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REVIEW

ANNUAL ARCHITECTURAL RESOURCE HANDBOOK

VOLUME 3 | 2015

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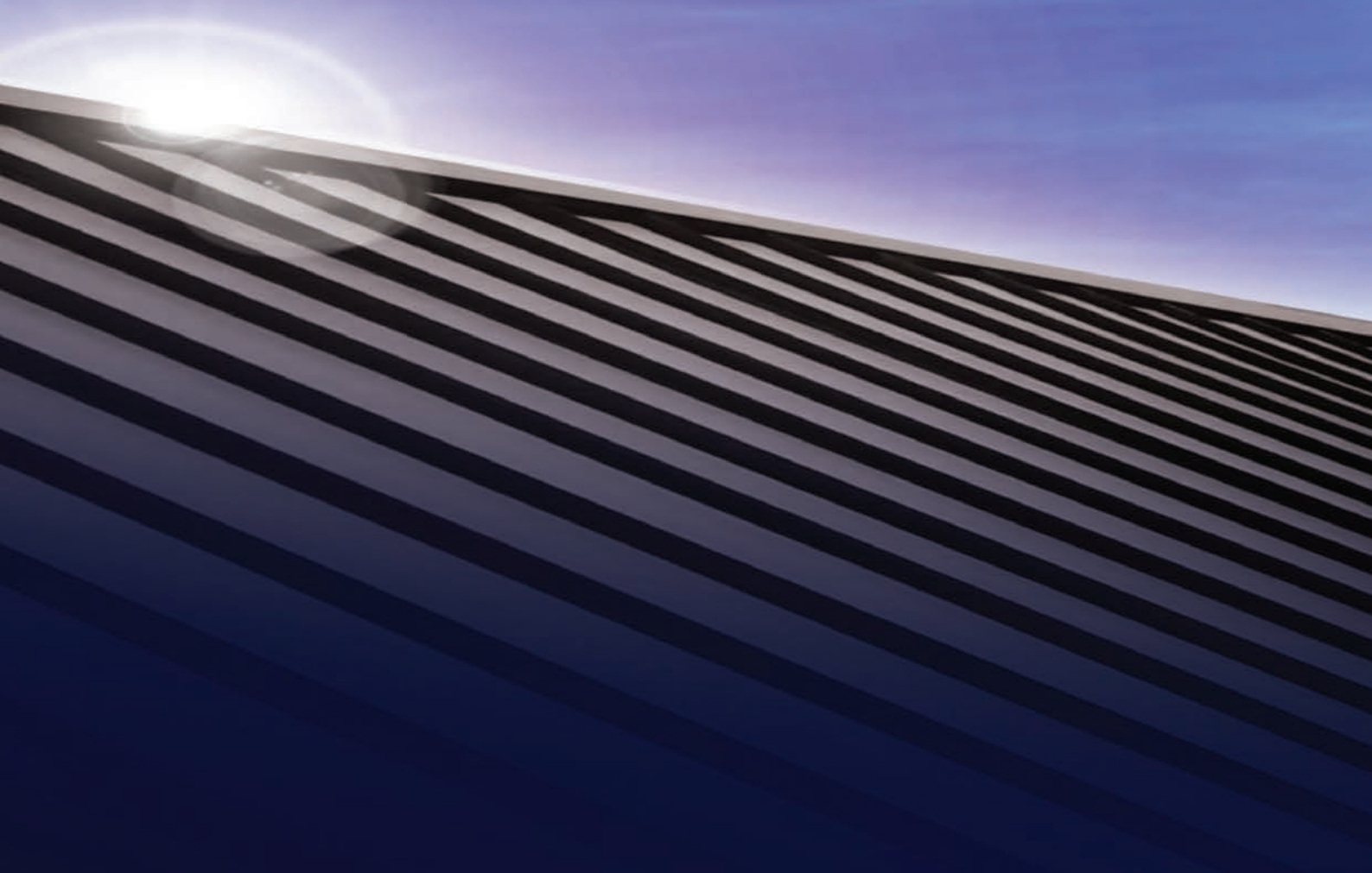
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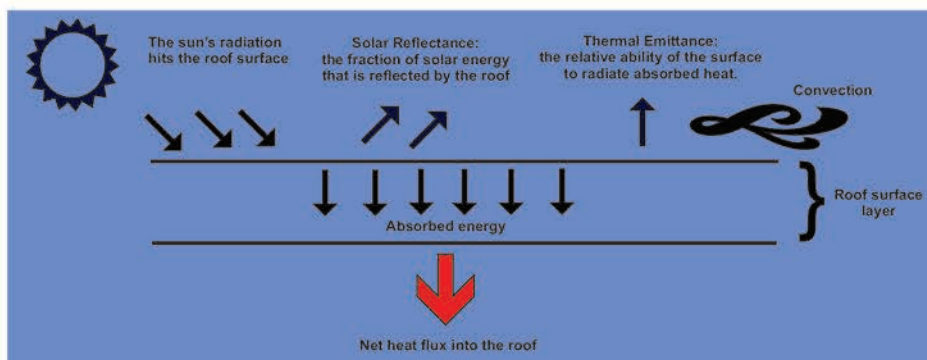
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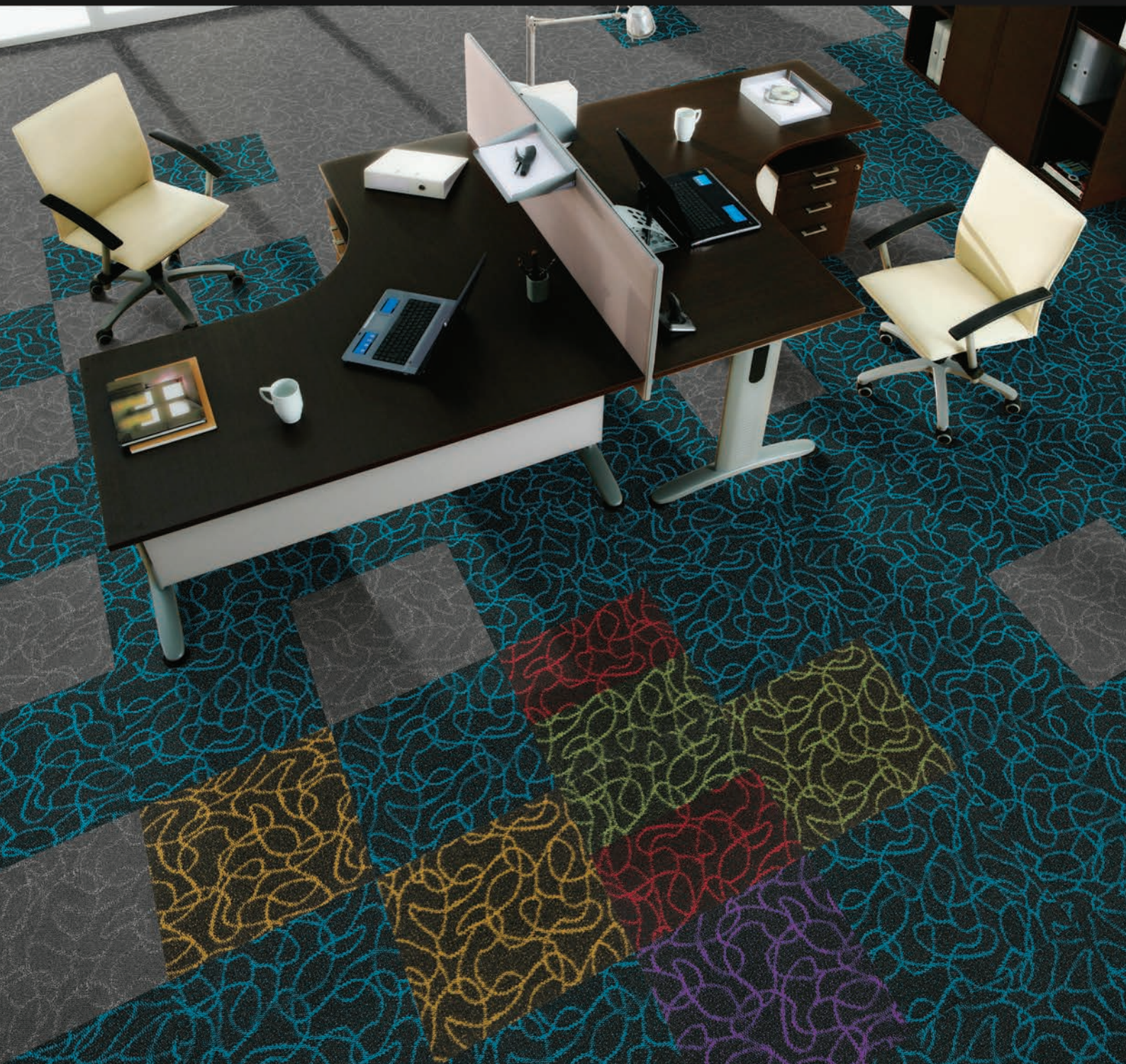
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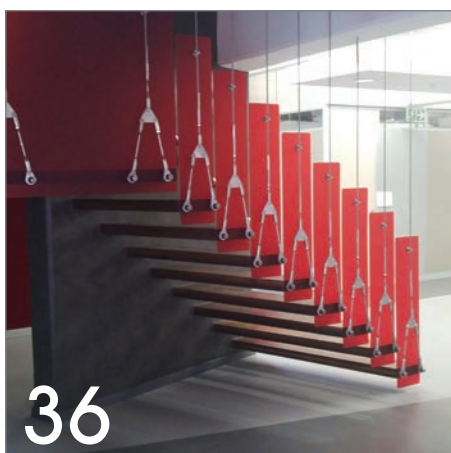
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It is not the beauty of a building you should look at; it's the construction of the foundation that will stand the test of time."

– **David Allan Coe**

Editor's Note

Architecture and design is creativity, from conception to completion, and therefore every piece of architecture on mother earth is unique in its established environment. Around the globe, masterpieces of architecture and designs, whether visual art or not, should speak of presence and environment but yearn for timelessness.

In my opinion, architecture is sometimes too complex. It should be simplified so that it can be understood and appreciated by everyone. It should be designed and conceptualised so that everyone can enjoy their place within each architectural space, and be stimulated by it. Great buildings, whether residential, commercial or industrial, should move the spirit. Every space needs to be enjoyed, respected and treated well.

Cape Town being awarded the Design Capital of the World 2014 marked an astounding achievement for our country. The title belongs to all South Africans as we complete each building, new or old, pouring our many different cultures and histories into these projects. Each of our cities, with their unique designs and cultures, tells a story of where you are in South Africa.

I would like to thank each and every contributor whose projects are featured in this edition of SA BUILDING REVIEW for contributing to a great read.

And, as SA BUILDING REVIEW mark its third anniversary, I would like to extend my gratitude to all our valued advertisers for their continuous support. We look forward to seeing you in our next edition, due out in early 2016.

I wish you all a productive and prosperous 2015 and I look forward to be working with you all in the year ahead. Enjoy the read!

Kind Regards
Elroy

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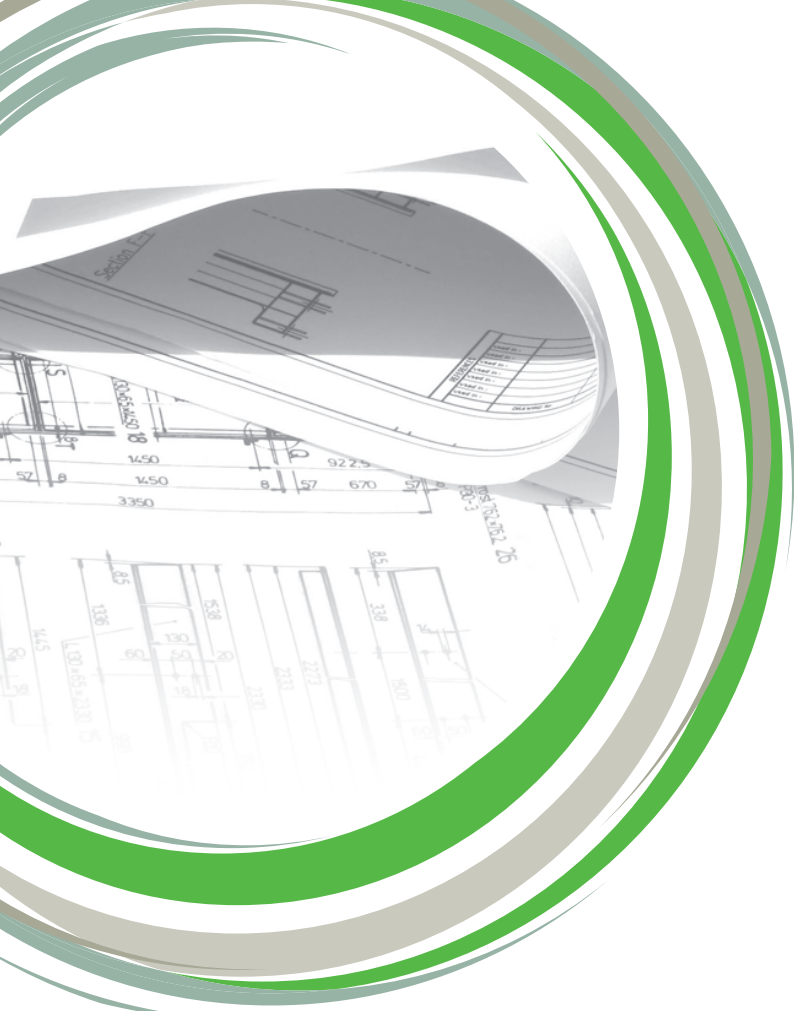
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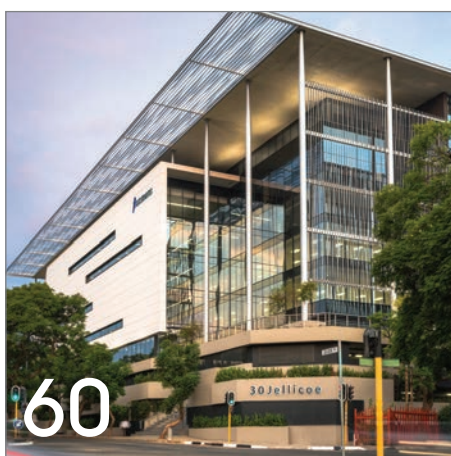
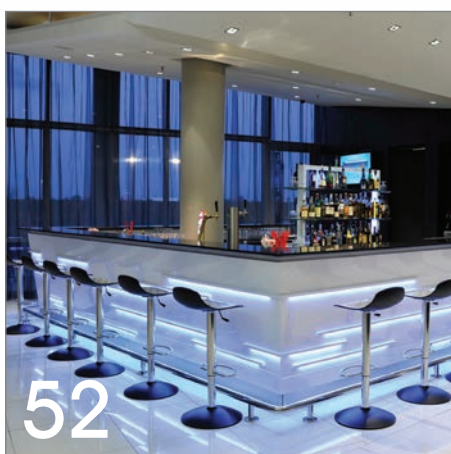
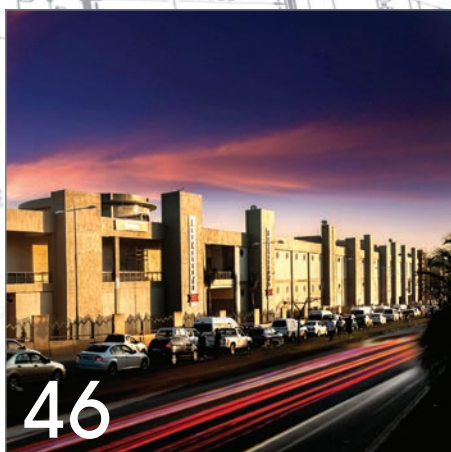
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A window of opportunity

The future of wooden windows and doors is here with Swarthland's innovative Ready-2-Fit range

Top quality timber architectural accents, such as beautifully crafted wooden windows and doors, can add an organically attractive and timeless elegant aesthetic to any building they grace.

Over and above the beauty of these features, wood is also a wonderful environmentally-friendly choice of building material as it's renewable, an excellent insulator, and, if properly maintained, exceptionally durable and long lasting.

With the launch of Swarthland's Ready-2-Fit range, installing and maintaining wooden fenestration and doors has become a synch. Cobus Lourens, Swarthland's national sales manager, explains: 'The Ready-2-Fit range of wooden windows and doors are professionally pre-sealed and pre-glazed before leaving Swarthland's factory. When the doors and windows arrive on site they are ready for installation with no further labour required for sealing or glazing. This not only saves the builder and home owner time and money on installation costs but also ensures that

the windows and doors are adequately protected against exposure to the elements. It also vastly increases the overall build quality – ensuring that the windows and doors are finished to Swarthland's exacting standards and that any warranties are upheld,' he explains.

The benefits of Swarthland's Ready-2-Fit range

The benefits of being pre-sealed

All the Ready-2-Fit windows and doors are pre-sealed with Swarthland's new German-manufactured Maxicare low-maintenance water-based sealant before they leave the factory, ensuring unbeatable protection against the elements. Maxicare's low-maintenance water-based sealant boasts a number of benefits, including that it's an environmentally-friendly sealant with low VOC emissions, it is UV- and water-resistant, non-flammable, lead-free, and it contains anti-fungal

properties to protect the timber from fungus, such as dry rot. It also offers years of protection from the damaging effects of extreme temperatures, humidity, cold, rain and sunlight.

No more sanding required

Gone are the days when you had to laboriously sand wooden windows and doors before re-sealing them. If it is sealed with Maxicare's low-maintenance water-based sealant you can simply wash and wipe the doors/windows down by using the specially-formulated Maxicare Wash 'n Wipe Wood Maintenance and Touch-Up Kit to restore their original beauty. The kit comes complete with a Cleaning Agent, Protective Emulsion, Protective Glaze and a sponge, and it is readily available from leading building merchants nationwide.



All glazing taken care of

All Ready-2-Fit windows and applicable doors are available pre-glazed with standard

4mm glass or 638mm safety glass in accordance with National Building Regulations. Double-glazing and Low-E glass are also available on request, depending on the application and level of thermal and acoustic insulation required.

Compliance with National Building Regulations and the Consumer Protection Act

Swartland continuously tests its products to ensure that its products are compliant with the National Building Regulations. To ensure that its windows are compliant with the SANS 613 and 204 (Fenestration Products) Mechanical Performance Criteria, the Ready-2-Fit range of windows are tested for deflection, structural strength, water resistance, air tightness, operating forces, and the best possible energy efficiency. As a result, all Swartland's Ready-2-Fit windows have unique mechanical property values, from A1 to A4, assigned to them.

Swartland's sub-frame system

Swartland has launched an innovative sub-frame system. Made from PVC-U, these cavity closers ensure simple and accurate fitting of all its windows



and doors, especially when installed by Swartland-accredited installers. The PVC-U cavity closers are the simplest and most effective way to seal window and door cavities, while also creating a rigid template for the surrounding bricks. The tight fit ensures the best thermal performance and forms a barrier against condensation and mould growth. These cavity closers also mean added savings in the building costs – every meter of cavity closer installed should save approximately 10 bricks. The sub-frame system offers architects and builders a fast, hassle-free installation method that guarantees superior build quality, and ensures that all guarantees are maintained.

Cobus concludes: 'Available in a variety of Maxicare finishes, including Imbuia, Light Oak, Mahogany, Teak, and White, the Ready-2-Fit range of wooden windows and doors from Swartland is a testament to the company's dedication to providing innovative solutions to the construction and design industries, as well as entrenching its position as an industry leader in providing quality, eco-friendly solutions.'



SWARTLAND

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Website: www.swartland.co.za

A purchasing revolution

SpecNet revolutionises the window and door buying experience

SpecNet is a fantastic, free, online specification tool designed to make specifying windows and doors easy.

Dylan Miller from leading wooden window and door manufacturer, Swarthland, explains: 'The system, accessible via www.swarthland.co.za or www.swarthland.co.za/specnet, provides specifiers, architects or builders with access to accurate, intelligent ArchiCAD objects and Revit families. From sketch design, through to reality, Swarthland windows and doors are freely available to all registered users.'

The benefit of using the SpecNet application is that it has been designed by professionals for professionals, and it aims to really simplify the

specification process and save industry professionals time and money. Also – since all the information on the SpecNet system is accurate, there is less of a margin for error on the professional's side.

All the data has been provided by Modena and LARGEarchitecture Group and can be saved at no cost into your own personal online library.

Each SpecNet drawing comes with its own individual U-values and SHGC-values, ready to fit into your plans to ensure that they meet all the SANS 10400-XA National Building requirements. These regulations relate to energy usage in buildings and it is mandatory by law to meet them.





Getting proportions and sizing right when it comes to fitting doors and windows is crucial. Currently, you can peruse Swartland's full Cape Culture range of wooden windows and doors on SpecNet – using it for inspiration or to find the specific products that are best suited to the project you are working on. In the near future, Swartland will also include its full Winsters Collection on SpecNet.

SpecNet allows users access to:

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- A discussion forum with interactive expert advice
- True supplier content for an informed design concept
- Product documentation and certification
- Product catalogues
- A price estimation system
- Training and information sharing
- Product images for all ranges

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Limiting liability

Limit your liability by choosing compliant windows

The SANS 10400-XA National Building Regulations covering energy usage in buildings is nothing new. However, the slow up-take of these regulations within the built environment, especially regarding fenestration, is worrying as it could lead to dire consequences for everyone concerned.

Hans Schefferlie, executive director for the Association of Architectural Aluminium Manufacturer of South Africa (AAAMSA) says that everybody involved in the built environment should be sitting up and taking notice of these regulations – from manufacturers to architectural professionals, specifiers, retailers, developers, builders, and even homeowners.

According to Hans, when it comes to enforcing these regulations there will be no exemptions granted: 'By law, ALL new buildings HAVE to comply with these regulations, as must any additions and extensions to existing buildings that require planning approval from a local authority. These regulations are being strictly enforced through the mechanisms and procedures used to regulate new buildings, such as plan approval and certification at the completion of the contract.'

Beware of non-compliant windows

Cobus Lourens from wooden window and door manufacturer, Swartland, says: 'Even though the SANS



standards are met, and a SAFIERA (South African Fenestration and Insulation Energy Rating Authority) Energy Rating Certificate confirming the thermal properties of the product.

He points out that buyers need to be acutely aware of gorilla marketing tactics: 'It's not a simple matter of one shoe fits all – make sure that the certificate of compliance is relevant to the specific fenestration products you are using. If a 1m x 1m window is tested, for example, then this makes a window this size, and all windows smaller than this size, compliant. Do not be fooled by a certificate that shows that a small window is compliant, if you require a larger window. Also, if you require a certificate for a full pane window, a certificate for a cottage pane window for instance, will not suffice either.'

Who is liable?

The simple answer is that everybody involved in a project can be liable in some way or another if non-compliant windows are used. Frans Dekker, president of the South African Institute of Architectural Technologists (SAIAT), explains in more detail:

- The architectural professional: If an architect professional specifies non-compliant fenestration products, in terms of the Code of Conduct of a Professional Body, he or she can be charged with misconduct.
- The builder: If the builder did not use compliant products, even though they had been specified in the drawings, he can also be held accountable for non-compliance of the end build.
- The retailer: If a retailer sells a non-compliant product, when a compliant product has been ordered, then they will be held to book for fraud.
- The property owner: Ultimately however, the buck stops at the property owner as they will be the one stuck with an illegal build that they won't be able to resell as a compliant dwelling. In these circumstances, he or she will be ordered in terms of the National Building Regulation and Standards Act to replace the non-compliant elements of the build, or in dire circumstances, to demolish the entire build.'

Hans stresses: 'The Consumer Protection Act casts a wide net to parties that may be held accountable if non-compliant fenestration products are used. So, to avoid any costly consequences, compliant windows are the only windows that should ever be specified and used in any building project.'

10400-XA regulations have been in force for quite some time, there are unfortunately still a multitude of non-compliant windows readily available on the market. This is extremely alarming as a new build without compliant windows will not pass the building regulations and will be deemed unfit.'

Although there are currently no compulsory specifications for manufacturing windows, investing in compliant windows, such as Swarthland's Ready-2-Fit range for example, is imperative. Hans explains: 'Generally speaking, the most economical solution usually prevails and the purchaser often does not insist on buying certified products as they don't know any better. However, this is lethal for the future security of the build in question because if it's deemed that it doesn't meet the regulations it will need to be rectified to be passed, and this could be an incredibly expensive procedure.'

Hans notes that to ensure the compliance of the fenestration products you are investing in, you need to obtain an AAAMSA Performance Test Certificate confirming that the mechanical performance



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Award-winning architects

Prism Architects offers customers and developers a turnkey service with experienced in-house expertise.

Established in 1997, award-winning Prism Architects is a South African-based firm of architects founded by Sam Manyathela, Schaik van der Merwe and Noel Puta, who realised the need for a practise that specifically addresses the requirements of a new and changing South African society.

The company operates from Polokwane, Johannesburg and Pretoria with a staff compliment of 45 people between the three practices.

Prism Architects offers customers and developers a turnkey service with the in-house expertise of experienced architects, project managers, architectural technologists and interior designers to ensure that it designs customers' futures together. The in-house team, situated in Polokwane, Johannesburg and Pretoria, consists of 60% women and 65% youth.

Various prestigious awards have been received by the practise and include five consecutive PMR No 1 positions for Architects Nationwide (max three partners), after which various other SACOB awards also followed.

To name but a few, landmarks that Prism Architects is proudly associated with include: The FIFA 2010 Peter Mokaba Stadium, Silver Star Casino, various Motor Cities, Meropa Casino – Polokwane, Standard Bank Square – Polokwane, various hospital and health care facility developments, Univen 2025 Master Plan and various campus projects, head office of Auditor General Polokwane, various corporate buildings and Polokwane's High Court.

Prism Architects also proudly points out its contribution to South Africa in 2010 as the lead consultant and architect of record for the new 45 000 seater Peter Mokaba Stadium, as well as design and architect of record for the Polokwane International Airport – New Terminal.

In true responsibility of serving a society, Prism's practice had the privilege of being a major contributor to the Limpopo Department of Health roll-out programme – with some 100 clinics, malaria camps and various hospital upgrades.

On the educational front, various FET colleges and university structures have become a reality, all in line with the company's slogan: Designing your future together.

The practice acknowledges that its success is a result of dedicated staff development, and numerous personnel have furthered their careers on a continuous basis.

As with all businesses, an architects' practise needs to remain a creative thinking environment in reality with time, cost and quality control, and usually within strict budgets. It should also ensure that reality checks provide a focus for basic sound business principles along with the challenges the building industry presents. Prism Architects prides itself on these principles.

Aware of the challenges within the building industry, especially in the field of architecture, Prism continues to be built around competitive pricing while remaining innovative and creative without compromising on quality control from documentation to end product. In the words of Winston Churchill, 'We shape our buildings – thereafter they shape us.'

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Why green business is good business



Prakash Naidoo, product and marketing manager of Océ South Africa considers the many elements that contribute to 'green' business practices.

Environmental sustainability centres around our responsibility to future generations to reduce our carbon footprint today. By nature, sustainability is about the future. It is about business practices that balance the interests of people, the planet, and profitability. Fortunately the movement to 'go green' is finally reaching critical mass, and environmentally-conscious companies are initiating efforts to balance what is good for business with what is good for the planet. Added to this, customers are challenging manufacturers to find better ways to protect and preserve resources.

Environmental sustainability is increasingly impacting large format printing and the trends within the industry. Thankfully there are strategies and actions businesses can take to ensure that they are working with sustainable technology providers. For many companies in this sector, sustainability has just recently become part of their corporate mission. For others, environmental sustainability is an opportunity to 'green-wash' their products and brands. For a rare few, it's been a part of their DNA for years.

As sustainability becomes a criterion for working or not working with a potential vendor, the challenge many companies face is determining whether that provider is truly sustainable. Whether you're in a reprographics shop or a corporate engineering/architectural print environment, it can be tough to separate reality from the exaggerated. Fortunately there are certain markers to look for when you're seeking sustainable business partners. Look for a history of sustainable practices, a commitment to recycling, efforts to give parts and products a second life, energy-efficient engineering, a forward-looking approach to waste and emissions handling, compliance with sustainability regulations, and any awards that recognise the company for environmentally-responsible business practices.

Reuse and recycle

While it isn't the only component of sustainability, recycling is an essential pillar of a wider programme of sustainable business practices. While many companies continue to send used machines to landfills because their focus is selling equipment



today, truly sustainable companies create products with components that can be recycled. They support recycling in their manufacturing and routine business practices, along with a remanufacturing process. Recovering parts and materials for re-use or recycling reduces consumption of new materials and parts. It also eliminates the waste inherent in the manufacture of new materials.

When looking for a vendor committed to reuse and recycling, ask them these questions:

- Do you have a remanufacturing policy?
- Are products and component materials engineered to be re-used in new systems?
- How are machines handled at the end of their economic lives?
- Are components reclaimed, recycled, or remanufactured – or are they sent to a landfill?
- Do components stay in play – or are they discarded as waste?

Environmental stewardship

Of course, there's more to sustainability than recycling. Increasingly, it's a matter of how a company does business. When it comes to production printing and document management hardware, you want a company with a record of implementing sustainable business practices. Does the company meet stringent standards for quality and environmental responsibility through procedures that minimise energy consumption, emissions, and waste? What about logistics – moving parts or equipment from A to B? Has the company adapted its processes to support a sustainable environmental programme? Is it powering truck fleets with alternative fuels like biodiesel? Is it using carbon neutral biomass fuels to power its production plants? What about emissions? Is it working to reduce or eliminate them?

The use of energy is another important environmental indicator considering the greenhouse gas emissions caused by burning natural gas and other fuels. Sustainable companies use green or renewable energy sources for heating, cooling, and production, and/or are studying ways to reduce energy consumption and improve efficiency.

As for the product you're considering, if you want to determine if it is energy efficient, look for the familiar ENERGY STAR logo. ENERGY STAR is a programme created to help businesses and individuals protect the environment through superior energy efficiency. Any product that bears the ENERGY STAR logo has met stringent guidelines for energy efficiency. Not every company will be able to respond in the affirmative on all counts – but look for an overarching pattern of eco-friendly business practices.

Waste handling and emissions

Waste handling and emissions are top-of-mind concerns for sustainability. Waste handling covers three basic areas – hazardous chemicals, industrial waste and domestic waste. Most industrial waste can be recycled, so look for a company that recycles and re-uses these components, and designs photoconductors and consumables to last longer. Meanwhile, reducing ozone, dust, and toner emissions should be a key initiative for any eco-responsible company.

Sustainability in R&D

Truly sustainable companies design products based on an awareness of their environmental impact from the earliest stages of product development. Devices that do not need any warm-up time, enabling them to start printing immediately and go into stand-by mode immediately after printing, drastically reduce energy usage. Similarly, devices that use less heat also have a lower environmental impact and save money in energy costs compared to conventional printing technologies. There's also no need to worry about ozone emissions, which can be responsible for causing headaches, sore throats or respiratory problems.

Compliance with standards

Compliance with regulations and standards also plays a role in many technology companies' strategies. The UN Global Compact encourages a precautionary approach to environmental challenges, initiatives that promote greater environmental responsibility, and development of environmentally-friendly technologies through research, innovation, and self-regulation.

ISO 14001 compliance indicates that a company has met one of the world's most respected standards for environmental responsibility. Compliance with any of these directives indicates a commitment to sound environmental practices.

A growing priority

Increased sensitivity to environmental concerns is a growing priority among the world's leading companies. In an increasingly global economy no company can afford to ignore the environmental impact of business,

especially when efficient environmental management can have a positive impact on the bottom line. And, as more customers demand that business partners prove they are sustainable, green business is becoming good business.

Long before the idea of environmental care gained the importance it has today, forward-thinking companies were already putting it into practice. For companies like Océ, sustainability has been a defining philosophy – as far back as 1958 when the company launched a new production process using a paper coating that reduced the use of solvents by 80%. The company has continued to expand its sustainability focus ever since then, finding innovative ways to use and re-use components, optimise energy and water consumption and reduce waste and ozone, dust and toner emissions.

Sustainability continues to be a cornerstone of the company's approach to business. The sustainability focal points for the Océ wide format printing systems are:

- Minimise energy consumption per print
- Maximise reuse of materials and minimise landfill
- Minimise emissions of ozone, dust, toner and noise, and
- Minimise wasted and unnecessary prints.

As more companies learn to balance what's good for business with what's good for the planet and seek out partnerships with companies that are green, many more businesses will see the advantages of taking the lead as environmental stewards and agents of change.

About Océ South Africa

Océ South Africa, wholly owned by the Bidvest Group, is one of the leading providers of document management and printing for professionals in South Africa as well as in neighbouring countries. The Océ offering includes office printing and copying systems, high-speed digital production printers and wide-format printing systems for technical documentation. Océ South Africa's head office is based in Johannesburg and it offers a support system throughout its distribution regions. Many of the Fortune Global 500 companies and leading commercial printers are Océ customers.



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Picture Credit: Lana Myburgh

Sandton Skye

The new Sandton Skye Towers will rise high above the hustle and bustle of Sandton, with the top loft and penthouse apartments on the 17th floor prominently placed on the magnificent Highveld skyline.

This contemporary 'urban resort' styled apartment hotel is an iconic assemblage of three wonderfully crafted towers that all sit on a dynamic public facilities podium, inhabited by restaurants, a pub, pool decks, a gymnasium, a wellness spa, a business centre, hotel concierge and reception areas.

Tower one is complete and construction on tower two will commence in 2015. 508 apartments will be developed on completion of the 3 towers.

Each tower block was designed from the inside out, and then further refined in each of the 17 stories through a sculptural exterior skin that is layered in coloured glass, stone cladding, aluminium and plaster render.

The apartments have generous views that stretch out, in a panoramic fashion diagonally across the corners, embracing this premium vantage from one of the most privileged positions in the heart of Sandton.

Every square centimetre is put to great use here, and the spaciousness of the public amenity podium will surprise all who visit this 24/7 environment.

The boutique approach to the design is celebrated in the exuberant poetry of the facilities of the restaurant, bar, business centre, outdoor deck and pool, and the health spa and gymnasium with indoor pool and incredible kids' centre.

The interior colour schemes are white on white, grey on silver, and charcoal on grey – all allowing an individual expression of vibrant colour in the fabric and artworks that will be placed in these crisp interiors.

The winning tower forms placed about the podium are shaped with an intense sense of place-making and contemporary significance. The visual appreciation of the design is mostly understood through this holistic reinterpretation of a 'paradise on earth'.





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Pictures credit: Jacques du Plessis

Beyond functionality

TSR performs beyond functionality – it's an iconic building that responds to its environment.

The TSR factory and head office development is located in Tunney Industrial Park, east of Johannesburg, adjacent to the N12 highway and in close proximity to OR Tambo International Airport.

TSR is a global leader in manufacturing and supplying ball and roller-type slew bearings. Because of expansion requirements, a new state-of-the-art manufacturing facility was required.

The primary brief to AMA Architects was to provide a functional and energy-efficient factory for the complete in-house manufacture and reconditioning of slew bearings. The secondary brief was to create a building that responds to the privileged site. The building is boldly sited on top of Tunney ridge, with full panoramic views towards the Johannesburg and Sandton skylines.

Beyond pure utility, the design of the facility responds to the company's primary product – the circular slew ring that's expressed in the architecture of the factory roof of this unique office building.

The curved factory roof has been articulated with massive roof monitors that return down the side walls. These bold elements give the factory its distinctive identity and ensure that the factory has extremely high levels of uniform natural light.

The office building, rather than being purely functional, expresses itself as a complex composition

of curved and cantilevered geometry, both shielding the inhabitants from the western sun and creating an iconic office complex that truly captures the ethos of a leading global company. The extensive office glazing has been designed to maximise the expansive views and natural light, and the effectiveness of the layout has resulted in an office building in which the lights are seldom turned on.

Facts and figures

Developer name: Casagrande Industries

Area of building:

- Gross built area of 14 941m²
- 12 214m² factory
- 571m² covered loading area
- 254m² factory staff facilities
- 1 411m² premium office space
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Cobra's electronic Cobratron range offers service consistency, product quality, and parts availability because it is proudly South African.

Cobra's electronic Cobratron range of water- and energy-efficient taps and mixers has performed so well in South Africa's first ever green rated office building – the Aurecon office building in Century City, Cape Town – that developers, Rabie Properties, specified the range once again in its recent development of the R85-million Number 3 Bridgeway's office block in the same complex.

The Aurecon office building was the first in the country to be awarded a 5 Star Green Star SA – Office Design V1 rating by the Green Building Council of South Africa (GBCSA) when it was completed in 2011.

Number 3 Bridgeway, located in the nearby Bridgeway Precinct that is being planned as the first all-green commercial precinct in the country, has followed in its tracks and also received a Green Star SA rating for office design.

The 3 800m² four storey office block was designed by Vivid Architects and is the new home of Philip Morris South Africa's southern and central Africa head office. 'We use Cobra as it is preferred by our developer customers for its consistency of service, quality of product, availability of parts and because it is proudly South African,' explains Charles Louw, associate at Vivid Architects.

Aside from the eight Cobratron pillar taps installed in the newly-built bathrooms and kitchen, 18 Cobra Strata basin mixers and five Cobra Strata sink mixers were also used, all with a collective value of more than R105 000.

The technologically advanced Cobratron pillar taps rely on highly-accurate sensors to deliver water only

when activated. This reduces water wastage, ensures hygienic operation, and offers customers increased flexibility as the sensors can be preset to intuitively deliver just enough water for a required function.

The taps' uninterrupted power supply features ensure they remain functional during power outages, while their pressure compensating six litre per minute flow restrictors (maximum flow) conform to GBCSA requirements.

Cobra's minimalist Strata range fuses cutting-edge technology and product design to offer basin and sink mixers that respond to the lightest touch, allowing users to control water temperature with consummate ease. Water flow is aerated to maximise efficiency and the mixers' high-performance ceramic disc cartridges ensure years of faultless service.

'Charles had an acute understanding of Rabie Properties' requirements given the superior performance and reliability of our Cobratron range in its previous developments, including the Aurecon offices, African Pride Crystal Towers Hotel & Spa and others,' explains Robert van Coller, technical sales at Cobra. 'This streamlined the selection process with the Strata products being added for their complementary aesthetic.'

COBRA
Website: www.cobra.co.za

To the letter



Cobra meets multi-million rand law firm's design brief to the letter.

When architects Boogertman and Partners designed the new 18-storey Bowman Gilfillan building in Bree Street, Cape Town, it wanted to incorporate as many local products as possible. A one-stop solution for all the brass and sanitary ware was also a priority. With Cobra easily meeting both these criteria, it was the natural choice as the preferred supplier.

Bowman Gilfillan is one of Africa's premier corporate law firms, employing more than 550 staff members, of which 310 are specialised lawyers. The firm has offices in Johannesburg, Antananarivo, Dar es Salaam, Gaborone, Kampala, Nairobi and Cape Town, with the latter being a completely new development constructed to the value of R135-million.

Approximately R800 000 was utilised for Cobra brass and sanitary ware, which predominantly included Taryn single lever basin and bath/shower mixers, and Cobratron pillar taps.

With its minimalistic lines and style, the Taryn mixers are particularly well suited to contemporary settings. The mixers feature 35mm temperature and flow control cartridges, anti-lime aerators and quality compression type head parts.

Both mixers offer superior functioning in terms of water saving and energy efficiency.

The Cobratron pillar taps take these savings to the next level with highly-accurate sensors that ensure water is only delivered when it is activated. This not only reduces water wastage but also ensures hygienic operations. These taps also offer customers increased

flexibility as the sensors can be pre-set to intuitively deliver just enough water for specific functions.

In addition to these mixers, a host of other Cobra products were used, including wall-hung basins; various traps and valves; wall-hung toilets, dual flush actuators, cistern frames and urinals; shower roses, arms and aerator inserts; and transformer boxes for the pillar taps.

'As well as Cobra being 100% South African and offering a full turnkey solution, it also offered the expert product advice that we were looking for,' maintains Marthinus Potgieter, architect at Boogertman and Partners. 'Also of importance to our client was that spares for the products installed would be readily available for years to come. Cobra met all these criteria.'

Robert van Coller, Cobra technical sales, says: 'Given Cobra's comprehensive product range it was easy to tap into the architectural vision. We understood exactly what Marthinus wanted to achieve in the bathrooms and helped to bring that vision to life with Cobra's products,' he points out.

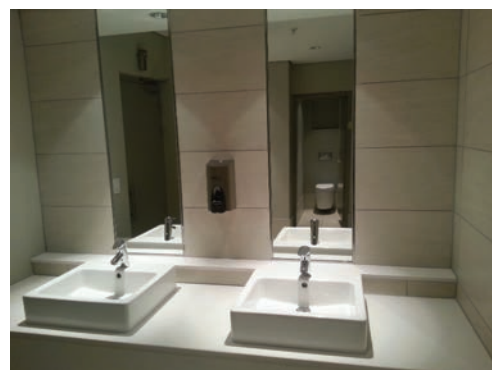
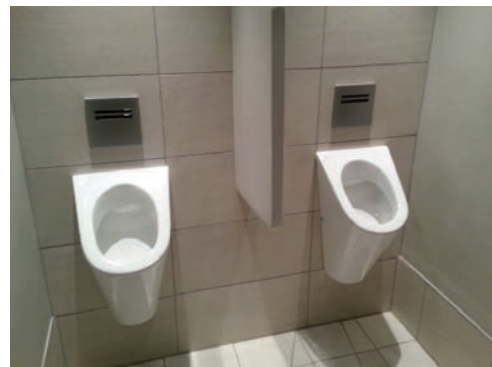
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Pictures by Andrew Royai

The seed library

When insufficient funding threatened the design for a world-class library at the MC Weiler Primary School in Alexandra, Johannesburg, the team at Architects Of Justice took it upon themselves to rework the plans and come up with an alternative.

The Architects Of Justice (AOJ) were commissioned by the MAL foundation, South Africa's first non-profit creative agency, to design a world-class library for the MC Weiler Primary School in Alexandra, Johannesburg.

The intention of this world-class library was for a design that could be used as a blueprint for future libraries within South African schools. Unfortunately, because of insufficient funding, the original design could not be realised. The AOJ team took it upon themselves to begin again taking basic principles derived in the first proposal. The project was 'put on a diet' and the SEED was planted, thereby honouring a promise that was made to the children at the MC Weiler Primary School that they would be receiving a new library.

The smaller building proposed was not intended to replace the originally designed learning centre, but rather be a semi-permanent building that could be removed and placed at another school once sponsorship or funding was available for the larger facility. In addition, if placed at another school, the SEED could be used as a 'litmus paper' for sponsors/donors/funders to test whether or not a school would be capable of managing a larger facility prior to building one, and would further offer an opportunity for these schools to adequately prepare themselves to run one.

The building is made up of two shipping containers stacked one on top of the other at 90° – forming a daring cantilevered cross. The ground floor container

houses the book library, while the first floor container houses space for group work and individual study. On the roof of the ground floor container there is an outdoor reading deck that is accessed from the first floor container. There is also a deck on the ground floor that doubles up as a stage for school assemblies.

The location of the library was essential to the success of the project. Located near the entrance, the library makes a powerful statement to the importance of such a facility within the realm of education, and elevates the sense of pride in the learners. Its proximity to the administration block improves the supervision of children during use, and complements the use of the school's square during assembly and performances.

The SEED is immediately visible upon entering the school via the main entrance. The colourful building – nestled between the classroom blocks and the admin building – is a direct contrast to the traditional face-brick school buildings. From the main school corridor, the technicolour-clad façade of the ground floor container of the SEED comes into full view. Long thin windows located between the book shelves on the interior allow for sneak peeks from the corridor through the building to the quad and Alexandra beyond. The upper container, painted in green and grey, hovers over the library entrance. Previously a barren quad of sand, the entire area around the building is finished with a resilient natural-look synthetic grass that makes a significant difference to the school.

The orientation of the two containers improves the use of internal and external spaces as shading increases comfort for learners during different times of the day, while at the same time providing visual interest. Insulation and natural ventilation further assist the passive heating and cooling, ensuring that the new facility does not add to the already strained resources of the primary school.

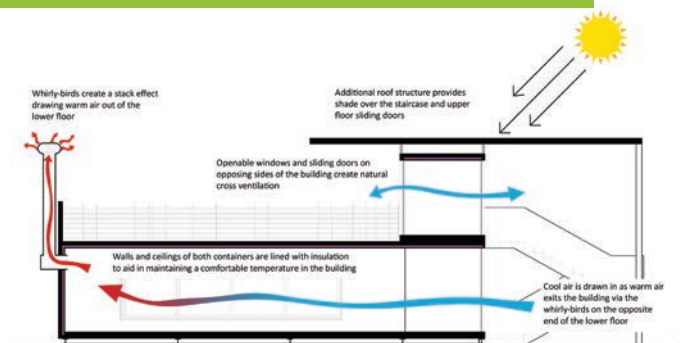
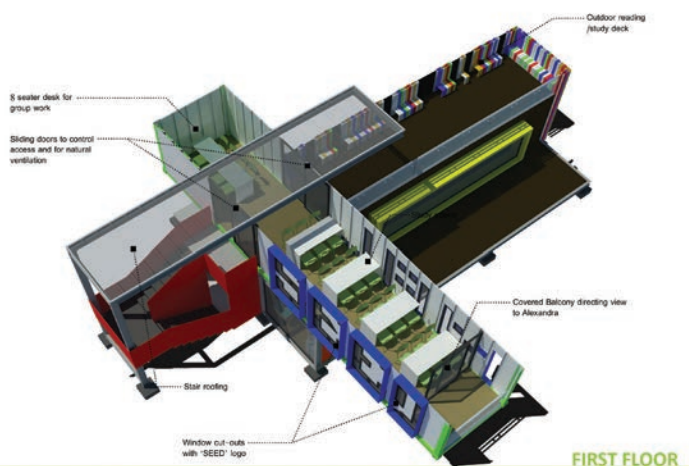
The SEED is made up of the basics of a school library

– a place to access information, do homework and read – and represents the key concepts identified in the originally designed library in its most basic form.

It is a working example of an exciting stimulating place that not only houses knowledge but also – through the use of colour, shape, light, the outdoor and imaginative and inventive space – provides users with an inspiring experience.



'The SEED library is intended as a repeatable prototype. It can only be wished that it would be repeated many times over, as there are simply too many sad and depressing places of learning in South Africa where buildings such as this could act as symbols of, and contribute to, a materially better future.' Excerpt from the South African Institute of Architects 2013/2014 Awards Book



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UNLOCKING DEVELOPMENT EFFICIENCIES FOR KWAZULU-NATAL

Development is currently well underway on the Ithala Trade Centre, situated at Durban's Point Waterfront, with completion expected by May 2015.

The property is being developed as a commercial centre offering nine floors of office space, as well as a parking and retail area with a total gross space of 9 595 square metres.

The objective is to consolidate and harmonise development activities, offering a one-stop shop facility.

The Ithala Trade Centre is regarded as a development hub, a first for KwaZulu-Natal, situated at the gateway to the city and providing easy access and ample secure parking.

It boasts an excellent setting, surrounded by mixed-used buildings and a modern network of canals, and is well located in terms of shopping amenities, conference facilities and other institutions.

Designed and decorated along modern classic lines, the IthalaTrade Centre follows a generally open plan approach, making best use of the floor space and featuring environmentally-friendly fittings to reduce operating costs.

Secure parking is available on two level sand at street level, while provision has been made for restaurants and coffee shops on the ground floor. Not only is this a game-changer

project for Ithala, but it is also a significant boost for economic development in KwaZulu-Natal, unlocking the potential for entities in the development environment to work together for the benefit of the Province.

For more information, please contact the office of Ithala Group Properties Beston Silungwe, on 031 907 8834 or via email: bsilungwe@ithala.co.za.

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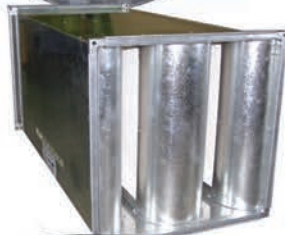
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CSIR's architectural design

By using a modular system, Archiway Architects created a flexible layout that can be adjusted to its customer's needs.

At the CSIR's premises in Pretoria, three new floors have been added to the building and services designed to accommodate maximum flexibility.

Visual links were created between the four floors by opening up the floor in three areas – opening up to the roof and creating 'towers' – letting natural light into the core of the building.

The bridge between the existing and new building are used as a social gathering area, and functions as a circulation route between the three new and the existing floors.

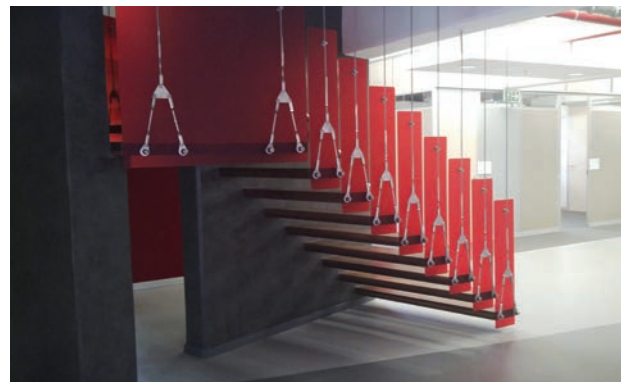
The office plan design includes overhangs on the northern façade, as well as sunscreens on both the northern and western façades to minimise direct sunlight. This minimises direct sunlight into the building while allowing natural sunlight to reach the back of the existing building.

The meeting rooms are situated in the south western corner of the building – on each floor – to allow for the air conditioning requirements to be centralised. The meeting rooms now also have the option of being opened to a balcony on each floor and have a view over Menlyn, Pretoria.

In the office plan design, Archiway Architects also allowed for the laboratories to be situated in the same position on each floor to optimise the ventilation and air conditioning requirements.

Each office has its own window and access to a balcony, which creates a pleasant work environment. The dimensions of the offices allow for maximum natural light and ventilation where required.

The graffiti wall was incorporated in the design to enhance office productivity and uplift social interaction between colleagues.





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The National Home Builders Registration Council (NHBRC) is a statutory body with the main responsibility of providing protection in terms of the Housing Consumer Measures Act, 1998 (Act No 95 of 1998). Its mandate is to provide protection for housing consumers against defined defects and to regulate the home-building industry.

The mandate of the NHBRC

Chapter 1 of the Housing Consumers Protection Measures Act, 1998 (Act No 95 of 1998) as amended, prescribes the mandate of the National Home Builders Registration Council. The Act states the objectives of the council as follows:

- To establish and to promote ethical and technical standards in the home-building industry
- To improve structural quality in the interest of housing consumers and the home-building industry
- To promote housing consumer rights and to provide housing consumer information
- To communicate with and to assist homebuilders to register in terms of this Act
- To assist home builders, through training and inspection, to achieve and to maintain satisfactory technical standards of home building
- To regulate insurers contemplated in section 23(9)(a)
- To achieve the stated objectives of this section in the subsidy housing sector

NHBRC products and services

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- Home-building inspections
- Rectification and forensic engineering investigations
- Home-builder training and development
- Home-building dispute resolution
- Litigation and legal advisory services
- Geo-technical and materials engineering

Enrolment of new homes

New home builds need to be enrolled with the NHBRC before construction commences. With the enrolment of a home comes the necessary engineering input from competent persons that assist the home builder to take the necessary precautions in structural design, to ensure that the home build is sound. An enrolment certificate is issued to all enrolled homes.

When a house is enrolled, the NHBRC will conduct a minimum of four inspections on the home and deal with complaints and non-compliance during construction.

The enrolled home will be covered for five years by the NHBRC warranty scheme on major structural defects, from the day of occupation.

Home-builder registration

Every home builder who is engaged in the process of building a home or selling a home should be registered with the NHBRC. Home builders undergo an assessment test to ensure that they meet the requirements. They are also furnished with a registration certificate to show that they are included in the database of the NHBRC.

Home-building inspections

Inspection services are provided to registered builders with enrolled projects/homes to assist them in building homes with structural integrity, resulting in low levels of housing consumer complaints.

Home-builder training and development

The NHBRC provides training and skills development to builders to build skills capacity. This entails developing and managing systems and processes for the delivery of training and devel-

opmental activities to emerging home builders, to assist home builders, through training and inspection, to achieve and maintain satisfactory technical standards of home building.

Customer Service Centres

To increase its visibility and serviced excellence to customers, the NHBRC established Customer Service Centres in all nine provinces. Activities range from registration of home builders, enrolment of new homes, inspection of homes and handling of complaints, to conciliation of unresolved complaints.

Service points in municipalities are also being set up to establish and improve the accessibility of the NHBRC.

Subsidy housing

At the onset, the mandate of the NHBRC did not cover the low-cost housing (subsidy) sector. In February 2002, the Minister of Housing announced that the NHBRC Warranty Scheme will apply in the housing subsidy sector.

In the subsidy sector, the NHBRC has initiated remedial works of housing-subsidy failures. The organisation enrolls new housing builds, conducts the geotechnical, civil and structural assessments required, inspects the builds and materials used and through its builder-training programmes empowers builders in respect of product and technical knowledge.

Alternative home building technologies

The NHBRC has a vision to create a society living in secure, comfortable and decent homes. The NHBRC has been advocating the use of alternative technology in the home-building industry with the aim of providing quick to erect, quality and affordable products that would aid in eradicating the housing backlog in the country. The Eric Molobi Housing Innovation Hub was launched in 2007, with the objective of identifying and supporting innovative housing systems developed nationally and internationally and which would provide a wider choice of quality and affordable homes to the housing consumer.

CONTACT DETAILS

Tel: +27 11 317 0000 (Head office)

Toll-free number: 0800 200 824 (SA only)

Physical address: 5 Leeuwkop road, Sunninghill, Sandton Johannesburg

www.nhbrc.org.za



For flexibility and high performance.

10 good reasons to use the versatile Geberit Mepla pressing system.

■ GEBERIT



Surface condition

The inner plastic layer of Mepla pipes has a surface roughness of only 0.0009 mm. This means there is little friction to impede the flow of water along the surface, permitting higher flow rates. It is more difficult for limescale and biofilm to adhere to the smooth surface. The high-quality PE-Xb Gebesil is a Geberit invention.



Bending capability

When installing Mepla pipes, the necessary flexibility is always ensured. 16 and 20 mm pipes can easily be bent by hand. They are flexible and can be routed easily. Bending tools can be used for larger dimensions of up to 50 mm.



Fitting retaining force

Special plastic cams on the plastic fitting and a retaining ring on the metal fittings achieve a high level of fitting retaining force in the pipe and prevent the fitting from slipping out of the pipe during assembly. As a result, the piping system can easily be installed, aligned and subsequently pressed by just one person.



Stability

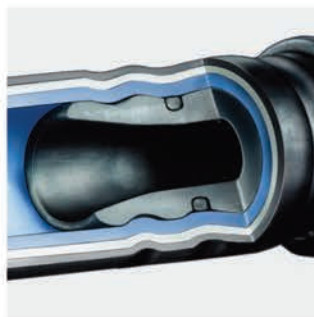
Using high-quality plastic, cross-linked polyethylene, in conjunction with aluminium combines the benefits of plastic with those of metallic piping systems. The thick aluminium layer in Mepla composite pipes ensures a high level of stability and extraordinary mechanical strength.



Pressing jaw guide

The defined jaw guide on the fitting ensures that the pressing jaw is positioned exactly right during pressing. It also prevents any risk of the joint slipping or being pressed in the wrong place. This means it is not possible to press the connection incorrectly, and a secure, long-lasting connection is therefore guaranteed.

The universally applicable Geberit Mepla pressing system comprises the system pipe, press fitting and pressing tool. The system is available in diameters 16 to 75 mm. An extensive range of fittings for all requirements as well as intelligent solutions for connecting the supply system to other installation elements round off the Mepla range of products. That's what we mean by "Know-How Installed".



Tensile strength

The tremendous tensile strength of the Mepla compression joint ensures a reliable, long-lasting connection. The quality of the press connection is constantly checked and exceeds the values demanded in the standards many times over. This guarantees a high standard of reliability, even in piping systems subjected to high loads.



Weld seam quality

The weld seam is crucial for the quality of the pipe. The homogeneous longitudinally welded aluminium layer in Mepla pipes, with its smoothly formed weld seam, guarantees the highest possible degree of safety and quality. As a result, the aluminium layer does not overlap. The pipe bends equally well in all directions.



Leaks if unpressed

Unpressed Mepla fittings leak unmistakably when subjected to water pressure tests. Water flows out of the unpressed connections. This occurs even at low testing pressures and during leak tests up to 15 bar. The pressure test cannot be completed successfully until all the connections have been pressed.



Pipe insertion depth

The pipe insertion depth remains visible at all times. This ensures that the pipe is correctly pushed onto the fitting during installation and can then be correctly pressed. As a result, the piping system can be preassembled. When the system is ready to be pressed, each connection can be checked directly to ensure that each pipe is in the correct position.



Linear expansion

The special composition of Mepla pipes with the thick aluminium layer prevents linear expansion of the pipe in response to temperature fluctuations. This means fewer fastening points are required during installation than with conventional plastic pipes.

→ www.geberit.co.za
011 444 5070 or
sales.za@geberit.com

An all-rounder beyond comparison.

10 good reasons for Geberit HDPE discharge pipes.



Connections that suit any need

From butt welding to quick electrofusion welding and screw connections with flanges and pipe threads: Geberit HDPE pipes and fittings can be connected in different ways that ensure permanent tightness.



Very high discharge capacities

With the Geberit HDPE Sovent fitting, the discharge capacity of stacks can be more than doubled. The hydraulically perfected element is used to connect floor pipes to a central discharge stack in high buildings.



Resistant to UV radiation

The polyethylene (HDPE) used by Geberit contains special additives which provide effective protection against UV radiation. This means that the weatherproof pipes can also be stored outdoors.



Shockproof and flexible

At normal room temperatures, Geberit HDPE pipes are virtually indestructible. The tough material is shockproof even when at temperatures as low as -40 °C. Especially during the building phase, this robustness ensures that the pipelines remain intact despite any mechanical influences.



Resistant to chemicals

The Geberit HDPE waste and drainage system is suitable for a variety of applications in industry and laboratories. The material is resistant to most commercially available alkalis, acids and chemicals. Even hot water of up to 80 °C does not harm the material.

The Geberit HDPE waste and drainage system leaves little to be desired: the robust pipes are available in all common diameters, from 32 mm to 315 mm, and the range of fittings and special fittings is comprehensive. The piping material polyethylene is very light-weight, yet incredibly tough, and the connection technologies ensure permanent tightness and a high tensile strength. The system includes thoroughly tested components for effective fire protection and sound insulation as well as practical tools for the building site and the workshop.



Inside walls and floors

The extraordinarily tough and robust Geberit HDPE pipes are safe to embed in concrete or install in the ground if the static and other generally acknowledged rules of expansion are observed.



Always a great solution

With Geberit HDPE discharge pipes, you can solve almost any drainage task perfectly without having to compromise. The range of fittings and special parts covers all pipe diameters from 32mm to 315mm and leaves little to be desired.



Excellent fire protection

The Geberit HDPE waste and drainage system includes officially certified solutions for effective fire protection. Fire protection sleeves and floor sealing systems, for example, prevent fire and smoke from spreading to other floors through pipe ducts.



Ideal for prefabrication

Thanks to a wide range of fittings, proven tools and a low material weight, the Geberit HDPE waste and drainage system is perfectly suited for prefabrication in the plumber's own workshop. This is particularly beneficial when working with complex branches and connection fittings.



Permanently leakproof

The welding joints of Geberit HDPE pipes remain permanently leakproof for many years, providing a high degree of safety to building owners and plumbers.

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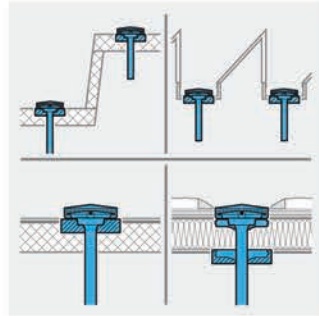
Double the amount of rainwater at half the pipe diameter.

Greater flexibility in the planning of large-surface buildings and roofs.



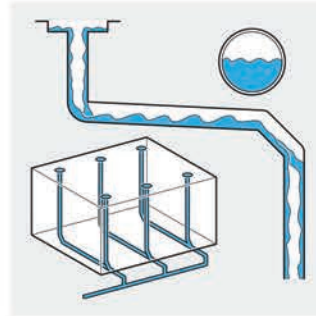
Planning software

Geberit ProPlanner is a user-friendly and sophisticated software for the configuration of Geberit Pluvia and can also be used to compile material lists.



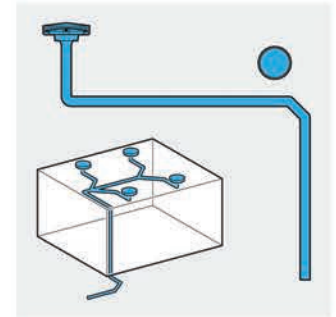
Versatile application

Whether it be flat roofs, pitched roofs or sawtooth roofs, Geberit Pluvia can be used almost anywhere. Suitable roof outlets and reliable sealing solutions are offered for a wide variety of roof structures, for example insulated/non-insulated roofs, inverted roofs or gutters.



Conventional system

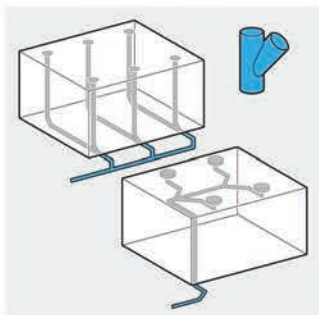
With conventional roof drainage, the water drains into partially filled, sloped pipelines.



Syphonic system from Geberit

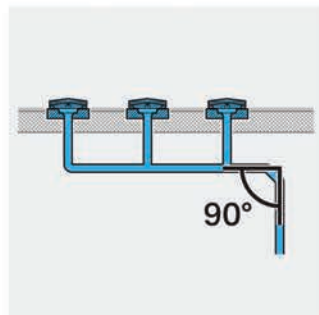
The pipes in the Geberit Pluvia system are smaller, and thus fill up completely during heavy rainfall. The resultant syphonic action created by the rapidly flowing water column quickly removes the water from the roof or gutter.

Syphen off rainwater instead of just letting it run. The Geberit Pluvia roof drainage system uses negative pressure to suction rainwater from the roof. Boasting far fewer pipes than the more conventional systems, it represents a superior choice in terms of price and required space. Geberit offers both professional planning software and a projectspecific planning service for the configuration and dimensioning of Geberit Pluvia according to current standards. Which means greater cost reliability and an optimum system solution.



Fewer stormwater connections

Thanks to the reduced number of discharge stacks, Geberit Pluvia roof drainage systems also require fewer stormwater connections to the system. This saves on both work and materials.



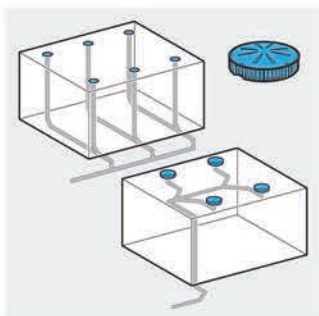
Horizontal pipelines

The roof outlets are connected to the discharge stack with horizontally installed PE pipes that do not require any slope. This facilitates coordination with other pipelines (e.g. sprinklers) and provides flexibility when it comes to design.



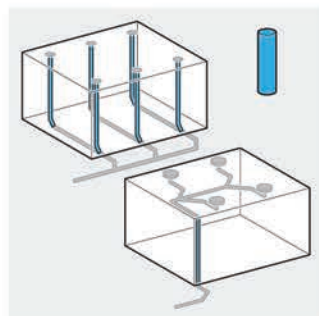
Warranty

Geberit Pluvia comprises high-quality, durable components. Resistant polyethylene (HDPE) is used for the pipes. Added to this are the decades of experience in planning and configuration. This is why Geberit Pluvia is able to guarantee the durable operation of its drainage solutions to building owners and sanitary engineers.



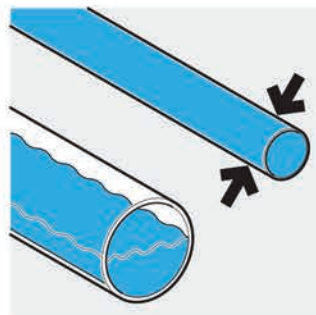
Fewer roof outlets

Due to the high discharge rate, Geberit Pluvia requires fewer roof outlets than conventional drainage systems. This reduces the number of roof openings and saves on labour.



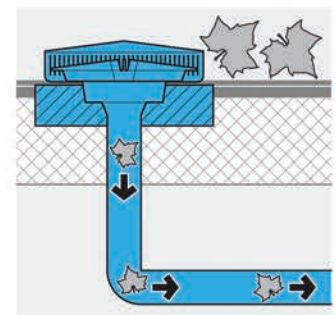
Fewer discharge stacks

Geberit Pluvia has a very high discharge rate per discharge stack, as they are completely filled with water. For this reason, fewer discharge stacks are required, giving you greater flexibility when it comes to design.



Smaller pipe diameters

Geberit Pluvia requires smaller pipe diameters than those used in conventional roof drainage systems. This saves on both weight and space and facilitates a prefabrication of entire pipe sections on the ground.



Self-cleaning effect

The high flow velocity of more than 0.5 m/s with a completely filled pipeline ensures self-cleaning for the entire roof drainage system. This reduces cleaning and maintenance costs.

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Geberit Concealed Cisterns

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A black and white photograph of two men standing in a workshop. The man on the left is younger, with dark hair, wearing a dark t-shirt and a light-colored zip-up jacket. The man on the right is older, with grey hair, wearing a dark polo shirt and cargo pants. They are standing in front of a wooden wall. To the left, there is a metal shelving unit with various tools and equipment, including a Geberit concealed cistern. The large yellow text 'Fit for the next 50 years.' is overlaid on the image.

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Mapelastic Foundation		●	●	●
Mapelastic Aqua Defense	●		●	

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Nedbank continues investment in KZN

Nedbank Corporate Property Finance has again demonstrated its continued commitment to supporting property development in previously under-served areas by opening the R360-million KwaMnyandu Shopping Centre in Umlazi, a township south-west of Durban.

Developed by KwaMnyandu Shopping Centre over a period of 18 months, the 23 000m² mall is linked to the KwaMnyandu railway station in Umlazi, the second busiest station in KwaZulu-Natal (KZN). This location ensures that the mall enjoys maximum foot traffic while providing rail and commuters with convenient access to shopping.

Anand Joseph, regional executive: Nedbank Corporate Property Finance in KZN says, 'We have long recognised the value of public-private partnerships to deliver on government's infrastructure and social development visions and objectives. We are proud to have played a role in enabling this shopping centre by providing the financing required by the developer and, more importantly, ensuring sustainable growth and development of the community.'

Because of its proximity to the King Zwelithini Stadium and the Mangosuthu University of Technology, KwaMnyandu was identified as a key education and sporting development node within

the urban regeneration plans. According to Carlos Correia from KwaMnyandu Shopping Centre, the development aids job creation and contributes to the socio-economic enhancement of the area. The centre features a contemporary design and a tenant mix that includes national fashion heavyweights, including the Foschini Group, Mr Price Group, and the Edcon Group among others. More notably, the centre houses Umlazi's first-ever McDonald's, as well as Pick n Pay and Shoprite. Currently the shopping centre consists of an 89% national tenant mix.

'Nedbank is excited about the potential for further growth within the KZN region. We have invested in various initiatives in the region, including recent financing of the new Lion Match Head Office in the Point Waterfront area. The launch of the Go!Durban transport network – a significant infrastructural investment – may very well position the KZN region for increased sustainable growth in the medium term,' Anand concludes.

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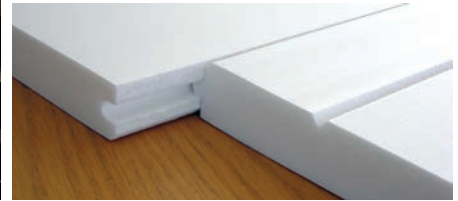
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Regulation XA: Energy Usage in Buildings

When can rational design of energy usage be used as an alternative to regulation XA – Energy Usage in Buildings? And what are the potential benefits?

Using rational design to comply with SANS 10400 XA energy usage requirements? Why bother?

When designing new buildings, compliance with regulation XA – Energy Usage in Buildings, of the National Building Regulations, must be demonstrated to planning authorities. Rational Design of energy usage for new buildings, when compared to a reference building, is one of the alternatives available to demonstrate compliance with regulation XA. When should this rational design be employed, and what are the potential benefits?

Designing a new home or building requires compliance with the stipulations of the National Building Regulations and, since November 2011, these regulations require thoughtful design of aspects

of each building to provide limitations on energy usage. Some regulations are common to all new buildings, and some are adaptable as to location and purpose. The intention of regulatory compliance is to ensure less energy demand and use in basic building functions, such as lighting, water heating and providing comfortable living and working conditions, for the occupants.

The regulations divide our country into six climatic zones. Depending on the location, purpose and occupation classification of each building, different interventions may apply based on the expected heat flow direction when the building is in use and the expected amount of energy required to heat or cool the building to comfort.

Thermal insulation of the building envelope comes into play to reduce the energy consumed to bring the building to an acceptable temperature range for human comfort. Humans are generally deemed comfortable within a fairly narrow range, for example from 20 to 28°C. However, this range moves slightly per climatic zone, and per season.

Thus, the factors that influence the energy usage of the building include design choices made for lighting, water heating, glazing and thermal insulation.

Compliance is either according to regulation prescript tables, or according to rational design. The rational design alternative allows alterations to be made to the minimum intervention levels as otherwise stipulated in the regulations, through demonstration that the amendments made result in the same or better energy usage as compared to a reference building. Proof is provided by the modelling of the thermal performance of the building by a competent person, using approved software.

So what is the reference building?

Essentially, the reference building is the same building when fully compliant with all the prescriptive interventions of SANS 10400 XA. Applying the rational design approach means calculating the maximum energy demand and average annual energy usage per square metre, as if the building is fully compliant, then trading off the variable intervention factors against one another to achieve the same average energy usage and maximum demand, or better.

Why this is possible is because the regulations are naturally conservative, to accommodate every type of building. If one takes the trouble to determine and demonstrate the specific energy demand and usage for a particular building, there are many ways to achieve the same energy usage outcomes.

This is important for two main reasons:

- The overall build cost can be reduced by adopting the optimum interventions for a building. Often the regulations can be demonstrated as deemed to be satisfied with lower levels of intervention in one aspect, compensated for by increasing other levels of intervention, which may be more cost effective.
- Rational design allows creative freedom to make best use of a given location, such as a spectacular view requiring lots of glazing, while remaining in compliance with energy usage regulations.

How does the reference building rational design alternative demonstrate energy usage compliance work in practice?

Broadly speaking, there are four steps:

1. Professional team and client develop the building design to meet occupant needs.
2. Designated competent person (energy) applies all criteria as stipulated in SANS 10400 XA to produce a building deemed to satisfy the prescriptive provisions for the building envelope and associated services. This theoretically compliant building becomes the 'reference building' referred to in paragraph 4.2.1.c.

3. Model the compliant building using approved software to determine the average energy consumption (kWh/m²/annum) and maximum expected energy demand (VA/m²).
4. Adjust the model inputs as required to achieve maximum benefit from a design and cost perspective, while maintaining the same or better theoretical energy demand and usage as calculated for the reference building.

By adjusting the model we refer to substituting or adjusting prescriptive components of the building to enable a better cost or design outcome, at the same or better energy performance.

As an example, consider a residential home where the ideal design calls for large glazed areas. As the glazing likely exceeds 15% of the floor area per storey, interventions are required to reduce the solar heat gain into the building, which may mean more expensive glazing alternatives. However, by increasing the amount of thermal insulation used in aspects of the building, for instance, the option may exist to use standard glazing if the net energy usage and demand result remains the same. This would be significant if the potentially expensive glazing is substituted with relatively cheap thermal insulation, enabling the building to be built within client budget, while enjoying the freedom of an appropriate design.

The cost of a rational design through the reference building method can reach as much as R30 000, for a very large building with many modelling considerations. Usually the cost is far less. The payback benefits justify rational design for buildings with a footprint exceeding 100m² as a rule of thumb.

The beauty of a thermal insulator such as IsoBoard XPS is the versatility of application in contributing to a successful rational design solution. IsoBoard's range of thicknesses and applications deliver proven thermal performance for the life of the building. Besides roofs and ceilings, IsoBoard can be added to walls, underfloor and the foundation perimeter, providing the added contribution to thermal comfort that enables flexibility in choosing solutions with maximum effect and minimum cost.

Talk to IsoBoard for advice on achieving energy usage regulatory compliance using the rational design reference building approach.



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Park Inn achieves Green Leaf Eco Standard Certification

The Park Inn Hotel in Sandton – through its partnership with Green Leaf Sustainability Services and its Think Planet and Living Responsible programs – has achieved the coveted Green Leaf™ Eco Standard Core Certification.

The Green Leaf™ Eco Standard is a global standard for measuring, managing and verifying sustainable business performance in an impartial manner. The Standard draws on the philosophy and 50-year track record in environmental leadership of its co-founder, the Wilderness Foundation.

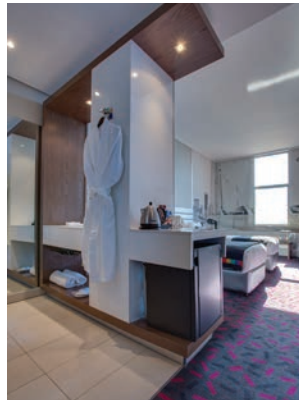
The standard is designed to meet and exceed compliance with South African and international

Codes of Good Practice and integrated reporting. It is a blueprint for achieving a sustainable, profitable future that is impact-neutral.

Park Inn Sandton has accomplished the certification and improved its sustainability footprint by introducing the following energy saving measures:

- Installed low-flow showerheads in all guest rooms
- Exchanged all high-energy halogen down lights with





- the significantly more efficient LED's
- Using heat pumps for heating water rather than conventional geysers
- Introduced a Key card-system in all rooms: switching off all lights and air conditioners while unoccupied
- Installing motion sensors in low-traffic areas to reduce energy wastage
- Changing its purchasing practices by buying over 80% of products from local suppliers
- Introduced a recycling project to reduce the hotels impact on landfill sites.

The Park Inn Hotel Sandton has also recognised the importance of creating awareness among its staff by involving them in reducing the impact of the hotel on the environment by actively promoting sustainable business practices through their 'Think Planet' and 'Responsible Business' programmes.

park inn

SANDTON

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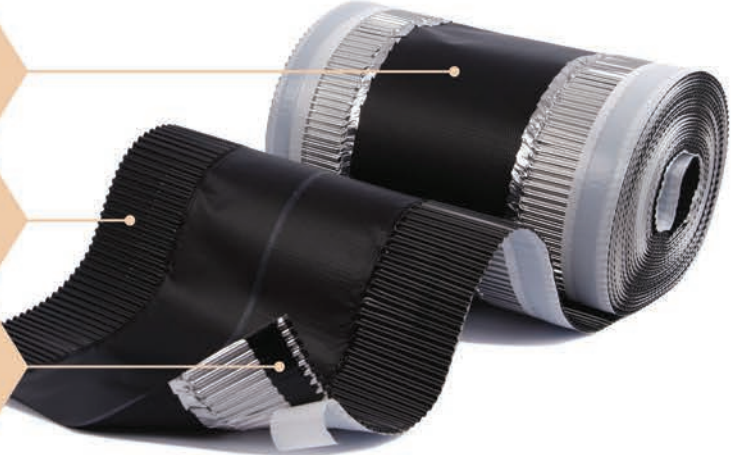
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295mm



10m



1.8kg

Dry Ridge roofing refers to the mechanical fixing of the roof ridge and hip-lines without the use of mortar. Traditional mortar bedding is widely used to fix roof ridge and hip lines. Though the initial setup costs of mortar application may be the driving factor for its popularity, its short life-span particularly in harsh weather conditions urges more awareness to ridge and hip-line applications. Coverland QuickRidge® is an innovative solution to mortar. It is an easy to apply ridge roll that is secured with high performance CH bond butyl glue to the ridge and hip tiles. The result is a aesthetically pleasing roof line which is leak proof and maintenance free.

WHY DRY RIDGE?

The roof is the most exposed part of any building. Typically weather conditions cause the roof construction to expand and contract.



Mortar hardens therefore it does not expand and contract with varying weather conditions or daily temperature variations.

Hairline cracks form which eventually increase in size.



Rain then penetrates the ridge and hip line through these cracks and cause damage to the interior of the roof.

Ongoing rain damage can cause trusses to rot which pose a serious health risk to the occupants of the property.



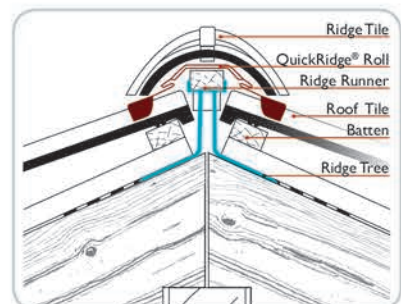
Often maintenance to the ridge and hip-lines use the same mortar method. An over coat of waterproofing is applied on top.

This looks unattractive and inevitably leads to future maintenance costs.

Features

In contrast, because Coverland QuickRidge® is mechanically fixed:

- Secure: offers better resistance to wind uplift and water penetration
- Time – saving: easy application, no messy mortar or the inconvenience of mixing and carrying mortar
- No unusual skills and minimal tools required: Roll and stick mechanism.
- Cost-effective: No long-term maintenance associated with mortar bedding.
- Weather-proof and safe
- Universal design: suits most concrete roof tile profiles





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- Turnstile - Cyclone™ Waist Height Glass
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Sikafloor® DECO AND ECONO RANGES

DECORATIVE FLOORING SOLUTIONS



The decorative flooring solutions from Sika allow the creation of an almost unlimited combination of functional and aesthetic requirements.

The results of this flexibility in design are rooms so unique and distinctive that people really like and appreciate living and working there.

Low VOC- Cleanroom Suitable.

www.sika.co.za

BUILDING TRUST



Sika launches econo and decorative flooring range

Highly Decorative Flooring Solutions for the Highest Aesthetic Demands

Sika's new decorative flooring solutions encourage the creation of an almost unlimited combination of functional and aesthetic requirements. The results of this flexibility in design are rooms so unique and distinctive that people really like and appreciate living and working in these rooms. Sika stands for innovation and quality in high quality flooring solutions – produced to enable your individual designs with exceptional ease of application.

Sika South Africa has recently launched the Sikafloor®-263SL and Sikafloor®-264 econo line. As both products are Cleanroom suitable and certified as low VOC (Volatile Organic Compound) emission, the products are recognised as sustainable products.

Sikafloor-263 SL is a two-part epoxy self-levelling, broadcast and screed system. It is highly fillable and

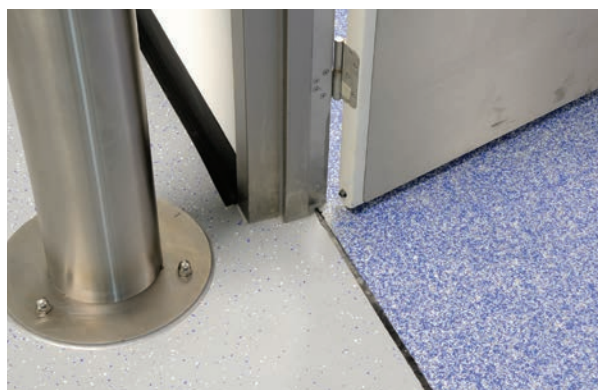
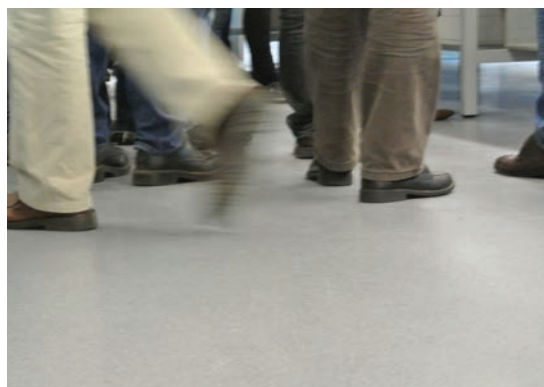
economical, offers good chemical and mechanical resistance, easy application, a gloss finish, is liquid-proof, and obtaining a slip resistant surface is possible. The self-smoothing and broadcast systems are suitable for concrete and cement screeds with normal up to medium heavy wear, such as storage and assembly halls, maintenance workshops, garages and loading ramps. The broadcast system is recommended for multi-storey and underground car parks, maintenance hangars and for wet process areas, such as the food and beverage industry.

Sikafloor-264 is a two-part epoxy roller and seal coat resin. The Roller coat product is suitable for concrete and cement screeds with normal up to medium heavy wear such as storage and assembly halls, maintenance workshops, garages and loading



TYPICAL AREAS OF USE:

Sika-DecoFiller	Life Sciences/Health Care (Pharmaceutical industries) Education (Schools and Universities) Leisure and Culture (Museums and Stadiums) Retail (Shopping Malls)
Sika-DecoFlake	Life Sciences/Health Care (Pharmaceutical industries) Education (Schools and Universities) Leisure and Culture (Museums and Stadiums)
Sika-DecoQuartz	Retail (Shopping Malls) Industrial (Manufacturing) Transportation (Airports)



ramps. The Seal coat is suitable for broadcast systems such as multi-storey and underground car parks, maintenance hangars and for wet process areas, as in the food and beverage industry.

A Range of Aesthetic Options

With both of these new flooring systems, a complete range of different surface finishes, textures and profiles can easily be produced by the use of Sikafloor Decorative systems, namely, Sika-DecoFiller, Sika-DecoFlakes and the broadcast aggregates Sika-DecoQuartz.

All of the Sikafloor decorative systems, as well as the transparent matt sealer coating, are based on the same low emission, UV resistant, high-performance epoxy resin that is tested according to the stringent minimum outgassing procedure of the German AgBB Scheme.

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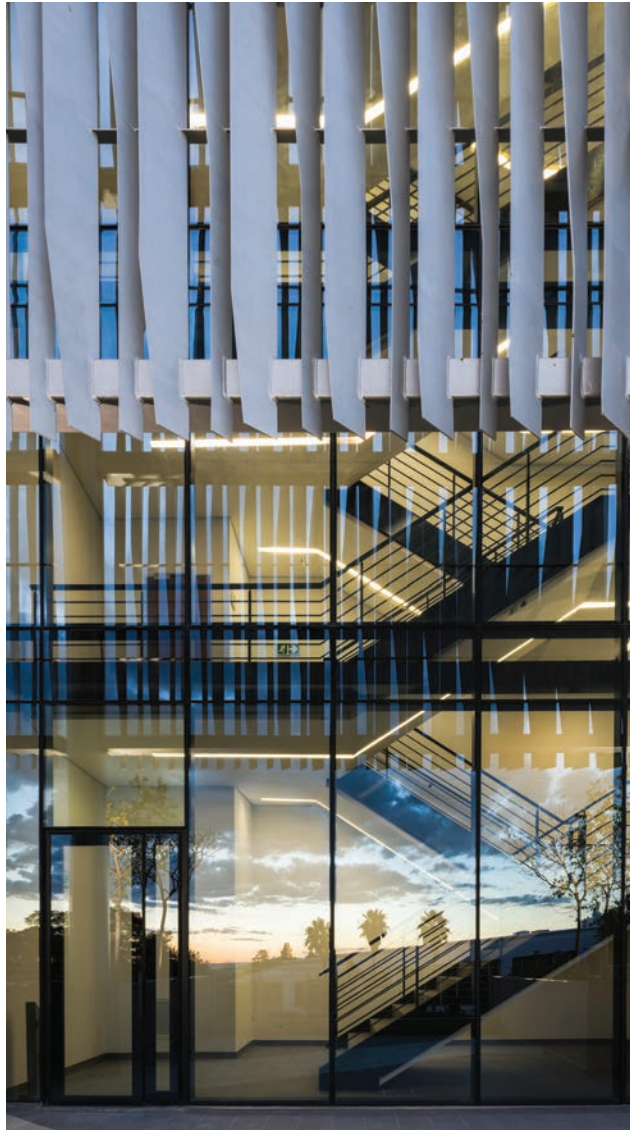
In 2011, Paragon Architects was approached by Investec to propose a building design to accommodate the law firm, Fluxmans, among other tenants.

In keeping with the mores of Investec and the tenant, a classical architectural approach was adopted for this building, although the language was not that of classical architecture.

Following a discussion with the local residents' group, a design evolved that comprised a raised platform at street level that included parking that was

expressed as a planted volume. Most of the plants – especially the trees – were pre-grown so that once they were planted in October 2013 they had reached some level of maturity. The plants included *Acacia xanthophloea*, *Celtis africana*, *Viburnum sinensis* and *Ficus microcarpa*. Access to the street was to be welcoming.





Sitting atop the platform are the offices, heavily screened to the east and west, with deep overhanging sun screens on the north side.

The steelwork forms an integral part of the design and the engineers developed a language that was as elegant as possible. The columns are 24m long in a single length. From the fifth floor to roof it tapers to 250mm from 500mm. There are 12 external columns and 16 internally.

The sunscreens were designed from a series of sun studies, executed by the mechanical engineer and internally the orientation of the blades directs your gaze to the treed residential suburbs beyond.

Revised fire regulations required an extra staircase and this was included in the architectural design.

The glazing formed an integral part of the design and included the following glazing specifications:

- AGC: double-glazed Stopray clearvision 50T
- spandrels with clear glass
- double-glazed back-painted unit
- 3.85m-high ground floor vision panels

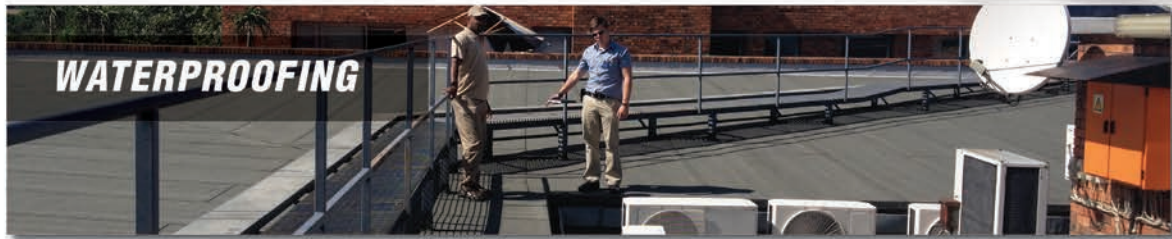
The biggest unitised glass panels are 4.5m x 1.4m.

A typical floor plate is 1600m², and the total area under construction is 22 000m² and 10 000m² GLA.

- Accommodation: office space with central service core
- Architects: Anthony Orelowitz, Duanne Render, Andrew Bell, April Mhlanga, Mila Bolon, Jarred Pinchus
- Completion December 2013
- 444 parking bays
- Contractors: WBHO

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Spartacote resin flooring systems

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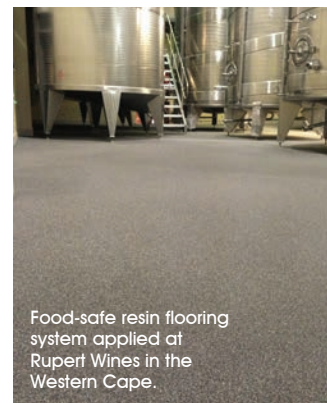
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- **High chemical and biological resistance**
- **Overnight installations**
- **Non-absorbent**
- **Seamless, smooth or non-slip surfaces**
- **Can be applied at sub-zero temperatures**

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Going green with Chromadek®

Chromadek® makes a difference to green initiatives in the building sector.

Do you know what 'going green' is all about? While the awareness of environmental and sustainability initiatives increases, this number drops when the question of how products make a contribution to green building arises.

So how do we get involved in green building solutions, if not already? If you find yourself considering how to promote green building, you are at the starting point. While legislation is a primary consideration, taking into account how a product makes a difference towards a sustainably built environment provides food for thought. The choice of materials available is vital in the drive toward the green building initiative. Consider for a moment aspects of our built environment. Almost every structure has a roof, and this integral component of a building can be finished in Chromadek®.

What does going green with Chromadek® entail?

'Going green' with Chromadek® does not just mean a greener colour, it also means going back to one of the first steps of producing colour-coated steel in a more sustainable manner. This involves the modification of the chrome content used in both the primer and pre-treatment components of Chromadek®.

Generically, the pre-treatment in colour-coated steel exists as a thin film layer designed to ensure the adhesion between the organic layer applied to the zinc-coated steel substrate for enhanced corrosion resistance. Currently Chromadek® consists of both a chrome-free primer and the recent transition to chrome-free pre-treatment (also referred to as surface treatment). The top coat and backing coats applied are also chrome free.

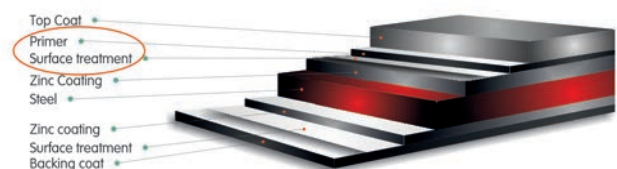
Chromadek® has going green credentials

Chromadek® is differentiated as a colour-coated roofing solution through the elimination of the chrome content in both the pre-treatment and primer applied in Chromadek®. In turn, the need to treat chrome containing effluent, produced as a by-product when producing colour-coated steel, is eliminated. This lends itself to sustainable manufacturing through the controlled emission of chrome when producing the preferred colour-coated roofing solution. To this end, every coil of Chromadek®, for roofing and cladding, produced by ArcelorMittal South Africa is committed to making a sustainable difference.

For the 'going-green' colour-coated steel roofing solution, consider Chromadek® or Chromadek Ultim®, the only local organic-coated material supplied as chrome free.

The "going green" DNA of Chromadek

Going green credentials = Chrome free



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Website: www.chromadek.com



Chromadek® is going green.

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While approaches vary, the move to GREEN BUILDING has been internationally endorsed for its benefits, some of which include alternative building technologies in conserving natural resources, through efficient and innovative use of the site, energy, building materials and water, reduced use of electricity and energy consumption thus reducing fossil fuels dependency. Consists of many components and creativity in accomplishing a solution oriented product, which comply with modern building standards and thus fulfils social basic needs and contribute to the conservation or renewal of natural resources in the construction industry while remaining environmentally friendly. This would include sound solution (acoustic treatment), fire solutions, and space solutions (partitioning systems), flexibility and privacy.



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Internal and external solar control for curtain walls, windows and other glazed elements treated with specific types and style of blinds, will contribute to points in green building ratings such as LEED, Green Star, Breeam and more.

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Currently, solar control is one of South Africa's highest priority, when designing a new building or refurbishing an existing one.



SOLUX - internal and external **sun control** with optional motorisation and integration into the building management system

Approaches vary, from products to solutions, some intended to increase productivity, ensure safety, create flexibility within the space, create necessary ambiance, temperature and light control for well-rounded physical and psychological performance with a purpose of

'Optimising the connection between people and spaces.'



Together with the architectural, engineering and construction technology discipline that concerns itself with mainly detail design of buildings in response to the changes and contemporary demands, phenomenon such as the: weather, human physiology influence and is influenced too by the environment and environmental activities including control ability, building maintenance, longevity or sustainability, to overall occupant comfort and health.



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A home with a soul

Prominent architect technologist builds dream home with recycled polystyrene.

'I believe that every building must have its own soul. When I started dreaming about building my own home I knew I wanted the building to reflect our passion, innovation, thinking outside the box, and caring for the environment.' This is the sentiment of Pretoria's leading senior architectural technologist and owner builder, Jan Minne, who is in the process of completing his 400m² home in the Six Fountains Residential Estate, situated adjacent to Silver Lakes in Pretoria.

Despite having built numerous residential and commercial building projects using the traditional brick and mortar over course of his career, Jan decided to use the revolutionary new Stumbelbloc building method developed by André Esterhuizen and Riedewaan Jacobs.

Each block is pre-formed in a mould at a factory, and is equal in size to eight standard bricks. Once the walls are at roof-level, the cavity walls are filled with polystyrene regrind (chipped up waste polystyrene) that acts as an insulator.

'I was very impressed when I first saw Stumbelbloc's cost-effective, environmentally friendly, energy efficient and convenient way of building that uses interlocking blocks,' Jan explains.

He undertook a fact-finding trip to Stumbelbloc's factory in Cape Town, and carefully inspected buildings that were built using this new approach to green building, before making his final decision.

'After standing for five years, I could see no difference between the Stumbelbloc homes and homes built with bricks and cement. However, the significant savings in cost, time and effort convinced me that this would be the route to go for my own home, and also quite possibly for future commercial building projects I undertake.'

There are numerous advantages to building with Stumblebloc, including:

No need for electricity

Stumbelbloc's innovative building method allows you to build a house without electricity in the middle of nowhere and it acts like a 'cold room'. You can produce the blocks and build an entire house without using a single kilowatt of electricity.

Thermal properties

One of polystyrene's key attributes is its excellent insulation properties. 'Polystyrene keeps hot food and beverages hot, and cold ones cold,' explains Adri Spangenberg, director of the Polystyrene Division of POLYCO – the Polyolefins Recycling Company.

Stumbelbloc puts these inherent qualities to good use by using recycled polystyrene in its construction projects. 'Polystyrene's thermal properties, when used in construction, are extraordinary,' Jan confirms.

Convenience

While conventional building methods are efficient, they can be arduous in their execution. However, the convenience of polystyrene cannot be questioned. The joy of using Stumbelbloc is that you don't have to fill the cavity walls with the polystyrene regrind during construction. You complete the house to roof height and then simply fill the walls from the top!

Cost savings on electrical and water services

Because Stumbelbloccs are modular, the entire building process is simplified and therefore faster. 'I have saved a lot of money with the plastering, for example, because the blocks are straight and self-aligning and self-levelling – much like when building with children's Lego blocks. With the traditional way of building, the task of fitting electricity conduits and water pipes in a new building after the walls are built is often arduous, messy, time consuming and expensive. However, because the cavities in the walls are kept empty until after the power plugs and



Figure 1 & 2
The architect's impressions of what the completed house will look like.



Figure 3
The polystyrene
regrind is being
thrown into the wall
cavity for insulation.

plumbing have been installed, it is a much easier and quicker process. You can decide exactly where you want your power plugs and points,' Jan points out.

Cheaper way of building

Thanks to the blocks being pre-formed in the factory, the entire building process is simplified. An entire house can be core-filled by two labourers in one day at a total material cost of R600.00. The cost of the blocks to make the house are only be in the region of R7.50 if you make them yourself, or R14.00 if purchased directly from an approved block producer. On the whole it is easier, quicker and cheaper than standard construction.

Reduces waste

Countries worldwide have a huge problem disposing of polystyrene waste. In South Africa, the Polystyrene Division of POLYCO actively works with recyclers and innovators to develop new uses for recycled polystyrene to prevent the product from being sent to landfill. 'Using polystyrene regrind in a building or construction process not only makes the most of a product in abundant supply, but also saves valuable landfill space,' Adri confirms.

To date, approximately 230kgs of recycled polystyrene has been used in Jan's home, which was collected from households and businesses in Pretoria by WastePlan. 'Polystyrene is highly recyclable, but developing end-uses for the product has proven to be difficult. Currently our ability to supply recycled polystyrene exceeds the demand. We are hoping that projects such as these will grow the demand for a product that is versatile and readily available,' explains Linda van Niekerk, MRF Manager for WastePlan in Pretoria.

Experts agree that Stumbebloc and other construction projects that make use of recycled polystyrene have application value for various construction requirements, such as chill rooms on farms, greenhouses, chicken batteries and hunting cabins.

'This is the ideal solution for government to reduce the huge backlog that currently exists in building RDP houses. Only the external wall of a RDP house needs to be constructed with Stumbebloc as the system allows for normal bricks to be tied into it. These houses will be warm in winter and cool in summer, Jan insists.

'I am convinced that Stumbebloc offers a workable, cost effective way of building green. Building with recycled polystyrene is new, innovative, and proven in numerous independent tests to be stronger, cheaper and safer than any other way of building. Making this small change will ultimately make a big different in reducing the size of our environmental footprint.'

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Stumbelbloc's innovative building method allows you to build a house anywhere and without electricity.



CONVENIENCE

When using Stumbelbloc the cavity walls don't need to be filled with the polystyrene regrind during construction. Complete the house to roof height and then simply fill the walls from the top.



REDUCE WASTE

The disposal of polystyrene waste is a worldwide problem. In South Africa, the Polystyrene Packaging Council (PSPC) is actively working with recyclers and innovators to develop new uses for recycled polystyrene in order to prevent the product from being sent to landfill. Using polystyrene regrind in a building or construction process makes the most of the product that is in abundant supply and saves valuable landfill space.



COST SAVINGS ON ELECTRICAL AND WATER SERVICES

Stumbelblocs are modular, which contribute to a faster and simplified building process.

The blocks are straight, self-aligning and self-levelling, therefore cost is reduced during plastering of the building and because the cavities in the walls are kept empty until after the power plugs and plumbing have been installed, it is a much easier and quicker process.

THERMAL PROPERTIES

Polystyrene has excellent insulation properties, helping to regulate the temperature in your home to give you warm winters and cool summers.



CHEAPER WAY OF BUILDING

An entire house can be core-filled by two labourers in one day, because the blocks are pre-formed in the factory, this makes it easier, quicker and cheaper than standard construction.



FOR MORE INFORMATION:

Stumbelbloc: Tel. (083) 228 8036 • www.stumbelbloc.com • Jan Minne (JJ Designs): 082 783 8127



Subsided Foundations



Ground Engineering

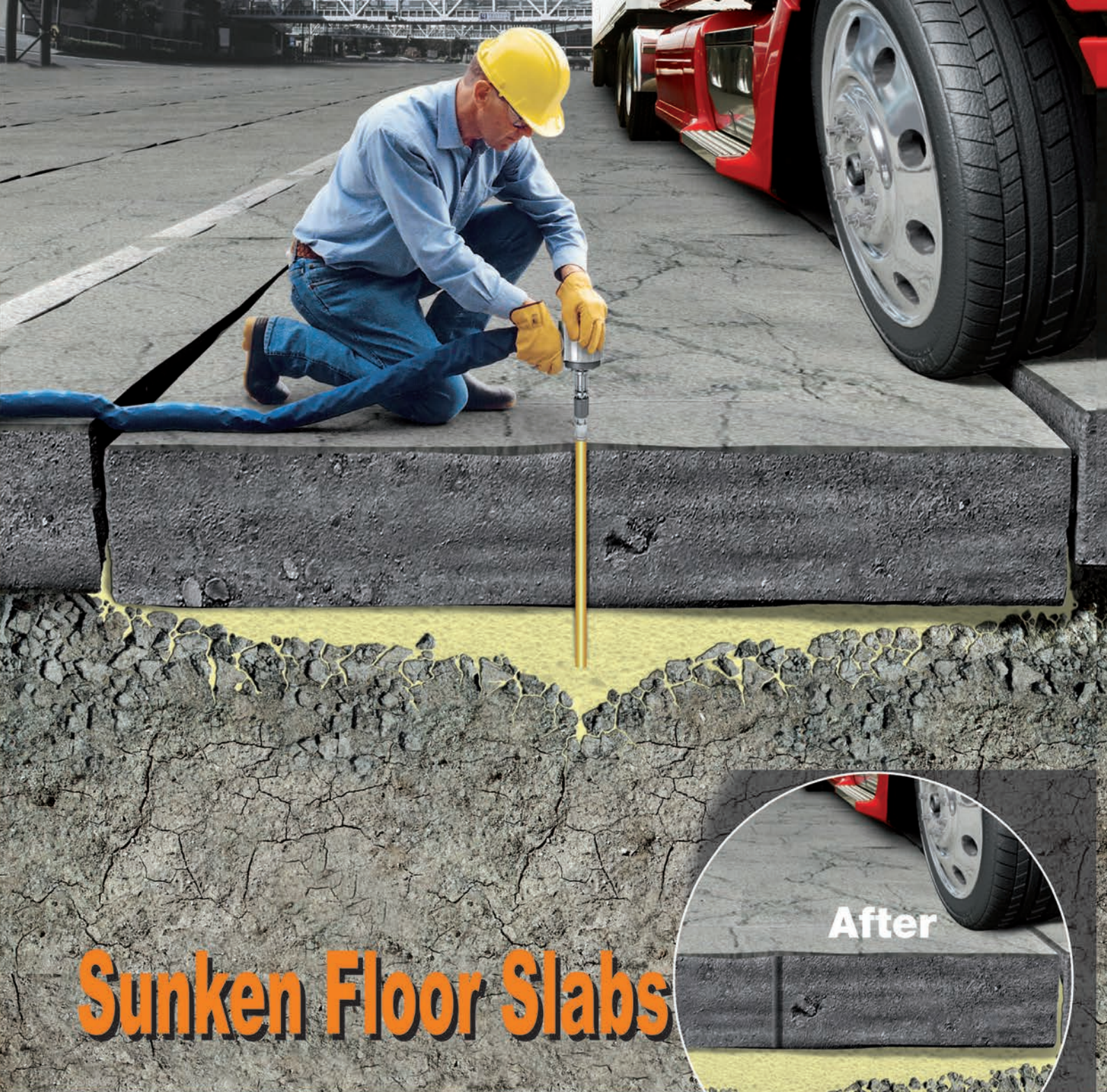
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Awarding excellence

North Park, in the Black River Park office complex in Cape Town, has received the first ever 'existing building' green rating.

The 18 675m² North Park in the Black River Park office complex in Observatory, Cape Town, has become the first building in the country to be awarded an 'existing building' certification from the Green Building Council SA (GBCSA) under the council's newly-launched Green Star SA Existing Building Performance (EBP) pilot tool.

Leaf Capital and Joubert Rabie, which own Black River Park, have made it their mission to secure green certification for the entire 75 000m² office park – one of the largest business parks in the Western Cape. The complex, consisting of North and South Park, is home to more than 110 companies including SAPOA and the GBCSA's head office.

In addition to securing the GBCSA's first-ever 'existing building' rating, the Northpark was recognised with a 5-Star GBCSA EBP certification.

Launched by the council in August 2014, the EBP rating tool recognises excellence in the performance of existing or older buildings where green building innovations have been introduced to make the building more sustainable, thus reducing their impact on the environment.

'Awarding of our first ever Green Star SA EBP rating to a building within the Black River Office Park is a significant milestone for the GBCSA, Misplon Consulting and the green building movement in SA,' comments Brian Wilkinson, GBCSA's CEO.

'We want many more building owners to follow the example set by Black River Office Park. With this first EBP rating awarded, the GBCSA continues its drive to advocate for retrofitting existing buildings with green innovations. It's these buildings that make up the large majority of properties out there,' he adds.

Until recently GBCSA's Green Star rating tools have focused largely on the design and construction of new buildings and major refurbishments – all with design and construction elements. It had very little focus on ongoing building operations and management. The suite of current new building and major retrofit tools were aimed at only about 2% of building stock, while the newly-released Green Star SA EBP tool addresses the remaining 98% of the building stock.

This existing building rating tool enables the effective measurement of a building's environmental performance in relation to its operation and management. It provides indicators to ensure that the building's environmental performance is efficiently maintained or improved over time. The new EBP rating tool is significantly differentiated by the fact that buildings can get a one- to six-star certification with this tool, and the rating is valid for a period of three years to ensure continued efficient operation and management of the building.

The office park has been at the forefront of sustainable commercial real estate for over a decade and this certification confirms the strength of the management team and its commitment to sustainability. The EBP certification of a building within the park marks the completion of the first stage of Black River Park's drive to get all the office buildings at the park certified.

Together with Misplon Green Building Consulting, Black River Office Park is now in the process of preparing submission packs to secure green ratings for the remaining buildings.

Some of the green initiatives that have been undertaken to secure the EBP certification include:

- The installation of the Southern Hemisphere's largest rooftop Photo Voltaic System that produces electric power from sunlight. This 1.2MW system is used to supplement and reduce the electrical load from the City's electrical grid. It produces around 1.9GWh of electricity per year, enough to power over 1 000 average-sized houses. This equates to between of 20 and 30% of the total amount of energy used in Park, and reduces the peak demand by around 18%. It is also the first commercial project to be allowed to feed back into the grid and be remunerated for this contribution.
- Energy-efficient lighting has been installed throughout common areas of the building and is currently being rolled out into tenants' premises through a joint financing initiative.
- Ecologically-friendly gardens, including a vegetable garden and fruit orchard, are maintained with borehole water pumped on site. Recycling of all garden waste is also done onsite to create mulch.
- The park is engaged with a new recycling-focused waste contractor to reduce the amount of solid waste going to landfill, and to improve recycling. This is aided by the procurement and placement of recycling bins around the park to encourage sorting of waste from the source and minimising contamination.

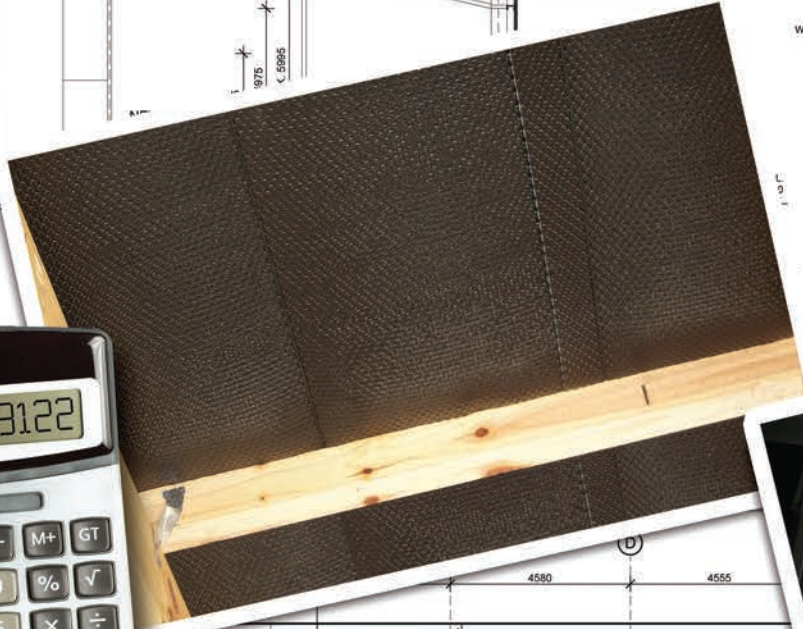
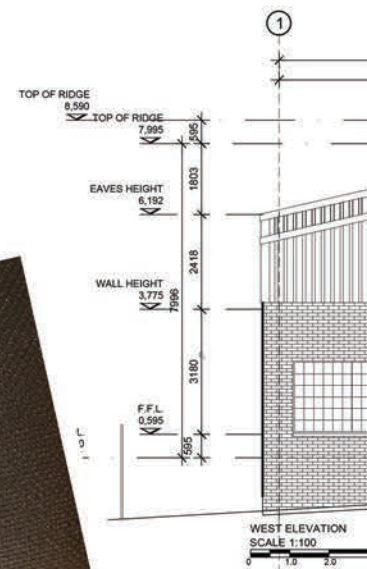
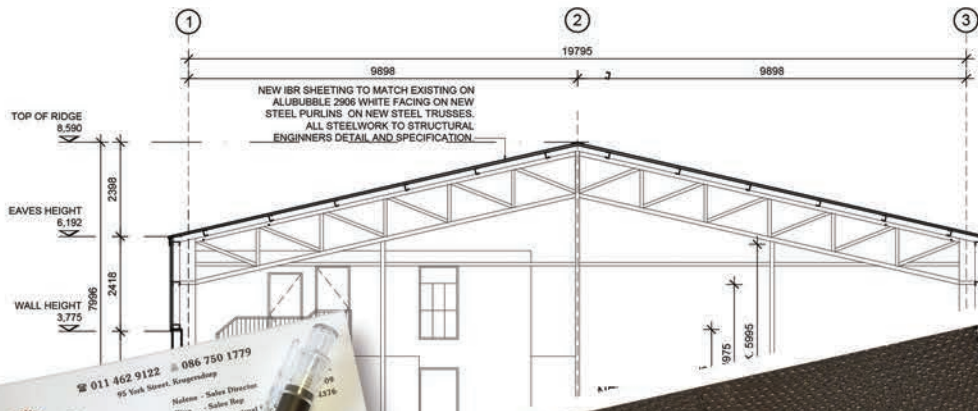
- Indoor air quality was a major focus with temperature, humidity, CO and CO₂ tests being undertaken. This was carried out in conjunction with natural and artificial lighting tests.
- Shop fronts with performance glass dominate the buildings' façade to maximise views to the outdoors for building users. This visual connection to the external environment, in combination with floor to ceiling heights in excess of 3.5m, has the benefit of reducing eyestrain for building occupants and contributing to a better working environment.
- In the park's Crossfit Gym, cycling and shower facilities have been made available to tenants with the aim of encouraging alternative modes of transport and a healthy and active lifestyle.
- Education and raising awareness of greening initiatives through talks, interviews and presentations has been established, and publication of this Building User's Guide, which includes procurement and purchasing of paints, carpets, adhesives and sealants for maintenance and fit-out work, has been provided.
- Standard cleaning consumables have been exchanged with an environmentally-friendly range of cleaning products and equipment.
- A storm water management plan, which recognises site-related practices to limit the disruption of natural hydrology, and minimise pollution and site deterioration, has also been implemented.
- A hard services management plan that encourages environmentally-sensitive hard services maintenance practices to reduce environmental impact and improve ecology value has been developed.

While Brian commended the efforts of Black River Park, he urged both the private sector and government to now also look more seriously at securing green ratings for existing buildings through the GBCSA's new certification tool.

'If we want to achieve a bigger positive impact in making buildings more sustainable and green, existing buildings need to be targeted. Our innovative "existing building" rating tool aims to drive the transformation of these buildings to become more sustainable spaces,' he concludes.

Greener buildings are becoming more attractive to both tenants and potential investors thanks in a large part to their triple bottom-line commitments to profit, social sustainability and environmental sustainability.

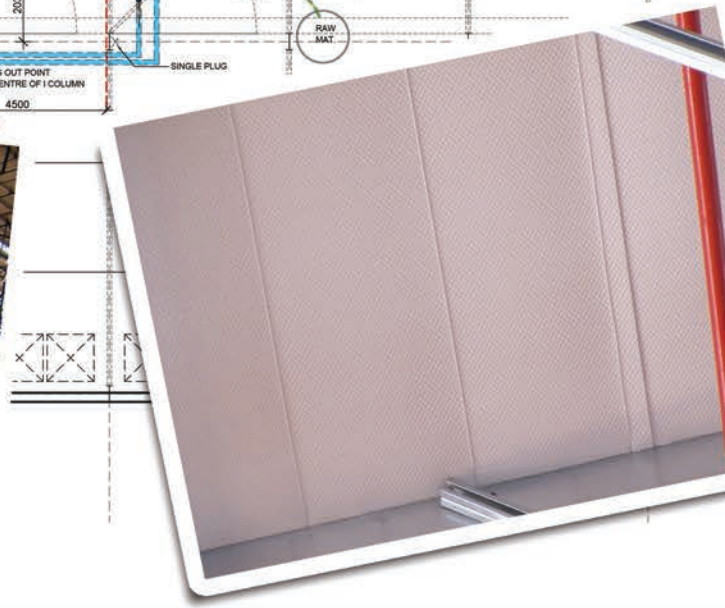
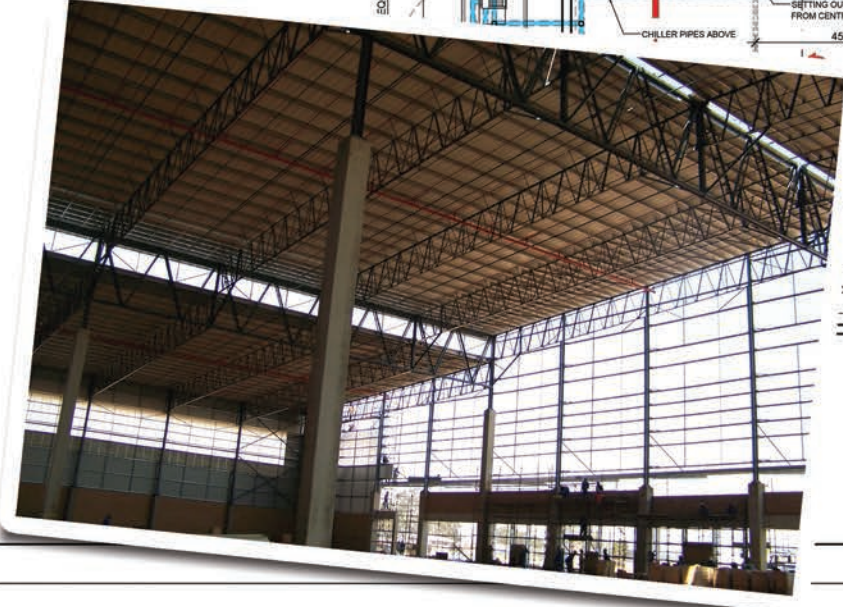
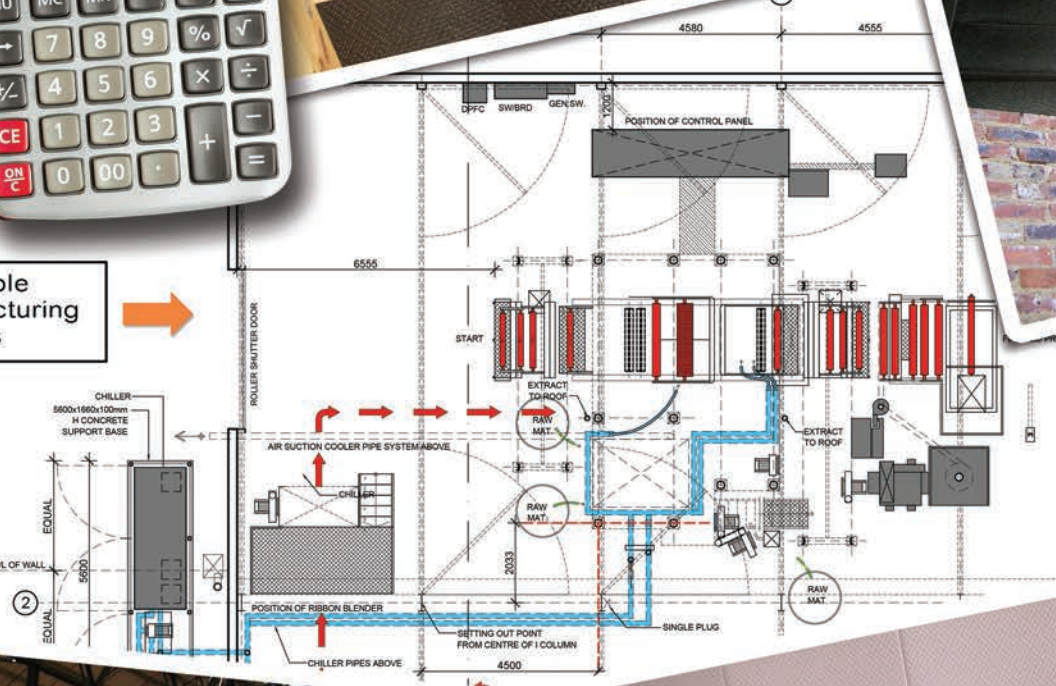


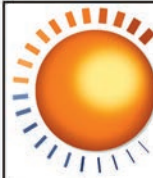
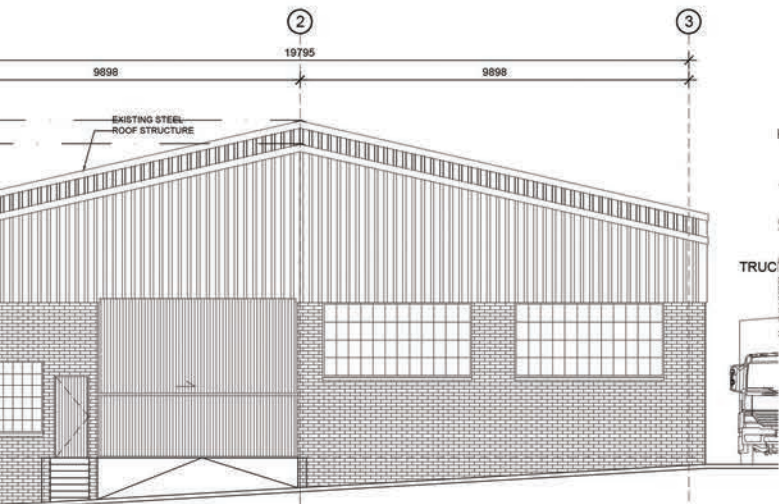


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Architectural illumination

The Victoria Falls Bridge is illuminated with light at night, every night.

In a recent feat of eco-engineering excellence, an LED solution to illuminate a special southern African bridge was brought to life/light. Solid State Lighting Technology in partnership with Philips Lighting Solutions devised this large-scale architectural lighting display to enhance the iconic 108-year-old Victoria Falls Bridge.

By day, Victoria Falls is on display in all its natural glory, but at night it is hidden under the veil of darkness, evident only by its characteristic thundering sound. Across this 2 150m gorge of plunging water is the 198m long bridge, a spectacular engineering structure built in 1905.

A portion of Zimbabwe's bridge was previously lit with 800w high-pressure sodium lamps, but these have a short life span and electricity consumption is very high. In comparison, an LED solution consumes 60% less energy. Each light uses 290 watts of power at full output, steady state, yet they are able to throw the light over 200m.

With the idea to honour and illuminate the Victoria Falls Bridge conceptualised towards the end of 2012, the project was designed soon after and installation began in mid 2013.

As the leader in LED technology, Philips Lighting Solutions advised, identified and sourced the best products to ensure effectiveness and longevity of this architectural illumination. With a 100 000-hour life span, the lights will illuminate the bridge for upwards of 15 years if burned for eight hours per night. After this, they will still produce 50% of their light output.

As it is a working bridge, it is subject to strong vibrations from large trucks as well as trains. It was not feasible for the floodlights to be attached to the bridge structure as the constant vibrations would quickly reduce the LED's life to 50% of their initial intensity.

Working sensitively with the environment, the installation team creatively used security fencing to which the LED floodlights were attached using

supporting accessories and cabling.

Each weighing 34kg, the project required 12 LED floodlights – also referred to as solid state lighting technology.

Twelve Philips CK Colour Reach Powercore Generation 2 LED spotlights were sourced from Mexico. These floodlights are positioned at the feet and sides on either end of the bridge, six in Zambia and six in Zimbabwe. A RGB controller and a DMX wireless emitter are positioned on the Zimbabwe side, and all information is communicated digitally across the gorge to a DMX wifi receiver that then communicates with the floodlights on that side, eliminating the need to run expensive and heavy cabling across the bridge span. With the use of a Philips Data Enable Pro, sourced from Holland, the line voltage and control data is merged so that each spotlight can be communicated with on a standard cable. This also drastically simplified installation and lowered the total system cost.

These high-performance LED lights are also able to produce an extensive array of saturated colours that are significantly more cost effective than traditional light sources for installation, operation and maintenance.

Bringing this forward-thinking technology to Africa, Solid State Lighting Technology and Philips Lighting Solutions have helped to enhance a special man-made structure and the iconic natural landscape, as well as illuminating the physical connection between these two southern African countries.

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The new generation E460 smart prepayment meter solution is rich in functionality and offers maximum flexibility.

Specifically designed to work with open standards for prepayment, smart metering and communications, it provides a future-proof solution that protects your metering investment.

Features

Open industry standard, G3-PLC OFDM technology for bi-directional communications between the E460 meter, the P160 Customer Interface Unit and the Data Concentrator.

Split metering solution, which typically consists of two parts; the E460 meter and the P160 Customer Interface Unit.

Communication between the meter and the Customer Interface Unit is by means of G3-PLC using existing household wiring; no additional communication wires are required.

The P160 Customer Interface Unit is typically installed in the consumer's home wherever there is a suitable electrical socket outlet available.

Real Time Clock and Time of Use - enabled in the on-line smart prepay and post-pay configuration modes.

Supports the latest STS currency token specifications.

Extensive e-metering load switch control functions including power-limiting capabilities.

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Open international standards

- G3 – PLC
- STS prepayment standard (IEC62055-41/51)
- Interoperable IDIS standard
- DLMS / COSEM communication protocols



E460



P160

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CHOOSE THE CORRECT HAZARD (H) CLASS:

H2 – Low Hazard: Inside above ground

H3 – Moderate Hazard: Outside above ground

H4 – High Hazard: Outside in ground

H5 – High Hazard: Outside in contact with heavy wet soil or in fresh water

H6 – High Hazard: Prolonged immersion in sea water



FOR MORE INFORMATION ON ANY ASPECT RELATED TO TREATED TIMBER PRODUCTS AND THE CORRECT USE OF TREATED TIMBER, OR WHERE TO CONTACT SAWPA MEMBERS, PLEASE CONTACT:

Tel: 011 974 1061
sawpa@global.co.za
www.sawpa.org.za



South African Wood Preservers Association

Understanding wood preservation

BRUCE BREEDT, executive director of the South African Wood Preservers Association, discusses the basics of wood preservation.

There are two types of wood preservation, primary (industrial) and secondary (DIY). Primary wood preservation involves a process where wood is impregnated with an industrial chemical wood preservative (biocide) to increase its durability and resistance to biological attack (fungi, wood borers and termites). High-pressure processes, involving waterborne chemicals and Creosote are predominantly used. Other approved methods of primary wood preservation are hot and cold open tank, using Creosote, diffusion, using Borates and low-pressure or double-vacuum processes using light organic solvent preservatives (LOSP), such as TBTN-P or Azole Permethrin. Visit <http://youtu.be/aCF0kYD6ruY> for an animation of the pressure process used.

Primary wood preservation is a pre-treatment where the timber is impregnated with a wood preservative prior to end-use application, and therefore acts as a preventative measure. It is not supplemental or remedial (after the fact). Chemical retention, penetration and processes used are prescribed in SANS standards and mandatory compliance is regulated through regulations and compulsory specifications. Third party product certification is thus required.

Secondary wood preservation includes supplemental or remedial preservatives that contain biocides as active ingredients, which can also be included in protective wood finishes that has wood sealers as the carrier. Supplemental or remedial preservatives are mainly applied by hand, for example, by brush, painted or sprayed on in a DIY setting, and are mainly corrective to stop further attack. It can also be preventative by treating exposed ends of pre-treated timber that has been

modified or cut. Bandages, pastes and rods (sticks) with diffusible borate as the active ingredient also fall under the remedial preservatives. Supplemental or remedial preservatives normally require an on-going maintenance programme to remain effective.

Protective wood finishes come in the form of sealers and varnishes, contain no biocides and are also applied by brush, paint, and spray in a DIY setting. These types of wood finishes protect against weathering factors, such as water ingress, temperature changes and UV rays, but not against fungal and insect attack.

Why preserve timber?

The natural durability of our commercially grown and used plantation species like *Pinus* and *Eucalyptus* is low, rendering it susceptible to insect and fungal attack; therefore it is imperative to preserve the timber. Timber preservation also enhances durability and confidence in using timber and extends the life of timber, as well as providing the added benefit of increasing the carbon sink.

Preservation of timber and the use of preservative treated timber are regulated by building regulations, such as regulation A13, as well as in the NHBRC manual, which specifies the use of preservative-treated timber when used in permanent structures in specific areas of South Africa. Compulsory specifications for timber preservations can be found in the VC 9092 (NRCS) specification which regulates the sale of preservative treated timber. Both these regulations refer to SANS10005, *The preservative treatment of timber*, which in turn refers to the relevant product standards are mentioned below.

Hazard Class	Application and risk	Preservative Type	Retention kg/m ³
H2	Dry indoors, above ground – Low	CCA Creosote	6 80
H3	Outside above ground – Moderate	CCA Creosote	8 80
H4	In ground contact – High	CCA Creosote	12 100
H5	Fresh water & heavy wet soil – High	CCA Creosote	16 130
H6	Marine (sea) water	CCA & Creosote	24 + 200

H CLASSES	PRESERVATIVE TYPES	TYPICAL END-USE APPLICATIONS	PROTECTION	RISK FACTOR
H2 – Dry interior above ground	- Class W – CCA, CuAz, ACQ and Boron - Class O – TBTN-P and ZP	Roof trusses and frame wall construction, interior doors and joinery	Insect attack	Low Risk
H3 – Exterior above ground	- Class W – CCA, CuAz & ACQ - Class C – Creosote & Coal tar	Decking, cladding, outdoor furniture, and exposed structural, fencing and landscaping timber products not in direct ground contact	Fungal attack and insects	Moderate risk
H4 – Exterior in-ground	- CCA, CuAz & ACQ - Creosote & Coal tar	Normal in ground timber/poles used structures, fencing, landscaping and garden features, etc	Fungal decay and insect attack	High Risk
H5 – Fresh water & heavy wet soil contact	- CCA, CuAz & ACQ - Creosote and Coal tar	Used in contact with fresh water and heavy wet soils, e.g. structures in fresh water, such as jetties, walkways, piling, etc	Fungal decay and insect attack	High Risk
H6 – Marine	Dual treatment of firstly CCA and then Creosote	Used in direct contact with sea water, e.g. jetties, quays, marine walkways, retaining walls and barriers	Fungal decay and marine borers	High Risk



Choosing the correctly treated timber

The following SANS standards apply to treated timber:

- SANS 457 parts 1 and 2 – wooden poles, droppers and guardrail posts for building, fencing and agricultural purposes
- SANS 753 and 754 – wooden poles for transmission and telephone lines
- SANS 1288 – All other preservative treated timber, for example sawn structural and flooring

These standards specify a Hazard Class system (H Classes), which categorises treated timber into different end-use applications based on the following:

- Different exposure conditions
- Potential risk of biological attack
- Preservative retentions/chemical loading

Product use information

Be sure to choose the correct H class timber for your intended application and apply remedial preservative to all cross-cut and exposed areas (except when in contact with the ground, fresh water or marine applications).

Apply a suitable brush, paint, or spray-on wood sealer when the natural look of the timber is desired. Do not plant poles inside an encapsulated concrete base. Instead, use a 'collar' or compacted stone and soil, with or without a solid (cured) concrete base.

How to plant a pole

The detail in this diagram assists proper drainage of any moisture that may be absorbed by a wooden pole. A structural engineer must be consulted for detailed structural requirements.

Safety precautions and warnings

When machining (sanding and sawing) CCA treated wood, be sure to wear a dust mask. It is also important to wear safety glasses to protect your eyes from flying particles. Work in a well-ventilated area to avoid prolonged inhalation of sawdust from CCA treated wood and wear gloves when working with freshly treated wood. Always wash work clothes separately.

Do not make baby toys or furniture from CCA treated wood that may be chewed on by infants, or make any food utensils from CCA treated wood. Do not use CCA treated wood for firewood, to prepare any foods, and do not store food in direct contact with CCA treated wood containers.

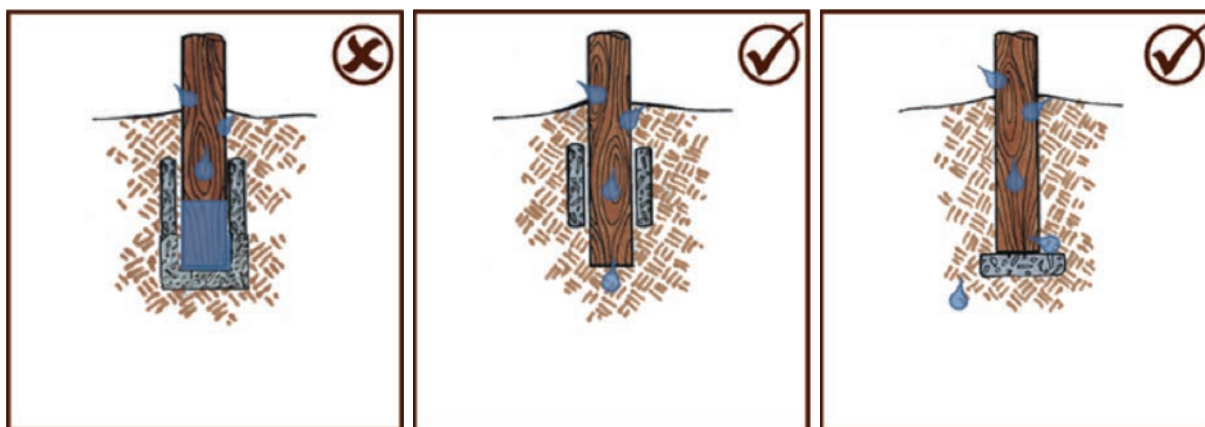
Do not make containers for storing drinking water from CCA treated wood. CCA treated wood should also not be used in beehives where it may come into contact with the honey, nor should treated wood shavings or sawdust be used for animal litter or where it can become a component of animal feed.

Disposal

While treated timber waste is not regarded as hazardous waste material, treated wood off-cuts and waste should not be allowed to accumulate but should be disposed of at a registered disposal or landfill site.

It is important not to burn treated wood off-cuts and waste or use it for firewood for food preparation as this will allow the release of chemicals, which are tightly bound to the wood, into the smoke. The ashes may also contain residual chemicals.

The primary wood preservation industry currently boasts 116 certified treatment plants in South Africa, consisting predominantly of CCA treatment plants and Creosote plants. In 2013, the total estimated preservative treated timber volume treated in South Africa was 1 065 580m³.



For more information on wood preservation in South Africa, please contact SAWPA



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Senior Consultant

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- Construction Regulations
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BOOKS CO-AUTHORED BY JOHAN LOUW

- "Explaining the Occupational Health and Safety Act – the legislature's interpretation",
- "A practical guide to the Construction Regulations",
- "Legal Liability and OHS Act Appointments",
- "Noise Induced Hearing Loss in Industry – a legal and practical approach".

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Fleet Glass and Aluminium's own in-house systems design department draws on decades of experience to meet the challenges of complex projects. Our process begins with a top-to-bottom review of the curtain wall design; understanding the architectural aesthetic requirements given the performance criteria, while providing details that interface with other exterior enclosure substrates.

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Sliding door systems provide a flexible solution for both interior or exterior applications. Fleet Glass and Aluminium install thoroughly tested sliding doors, window frames and shop front windows to the requirement and specifications of customers and standards.

We specialise in the following:

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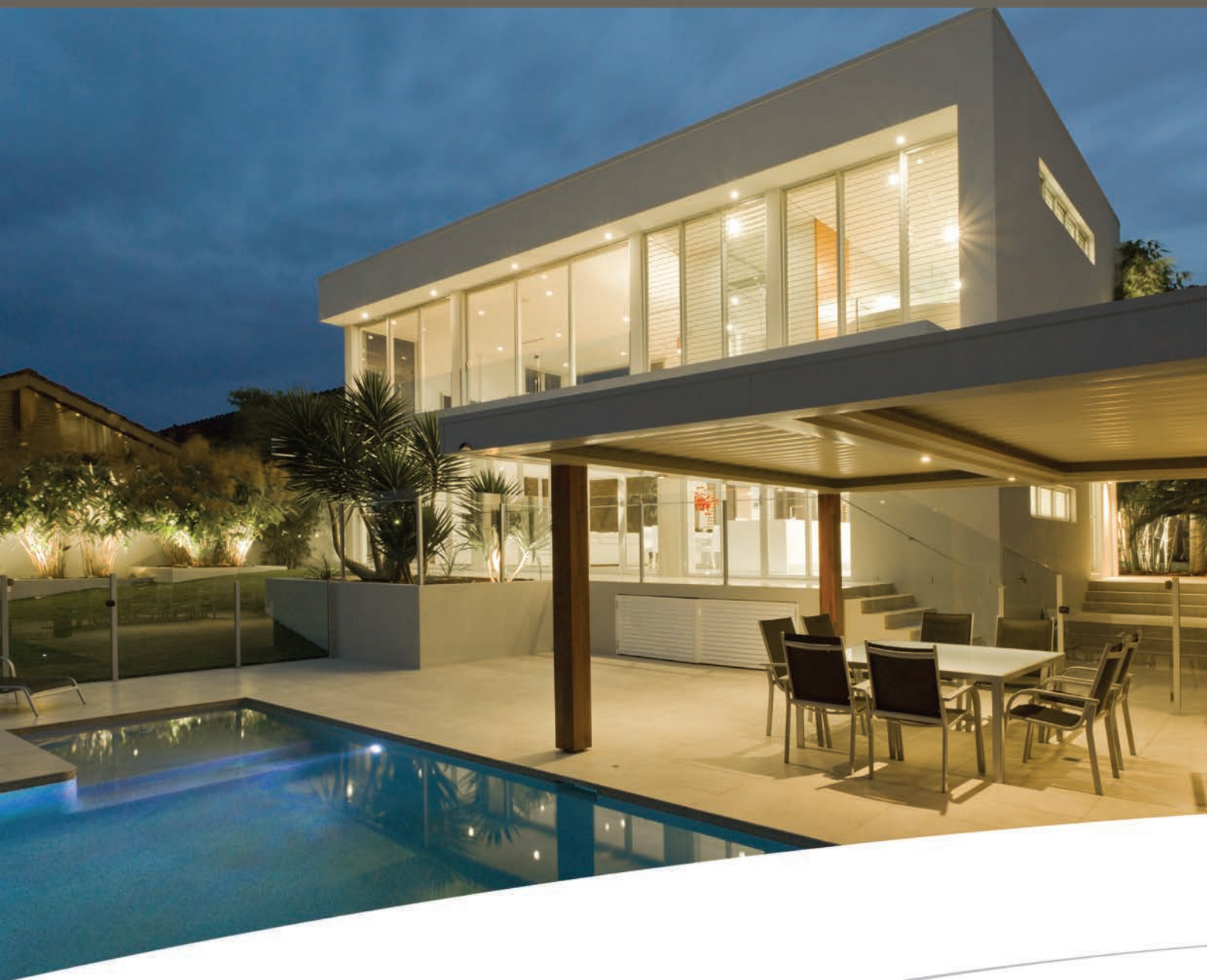


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- End-user design



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products and solutions

THINK LAFARGE

A world leader in building materials, Lafarge employs 64,000 people in 62 countries, and posted sales of €15.2 billion in 2013. As a top-ranking player in its Cement, Aggregates and Concrete businesses, it contributes to *Building better cities* around the world, through its innovative solutions providing them with more housing and making them more compact, more durable, more beautiful, and better connected.

With the world's leading building materials research facility, Lafarge places innovation at the heart of its priorities in order to contribute to more sustainable construction and to better serve architectural creativity.

In South Africa, the company manufactures and supplies cement, aggregates, readymixed concrete and gypsum plasterboard. It focuses on providing solutions to help the sustainable development of better cities that benefit the country's people. Through having a strong presence in all of its business lines, it is in a unique position to contribute to urban construction, while also helping to build rural towns and villages.

Customers in the local construction industry, whether contractors, architects, developers or retailers, associate the Lafarge name with reliable, quality solutions for their building material needs. Lafarge South Africa's key ingredients for success in today's highly competitive market include being able to offer the widest range of designed-for-purpose products and delivering a genuine customer-focused service.

advertorial



South Africa is home to over 90% of the planet's population of rhinos. Lafarge South Africa demonstrates active concern for the conservation of the country's wildlife heritage and was a major donor towards the creation of the world's first dedicated non-commercial baby rhino orphanage and continues to support the centre.

Some of the products that illustrate the market-leading spread of solutions available from Lafarge South Africa include:

CEMENT SOLUTIONS

Lafarge South Africa was the first local cement manufacturer to offer a complete range of enhanced, more environmentally-friendly cements throughout all strength classes. Whatever the size or technical challenges of a project, the company is able to provide a suitable product solution with experienced technical back-up.

➤ Affordable, sustainable solutions

The general-purpose Lafarge South Africa CEM IV cements, Buildcrete 42,5N and DuraBuild 32,5N, have more than 40% clinker replacement using the company's innovative fly-ash enhanced formulation.

DURABUILD

Durabuild is designed for mortar, plaster and light concrete work, with the emphasis on affordability.



BUILDCRETE

The Buildcrete name is long-established in the local construction industry as the premium quality general-purpose cement. The high performance and early strength gain of Buildcrete enable builders to standardise on its use for a wide range of applications.



FASTCAST

Fastcast 52,5N is a premium high early strength cement formulated as the ideal cement solution for brick and block manufacture, other smaller precasters and DIY customers. Uses include brick and block making, precast concrete products, concrete roof tiles and general small precast items e.g. lintels, garden benches, garden ornaments.



➤ Premium technical enhanced cement

POWERCRETE

Powercrete Plus CEM II 42,5R, a premium technical enhanced cement, is widely used in the readymix and construction sectors for dam/reservoir construction, structural concrete applications, medium strength concrete for driveways, unreinforced light industrial floors and mass concrete, post-tensioning and prestressed slabs and beams. The special formulation of Powercrete Plus gives it the capability of being enhanced further on site with additional fly-ash or slag, to meet different concrete design requirements for strength, durability and workability.



➤ Cement innovation

SUPASET

SupaSet is a remarkable new product that illustrates how Lafarge technology is applied to meet the needs of its customers for convenience and rapid results. A first of its kind in South Africa, SupaSet is ready-to-use, just add water. It takes only 10-15 minutes to set a pole firmly in position, compared with up to 2 days for a conventional concrete. SupaSet is used for poles (wood or metal) around the home, including decking poles, carports and lapas, small to medium size gateposts, rotary washing lines and general fencing.

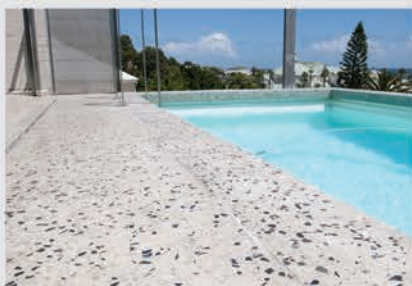


READYMIX CONCRETE SOLUTIONS

ARTEVIA™

The Lafarge Artevia™ range is Lafarge's high-quality range of decorative concrete. Offering a wide choice of colours, textures and patterns in durable, minimal maintenance concrete, Artevia™ imparts originality to the inside and outside of homes, and the means to express the homeowner's personality.

Artevia™ Polish is the solution for achieving silky smooth, marble-like finishes. Artevia™ Colour with its integral pigments is a durable structural concrete to beautify high-traffic areas. The appeal of natural stone textures is provided with Artevia™ Stone, while the exposed aggregates in Artevia™ Exposed make an attractive, non-slip driveway.



➤ Self-compacting concretes

AGILIA®

One of Lafarge's groundbreaking products, Agilia®, is a self-compacting concrete designed to flow under its own weight without the need for vibration. The product's exceptional fluidity enables it to fill all corners and areas in formwork or moulds effortlessly, and produces excellent architectural finishes.



➤ Permeable concrete innovations

HYDROMEDIA™

Lafarge's Hydromedia™ permeable concrete demonstrates that practicality can go hand in hand with beauty. Hydromedia™ is an innovative porous concrete that provides rapid drainage of stormwater for a wide variety of uses such as driveways, pathways and swimming pool surrounds. The strength and light weight of Hydromedia™ also make it an ideal solution for concrete "green" roof systems.



AGGREGATE SOLUTIONS

Lafarge South Africa operates 20 quarries strategically located throughout the country to service all sectors of the local construction industry. Its quarry materials fall broadly into three categories: road materials, concrete materials and specialised materials. Specialty products and services include quality testing and bagged premixed products such as Builders' blend concrete mix and specially graded stone sizes made on demand.

PLASTERBOARD AND INTERIOR FITTING SOLUTIONS

Lafarge Gypsum manufactures and markets innovative gypsum-based building solutions and related systems for constructing, finishing or decorating interior walls and ceilings in residential, commercial and institutional construction projects. It is the first company in South Africa to carry the SANS 266 SABS mark for all of its plasterboard, providing customers with the assurance of consistent quality.

LAFARGE HAS THE SOLUTIONS

Whether you need a high strength, durable concrete, a readymix concrete solution or a technically superior product for your next project, Lafarge South Africa has the solutions for you. *Building better cities* has never been easier thanks to Lafarge South Africa.

Additional information is available on the website at www.lafarge.co.za

Lafarge complimented on products and service for Metolong Dam

The Metolong Dam project is the major structure in the Metolong Dam and Water Supply Programme (MDWSP) that will provide a new raw water supply for Lesotho's capital, Maseru, and the generally impoverished surrounding areas.

Traditionally, cement for water infrastructure projects has been dominated by CEM I products. Realising that Heat of Hydration would be a significant concern, Lafarge South Africa proposed its premium technical cement, Powercrete Plus CEM II 42,5R. This innovative formulation is a Low Heat cement and also has the capability of being enhanced further on site with additional fly ash. The outcome of extensive laboratory evaluations of proposed RCC (Roller Compacted Concrete) and the CVC (Conventional Vibrated Concrete) mixes was that Powercrete Plus and DuraPozz® classified siliceous fly ash from Ash Resources were used as binder materials.

The anticipated final requirement of Powercrete Plus cement is 33 000 tons. Similarly, the final fly ash usage on project completion at the end of 2014 is expected to be a total of 33 000 tons. Main contractor SinoHydro, a global top-ranking Chinese construction and hydropower group, was highly complimentary about Lafarge's service saying the company gave them outstanding support, achieving a hundred per cent on-time delivery record to site.



The Turkish Mosque: a unique project

The Nizamiye Masjid, or Turkish Mosque in Midrand, Gauteng, is the largest mosque and also the only true example of Ottoman architecture in the southern hemisphere. The basic plans were designed in Turkey as an 80 per cent scale copy of the 16th-century Ottoman Selimiye Mosque in Edirne, Turkey. To ensure that the Mosque was constructed in keeping with its Ottoman origins, 600 specialised craftsmen were brought from Turkey.

Lafarge South Africa supplied the total requirement of 13 800 m³ of readymix concrete from its Chloorkop batch plant. The cement used was Lafarge's versatile premium technical CEM II product, Powercrete Plus 42,5N. It was blended further with DuraPozz® the high quality classified siliceous fly ash from Ash Resources to achieve a range of customised mix designs.

For the continuous mass concrete of the 1 000 m³ floor slab, the company supplied two pumps and delivered readymix around the clock. Another critical construction task – pouring the concrete for the 32 m high by 24 m wide main dome – involved Lafarge in organising the largest mobile pump in South Africa at the time and completing the job in a 20-hour non-stop pour. Lafarge South Africa is proud to have been part of this magnificent, once-in-a-lifetime project.



Lafarge building material solutions for Auto & General Park

As the upgraded William Nicol highway, north of Fourways in Johannesburg takes shape, it offers a superb view of the Auto & General Park building with its dramatic porte-cochère thrusting out towards the Helderfontein Spruit. The 24 000 m² building is home to Telesure Investment Holdings, part of an international financial services group that houses leading insurance brands in South Africa, including Auto & General Insurance, 1st for Women Insurance, Dial Direct Insurance, Budget Insurance and direct life insurance provider ILife, which were previously in six dispersed separate buildings throughout Gauteng.

Construction of the project used 5 100 tons of Lafarge South Africa's versatile premium technical cement, Powercrete Plus CEM II 42,5R. The company continues to supply its specialised cementitious binder, RoadCem CEM II 32,5N for the ongoing work on the nearby William Nicol highway.

When the Auto & General Park project decided to upgrade one of the major floor slabs, a key challenge to thickening and strengthening the slab was the restricted access. Lafarge South Africa provided the solution in the form of 155 m³ of its unique high performance self-consolidating concrete, Agilia™, which was pumped into holes drilled through the slab. Readily achieving a compressive strength of 50 MPa, the high fluidity of Agilia™ allowed it to completely fill all spaces in the formwork, while remaining homogeneous.

Main contractor, Aveng Grinaker-LTA, said that the long-standing relationship with Lafarge reflected the consistent quality of their products together with an excellent delivery and backup service.



Photograph courtesy of Auto & General

Forest Hill City Mall – a modern urban lifestyle

Raising the bar for a modern urban lifestyle, the Forest Hill City Mall was opened in July 2014. It is the first mixed-use development of its kind in the Centurion area of Gauteng.

Lafarge South Africa was awarded the concrete supply contract for the entire R1,36 billion project. This amounted to 53 880 m³ of 10-40 MPa grades of concrete supplied mainly from the company's Rossway Readymix plant. The company provided technical support and its Bon Accord, Centurion and Chloorkop plants acted as concrete production back up, while also supplying other products such as Ultra™ Waterproof concrete, Post-Tension mix and mortar. These arrangements met the need for an assured large volume supply of quality concrete on the challenging fast track, eight-month project.

The standout feature of the 74 000 m² development is the emphasis on entertainment, offering an Olympic-sized ice rink, bowling alley and even a wave pool, in line with the growing trend for a shopping visit to a mall becoming a family outing. The Forest Hill City Mall concept is an ideal expression of 'Building better cities', the brand baseline of the Lafarge Group, a world leader in building materials. It reflects the Group's ambition to contribute products, solutions and services that help to create more sustainable and desirable living environments for everyone.





Seamless integration

Creating a home that would not scar the untouched natural beauty of its surroundings.

The brief for this holiday home was simple. LWA' clients were empathic about their wish for a home that would not scar the untouched natural beauty of the site. They also wanted a visual link with the breathtaking view of the Breederivier mouth from anywhere in the house, and a wind-free entertainment courtyard.

This last requirement was quite a big challenge and was the determining factor in the eventual layout and the design of the roofscape. The gale-force offshore wind often blows for days on end, creating strong whirlwinds in courtyards when deflected over solid building forms. As such, it was essential to create sheltered outdoor spaces.

We solved this challenge by breaking up the building form, effectively allowing exit channels for the

wind. This also helped to reduce the scale of the building and effectively merged it with the landscape without compromising the lovely double volume created by exposing the roof structure internally.

A guest cottage was added at the top end of the site to provide additional accommodation for visitors and to provide privacy to the entertainment courtyard. This was also a practical way to deal with the cleaning and maintenance of spaces that aren't used as often as the main house.

Large sliding doors were used to connect the indoor spaces, with the view and light filtered through adjustable louvered shutters. Strategically placed gable windows allow the soft early morning and late afternoon light into bedrooms and living spaces.

Colours for finishes were kept neutral to highlight the colour and texture provided by the external landscape. Dressed stone cladding from Barrydale provides organic texture and warmth to the courtyard.

The building envelope and minimal workspace was marked out and strictly controlled during the construction period to ensure that the pristine natural vegetation was left undisturbed. A timber deck was added to the front of the house on a light substructure to minimise damage to the slope down to the river.

The success of the project is reflected in the fact that even though the house was only recently completed, it looks like it has been there for years.

LWA

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Access flooring saves costs

Access flooring paid for in less than twelve months!

Bergvik, a well-established and reputable raised access flooring company, provides added revenue streams for their customers that enable them to pay for the floor in less than 12 months.

Established in 1970, Bergvik Flooring has designed, manufactured and sold technical raised floors and secure seismic bracing solutions all over the world. Bergvik Flooring is an innovative, knowledge company with operations in Sweden, South Africa and the US.

'We have a strong focus on raised floor systems and seismic bracing tailoring solutions for our customers' applications worldwide. We work hard to increase our customers' value chain and competitive strength through close cooperation and a strong end-user perspective. Customers such as Vodacom, MTN, Teraco and Eskom have realised the advantages that this unique Swedish product provides to their data centres, telecommunication and electrical rooms,' explains Peter Brandstrom, Bergvik's CEO.

'The old mindset was to build a floor the cheapest way possible. However, the new mindset is to build a floor that helps your customers to reduce their costs and increase their revenue streams while improving their asset turnover,' he adds.

How can a raised floor achieve these benefits? Bergvik realised that the number one cost, over time, for a data centre is that of energy from cooling the server room. By using the superior airflow stratification – offered by the Bergvik Air Grill – together with its modular Iso floor structure, customers obtain large energy cost savings by being able to raise the CRAC set temperature by 3 to 5°C.

Other cost savings come from being able to put the CRAC units, fire suppressant cylinders and batteries directly on top of the Bergvik floor, which means no external boxes are required, grounding is required in only two places instead of multi-point grounding, and no bridging is necessary because the pedestals are movable, not set at 600 x 600mm. By generating optimised floor layouts to provide the opportunity to add more server racks on the same data centre footprint, Bergvik adds to its customers' monthly revenue streams. A significant example of this includes one customer who created additional revenue of R3-million within 12 months.

This was achieved by offering 1000 x 600mm custom-sized cold aisles with Air Grills with high-plume fins to improve air stratification, rather than a cold aisle width of 1200mm using two standard flat-bottom panels positioned side by side. Bergvik can improve asset turnover (a measure of how well assets are being

used to produce revenue) as the floor can last for years and is flexible and adaptable for future changes and requirements.

Customers also benefit from Bergvik's modularity and adaptability of the floor system's design; the installation speed and accuracy and the ease with which cable and service pipe penetrations can be made through the panels; and the flexibility of the floor panels' layout and the relative ease with which layout changes to existing installations can be made as needs change over time.

'Our customers also like the pleasing aesthetic appearance and superior final finish of the floor. The limited numbers of support structures below floor level make data and power cable installation far easier, quicker and safer, the conditioned airflow to the equipment racks is also less restricted, and cooling efficiency is enhanced,' Peter comments. Further advantages of the Bergvik Iso floor include:

- Quick assembly due to a flexible design
- Very high stability even when panels are removed
- Adaptable to equipment where all panels can be lifted in front of the cabinets to facilitate cabling and services
- Only certified installers are used to strengthen high-quality standards
- Up to 70% fewer pedestal supports than with conventional static floors, providing more free space for cable ladders and other services
- Highly flexible system to meet customers' requirements
- Complete range of accessories available
- Different floor panels sizes available
- Provides a five year warranty

Located in Midrand, Johannesburg; and Somerset West, Cape Town; Bergvik provides materials with very short lead times across sub-Saharan Africa thanks to the large inventory it keeps in South Africa.



BERGVIK

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Going from strength to strength

From a mere idea to a fully-fledged manufacturing concern, Gemini Frameless offers high-quality, customised frameless glass products to customers' specific requirements.

Born as a mere idea (and sideline business) in 2007, Gemini Frameless was really only conceived in an effort to add some new dimension to the daily trade of Manuel Marques who, since 1994, knew 'nothing but glass' and was at a stage where wholesaling flat glass to the building industry simply grew monotonous.

Two years were spent on 'school-fees' while the trial and error of research and development took its course, all headed up by Manuel's wife, Nicola Marques, on a manufacture and supply basis only.

Gemini Frameless, as it is known today, really only came into its own in 2009 when the potential of introducing an installation service was realised, leaving behind all the other trades and focusing on only one goal – to specialise in frameless glass, and only frameless glass.

Gemini Frameless grew from strength to strength, starting in a small unit in Edison Business Park, Vanderbijlpark, and very soon moving into a double unit in the same business park from where the company still operates today.

A consistent all-year-round marketing strategy has played a vital role in helping Gemini Frameless products reach the public and grow the brand in less than half the expected time. The whole process from glass to frameless begins and ends within the shop at Edison Business Park. Everything is manufactured to customers' specific requirements to ensure their dreams are made a reality when it comes to their glass requirements.

Gemini Frameless continues to push the boundaries of tempered safety glass.

Just a few of its specialised and customised frameless products include:

- **Frameless glass shower doors and steam shower enclosures**
- **Frameless glass stacking doors**
- **Frameless glass sliding/entrance doors including pivot entrance doors**
- **Frameless glass balustrades and glass curtain walling**
- **Frameless glass office partitioning and privacy screens**
- **Back-painted glass splash backs for kitchens and bathrooms**
- **Table tops, deco mirrors, stand-off picture frames**
- **UV-bonding of glass podiums and showcases**

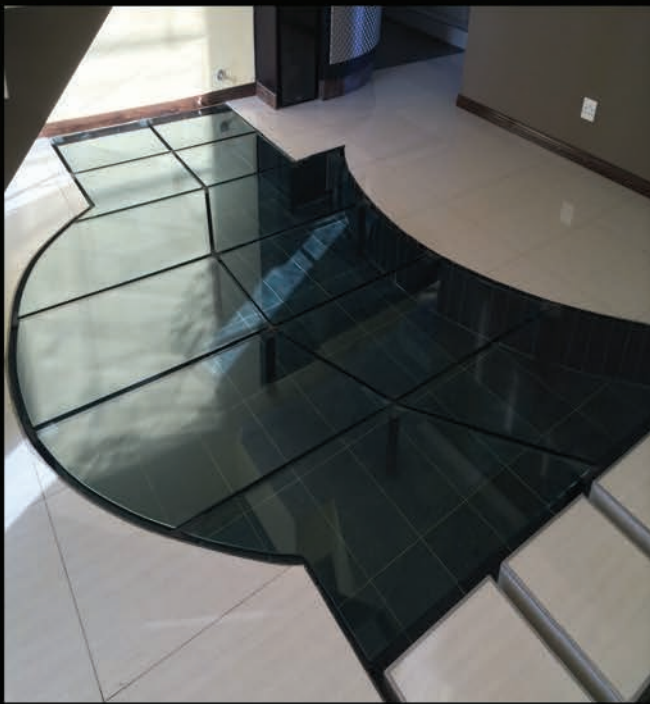
Over and above the dedication, trial and error, blood sweat and tears, it was Manuel's passion and his innovative solutions for using glass that has taken Gemini Frameless to such an extraordinary level. Much gratitude must also go to his right-hand man,



Jacques Randall, for believing in Manuel's dream and always giving his unwavering dedication and commitment to the company.

Manuel sees the world through glass – often referring to glass as 'structural art' – with so much still to come.

Today, Manuel, Nicola and their team of 17 staff members are proud to say that Gemini Frameless is a strong company that offers the highest quality in products and services. They invite you to view their show room in Edison Business Park or be amazed by viewing their wonderful products/work done on their website – a www.geminiframeless.com. Please also feel free to leave a comment, as it is opinions that drive this dynamic team.



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Lighting the way... smartly

Visiting Eagle Lighting Superstores offers you a world of lights under one roof with the latest designs and innovations from throughout the world.

Eagle Lighting (Pty) Ltd, established in 1924, has been supplying lighting and lighting accessories all over South Africa and neighboring countries for 91 years. We have seven stores in the Western Cape, which includes a new modern showroom in Lakeside. The five Superstores boast over 1 000m² of showrooms per store, all equipped with the full range of lighting products and accessories.

As leaders in the industry, we have knowledgeable staff in each of our Superstores to assist you with your lighting requirements.

Each of our shops have a LED lighting section, where our staff can demonstrate to you LED lighting compared to other previous forms of lighting like halogen. In order to assist with energy saving for our customers we have a complete range of downlighters, which can substitute the old halogen downlighters. LED downlighters have grown in popularity due to greatly improved light diffusion and overall light quality from the new generation lamps and luminaires.

To cater to demand, we increased our range of LED luminaires in 2014 for domestic and commercial use. We also offer downlighters in a warm white for domestic use, as well as a neutral white for project installations.

Furthermore we offer a large selection of LED recessed fittings and a range of LED desk lamps, exterior lights and LED wall lights. Eagle Lighting (Pty) Ltd is a leader in green environmentally friendly lighting products and offers a wide range of LED lamps and luminaires, as well as the latest technology in Compact Fluorescent energy saving lamps and the new T5 Energy saving commercial lamps and luminaires.

Added to our range is our new FH range of non corrosive bulkheads, which will accept 15 watt CFL long life lamps. Please feel free to contact any of our stores for assistance with these products.

EAGLE LIGHTING

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VISIT OUR STORES





Full service capability

Suppliers of light steel frame structures for the building industry.

Trumod is a design and manufacturing enterprise that has been supplying light steel structures for the last eight years.

As a member of Clyde Industrial Corporation Trumod has direct access to significant stock holding of slit steel, allowing the company to react to fluctuation in demand, putting it in the ideal position to offer customers a speedy and consistent supply of rolled sections.

Trumod is most probably the only manufacturer worldwide that has three manufacturing systems, having found that a single manufacturing system does not offer the capability to effectively serve the full light steel frame market.

These advanced technologies each have characteristics that are well suited to a specific market sector:

For wall framing Trumod makes extensive use of Framemaster/FrameCAD. The system offers software that is ideal for wall and floor frame designs. Its wall frames have been used in a variety of innovative building projects and the company's expertise in this regard ranges from the erection of simplistic structures for relief housing, to multi story buildings and large warehouses. The company offers singular designs for student accommodation, residential houses and school buildings. The frames, as with trusses, can be flat packed for cost effective and easy transport.

Trumod also contracts in an architectural design team that provides customers with 3D modelling of the proposed structure. This tool provides significant insight in the outlay of the building.

Roof trusses – large span. A Scottsdale machine rolls a steel section that is well suited for the larger roof spans. Trumod's optimised truss design offers cost effective support for any type of roof cover, and the company has designed and provided trusses with a clear span of 30m. This length of truss would be very costly to transport – and therefore a service of rolling trusses on site is offered. The trusses are then assembled for lifting and fixing to the support structure. Truss assembly is simple as all members have been

pre-cut and punched. No jigs are required and members can be bolted together using local labour. This technology is well suited for the roof structures of churches, halls and sheds.

Roof trusses – short span. Trumod has acquired 'U' truss machines and technology from Vela Building Systems. The trusses are well suited for the shorter span roof structures, such as affordable and RDP housing projects. The company has the capacity to manufacture in excess of 17 500 trusses per month – this equates to approximately 2 500 roofs of 40m². Trumod is currently supplying roof trusses to a number of RDP projects countrywide.

With these advanced steel manufacturing systems at its disposal, Trumod matches the most effective product to its customers' needs.

As members of SASFA (www.sasfa.co.za), the controlling body for light steel framing, all designs comply with SANS 517. Trumod is one of very few manufacturers that has the design capabilities and manufacturing capacity to meet customers' demands, and prides itself on supplying cost effective, quality structures to satisfied customers.



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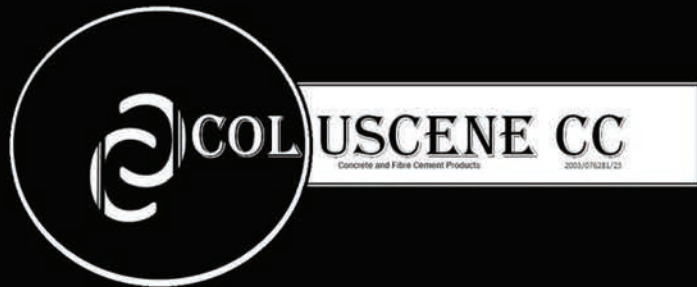
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Modular Buildings By Nature

Following the European trend of building beautiful timber homes, Perfect Places is changing the way South Africans build homes.

There is no question that sustainable building is the only ethical way forward when it comes to designing homes, and what better solution than to join the European trend of building beautiful timber houses?

Perfect Places is changing the way South Africans build homes. It was at the juncture of a passion for architecture and a love of sustainability when, five years ago, Dutch designer and mechanical engineer, Erwin van der Weerd, created Perfect Places.

Early in 2014, Kim Jack, previously with Oakwrights in the UK, joined Erwin. Kim brings another dimension to the business adding the Oakwrights brand to its portfolio, providing a sustainable building option for the very high-end market.

This formidable team is now able to provide the best solutions in eco-friendly building for the entire range of design, styles and budgets.

Getting it right from the start

Ecological and economic awareness is fundamental to the Perfect Places design, engineering and building

processes, keeping eco and sustainability top of mind from the start as opposed to retro-fitting 'green' to make something not-so-environmentally friendly a little better.

Ventilated timber skin

The secret lies in the spaces between – the breathable wall system that dries and ventilates air – producing houses with six times better insulation than those built of bricks and mortar, almost double the R-value and 85% less embodied energy. This increased insulation and ventilation translates to a massive saving on heating and electricity bills for new home owners.

So what's in a wall?

Each wall panel consists of four layers – the outer board (or wall cladding of your choice), the cavity that allows the wall to be ventilated, the insulation layer consisting of 135mm recycled plastic and breathing foil, and finally the inner layer made of imported Swiss/German three-ply spruce board.

30%-40% of a home's insulation occurs in the walls and



'Space and time are two infinite things that pass us by. However, architecture enables us to model space and set time like a sundial. It can also embody a third infinite thing: beauty.'
Archdaily.com

No difference with municipal approval and home loans

When applying for municipal plan approval and home loans, timber structures like these modular pods are no different from bricks and mortar – they are permanent structures and have a long lifespan.

Perfect Places has been named the 3rd Greenest Building Company in Africa, and is revolutionising the local industry with a range of modular construction solutions ranging from pods and modular houses to custom designs.



roofs, so great care is taken to maximise the opportunity here. There is no steel used in the panels as steel loses its strength quicker than treated wooden beams in a fire. As a result this improves the overall fire rating of the building.

Light as air

The entire production process reduces environmental impact every step of the way; wood is one of the most sustainable and renewable materials, light in weight, and the wooden wall and roof panels allow for factory fabrication, which radically reduces transport and labour costs in addition to man-hours on site building.

From the architect's mouth

The entire process is a pleasure – the customer's cost saving can be as much as 20% and the building time reduction around 60 to 80%. A 100m², two bedroom home can come in at as little as R585 000 and be built in the factory in three weeks with around a three-week assembly time on site, making a house occupation ready within two to three months of council approval. In the clean, well-equipped and brightly lit factory, in Blackheath, working conditions are pristine, giving optimal results, much better tolerances and the hindrance of bad weather is completely negated.

A natural perception is that wood, because of its lightweight, will not endure the elements as well as bricks and mortar but this is completely false. It has been proven that well engineered treated wooden houses often withstand tornados better than their bricks-and-mortar counterparts.

When it comes to fitting choices – even suspending heavy objects – there is practically no difference in options when building a timber home.

Modular pod options

A new solution for builders is that pods can be ordered as a DIY kit to be constructed on site. There are three pod sizes, which can be arranged together, interconnected and stacked.

- Studio Pod (18m² or 28m²) – an entry-level unit with no internal walls
- Living Pod (18m² or 28m²) – similar to the Studio Pod but with internal walls and doors to accommodate a bathroom and bedroom
- Office Pod (18m² or 28m²) – open-plan space with a bathroom and kitchen

Each pod consists of eight wall panels, floor modules and roof modules. Building using this modular pod concept is quick and simple – a great solution for a small home, office or school.

Erwin's top five green building tips:

- Condensation capturing
- Grey water harvesting
- Solar geyser or heat exchanger
- PV panels or wind generator
- Double glazing



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Why registration with ECSA is vital

Like any other profession, engineering practitioners also need to be registered – in this case with the Engineering Council of South Africa (ECSA), a statutory body for the engineering profession.

ECSA's primary role is to regulate the engineering profession in terms of the Engineering Profession Act, 2000. This includes the registration of engineering professionals in four categories provided for in the Act; covering nine engineering disciplines and includes mechanical, civil, electrical, agricultural, aeronautical, chemical, mining, metallurgical and industrial disciplines, and in identified specified categories.

The true mark of an engineering practitioner is recognized through the use of authorised titles such as;

- Professional Engineer (Pr Eng)
- Professional Engineering Technologist (Pr Tech Eng)
- Professional Engineering Technician (Pr Techni Eng)
- Professional Certificated Engineer (Pr Cert Eng)

- Registered Lifting Machinery Inspector (Reg.LMI)
- Registered Lift Inspector (Reg Lift Insp)

These practitioner titles carry considerable prestige and an indication that competent engineering professionals are capable to accept engineering responsibility for the engineering work performed. Engineering services are essential to the society and the economy; such as infrastructure, competitive manufacturing, mining, chemicals, transport and services. All spheres of government including local government are dependent on engineering services.

Recognition through registration instils a sense of confidence in the mind of the public, namely that an engineering practitioner meets minimum levels of competence. The public feels assured that a person's competence has been assessed by other professionals in one's field of expertise. This results in enhanced engineering capabilities for the country.



Ensuring the credibility of the engineering profession

The importance of expert engineering skills cannot be denied. Engineering plays a critical role in the design, building and maintenance of structures, machines, devices, systems, materials and processes. The Engineering Council of South Africa plays a major role in maintaining standards within the sector.



President, Cyril Gamede, Pr Eng



Vice president, Adrian Peters, Pr Eng

The Engineering Council of South Africa (ECSA) is a statutory body established in terms of the Engineering Profession Act (EPA), 46 of 2000. ECSA's primary role is the regulation of the engineering profession in terms of this Act. Its core functions are the accreditation of engineering programmes, registration of persons as professionals in specified categories and the regulation of the practice of registered persons. ECSA is under the leadership of Cyril Gamede, Pr Eng, President and Adrian Peters, Pr Eng, Vice President.

Vision statement

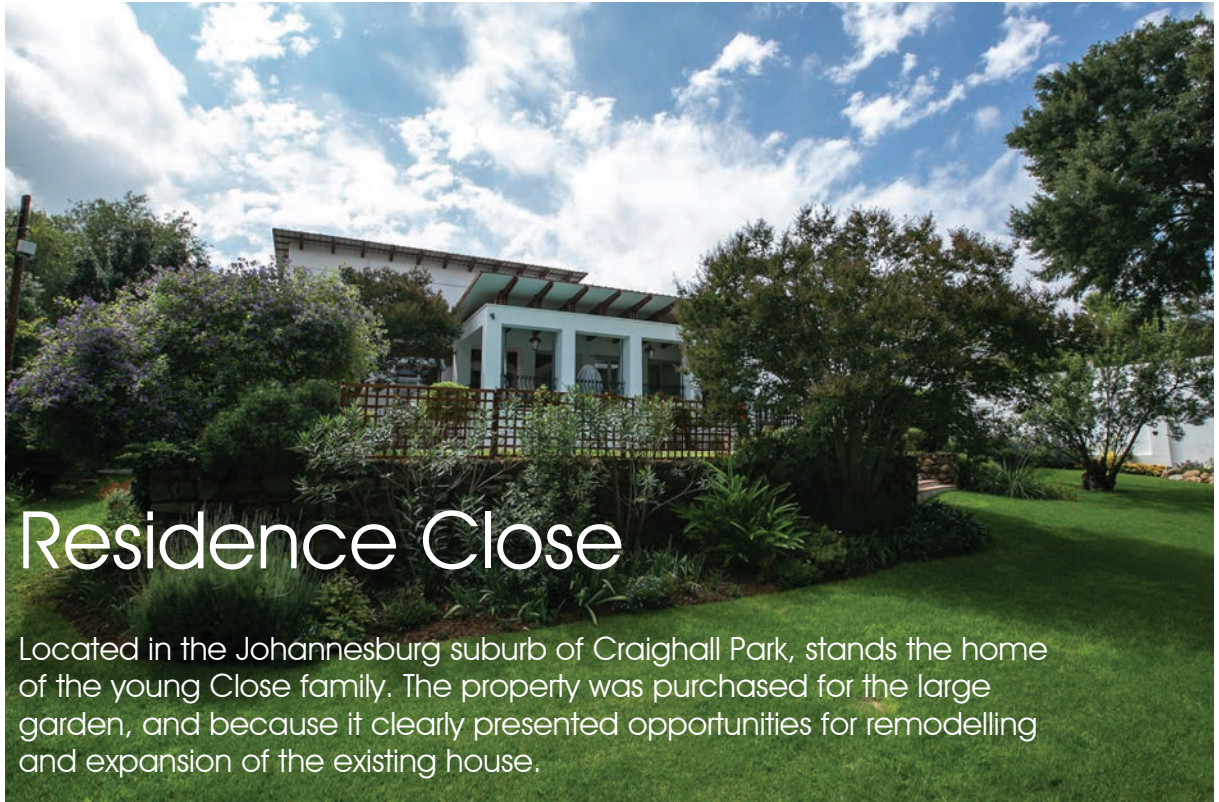
ECSA's vision is to ensure that South Africa enjoys all the benefits of a strong, competent, growing, sustainable and representative engineering profession, able to provide all the expertise necessary for the socio-economic needs of the country and to exert a positive influence in South Africa.

Mission statement

Our mission is to create circumstances where society is confident the South African engineering profession is able to carry out the necessary functions for the socio-economic growth in the country. ECSA achieves its mission through:

- Setting and monitoring of standards to international norms;
- Certifying and ensuring the competence of individuals through registration;
- Ensuring quality of engineering education through accreditation;
- Regulating professional conduct; and
- Growing the profession in quantity and quality in partnership with stakeholders.

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Residence Close

Located in the Johannesburg suburb of Craighall Park, stands the home of the young Close family. The property was purchased for the large garden, and because it clearly presented opportunities for remodelling and expansion of the existing house.

In 2011, Christine Close approached the Architects Of Justice with a desire to make alterations and additions to her house. Her overriding request was that she and her husband wanted to live in a Spanish hacienda, an idea that was soon reinterpreted by the AOJ team and contextualised into the South African paradigm.

Taking Spanish design principals into consideration, and how they could be adapted to the South African context, the architects first identified that Spanish people – living outside the cities – occupy homes that have an intrinsic relationship with nature (as is the case in most Mediterranean countries).

Interiors are linked to large open outdoor spaces and often used for family gatherings or to simply enjoy the temperate climate. Secondly, in more densely organised Spanish suburbs, courtyards are used to maintain privacy from passers-by and as a way to define personal green space. These two principals quickly became the underlying concepts behind the design.

The Close's requirements were simple: the finished home needed to have ample living space, bedrooms and utility areas. It needed to maximise use of the expansive garden and have a reinforced sense of entry, and the opportunity for phased growth, all while keeping to a rather tight budget.

At the beginning of the project, certain areas within the existing house were identified as spaces to be retained, or only changed minimally. This immediately reduced the risk of running over budget as a large part of the spatial programme could be distributed here for little cost. The remaining areas were regarded as obsolete and marked for

demolition. The additional spaces, which were not part of the existing structure, were then designed as completely new components and grouped within the existing spaces around open courtyard spaces. These courtyard spaces were then organised and sized to best suit the relevant activities and to further layer privacy within the home.

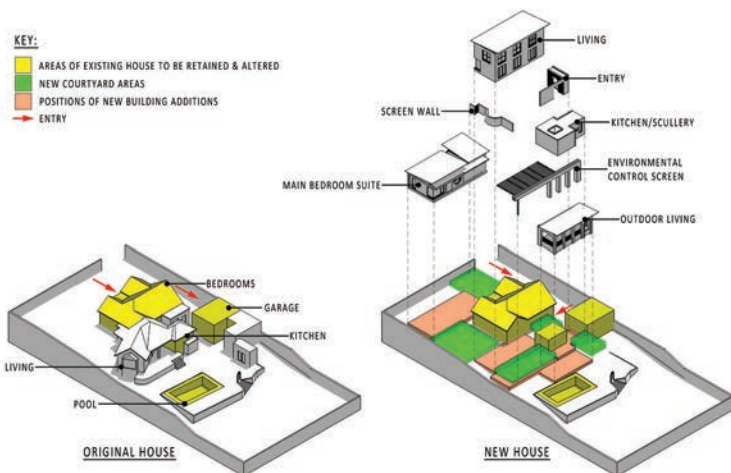
The design is extremely efficient in terms of climatic control. The separation of volumes reduces the need for heating and cooling technologies. Cooling of the various spaces is simply achieved by opening doors and windows to allow air currents to passively ventilate the interiors. During colder days, because of the appropriate north orientation, the sun enters through the large openings, further assisted by performance glazing. The separation of the building volumes allows for multi-directional connections to the outdoors, which not only improve environmental control but offer generous views into the garden from pretty much any room in the house.

When considering the use of materials, a concerted effort was made to retain some of the existing character of the original home. The existing parquet floors were refurbished and reclaimed parquet flooring was sourced for the new spaces within the house to tie the old and new together. The use of timber was echoed above by exposing the roof supports in the new indoor and outdoor living spaces.

The use of smooth white plaster on the exterior walls improves the thermal properties of the building by reflecting unwanted heat away. Although it may appear bland at first, this was purposefully chosen as a way of complementing an architectural language that is defined by beautifully-balanced proportions and achieved with simple construction methods.



Picture Credit: Michal Granicki Photography and Architects Of Justice



In contrast to this, a few well-crafted design details that required special attention were introduced – wrought iron security gates and patio balustrades, as well as narrow terracotta clay pavers, laid in a fishbone pattern, echo the underlying Spanish theme. The tectonic connections of the roof timbers and pergola structures in the outdoor living spaces give the house a contemporary feel.

These, complemented by tastefully eclectic interior finishes and furniture pieces, chosen by the homeowner, make for a personalised home in which the Close family is certainly happy to remain for a long time.

ARCHITECTS OF JUSTICE

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Repairs and Finishing of Concrete and Renders



	Repairing prefabricated concrete structures	Repairs to precast structures	Evening out surface imperfections	Repairs to superficial defects eg honey-combing	Restoration of corners and sides of balconies	Smoothing walls prior to installing ceramic tiles	Repairing old, damaged renders	Canal linings, hydraulic works, tunnels that require resistance to sulphate attack
Planitop 100	●	●	●				●	
Planitop 400		●		●	●		●	
Planitop Smooth & Repair	●		●	●	●		●	
Nivoplan			●			●	●	
Mapegrout T60	●	●						●
Mapegrout LM2K	●				●			●



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The role of ITC-SA

The vision of The Institute for Timber Construction South Africa (ITC-SA) is to create and maintain the highest standards in the engineered timber construction industry.

The mission of the ITC-SA is to uplift through – its members – the standards in all aspects of engineered timber construction in the building industry, for the benefit of the consumer.

It does this by monitoring membership, continuously improving standards, promoting and marketing engineered timber structures, and overseeing the training and development of members.

Service Offerings

- Ensure South African Qualifications Authority (SAQA) professional recognition for ITC-SA members, and developing criteria that will enable professional registration.
- Develop criteria that will guide professional registration through Recognition of Prior Learning (RPL), and which will be applicable to members that have not had the benefit of formal and recognised tertiary education.
- Develop the Continues Professional Training (CPD) requirements that will need to be complied with for members to maintain their professional status.
- Continuously liaise with SAQA on behalf of ITC-SA members to ensure compliance with all registration requirements and to contribute to the development of further training and development criteria for the ITC-SA membership.
- Participate in industry established forums for the development of training material that will be SAQA accredited, available on the public domain, and will be used to up-skill specifically ITC-SA members.
- Interact with other professional bodies as mentioned in the Construction Built Environment Act, to ensure a comprehensive understanding of the role of the ITC-SA in supporting these professionals to comply with industry demands in engineered timber structures.
- Interact with statutory bodies, such as the National Home Builders Registration Council (NHBC) and the National Regulator for Compulsory Specifications (NRCs), to create recognition for competence and service offerings of the ITC-SA membership and a demand for the services that may be rendered by its professional members.
- Provide ITC-SA members with information regarding current, updated and new industry standards in the design, fabrication and erection of engineered timber structures.
- On behalf of the ITC-SA members, negotiate training opportunities at FET Colleges for employees that need to do further training and development – specifically at FET Colleges.
- Through the ITC-SA System Members and its international affiliation, review best international practice in the field of timber engineering either from international sources or by research to develop reliable codes of practice and material

specifications that will guide timber engineering in South Africa.

- Through the ITC-SA Technical Engineering Advisory Committee (TEAC), research and update the bracing and connection rules for timber engineering and publish erectors and designers handbooks to disseminate the information to the ITC-SA members and industry users in the market place.
- Arrange awareness seminars on erection and bracing procedures to educate engineers, architects, quantity surveyors, clerks of works, building inspectors, builders and carpenters.
- Encourage the removal of barriers for the acceptance of timber structures by local authorities, government agencies, lending institutions and professional groups.
- Work with the timber industry to establish the availability of appropriate grades, sizes and quality timber that will ensure safe and economical engineered timber structures.
- Provide the expertise to answer technical enquiries effectively and to investigate problem structures impartially, or to act on complaints from consumers in an unbiased and fair manner.
- To inspire confidence in engineered timber structures on the part of designers and specifiers
- To audit its members annually for awarding a Certificate of Competence to those that design, manufacture, supply and erect engineered timber structures.

Roll definition

- The ITC-SA ensures consumer protection in the use of timber engineered products in contracts entered into with the ITC-SA membership.
- It regulates the professional conduct of its members, and applies proper sanctions where *prima facie* evidence confirms professional misconduct.
- The Institute has full support of its members and recognition by industry role players in the development of industry norms and standards and in the mitigation of risks associated with the use of timber engineered products.



INSTITUTE FOR TIMBER CONSTRUCTION-SA

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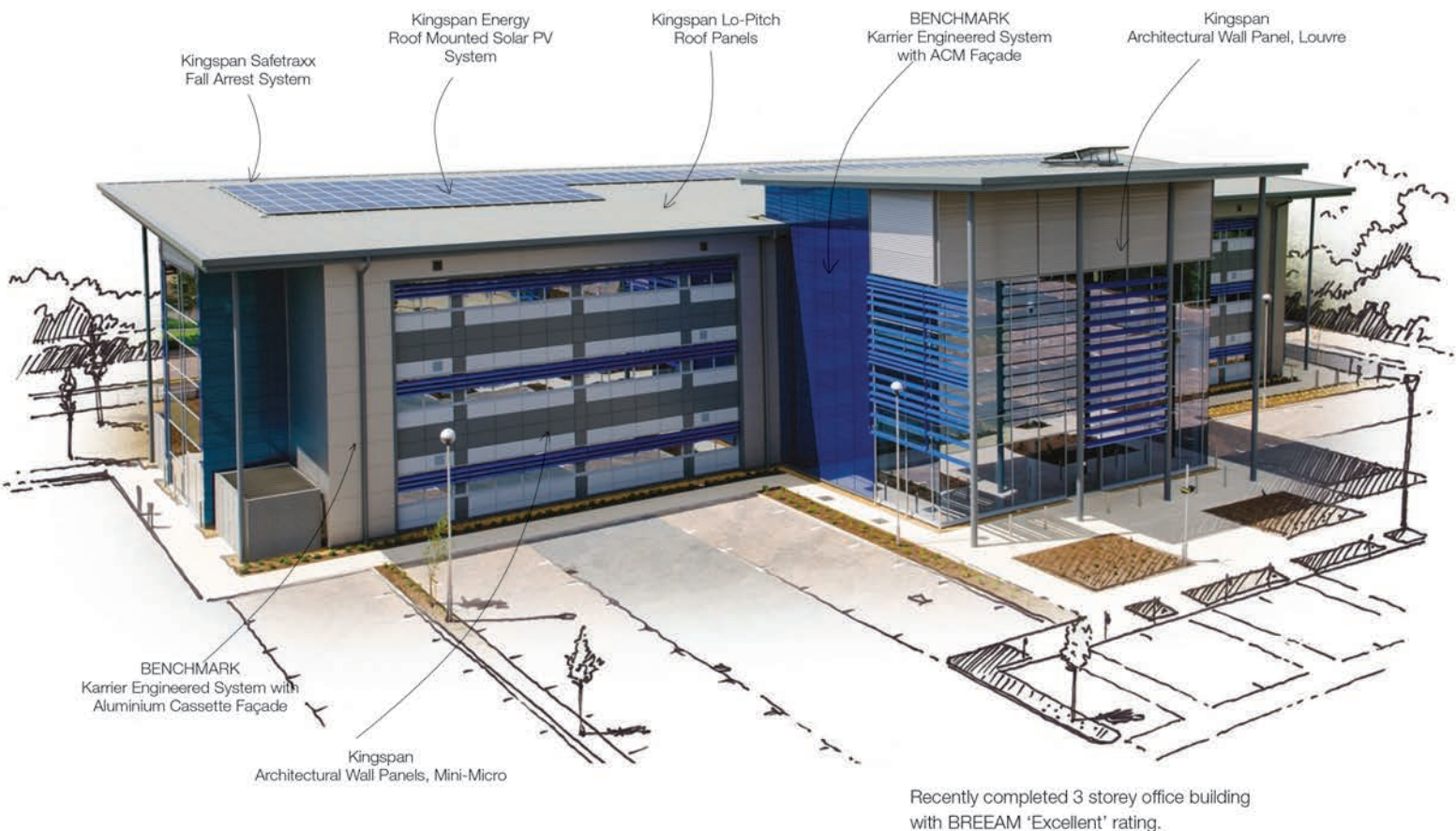
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Building Envelope Solutions

Kingspan Insulated Panels has pushed the boundaries of building technology for over 40 years. Our products feature the world's most advanced, high performance insulation cores, offering superior thermal performance in any climate.

We allow developers, architects and contractors to meet even the toughest construction challenges and create functional buildings that are aesthetically pleasing, energy efficient, safe, cost effective and sustainable.



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- Controlled Environment insulated panels for conditions from -40°C to 18°C.
- Kingspan Energy Rooftop PV; solar energy solutions.
- Standing Seam Systems; innovative roofing solutions with the options of a free-form, architectural built-up system or a single component insulated panel.
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Delivering performance

A striking operations centre in Peterborough, UK, took full advantage of Kingspan Insulated Panels' wide range of building envelope, façade, rooftop PV and safety solutions to become the first commercial property in the UK to receive a BREEAM 'Excellent' certification.

Kelway Limited, one of the UK's fastest-growing IT solutions and service providers, commissioned the three-storey office to support its rapidly expanding operations. The new premises have enabled Kelway to deal with a far greater volume of customer enquiries. The bespoke 2 700m² building, designed by David Turnock Architects, was the third constructed by developers Artisans at its OPUS Business Park site, and accommodates over 350 staff.

A key requirement for the project was that the building should be eye-catching and modern, while still attaining excellent levels of energy efficiency. To achieve this, DGT Structures Ltd installed Kingspan Architectural Wall Panels in two different profiles; Mini-Micro (KS600-1000 MM) and Louvre (KS1000 LV). Both profiles were specified with the Kingspan Spectrum Metallic coating in obsidian colour, providing the building with a sleek, metallic façade that is highly durable and corrosion resistant. In addition, the products also deliver lifetime insulation continuity and outstanding thermal performance with U-values as low as 0.14W/m²K (equivalent R-value of 7.14m²K/W).

The building's distinctive design includes a glazed central entrance hall that rises up out of the front of the three-storey centre and a dramatic overhanging

flat roof supported by eight large metal columns. 1 629m² of Kingspan Lo-Pitch (KS1000 LP) insulated roof panels were specified for the roof in grey.

The roof panel features a secret-fix, concealed side-joint design that allows it to be installed more rapidly than conventional alternatives, and its high-performance, Insurer Approved PIR insulation system delivers optimum levels of thermal efficiency. The product also offers excellent fire protection with the panel facings, both internal and external, rated Class 0 in accordance with building regulations and achieving FM Global certification.

BENCHMARK façade products were used to create the sleek, modern exterior to Kelway Limited's new operations centre, combining simple grey tones with eye-catching iridescent highlights.

BENCHMARK Karrier Engineered System with ACM and Aluminium Façades were specified for the facility in a recessed fixed cassette option. 566m² of the ACM Façade was fitted on the sides of the main entrance hall and at the corners of the centre. Through its partnership with Alucobond, BENCHMARK is able to offer the system with an Ocean Spectra finish, combining blue and green colour gradients with iridescent highlights to create a façade that changes



case study

Kingspan Insulated Panels



colour depending on cloud cover, viewing angle and daylight. The building's seemingly ever-changing appearance contributed to it receiving a regional design award.

To complete the main building façade, DGT Structures Ltd installed a further 207m² of the Aluminium Façade along with the Kingspan Architectural Wall Panels. The Aluminium Façade was specified with a powder-coated finish in Silver Grey and Basalt, allowing it to seamlessly integrate with the Kingspan Spectrum Metallic Obsidian finish of the Architectural Wall Panels. This combination of colours provides the building with a modern, professional exterior, which perfectly complements the colourful highlights of the ACM Façade.

Both façade options were installed on the BENCHMARK Karrier Engineered System, a high-performance insulated panel system specifically designed to support a wide range of façades. BENCHMARK Karrier provides the high levels of thermal performance and airtightness required for the BREEAM 'Excellent' rating, with air leakage rates of less than 6m³/hr/m².

In total over 9 000m² of Kingspan Insulated Panels' products were installed on the Kelway facility, and a further 1 600m² of BENCHMARK Façade Systems. To provide high-quality finishing touches to the building envelope, over 2 400m of Kingspan Flashings, with a milled aluminium finish, were also installed, complementing both the façade and roof panels.

Artisan Construction Director, David Railton discussed the benefits of installing several Kingspan Insulated Panels' products on the project: 'Given the target of achieving a BREEAM 'Excellent' rating for the building, it was vital that all the products we installed delivered the performance that was required. With Kingspan Insulated Panels we were confident that this would be the case. The Kingspan Insulated Roof & Wall Panels not only deliver high levels of thermal

performance, but they also have low environmental impact and they provide the building with an impressive appearance, which was completed with their flashings.

'We also installed a Kingspan Rooftop PV System to reduce the building's energy requirements from the national grid. By installing the PV system along with Kingspan Lo-Pitch insulated roof panels we were able to simplify and reduce the time scale for the build programme. It also allowed us to obtain a combined system guarantee as part of the Kingspan 25-year guarantee.'

Over 1 000m² of the Kingspan Energy Rooftop PV System were installed, with Kingspan's expert team of PV engineers, providing guidance throughout the project to ensure the array delivers the maximum power output. The Kingspan Energy Rooftop PV System is capable of generating energy even in overcast conditions and has a proven operational life in excess of 40 years.

Kingspan Safetraxx Fall Protection System was also installed on the project, allowing simple and safe access for any future maintenance of the Rooftop PV System. Safetraxx comprises a precision-engineered aluminium extrusion, which is installed on to the insulated roof panels without the need for costly and disruptive access to the underside of the roof. Also, the fixings used do not penetrate the roof, so heat loss and thermal bridging issues are avoided.

The building also features a range of other energy-saving features, including rainwater harvesting, solar shading and high-performance glass to minimise heat gains. Despite the hi-tech design of the project, the construction was completed in just six months with 90% of all construction waste recycled. The project was designed and delivered in way that would optimise the building's energy efficiency and, ultimately, it was this holistic approach that resulted in the building achieving the UK's first 'Excellent' BREEAM rating.

High-performance building envelope solutions

Kingspan Insulated Panels, the global leader in high-performance building envelope solutions, has recently opened its first African office in Durban. We speak to GAVIN MINAAR, Kingspan Insulated Panels' business development director for Africa, about the company, its plans in Africa, and what it's doing for its local customers.

Let's start by you telling us about Kingspan Insulated Panels, the biggest division of Kingspan...

This year is Kingspan's 50th anniversary. Since 1965 when the company was founded by Eugene Murtagh in Ireland, we have constantly innovated to bring new thinking and products that improve the energy performance of buildings and we have become a prominent brand within the construction industry. Today, Kingspan comprises four divisions – Insulated Panels, Insulation, Environmental and Access Floors.

We serve customers across the globe and are proud to be seen as a leader in high-performance insulation, building fabric and solar integrated building envelopes. Outside our UK and Irish home markets we have grown to establish major operations in Europe, North America, Australasia and the GCC. And, most recently, we're very excited to have opened an office for Kingspan Insulated Panels in Durban, as a first step in our plan to bring Kingspan's approach to the African continent.

Put simply, we're here to deliver high quality, high efficiency, lower-cost and low-carbon buildings. That's the essence of our promise to our customers.

For five decades, Kingspan Insulated Panels has pushed the boundaries of the building envelope by

enabling building designs that offer building owners less capital cost and a higher return on investment. For occupiers, our solutions deliver lifetime operational cost savings and future-proofed buildings that meet the most stringent environmental standards.

Net-Zero Energy

So that's the company philosophy. But how do you actually deliver on it?

We have a clear science and process for making that happen. Our cost optimal, energy-saving approach is a complete, end-to-end model for realising affordable, energy-efficient and sustainable buildings. We call it the Route to Net-Zero Energy. It's a three-step process that, if followed properly, locks in the specifications and performance of Kingspan's solutions to deliver Net-Zero Energy and the best possible return on investment.

Stage one is called EnvelopeFirst & Building Services. Thermal efficiency, airtightness and daylight design of the building are optimised for its entire lifecycle. The building services – heating, lighting and hot water – are also optimised to complement the envelope design.

The second stage is called Insulate & Generate.





This involves making additional enhancements that introduce low- or zero-carbon technologies to reduce the overall energy footprint of the building, such as photovoltaic (PV) and heat pump technologies or wind turbines.

The third stage, Net-Zero Energy Buildings, closes any performance gaps. Its purpose is to ensure that the overall annual performance of the building balances out – in other words, the building generates as much energy as it consumes. Here, Kingspan examines how the renewable energy technologies already incorporated in the building can be improved. At the same time, it's established whether investment in off-site energy saving schemes is required.

Within the Kingspan Insulated Panels division, we have eight separate product groups that underpin this holistic Net-Zero Energy approach on the international markets. Insulated Roof & Wall Panels remain our core business, which are often specified with BENCHMARK, our range of high-end Façade & Roof Systems. Alongside these, our range includes Standing Seam Systems; Metal Roof & Wall Systems; Controlled Environments; Structural Products & Systems; Fabrications, Safety & Lighting Solutions; and, most recently launched, Kingspan Energy Rooftop Solar PV. This latest addition provides customers with solutions that dramatically cut electricity costs, often with no capital outlay.

All of these advanced, high-performance systems are now available to customers in Africa.

In recent years, we've seen an interesting change within our business. We're no longer just seen as a product manufacturer. As Kingspan Insulated Panels has become recognised as the first stop for building energy efficiency we've seen a big increase in the

number of customers coming to us for consultancy. Even before products are specified, we're being asked for advice on building optimisation at the design phase of projects.

A footprint in Africa

Why did you choose South Africa as the location for your first office?

It makes total sense for us to establish an operation in Africa. In fact, it's something that's been in the plan for a while. We're making a big commitment to the region and are comfortable doing that because we believe there's already a matching philosophy and commitment to progressive construction. That's why I'm particularly excited about the potential for interesting projects here.

Aside from the meeting of minds, the commercial landscape needs to be right, too, of course. 'We think the general economic trend in Africa remains positive for the long term. There's an ongoing need for new commercial buildings that offer high energy efficiency and low operational costs.

Choosing South Africa as the location for our first office was an easy decision. We see it as an important hub and gateway for the region. South Africa already has some of the most stringent energy and building regulations on the continent, and we expect other African nations to follow the example being set here. So, the macro environment in South Africa is a good fit in terms of how we can add value for customers.

I also like to think that Kingspan Insulated Panels already has a few friends here. I often meet South African architects who are familiar with Kingspan. There's a big contingent who have spent time in



Europe and have now come back to South Africa with an appreciation for our products and our approach.

Part of my job is to make sure that we build on those relationships. Not least because we think it will be the architect community that will lead the ongoing progression in South Africa. And beyond in fact – it's really not uncommon for me to hear South African voices when I'm on building sites in other African countries.

SA construction market

How would you characterise the South African construction market?

It's well documented that the construction industry here has had a tough few years. The infrastructure development highs in preparation for the World Cup were followed by the global recession and suppressed local growth. Lots of development projects were shelved, not just in the public sector spending but the commercial property sector too.

However, confidence is beginning to return and it looks like the cycle has bottomed out. There are encouraging signs from the financial performance of some of the major construction players and order books are beginning to look healthier. At the end of 2014, The PMI (Purchasing Managers' Index) had recovered to its best level in over a year and shows that a steady level of expansion is returning to the market. In the short term, there's even greater pressure on contractors to keep costs down and the speed of build up. Building envelope solutions like ours have a distinct advantage here over traditional, built-up construction methods.

It's certain that over the coming decades many African countries will continue rapid urbanisation and commercial development. If this demand is met using cost optimal, energy-saving building products, there's potential to redefine expectations of the built environment. There's an opportunity here to be ambitious, to set the bar high – not just for Africa but for all developing countries. As I've said, we think South Africa can lead the charge, to set an example and export best practices across the continent and beyond.

Opportunities in Africa

What is the opportunity for Kingspan Insulated Panels in Africa?

We're by no means strangers to the region. For years, we've been supporting our existing customers as they've set up new manufacturing operations or facilities in Africa – such as the installation of our Kingspan FIREsafe Trapezoidal Roof panel system at a Nestlé Foods production plant in Lagos, Nigeria. Now, with feet on the ground in Durban, we're in an even better position to support these customers.

We're already having interesting conversations with African companies that are leaders in their industries. Kingspan's Temperature Controlled Systems for walls and ceilings have been specified for a new SAB (South African Breweries) facility in Alrode, Johannesburg. We're also pleased to be involved in the construction of a huge facility for Integrated Medical Industries in Port Harcourt, Nigeria, where over 75 000m² of our insulated roof and wall panels systems are being installed.

Looking forward, we want building owners, architects and specifiers in Africa to see Kingspan Insulated

Panels as synonymous with sustainable, high-performance building envelopes. Our opportunity lies in showing that our products can resist the harsh conditions in Africa while also delivering excellent thermal and structural performance.

Innovations for South Africa

What are some of the innovations you're bringing to South Africa?

Just as in our home markets in Europe, customers in Africa expect the best performing products and solutions, but also the kind of thinking and innovation that allows them to add value to their own customers.

Kingspan Energy is our sub-division that provides rooftop PV systems to businesses and property owners. It gives them the opportunity to generate their own electricity, reducing their energy costs and enhancing the value of their properties.

ZerO Energy Lighting (ZEL), our latest ground-breaking concept in energy efficiency, is another good example of a system that delivers huge energy efficiency at potentially zero cost. ZEL offers a unique blend of high-quality daylight solutions, intelligent LED lighting, fully-programmable automatic controls, and Kingspan Energy Rooftop Solar PV. Utilising advanced virtual environment modelling and expertise, we assess building operator and design team requirements, taking into account key parameters such as location, orientation, work activities and environment, to create the optimal, tailor-made lighting design. With this knowledge, the performance and configuration of Kingspan Day-Lite rooflights and Kingspan Smart-Lite intelligent LED lighting system can be assessed and optimised to meet building occupancy requirements. Finally, the residual lighting energy demand is calculated and a Kingspan Energy rooftop PV array is designed accordingly. Typically, the system pays for itself within three to four years.

Challenges for South Africa

What are the issues facing your customers in South Africa?

The reliability of electricity supply is definitely the biggest issue right now. There simply isn't enough capacity in the grid to properly meet demand, so load shedding has become all too common. The interruption of business, particularly when the economy is in recovery mode, just isn't acceptable.

That's why we're particularly excited about the solutions we can now offer customers in Africa. Our entire approach at Kingspan Insulated Panels is about achieving energy-efficient, optimised buildings that have less reliance on the grid. This, coupled with solutions like Kingspan Energy, puts more power in the hands of building owners and occupiers because they can generate more of their own electricity.

New regulations are pushing us in this direction anyway. The majority of South Africa's building stock was built when electricity was cheap. This led to an increase in demand on the national grid so, in response, the South African government introduced South African National Standard (SANS) 10400-XA. These new regulations are designed to encourage the construction of more energy-efficient buildings and,

through retro-fitting, improvement in the performance of existing buildings.

Our technical team at Kingspan Insulated Panels has an excellent knowledge of the SANS requirements, including the different building categories, the routes to compliance and the regional variations. We can provide advice and assistance with new and retro-fit projects, on how best to comply with the regulations and how our products can help any building achieve greater energy efficiency.

SANS 10400-XA energy usage in buildings is the South African equivalent to Part L for Energy Conservation of Fuel and Power in the UK, so we've seen many of our UK customers having to meet the same challenges. As per our Net-Zero Energy approach, we first look at how the fabric of the building can be upgraded to deliver the required improvement in thermal and energy efficiency performance. Considering the feasibility of the Kingspan Energy solution is often the next step.

For the African market the fire resistance of materials is a major consideration for specifiers, and it's an issue that's increasingly on the radar of insurers and banks. We have been leading the industry for many years campaigning for more stringent and more detailed testing. We work closely with industry bodies, fire consultants, such as Tenos, and testing establishments, such as Factory Mutual (FM), to ensure that industry expectations of fire performance are high and that our products comply with the best possible standards.

Also, landlords want buildings that will attract the best rental yields and last for as long as possible. Speed of construction is a major issue for owners and investors who want immediate occupancy and a quick return on their investment. Our insulated panel and façade systems are high-performance, highly-engineered single components and factory-assembled quality panels that are quickly and easily installed through a single-fix installation process. They are well known for reducing the risk of accidents as less time is spent at height, reducing overall build programme costs through their fast track installation process, and reducing operational costs through the lifetime of the building.

Customers are looking for solutions that future-proof them against changing legislation. I think we are at our most useful when we help customers take a holistic approach that optimises a building for the long term. Our best advice is to think beyond the minimum standards set out in the latest regulations and consider something altogether more ambitious. The right mind set is to future-proof buildings against more demanding standards, and create optimised designs that reduce capital and operational costs over the lifetime of the building.

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Committed to the aluminium industry's growth and making a meaningful contribution to sustainable development in southern Africa.

Hulamin is a leading, mid-stream aluminium semi-fabricator and fabricator of aluminium products located in Pietermaritzburg, KwaZulu-Natal, and Midrand, Gauteng, supported by sales offices in South Africa, Europe and the US.

As the only major aluminium rolling operation in sub-Saharan Africa, Hulamin is one of the largest non-mineral beneficiating exporters in South Africa, with over 60% of its sales exported to leading manufacturers around the world, focusing on specific product and end-use markets.

Hulamin is committed to the growth of the regional southern African aluminium industry and making a meaningful contribution to sustainable development in southern Africa. Hulamin employs over 2 000 people and contributes materially to the sustainability of the local Pietermaritzburg community.

The origin of Hulamin dates back to 1935 when the Aluminium Company of Canada Limited (Alcan) opened a sales office in South Africa, which was followed in 1940 by the registration of the Aluminium Company of South Africa (ALCOSA).

During and after World War II, demand for semi-fabricated aluminium developed to the point where an aluminium rolling mill was opened in 1949 at the current Pietermaritzburg site. The company has grown and expanded its operations to cover a full range of rolled and extruded aluminium products. Hulamin operates modern aluminium rolling equipment as a result of its two major expansion projects. The first was completed in 2000 at a cost of R2.4-billion and increased annual capacity to 200 000 tons. The second expansion project, at a cost of R950-million and completed in 2010, increased nameplate capacity to 250 000 tons and the capability for the production of higher-value products, thin gauge foil and heat-treated plate. In 2007, Hulamin unbundled from Tongaat Hulett Limited and listed on the main board of the JSE in the aluminium sub-sector of the Industrial Metals & Mining sector.

Hulamin has three operating segments. Hulamin Rolled Products, Hulamin Extrusions and Hulamin Containers.

Hulamin Rolled Products is a semi-fabricator of rolled aluminium products; it is a modern, globally-competitive producer of a range of technologically sophisticated sheet, coil and plate products.

Focusing on high-quality, tight tolerance and complex products, the Rolled Products business provides customers with a combination of technical expertise, high-technology manufacturing capability and responsive customer service. The Rolled Products

operation, based in Pietermaritzburg, KwaZulu-Natal, includes re-melting and recycling facilities, direct chill ingot casting, continuous casters, hot, cold and foil rolling mills, and a range of further finishing processing lines.

Rolled Products is the only rolling mill in South Africa and supplies to global customers – with the majority of its products being exported to customers in North America, Western Europe and the Far and Middle East for use in the packaging, automotive and transportation, engineering, and building and construction markets.

“

Hulamin is committed to the growth of the regional southern African aluminium industry and making a meaningful contribution to sustainable development in southern Africa.

”

Hulamin Extrusion is a leading local semi-fabricator of extruded aluminium products. The business operates from two plants, one in Midrand, Gauteng and one in Pietermaritzburg, KwaZulu-Natal, with a sales office in Cape Town. Hulamin Extrusions supplies the local engineering and architectural markets with a wide range of extruded aluminium profiles in both standard and custom shapes. Hulamin also holds a 49% share in Almin Metal Industries Limited, a Zimbabwean extrusion-intensive business.

Hulamin Containers is a downstream business in the rolled products segment and is South Africa's leading producer of rigid aluminium foil containers for the catering industry and for household use.



HULAMIN

HULAMIN

Website: www.hulamin.co.za

Mobility in concrete technology

konkreteMBP's products are at the forefront of innovation and green technology around the globe.

konkreteMBP (Pty) Ltd was incorporated in September 2012 and established to enter the cement and concrete construction equipment and related products arena. Collectively, the directors have 15 years' experience in specialised corporate banking, five years in specialised finance markets, and 17 years in general management in the construction and mining sector. The company is a Level 4 BEE contributor and has three operating divisions:

konkreteMBP

In September 2012 konkreteMBP signed an exclusive dealership agreement with EUROMECC ITALY.

It is now the agent and distributor for EUROMECC in southern Africa and offers state-of-the-art turnkey solutions for its mobile concrete products, ship loaders, marine terminals and concrete recycling plants.



EUROMECC as the OEM has many years' experience designing and manufacturing batching and precast plants. It also offer related equipment, such as plants for RCC production and continuous cement mixture production, mixers, and all the necessary equipment: belts, dust venting filters, bucket elevators, extractor and conveyor screws, management units and silos. Other equipment includes:

Bulk material storage – konkreteMBP produces monolithic and bolted silos, with a capacity from 33 to 3090cu.m., not only adopting a standard circular shape but also a squared shape for particular requirements such as marine terminals.

Bulk material handling (marine/portside) – Systems of belts and bucket elevators, ship loaders and ship-unloaders, conveyor screws.

Ecology – Waste inertisation systems and concrete recycling systems.



konkreteONAROLL

konkreteONAROLL is the agent and contractor for CONCRETE CANVAS (CC) – a flexible concrete-impregnated fabric that hardens on hydration to form a thin, durable, water- and fire-proof concrete layer. This product is used in slope protection, ditch lining, erosion control, bund lining and mining.

konkreteBLASTER

The Ready-Jet Blaster is a high-pressure non-entry, robotic truck mixer-drum cleaner.

This unit cleans the ready-mix truck drum in one to two hours by removing hardened concrete from inside the mixer drums without any human entry.

konkreteBLASTER utilises high-pressure water instead of manual chipping, and significantly reduces exposure to silica dust – to well below OSHA permissible exposure limits.

Preferred supplier

konkreteMBP aims to become the preferred supplier of various government departments, as well as listed and unlisted construction companies and mining houses. Its current and potential clients range from small one-man construction outfits carrying out community-based projects to ready-mix and construction companies, and big multi-national blue-chip listed companies.

konkreteMBP's products are used globally and the company is at the forefront of innovation and green technology worldwide.

The company is based in Pretoria with warehousing and workshops conveniently located near the airports and industrial areas. It also has representative offices

Robotic Mixerdrum Concrete Removal



in Cape Town, Port Elizabeth, Bloemfontein, Durban, Nelspruit and Polokwane, is a member of all the relevant industry societies and associations, and a proud member of Unashamedly Ethical.

konkreteMBP's motto is: Mobility in concrete technology.

KONKRETE MBP

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KONKRETE BLASTER

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- MOBILITY IN CONCRETE TECHNOLOGY

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LEADING ROOF TRUSS SYSTEM SUPPLIER IN SA AND THE WORLD



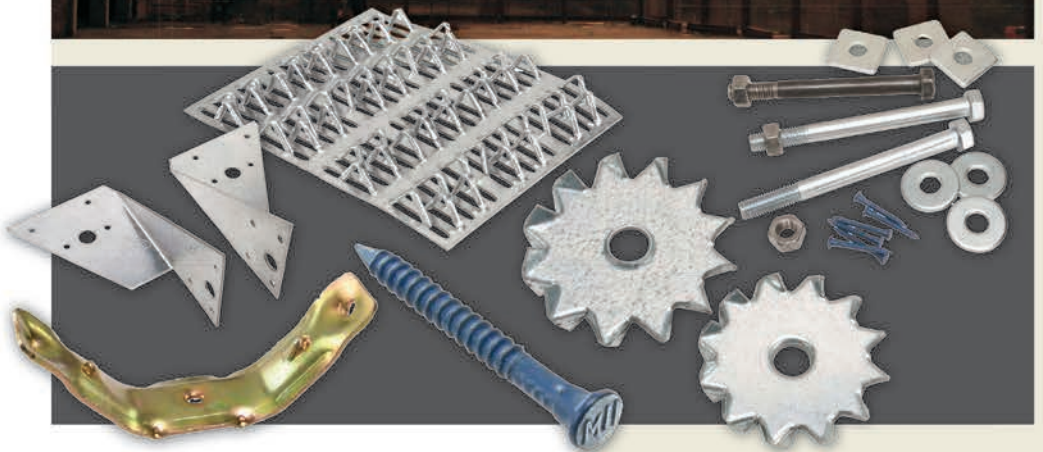
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- Light Gauge Steel Trusses
- Steel Wall Framing



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Roof structure success

MiTek® illustrates why it is the leading roof truss system supplier in South Africa with an impressive showcase of projects.

MiTek® is the leading roof truss system supplier in South Africa with a network of over 200 licensed roof truss manufacturers across southern Africa.

With its proven track record of performance and delivery, MiTek® is continually involved with many large-scale projects, whether they're of the Gang-Nail® plated timber truss type or utilising Ultra-Span® LGS technology.

MiTek projects – completed or in progress include:

Mediclinic Centurion Hospital

This extensively large shallow-roof structure with the majority of 9 100m² representing the Ultra-Span (LGS) roof system, was supplied and erected by Hi-Tech Nail Plate, a long-established MiTek licensed supplier.

In conjunction with Graceland Architects, from the outset this roof structure was designed by MiTek to contain the greatest amount of LGS possible,

although obviously certain sections still required conventional mild steel solutions.

The utilisation of the Ultra-Span system for 9 100m² of the total roof structure represented almost 45 tons of steel, which equated to a mass of just below 11kg/m² of roof area – with some of the roof trusses being 19m clear span and carrying substantial imposed loads.

Due to the low self-weight of the Ultra-Span trusses, they were assembled on site into braced roof sections and then lifted into the final roof position by the site tower cranes. This process ensured that the overall completion could be done in just five months, even with weather often interfering.

The professional team, Graceland Architects, Taljaard Meyer & Storm and Mediclinic are all very impressed with the performance and cost savings achieved by utilising the Ultra-Span system and has since been used at many other Mediclinic projects.





Jubilee Mall

This large shallow-roof structure of some 4 600m² was supplied and erected by Giant Engineering cc in just 14 days. The total project required some 350 trusses, which were assembled on site in just over one minute per truss. This highlights the simplicity of the Ultra-Span system. All of this provided the end client substantial savings over the original roof design.



Mediclinic Kimberley

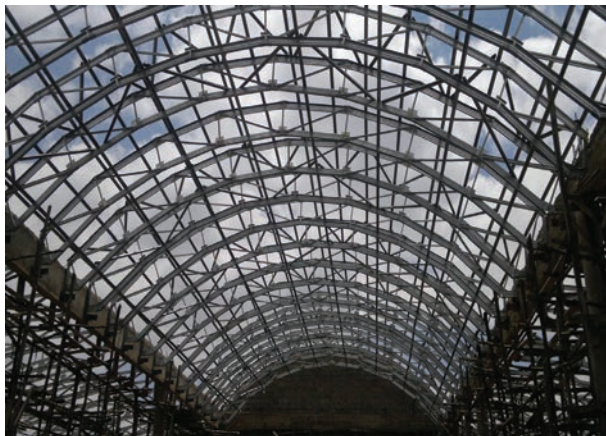
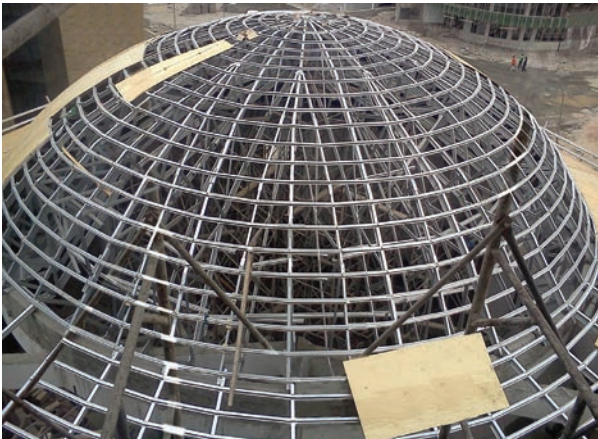
These very large shallow-pitched Ultra-Span roof structures with a total area of over 10 000m² and clear spans of over 25m were supplied and erected by Central Roof Industries. The professional team, the contractor and end client were very impressed with the speed of completion and associated cost savings.

It was also one of the projects nominated for the 2014 Steel Awards.



Boardwalk Casino Hotel

This very large Gang-Nail® timber roof truss structure of over 6 500m² with spans of 20m, a 45° pitch, as well as many dormers and turret roofs was supplied by BUCO Uitenhage.

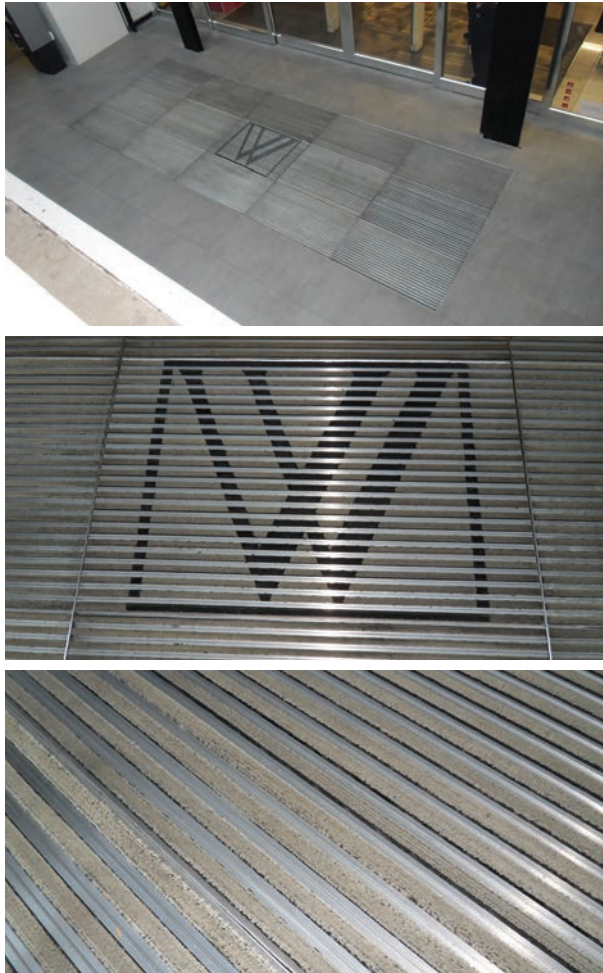


East African projects

Some recent projects completed utilising the Ultra-Span roof truss system: auditorium, mall, warehouse and church.

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There is an installation of NuWay matting at East

Gate Woolworths, which has been there for the last 26+ years without needing to be replaced. Its present condition indicates that it is good for another 20 years.

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Sandibe Okavango Safari Lodge

A 24 bed luxury boutique hotel in the heart of the Okavango Delta, Botswana.
Nicholas Plewman Architects in Association with Michaelis Boyd Ass. London.

The Okavango Delta is considered one of the seven natural wonders of the African continent. Seventeen years ago Nick Plewman's architectural career was propelled into what was to become a career specialisation when he was commissioned to build the first Sandibe Safari Lodge on a hitherto virgin site – a small riparian forest on the banks of the Santandadibe River on the eastern side of the Okavango Delta.

What distinguished that commission was the requirement that the architect live on site for the duration of the project. In so doing Nick developed an acute environmental awareness and a very 'hands on' approach to design in the bush – with each building designed in-situ and crafted into its specific niche in the forest. Inevitably, after nearly 18 months of tented living surrounded by the forest site and all its wild inhabitants, Nick developed an intimate and highly personal 'special relationship' with Sandibe.

But, truth be told, he was never really satisfied with some of the restrictions imposed on the original design by various considerations at the time and, notwithstanding its reasonable success, he harboured a secret desire to knock it all down and replace it with something entirely different, something organic that grew out of that particular and highly personal relationship.

Since the original lodge was built seventeen years ago, much has changed. Nick has built Nicholas

Plewman Architects (NPA) into a small but high-capacity firm with a handful of very skilled architects and technicians. The Okavango Delta has been declared a world heritage site and in consequence a raft of wholly appropriate but formidable legislated environmental restrictions have been imposed on building there. The client, AndBeyond, has grown into a global Safari Company. The concession under which the old lodge was built has run its course and expired and a new concession required compliance with all the new environmental restrictions, as well as an ultra-luxury product of outstanding architectural merit.

Teaming up with a London firm with whom NPA was already working in East Africa, Michaelis Boyd Associates, Nick brought Alex Michaelis to the Okavango and outlined a vision for a wholly-organic timber building animated by the denizens of the delta.

Good architecture lets nature in

The result is that new design of Sandibe not only meets its formidable environmental challenges but is invigorated and inspired by them. It is habitation made manifest of all the creatures that have ever found or made shelter in and beneath the site's ancient trees. The lodge draws its inspiration from animals that carry their shelter with them or weave it from the organic materials to hand. The two architects chose the pangolin – Africa's armadillo –



as a specific motif because of its shy, elusive and completely harmless nature, and its ability to curl into its own protective carapace of scales. The final building appears to have grown organically from its riparian site or, metaphorically speaking, to be some endemic, gentle and maternal creature leading her off spring through the swamp forest.

Although LEED or GREENSTAR ratings tools have not been developed or applied to this sort building – the project proceeded on the basis that if they were, the highest standards of accreditation would be aimed for. The sustainability imperatives of the project were:

- The new buildings had to be wholly built of ultimately bio-degradable materials.
- The site, separated from civilisation by a hundred miles of swampland, river crossings and rough tracks, had to be completely cleared of all previous non-degradable material – literally hundreds of tonnes of demolished bricks and mortar gently removed from the forest and trucked out of the delta.
- 70% of the luxury lodge's not insubstantial energy requirements had to be of sustainable origin.
- Minimal to zero physical impact of any sort on the site, fauna and flora.
- Complete treatment of sewerage and removal of waste.

Notwithstanding the above, the client expected a boutique hotel that would deliver the very highest standards of luxury to its well-heeled and well-travelled guests. Essentially this meant, in addition to unique and inspiring design, there could be no compromise on power, copious hot water supply, luxury bathing, and food preparation equal to the best hotels in the world. The sorts of compromises that inform most eco lodges were not acceptable.

The completed project meets or exceeds all of the above imperatives. Sandibe is built almost entirely of wood. Laminated pine beams give curvilinear shape.

The building skin is formed like an inverted boat from layers of butt-jointed pine scale planks, waterproofed with an acrylic membrane, and covered in Canadian cedar shingles. There is no glass other than in the retail shop and library – the glazing such as it is, is Serge Ferrari Soltis fabric – a permeable but highly weather-resistant and thermally-efficient membrane.

External screen walls and balustrades are fashioned from an interlocking mat of eucalyptus laths woven onto stiff wire. Decks and floors use FSC approved hard woods. Power is sourced from a 100 KVA PV array that means generators need only run for three to four hours a day. Hot water is delivered instantly, even at the furthest cabin, from a solar array of evacuated tubes backed up by heat pumps continuously pumped through a 2.5km ring main. And this is notwithstanding the distance the measured loss of temperature between source and furthest tap is 1.7°. All water and soil waste is collected and pumped through an accredited biological treatment plant that renders effluent certifiably safe for discharge into the highly sensitive environment.

Finally, the environmental success of the project is perhaps best judged from the fact that the area's prolific wildlife including big animals like elephant, hippo, lion and leopard have continued to live on and use the site with such disregard for the emerging and completed buildings that you might imagine they simply don't see it at all. As IM Pei said: 'Good architecture lets nature in.'

NICHOLAS PLEWMAN ARCHITECTS

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Operating with SAVI

Aluminium window and door hardware supplied by an organisation focused on offering personalised service.

SAVIGNAC was born in 1969, initially as an exporting company. Over a decade ago, prompted by the building boom in South Africa, the company was encouraged by the growing interest in aluminium to diversify its focus. SAVIGNAC introduced its newly-designed range of hardware for aluminium windows and doors to fabricators across sub-Saharan Africa, and the rest is history!

Through regional networking, SAVIGNAC has expanded its nationwide footprint. Proudly South African and operating with Savi, its branches are located in Johannesburg, Pretoria, Durban, Cape Town and Port Elizabeth. The company has created the trademarks, SAVI EURO, SAVI AFRIQ and SAVI brands, which are distributed on the African continent. It's also the agent for Savi QS.

SAVIGNAC products carry a five year guarantee, are manufactured from accredited materials, sourced from reputable international factories and are supplied to major aluminium window and door manufacturers. The company is a member of AAAMSA (the authority body in the South African Aluminium industry) and SASSDA (the authority body in the South African Stainless Steel industry). It's also a level 8 B-BBEE contributor.

Core products – locks, lever handles, pull handles, friction stays and window handles – are manufactured with three specific aims in mind. These include providing fabricators with a robust product to face

the corrosive conditions that prevail along Africa's coastline; providing a competitive alternative; and providing a product that's readily available throughout Southern Africa. SAVIGNAC has spent the last 10 years introducing the Savi Euro brand to fabricators and is continuously improving its products. The technical team provides support on site, should the need arise, and SAVIGNAC remains lean and mean to ensure it delivers a personalised service to its customers.

SAVIGNAC is jointly owned by Howard J Buttery, TSS Mauritius and Savignac's managing director, Stephanie Harel, all of whom are passionate about people and embrace diversity. The team at SAVIGNAC includes staff who are fluent in English, Afrikaans, French, Zulu, Sotho and Xhosa.

SAVIGNAC's DNA:

- Independent, agile and responsive
- Quality, speed and personalised service
- Door-to-door delivery throughout South Africa
- Level 8 B-BBEE
- Passionate about customer satisfaction
- Passionate about employee development
- Portfolio includes Mopanya Mall Soweto, Anglo American Research Sandton, Virgin Active Centurion, Dube Tradeport KZN and Ogilvy Cape Town
- Committed to building Africa with Savi



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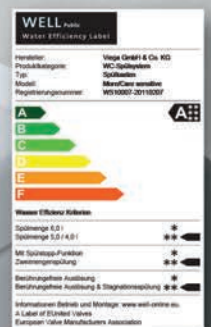
Gone are the days when a shower was hidden away, now with Advantix shower channels and floor drains from Viega you can make the shower the focus of the room. The multiple design prize-winning Advantix products from Viega will offer you freedom when creating a bathroom. With the use of high quality materials like glass it is far more than

just a boundary between wet and dry areas in the bathroom. Architecture needs freedom. Advantix shower channels can be used exactly where the building concept requires them to be. Should the shower channel be in the middle of the room to optically separate the dry and wet zones? Or do you prefer it along the wall? With Viega, taste and architecture decide on the position. Polished and matt stainless steel are available as well as the purist glass. In addition, there is also a shower channel grate that allows you to incorporate the tiles into it – tailor made to the individual's taste.

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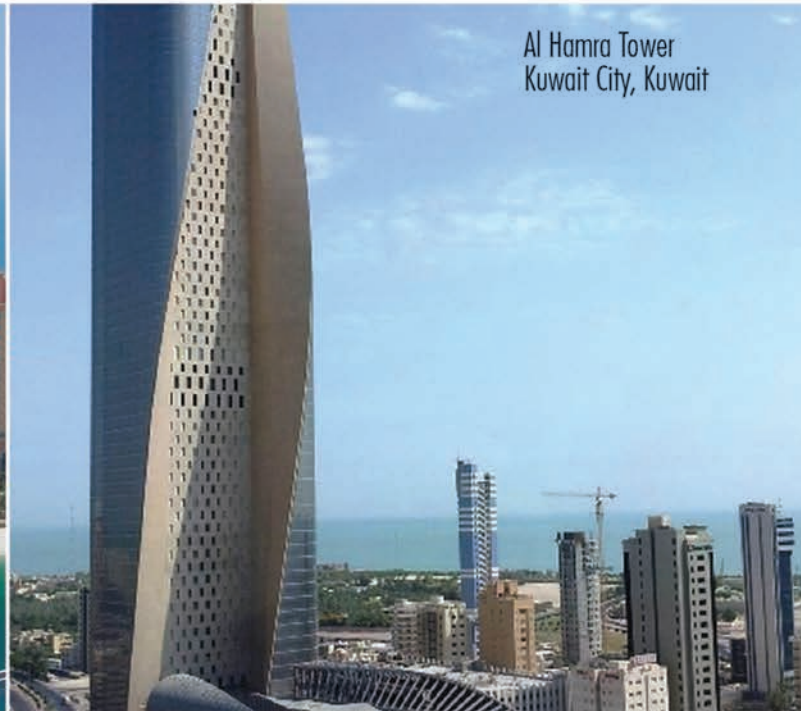
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Globally Proven
Construction Solutions



A proven track record

MDCC has a proven track record of handling small and large projects with efficiency, absolute integrity and expertise through experience.

Established in April 2000, MDCC is a multi-disciplinary firm of built-environment consultants with offices in Klerksdorp, Johannesburg, Centurion and Mafikeng, and international offices in New Delhi, Windhoek and Lagos. The company provides professional services in the fields of civil, structural and development engineering, architecture and project management,

complemented by its other built environment partners.

The base of the company's experience goes back to 1985 when Johan Styger was appointed as a partner in a consulting civil and structural firm in Klerksdorp. Ahmed Gabru joined the same company in 1990, and their joint experience covers



the full spectrum of the built environment. Architect Nico Schoeman was appointed as a director in March 2005. Structural engineer, Marvick Janse van Rensburg, and legal advisor, Najma Gabru, were appointed as directors in September 2012.

The enthusiastic team at MDCC has a proven track record of handling small and large projects with efficiency, absolute integrity and expertise through experience. Together the team strives to deliver an exceptional level of service to all its clients.

President Square Shopping Centre, Vanderbijlpark

The new President Square shopping centre located

in Powerville, Vanderbijlpark, opened for trade on November 24, 2014, as scheduled. MDCC's team of built-environment professionals, including the project manager, architect, structural, civil, electrical and mechanical engineer, and quantity surveyor were instrumental in the successful materialisation of the project. The 24 000m² shopping centre boasts 43 shops, including national tenants and the anchor, President Hyper.

The development includes 1 310 parking bays, of which 630 are in the basement. The ample parking and the close proximity to surrounding residential areas in the Vaal Triangle, the category dominance of the anchor, make it the ideal shopping destination.



Professional team:

Project manager	MDCC (Pty) Ltd
Johan Styger	Tel: 018 468 8000
Architect	MDCC (Pty) Ltd
Structural engineer:	MDCC (Pty) Ltd
Civil engineer:	MDCC (Pty) Ltd
Electrical engineer:	Ingplan Consulting Engineers
Mechanical engineer:	Ingplan Consulting Engineers
Quantity surveyor:	SVR SA
Main contractor:	Iguana Projects (Pty) Ltd

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Inovar flooring complies with the highest international standards, offering the latest innovations in manufacture. Inovar is committed to the environment and has a dedicated green policy that guides its entire range, from sourcing to final product.

In line with international and European flooring trends, 'Scandinavian Style', 'Shabby Chic' and 'Vintage', Inovar installs and distributes Finfloor flooring products. The company is now launching its new Black Forest laminate collection, which comes in oversized XXL planks.

The wider and longer (2 200 x 239mm) planks make spaces look bigger, more contemporary, authentic and rustic. The trend for 2015 is wider, wider and wider. Black Forest's 2.2m-long planks offer no distracting repeat and each plank looks as if it has been naturally grown. With its patented 'drop down Valinge joint locking system' these XXL planks are quick and convenient to lay.

Available in five distinctive colours, with true-to-nature grains and patterns, Black Forest is refined in both visual terms and technical specification.

Black forest Collection core materials are made from superior water-resistant conifer wood fibre that are five times more water-resistant than normal HDF high-density fibre board. The thicker 12mm planks are impregnated with wax in both the substrate and on the Valinge glueless locking system for extra protection against friction, water and noise.

Available in AC4/W32, the Black Forest Collection is suitable for heavy domestic and general commercial purposes, offering a 25-year domestic warranty and a five-year commercial warranty. All products are SAWLFA accredited.

Some recent commercial retail projects completed include:

Lucky Brand stores – Inovar's Woodline Parquetry, solid engineered wood flooring in Antique Rockies Oak was specified for the Lucky Brand stores nationally. With its innovative cross-ply system, Woodline Parquetry proved to be extremely resistant to wear-and-tear and the perfect solution for this high-traffic retail store.

At the V&A Waterfront in Cape Town, the Ben Sherman store is fitted with Inovar's Finfloor Laminates in Augusta Oak. FinFloor Laminates replicate a true-to-life match of the grain of the original timber, but without exploiting our natural forests.

Home Fabrics (countrywide) fitted its retail shops with Norway Oak from Inovar's Supreme Laminates range. Supreme Laminates from Finfloor are stain-resistant, anti-abrasive and fade-resistant, ensuring guaranteed years of use.

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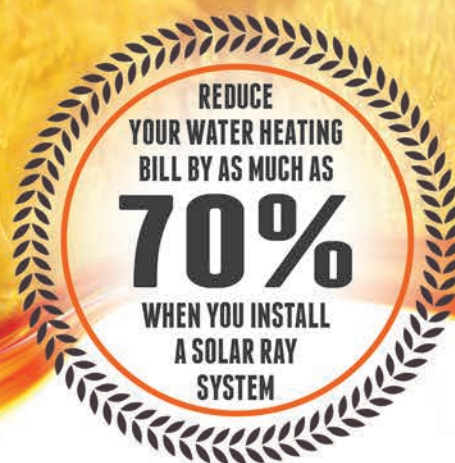
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**GREEN
BUILDING**

The graphic features a solid green background. In the center, there are three concentric circular elements. The innermost is a solid green circle containing the text 'GREEN BUILDING'. The middle ring is a white circle that reveals a background image of a blue sky with white clouds. The outermost ring is a thick, light green band with a dynamic, brush-stroke-like texture. The text 'GREEN' is in a light green, sans-serif font, while 'BUILDING' is in a white, sans-serif font.



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SAVA hosts highly-successful Vinyls SA 2014 conference

In October 2014, the Southern African Vinyls Association (SAVA) hosted the bi-annual meeting of the Global Vinyls Council (GVC), followed by a hugely successful Vinyls SA 2014 Conference.

According to SAVA's CEO, Delanie Bezuidenhout, the GVC meets twice a year to share updates and pertinent information with partners all over the world, and to distribute these details to its members.

As a member of the GVC since 2011, SAVA shares its objectives of building an awareness of the various benefits that vinyl products bring to society, correcting misinformation about the health and safety of vinyl, and defending the local industry and its products from unwarranted attacks.

'Being a member of the GVC allows us to be part of an international network of experts that encourage knowledge transfer and international cooperation,' Delanie explains. Proof of this was the willingness of 11 international experts to impart their expertise – about PVC manufacturing, its uses and recycling initiatives – at the Vinyls SA 2014 conference hosted by SAVA.

'This is the first time the Council has met on the African continent. Not only were its members excited to visit our beautiful country, but they were also keen to share ideas and create an opportunity for learning from each other's best practices and experiences,' Delanie points out.

More than 100 delegates attended the Vinyls SA 2014 conference and were treated to a full and varied programme of original papers. Topics covered all aspects of PVC, ranging from formulation to recovery and recycling.

Peter Willis, senior associate of the University of Cambridge's Institute for Sustainability Leadership, delivered the opening address. He reminded delegates of the reasons why global society is placing increasingly stringent demands on a widening range of products, including PVC, and that it will continue to do so far into the future.

'All industries need to adapt to powerful new environmental, social and economic constraints. This conference highlights the interesting fact that PVC is, by nature, a potentially troublesome substance if poorly managed. However, thankfully the global PVC industry has taken up the challenge of making sure it is managed safely. In so doing, it has solved problems many other industries have yet to face,' Peter explained.

SASOL's Rishi Madho was the second keynote speaker and delivered a paper entitled, The South African PVC Industry, in which he highlighted the growth, challenges and opportunities facing the local vinyls sector.

The rest of the day's presentations were divided into three sessions, during which local and international experts shared the stage and their expertise about central and pertinent topics.

Session 1 was a presentation and panel discussion by the four members of the Global Vinyls Council – Dr Brigitte Dero (VinylsPlus, Europe), Sophi MacMillan (Vinyl Council of Australia, Australia), Shigetaka Seki (Vinyl Environmental Council, Japan) and Delanie Bezuidenhout (SAVA, South Africa) – who focused on the role of the GVC and regional trends and challenges.

This discussion was followed by a detailed presentation by Dr Dero who delivered an update about the progress being made by Europe's VinylsPlus to improve the sustainability of PVC, and Ole Grøndahl Hansen of Denmark who spoke about the latest developments and successes of the PVC Medical Alliance.

Session 2 saw Nigel Sarginson of ExxonMobil Europe, Dr Martin Stimpson of Eastman Company, UK, and Carlos Casas and Luis F Shilton (Varteco Quimica Puntana) present their views on global regulatory developments, PVC plasticisers, and non-ortho-phthalates.

Session 3 looked at global trends, developments and innovations in the use of PVC in pipes and building and construction, with presentations by Stuart Hope and Ian Sewell from Baerlocher, and Dr Arjen Sevenster from the European Council of Vinyl Manufacturers.

'The conference was a huge success and an important step in establishing South Africa as one of the leaders on the international stage. Although we might be far removed, geographically, from the rest of the global PVC role players, it is abundantly clear that we face the same issues and challenges. We have much to learn from each other and it is only through the sharing of ideas that we will be able to continue to develop the industry to meet the challenges of business, sustainability and innovation,' Delanie concludes.



SAVA

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THE GOOD NEWS!

In a letter to SAVA in October 2011, the Green Building Council of South Africa (GBCSA) acknowledged that the South African vinyls industry has and continuous to address the historical environmental concerns regarding PVC and is constantly improving its environmental credentials. The progress to date is on par to that of the international vinyls industry.

The GBCSA Technical Steering Committee therefore decided to **withdraw the MAT-7 PVC Minimisation credit from the Green Star SA rating system**. The GBCSA commended SAVA for taking the initial step in the development and implementation of a voluntary product stewardship programme for PVC resin and product manufacture for the South African industry.



www.savinyls.co.za

**SAVA**

Southern African Vinyls Association

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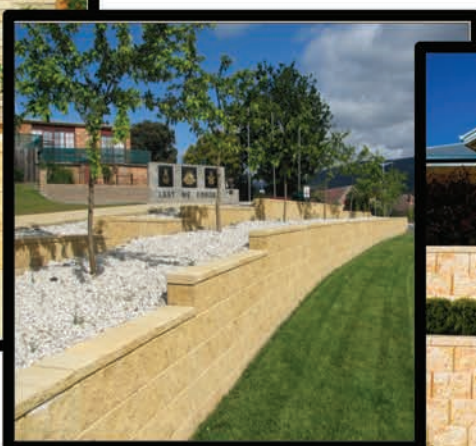
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Green bond

The City of Johannesburg's long-term strategy supports a low carbon economy, is able to continually change and adapt, and remain sustainable even when confronted with complexity and uncertainty.

The City of Johannesburg is known as the financial powerhouse of Africa, housing several local and multinational companies. As such, the City is well-placed to play a critical role in the global Green Economy.

The launch of the City's innovative Green Bond earlier this year is testimony to its commitment to providing a resilient liveable and sustainable environment.

Through its Green Implementation Plan, the City of Johannesburg sets out a long-term strategy that supports a low carbon economy, able to continually change and adapt, yet remain within sustainable thresholds of existence – even when confronted with complexity and uncertainty.

Johannesburg's Green Bond is designed to take the City closer to its long-term goal of becoming a green, sustainable and healthy metro. In marking the occasion, Executive Mayor, Parks Tau said: 'The Green Bond will provide the City with a funding source to improve and expedite the implementation of its climate change mitigation strategy and move the City towards a low carbon infrastructure, minimal resource reliance and increased preservation of natural resources.'

The City of Johannesburg concedes that it is among the biggest emitters of greenhouse gasses in South Africa, mainly as a result of industrial, transport and residential activities. The Green Bond is just the latest

in a series of programmes designed to maximise resources and lower the City's carbon footprint.

All projects to be financed from the Green Bond are green initiatives, such as the Biogas to Energy Project and the Solar Geyser Initiative, as well as all other projects that reduce greenhouse emissions and contribute to a resilient and sustainable city.

Through this innovative financing mechanism the City will benefit in terms of accessing additional funding, tapping into a new investor base with social responsible investment (SRI) mandates and project a positive image to investors when dealing with climate change challenges.

The Biogas to Energy project

The Biogas to Energy project, officially launched in August 2013 at the City's biggest waste water treatment plant, Northern Waste Water Treatment Works, is turning biogas from waste into power at five of the City's waste water treatment plants to offset rising electricity costs.

When Eskom announced tariff increases that were to take place between 2010 and 2012, the City quickly realised that the increases would have a direct effect on operational costs of waste water treatment in Johannesburg.

The increases by Eskom indicated that the annual electrical power costs would treble in the next seven to ten years. It is estimated that by 2020 the cost of

In its effort to mitigate climate change the City of Johannesburg has introduced Green Bond.

What is a Green Bond?

A green bond is a fixed income initiative that is used as a financial tool to fund and produce climate change solutions.

What will the Green Bond pay for?

The Green Bond is used to finance environmentally friendly capital projects. These will be categorised in energy (Smart Meter, solar water geyser, biogas); water (energy efficiency); waste (landfill gas to energy, garden sites, recycling projects); and transport (BRT routes, Metro bus dual fuel projects) sectors.

What is the Green Economy and why is it important?

The City of Johannesburg has flagged its greenhouse emissions as an area of focus to cut down on and improve in the future.

The Green Economy combines economic growth and employment with a low carbon economy

A central requirement of the Green Economy agenda is to ensure that economic benefits and jobs are generated through any adoption of greener technologies. This entails finding greening opportunities where the economic benefits (over the long-term) exceed the costs of such a transition.

An exercise is being undertaken to calculate the potential job creation that could be achieved through Green Economy interventions.

Was the South African Debt Capital Market Ready for the green bond

Yes, the bond was oversubscribed by 150%. The green bond coupon, at 10.18%, is priced at 60 basis points lower compared to the last bond issued in March 2011. The current bond was issued at a spread of 185 basis points against the benchmark bond R2023, thereby lowering the City's credit spread by 10 basis against the 10 year benchmark bond since the last bond issuance.

electricity for waste water treatment in Johannesburg will increase from R93-million per annum, as it was in 2010, to about R300-million per annum. This estimated amount excludes the proposed 16% tariff increase per annum by Eskom. The tariff increases will thus put enormous financial pressure on water service providers.

Following the announcement of tariff hikes, Johannesburg Water investigated ways of generating electrical power from the biogas produced at their waste water treatment works, as well as for reducing the current electrical power demand.

After extensive feasibility studies and research, the City finalised a report in 2010 that recommended the implementation of a pilot project at Northern Waste Water Treatment works before it is moved to other waste water treatment works.

The aim is to become as self-sufficient as possible for the electrical power demands of our waste water treatment plants by 2016. Initially combined heat and power (CHP) generated could possibly provide about 55% of the waste water treatment electricity needs.

Waste to energy

As part of the City's ongoing efforts to improve waste management, it has prioritised projects to divert waste from landfills and to turn waste into energy where possible. In his State of the City address in 2014, Executive Mayor, Parks Tau, said: 'The diversion of waste away from landfills remains a key priority for the City of Johannesburg.' Some of the waste streams identified include the diversion of green waste, builders' rubble, food waste and residual waste. Separation at source is currently being rolled out in Waterval, Zondi, Diepsloot, Orange Farm, Central Camp, Marlboro and Southdale. A total of 470 000 households are targeted for participation in the programme.

The City's garden sites are being upgraded to accept recyclables. In the final stages of the programme a total of 950 000 households will be included in the programme. As builders' rubble is also a huge contributor to illegal dumping, the City plans make mobile crush and static crushing plants available at various landfill sites to address the challenge.

The City of Johannesburg has also recognised the role of the various stakeholders in reducing waste to landfills, and would partner with the private sector to accelerate the implementation of waste-to-energy projects that will move the City towards the attainment of a 70% reduction by 2030.

In addition, more than R2-billion has been earmarked for waste-to-energy projects that are already reported to be producing higher electricity yields than expected.

The City reports that since the start of the flaring of methane gas at Robinson Deep landfill site, the daily pumping of this gas is at 1500m³ per hour and should rise to 3000m³ when the flare is operated at full capacity.

This translates into 5MW of renewable electricity, which will provide power for approximately 5 000 houses, reducing the greenhouse potential of landfill

gas by approximately 149 000 tonnes of CO₂ per annum.

In the near future, all five of the City's landfill sites – Marie Louise, Robinson Deep, Ennerdale, Linbro Park and Goudkoppies – will be converted from methane gas flaring to power generation sites. This will produce approximately 19MW of electricity that can supply 12 500 medium-size households over 20 years and beyond.

Greener transport

Implementation of the Rea Vaya Bus Rapid Transit (BRT) system, which is used by tens of thousands of commuters daily, has already made significant inroads into combating the carbon problem.

The third phase of Rea Vaya, which began in February 2014, includes:

- 16km of new BRT trunk infrastructure along Louis Botha and Katherine Streets
- 10 new stations
- A state-of-the-art and underground public transport interchange at the site of the Wynberg Bridge
- 31km of public environment upgrade in Alexandra as part of the Complete Streets initiative
- More than 5km of walking and cycling lanes
- A new bridge over the M1 to accommodate some 10 000 people who walk between Alexandra and the Sandton CBD every day

The plan also includes a second bridge dedicated to the Rea Vaya bus lanes in Marlboro; a new transport system in the Sandton CBD so that there can be seamless integration between the Gautrain station, walking, cycling, Rea Vaya, mini bus taxis and other bus services; and a new bus depot in the inner city, and Alexandra. With the full implementation of Bus Rapid Transit it is estimated that the City will save 1.6-million tonnes of carbon dioxide equivalent emissions by 2020.

Over the next few years, the implementation of the City's ambitious Corridors of Freedom programme, with its associated reduction in commuting time and distances, will also significantly reduce CO₂ emissions and enhance the quality of life of all residents.

The City has launched its first two Metro buses powered by dual fuel – compressed natural gas and diesel. In 2015, Metrobus will be converting 30 more buses and purchasing 150 new buses to use dual fuel.

There are significant advantages to the City for using dual fuel buses. Not only are they cleaner – the City's first two buses are emitting 90% less carbon emissions than a diesel bus – but the fuel source, biogas, can be sourced from waste including grass from City Parks, biowaste from the Fresh Produce Market and bio crops grown specifically for this purpose.

Broad greener, power-saving initiatives

In addition, the City is retrofitting buildings with energy-efficient lighting and cooling and heating systems in a project to include more than a hundred municipal buildings, cutting hundreds of tonnes of CO₂ emissions.

Outdoor lighting is being retrofitted with energy-saving LEDs, and solar water heaters are being rolled out in a number of areas. The Cosmo City Climate

Proofing Project, which involved the provision of low-pressure solar water geysers to more than one thousand low-income households – including the provision of energy efficiency lights and planting of fruit trees – led to the expansion of the solar geyser programme to other areas of the City through the City Power Solar Water Geyser Programme (SWHP).

The SWHP launched in October 2012, is aimed at rolling out 110 000 geysers to low-income

households over three years. The 43 000 solar water heaters already installed by City Power collectively generate the equivalent of 22.5GW hours of electricity per year – enough to run a small town or part of a suburban area. The installation of 42 000 smart meters, geyser control systems and energy efficiency programmes, all of which are ongoing, will continue to enhance Johannesburg's energy efficiency.

The City of Johannesburg's Green Bond will fund the following projects:

Renewable electricity/power

- Electricity grid efficiency
- Electricity generation from renewable sources
- Installation of power efficient transformers in the power distribution grid
- Installation of high voltage direct power transmission line
- Supply side energy efficiency improvements (transmission and distribution)
- Off-grid electricity generation
- Electrification of communities through grid extension
- Renewable thermal energy
- Solar water heating systems
- Fuel switch – coal/oil to gas
- Switching fossil fuels
- Waste energy recovery projects

Household and building energy efficiency

- Water saving
- Demand side energy efficiency activities for installation of low-flow hot water savings devices
- Lighting
- Distribution of efficient light bulbs to households
- Demand side activities for efficient lighting technologies
- Demand side activities for efficient outdoor and street lighting technologies
- Demand side energy efficiency activities for installation of energy efficient and/or controls in buildings
- Energy efficiency and fuel switching measures for buildings
- Energy efficiency and renewable energy measures in new residential buildings
- Substituting fossil fuels based lighting with LED/CFL lighting systems
- Demand side energy efficiency activities

Transportation

- Energy efficiency
- Transportation energy efficiency activities using retrofit technologies
- Fossil fuel switch
- Fuel switch
- Introduction of low emission vehicles/technologies to commercial vehicle fleet

Waste Management and Wastewater

- Recovery and recycling of materials from solid waste
- Alternative treatment composting
- Alternative waste treatment processes
- Avoidance of methane emissions through composting
- Avoidance of methane emission through excavating and composting of partially decayed municipal solid waste
- Landfill gas
- Flaring use of landfill gas
- Landfill methane recovery
- Manure and comparable waste
- GHG emission reductions through multi-site manure collection and treatment in a central plant
- Reforestation and afforestation
- Small scale project activities implemented on wetlands
- Small scale project activities implemented on lands other than wetlands

Corridors of freedom

The City of Johannesburg envisages a future of well-planned transport arteries – Corridors of Freedom – that will enable residents to live closer to their workplace, enabling them to work, live and play in the same space without having to travel long distances.

For too long our City continues to be shaped by our apartheid past. Generally, black people live far from their workplaces and travel long distances to reach work, school, and their places of leisure.

We are restitching our City to create a different future for our residents where we can link jobs to people and people to jobs. We will be embarking on transit-oriented development. And, because the developments are along transport corridors, the provision of transport like Rea Vaya will enable fast, safe and affordable mobility. Dubbed 'Corridors of Freedom', they provide residents with increased freedom of movement, as well as economic freedom – liberating them from apartheid spatial legacy characterised by informal settlements, poor schooling and limited recreational spaces.

We envisage a future where the City consists of well-planned transport arteries (the Corridors of Freedom), linked to mixed-use development nodes with high-density accommodation, supported by office buildings, retail developments and opportunities for education, leisure and recreation. In this future, Joburgers will live closer to their workplace and be able to work, stay and play in the same space without having to travel long distances. Reduced cars, and less carbon emissions, will save our environment. The Corridors of Freedom will transform entrenched settlement patterns that have shunted the majority of residents to the outskirts of the City, away from economic opportunities and access to jobs and growth. This will give rise to a people-centred City where the needs of communities, their safety, comfort and economic well-being are placed at the core of planning and delivery processes.

Additionally, Corridors of Freedom will result in reduced poverty for the majority of the City's residents who are currently spending a large percentage of their income on transport. The new City skyline will consist of high-rise residential developments growing around the transit nodes, gradually decreasing in height and density as they move further away from the core. Social infrastructure, schools, clinics, police stations and government offices will be strategically located to support the growing population. Through the Corridors of Freedom Johannesburg will make a decisive turn towards a low-carbon future with



eco-efficient infrastructure that underpins a sustainable environment.

Targeted areas

The City is consulting with residents and stakeholders to finalise the routes and nodes of its corridors of freedom. However, the focus is on the following areas:

In the medium term (2016):

- Soweto to CBD along Perth Empire
- CBD to Alex
- Alex to Sandton
- Turfontein node
- Mining Belt

In the long term (2040):

- Sandton/Randburg to Diepsloot
- Alex to Ivory Park

Apartheid spatial planning has left the City with sprawling low-density areas without viable public transport systems.

Private car use is a significant driver of energy consumption and greenhouse gas emissions in the City. A 10% shift of private car users to public transport for their daily commute will result in an 8% reduction in energy consumption. Future planning must address both the issues of sustainability and inequity. The most efficient urban form is compact, mixed land-use with an extensive public transport network that includes high-intensity movement corridors and with attractive environments for walking and cycling. A compact City is energy efficient, provides residents with greater access, promotes social cohesion and creates a vibrant urban environment.

Key features of Corridors of Freedom

- Safe neighbourhoods designed for cycling and walking with sufficient facilities and attractive street conditions
- Safe complete streets with features to calm traffic, control vehicle traffic speeds and discourage the use of private transport
- Mixed-use developments where residential areas, office parks, shops, schools and other public services are close together, stimulating economic

activity and creating opportunities for emerging entrepreneurs

- Rich and poor, black and white living side by side, with housing options covering a range of types and prices including rental accommodation
- Limited managed parking to reduce the amount of land devoted to parking and further discourage the use of private transport
- Convenient transit stops and stations

The long-term impact

The development of dedicated transport corridors hold a number of advantages for Johannesburg:

- The City will focus productive land use and economic activities in areas where transport infrastructure – both rail and road – are already present or being planned.
- The demand for private motorised transport will be reduced and the average trip length will be shortened.
- Public transport will become a viable alternative because residents will live closer to work, shopping and leisure opportunities.
- High-density housing will stimulate opportunities for the SMME sector and small-scale operators in the informal economy.
- The environmental impact of public transport in high-density areas will be significantly smaller than in areas of low-density urban sprawl reliant on private cars.
- Residents will benefit because they will not have to spend so much time and money on transport.
- Learners will benefit because they will be closer to school.
- Unemployed people will benefit because it will be easier to get to places to look for work.
- Factories will benefit because workers will get to work on time.
- Shopping centres and hawkers will benefit along the corridors and nodes because of the increased number of people passing their shops.
- Our environment (and our lungs) will benefit with less private car use and dangerous carbon emissions.
- Construction and other related industries will benefit from the job opportunities throughout the lifetime of the project.

Hearing the peoples voices

For the average Joburger the option to live in close proximity to public transport facilities with easy access to the City and to make use of an improved transport system will be a life-changing experience. Gone

will be the days of being forced to rise at dawn to catch a train, bus or taxi to a place of work. Gone will be the days of returning to your home late in the evening, unable to share a family meal together or spending quality time with your spouse and children. The Corridors of Freedom will usher in a new era of access to opportunity and a choice for residents to work, stay and play within the same space without the inconvenience and high costs of travelling over long distances every day. The majority of South Africans have been forced by apartheid social engineering to live on the outskirts of cities and towns.

The National Household Travel Survey (2003) conducted by Stats SA found that the average travel time between home and work for commuters making use of public transport is 59 minutes. More than 1.3 million South Africans spend more than two hours a day travelling to and from their places of residence. To this can be added at least 30 minutes per trip spent walking to a station or bus stop and waiting for the bus or train to arrive.

For the Joburger living in areas such as Diepsloot, Orange Farm or Ivory Park this means waking up before dawn every working day to access transport that will take them into the city or the northern suburbs. In the evening the process is repeated. The survey also showed that 16.4% of Gauteng residents spend more than 20% of their monthly income on transport.

The social fabric of families suffer because of absent parents who are already on their way to work when their children prepare for school, and arrive back at home late, unable to share a family meal, supervise homework or spend quality time with their spouse and children.

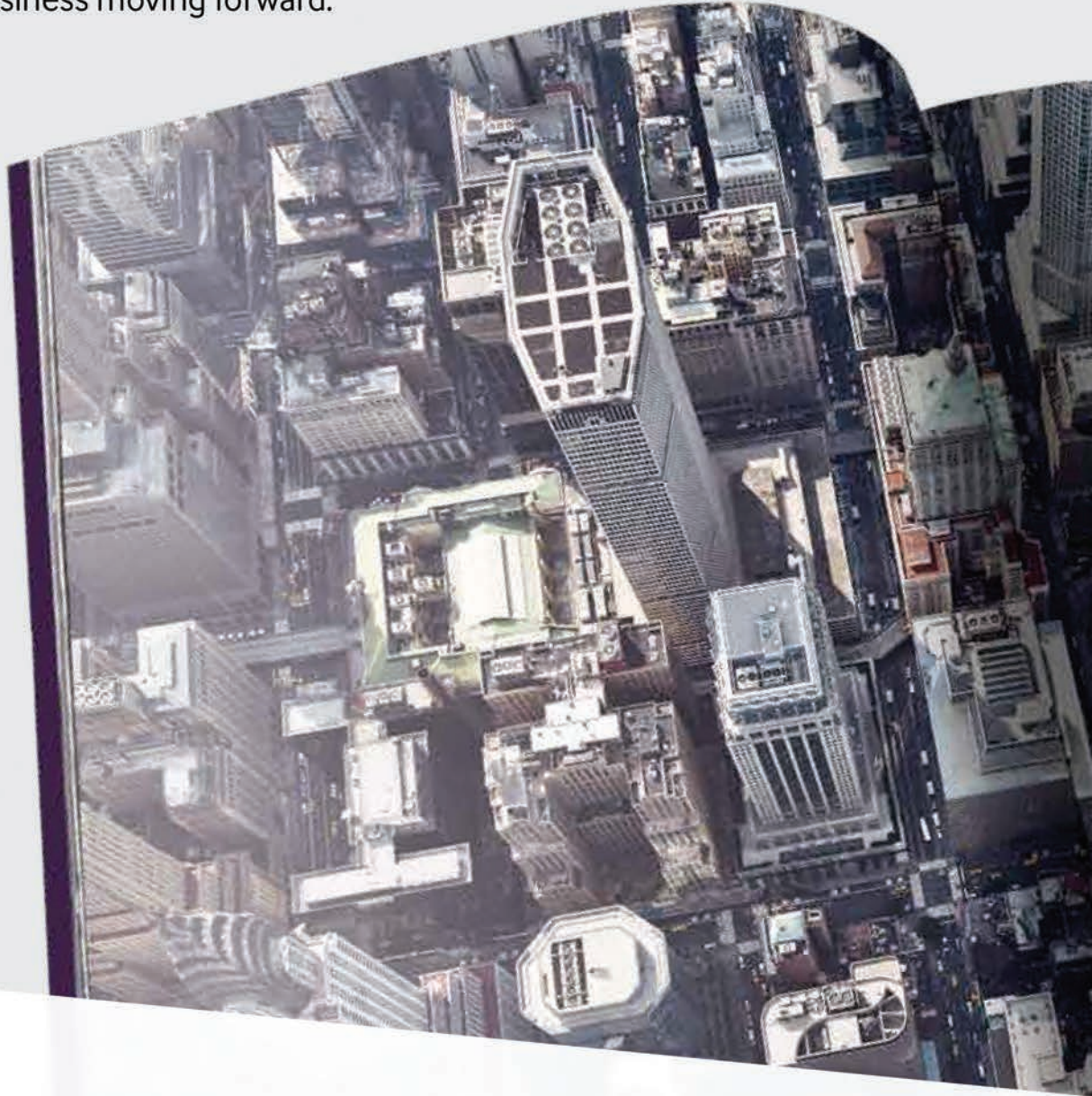
The Corridors of Freedom are designed to reverse these trends. Medium- and high-density housing will spring up next to the transport arteries and around the transport hub – linking home and work. The cost of transport will be lowered leaving households with more money to spend on food, education, shelter and other basic necessities of life. The quality of life enjoyed by families will be improved because parents will be able to spend more time with their families.

Neighbourhoods will be supported by social infrastructure – local shops, parks, schools, clinics and police stations. Residents will be given a wider range of choices of housing with a strong emphasis on rental accommodation in well-located and managed developments. Cutting down on carbon emissions and exhaust fumes will lead to a cleaner environment and improvements in the health of the population and the quality of life they enjoy. Johannesburg will continue to lead South Africa towards a low-carbon economy – ensuring a sustainable future for all its citizens.



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In 1999, Fourways Airconditioning was a small company in Kya-Sands, Johannesburg, selling Samsung airconditioners to COD customers. In 2002, the company acquired additional staff in order to aggressively market Samsung aircons and since then the growth of Fourways has been meteoric. Sales between 2001 and 2013 increased by approximately 3 000% in Gauteng alone, and today Fourways Airconditioning is a fully national company with warehousing and technical support centres in all major metropolitan areas.

Nationwide expansion

Fourways' rapid growth necessitated two moves to larger premises in Johannesburg as well as the acquisition of additional warehouses. In 2009, a second branch was opened in Pretoria to service local demand. Thereafter, a Fourways branch opened in Durban followed by one in Bloemfontein, and in 2013/4, Cape Town, Port Elizabeth and George all became part of the national Fourways Airconditioning family. The result is an unrivalled combination of product availability, local technical support and after-sales service for Samsung and Alliance airconditioners, as well as Heat Pumps and LED lighting.

Extensive airconditioning range

Whilst supplying several hundred airconditioning installers nationwide, Fourways Airconditioning also works with developers, consulting engineers, architects, builders and other contractors to ensure the correct specification of products for various projects.

In the field of airconditioning, Fourways supplies everything from small domestic split units, to cassettes, ducteds, underceilings, floorstandings, rooftop units and even portables and Air Curtains. In the larger systems area, growth has been exponential with Samsung's various DVM models meeting with widespread success.



In 2006, Fourways also launched its own range of Alliance airconditioners and Heat Pumps to meet a specific gap in the market.

Substantial growth in Samsung and Alliance Heat Pumps

The ultimate in eco-friendliness, Samsung's Eco Heating System (EHS) is an all-in-one system with highly efficient heat pump technology that keeps homes at a comfortable temperature with low heating costs all year round. Not only does Samsung EHS heat water for domestic use, it also provides underfloor heating, while inverter technology along with heat pump economy ensures maximum energy savings.

Alliance Heat Pumps have also met with extensive nationwide success, especially since the Energy Usage in Building Regulations (XA2) came into being in 2011 requiring all new buildings to have 50% of their hot water supplied by means other than electrical element heating. Wil Jansen, Director of Alliance Heat Pumps,



a division of Fourways Airconditioning South Africa says: "Because Heat Pumps heat water for a third – and even a quarter of the cost – of electric element geysers, project engineers, architects and developers have been specifying them as the ideal solution for meeting the new energy requirements.

"All our Alliance Heat Pumps use R410A gas which is not only environmentally friendly, but also ensures optimum output, a water temperature of 60°C plus the higher hot water yields that consumers are demanding. In addition, we have introduced bigger 'tube-in-tube' Heat Exchangers with rifled piping which results in increased heat transfer, greater efficiency and faster heating times."

New Samsung DVM S offers industry-leading efficiency
"An ever-increasing component of Fourways' growth has been in the Systems area," comments Richard Perry, Managing Director of Fourways Airconditioning South Africa. "Because of government regulations, more and more industrial and commercial companies are moving to energy-efficient HVAC systems. Samsung's DVM S unit is proving very popular, particularly as we are able to assist with training and technical assistance. Where companies have been awarded a job, we can provide specific training for their staff as well as detailed design assistance."

Building on the success of previous DVM Systems, Samsung's DVM S now offers the world's largest capacity single unit – 22HP/61.6kW – combined with a 30% reduction in unit size and 37% reduction in weight over previous DVM models. With a combination of 4 DVM S units offering a capacity of up to 88HP, the system is revolutionising the HVAC industry.

Mfundo Ciko, a director of Fourways Airconditioning Johannesburg says: "Because DVM S units take up even less space than previously, with one unit able to supply up to 64 indoor units, we are finding that contractors nationwide are moving over to this system. Samsung's Dual Smart Inverter with Vapour Injection maximises energy efficiency, ensuring that required temperature is achieved faster along with a reduction in energy and operating cost. A 110-metre piping level difference between indoor and outdoor units with a 50-metre indoor height difference ensures installation flexibility on high-rise buildings. We also carry stocks of DVM units, with a large holding of spares and provide the best back-up service in the industry. We have already

supplied DVM systems for many hotels, universities, flats, hospitals and other commercial/industrial areas as well as upmarket homes."

Eco-friendliness a priority

In keeping with worldwide trends, Fourways Airconditioning supplies environmentally friendly products. R410A gas is becoming standard in the airconditioners supplied by Fourways, and sales of Inverter models – which use a minimal amount of electricity to achieve perfect temperature control – are on the up-and-up. All Samsung and Alliance Heat Pumps use R410A gas, and training sessions are regularly conducted for aircon and Heat Pump installers.



Collaboration with contractors, architects and engineers a key to the future

"In line with our vision of being the Number 1 supplier of Airconditioning units, Heat Pumps, spares and service in South Africa," states Perry, "we are not only committed to supplying on-the-spot service to all the installers who buy from us, but also in ever-increasing measure, to working with specifiers in the industry. We are thus able to collaborate with developers, architects, consulting engineers and others right from design stage through to completion in terms of installing larger Systems."

'Service is what we sell'

"Ultimately, our rapid growth comes down basically to one word: 'service'. We have excellent products, but it is our on-the-spot supply capabilities combined with design assistance, technical back-up and long-term after-sales parts supply that have combined to make us one of the largest Airconditioning/ Heat Pump suppliers in South Africa. However, we are not resting on our laurels, but are constantly looking for new ways of improving our service to our customers, because 'Service is what we sell'," concludes Richard Perry.

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The Nereda process reactor.

Water – essential for the future

The Western Cape's Berg River project is striving to see clean water for sustainable development, and it rightly celebrates its selection as a World Design Capital 2014 Project. The project model provides a viable bio-option that can be used in city or rural-mixed zone areas of South Africa.

By Gareth Griffiths
Photos by Gareth Griffiths Imaging

Good design lies at the heart of an important project that involves all three spheres of the government.

Conceived by the Department of Environmental Affairs and Development Planning in the Western Cape Province (DEADP), the Berg River Improvement Plan (BRIP) has a vision for the river water to be of acceptable quality and quantity for sustainable farming, industrial development, human consumption and recreation as well as for ecological health. In this regard, DEADP is supported by the Department of Water Affairs, numerous Municipalities and commercial entities.

The BRIP has a holistic approach, aiming to address the elements of:

- Comprehensive monitoring of water quality
- Upgrading waste water treatment plants to new high environmental standards
- Upgrading water quality and the impact of habitation in informal settlements
- Striving for best practices in agriculture in the affected areas
- Rehabilitation and bio-remediation of existing water courses
- Striving to achieve a sense of the economic value of water among all concerned.

The first phases of the two water treatment projects launched in November include:

Informal settlement water project: The Langrug community

As with many other Western Cape informal settlements, Langrug was established between 1993 and 1994 by indigent migrants from the Eastern Cape. According to the Cape Town Project of the Worcester Polytechnic Institute, this makes up 72% of Langrug's population seeking employment in the vineyards surrounding Stellenbosch. At the time of the last survey, there were 49 people per working toilet and 72 people per working tap. Water is critical in the area. The settlement is located right outside the established town of Franschhoek, and both communities share a common dependence on clean potable water.

Bioremediation

Bioremediation technology is based on the idea that the most effective filter in nature is a fully functioning ecosystem of bacteria, fungi, plants and animals from habitats that improve water quality naturally. The system houses these ecosystems in separate tanks to treat varying levels of water quality.

Water from the Langrug community includes water from domestic activities such as washing, drainage from tap stands and other waste water that flows over the earth's surface collecting litter and other forms of contamination. This is collected and sent to a separator where solids are filtered out and the water is diverted to a bioremediation filter.

Bioremediation takes place through a number of filter stages that work together to effectively treat the inflowing water through various stages. Treated water is then used for watering sports fields or public open spaces, or for supporting urban agriculture, finally being released back into the river. Solids that are created by this process may be used for growing flowering plants that can be sold for the benefit of the community.

Bug clusters that break down sewage

'Cleaner, brighter treated water from sewage plants? Clean enough to drink from a glass, although it may still contain hormones from domestic waste water that are not broken down by the Nereda process,' says Saskia Langer, plant manager of the newly commissioned Wemmershoek Waste Water Treatment Plant.

In the Franschhoek area inhabitants have long spoken about problematic treatment of waste water. The nature of the inflowing waste has perennially caused problems, for example, the processing of waste that comes from the production of wine is very different to that of common domestic waste, agricultural or industrial waste.

Conceived in Holland, the aerobic granular sludge technology method of treating waste water is relatively new and represents a bold step forward in the treatment of waste water and sludge. The concept appears relatively simple. Water is purified to the stage where it can be used for irrigation or pumped back into the river. Sludge is treated to the point where it can be dried, compressed and pelletised to be used as fertiliser.

During 2005, system supplier, Royal Haskoning DHV, oversaw the installation of 20 or more full-scale aerobic granular sludge technology systems, called Nereda, used in the treatment of industrial and municipal waste water or sewage in three continents. The Wemmershoek facility is one of the most recent, although significantly not a South African first. Some years ago the process was successfully implemented at the municipal water treatment plant in Gansbaai.

At the heart of the process is a pair of twin sequencing batch reactors that ensure aerobic and anaerobic digestion of sludge.

The advantages to the built and natural environment are clear. 'Nereda plants require a quarter of the area of traditional installations, the process consumes much less energy, and it is entirely based on natural ingredients,' says the manufacturer.

At the Wemmershoek plant the treated water is reacted briefly with chlorine gas, which serves to kill off any remaining toxic bacteria before being passed on for agricultural irrigation usage or, in the case of Wemmershoek, pumped into the Berg River.



Above: Dr Joy Leaner, Director: Pollution Management at DEADP with colleagues and community members of the Langrug community.



Right: The upgraded Wemmershoek Waste Water Treatment facility.



Above right: The solid end of the Nereda process - compost-like sludge.

Good management of water and sanitation is critical to poverty reduction and a precondition for inclusive and sustainable development. Billions of people still do not have access to adequate sanitation and water that is safe for human consumption. Growing water scarcity and pollution are projected to further exacerbate the drinking water and sanitation crisis, seriously hamper economic growth and irreversibly degrade the environment. United Nations Secretary-General's Advisory Board on Water and Sanitation – January 2013

The writer was the guest of the Western Cape Government at both projects.

What makes a building 'green'? The City of Cape Town has put together a set of green building guidelines.

Green buildings are environmentally responsible, and ensure the sustainable and efficient use of resources and energy. They are also shown to promote well-being and productivity, as well as have lower operating costs.

- Used water, known as grey water can be directed onto your lawn and flowerbeds.
- Consider switching to 'green' electricity, which is generated from renewable sources such as wind, solar and wave power. This will save you water too, as coal-based power stations use water to generate electricity.
- Plant trees on the south, west or east side of your property to provide shade during summer.
- A ceiling and insulation in a small house can reduce your energy requirements by as much as 124 kWh a month – saving roughly R50.00/month.
- Eco-friendly building materials can be used, including reclaimed wood, recycled/composite plastic, non-toxic eco-sensitive paints.
- Rain water can be harvested from the roof and stored, or channelled to the garden.
- Install a solar water heater – these are relatively expensive but result in substantial savings on your electricity bill (water heating is the biggest part of most household's electricity use profile).
- Install energy efficient light bulbs (CFLs) throughout the house. These are usually more expensive than conventional incandescent light bulbs, but have a much longer life-span and use far less electricity. They pay themselves back in a few months and are a very sound environmental choice.
- Install solar (photovoltaic) panels on the roof to provide electricity to run low consumption appliances such as the TV, radio, lights and fridge.

Saving electricity saves you water. Statistics show that for every kilowatt hour (kWh) of energy generated, approximately 1.3 litres of water is used. A kWh measures one kilowatt of power expended in one hour. To register your building with the Green Building Council of South Africa (GBCSA) and get it Green Star SA certified, you will need to provide evidence of the green building measures you have or will use. Visit GBCSA for more. Be Water Wise.



For more information on being Water Wise please visit www.randwater.co.za and click on the Water Wise logo or contact us on 0860 10 10 60.



LMC Green targets a 5 Star Green Star SA Rating for PPS Insurance Company's Centurion Square, a 22,000m² Office Development located in Centurion, Pretoria



Department of Environmental Affairs

LMC Green was appointed by the GBCSA as an Independent Assessment body responsible for the adjudication of the DEA project located in Arcadia, Pretoria. The development achieved a 6 Star Green Star SA Office Design rating.



With extensive experience in mechanical engineering design, green building consulting as well as project management/coordination for a number of large scale projects, both in the United States as well as in South Africa, LMC Green has gained valuable experience and expertise in sustainable design practices. The company's hands-on problem solving approach has proven to be a crucial factor in the successful implementation of these sustainable initiatives and consequent completion of these projects. As a result, the company has been appointed by the GBCSA as a certified assessment body and faculty member to provide input and training respectively, within the realm of green buildings.

SERVICES OFFERED

LMC Green Consulting applies Environmentally Sustainable Design principles and conforms to the requirements and regulations stipulated by the GBCSA in order to assist professional design teams achieve their Green Building goals and desired Green Star SA ratings. Green Star SA certifications can be obtained for the following:

- New Buildings/Refurbishment contracts
- Retail projects
- Public and Education Building projects
- Multi Unit Residential Developments
- Existing Buildings (using the EBP tool)
- Interior Fit-outs



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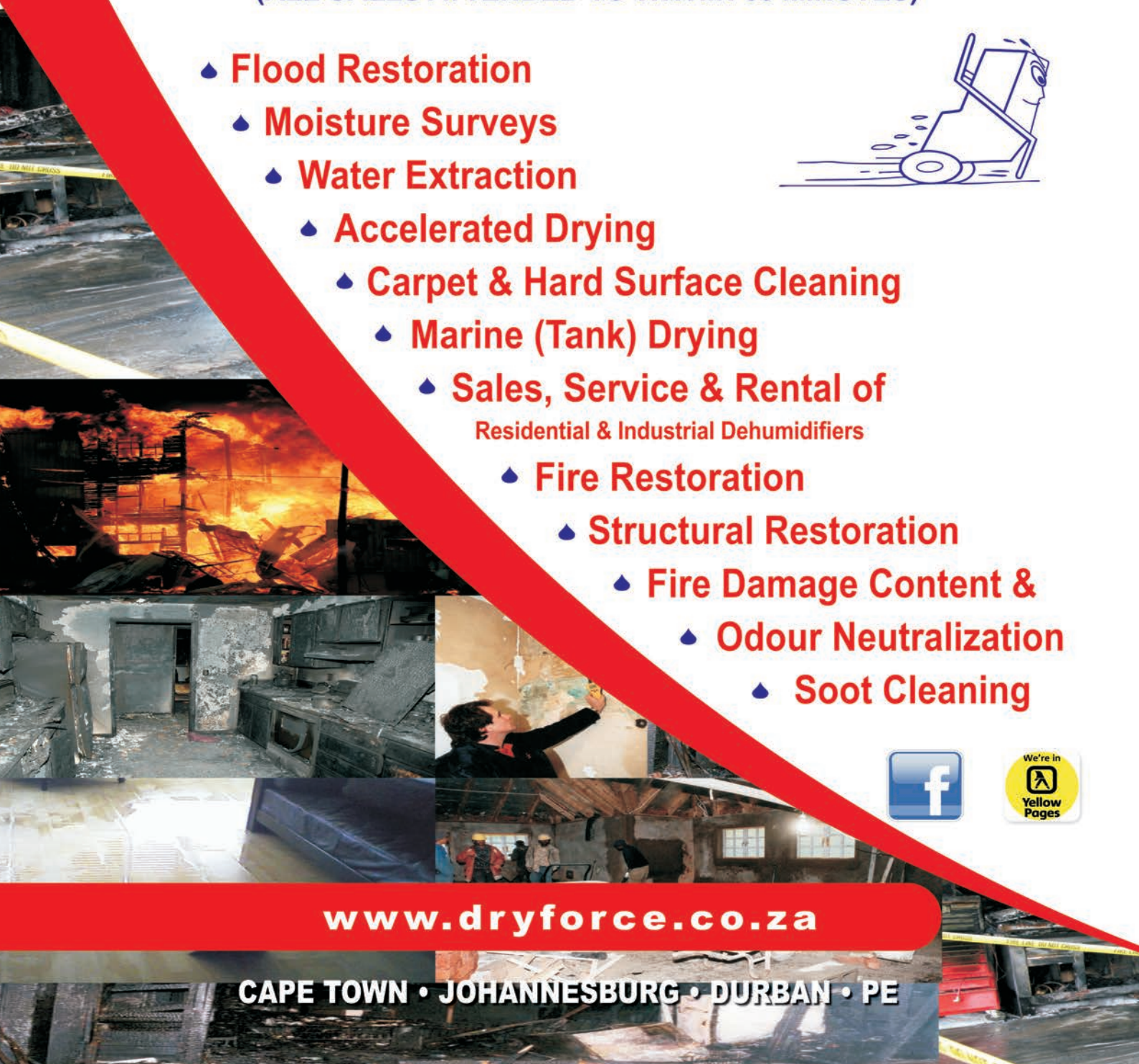
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Quality assured

There is a strong trend within the construction industry to specify professionally readymixed concrete to ensure quality construction and to mitigate the risk of structural failures.

As such, readymix firms that have been audited and found to comply with quality, safety, health, environmental and road transport standards are preferred to non-compliant readymix suppliers, for obvious reasons.

In southern Africa, the only organisation that is able to audit and accredit ready mix concrete suppliers is the Southern Africa Readymix Association (Sarma).

Peace of mind

'When developing infrastructure, building roads, houses, shopping centres or any other structure, it is important to specify concrete from an accredited Sarma member. By doing this, users have peace of mind that the plant has been audited by external auditors and has passed the strict requirements to be able to produce quality assured concrete. In South Africa there is no law to govern the quality of readymix delivered, which means the supply is open to abuse by unscrupulous companies. However, Sarma only represents quality suppliers and has made it our mission to self-regulate the industry, ensuring that quality is upheld. All audits are carried out by third-party auditors with no allegiance to individual companies and, unlike uncertified suppliers, Sarma members cannot simply hide behind untested, unaudited claims,' explains Sarma's general manager, Johan van Wyk.

He adds that Sarma has begun working closely with construction industry bodies representing civil engineering contractors, consulting engineers, municipal engineers, road pavement authorities, mining developers and many others to highlight the importance of compliance with standards, and the importance of dealing with Sarma accredited members.

'Communication between these bodies has also begun to bear fruit and in recent months a number of large construction companies, municipalities and mining houses have begun converting their tender documentation to specify concrete only from Sarma accredited suppliers,' Johan adds.

'By specifying Sarma-approved concrete suppliers, users are assured that they will get ethical concrete products that are made according to the right specification for the requirements – every time. In addition members can also offer insurance against concrete failure. In such instances, the special insurance available to Sarma members comes into force to ensure that the faulty concrete is removed and replaced at no cost to the user. We recommend purchasing concrete only from our members listed below,' Johan concludes.

Disclaimer

Please note: The member list was correct at time of publishing. To view the latest listing, please visit www.sarma.co.za. To ensure you remain up to date with the latest developments in readymix concrete, please subscribe to the Sarma newsletter by visiting the website www.sarma.co.za, emailing office@sarma.co.za, or contacting Mary-Ann Sutton on +27 011 791 3327

SARMA MEMBERSHIP 2014

OPERATION	PROVINCE	TEL NUMBER	WEBSITE
3Q CONCRETE HOLDINGS	GAUTENG	014 592 2202	www.3qconcreteholdings.co.za
AFRIMAT CONCRETE PRODUCTS	KZN	034 980 9411	www.afrimat.co.za
AFRIMAT READYMIX CAPE	WESTERN CAPE	021 917 8840	www.afrimat.co.za
AFRISAM	GAUTENG	011 670 5582	www.afrisam.co.za
AKR (SANDBSCAPE TRADING)	KZN	031 500 8688	no website
CIOLLI BROS	WESTERN CAPE	021 557 1111	www.ciollireadymix.co.za
CONCRETE 4 U	PORT ELIZABETH	041 501 5400	www.concrete4u.co.za
CYC CONCRETE	MAFIKENG	018 381 0548	no website
EASTERN READYMIX	PRETORIA	012 807 0212	www.easternreadymix.co.za
LAFARGE	GAUTENG	011 657 0000	www.lafarge.com
LATEGANS	WESTERN CAPE	021 873 1154	www.lategans.co.za
MAFEFUANE READYMIX	BETHLEHEM	058 256 1153	no website
MEGAMIX	WESTERN CAPE	021 845 8189	www.argent.co.za
NELSPRUIT READYMIX	NELSPRUIT	013 755 2321	no website
NPC CONCRETE	GAUTENG	031 450 4401	www.npc.co.za
OMV	GAUTENG	053 807 2000	www.omv.co.za
PC'S TRANSPORT	ERMELO	017 811 1411	no link
PORTLAND READYMIX	DURBANVILLE	021 972 1111	www.portland.co.za
ROBBERG	EASTERN CAPE	044 533 3476	www.robbergreadymix.co.za
ROCKSOLID	WITBANK	013 696 8900	www.rocktuff.co.za
SA MIXED CONCRETE	DURBAN	031 765 1246	no link
SCRIBANTE CONCRETE	EASTERN CAPE	041 406 7900	www.scribanteconcrete.co.za
STALLION READYMIX	ERMELO	017 801 1930	www.stallionreadymix.co.za
WG WEARNE READYMIX	GAUTENG	011 459 4510	www.wearne.co.za
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BASF	GAUTENG	011 203 2405	www.basf.co.za
CHRYSO	GAUTENG	011 395 9700	www.chryso-sa.co.za
LIEBHERR	GAUTENG	079 874 9624	www.liebherr.com
MAPEI	GAUTENG	011 552 8476	www.mapei.co.za
MSASA(XYPEX)	CAPE TOWN	021 426 0243	www.xypex.com
PAN MIXERS	GAUTENG	011 578 8700	www.pmsa.com
PENETRON (Ass)	GAUTENG	011 314 8300	www.penetron.co.za
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TFM INDUSTRIES	GAUTENG	011 316 4161	www.tfm.co.za
PPC LTD	GAUTENG	011 386 9105	www.ppc.co.za



Sustainability, functionality and great design – London

How does a mature, developed city such as London deal with the needs of sustainable development versus the needs of a growing economic sector? The Leadenhall Building, aptly nicknamed the Cheesegrater, is one of several new sustainable buildings in the heart of London's business district. SA Building Review's contributing editor visited the completed site.

Words by Gareth Griffiths
Photos by Gareth Griffiths Imaging

Construction of this dynamic and unusual building located in the heart of London's business district commenced on September 9, 2011. It was opened to tenants during the second half of 2014.

The Leadenhall Building (Leadenhall) is located at 122 Leadenhall Street. Situated in an area of extraordinary commercial development in the Aldgate and Bishopsgate districts, it's immediately evident from street level the extent to which off-site modular construction has taken hold.

The 'Inside Out' building in Lime Street, across from the Leadenhall building, houses Lloyds of London. Completed in 1986, the Lloyds Building starkly contrasts its newer cousin across the street. Of course this building is strikingly different in itself, and designed along the architectural principles of Bowellism, where services are located outside the building to maximise habitable space inside (think the Pompidou Centre, Paris). Nearby, another entirely different but striking building at 30 St Mary Axe Street, 'The Gherkin', was completed in 2003.

The Leadenhall was developed as a joint venture by British Land, one of Europe's largest Real Estate Investment Trusts (REITs), and Oxford Properties. The latter is a global investor, developer and property manager. The architect was Graham Stirk of Rogers Stirk Harbour and Partners. At present, Leadenhall provides the highest office space in the City of London. The contract was undertaken by Laing O'Rourke, a multi-disciplinary international construction and engineering firm.

Sustainability

Sustainability cuts across the multiple disciplines of green building but also includes heritage and caring for people. The principle of the developers is that a sustainable approach is essential in the delivery of high quality buildings. As such, design and engineering elements were deliberately chosen to make efficient use of energy and resources.

The writer's view from outside, was that the designers went out of their way to make the building welcoming

and people-friendly. Under the enormous overhang of the building at pavement level is the galleria and this currently houses a highly-informative display aimed at educating visitors about the project and the building's sustainability.

The building is supported by 16 inclined columns and braces, which create this large user-friendly area of open space, reaching 28m. Once fully completed, the area will run underneath the building allowing a new walkway from Bishopsgate through to Leadenhall Street – used by thousands of pedestrians each day.

The design team had to tread carefully because all around the neighbourhood are elements of London's rich and ancient history. These are listed buildings that occupy high status in the history of the City, which can't simply be ignored. The juxtaposition of early millennium church buildings with the new feats of architecture and developing sites is breathtaking.

The how

Just how did the designers of the Leadenhall approach the matter of sustainability?

Paramount was the need to preserve the cityscape that includes the dome of St Paul's Cathedral. The designer's response was immediate. To create the building shaped as a vertical wedge (cheesecutter) so that the view of the dome of St Pauls from its principle viewing spot on Fleet Street to the West was unaffected. In fact, the building seems to 'lean away' from the dome.

According to the developers, 'The Leadenhall Building's sloping south face slots neatly into the space to the left of Wren's iconic dome, leaning deferentially away from it to avoid encroaching on the world-famous view. As any developer looking to build upwards in the City soon learns, protecting the view of St Paul's is paramount. But in the case of The Leadenhall Building, that restriction, far from limiting



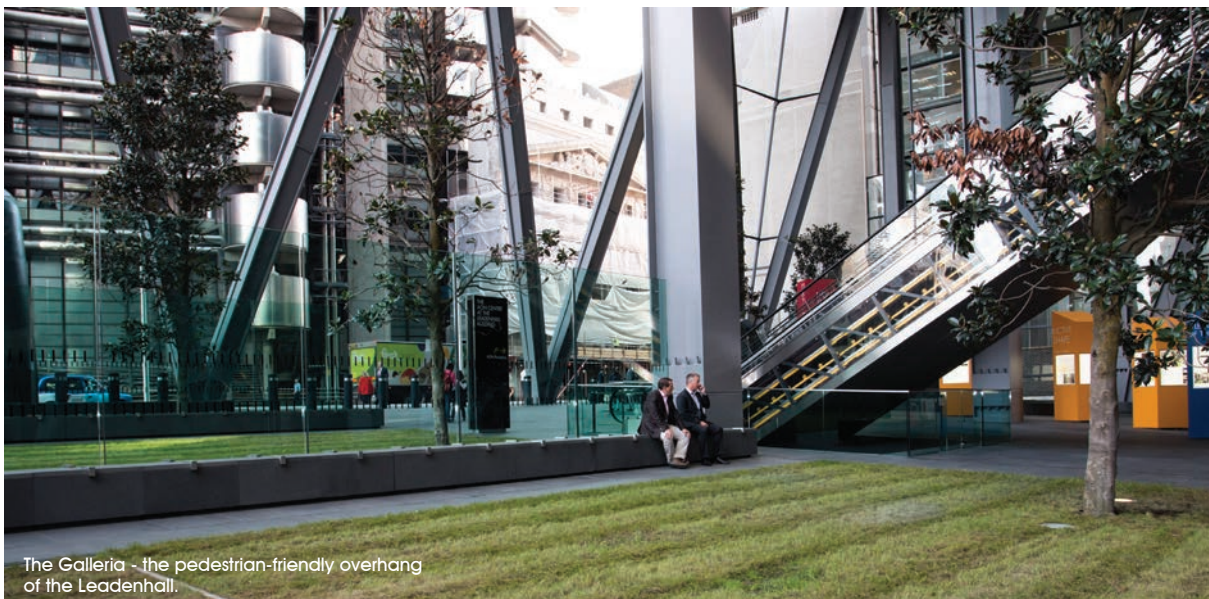
Note the inclined columns and braces that form part of the building megastructure.



Old with the new. St. Helen's Bishopgate, a 13th-century church. The Gherkin in the background.



The Pinnacle, a controversial Bishopsgate development currently on hold. Behind, the "working end" of the Leadenhall.



The Galleria - the pedestrian-friendly overhang of the Leadenhall.



the architects' creativity, acted as the springboard to an ingenious solution. Unusually for a tower, there is no central core. The strength of the building is all in the megaframe – the muscular, wedge-shaped framework of steel triangles that houses the office floors. With light flooding in from three sides, and minimal pillars, those offices offer unparalleled flexibility for occupiers, as well as breathtaking views south, east and west over the City, the River Thames and beyond.' (Source: www.theleadenhallbuilding.com)

Large scale design stage sustainable features also include:

- Prefabrication meant the on-site workforce could be reduced to half the number of people required to build a large building of this nature. This streamlined the construction process and reduced the risk of accidents. In addition, the employment possibilities created by a project of this size were spread beyond the city to the areas where the prefabrication sites were located and where work as presumably most needed.
- Design and engineering elements have been deliberately chosen to make efficient use of energy and resources.
- The building as a triple-layer glass shell, which is key to its thermal sustainability. The outer layer of glass is separated from an inner layer of double-glazing by a cavity containing blinds that respond to the sun's movement, keeping the office space comfortably cool throughout the working day.
- The external glazing incorporates vents at every seventh storey, allowing air to flow freely around the cavity. This minimises the need for HVAC, which is most frequently the highest energy demand item in any office building.
- Monitoring systems are in place to ensure resources are managed efficiently on an ongoing basis. There are 293 energy meters placed through the building and these monitor usage.
- The building minimises its water usage – it has low-flow water fixtures and fittings.
- Design for Manufacture and Assembly (DfMA) approach – this elective approach where components of the building are manufactured offsite – emphasises the elimination of material waste using

Strong steel mega frame and bolts at the Leadenhall

According to the professional team, the mega frame of the building was constructed at specialist steelworks in northern England, Scotland and Northern Ireland. It is divided into eight sections, each of which is 28m high and comprises seven floors (apart from the first section that contains five). The steel columns and beams are connected by nodes that transfer forces of up to 6 000 tonnes, while nearly 3 000 megabolts (threaded steel rods) connect all the steel parts together.

These mega bolts are stretched (pre-stressed) before being installed so that completely rigid joints are created. This type of construction is more commonly used for bridges and offshore oil rigs.

Lifting the steel frame sections into position required cranes that could lift up to 45 tonnes. However, the heaviest-duty crane available had a maximum load of 32 tonnes, so two new cranes were manufactured especially for the construction of the Leadenhall Building.

efficient material sourcing, design, engineering and manufacturing technologies. DfMA increases the quality of materials and installations, reduces waste to almost zero, and significantly decreases deliveries to site, avoiding air pollution and congestion, minimising embodied energy and carbon. Evidence from independent environmental monitoring suggests such embodied energy and carbon is typically half that of projects built using traditional methods.

According to the Mayor of London, Boris Johnson, 'The Leadenhall Building is the latest landmark to grace London's iconic skyline, demonstrating our city's ability to design and construct world-class architecture. This ambitious project has created jobs in London and across the UK, supporting great British manufacturing all over the country'.

Although climate and economic factors differ between the UK and South Africa, there are surely some sound sustainability principles that are common between the two economies?

Gareth Griffiths is SA Building Review's Editor at Large and undertook this investigation while on a recent trip to London.

Further photography taken by him that features this burgeoning business district can be view at <http://tinyurl.com/ktcoldf>

SIKA IS TAKING RESPONSIBILITY FOR A SUSTAINABLE FUTURE



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Leading the way

Dubbed Africa's greenest hotel, the stars shine brightly at the Hotel Verde.

Words and photos by Contributing Editor

Arriving at the Hotel Verde next to Cape Town's airport can be misleading. Located in an industrial and windswept area with the noise of aircraft, visitors are naturally impressed by the oasis that awaits them. Even the hotel ground level parking area has an industrial feel since it is dominated by a trio of wind power generators.

The Hotel Verde was commissioned in late 2013 and since then has been the focus of many sustainability articles in the media. Having recently received its LEED Platinum status and numerous awards, SA Building Review wanted to know just how effective the many sustainability aspects of this hotel are, now that they've been in service for over a year.

Sustainability consultant, André Harms of Ecolution, chatted to the SA Building Review to provide these insights. André has been lead sustainability consultant and has remained in this capacity from the project's inception to bringing all the sustainability systems online. He collaborates closely with the hotel's facilities management team.

Mario Delicio, Hotel Verde's inspirational managing director, mandated Ecolution, the project's consultant,

to build 'Africa's greenest hotel'. To fulfil such a bold brief, independent third party verification was *sine qua non* and the project team was 'humble but proud' to achieve Platinum status across all categories of LEED Platinum Design and Construction Certification, in May 2014.

Hotel Verde is the first hotel in Africa to achieve a Platinum certification across all categories and is among only six hotels worldwide to have achieved it for the same category. It is also a first for a South African building to receive Platinum certification for design and construction.

On the environmental management side, the hotel recently also received an Exemplary Platinum certification from the Heritage Environmental Management Company.

On the horizon are ratings under the GBCSA Green Star Existing Building Performance pilot programme, and a tandem application to LEED for its Existing Buildings rating. The outcome is expected to be of great value in benchmarking the local pilot standard. At present, there is no Green Star design and/or build tool for hotels, but the existing building pilot tool can now accommodate various buildings.



The Hotel Verde lives up to its name of Africa's Greenest Hotel.

The most noteworthy green measures implemented

André's personal view is that the hotel operator's holistic and sustainable outlook and culture of sharing is the biggest contribution to the green building environment. 'I believe our biggest success lies in our education programme that begins with students and high school pupils. In line with our philosophy of sharing knowledge, we also host tours and lectures for designers and facilities managers from other accommodation establishments that are keen to follow the Hotel Verde's lead. The underlying goal is to be an agent for change and encourage the upcoming generation,' he says.

Energy efficiency

While the eye-catching wind-operated turbines have been less successful with a long projected payback time, the sum total of the passive and active measures implemented has paid off big time. These have enabled an extraordinarily energy-efficient establishment that uses 70% less energy than an average hotel of similar size. Put into numbers, the hotel consumes 77kWh/m² per annum. The norm is 255kWh/m² and the SANS requirement is 650kWh/m². However, it's significant when comparing against LEED prescribed benchmarks based on stringent ASHRAE 90.1 norms that the Verde is 50% more energy efficient than that average.

André says that the wind turbines that are each capable of generating 3kW flat-out, also serve to make a statement on behalf of the sustainable energy movement.

“

Be the change you want to see
in the world.” Mahatma Gandhi

”

Also in line with its vision of educating users, particularly hotel guests, the hotel features a gymnasium that allows the co-generation of power from three units of equipment. Although power outputs are small – along the lines of 200Whs for the very fit – the participation and involvement by users broadens their understanding and helps to spread the message. According to André the average user would only generate about 50Wh of energy if using the equipment for one hour – sufficient to prepare a cup of coffee!

One of the most effective energy-efficiency devices is the sophisticated and innovative HVAC system that incorporates heat pumps and geo-exchange field located under the hotel in 100 individually-drilled boreholes. In addition, the installation of several large and well-insulated buffer tanks allow the storage of water at the desired temperature for when it is needed, or for use at a time when peak electricity demand makes the tariff cost of electricity very high or places a strain on the grid. At times, when there is little differential between hot and cold water and use of the geo-exchange field contributes little; dry coolers on the roof are available as redundancy. They can also be used for rectifying any unlikely but possible long-term effects underground that could be brought



The hotel swimming pool is 100% natural and is cleansed by a fully fledged ecosystem in the outer zone.



The hotel cultivates as much of its own vegetable and herb as possible, utilising composted green waste.



The rehabilitated wetland

about if, over a year or multi-year period, the load is significantly dominated either towards cooling or towards heating the ground.

There are numerous other energy-efficient innovations, including the design of the building's lifts and passive interventions such as energy efficient (high solar reflectance) and green roofs.

Considerable renewable energy is also generated by way of a batch of PV panels on the roof.

Water interventions

The hotel features all the standard water-saving devices in bathrooms and kitchens. In addition, grey water is cleaned and recycled into flushing for (water conserving) toilets. 'South Africa has a water problem, which is why water conservation features highly on the Hotel Verde's priorities,' says André. 'Luxury and sustainability are not mutually exclusive. However, it is preposterous to be flushing waste away with perfectly good drinking water and the industry has to come up with better ways to do this. A great step in that direction is to utilise recycled grey water.'

In essence, water for hotel use matches the consumers to the different sources, of which there are four:

- Municipal water as a potable source and for personal hygiene
- Grey water from showers is cleaned and used for flushing of toilets and landscape/vegetation maintenance

- Captured rain water – for outdoor use, washing cars, hardscaping and irrigation. Stored in rainwater storage tanks
- Ground water – collected from drainage layers underneath the basement and around the perimeter of the basement (utilising perforated pipes in a sandwich of coarse stone enclosed in geo-fabric) is collected in a sump, buffered and pumped into rainwater storage tank.

Hence, only clean water is fed into the storm water system and only when in surplus.

The result of this programme is spectacular. In the grounds of the hotel a rehabilitated piece of land that once served as a municipal retention pond, but was in fact an illegal dump, has been revitalised into a wetland populated with indigenous plant life, now home to various animal and bird species. A jogging track winds its way around this feature and a dedicated beehive area allows for the collection of honey and as a medium of education.

Eye catching sustainability features

Vegetable and herb gardening for the kitchen uses sustainable techniques and the hotel's own compost. The swimming pool is 100% natural and is in effect a pond that uses natural means to clean the water without the need for chemicals. A specially-designed outer zone functions as a fully-fledged eco-system that acts as a natural filter and purifier for the inner bathing zone.



Above: Mario Delicio and André Harms

Left: The wind turbine generators make a statement about renewable power resource generation.



Above: Even the gym tells the story of energy efficiency. A small amount of power is generated by certain of the equipment.

Left: Food for the hotel kitchen is sourced from the closest by sustainable sources possible.

In the lounge, a stunning natural dividing wall is illuminated using natural light on the outer facing side and using LED grow lamps on the inner face. Mario admits that this is his personal favourite feature.

Sustainable approach to art

The developers went out of their way to commission local artists and involve schools in various initiatives to display their artwork throughout hotel's interior and exterior. Much of the work is made using recycled materials or carries an environmental theme.

Indeed, the hotel seems to be living up to its name of 'Africa's Greenest Hotel'. SA Building Review thanks everyone concerned for making the time to spend with our contributing editor.

About Ecolution

Ecolution Consulting was established in 2011 by André Harms in response to the need for market transformation towards more sustainable and responsible design, construction, operation and maintenance in the built environment. Ecolution provides a range of responsible engineering and sustainability consulting services for the property industry and their suppliers. André is an electro-mechanical engineer with extensive experience in both design, project management, commissioning process implementation and auditing sites for sustainability projects.

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ACDC employs over 600 people nationally and is represented in all CBD's in South Africa. The company's technical specialists and support staff are one of its biggest assets, and their skilled staff are able to assist with product selection and technical specifications, solutions and more.

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'We have come so far in technological advances and aim to secure the best products technical skills and support for our customers,' says Mario Maio.

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'Our manufacturing operation offers an array of solutions from the production of transformers, power supplies, electronic timers and motor starters to power factor correction systems,' Mario adds.

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To address the heightened demand of renewable energy and energy savings, ACDC has developed a group of specialists to focus purely on the activities of environmentally-friendly solutions. Its Green Team offers simple but effective energy choices to assist all types of businesses (industry, commercial and government) to reduce their energy usage. It also supports national goals for greater energy security.

The Green Team helps businesses find effective ways to reduce energy use in optimising assets and reducing fossil-fuel consumption and carbon footprints. It does this through the implementation of co-generation, managing peak demand energy consumption, power factor correction, lighting, solar panels, and variable speed drives for compressed air, fans, motors, and pumping systems.

Lighting design specialists

'In addition, we have a large group of technical specialists from lighting design and solar solutions engineers to electrical engineers,' says Mario.

Light is a technically difficult yet an astonishing medium that requires mastery of varied and continually-evolving disciplines. Building project specialists should consider the difference between the services provided by a lighting professional versus an electrical engineer or interior designer.

- Electrical engineers specify the requirements for lighting as part of the project's electrical system.
- Interior designers select decorative lighting equipment in adherence with the property's layout and décor.
- Lighting design engineers integrate the art, science and business of illumination design and implementation far beyond concerns of pure visibility.

'Professional lighting designers bring solid technical acumen and sensitive design techniques to architectural and landscape projects. The value-added services they provide can make or break the success of a project and our engineers operate hands on to assist customers with on-site decisions.'

A benchmark in the market

Among the company's many strengths is its extensive bi-annual catalogue, widely recognised as a benchmark in the electrical industry. Here customers will find specifications, product ranges and technical details required to make the most appropriate product selections. ACDC's 2015 edition of the catalogue is now available.

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Green innovations in basic building materials

New building block technologies, based on tried and tested methods of old, are coming to the fore. So, too, are innovative methods of using plastics waste in the manufacture of concrete.

By Gareth Griffiths
Photos by: USE-IT

Thanks to its versatility and widespread availability, earth has been used as a construction material on every continent and in every age. It is one of the oldest building materials on the planet.

'It is thought that the first free standing human dwellings may have been built out of sod or wattle-and-daub. About 10 000 years ago, the residents of Jericho were using oval, hand-formed, sun-dried bricks (adobes). Earth construction takes many forms, including adobe, sod, rammed earth, straw-clay, and wattle-and-daub. Even today, it is estimated that between a third and a half of the world's population lives in earthen dwellings,' reports Michael Smith, on the website, Networked Earth.⁽¹⁾

Building with earth and similar materials is termed natural building. At the heart of natural building is an ethos that places a high value on social and

environmental sustainability. There are many forms of natural building. Natural builders employ basic, easy-to-learn techniques that call on locally-available and renewable resources.⁽²⁾

In the case of earth block, the substrate consists primarily of soil. There are three basic versions – the compressed earth block (CEB), the stabilised compressed earth block, and the stabilised earth block. Significantly, South Africa has become one of the global pioneering countries in reverting to and refining this age-old methodology.

CEB blocks are assembled into walls using standard bricklaying and masonry techniques. Mortar may be simple slurry made of the same soil/clay mix without aggregate, spread or brushed very thinly between the blocks for bonding. Cement mortar may also be used for high strength, or construction during freeze-thaw cycles causes stability issues.⁽³⁾

South African innovation wins acclaim

With an abundance of builders' rubble arising from South Africa's numerous new developments and brown-fields developments, considerable effort has gone into finding ways of recycling or re-using what was formerly regarded as building waste.

At the recently held Better Living Challenge Awards, a Durban-based organisation was honoured with the first place award in the structural home category. The Better Living Challenge is a design competition showcasing green and affordable products, systems and services that improve the homes of people living in low-income communities.

The Challenge is a public-private sector initiative managed by the Cape Craft and Design Institute.

The category winner was Durban-based section 21 company, USE-IT, which aims to identify waste beneficiation opportunities in municipal areas that will help to divert waste from landfill and create

According to USE-IT the advantages of its sustainable green building – CEB system are:

- Use of local soil to make blocks – minimising transport cost and carbon footprint
- Using spoil from cut-and-fill and waste rubble – recycle, reuse
- At least three times stronger than concrete blocks
- Fully certified and tested (Agrément, SABS, CIDB, NHBRC)
- Cheaper and stronger than conventional building
- Greater thermal efficiency and completely waterproof
- Simple building method – leading to skills development and job creation
- Low embodied energy and carbon savings
- Supportive of a healthy green living lifestyle





Construction takes place using bricks made via the compressed earth block method.

employment in the green economy. USE-IT's primary objective is to create value in the waste collection chain, and to channel the resource into initiatives that multiply the economic, social and environmental benefits that support sustainable infrastructure.

Made from a blend of 30% discarded builders' rubble and readily available clay-bearing soils, the USE-IT blocks are reportedly three-and-a-half times stronger than concrete blocks, significantly cheaper and ten times more thermally efficient. Unskilled people can be trained, in just one hour, to lay the blocks.

According to Chris Whyte from USE-IT, 'There is no need to plaster our walls and we use the smallest possible amount of cement, about 5%, to stabilise the blocks. We do not need to fire the blocks and they cure in just seven days, ready to build. The process of building does not use a cement brickforce between the blocks, but rather a thin soil-slurry that is cheaper, quicker to use and bonds more strongly than cement.'

Global researchers develop plastic/sand replacement technology

Academics from a UK-based university are collaborating with Indian researchers in a two-year project to create environmentally-friendly concrete that uses plastic waste as a partial replacement for sand. In India, a very high demand for concrete to support a construction sector boom has led to unregulated and damaging sand extraction from river beds. Mining for sand has been banned in many Indian states, but damage to mangrove swamps that provide a breeding ground for nature has already started. Removal of sand also makes surrounding agricultural fields in the flood plain very susceptible to flooding and the ingress of salt water.



On the other hand, India's booming economy produces huge levels of plastic waste, arising from plastic carrier bags and other packaging. A team of British and Indian researchers are working on a concrete mix that will utilise plastic waste diverted from landfill that is shredded and mixed into concrete as a replacement for approximately 10% of the sand. The potential for this application is physically huge, with India being the second largest manufacturer of cement on the planet.

The research will also investigate how using plastic in place of sand within concrete affects its strength, durability, fire and thermal properties.

The Bath University research project is funded by the British Council under the UK India Education and Research Initiative (UKIERI) program, established in 2006.^[4]

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Materials under the spotlight

Outstanding projects by UK-based researchers add immense value to sustainable building initiatives.

By Gareth Griffiths BSc UCT (Chemical and Material Sciences)
Photos by: University of Bath & Gareth Griffiths Imaging

Located in a peaceful setting in the historic city of Bath, the University of Bath has research teams that have gained international recognition in the field of construction materials. Of particular importance to the green building movement globally must surely be the work done under the auspices of the Department of Mechanical Engineering by the Institute for Sustainable Energy and the Environment (I-SEE).

I-SEE aims to discuss, connect and integrate energy and environmental research. It focuses on the natural and engineering sciences, with partnerships in the social, economic, political sciences and in policy. Founding director of the Institute, Prof Geoffrey Hammond, co-authored invaluable research with Craig Jones on the embodied carbon and energy contents of common building materials. The so-called *Inventory of Carbon and Energy (ICE)* published in 2011, is now in its second evolution and provides provocative insights into the environmental impacts of ubiquitous materials. Although the data clearly aims to assist the building materials industry and researchers, the information also provides scientific insights into materials that are truly green or sustainable.

The HIVE

One of the more prominent and recent projects undertaken by researchers in the Department of Architecture and Civil Engineering at the University of Bath is a joint project with the British Engineering and Physical Sciences Research Council. Located on property leased in Swindon from the Science Museum there, the project named the HIVE strives to analyse the performance and environmental impact of construction materials in the future. Parameters include energy efficiency, flood resistance, structural capability and internal air quality.

With buildings currently being responsible for 50% of all CO₂ emissions in the UK and globally, it is seen as essential that all new materials are evaluated under real conditions of full scale. The University's new HIVE facility provides just such a test bed and offers a plug-and-play facility outdoors that speeds up the adoption times of new and innovative materials and methods.

According to the University's Professor Jane Millar, pro-vice-chancellor for research at the University of Bath, 'The HIVE is a pioneering site that allows industry to develop future energy-efficient construction materials and systems faster, while strengthening the



Dr Mike Lawrence at the University of Bath's
HIVE research facility Wroughton



Drying a house out after flooding is crucial. University of Bath's Alistair Bradley and Dr Wen-Shao Chang with flood resistance testing equipment for building materials.

research capabilities of our BRE Centre for Innovative Construction Materials.'

The HIVE is indeed the first facility of its kind in the UK, and its importance is emphasised by its official opening in September 2014 by Prince Edward, the Earl of Wessex, who is also the Chancellor of the University.

Structure of facility

There are eight individual cells that make up the building. Each has been built to be completely insulated from the others, and each has one side exposed to the external environment. These sides are used to install test walls made from a range of materials and systems that are being evaluated. Hence, real life conditions exist, from which accurate extrapolations of environmental performance such as U-values can be made. According to researchers, this creates a more accurate picture of environmental performance than the U-value assessments currently used in building regulations.

According to the University⁽¹⁾, programmes currently underway include:

- Testing the thermal and acoustic performance of double skin facades, along with the performance of different window types and acoustic ventilators with UK specialised consultants, Mach Acoustics, to help increase use of low impact natural ventilation.
- Testing fabricated pre-dried hemp-lime panels in open air buildings – contrasting thermal performance with wood fibre, mineral wool and other materials – part of the EU-funded HEMPSEC project.
- Understanding how effective wall panels are at addressing poor air quality, for instance by absorbing VOCs and other pollutants, together with an EU-funded ECO-SEE project. The ECO-SEE project aims to address an emerging health problem associated with modern low carbon buildings. Modern buildings have been developed to be very airtight, improving

their energy efficiency and reducing their carbon footprint. However, these sealed environments have created unexpected side effects, with research showing that a build-up of potentially harmful chemicals in the air is potentially causing negative impacts on occupants.

- Testing the flood resilience and structural integrity of timber walls – to help flood proof future homes.

In addition to the above, researchers can evaluate the internal environment that construction materials create. Other features of the HIVE also include a hygrothermal cell to evaluate heat and moisture movement through buildings and test energy efficiency, air tight integrity and acoustics, a special cell that can be used to test internal walls, floors and a roof that allows load testing, and a flood cell that tests the resistance of construction materials to high water levels or floods. In addition, a bladder cell tests construction panels against horizontal loading, including wind or geotechnical forces.

The HIVE facility is directed by Dr Mike Lawrence of the BRE Centre for Innovative Construction Materials and the Building Research Park (pictured above). He sees the testing function of the facility as essential if the UK is to lead the way in low carbon homes and meet challenging emissions targets.

It's incredible to think that such a high level of materials research is taking place in the ancient city of Bath, where physical elements built with sustainable stone of pre-Roman occupation still exist – and none more well-known than the Bath spa. Recently, the writer was fortunate to tour the historic baths, a World Heritage Site, and was acutely aware of the sense of history and role of the ancient materials of construction.



Ancient building materials that withstood the test of time. At the Roman Baths in the city.

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The writer acknowledges the excellent assistance from the University of Bath in providing and sharing the information required to write this technical report.

Gareth Griffiths is the editor of *To Build* magazine, a photojournalist, technical writer and a qualified physical scientist. His photography from Bath Spa can be viewed at www.professionalphotoshoots.co.za

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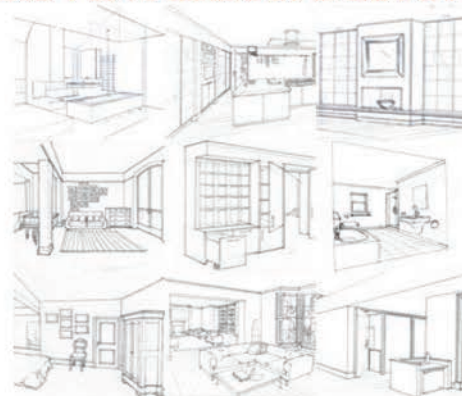
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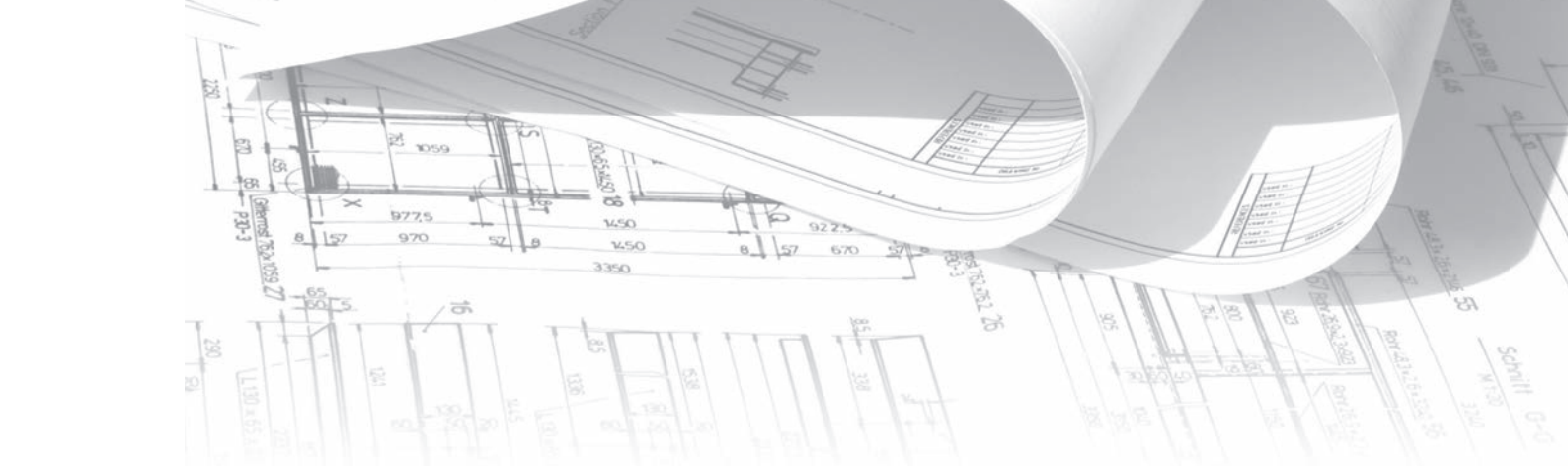
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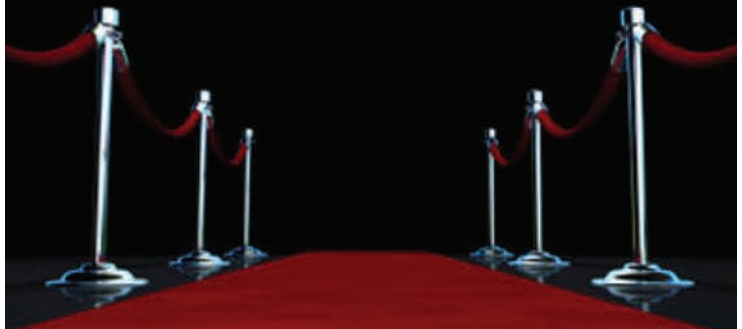
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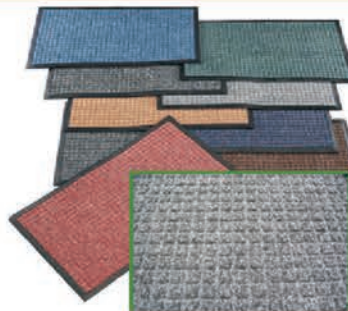
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Industry-leading fuel efficiency

Mercedes-Benz achieves industry-leading fuel efficiency with new hypoid axles and offers trucks that think for themselves.

Two Mercedes-Benz Actros 6x4 truck-tractors, fitted with the latest Mercedes-Benz RT440 hypoid rear axles as standard, have achieved significant fuel savings of more than 5% in test runs in the Eastern Cape.

Mercedes-Benz engineers have developed a new hypoid rear axle for the current Actros 2644LS/33 and Actros 2654LS/33 6x4 truck-tractors that were tested under everyday conditions along Mercedes-Benz South Africa's (MBSA) well-known trial routes in the Eastern Cape.

Mercedes-Benz trucks combined the OM 502LA engine with its 540hp with the RT440 hypoid rear axle in the Actros 2654LS/33, which replaces the other air-suspended 2650LS/33. It now has a 3.583 rear axle ratio.

Christo Kleynhans Mercedes-Benz trucks product manager says: 'The new RT440 hypoid rear axles make for the most fuel-efficient Mercedes-Benz 6x4 truck tractors. In fact, the fuel saving achieved on the 2644LS/33 was 5.67%, and 5.37% on the 2654LS/33.'

It is an on-going quest in which Mercedes-Benz trucks – the first manufacturer to complete the launch of a full range of Euro VI-compliant trucks in Europe – continues to reduce fuel consumption and emissions in South Africa.

Christo points out that South Africa is well-known for its distinctive operating conditions and trucking environment, which provides a testing ground suitable for a wide spectrum of applications. 'Thanks to the outstanding track record of the Mercedes-Benz Testing Department, it was an obvious choice to call on their expertise to perform the comparative test between the new hypoid axles and the existing hub reduction rear axles,' he elaborates.

Independent testing together with thorough research also played a significant part in Mercedes-Benz introducing the innovative Telligent Maintenance System, which makes it possible for the trucks to inform operators and drivers when it is time for a service.

The first truck manufacturer to introduce this product in South Africa, Mercedes-Benz Trucks (a Daimler Truck and Buses brand) is changing the maintenance and servicing mentality in the country. Moving away from pre-set service intervals, this product makes individualised service intervals possible by taking its cue from the actual wear and tear on the vehicle.

The truck is designed to monitor the condition of the engine oil, transmission oil, axle oil and general service components (air filters, fuel filters and brake pads), based on the operating conditions of the

vehicle. This ensures optimum utilisation of operating fluids and service parts without risk to the service life or reliability of the engine and driveline. The Telligent® Maintenance system stores information about faults, but only alerts drivers if they need to take action.

Lowering total cost of ownership

The 2013 State of Logistics Survey for South Africa, published by the Council for Scientific & Industry Research (CSIR), attributed increased logistics costs in the economy to be a factor of 'a disproportionate growth in cost drivers – especially fuel'. Logistics costs of R393-billion in 2012 escalated to R423-billion in 2013, and this is expected to stand at R456-billion for last year.

Telligent® Maintenance tells the driver or truck owner exactly what needs to be serviced, and when. This leads to less time spent in the workshop and more productive time for the truck and driver. Effective usage of the system can realise a saving of up to 14% in service costs.

Optimal results will be realised if Telligent Maintenance is used with FleetBoard, the benchmark vehicle management and tracking system provided by Mercedes-Benz South Africa. Over 18 months between 2011 and 2013, FleetBoard registered a combined savings of over R6-million and uptime savings of 2 658 hours, in 658 cases.

FleetBoard provides impartial, comparable data from all vehicles in a customer's fleet, such as an overview of mileage, operational status, consumption, and deployment profiles of drivers including an evaluation of overall driving styles. This enables fleet managers to determine the causes for high consumption and promptly address these issues.

From an environmental point of view, the Telligent® Maintenance system also scores brownie points for manufacturers and truck owners. Less frequent oil and filter changes equate to less of these items contributing to pollution.

For an Actros to qualify for this unique value offering it simply needs to be activated on either the CharterWay® BestBasic or CharterWay® Service Complete contracts available at the nearest dealership. However, cancellation of the CharterWay® contract will result in the vehicle returning to fixed service intervals. Although this offer applies to vehicles sold with effect from 1 May 2014, trucks sold prior to May 2014 on a CharterWay® Contract are eligible to be converted to a Telligent® Maintenance Contract backdated to 1 January 2014.



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