, construct and manage infrastructure and is the most exciting thing to happen to the construction industry, since the arrival of the computer,” concludes Karassavas.

View the video Virtually Human: Creating ProjectOVE at https://goo.gl/YQ4wPf

More information at www.arup.com
The current global context of BIM Standards and protocols

By Anine Eschberger Wortmann

The concept of using digital models and specifications for simulations is firmly entrenched in several industries which require measurable and repeatable methodologies. This includes the manufacturing and engineering industries in order to ensure service and product integrity on behalf of the client. Within the current “digital construction era” the construction industry is following suit as Building Information Modelling (BIM) is widely adopted globally. The construction industry differs from the manufacturing industries however as each project is a unique endeavour.

Numerous countries worldwide have implemented open and vendor-neutral BIM standards and protocols in order to mandate BIM on public sector projects. This is necessary to re-organise work flows which will standardise and thus optimise real-time collaboration among construction stakeholders in a common data environment. This increase in efficiency of operations and communication from all stakeholders will create data-rich environments which in turn will add value for clients.

BIM standards and protocols should be context-specific and ideally be developed collectively by local government agencies, professional bodies, voluntary organisations and research committees. Unfortunately existing international BIM standards and protocols cannot merely be lifted or adapted to other contexts as each context differs in various aspects which may include the following: procurement processes, design processes, construction methods and government policies.

Most developed countries have promoted BIM implementation and practice. The United States of America’s General Services Administration is currently pioneering the implementation of BIM on public projects and has mandated BIM usage for spatial program validation since 2007. Denmark, Norway and Finland are currently leading the building design and construction industry in terms of open BIM standards and protocols as they have mandated the use of BIM on government projects since 2007. The Scandinavian region has developed the technology and vendor-neutral standard Industry Foundation Classes (IFCs), one of the most popular collaboration formats used in BIM.

BIM-based designs have been mandated in Singapore since 2013 and in South Korea since 2012. France is aiming to regulate BIM implementation by 2017. The United Kingdom and Australia have both mandated BIM for government projects since the first half of 2016. The government of the United Kingdom additionally mandated Level 2 BIM adoption since the first half of 2016 as they have gained increased support from industry bodies and professionals.

This requires collaboration between stakeholders as design information should be shared in a common file format. However this does not necessarily require working on a single shared model. The United Kingdom’s standards are generally straightforward and logical, it is also clear how different BIM standard documents and protocols relate to each other as they have been developed in conjunction. Although USA BIM standards and protocols are more fragmented as it appears that most have been developed in isolation, it can nevertheless be argued that they are more context-specific.

The potential of both Information and Communication Technology (ICT) and BIM in Africa remains largely untapped and lags behind the global context.

The South African construction industry differs from the global top-down regulatory model as there are currently no mandated or national best practice BIM standards or protocols. Organisations implement company-specific BIM standards and protocols at best with isolated incidents of cross-industry alliances. The company-specific standards may be difficult to share or replicate and will thus serve to hinder design collaboration.

Furthermore there is little interest from local government agencies, professional bodies and voluntary organisations to act as driving forces in the development of national BIM standards and protocols, despite the existence of a vibrant client base. South Africa thus lags behind numerous countries in BIM implementation and practice.

The South African BIM Institute has stepped into this gap as they are currently developing a local BIM protocol based on the AEC UK Technology Protocol. This is being developed under an MOA with the South African Institute for Architects.

Barriers to BIM standards and protocols, apart from the lack of understanding, include contractual issues, continual training and education and support from top management of construction organisations.

Due to the nature of collaboration there is much uncertainty about the quality of BIM models, the reliability of cloud technologies, data ownership as well as intellectual property rights. Furthermore continual training and education is crucial in adopting BIM; this typically requires substantial up-front costs of which managers and clients cannot immediately see the return on investment.

BIM standards and protocols should be the core of any construction project in order to reap the full benefits of BIM. It aims to not only standardise and optimise consistent workflows between stakeholders, but also to reduce project delays and cost overruns which in turn can potentially increase the overall economic development in any given context. The adoption of BIM standards and protocols in a South African context will force the local construction industry to catch up with global BIM adoption and enable them to compete on an equal footing in foreign markets.

More information at www.biminstitute.org.za

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Tossing technical knowledge to the heavens

America has given the world so many interesting things: bazookas, beach balls, barcode readers, and barbed wire. Now it has produced... the concrete Frisbee, writes Jan de Beer.

With 2016 having been an Olympic Games year, it is perhaps fitting to look at a novel, but very special concrete sport. It is a competition that will bring joy to any concrete technologist but is unlikely to be included in the sports that win medals at the Olympics just yet. Well you never know, they even played golf in Rio this year.

We’re talking here about the art of concrete Frisbee throwing – a sport that is fast catching on among the concrete community in the USA. Back in 1985, the respected American journal, Concrete, described how students in the Concrete Technology Programme at Alpena Community College in Michigan, had developed what must have been a pioneering annual Concrete Frisbee throwing competition. The students had two categories to compete in: those who could throw their self-made Frisbee the furthest – even if its broke to pieces when it hit the ground – and the second: for those whose Frisbee still went the winning distance but, importantly, stayed intact when it hit mother earth. Or whatever stood in its way as you will read later.

The hometown favourite, Greg Ferguson of Alpena, really put his back into it and sent his Frisbee soaring to a winning distance of 54.8 metres before it landed and, sadly, cracked on impact. In the other category, Dan Arner’s distance was only 37 metres, but his Frisbee was still intact after hitting the ground.

Now even the American Society of Civil Engineers (ASCE) has caught on to this novel way of teaching students how to build durable concrete Frisbees. But, being a ‘Society’, there are rules, and these have to be obeyed as outlined in the rules for the October 2016 competition staged by the ASCE Florida International University Student Chapter.

First of all, the primary composition of the Frisbee had to be portland cement, with reinforcement restricted to non-metallic mesh such as carbon and fibreglass. For aggregates, the sky was the limit. Moulds could be an old plastic Frisbee, pie pan or wooden form. The teams were allowed to bring two Frisbees to the competition in Miami and select the one to toss before the competition started. “The concrete Frisbee should be circular in shape, solid, and without any holes. It must be smaller than a 280 mm x 280 mm x 50 mm box, and larger than a 20 mm x 20 mm box,” the competition rules decreed and the creation of a shell formed by any reinforcement was taboo.

After aesthetic considerations (read: clever paint jobs) which counted for 10% of the points, there was the matter of weight which was equivalent to a quarter of the points contestants could earn: the lightest Frisbee would score top marks. Distance thrown counted for another 20% and then – taking matters a lot further than the pioneers at Alpena did in the sport’s early years – the ASCE now has also placed a fixed target 15 metres away for the contestants to aim at. Accuracy here counts for 20% of the points awarded.

Finally, another 25% of the points were allocated for Frisbee durability. The Frisbees were then weighed after the competition and the residual weight used to calculate durability. Hapless souls whose Frisbees weighed less than 50% of the original weight got zero points for durability.

There are stacks of reports on concrete Frisbee throwing competitions on the internet but the report on the 2008 University of California Los Angeles ASCE competition was compiled as only a true engineer could: “Benji’s throw achieved stable flight and went 153 feet before striking the side of a building. Benji’s throw could have travelled an additional 10 feet horizontally had it not been abruptly stopped by Matador Hall. The building impact caused concern for the durability score. The judges seemed to agree that the large building so close to the field warranted some, albeit minor, special consideration for future durability scoring.”

So the fun-spoiling old Matador Hall “abruptly stopped” Benji’s magnificent throw. And the judging criteria would have to be amended in future because this nasty building is determined to spoil the fun.

One would presume Matador Hall is never over-booked on the day the LA students start throwing Frisbees around.
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