

Construction WORLD

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Looking back on
70 YEARS of
INNOVATION



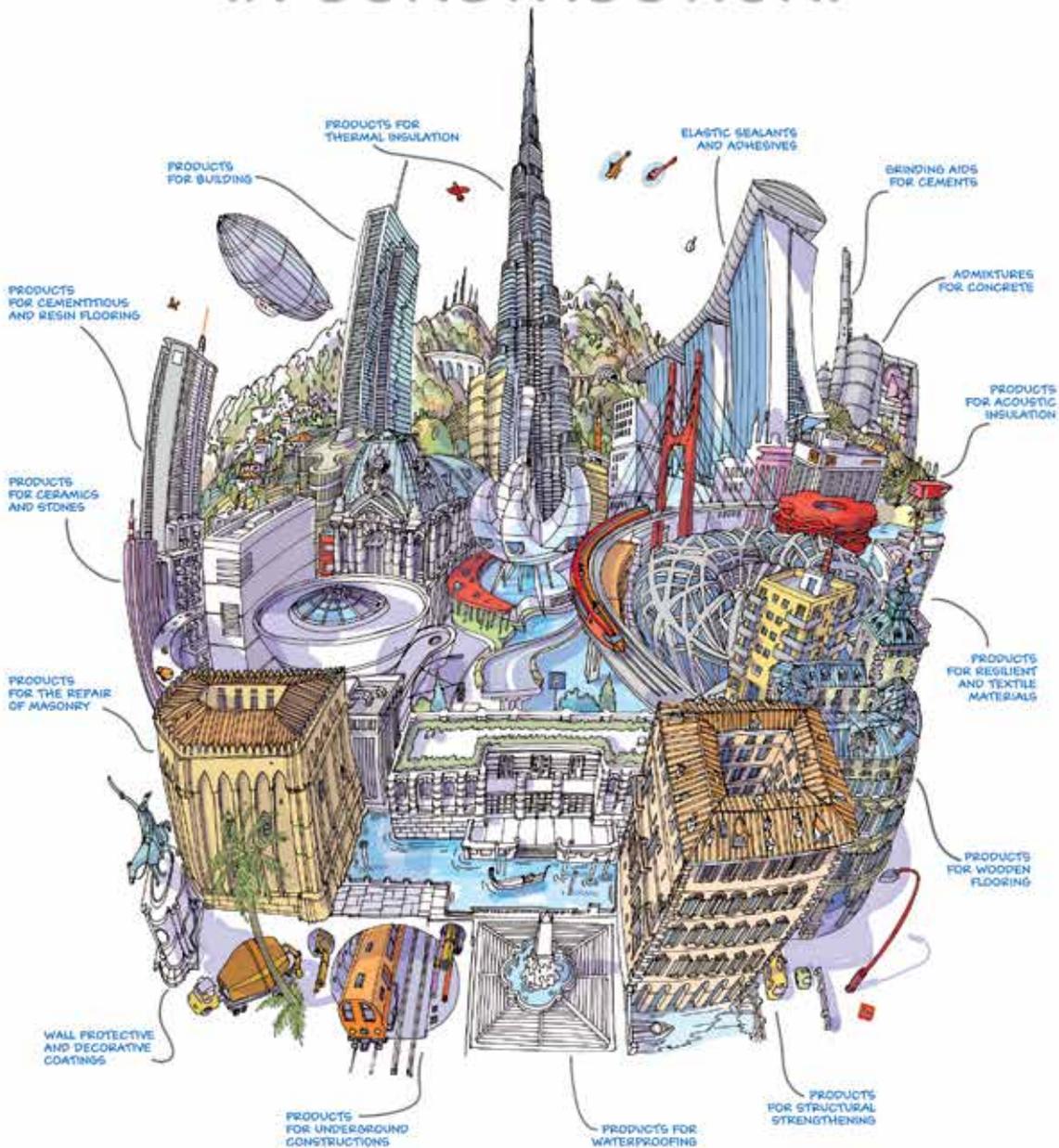
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EDITOR'S COMMENT



Noupoort Wind Farm has achieved its Commercial Operations Date making it the first wind farm to successfully achieve operation as part of the third round of the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP).



In this month's issue we have the first alternative energy feature in *Construction World*. Just five years ago green energy had an almost negligible footprint in the country. Fast forward to 2016 and almost 2 000 MW is being generated by 42 projects across South Africa. This is set to increase significantly in the next few years.

Sustainable Construction World, our second sustainable supplement, will be published in October. Although green building is still very much in its infancy in South Africa, it is becoming vital. Support this supplement with advertising or editorial.

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The reality is that despite these increases, coal generated electricity still accounts for almost 95% of the 44 000 MW generating capacity in South Africa. At this stage renewable energy (solar and wind power) accounts for only about 5% of SA's generating capacity. According to Eskom, a maximum of 1 600 MW of renewable energy is part of its current generating capacity.

It is important to keep in mind that with solar and wind energy, there is a difference between installed capacity and maximum production: as the wind does not always blow and the sun does not always shine, such infrastructure does not always produce to maximum capacity.

A renewable energy plan

The Department of Energy has committed to increasing renewable energy to 13 225 MW by 2025 – this is in terms of the country's Integrated Resource Plan. In the shorter term, this plan aims to expand the renewable procurement programme to some 6 000 MW by 2020 – 92 independent producers have been selected

for this (according to the Renewable Energy Independent Power Producer (IPP) Procurement Programme (REIPPPP)). A significant number of these, 79, have now reached financial close and are generating power (i.e. fed into the national grid) or are being constructed.

The future of coal

At the end of 2015 South Africa was a signatory of an agreement in Paris that will force countries to switch to a low-carbon economy in an effort to minimise climate change. The implication is that, if South Africa adheres to the agreement, the country will never see the likes of a Kusile and Medupi being built ever again.

Ironically however, Eskom's (our largely coal-fed national electricity utility) woes are hampering the roll-out of renewable energy in South Africa. The REIPPPP plan was stopped from issuing budget-quotes to IPPs because of Eskom's financial problems. In addition, international companies involved in the plan are paid in rand by Eskom – the fluctuating exchange

rate has made it unattractive for more foreign investment in the programme.

A significant investment

Despite inherent drawbacks (as opposed to the predictability of electricity generated from fossil fuels), establishing a renewable energy infrastructure in the country, has had a positive effect. Earlier this year, the renewable energy programme had attracted R192,6-billion of which R53,2-billion was foreign investment.

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AFRICA seen as a major GROWTH NODE

Addressing a media briefing to showcase the company's global and regional service offering and capabilities, newly-appointed chief executive – Africa Carlos Poñe stressed that, while AECOM had a presence in 150 countries, Africa remained a strategic objective.



“Going forward, Africa will remain an important focus. It is important to note that we have both a global and a regional reach.” Poñe noted that the continent fell into the Europe, India, Middle East and Africa ‘super region’.

“This means we have a lot of international expertise and experience. For example, we have excellent engineering centres in Romania and Spain. Wherever we do not have the capabilities here, we can certainly draw on these globally.”

AECOM has 1 200 employees in Africa, of which the majority are located in South Africa. Revenue from the continent currently stands at USD150-million, which Poñe says it is his aim to boost substantially. The company has a presence in 15 African countries.

AECOM in Africa

This comprises permanent offices in Ghana, Nigeria, Liberia, Senegal, Kenya, Uganda, Tanzania, Lesotho, Mozambique, Botswana and South Africa, where its head office is located in Centurion. In addition, AECOM has project offices in Ethiopia, Guinea, Rwanda, the Democratic Republic of Congo, Gabon, Ivory Coast and Congo.

“We do not want to go into Africa with a shotgun approach. We have a strategy that defines our approach in terms of the business-to-business environment and GDP growth,” Poñe reiterated.

Commenting on the challenge of conducting business in Africa, Poñe said that AECOM's strategy was predicated on health and safety and ethics and integrity. “Being a company that sells expertise, our people are naturally at the top of our agenda.

“We cannot do the work we do without having the best people in the world.” Poñe stressed that AECOM's approach to Africa is based on being 100% compliant with the local laws and regulations, which is seen as a minimum requirement for conducting business.

AECOM sees the oil and gas sector in Africa as a major growth area.



Service offering

Looking at the company's broader service offerings, Poñe elaborated that AECOM provides a blend of global reach, local knowledge, innovation and technical excellence in delivering solutions that create, enhance and sustain the world's built, natural and social environments.

The Construction Services Group specialises in design, EPC contracting and financing, while AECOM Capital invests equity in projects that provide future opportunities and growth for the company. Both the Management Services Group and the End Market Group ensure sufficient integration and functionality between all the different divisions.

“In terms of architecture, we have been responsible for a number of iconic projects in Africa and around the world, from car dealerships to major buildings, hotels and airport towers. In terms of the latter, AECOM, in conjunction with Pininfarina, won an international design competition for the regional Air Traffic Control (ATC) tower and technical building at the Istanbul New Airport.

“If you look at the number of architects we have in the company, with 26 in South Africa alone, we could rank as one of the world's largest architecture firm,” Poñe pointed out. In terms of design and planning, AECOM focuses on integrated project delivery.

“We have the capability to design and plan new cities and urban districts. For example, we carried out the master-planning for the London 2012 Summer Olympics, the London 2020 Vision, and most recently for the upcoming Rio Olympics.”

AECOM also carried out the master-planning for Saadiyat Island in Abu Dhabi, an iconic residential and cultural development. In South Africa, AECOM was responsible for project and cost management and specialist consultancy for both the Moses Mabhida Stadium in Durban and Greenpoint Stadium in Cape Town.

In terms of engineering services, Poñe highlighted that AECOM has a highly experienced team based in South Africa that specialises in clinics and hospitals. “We are very strong in this niche sector, and our people are probably among the best in the world.”

Looking at programme management, Poñe cited the lead role that AECOM has assumed on the new Doha Port in Qatar, in addition to its ongoing involvement with the new dig-out port in Durban. “Globally and regionally, we have huge expertise when it comes to ports and harbours on a design, construction and project management basis.”

AECOM is also ranked as the number one company globally in terms of transportation, with construction and site supervision expertise ranging from railway systems to corridor studies. “I have very little doubt that we are probably the number one in Africa when it comes to transportation,” Poñe stressed.

In terms of the water sector, AECOM has been involved with various major Acid Mine Drainage (AMD) projects in Gauteng. Other water infrastructure projects include the award-winning Spring Grove Dam. “We are working in Kenya and Ethiopia out of South Africa in this sector,” Poñe revealed.

The main competitive edge for AECOM is its capability to deliver total projects, all the way from design to complete handover. “What is important as far as the client is concerned is that we can handle the full complexity of a large project. This means that the client has a single

“This means we have a lot of international expertise and experience. For example, we have excellent engineering centres in Romania and Spain. Wherever we do not have the capabilities here, we can certainly draw on these globally.”



AECOM is involved in infrastructure from construction to harbours and marine.



Carlos Poñe chief executive – Africa, AECOM addressing a media briefing.

point of contact and does not have to deal with a large number of different companies.”

Poñe added that AECOM has identified the power sector as a major growth area in Africa, from transmission to distribution and even micro-grid systems. “We are working on several transmission systems in East Africa, and have just clinched projects in both Lesotho and South Africa. This is an area where we foresee major growth, and we certainly have the capability to tap into this sector on the continent.”

While the mining industry remains constrained by the global slump

in commodity prices, Poñe argued that mining projects in Africa in particular have a major need for enabling infrastructure in order for them to get off the ground. “This is another area where we can successfully deliver our expertise in EPC contracts.”

In the burgeoning area of environmental services, AECOM experts from Spain are involved in building up the capabilities of various local municipalities in this regard. “From ground engineering to air-quality impact assessments to environmental health, we can conduct all of these specialist studies in-house,” Poñe concluded. ◀

NEW SALES DIRECTOR

The leading resin flooring manufacturer Flowcrete South Africa has appointed Emile Venter as its new sales director.

➤ Formerly the business’ national sales manager, as of 1 June 2016, Venter became responsible for Flowcrete’s continued growth in the Southern African Development Community (SADC) region as well as ensuring that local market expansion plans are executed.

Flowcrete South Africa’s managing director, Craig Blitenthall, said: “Venter has an excellent understanding of the business and carries with him the values Flowcrete would like to portray. His loyalty and commitment to the business made this promotion the obvious next step.

“Over the last two years he has focused on increasing Flowcrete sales nationally and he has successfully executed and maintained the focus on sales during an extremely challenging year. He has travelled tirelessly throughout South Africa and the SADC region, getting to know all the Flowcrete approved applicators and clients.”

Venter said: “I’m very excited about this new role and getting to grips with the opportunities, challenges and possibilities that it will present.

“My true passion is selling and interacting with customers, and as Flowcrete South Africa’s sales director I’ll get the chance to work with clients across multiple countries, as well as further develop the Flowcrete brand within South Africa at a promising time for the nation’s construction industry.”

Emile Venter brings to this new role an extensive amount of experience in sales as well as a decade of experience in the flooring industry.

After graduating from RAU in 1998, Venter started his career in an IT capacity before quickly progressing into a technical management position. In 2006 Venter moved into the construction industry when he began selling and project managing soft flooring materials.



Emile Venter.

In 2009 he began working with Flowcrete South Africa as a technical sales consultant in Gauteng, after being impressed by the variation and quality of Flowcrete’s products. He then progressed to become the Gauteng regional sales manager in 2012 and in March 2014 was further promoted to national sales manager. ▶

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OFFICES in KENYA

Growth in Africa and in particular East Africa is providing a major catalyst for the increased expansion of global construction and management consultants Turner & Townsend, which has opened an office in Kenya.

Newly appointed country manager for Kenya, Daimon Keith.



> Says newly appointed country manager for Kenya, Daimon Keith: “Our ongoing focus on continued expansion on the continent is increasingly important in growing our business globally.

“Having set-up originally in South Africa 34 years ago, we are currently involved in over 40 projects outside of South Africa at various stages of the project lifecycle, from setup through delivery and close out. We are working mainly in the telecoms, oil and gas, infrastructure, health, education, and hotel and leisure sectors specifically in Kenya and more broadly across East Africa.

“In achieving growth now and into the future our Africa strategy incorporates three main hubs, concentrated in the SADC (Southern African Development Community), East African Community (EAC) and West Africa. We have developed our business in SADC for many years and while we continue to grow, our focus at present is on EAC as this is the next logical step given our existing client base and the opportunity to introduce new services and develop skill sets in the region. In West Africa, Nigeria and Ghana will be our focus areas as we seek new project opportunities.”

Keith says South Africa has proven an important gateway for Turner & Townsend’s continued growth in Africa, with the Johannesburg office the first of the regional offices globally to be established outside of the UK. “The South African business began with a focus in the mining sector and then grew outwards into Africa. However, the gateway into East Africa for us was our Uganda office, launched off the back of a project with Tullow Oil, resulting in additional work from other clients and enabling us to build our brand. We encouraged one of our Ugandan professionals – Elizabeth Natukunda, who was working for Turner & Townsend in the UK, to return to Uganda to run the business. Last year she was highly commended as a young up and coming consultant during the British Expertise International Awards 2015, given her success in Uganda over the last five years.

“With Kenya being the largest economy in East Africa it became imperative for us to have a Nairobi base if we want to grow our presence across the EAC. Support residing in Kenya is also strategically important as a base for many of our global clients that have large operations in country.

Keith says having breadth of experience

across African countries is important because the project challenges and risks of doing business are vastly different in each African country. “The fact that we have experience across 38 countries in Africa means that we can offer and deliver a service that is realistic and relevant, with solutions that meet the expectations of both local and global players. In East Africa – besides Uganda and Kenya – we are currently delivering projects in Rwanda, Tanzania, Ethiopia and Djibouti. We take this pan-African experience and contextualise it for the local market. Our philosophy in providing solutions is an inclusive, client-centric approach – while leveraging off our global and local expertise and experience.

“Kenya has its ‘vision 2030’ ambitions to create infrastructure and they have recently set up and gazetted a public private partnership (PPP) framework that is backed by a Presidential Delivery Unit. We have a strong skill set to be able to offer services in this space, and in terms of property are currently engaged with General Electric, Safaricom and Aga Khan Health Services. Another key area of focus is the natural resources sector and we are working with clients locally to deliver commercially viable schemes, for example pipelines in the oil and gas sector.”

Keith says the lack of liquidity in certain countries in Africa makes PPP an attractive model. “This is an area we can really add value as we have a lot of experience playing a technical advisory role for these types of projects. Our understanding of the local market, the supply chain and how they procure along with the relevant local and international benchmarks will also allow us to add value to any owner’s team on capital projects. We can get involved at any stage of the project lifecycle be it feasibility, project set-up, or project delivery. During the project lifecycle we are able to offer the following services as required by the client, namely cost management, project management, project controls and contract services (claims assessments, disputes resolution, contract administration).”

The Kenyan capital, Nairobi. Kenya is the largest economy in East Africa.



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Protecting the **RIGHTS** of **BUILDING OPERATORS**

The Joint Building Contracts Committee (JBCC) has become synonymous with the compilation of documents that protect the rights of all parties involved in building contracts. Here Uwe Putlitz, CEO of JBCC, tells *Construction World* more about the JBCC, its origins, operations – and challenges.



Uwe Putlitz, CEO of JBCC.

When was the Joint Building Contracts Committee established and what led to its establishment?

The first 'standard building contract' was written in 1879 by the Royal Institute of British Architects (RIBA) and the Association of Master Builders in London. This document was revised in 1931 by the RIBA and published in SA by the Institute of SA Architects (ISAA) in the same year. In 1963, the RIBA substantially revised the document in conjunction with others under the umbrella of the 'Joint Contracts Tribunal' which continues to publish contract documents in England.

In 1981, South Africa followed the trend in England under the banner of the Joint Study Committee with the ISAA (now SAIA) inviting other role players to join the committee which was replaced by the Joint Building Contracts Committee in 1984.

The JBCC was registered as non-profit company in 1997 with its own office and permanent staff.

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Who serves on the JBCC now?

The current constituents are the Association of Construction Project Managers, Association of SA Quantity Surveyors, Consulting Engineers South Africa, Master Builders South Africa, Institute of Landscape Architecture in SA, SA Black Technical + Allied Trades Association, SA Institute of Architects, SA Property Owners Association, and the Specialist Engineering Contracts Committee.

How regularly do you meet?

The Technical Committee generally meets monthly to deliberate the content of JBCC publications and future editions. The Board meets twice a year, and the Executive Committee, four times a year.

Is it sometimes difficult to reach consensus?

The various committees seek to reach consensus on all decisions – but it's not always easy.

Who decides that it is time for a review of a document?

Delegates from the constituents suggest to the committee as a whole that new editions or other documents are required by the industry.

Are the contractual needs and input of the increasing number of small builders/sub-contractors now operating in SA catered for in your documents?

The use of language and the style of writing in the 2014 edition of JBCC Agreements is considerably simpler compared to earlier editions. Future editions will include further improvements in choice of wording, with more sub-clauses instead of long clauses and also a simplification in the layout of the text.

Are these smaller subcontractors – who mainly don't have funds for legal action – more in danger of being 'ripped off' by other parties in a project?

Some emerging contractors lack communication and administrative skills in addition to limited technical skills and use of labour-saving equipment. Subcontractors are often abused by main contractors – commonly by late, partial or no payments, and unfair imposition of penalties. Both categories of contractors often work without being appointed with recognised forms of contract. And even when they are properly appointed, they tend to only read the document when things have gone wrong.

Is there sufficient awareness among these smaller companies about the need to protect their interests via your contract documentation?

The potential audience dealing with contracts in the building industry is probably in excess of 100 000 persons ... but many have very limited knowledge of any of the contracts in common use or procedures to be followed.

How many JBCC documents have been produced since JBCC was founded?

Six editions of the building contract have been published since 1991 with supporting documentation in the form of guides, certificate forms, etc. The JBCC standard building agreements have been drafted to equitably share the risk between the employer and the contractor: the clauses in the contract provide a 'checklist' of the rights and obligations of each party.

Can anyone obtain copies? Is there a charge involved?

JBCC publications are sold in hard copy country-wide by the constituents' regional offices (called vendors). These vendors purchase stock





from the JBCC in Johannesburg at 'wholesale price' and sell same at a markup. JBCC publications may also be purchased in electronic format by following the link on the JBCC website – allowing users to complete contract specific information without changing the contract text.

Are JBCC contractual documents used elsewhere in Africa?

JBCC documents are used throughout Africa, mostly in the old 'Commonwealth' – countries who speak English, and to a lesser extent in Francophone Africa – mostly where South African developers, consultants and/or contractors are involved.

Do all our national, provincial authorities and municipalities use your documents?

Organs of State (OoS) generally use JBCC documents for building work. JBCC does not publish an agreement for civil or engineering works. OoS use one of the other CIDB approved agreements for engineering work.

Do our courts refer to your documents in reaching verdicts?

JBCC agreements form a binding contract between the parties. Where serious disputes have arisen some have been settled successfully in South African Courts. There have been no instances where the JBCC agreement or the wording was the cause of a dispute.

What are your biggest problems when it comes to building contracts?

Often employers make changes that are unfair on contractors, and contractors imposing totally unfair performance and payment conditions on subcontractors. At JBCC training seminars we concentrate on dispute avoidance, and the unintended consequences of changes. Such problems can in almost every instance be avoided by following the provisions in the contract.

Do you get a lot of approaches about what are seen as breaches of contracts?

The JBCC offers a free 'frequently asked questions' service where users can email the JBCC for guidance but we do not get involved in individual disputes.

Do disputes tend to crop up in some sectors of the industry more than others?

Simplistically, if both parties and the principal agent followed the content of the clauses within the stipulated time limits, there would be no disputes.

Contract administration is a time-consuming activity requiring compliance with statutory and contractual provisions: inspections on site, keeping records, issuing instructions and various certificates, keeping to dates stipulated in the contract, and making payments by the contractual dates.

Poor performance by subcontractors, not progressing in terms of the programme, and poor finishes are frequent problems causing disagreements about payments and delays. Late and partial payments are also a significant problem.

How many training seminars do you present?

The JBCC presents 10 to 12 seminars throughout the country – twice a year in Cape Town, Durban and Johannesburg and once a year in the smaller centres to about 1 000 person per annum. JBCC also presents in-house seminars to 16 or more persons tailoring the content to suit the user for example focusing on clauses relevant to contractors/subcontractors or developers.

In your direct dealings with the delegates to the seminars, what strikes you the most?

Basically it all comes to 'what are my rights?' – and how to deal with claims for additional time and money. <

Major **BUSINESS STRIDES** announced

ATTACQ is happy to announce a major stride in its business development with the launch of a refreshed brand, significant new transactions that expands the Attacq Waterfall development footprint, and an accelerated internalisation of the Waterfall development management function.

> Attacq recently unveiled its newly refreshed brand to members of the media and key stakeholders. “The vibrantly refreshed brand boasts a new colour palette dominated by red and grey, denoting confidence in our future sustainability and is akin to the investment leadership position Attacq has carved for itself as a successful listed capital growth fund,” says Morné Wilken, chief executive officer of Attacq. “The modern and vibrant logo supported by an equally recognisable icon element to identify and differentiate Attacq both in the real estate segment and the investment world,” explains Wilken.

“The new brand resonates with our creative approach to business and is supported by our business philosophy of ‘Develop, Invest and Grow’. The brand refresh is the next salient step of our fully integrated marketing communication and stakeholder engagement strategy that was adopted early in 2016,” says Wilken.

Wilken said that Attacq as a capital growth fund, differentiates itself from its

real estate peers. Its relatively new, quality property portfolio, including its stake in the recently launched Mall of Africa as well as its offshore assets which are now in excess of 24% of gross assets, are bearing fruit for investors. “Our vision is to create sustainable capital growth for shareholders and to become the premier property fund in South Africa. Hence to effectively communicate this with the market we have created a powerful new brand for Attacq that aligns with our vision,” says Wilken.

Accelerated internalisation of Waterfall development

Attacq has taken the strategic decision to accelerate the internalisation of the Waterfall development management function to enable Attacq to take full control of the strategic planning, marketing and roll-out of the Waterfall developments. Attacq will drive the development of Waterfall City and its world-class infrastructure as the African headquarter destination for years to come.

“Attacq and Atterbury have agreed to amend the existing development management agreement to terminate the exclusivity of Atterbury’s appointment as development manager to Waterfall effective 1 July 2016,” explains Wilken. In anticipation of the expiry of the exclusivity period, Attacq has been assembling its own development team and appointed Pete Mackenzie, who has over 25 years’ experience in the property development and investment sector, as its head of developments. As part of the internalisation of the development function, Attacq has appointed Morné Whitehead, who was previously with Atterbury.

“From a practical point of view, the completion of certain developments in the ground will remain the responsibility of Atterbury so Atterbury will continue to earn the remaining development fees in respect of these developments,” explains Wilken. Wilken concludes: “In addition to the benefits of taking full control of Waterfall’s development management, Attacq will also effectively earn fees from its property developments”.

Exciting Sanlam and Equites transactions

Attacq and Sanlam Properties recently announced a significant strategic property transaction for further light industrial commercial and retail development in.

The joint venture has acquired 28 ha of Waterfall land from Attacq and an additional adjacent 100 ha from the Mia family, securing a total of 128 ha of usable land on the eastern side of the N1 freeway and south of the Allandale interchange. This land is ideally located in the visible Waterfall development node, which is perfectly located between the Allandale and Buccleuch interchanges. The area



Morné Wilken, chief executive officer of Attacq.

benefits from easy and convenient access to the road and rail infrastructure of the central Gauteng economic development zone.

Sanlam holds 80% and Attacq holds 20% in the joint venture with Attacq having the right to increase its shareholding to 50%. Some 114 ha of the land will be utilised for light industrial commercial developments with the balance of 14 ha to be developed for retail purposes. The development roll out will be managed by Attacq.

Extensive demographic and feasibility studies have been undertaken and fully support the proposed retail development to be done on the 14 ha of retail land in the near future. In terms of the retail development, Attacq has already elected to increase its shareholding in the joint venture to 50%.

The 114 ha of light industrial commercial land is ideally located for light industrial activity and distribution centres. The developments on this land will in future also benefit from further infrastructure development and the additional access links that are foreseen for the area to the south of Allandale Road.

Attacq has also concluded a transaction with Equites, in relation to eight industrial buildings at Waterfall. The transaction forges a strategic partnership between Equites and Attacq for the purpose of jointly pursuing opportunities in the industrial property sector in and outside of South Africa. The parties will be able to pursue and unlock certain greenfield developments around South Africa which is consistent with the Attacq group’s value proposition of developing properties as part of its strategy of being a capital growth fund to earn development profits.

A long term view is taken on property. The overarching strategy of Attacq is rooted in sustainable capital growth and robust appreciation, with emphasis placed on a far reaching outlook, similar to the asset class we invest in. Its vision unfolds through the development and ownership of a diversified portfolio of properties with contractual income streams. **◀**





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Impact energy:	72.8J
Blows per minute (b/min):	870
Noise:	110dB(A)

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Continuous rating input:	2,000W
Vibration level:	14m/s^2
Impact energy:	71.4J
Blows per minute (b/min):	870
Noise:	108dB(A)

50kg Class Electronic Breaker info. correct as of launch in 2015



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Construction^{WORLD}2^{BEST}
PROJECTS 16

CALL FOR ENTRIES

Construction World's Best Projects showcases excellence in the South African building, civil engineering and project management sectors.

In its 14th year, the aim of *Construction World's* Best Projects is to recognise projects across the entire construction industry: from civil and building projects to professional services to specialist suppliers and contracts.

There are seven categories in which to enter. Projects may be entered in several categories, provided they meet the prerequisites for entering each one, as well as meet the entry criteria.

Judging

A panel of independent judges from the construction industry has been appointed. These judges represent ECSA, SAICE, MBA and CIOB. They are Trueman Goba, chairman of Hatch Goba and former ECSA and SAICE president; Nico Maas, chairman of Gauteng Piling and former president of the Master Builders' Association; and Rob Newberry, managing director of Newberry Development and founding president of the Chartered Institute of Building.

Each criterion as set out for the various categories will be scored out of 10 – with 10 being the highest score and one being the lowest – **it is therefore VERY important that entries address the criteria for the particular category it is entering.**

In each category an Overall Winner Award and one or two Highly Commended Award(s) will be made. A 'Special Mention' award may be given.

Awards evening

The awards ceremony will be held on **Wednesday, 9 November 2016**. The venue and format will be finalised in due course.

Entry criteria for each category

- Construction innovation technology
- Corporate social investment
- Design innovation *
- Environmental impact consideration
- Health and safety
- Quantifiable time, cost and quality *
- Risk management *
- Motivating facts about the project

(The same criteria pertain to all categories except for 'Category B: Specialist Contractors or Suppliers' where the following do not apply: Design innovation; Quantifiable time, cost and quality; Risk management.)

Category A1: Civil Engineering Contractors

Prerequisites for entries

- Only South African construction and civil projects executed by locally based companies.
- Projects are eligible during the execution of the project and up to 12 months after completion.
- Projects must be 50% complete at time of entry.

REFER TO ENTRY CRITERIA

Category A2: Building Contractors

Prerequisites for entries

- Only South African construction and civil projects executed by locally based companies.
- Projects are eligible during the execution of the project and up to 12 months after completion.
- Projects must be 50% complete at time of entry.

Bronze sponsor:



REFER TO ENTRY CRITERIA

Category A3: Civil Engineering and Building Contractors (outside South Africa)

Prerequisites for entries

- Projects outside South Africa, executed by a South African contractor.
- Projects are eligible during the execution of the project and up to 12 months after completion.
- Projects must be 50% complete at time of entry.

REFER TO ENTRY CRITERIA

Main sponsor:



Submitting entries

- Each entry must be accompanied by the completed entry form; available on www.constructionworldmagazine.co.za or by requesting it from constr@crowm.co.za.
- The maximum length for submissions is 2 000 words
- Each submission must clearly state which category is entered for*
- **IMPORTANT** It is to the entrants' own advantage to address ALL the criteria as set out in the category being entered. If a criterium fell outside the scope of the contract, please state this.
- The written submission must be accompanied by up to six high resolution photographs with applicable captions.
- The photographs and copy must be submitted separately – NOT in PDF format.
- The submission must also contain a summary list of important project information such as client, main contractor etc. – i.e. the professional team involved in the project.
- Electronic submissions are acceptable – entrants do not need to produce hard copies of entries.

* *Construction World* retains the right to move entries into a more appropriate category.

Deadlines

Deadline for entries is **Friday, 9 September 2016** at 17:00.

Contact

For further information contact the editor, Wilhelm du Plessis on 011-622-4770 or constr@crowm.co.za

Special issue

The December issue of *Construction World* is dedicated to the various winners and entries and is thus an overview of activity in the built environment during the past year.

Category B: Specialist Contractors or Suppliers

Prerequisites for entries

- Only South African construction and civil projects executed by locally based companies.
- Projects are eligible during the execution of the project and up to 12 months after completion.
- Projects must be 50% complete at time of entry.

Criteria for category B

- Construction technology innovation
- Corporate social investment
- Environmental impact consideration
- Health and safety
- Motivating facts about the project

Category C: Professional Services*

Prerequisites for entries

- Only South African construction and civil projects executed by locally based companies.
- Projects are eligible during the execution of the project and up to 12 months after completion.
- Projects must be 50% complete at time of entry.

REFER TO ENTRY CRITERIA

*Depending on the entries received, an award for both consulting engineers AND architects will be made.

Category D: Public Private Partnerships

Prerequisites for entries

- Only South African construction and civil projects executed by locally based companies.
- Projects are eligible during the execution of the project and up to 12 months after completion.
- Projects must be 50% complete at time of entry.

REFER TO ENTRY CRITERIA

Category E: The AfriSam Innovation Award for Sustainable Construction

Description of category: Working with the community on a project that has socio-economic impact.

Prerequisites for entries

- Only South African construction and civil projects executed by locally based companies.
- Projects are eligible during the execution of the project and up to 12 months after completion.
- Projects must be 50% complete at time of entry.

This category will be judged on the project's

- change and transferability
- ethical standards and social equity
- ecological quality and energy conservation
- economic performance and compatibility
- contextual and aesthetic impact

REFER TO ENTRY CRITERIA

FINAL CALL FOR ENTRIES

SA property market grows to R5,8-TRILLION

The South African property sector is worth R5,8-trillion according to results from the latest study undertaken to determine the size of the country's property sector.

> The Property Sector Charter Council recently released reviewed market size estimation that provides a snapshot of the South African Property Sector using figures from the financial year 2014/2015.

It reveals the property sector's size at R5,3-trillion with a further R520-billion land officially zoned for commercial and residential development.

The study was compiled by MSCI for the Property Sector Charter Council. It was and remains the first and only research of its kind in the country. Its significance is far reaching.

This report builds on baseline research that measured the size of the property market in SA at a massive R4,9-trillion at the end of 2010. It shows a meaningful increase of nearly R1-trillion in four years.

The study also supplements the Property Sector Charter Council SA Property Sector Economic Impact Report that estimates the property sector's contribution to GDP at a significant R191,4-billion in 2012 in terms of annual income and expenditure flows generated by the sector and a R46,5-billion contribution to the fiscus.

The research is part of a larger project by

the council, which provides a point of departure against which various transformation charter imperatives can be assessed.

CEO of the Property Sector Charter Council, Portia Tau-Sekati says: "For a sector this big and this important it is crucial to have a hub of knowledge that consolidates information to support a common and consistent understanding of the sector."

Tau-Sekati explains that by regularly updating this research the council also creates a measure of the effect of property cycles on the sector's value, which can be significant. Commercial property carries a value of around R1,3-trillion, up from some R780-billion, with almost R790-billion held by corporates, R300-billion held by REITs, R130-billion by unlisted funds, and R50-billion by life and pension funds.

Of this, retail property has the highest value at R534-billion (R340-billion in 2012) followed by office properties at R357 billion (R228-billion) and industrial properties at R281 billion (R187-billion). Hotels and other property accounted for R94-billion in value (R25-billion).

A key finding of the latest research shows that formal residential property still accounts



CEO of the Property Sector Charter Council, Portia Tau-Sekati.

for nearly three-quarters of property owned in South Africa, and grew from an estimated R3-trillion at the end of 2010 to R3,9-trillion. For the first time, it also considered informal residential property, although it has no value, which was quantified by the number of households provided by the Department of Human Settlements.

Undeveloped urban land zoned for development remained unchanged around R520-billion (1,1% of total land in SA).

The public sector contributed a total of R237-billion, of which around R102-billion is estimated to be in the hands of the Department of Public Works, R66-billion held by SA's 19 largest state-owned enterprises, and R69-billion owned by metros and selected local municipalities.

Through this research, the Property Sector Charter Council continues to provide an updated scope of the property sector and create a more accurate overview of the South African economy. **<**



INVESTMENT IN MOZAMBICAN REAL ESTATE

Mara Delta (formerly Delta Africa), the first multi-listed property fund to offer international property investors direct access to immediate high growth opportunities on the African continent outside of South Africa, announced that it is looking into investing a further USD110-million into Mozambique, by acquiring an additional four properties, as well as the second stage development of its Anadarko building.

➤ The Company has since 2014 invested in six landmark commercial properties in Mozambique, collectively valued at USD160-million, including landmark buildings such as the Anadarko, Hollard and Vodacom buildings in the capital city of Maputo.

Head of developments, Greg Pearson commented: "We are confident of the long term growth prospects in Mozambique. The challenges that the country faces are not unique to emerging economies and we are continuously engaging with the Banco de Moçambique on these matters.

"Mara Delta has a solid risk strategy in place which includes careful cash flow management around investments, our ability to manage flow of funds through our liquidity facilities in Mauritius and ensuring our anchor tenants are blue chip internationals, securing most of our leases in US dollars.

"We are currently engaging with financiers for a 7 to 10 year Mozambique debt package to refinance the in-country debt and fund the acquisition pipeline."

With a management team with over 45 years combined African experience and relationships, as well as in-country asset and property manage-



ment teams, the company is focused on creating significant shareholder value ensuring consistent growth on the African continent.

"Real estate investment is a long term play, and we certainly remain committed to the countries we invest in. We have long leases in place and have diversified our portfolio in Mozambique significantly to manage through the economic cycle," Pearson added.

Mara Delta's assets in Mozambique include commercial offices in key strategic nodes and the Company recently diversified into corporate accommodation as well as strategic retail centres and warehousing under triple net leases. These assets are managed in-country by Mara Delta's local asset management team.

The Company, listed in Johannesburg and Mauritius, also holds a portfolio of assets in Morocco, Zambia, Nigeria, Kenya and Mauritius. ❏



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Developing promising **SMALL** **BUSINESSES**

Growthpoint and Attacq confirmed a renewed partnership to develop promising small businesses through the Property Point initiative.

> Nine small businesses will benefit from strategic development as part of an exciting new intake by Property Point, a Growthpoint Properties initiative, in collaboration with Attacq Limited, a capital growth fund listed on the JSE, with a diverse portfolio. These nine businesses have joined Property Point's supplier development programme as part of its latest intake, which has been tailored to the specific needs of Attacq.

"Attacq continuously aims to develop and invest in the growth of people and so believe that this programme will provide an excellent platform to achieve this", says Danny Vermeulen, Attacq's Transformation specialist.

Shawn Theunissen, head of corporate social responsibility at Growthpoint Properties and head of Property Point, explains: "Supplier development improves supplier performance in a proven win-win for both small businesses and corporate companies."

He adds: "By developing the companies on Attacq's supply chain, we are improving the quality of service delivery it receives from its suppliers. This benefits the company, its clients and the small busi-

nesses. What's more, this supplier development partnership between Attacq and Property point makes a positive contribution to SA's property sector and plays a vital role in stimulating the economy as a whole."

All nine small businesses deliver services to the property industry, such as landscaping, plumbing, cleaning, building maintenance, air-conditioning and fire protection. "Due to the nature of Attacq's business of consistently delivering capital to its investors through investments and developments, these nine businesses are the perfect fit to our business and we are excited to offer them a bright future," adds Danny.

Theunissen explains effective supplier development creates the basis for a business relationship that manages and improves service while equipping and supporting a small business's management and workforce, and assisting it on a strategic level. It also ensures compliance and effective risk management.

For Attacq, the supplier development programme of Property Point supports its competitive edge with better service delivery from its supply chain, ensuring satisfied clients and better tenant attraction and retention. By supporting suppliers to strengthen their capabilities, the programme will ultimately enhance Attacq's performance and align with Attacq's core pillars – invest, develop and grow.

For the entrepreneurs, Property Point's supplier development programme helps them build a sustainable business and sidestep stumbling blocks that too often result in small businesses failing.

As profitable small businesses, these suppliers are better positioned to grow into thriving medium-sized and large corporations, provide opportunities for new jobs and support SA's economic growth.

Property Point's latest supplier development intake continues its excellent track record as leaders in enterprise and supplier development. Established by Growthpoint in 2008, Property Point has led the way for developing small businesses supplying the property industry. It has also pioneered collaboration across businesses in the property sector through its growing and thriving relationship with Attacq.

Property Point provides entrepreneurs operating within South Africa's property sector with the necessary skills, training and personal development they need to grow their businesses and reach their full potential, compete in the open market and meet the industry's supply chain needs.

Since inception, it has seen almost 100 SMEs participate in its two-year incubation programme. Generating over R451-million in procurement opportunities for these SMEs, Property Point's programme has helped these enterprises achieve a reported revenue growth of up to 54.5%. It has also been instrumental in growing these small businesses to create over 1 100 jobs, so far.

"Together Property Point and Attacq are creating jobs, transforming workplaces, boosting the competitiveness of businesses big and small, innovating and stimulating the economy," says Theunissen. **<**

Members of the nine businesses who joined Property Point's supplier development programme in collaboration with Attacq Limited.

Front row: Bongwiwe Baleni (Growth Circle Construction), Tiyani Khoza (Makasela Air), Thabo Malefetse (Thatego Holdings), Kabelo Mopai (BLK Projects); **2nd row:** Dorcas Malefetse (Thatego Holdings), Letty Ngobeni (Integrigo), Maxwell Nyamajiwa (Property Point); **3rd row:** Khutjo Langa (Property Point); **4th row:** Nomtha Kubheka (Property Point), Henchard Njoni (Ndzilo Fire Protection), Mpho Sono (TMT Cleaning), Themba Ndlovu (Ndzilo Fire Protection); **5th row:** Michael Renecke (Property Point), Robyn Basson (Property Point), Shawn Theunissen (Property Point); **6th row, left to right:** Chris Ndongeni (Twin Cities), Siphwe Zwane (SKS Business Solutions), Danny Vermeulen (Attacq) and **back row:** Hannes Steyn (Property Point), Zama Zwane (SKS Business Solutions), and Jaco Van Aswegen (Attacq).



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Green building: 5% MORE

The average cost premium of building green over and above the cost of conventional construction – or green cost premium – is a mere 5% and can be as low as 1,1%.



This is according to the 'Green Building in South Africa: Guide to Costs and Trends Report' compiled by the Green Building Council South Africa (GBCSA), the Association of SA Quantity Surveyors (ASAQS) and the University of Pretoria (UP) which was released recently.

The study includes cost data on a total of 54 Green Star SA office buildings certified through the GBCSA Office v1 tool up to the end of 2014; 33 of which are in Gauteng, 11 are in the Western Cape and nine in KZN.

Manfred Braune, chief technical officer of the GBCSA says that the study was undertaken to analyse the actual cost premium of building green in South Africa, and challenge the belief that green buildings cost much more than conventional building. "South Africa has seen exponential growth in certified green buildings, from the first Green Star SA building in 2009 to the 165th in June 2016. Despite this, there are many more buildings that could be going green, but are not.

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Apparent green premium

One of the barriers has been the apparent green premium that many developers or building owners have thought going green would cost them. In the early 2000s, globally and locally a myth was perpetuated that green buildings cost 20-50% more than conventional buildings. Several international studies were done a few years later that dispelled this myth, but South African data had not yet been collected or reported on, so was not included in the studies. The findings of this study for the first time show that green buildings can be built for a negligible premium – between one and 10% – and that this premium is declining."

Pursuing Green Star SA certification was found to result in an average green design penetration of 42,7% of the total project budget. Green design penetration indicates the extent to which the Green Star SA Office v1 Rating Tool has introduced green design into elements of a project, expressed as a percentage of the total project cost.

The study analysed the green design premium and green cost penetration in terms of location; construction area; base building cost; tenant mix; vertical façade to

construction area ratio; Green Star SA rating levels (4, 5 or 6 Star); rating type (Design or As Built) and certification date; and rating tool categories, of which there are nine, totalling 69 credits.

As would be expected, the green cost premium increases as the Green Star SA rating increases, with an average premium for a 4 Star Green Star SA rated building being 4,5%, 6,6% for a 5 Star Green Star SA rating and 10,9% for a 6 Star Green Star SA rated building.

Interestingly, there was a slight difference in average costs in the three major economic hubs, and a correlation between the cost premium and penetration. Penetration was found to be slightly higher in the Western Cape (46%) versus Gauteng (41,8%) and KZN (40,4%), while the average cost premium in the Western Cape was 6,9%, 6% in Gauteng and 4,5% in KZN.

It was also found that construction area had a significant impact on green building costs, with costs dropping from 9,3% for a building under 5 000 m² to 2,6% for buildings over 50 000 m².

More competitive tenders

Danie Hoffman, programme leader for quantity surveying at the University of Pretoria says that contracts for larger buildings often benefit from more competitive tenders due to higher levels of productivity. "Economies of scale also result in larger developments having higher efficiency levels (and lower building costs per square metre) of installations such as lifts, escalators or air conditioning systems. So a large office development of say 28 000 m² with a substantial budget of R350-million will therefore often be able to afford green building initiatives more easily compared to a building with the same specification level but 1 000 m² in size and costing R14-million. Larger projects will also offer design teams more green design options/scope which all support lower green cost premiums."

There were some interesting findings in the analysis of tenant mix. Firstly, from 2009-2011 only 20% of green buildings were developed for generic clients, or multi-tenanted buildings. This escalated to 40% during 2012-



Manfred Braune, chief technical officer of the GBCSA.

Other noteworthy findings of the study include:

- The green cost premium appears to progressively diminish over time, largely as a result of the growing maturity in the green industry;
- Green cost premiums have been declining since 2011, indicating that the SA green industry is maturing; a higher vertical façade to construction area ratio yields a higher premium;
- Two categories of the Office v1 tool (Energy and Indoor Environment Quality) received 58% of the allocation of the total green cost premium. This is because they carry a combined weighting of 40% and many of the credits of these two categories have a direct impact on the operating cost of buildings and on the quality of life experienced by the inhabitants of buildings. These credits are therefore often pursued by design teams.

2014. In addition, it was found that a building developed for a single tenant showed a significantly higher premium (8,1%) than a multi-tenanted building at 3,4%.

Hoffman says that this is because single corporate tenants often set more demanding specification levels and may also strive for a higher Green Star SA rating as part of corporate marketing and public image. "Such tenants will in most cases also provide design teams with more substantial budgets that can allow for more expensive, state-of-the-art green design solutions," he adds.

Karl Trusler, ASAQS EduTech director says of the quantity surveying firms who provided professional services on these buildings, "Their skills were ideally suited to providing the sophisticated data required to arrive at the findings, and determine the trends of this study."

"The findings in this report are very encouraging and, together with the findings from the joint MSCI/GBCSA Sustainability Index that shows that in South Africa green buildings yield a higher return on investment, they make a very strong business case for green buildings to developers, property owners and corporates," concludes Braune. <

"Economies of scale also result in larger developments having higher efficiency levels (and lower building costs per square metre) of installations such as lifts, escalators or air conditioning systems."

LEED® GOLD CERTIFICATION FOR NEW PROPERTY

With the value of green building now increasingly well-established in South Africa, developers are turning to experienced consultants to ensure their buildings are environmentally responsible and sustainably resource-efficient.



➤ Appointed by developer Atterbury Property as green building consultants for the new Novartis head office in Waterfall City, Aurecon has ensured compliance with best practices in green building design and construction.

The property's owners, Attacq, recently announced that the Novartis building is now 'Leadership in Energy and Environmental Design' (LEED®) Gold certified. The LEED rating system, developed by the United States Green Building Council (USGBC), is the most widely adopted programme for buildings, homes and communities that are designed, constructed, maintained and operated for improved environmental and human health performance.

The Novartis head office achieved its certification for the implementation of practical and measurable strategies and solutions for high performance in sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality. "Waterfall City has been developed as a live, work and play urban space where people can enjoy a balanced lifestyle in a pleasant urban development setting that takes both people's needs and that of the environment into account.

The philosophy reaches beyond pure environmentally sensitive construction and is embedded in the total holistic urban design. We are very proud of the LEED certification of our new Novartis building. This is a highlight achievement in line with our Attacq urban design principles. We thank Aurecon for the excellent innovative work done on the project," says Morné Wilken, CEO of Attacq.

Attacq adopted international best practice urban design principles for all its developments at Waterfall City. "The aim of these urban design principles is to ensure that green building is the standard base approach in

this major new development," explains Carien Storm, Attacq project and sustainability specialist.

Atterbury Property's development manager, Jeanne Jordaan, is also highly complimentary of the commissioning process and of the service provided by Aurecon. "The LEED certification process is a thorough one and focuses on important sustainability features which will add significant value and quality to the building and its surrounds. We definitely intend to use this rating system again. Atterbury Property deemed it important to be associated with an established body such as USGBC as it views the recognition of the LEED certifications by international investors to be an important benefit," he said.

The major differences between the LEED and the Green Star SA rating system lies in the rationale behind the building certification process. The LEED process consists of two stages: the initial 'design review', followed by the 'construction review'. Projects receive 'anticipated points' on the completion of design review and only receive certification on the completion of the construction review. This approach ensures the implementation of the initiatives as documented in the design review.

"The increased focus on developing environmentally-sustainable buildings is indicative of a maturing green-building industry that is rapidly gaining a substantial foothold in South Africa. As a result, the company is now looking at utilising and developing a broad range of sustainability tools to best suit its clients' needs," says Marni Punt, environmentally sustainable design (ESD) consultant at Aurecon. "Aurecon is delighted to have delivered Atterbury Property's first Green Star rating and now, Atterbury Property's and Attacq's first LEED rating." ❏

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SMART SOLUTIONS FOR CITIES AND THE BUILT ENVIRONMENT

The LafargeHolcim Awards is the most significant global competition in sustainable design. It seeks leading projects of professionals as well as bold ideas from the Next Generation that combine sustainable construction solutions with architectural excellence.

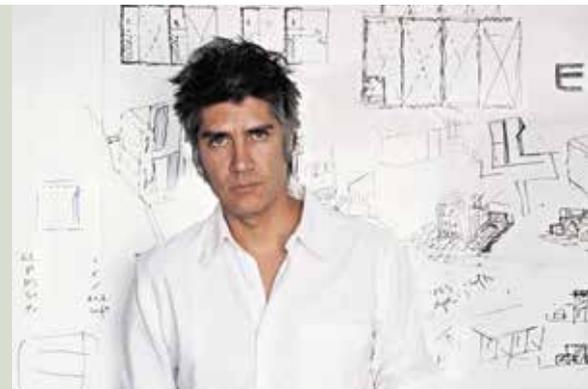
➤ Organised by the LafargeHolcim Foundation for Sustainable Construction, the competition identifies the ideas with the highest potential to tackle today's challenges to increasing urbanisation and to improve quality of life. Projects and concepts from the fields of architecture, landscape architecture, urban design, planning, technology, and civil and materials engineering are eligible to be entered online in the USD2-million Awards competition; it closes for submissions on 21 March 2017.

The competition's main category is open to architects, planners, engineers, students of related disciplines, project owners, builders and construction firms that showcase sustainable responses to technological, environmental, socioeconomic and cultural issues within contemporary building and construction. Projects must have reached an advanced stage of

design, have a high probability of execution, and may not have started construction before 4 July 2016.

Participants up to the age of 30 years of age can also submit visionary concepts and bold ideas in the competition, irrespective of the probability of actual implementation of the project: the Next Generation category specifically seeks 'blue-sky' solutions by students and young professionals.

The competition is divided in five geographic regions – each with its own jury of renowned specialists. Projects are evaluated according to the region in which they are to be built, and are measured against the five 'target issues' for sustainable construction which look at a project from a holistic perspective and take its entire lifecycle into account. The juries are headed by Harry Gurger (for region Europe), Ray Cole



Alejandro Aravena, partner architect at Elemental, Chile – LafargeHolcim Foundation Board member since 2013 and Pritzker Prize laureate 2016.

(North America), Angelo Bucci (Latin America), Nagwa Sherif (Middle East Africa) and Donald Bates (Asia Pacific).

The winners will be announced at a series of five consecutive Awards ceremonies in the second half of 2017. Winners automatically qualify for the global Awards competition in 2018. ❏

"The LafargeHolcim Awards have not only brought awareness, but have also raised the standard for how we deal with sustainability." – Alejandro Aravena.

Product and service development

INVESTMENT

Innovation is necessary to develop products and services that underline environmental stewardship. This is according to Andries Marais, general manager – operations at CHRYSO Southern Africa, who says that in order to create a sustainable future for Earth's inhabitants, it is critical that organisations contribute positively to the preservation of non-renewable resources.



He suggests that organisations allocate a predetermined percentage of turnover for research and development into products that focus on energy reduction in their manufacturing process. The CHRYSO Group invests approximately 4% of all global sales in the investigation of green product innovations that are based on bio sourcing, renewable resources and biodegradability principles.

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The goal is to emphasise product lines that assist customers in promoting their energy efficiency while simultaneously reducing their carbon footprint. Marais says that ongoing review of CHRYSO's existing product portfolio and a customer needs analysis results in the development of approximately 30 new CHRYSO products each year with an average of 12 product patents filed annually.

Marais suggests organisations take a critical look at the way in which they operate their processing and manufacturing plants to ascertain how they handle natural resources. He cites the CHRYSO Group's Green Factory Model which has been adopted by the Cape Town, Durban and Jet Park plants. Careful thought has been given to a wastewater management system, a rainwater catchment programme and a sludge waste management system to minimise negative environmental impact.

In addition, CHRYSO places great emphasis on the use of non-hazardous materials and the implementation of recycling initiatives. Marais says that companies should consider demarcating a specific area in their facility where collection bins for glass, paper, plastic, metal and wood are placed and employees are encouraged to participate. The recycling initiative is echoed in CHRYSO's use of recycled packaging wherever possible and bulk deliveries of products to



CHRYSO Group's Green Factory Model has been adopted by the Cape Town, Durban and Jet Park plants. Careful thought has been given to a wastewater management system, a rainwater catchment programme and a sludge waste management system to minimise negative environmental impact.

maximise load capacities and reduce the use of non-renewable fuel resources.

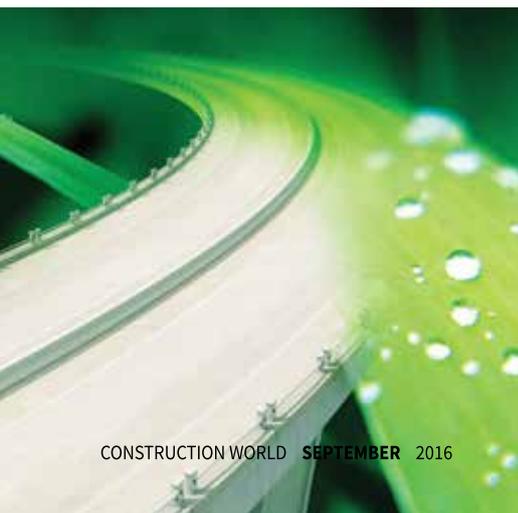
Some examples of products that are underpinned by good environmental stewardship are CHRYSO® Dem Bio 10, a biodegradable vegetable based demoulding oil; CHRYSO® Deco Lav P, a range of aqueous based surface retarders; CHRYSO® Environmentally friendly cleaning agents; EnviroMix®, a technology engineered to boost the use of cement extenders reducing the use of clinker without comprising on the quality of the concrete or cement product.

Marais points out that sustainability should also extend to the development of an organisation's employees and the communities adjacent to manufacturing and processing plants. "In addition to bringing all stakeholders on board with environmental awareness programmes, there should be an emphasis on accountability to encourage safe practice both in the workplace and at home. Together with commitment to environmental compliance and certification programmes such as ISO 14001, these elements will make a great contribution to preserving resources for the future," Marais concludes. <

The CHRYSO Group invests approximately 4% of all global sales in the investigation of green product innovations that are based on bio sourcing, renewable resources and biodegradability principles.



Ongoing review of CHRYSO's existing product portfolio and a customer needs analysis results in the development of approximately 30 new CHRYSO products each year with an average of 12 product patents filed annually.





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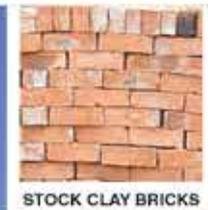
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Geotechnical icon, Franki Africa, famous for the Frankipile and the 'Franki Blue Book', amongst other things, is 70 years old this year and going strong.

In November 2016, Franki celebrates 70 years of continuous operation in Africa and, according to MD Errol Braithwaite, the company is more motivated than ever to move forward vigorously in spite of challenging times in the construction industry.

"Seventy years is a significant milestone and a time to stand back for a moment and reflect on the attributes that have made Franki so successful down the years – attributes like customer focus, technical excellence and product innovation."

"While the construction industry both in South Africa and on the rest of the continent is facing challenges on every front, we are convinced that the attributes that have served us so well in the past will continue to do so in the future.

"We are proud and gratified to have worked on projects which have contributed massively to the development of South Africa and of the continent as a whole. Indeed, we see ourselves, along with all members of the built environment profession, as primary enablers of growth and development in Africa.

"Our 2013 acquisition by the Keller Group, the largest independent geotechnical contractor on the globe, has greatly enhanced our portfolio of products and our access to world class expertise. There is no doubt that, involved early enough, we are able to bring the most cost effective and technically appropriate solutions to almost any geotechnical project almost anywhere in Africa.

"Most recently, in addition to its traditional piled foundation projects, Franki has constructed several massive basements in Sandton; completed important marine projects in Port Elizabeth and Durban and ground improvement work in Cape Town.

"Our growing list of successful projects outside of South Africa is equally noteworthy. In many instances, this is no easy feat, especially in regions where the logistical challenges associated with the movement of large and specialised machines is acute; not to mention exchange-rate and legislative challenges, as well as security and disease concerns," Braithwaite says.

"Nonetheless," says Braithwaite, "Franki is well represented on the continent, having recently completed projects in Mauritius,

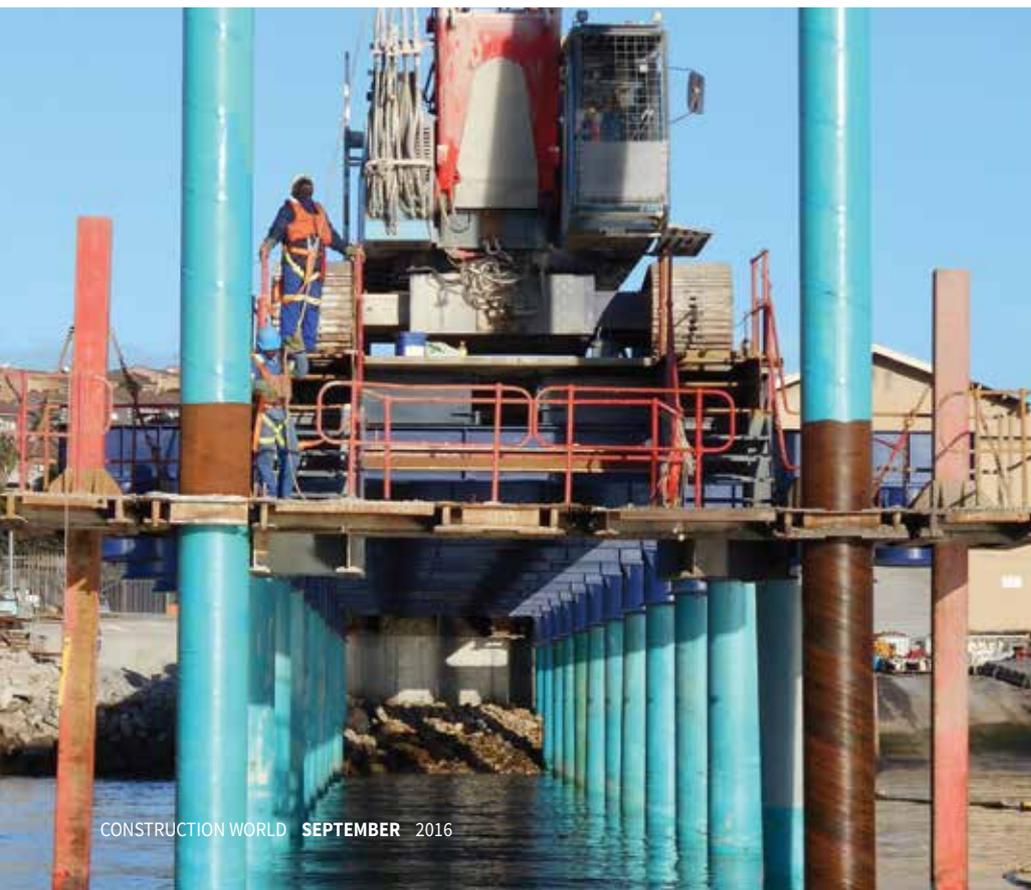
Angola, Ghana, Mozambique, Tanzania, Uganda, Swaziland, Botswana and Zambia. Our 70th birthday 'resolution' is to build on this footprint wherever opportunities arise. Colleagues within the Keller Group already operate in Egypt, Tunisia, Algeria, Morocco, and Ivory Coast. Indeed, the Keller/Franki partnership enables us to bring best practices in expertise, health and safety, quality, and technology to any location in Africa which, combined with Franki's experience, constitutes a compelling service offering to our customers."

The first office of the Franki operation in South Africa was established in Cape Town as a subsidiary of Frankipile, the internationally renowned Belgian-based piling company. The first local MD was Wally Rowland who celebrated Franki's 50th anniversary with the company in 1996. Rowland, regarded by all as the founding father of Franki in this country, passed away in August 2006 aged 92.

From the fledgling start of the first contract – the installation of eight piles for a small building in Paarden Eiland near Cape Town, Franki has grown into a market leader with the capability and capacity to handle large and complex geotechnical projects.

In the process it has shown its ability to successfully compete with international geotechnical companies both in South Africa and beyond the borders in sub-Saharan Africa and the Indian Ocean Islands where the company has been very active. It has not however lost its appetite or competitiveness on small projects as well – even today the majority of its projects are less than two million rand in value.

Franki however has become much more than a successful contracting company. It has led the way in piling technology, boasting some of the best-known geotechnical engineers in the country who have developed a reputation for their knowledge and expertise both here and abroad.



years in sub-Saharan Africa

The Blue Book and the Franki Pile – symbols of Franki's industry leadership

Franki's 'Blue Book', as it has come to be known in the industry, is the definitive guide to practical geotechnical engineering in Southern Africa. Gavin Byrne, Franki's recently retired technical director who now consults to the company, says that the book's purpose was initially, and still is, a reference with a wealth of practical information on geotechnical topics, which countless readers over the years have found to be very useful.

The first edition was written and compiled by then managing director, Ian Braatvedt in 1976. Its main focus was aspects of soil investigation and piling in Southern Africa. The second edition, published in 1986 by Franki's technical director at the time, John Everett, placed more emphasis on design aspects.

Along with fellow co-authors, Byrne was extensively involved on the third and fourth editions, which were rewritten and updated in 1995 and 2006 respectively. He is currently working on a new edition which will provide insights into some newer technologies including vibro-compaction, vibro-stone columns and rigid inclusions.

The Franki Pile

The origins of the iconic Franki driven cast in-situ pile – the Franki Pile – can be traced back to Franki's Belgian founder, Edgard Frankignoul, who invented the system and patented it in 1910. While it is just one of the many piling techniques employed by Franki Africa today, the Franki pile – with its characteristic enlarged base – has been the cornerstone of the company's success in Southern Africa.

"The Franki pile is a unique system for generating excellent load capacity and we

have developed a number of techniques to install the Franki pile in a variety of soil conditions," says Byrne. "This is a very flexible system and its key advantage is that the large base enables one to found the pile at approximately half the depth of other piles, making it more economical and much faster than alternative cast in-situ methods," says Byrne.

Changing of the guard

Meanwhile in January 2016, there was a change of guard at Franki with Errol Braithwaite taking over as managing director from Roy McIntock who retired in December 2015.

Braithwaite says that one of McIntock's most important legacies was decentralising operations, which has been key in the efficient running of Franki. "Each of Franki's divisions, big businesses in their own right, is run autonomously by experienced and highly competent managers and this is fundamental to Franki's efficiency and excellent service delivery."

Braithwaite, after having previously been at Franki from 1996 to 2000 as a design engineer, says he is delighted to be back. "Franki Africa is stronger, more focused and better equipped in skills and machinery than ever before," he says. "Our in-house design capability – probably our most significant market differentiator, enables us to develop technically robust and cost effective solutions in collaboration with our clients and consulting engineers. This routinely results in real benefits for the project".

Franki offers a comprehensive range of geotechnical and marine engineering services including both design and construction for the general construction, civil engineering and mining industries.

Franki's work in both commercial and infrastructure projects is implemented to the exacting standards required by its



ISO 9001 accreditation and undertaken with safety as a major priority. Franki is OHSAS 18001 certified.

Franki are specialists in: piled foundations; soil improvement – in-situ compaction; in-situ replacement; rigid inclusions; deep soil mixing; jet grouting; grouting; underpinning; lateral support; pipe and culvert jacking; marine foundations and structures; environmental remediation; geotechnical investigations and geotechnical design and advice.

Conclusion

It's a great achievement for a company to last 70 years and to still be such a dynamic force in its industry. But for Franki, it will be business as usual for one of South African industry's best-known brands and companies. "Our motto is 'Quality is our Foundation'," says Braithwaite. "This refers not only to the installation of our various products but also to our culture of working successfully together with all our stakeholders in producing quality work in a friendly and productive environment.

"Our real foundation is undoubtedly our people and we look forward to working together in building on our successes of the past to create a dynamic and productive future for all," he concluded. <





BOUTIQUE OFFICE DEVELOPMENT

in the heart of Sandton

Photographs by Mike Pawley

Number 4 Stan Road in the heart of Sandton is the original and the new home of MDS Architecture, a South African practice with a history spanning over 60 years. The new eight storey building has a unique sculpted street presence and manages to provide a sense of sanctuary and privacy despite its location amid imposing neighbouring structures. It also boasts both a 4-Star Design and a 4-Star As-Built Green Star Rating from the Green Building Council of South Africa.



MDS Architecture designed the office building for a consortium of professionals, made up of some of the partners in the practice as well as those of their long-standing office neighbours, Brian Heineberg & Associates. The original building was developed in 1991.

Sean Pearce, a partner at MDS Architecture, created the concept for the building and Pat Henry, also a partner, led the design development and construction of the project. Pearce explains that the site's context was an important consideration in developing the design. The site is bordered by complexes of residential towers on three sides, with a large office development between it and the very busy Grayston Drive. Its street address on Stan Road faces west, which created an interesting design problem for resolution.

The original single-storey building at 4 Stan Road was the home of MDS Architecture and Brian Heineberg & Associates for many years and they have proudly returned to this address as the anchor tenants in the new building. "Designing a building for both architects and quantity surveyors who are also your partners and co-owners makes for a very interesting project," says Henry.

"The original single level structure that made way for this exciting new building was being dwarfed by massive developments as this part of Sandton grew. For us, the site holds so much history and while wanting to pay homage to our roots we also wanted to ensure that the new building reflected the future of both practices as well as that of the burgeoning greater Sandton precinct," he explains.

Two distinct aspects

The building has two distinct aspects. The street address façade on Stan Road is west-

facing and is treated as a solid face with massive full height fins behind which thin slivers of glazing peep southwards over the roofscapes of Sandton. In this way the design manages the typical heat build-up of a west-facing façade and controls the associated glare issues. It also provides a sense of privacy and intrigue for the occupants.

The north-facing façade is fully glazed. It opens up the office spaces to the views across Bryanston towards the Magaliesberg as well as looking onto a private landscaped courtyard on the fourth level.

The entrance to the building slices vertically into the solid west street façade, creating a unique permeable street address with reception facilities at street level.

The entrance is distinguished from the other buildings with lush green landscaping contrasting with the angled and sculptured forms of the building. The slope of the street led to the contrasting angles in the façade. At night, vertical illuminated shafts between each pair of trees mirrors the concealed vertical illumination between each of the façade's fins, further creating a dramatic presence in the street.

Sky deck as sanctuary

In order to meet the owner's brief for above-ground parking as opposed to excavated basement parking, the architects created a podium with a generous landscaped sky deck onto which the offices open. This level has been designed as a useable sanctuary for the occupants to break away from their work. It has large-scale indigenous trees providing shade with under planting that will attract birdlife to the area. The deck is made up of areas of timber decking and imitation lawn with tables and chairs under umbrellas and a bar area for entertaining purposes. The





Professional team

- **Client:** Sharmane Investments
- **Architect:** MDS Architecture
- **Quantity surveyor:** Brian Heineberg & Associates
- **Structural engineer:** L&S Consulting Engineers
- **Electrical engineer:** CKR Consulting Engineers
- **Air-conditioning:** Spoomaker & Partners
- **Green consultant:** Green By Design
- **Fire consultant:** Specialised Fire Technology
- **Landscape architect:** Bertha Wium Landscape Development
- **Main contractor:** Tiber Bonvec



area enables the office building to stand back from the boundaries and creates a pleasant green space at high level in between all the other neighbouring buildings.

The floor plates of the offices are in a loosely triangular shape, providing north-light and avoiding the sense of being crowded in by the surrounding buildings. "The podium and deck is at the same level as those of the surrounding buildings but it has privacy due to the treed green berm created around it, you are not aware of other people using their decks," explains Pearce.

Materials and aesthetic

The use of dark full height performance glazing on the northern façades ensures a modern, timeless expression complemented by large scale white porcelain clad fins adding vertical interest to the building and giving it a simplified black and white aesthetic. The podium is dark and clad with recycled security grilles from the original building. These grilles have been fitted with planters at each floor level so that in time they will be covered with soft green creepers giving the podium the appearance of a large clipped hedge. The creepers have been chosen to have a flush of seasonal white flowers and the reuse of the grilles have added to the Green Star submission.

MDS Architecture has chosen an open-plan office layout with a restrained industrial design studio aesthetic that contrasts with the slick and glossy finishes on the exterior of the building. The colours are generally also black and white with painted rather than plastered brick, exposed concrete and warmed with natural timbers. The light fittings have been purpose made and or chosen to reflect this aesthetic.

An internal pause area featuring book

lined shelves, a large screen TV and multi coloured bean bags is linked to the kitchen area with a huge wooden island table that doubles up as a place for lunch as well as informal meetings.

The gallery linking the reception area to the staff entrance and toilets has been treated with a graphic bespoke wall covering that makes abstract references to MDS Architecture's many iconic projects built over the years.

The toilet facilities have been treated very differently to the run-of-the-mill toilets found in office buildings in that the wall surfaces are either clad full height with black glass or a textured black wall covering, contrasting with white porcelain sanitary ware and white stone vanities. The ceilings are also painted black. The WC cubicles are clad externally with warm French oak timber and internally with high gloss white ceramic tiles; all in all creating a dramatic experience for the users.

Each office floor has been treated in such a way that each tenant can create their own experience and brand from the moment their visitors alight from the lifts.

Parking

Parking is provided in excess of the minimum statutory requirement for offices; the parking areas are all above ground and naturally ventilated and illuminated. The new town planning requirements for the precinct dictate that no off-street parking may be provided for new developments and in order to comply, all the visitors bays have been provided on the ground floor behind secure access and control. These parking bays link directly into the building's reception area as well as the pedestrian entrance for visitors using the Gautrain or taxis.

Sustainable building features

While the re-use of certain elements from the original building has contributed to 4 Stan Road's sustainability rating, it is also provided with all the energy efficient and building management systems including sub-metering of both water and energy necessary to achieve its 4 star Green Star rating from the Green Building Council of South Africa.

The system chosen for air-conditioning and ventilation is a decentralised variable air volume (VAV) system with a highly efficient air cooled chilled water plant on the roof. It is energy efficient, sustainable and flexible and provides the indoor air comfort and quality required to comply with the Green Star rating of the building.

Cycling facilities have been provided for both building occupants and visitors. Secure bicycle storage spaces, lockers and showers have been designed with easy access to the building's reception area.

The Green Building Council of South Africa has awarded both a 4-Star Design and a 4-Star As-Built Green Star rating for the building after only Round One submissions; these Green Star plaques are proudly displayed in the building's reception.

Into the future

4 Stan Road is a boutique office building that features thoughtful and practical modern design. It is a fitting testimony to the unique blend of creativity and pragmatism for which MDS Architecture is known. In addition, it pays tribute to a rich history while looking confidently forward to the future. <

A complex ‘QUIET’ CONTRACT

J.C. van der Linde & Venter Projects had to employ tight planning and adapt quickly to the building site’s surroundings when it recently successfully handled the expansion of the Information Management (IM) block at the Life Groenkloof Hospital (previously Little Company of Mary Hospital) in Pretoria.

> The project, undertaken on behalf of the owners, Life Healthcare, entailed adding two additional floors on top of the existing structure in George Storrar Drive in Groenkloof, to create 1 100 m² of additional floor space. In addition, J.C. van der Linde & Venter Projects was tasked with constructing a new fire-escape for the historic Catholic hospital which opened in 1957.

While smaller than other healthcare projects previously undertaken, Arrie Venter, contracts director of J.C. van der Linde & Venter Projects, says the expansion of the Life Groenkloof Hospital proved to be extremely

complex, considering the sensitive nature of the building environment and limited space available for the construction team.

“The floors directly below had to remain functional right from the outset during the extensive preparation works, which involved demolition and concrete sawing activities on the roof of the existing structure. We had to keep construction noise levels to an absolute minimum at the hospital, so this called for careful planning to keep to the strict project timelines and ensure a safe site throughout the duration of the build.

“Importantly, extensive preparations had to be undertaken well ahead of boarding the



Included in the contract handled by J.C. van der Linde & Venter Projects was the installation of a new fire-escape.

site in July 2015, enabling the building team to pre-empt challenges before embarking on the project. In addition to constructing next to a live healthcare facility, we had to plan around an extremely congested site, bearing in mind that the busy hospital has only one access point,” Venter says.

The tower crane – the vital component for the operation – had to be precisely placed next to a heli-pad to ensure optimal and safe materials handling on site, while avoiding disrupting hospital traffic and construction activities. With its ample 28 m radius, the crane was also used to assemble formwork on top of I-beams, which spanned sections of the existing structure’s corrugated roof sheeting, to build the new façade.

Venter says critical materials, such as reinforcement and bricks, were delivered to site on a just-in-time basis as stockpiling space was limited. “Smaller trucks that could easily manoeuvre in and around the site were used to deliver the construction crew’s daily requirements. Interestingly, a sizeable section of the façade and brickwork was substituted with space-frame walling.”

However, even the tightest of planning cannot cope with unpredictable weather, and J.C. van der Linde and Venter Projects had to employ extra and extensive waterproofing to protect the exposed structure during the late and heavy rainfalls at the start of this year.

“The Life Groenkloof Hospital expansion project was a classic example of the challenges building contractors have to face in any refurbishment and upgrade project. Full credit must go to the experienced management team we had on site,” Venter adds. **<**

The building contract involved expanding the existing IM facility of the Life Groenkloof Hospital.

Professional team

- **Client:** Life Healthcare Group
- **Main contractor:** J.C. van der Linde & Venter Projects
- **Architect:** Origin Architects
- **Quantity surveyor:** Matla Quantity Surveyors

The J.C. van der Linde & Venter Projects team on site were led by Arrie Venter supported by J.J. Maree (site agent), and Martin Naudé (general foreman).



LUSAKA'S MAJOR WATER INFRASTRUCTURE UPGRADE

SMEC has been appointed by the Millennium Challenge Account – Zambia Limited (MCA-Zambia) to undertake programme management services for citywide water supply, sanitation and drainage improvement works in Lusaka.

➤ The project scope includes: upgrading the primary water distribution system, expanding secondary and tertiary water distribution networks (including supply and installation of house connections and water meters).

Sewerage systems will also be improved by extending existing sewers and facilities to non-serviced areas, and mitigating flood risks by constructing new primary outfall drains and upgrading existing drains.

"This project will increase access to a reliable water supply, and improve sanitation and drainage services in selected urban and peri-urban areas of Lusaka," Pula Herath, general manager, water & environment, Africa Division, SMEC International, comments.

SMEC has been appointed programme manager, traversing the whole Compact. This comprises co-ordination and management of technical consultancies that, in turn, are responsible for the administration and supervision of all seven construction packages, with a capital cost of about AUD120-million.

SMEC's services include general programme management, financial reporting, technical assistance and advice and general support in ensuring MCA-Zambia's compliance with all relevant environmental, health and safety standards. Herath explains that this project is a good indicator of the need for reliable basic infrastructure in Africa, which "is somewhat different to that in South Africa, where we are focusing mainly on efficiency improvements."

He adds that SMEC probably has the largest African exposure of any consultancy involved in the water infrastructure sector, with 14 offices in four main regions. ■



The project will increase access to a reliable water supply and improve sanitation and drainage services.

Pula Herath, general manager, water & environment, Africa Division, SMEC International.



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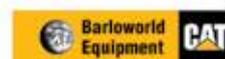
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PRESTRESSED SLABS

specified for security wall

Some 3 400 prestressed hollow-core concrete slabs are being used to construct a five kilometre security wall for the Department of Public Works at South Africa's naval base in Saldanha.



Designed by Delta Built Environment Consultants in close collaboration with leading prestressed hollow-core concrete slab manufacturer, Topfloor, the wall is being erected by KP Construction, the project's main contractor.

According to Topfloor director, Wessel Prinsloo, the slabs are being precast at Topfloor's Cape Town factory where they are prestressed with steel reinforcement before being delivered on flatbed trucks to Saldanha.

"Prestressing provides hollow-core slabs with additional strength and the slabs being used for the Saldanha wall boast a strength rating of 50 MPa plus. As a result, nothing short of mechanised demolition equipment or high explosives would make any sort of destructive impression on the wall. This is why prestressed slabs are being used on an increasing basis to safeguard property of strategic importance or high value in other parts of the country," advises Prinsloo.

The wall is being built to a simple yet effective design which uses galvanised

steel H sections to support the six metre-long slabs. The H sections are bolted onto six threaded bars cast into the reinforced concrete foundations. These extra heavy duty foundations were specified by Delta to ensure that the wall can withstand the frequent and sometimes gale-force winds prevalent on this stretch of coastline.

The wall follows the natural contours of the undulating fynbos-strewn land and rises 3,2 and 4,2 m above ground level; a section of approximately 400 mm is buried below ground.

Construction, which began in December 2015 and is due for completion by the end of 2016, is effected by hoisting the slabs using a truck-mounted crane. A special grab mechanism had to be designed by Topfloor to lift and install the slabs. The crane has sufficient reach to service three wall bays from one location. Once installed, the slabs are caulked into the H sections with a plaster sand and cement mix.

Part of the contract involves the planting of a line of various types of trees on the outer perimeter of the wall to add a green and aesthetic element to what would otherwise have been a stark monolith.

Additional aesthetic appeal is achieved by mounting the panels so that the slabs' smooth soffit sides are positioned on the outer (public) side of the wall. Moreover, the slabs have been cast with bevelled edges which form V-shaped channels where the slabs meet to further enhance the appearance of the walls.

Prinsloo says there are several advantages to this type of walling, speed of construction and the superior strength of the wall being major considerations.



Topfloor contracts manager, Norlando Nomdoe, stands on one of the concrete foundations.



A Topfloor wall slab is offloaded prior to installation between the steel H sections.



An inner section in which the attractive V-shaped indentations between the slabs are clearly visible.

A section of completed security wall built with Topfloor prestressed hollow-core slabs at the Saldanha Naval Base.



"Eight to 10 bays or 48 to 60 linear metres are completed daily (eight hours). A conventional masonry wall, which is not nearly as strong or durable, would have taken two to three times as long to build.

"The cost of constructing a security wall using prestressed hollow-core slabs is considerably less than an in-situ wall offering the same properties. Moreover, precast walling requires no shuttering or propping, onsite curing, formwork or grouting.

"As with other walls built with prestressed hollow-core panelling, the Saldanha wall will have a very long life span. It is maintenance free, and other than occasional cleaning, no other servicing is required. The slabs can also be dismantled and re-used elsewhere," adds Prinsloo.

EXPANSION

of press shop

AECOM was responsible for the engineering services for a recent expansion project undertaken by Toyota South Africa Motors at its manufacturing facility near Durban. This included a new press line with the largest press in the southern hemisphere.

➤ Toyota South Africa Motors recently increased the capacity of its existing press shop at its Prospecton plant, south of Durban, driven by Toyota's new Hilux and Fortuner models. "AECOM provided all engineering services, as well as project cost control and project management, with our fully integrated team," Stuart Manzie, associate, building & engineering, AECOM, explains.

The press shop is the sheet metal shaping section of an automotive plant, which receives the sheet metal in coils. It is cut into plates of various sizes on the cutting line. These are given their final shape on presses by using different dies for each type of component, and also by means of different operations such as pulling, trimming and piercing.

The new line of presses will produce the external parts of the car body (body sides, bonnet, doors, etc.), as well as the chassis rails. The new press line consists of three new presses incorporated into an existing logistics bay. The largest of the three presses has a pressing capacity of 2 300 t, which makes it the largest press in the southern hemisphere.

The incorporation of the presses required the construction of new press pits for the presses, and a new scrap tunnel to house new scrap conveyors. The press shop's die storage area was also increased to accommodate the new dies.

The new die storage area has a load capacity of 10 t/m², incorporating a 500-mm-thick suspended ground floor slab supported on driven cast in-situ (DCI) piles. This also tied into four of the existing press shop bays. It included an extension to the crane runways for 40 t cranes.

The construction of the press pits and scrap tunnel required a 16 m wide by 7 m deep excavation, all within the existing building. Due to poor ground conditions and high static and dynamic loading, the pits were



Toyota South Africa Motors increased the capacity of its existing press shop.



The Toyota press shop is the sheet metal shaping section of an automotive plant.

founded on precast piles driven down to bedrock at a depth of 40 m.

Height constraints within the building led to the piles being installed from a modified Casagrande piling rig from the bottom of the excavation. The perimeter of the excavation was shored with a contiguous piled wall using Continuous Flight Auger (CFA) piles and soil nails.

A high ground-water table meant that the bottom of the excavation was about 5 m below the water table. Dewatering wells were installed and used to keep the excavation dry. High vibration during precast pile driving and soil settlement during dewatering necessitated risk assessments to mitigate associated risks to the sensitive adjacent crane supporting structures.

Weekly surveys were undertaken on building columns and floor slabs to identify any settlement that may have taken place. Vibrations caused by piling were also monitored to ensure that the specified limits were adhered to. ◀

29

HILTI HQ PROJECT WINS SAPOA AWARD

Another landmark Atterbury Property Development project has won the coveted South African Property Owners Association (SAPOA) Excellence Award for industrial development.

➤ Atterbury Property Development's iconic project for Hilti at Waterfall Logistics Precinct was named the winner of the industrial category at the recent SAPOA Innovative Excellence Awards.

This is the second year in a row that Atterbury has won the industrial development category at the awards, which recognise significant contributions made through innovation and excellence within the property sector.

This year, four of the six finalists in the industrial development category were Atterbury projects. In addition to Hilti, Atterbury's finalists were projects for Cummins, Stryker and Servest, at Waterfall.

Arno du Plessis, development manager at Atterbury Property Development, says: "We're excited to receive this leading tribute that honours excellence in industrial property development. It highlights our track record of achievement in this exciting sector."

Atterbury developed the Hilti facility on behalf of Attacq Waterfall Development Company (AWIC). AWIC is 100% owned by JSE-listed real estate capital growth fund Attacq Limited. It holds the commercial development rights to Waterfall.

Du Plessis explains that as a European-based company with its head office in Liechtenstein, Hilti wanted its new premises to be a reflection



of its leading edge products and services.

The design of Hilti's new facility features a striking glass façade and an eye-catching roof that makes a fluid 90-degree curve, elegantly wrapping itself around one side of the building. With its ultra-modern design, Hilti's local headquarters have been tailor-made with some 2 000 m² of offices and about 1 800 m² of warehouse space. The property includes a training centre, servicing centre and tool centre, all embodying Hilti's corporate culture. ◀

PUSH BOUNDARIES

across disciplines

Wilhelm du Plessis spoke to Nicholas Karassavas, Arup's CAD and BIM manager. He has an architectural and strong multidiscipline technical background and speaks with authority about BIM in the South African and global context.

In a nutshell, what is BIM?

Building Information Modelling (BIM) is an information-centric process of collating and managing pre-defined outcomes in the form of digital data that gets accumulated during the different stages of a building's lifecycle by all the professionals involved – from initial planning to facilities management to de-commissioning.

Various software applications and processes are used to create an intelligent, shared, digital 3D model that is used to represent this data.

How has the support for it been in South Africa?

South Africa has a strong existing and rapidly growing set of professionals, both capable and willing to share their knowledge to an eager architecture, engineering and construction (AEC) industry.

We have workshops, talks and forums at all major build and AEC events, and a newly formed BIM Institute, which is leveraging knowledge from leaders in the industry and assisting the industry drive to BIM.

There are freely available international protocols and documents covering all aspects of the BIM process for each discipline and player involved.

Nicholas Karassavas, Arup's CAD and BIM manager.



What are the difficulties with introducing BIM into South Africa?

Initially BIM has been used and managed by the design professionals (architects and engineers) who benefit directly. It is doing well in South Africa and the number of firms with BIM capacity is growing at a healthy pace.

However, many owners and property managers currently are unaware of the potential gains from the BIM process.

For example, if an owner used a BIM model to keep a live record of asset management data and then wanted to move offices, they could use the model to move any associated element on a virtual plan. Owners need to start questioning what can be delivered by professional teams on their projects beyond the traditional drawings.

We also need the adoption of a common SA BIM standard, based on international standards, to aid our AEC sector in its ability to better share, create and manage all this data and related documentation in a commonly accepted manner.

How is this system applied to your work within Arup?

Arup is an international design, engineering and business consulting firm working on many of the most innovative and complex planning, building, infrastructure, transport and civil engineering projects in the world. We have an ethos of testing new technologies – these may cost us, but the lessons learnt outweigh pure profits.

Embracing learning and innovation leads to the pushing of boundaries. When we saw how BIM makes our internal systems more efficient, has the ability to reduce risk and construction issues and helps us push new boundaries across our disciplines, it made sense to adopt BIM as our default methodology for producing design work.

Various governments and organisations that Arup works with, specify BIM on their projects. This cemented our commitment to this way of working and understanding projects.

One of the reasons why the BIM system has not been more

widely used is because of the cost. How expensive is designing a building with this?

It's difficult to put an exact cost on using BIM – it depends on a wide variety of factors including the level of BIM required, the complexity of the project and the maturity of the BIM team involved.

This cost also needs to be considered in conjunction with the value using BIM provides. Significant lifecycle cost saving opportunities are unlocked because we are able to visually represent additional information like time, cost, design specifications, sustainability and maintenance information – remaining pertinent for the life of the building.

This ability is showing substantial savings throughout the process from design through to facilities management, ultimately improving design, performance and reducing risk throughout the construction and finance management aspects of the project.

Can the system be applied to any building?

As long as the architects and engineers are on board, a level of BIM can be used on any project. A less complicated building simply needs less data and has fewer deliverables and requirements than a larger and more costly building.

Buildings with repetition, such as franchise offerings (banks, food franchisers, hospitals, store franchisers etc.), have the most to gain from using high level BIM. This is because the repeat business warrants more effort be put in earlier to the systems and integration of aspects such as costs, specifications, manufacturer codes, lighting, finishes, construction and procurement sequencing on these projects, etc.

What are the advantages of BIM for 'green building'?

BIM excels in green build. The high end technical CAD tools used in BIM have abilities to geo-reference the project and model accurate live weather and thermal data to libraries of materials and content used within projects.

This allows for optimal building orientation, better reports, accurate design checks, including how the design impacts carbon energy loads, lighting and active or passive heating and cooling solutions.

For the outcomes of good green building design, it is essential that all the designers get involved early (before the concept designs are completed) so that each specialist designer may add his/her portion



in the architectural design and can discuss advantages and disadvantages of aspects of the design concept (form following function).

What is the level of BIM expertise in SA?

We have a high level of expertise placed in a small number of competent people, but these are too few to drive our entire industry. Part of the difficulty is because these individuals are so valuable within organisations, they become very project or company focused and contribute less to driving the BIM industry as a whole.

How is BIM measured?

Arup has developed a BIM maturity measurement application based on work by the Penn State University that anyone can use. It uses a quick and transparent Excel spreadsheet to measure both maturity and progress within a project and in comparison to other projects.

It can be completed by project managers or discipline leads with the input of a BIM manager or the BIM lead on the project.

This allows each project to set clear goals and measure its progress at each stage. These measurements assess against Arup's own Phase 1 BIM Targets for all projects and against external benchmarks such as the UK Government's BIM Level 2 measure.

Results can be amalgamated by group, discipline and region and consists of a series of multiple choice questions asked about the project's information management process and each disciplines' information modelling practices. The weighted ratings are then measured against criteria aligned with a maturity rating.

Can the system be used when renovating an existing building?

BIM can be used effectively on existing buildings. Existing buildings, particularly older ones, often have very little data to start with. We are now able to use BIM with 3D point

cloud image scanning or photogrammetry to create a model based on the existing structure and services.

These projects often turn out better than new projects as existing sizes, materials and innate performance defects are usually apparent and more tailored solutions can be found to resolve these historic client issues. <

What are the advantages of the BIM system?

- Substantial construction, maintenance, energy saving and lifecycle ownership cost reductions.
- Pre-build co-ordination and associated cost and time savings and accuracies down the line.
- Reduction of repetitive work by all professional designers involved.
- Access to live and pertinent information by all at any time for better early decision making.
- Better integrated design across disciplines.
- Better understanding of the client's building requirements.
- Clearer communication between design team and client, especially in terms of the consequences of design changes.
- Live bills of quantity and cost variation implications, if so required.
- Better procurement management and future purchase agreements across single and multiple projects.
- And many more – each project demonstrates more advantages to both designers and users.

PRECAST COAL BUNKER COMPLETED

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Stefanutti Stocks Civils Completed a 4 000 and a 15 000 ton precast coal bunker at Kinross, Mpumalanga for Sandvik Mining.

> The 15 000 ton bunker comprises of a total 491 precast panels. The project saw an average of 3,2 panels placed per day, peaking at 22 panels on the sloping and vertical wall units.

This process was completed without the use of normal scaffolding for access. Rope access teams were deployed to install and complete the majority of the work. This method, in addition to minimising risk by cutting time spent constructing and working from scaffolding, also reduced the installation programme by a third.

The precast panels were stitched together and a total of 1 010 m³ of concrete was used for this.

The vertical walls were stitched by means of an in-house designed self-compacting concrete. This self-compacting concrete was used to reduce the safety risk of working with heavy equipment at heights. <



Project safety stats

Site team size:
315

Total Hours Completed:
915 225

LTIFR 12 month rolling:
0.15

Injuries over last 12 month:
0.00

RCR 12 month rolling:
0.60



More **FLOOR SPACE** for SA **TOURIST**

A 22 storey hotel is rising out of the footprint of the old Tulip hotel in the Cape Town central business district (CBD) in the Western Cape, South Africa.

Developed by Green Willows Properties and to be operated by Tsogo Sun, this asset will feature 500 bedroom suites, of which 250 will be part of the Sun Square Luxury Hotel and the balance affordable units. These are complemented by banqueting and conference facilities and retail space, as well as 300 undercover parking bays.

Murray & Roberts Western Cape, a division of Murray & Roberts Construction, has made steady progress on the project and, by June 2016, it had reached the halfway mark with 10 more floors left before handing over the building to its client.

Overseeing the build is senior contracts manager and Western Cape executive, Collin Morilly, who is a seasoned member of the Murray & Roberts Western Cape team, having

successfully completed many iconic buildings in the province on behalf of the leading South African building contractor.

Morilly says the execution of the design of the hotel by internationally-acclaimed Dexter Moren Associates and South African partner, Ruben Reddy Architects, is now in the phases where the construction of the structure has become typical and therefore easier.

As the structure climbs to its final level, subcontractors follow three to four floors below, starting with the installation of the services components, followed by the dry walling, ceilings, doors, skirting, tiling, painting and soft finishes.

There are 40 bedrooms on each floor of the hotel tower that starts on the fifth level of the structure. These are preceded by the podium which consists of 1,5 basement parking levels and two levels housing the

front and back of house and a further three parking levels.

Building complexities

Most of the complexities of the build were encountered in the early stages of the contract. From the outset, the site team was aware of the extremely built-up environment in which it would be operating.

"This structure is surrounded by four of the busiest streets in the Cape Town CBD, namely Buitengracht, Strand, Bree and Castle streets, and we therefore had to plan very carefully to ensure a safe and productive site," says Morilly.

Importantly and in line with Murray & Roberts Western Cape's commitment to safe operation, Morilly says that public safety is on top of the agenda.

The operational site has been clearly demarcated with signage alerting the public of construction activities, while access to the site is strictly controlled, complementing other safety and environmental interventions such as the installation of debris netting around the entire structure.

To mitigate the risk, Murray & Roberts Western Cape ensured that at all times



HOTSPOT

operations and traffic management were carried out in strict accordance with the Tsogo approved hoarding permit and traffic management plan, thereby enhancing a healthy relationship with the city.

With space being at such a premium, it was imperative that the two tower cranes were carefully positioned and ready to operate immediately. The first crane is supported by a base that is cast inside the structure and the second by ballasts outside of the building.

Meanwhile, the laydown area in the basement provides very limited space for storing essential building materials. The bulk of the building requirements need to be stored off site and their timeous delivery to the site is planned on a just-in-time basis to avoid disrupting the construction programme.

“Logistics of supply is critical on this project. We have to plan very carefully and, often, deliveries to site have to be done in the evening when traffic in the city has started to subside. This has allowed for an uninterrupted start by the various teams the following morning,” he says.

A congested site

Adding to these complexities is the number of subcontractors interacting with the main contractor on this congested site. In June, Murray & Roberts Western Cape was interacting with just under 40 subcontractors as work continued apace on the specialised trades.

By the time the project peaks early next year, the site is expected to host about 500 workers, adding a new level of complexity to the project.

However, the biggest challenge on this project was the large transfer slab at the fifth level of the structure that marks the end of the podium work and the start of the main tower that houses the hotel.

Cement pours

Pouring this 1,1 metre thick slab above the five podium levels required extensive

“Logistics of supply is critical on this project. We have to plan very carefully and, often, deliveries to site have to be done in the evening when traffic in the city has started to subside. This has allowed for an uninterrupted start by the various teams the following morning.”



The old heritage building will be integrated into the hall of the new structure.

Once the transfer slab was successfully completed, the tower section started climbing quickly, with work



Subcontractors start with the installation of the services components of the structure and then install the dry-walling, ceilings, doors, tiling and skirting.



☛ planning with the help of structural engineer EKCON and principal agent, AECOM.

Danie Jurgens, engineer for Murray & Roberts Western Cape, says an intricate back-propping system had to be designed and planned from the fifth level all the way down to the basements to support the transfer slab. The smallest pour was 320 m³ and the largest 400 m³.

Jurgens says that in line with the larger Murray Roberts Group's STOP.THINK. ACT 24/7 campaign no one was allowed access in and around the site while the

concrete pours were under way.

The slab was undertaken in six individual pours and the concrete pumped 42 m from Bree and Buitengracht Streets in the early hours of the morning to avoid peak hour traffic in the CBD. About 2 000 m³ of concrete was cast, commencing on 3 February and ending on 8 March 2016.

Complicating the process was the intricate drainage system that had to be cast inside the slab, as well as its extensive reinforcing steel design.

To accommodate this, two 550 mm thick

RIGHT: The scaffolding for the external works had to be carefully designed to accommodate the different trades involved in the façade that comprises different materials of different shapes and sizes.

BELOW: The tower cranes had to be positioned carefully on the very congested site.



concrete layers were poured on top of each other with a five day curing period required between layers. The surface of the first cast was primed for the next pour by receiving a thin layer of concrete with a retarding agent and then sprayed with a jet of water.

External façade

Morilly says the external façade of the building is also a complex undertaking. It comprises different materials with a variety of shapes and sizes. These include bricks, windows and imported marble tiles, while close consideration also had to be given to the design of the scaffolding to accommodate the various tradesmen right from the outset to avoid cost overruns.

A very interesting aspect of the build is the merger of the new structure with the old Tothills Building.

“This heritage building is being incorporated into the front of house of the new structure and we have been tasked with restoring it to its original state, overhauling the roof, ceilings, walls and floors. We are working closely with the structural engineers and have already undertaken extensive tests to validate the structural integrity of the building,” Morilly says.

Work on the project commenced in the rainy seasons in the Western Cape and Murray & Roberts Western Cape and one year into construction the company is on track for the contract completion date.

It becomes very apparent that this will be yet another successful project completed by Murray & Roberts Western Cape in the leading tourist destination in the country. ◀

KHOBAB WIND FARM strives for INDUSTRY FIRST

Khobab Wind Farm has announced the completion of its first foundation pour on 30 June 2016. The foundations are designed using an 89% replacement of cement, one of the world's lowest carbon wind farm foundation footprints, making use of the same formulation that its sister farm, Loeriesfontein Wind Farm, successfully used in the completion of its foundations.

> "We are currently testing an even higher cement replacement formulation and hope to achieve the desired strength test results soon," explained Kevin Foster, project manager for Khobab Wind Farm. Situated in the Hantam Municipality, 60 km north of Loeriesfontein in the Northern Cape, Khobab Wind Farm is currently employing over 100 local workers on site. All 61 foundations are due for completion by mid December 2016.

Khobab Wind Farm is utilising extremely low quantities of Portland cement in the concrete formulation of its wind turbine foundations. "This revolutionary formula has been tested in the adjacent wind farm and we are confident to continue to use it in our foundations. The insights gained have allowed us to continue to test lower levels of Portland cement," says Foster.

Environmentally friendly bases

The bases use a unique design comprising 35 kg of high grade Portland cement per cubic metre, almost 90% less than a standard concrete mix. This composition means that the wind farm's carbon footprint is reduced to approximately 90,7 kg of carbon dioxide per cubic metre. Ground Granulated Corex Slag (GGCS), a by-product from the iron industry, is used to replace 89% of the cement.

"Cement manufacturing is typically a high

energy intensive process; so by substituting the cement with a by-product the carbon footprint has been considerably lowered," continued Foster.

A 28 day compressive strength test was completed when the formulation was originally tested; it indicated that the 89% replacement ratio achieved an impressive strength of 55 MPa (megapascals), and an expected ultimate strength of 100 MPa, within a 56 day period. "The strength of concrete is measured in megapascals; theoretically a cubic metre of concrete that is rated 30 MPa, is able to withstand the weight of six bull elephants, whereas these foundations are able to withstand the approximate mass of 20 bull elephants standing on a square centimetre of concrete – a phenomenal feat," demonstrates Cyril Attwell, Murray & Roberts Construction, group concrete & research manager.

A carbon footprint is defined as the total amount of greenhouse gases produced to directly and indirectly support human activities, expressed in equivalent tons of carbon dioxide (CO₂). "The achieved reduction in our carbon footprint is phenomenal, especially considering that a standard 30 MPa concrete as supplied by the ready-mix industry equates to a carbon footprint of approximately 300 kgs to 350 kgs of CO₂ per cubic metre," added Foster.

Traditionally, 30 MPa concrete requires between 300 kg and 350 kg of ordinary

cement per cubic metre. But now scientists working for Murray & Roberts have developed a technology that meets the 30 MPa standard using just 25 kg of cement or even less. Not only does it meet the standard, it far exceeds it. To date strengths of up to 52 MPa have been achieved on other sites using Murray & Roberts' patented ARC (Advanced Recrystallisation) technology and 0 kg of Portland cement per cubic metre.

The wind farm capability

Khobab Wind Farm will comprise 61 wind turbines each with an output of 140 MW and will generate approximately 563 500 MWh/year of clean, renewable energy to the national grid. The wind farm will avoid approximately 550 000 tonnes of carbon emissions each year when compared to traditional fossil fuel power plants and generate enough to power around 120 000 average South African households.

The site, which spans a total of 3 200 hectares, was chosen for its excellent wind resource, favourable construction conditions and straightforward electrical connection into Eskom's Helios substation. The wind turbines will be supplied by world-leading manufacturer Siemens Wind Power, with the blades, hubs and nacelles that compose them arriving from overseas at a nearby port and being transported by road to Loeriesfontein. The majority of the 99 m turbine towers are to be manufactured by GRI, in Atlantis, in the Western Cape. Civil and electrical works are to be completed by a consortium comprised of Murray and Roberts Construction and Consolidated Power Projects.

The Khobab Wind Farm is part of the South African Government's Round 3 Renewable Energy Independent Power Producer Procurement Programme (REIPPP) is expected to be operational by December 2017. <

Khobab Wind Farm is owned by a consortium dedicated to providing clean, renewable energy to the people of South Africa:

- **Lekela Power:** Lekela Power is a pan-African renewable energy platform, which has in excess of 1 300 MW of wind and solar power projects in its portfolio. It is a 60:40 joint venture between Actis, the global pan-emerging market private equity firm, and Mainstream Renewable Power, the global wind and solar company.
- **Khobab Community Trust:** Established by the project company with the objective of carrying out public benefit activities to benefit the local community in the areas of enterprise development, education and health.
- **Thebe Investment Corporation;** one of South Africa's most established broad based BEE Investment management companies and leading investor in the Energy & Resources sector (advised by Bridge Capital).
- **The IDEAS Managed Fund,** is managed by Old Mutual Alternative Investments, a subsidiary of Old Mutual Investment Group one of Africa's largest independent investment managers.
- **Futuregrowth Asset Management,** a pathfinder in fixed interest and developmental investing.



NOUPOORT WIND FARM operational

Noupoort Wind Farm has achieved its commercial operations date (COD) on schedule and on budget, making it the first wind farm to successfully achieve operation as part of the third round of the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP).

> All 35 turbines of this ZAR1,9-billion, 80 MW wind farm, have been commissioned and connected to the Eskom Grid and the project satisfied all of Eskom's requirements on 11 July 2016. "We are thrilled to have reached this milestone on target and to have met all Eskom's requirements including Grid Code Compliance, thereby achieving COD just 17 months after construction commenced," said Savva Antoniadis, country programme manager for Noupoort Wind Farm.

South Africa's relatively new wind energy sector is already supplying enough electrical energy to power more than half a million households from 15 large wind farms generating over 3 GW of wind energy. In addition to the enormous water savings, significant in the country's current state of drought, REIPPPP ensures that renewable energy projects benefit nearby communities. So far in excess of ZAR90-billion has been committed to developmental initiatives

under this programme. "We are currently implementing various economic development projects, which include Capacity Building for existing and prospective entrepreneurs; and local maths and science development programmes that incorporate science and computer labs as well as local Wi-Fi infrastructure," explains Antoniadis.

The team at Noupoort Wind Farm has been working closely with the various Eskom teams to achieve this milestone, but value the positive community relationships equally as much.

"Our project has received resounding support from the local municipality and the surrounding communities who supported us throughout the construction phase, for this we most grateful and look forward to a long and mutually beneficially relationship," adds Antoniadis.

Situated in the Umsobomvu Municipal Area located 10 km east of Noupoort in the Northern Cape, Noupoort Wind Farm spans



Savva Antoniadis, country programme manager for Noupoort Wind Farm.

7 500 hectares and comprises thirty five 99 m-high wind turbines. The site was chosen because of its excellent wind resource, its proximity to national roads for wind turbine transportation, the favourable construction conditions, municipality and local stakeholder support, the straightforward electrical connection into the Eskom grid, and studies showed that there would be little environmental impact.

When operating at full capacity, the 80 MW Noupoort Wind Farm will generate around 304 800 MWh of clean renewable energy per year; this is expected to supply electricity to power up to 69 000 South African homes. Noupoort Wind Farm will effectively eliminate approximately 300 000 tonnes of carbon emissions each year when compared to traditional fossil fuel power plants. In addition to zero carbon emissions and reduced use of fossil fuels, the country will benefit from minimal water consumption during the generation process and significant social and enterprise development programmes. <



SOLAR panels for LARGE FACILITIES

South Africa's electricity is ranked as the 10th most expensive in the world, and with the National Energy Regulator (Nersa) having approved a 9,4% hike for Eskom for 2016/17, we can expect our position to worsen. NUS Consulting, a global energy management company, researching the state of energy markets, says we pay more for our power than countries such as Poland, Australia and Canada.



➤ Since 2009, prices for solar photovoltaic (PV) modules have fallen roughly 80%, says the International Renewable Energy Agency (Irena). It also released a report in June, stating that the solar industry is poised for massive expansion, driven primarily by cost reductions. It estimates that solar PV capacity could reach between 1 760 and 2 500 gigawatts (GW) by 2030, up from 227 GW today.

KJION Energy SA, a subsidiary of ICT Group Holdings, provides PV solutions with or without battery storage for large commercial and industrial sites, with the benefit of offsite monitoring. These customised solutions offer completely self-sustainable, off-the-grid requirements, as well as backup, on-grid PV needs, as well as a solar trailer for mobile requirements.

"For companies that have large warehousing facilities, PV panels on the roof to supply their power makes real economic sense," says Johann Wassermann, sales

manager at KJION Energy SA. "Capex can be written off entirely in one year and Sars offers tax incentives per saved grid kWh spent too. The return on investment for solar has come down drastically in the last few years and depending on the batteries used, it ranges from 3-5 years for lead acid batteries and 10-15 years for lithium-ion.

But the efficiency and cost of batteries is also constantly improving" says Wassermann. And financing options are becoming more available through most banks and investors, he adds.

Robotic cleaning tool

KJION has recently launched a robotic cleaning device for large solar plants to the local market. "It's programmable for when cleaning should take place and it's powered by its own panel," says Paul Fried, KJION CEO. "It uses particularly soft brushes to avoid scratching and damaging the panels, which is often a problem when panels are cleaned manually. Dirty panels reduce power output and this tool can increase it by 35%. It also detects hot spots which cause power

production problems and these can then be investigated and resolved."

Warehousing solutions

For organisations that wish to install solar on their roofs, KJION does a site survey to ensure structural strength for the weight of the panels and to ensure that the electrical distribution boards are compliant. "If we find that a site doesn't meet the requirements, we're able to assist in upgrading the electrical layout or providing suitable contractors who can assist on the structural side," says Wassermann.

Offsite monitoring

As part of their PV solar installations, KJION offers offsite monitoring, to ensure that systems are running optimally and smoothly. "This is part of our after-market support, which is as important to us as the installation of our panels," says Wassermann. "With solar, maintenance is really low, but we've found that we can offer support in energy management with our offsite monitoring offering. We like to walk the distance with our clients." ❏



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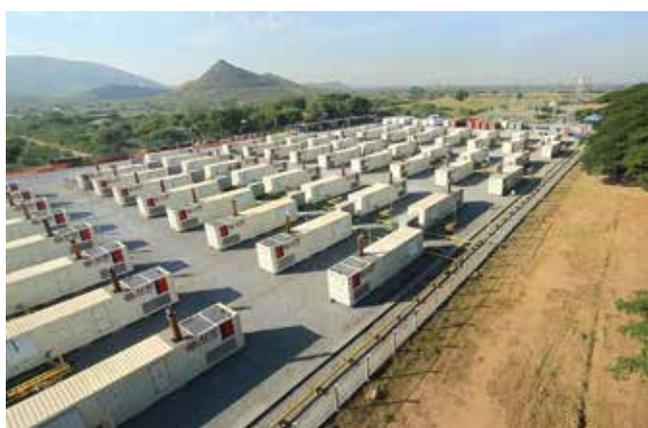
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to renewable energy solutions

Companies in sub-Saharan Africa looking to benefit from the independence and cost savings of renewable energy can be left in the dark when the weather is unco-operative. However, a solution combining intermittent wind, solar and hydro-power with supplemental fuel-flexible turbines can ensure these companies have the environmentally friendly and reliable power generation they require.



Colm Quinn, regional sales director at APR Energy.



Aerial view of APR Energy's 102 MW turnkey power plant in Kyaukse, Myanmar.

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This is according to Colm Quinn, regional sales director at APR Energy – the world's leading provider of fast-track mobile turbine power. Quinn says that as electric utilities and energy-intensive industries throughout the developing world invest in power infrastructure, they are under increasing pressure to consider the environmental costs associated with the use of higher-polluting fuels such as diesel, coal and heavy fuel oil (HFO).

He says power generation using advanced fuel-flexible turbines can switch seamlessly between natural gas and other cleaner-burning fuels such as LPG (liquid petroleum gas). "As a result, these modules produce 38-94% less nitrogen oxide (depending upon use of water injection) and 20% less noise than diesel power modules, offering a great fit for environmentally conscious operations with stringent regulatory controls."

The ability of the turbines to switch seamlessly between LPG,

natural gas and other fuels provides electric utilities and energy-intensive operations with unprecedented flexibility to manage costs by optimising fuel pricing and availability, he adds.

Besides being able to use more environmentally friendly fuels, fuel-flexible turbines also take up far less land space than renewable energy power plants. "The significant amount of land required is often an important consideration for companies weighing the emissions advantages of renewable energy. A 50 MW solar farm would cover approximately 430-500 acres, while 50MW of wind turbines start off at around 100 acres if installed on a ridgeline in hilly terrain and range to 2 500 acres if installed across open, flat terrain," Quinn says.

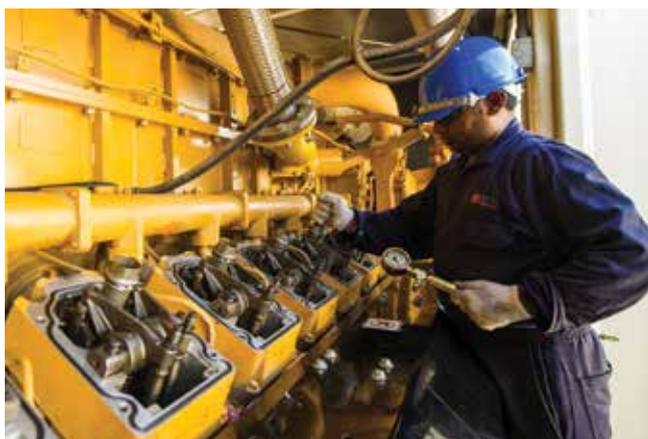
"By comparison, a modular 50 MW plant using compact, power-dense turbines is an ideal solution for operations with space constraints, only requiring a footprint of around 1,4-acres – approximately one-third of the space needed for the same electricity output produced by reciprocating generators, depending on whether on-site LPG fuel storage is required," he adds.

Perhaps the biggest benefit is that a fuel-flexible turbine solution is not subject to the intermittent nature of sunshine, wind and rain as it can generate reliable power, 24 hours a day, 365 days a year.

There are a multitude of other advantages of mobile fast-track power solutions in addition to the environmental benefits and flexibility of fuel type, he says. "Due to minimal construction and setup requirements, mobile turbine solutions can be installed within 30 to 90 days and are easily transportable via land, sea or air. They are also entirely scalable to the requirements of the company and can be scaled up or down at any given time depending on the power generation needs."

He says these solutions can also be installed close to the demand, reducing the need for transmission and distribution infrastructure, while also cutting the power loss that occurs as electricity travels long distances. <

Inside view of an APR Energy mobile gas power module at Kyaukse, Myanmar.



Aerial view of APR Energy's mobile gas turbine power plant in Western Australia.



New Avon Power Plant OFFICIALLY ONLINE



The independent Avon Peaking Power gas turbine open cycle power plant near Durban is officially online, its developers announced at POWER-GEN & DistribuTECH Africa.

The independent Avon Peaking Power gas turbine open cycle power plant near Durban is officially online, its developers announced at POWER-GEN & DistribuTECH Africa.

➤ Addressing the fourth annual POWER-GEN & DistribuTECH Africa conference in Sandton, the joint venture responsible for implementing the 685 MW Avon Peaking Power Plant said the plant had completed its final phase of commissioning and reached the COD milestone recently.

Avon is the second Independent Power Producer (IPP) project in South Africa by the joint venture between France's Engie, South Africa's Legend Power Solutions, Japan's Mitsui & Co and The Peaker Trust.

The first of the group's local projects, the 342 MW gas-fired Dedisa Peaking Power plant in Port Elizabeth, went into commercial operation last year, selling power to Eskom under a 15-year power purchase agreement.

The plants are the first large-scale independent thermal plants to be dev-

eloped in South Africa outside of Eskom.

The consortium comprising Ansaldo Energia and Fata S.p.A. received the Notice to Proceed (NTP) on engineering, procurement, construction and commissioning of the projects in September 2013, with Ansaldo managing civil works, power island supply, construction and commissioning and Fata managing engineering, procurement, construction and commissioning of the BOP and electro-mechanical installation works (including cabling, piping, Demi Sys, fire fighting, HVAC, and substation).

As highlighted by Fata project director, Italo Ballestrelli, only 22 months after the contractual Notice to Proceed, the consortium succeeded in respecting the Commercial Operation Date, with Dedisa unit 1 becoming the first synchronisation injecting electric power into the national grid in June 2015.

"It was an historic moment, because it was the first thermal electric power generation into the South African grid made by an IPP," noted Elisa Prato, project manager for Fata S.p.A. "In light of the success of these two plants we are optimistic about the potential for future IPP projects through our branch presence in South Africa."

"The accomplishment of this mission had a great strategic relevance for power generation and for the improvement of the South African grid stability," she said.

Both Elisa Prato and Fabio Pelizza, project manager for Ansaldo Energia, said while certain challenges had been experienced in the construction and commissioning of the Dedisa plant, the fact that Dedisa was located in the Zone 13 of the Coega Development Corporation (CDC) Industrial Development Zone (IDZ) and close to a port had worked in the developers' favour. Effective project stakeholder management, a holistic approach to labour project management, and partnership with engineering resources in a partnership with the Aurecon Group and Jones & Wagner had also contributed to the successful outcome, they said. ◀

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SOLAR ENERGY BOOST creates construction opportunities

In order to address the energy crisis in South Africa the government is committed to pursuing alternative energy sources for the provision of the country's future energy requirements.



➤ One such project, the thermosolar generating plant project, known as Kathu Solar Park, is currently underway near Upington in the Northern Cape. Led by client GDF Suez, the project has been implemented with a consortium of partners and in conjunction with the South African Department of Energy (DOE). The scheme is expected to generate around 1 200 new jobs during construction phase and, as such, there is a considerable need for the provision of high quality site accommodation. Answering this call Kwikspace Modular Buildings (Kwikspace), is set to deliver over 2 000 m² of temporary site camp accommodation.

Kathu is a 100 MW greenfield Concentrated Solar Power project that, equipped with a molten salt storage system with parabolic troughs, has a thermal energy storage capacity of four and a half hours. By allowing for the collection and storage of excess solar energy, this technology compensates for the intermittent nature of solar energy. The solar park, in partnership with Eskom, is set to provide no less than 80 000 South African households with solar energy and contribute to a saving of six million tonnes of carbon dioxide over the next 20 years.

The Kathu Solar Park project adds to Kwikspace's growing portfolio in the renewable energy sector which includes the successful delivery of site accommodation to the Xina Solar One (CSP), a 100 MW greenfield concentrating solar power (CSP) project located in Poffadder in the Northern Cape, and the installation of two solar photovoltaic plants (PV) for Italy-based TerniEnergia (Italeaf Group). Both schemes are set to add additional capacity to Eskom's electricity grid.

Modular units for the Kathu project will be manufactured in controlled factory environments and assembled on site by teams of

experts including an erection team, electrical team, plumbing team and a civils team. All units will be assembled using fully insulated polyurethane injected panels, which provide temperature control and noise reduction far superior to standard prefabricated panels. The modular buildings will function as offices, access control buildings, ablutions and as a kitchen and diner. Additional services such as a large U-shaped contractor's office, complete with WiFi technology, will also be supplied.

This system of modular construction allows for rapid delivery, and modular units can be erected in just 35 working days. To further enhance efficiency, Kwikspace offers a range of fit-out solutions. On the Kathu project the company will also be supplying 2,7 km of palisade fencing, external electrical and plumbing reticulation, a weighbridge, a septic tank, telecommunication facilities, a water conservancy tank and electrical generators.

Comments Roberto Campos, Kwikspace sales executive, "We're excited to

be supporting renewable energy projects that will see a way forward to assisting in South Africa's energy crisis. Kwikspace is a leading designer, manufacturer and erector of prefabricated buildings for deployment in sub-Saharan Africa and has been accommodating clients in the oil and gas industry, power generation, construction, mining and government sectors for over 40 years. With its extensive expertise, and factories throughout the country, Kwikspace is perfectly positioned to address a wide range of site accommodation requirements."

Stringent health and safety regulations are enforced on-site and the client has placed significant importance on ensuring that anyone coming into contact with their works returns home safely at the end of the working day. Kwikspace has made a significant effort to moderate its activities to comply with these requirements. By reducing the amount of man hours spent on a live construction site, the off-site construction methods utilised by Kwikspace offer further health and safety benefits. ◀

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ECONOMICAL SOLUTION

to rockfall protection

When we think about mining, the picture of a worker with hard hat, overhaul and gumboots comes to mind. He is usually working underground in a tunnel hundreds of metres below the earth's surface.



South Africa have some of the deepest mines in the world, so you can imagine the amount of roads/tunnels criss-crossing the earth below our feet. To protect people and equipment, the tunnels are lined with mesh. In some mines, Geobruigg's high tensile steel mesh (breaking load of 1 770 N/mm²) had been used for ground support in the tunnels. The majority of the tunnels in the gold and platinum mines, have for years and continue to do so today, been safeguarded with mild steel (breaking load of 500 N/mm²) and lacing as the preferred method for roof support.

South Africa's other commodities like iron ore and copper are mined on the surface. And even though the environmental challenges for surface or open pit mines are different, they still require safety measures to protect their most valuable assets – the workers and the equipment. Even though the roads inside an open pit mine are not numbered P, R or N, and probably don't appear on Google Maps, they can't be neglected as they ensure that the operations of the mine run smoothly.

A typical open pit mine has pit walls that are excavated at an angle and the walls are stepped/benched. The benches vary between

8-12 m in height and 4 to 8 metre in depth, depending on the size of the machinery that will be used. These benches help prevent rocks falling all the way down the entire face of the wall. Sometimes additional rockfall mitigation measures are required. More and more companies are looking for solutions that have less impact on the environment and are more cost-effective. Geobruigg's range of products provide rockfall mitigation solutions that are not only aesthetically more pleasing, but are easier to install and more cost-effective.

Situation at Rio Tinto

Towards the end of 2015, Fairbrother Geotechnical Engineering approached Geobruigg to help them with a design solution at Rio Tinto's Rossing Uranium Mine near Swakopmund in Namibia. Extensive blast damage within the sub-drill area have left the rockmass on the particular access ramp to comprise of loose rocks and jointed blocks that hung precariously along the crest of the bench face. This situation is a potential source for rockfall. The low catch capacity in certain parts of the slope posed a risk to equipment and possible injury to people. This would lead to increase in production cost. Although temporary measures to mitigate the risk had been put in place by the mine, they required a long-term solution to adequately minimise danger posed by the rockfall hazard.

Solution provided

Considering the geological condition at the mine, a draping system was recommended. This option would not only proof cost effective, but would be an efficient solution to ensure that the trolley line is protected from rockfall. The draping system comprising 15 000 m² of Geobruigg's QUAROX PLUS® mesh was installed by Fairbrother's trained specialists. The wall in question was approxi-



QUAROX® PLUS draping system is a cost-effective mitigation solution.

mately 110 m high and 270 m long and easily accessible via a haul road. Enough room for installation of anchors to pin down the draping system, was present. The secondary mesh on the QUAROX PLUS® rolled cable nets are factory pre-installed. The Geobruigg® Supercoating finish on the cable nets gives it three times longer lifespan than hot dip galvanized cable nets.

The slope draping solution used at Rio Tinto's mine is a combination of DELTAX® mesh (secondary) and QUAROX® rolled cable nets (3,9 m x 30 m per roll). The superior qualities of QUAROX® rolled cable nets compared to conventional cable nets, allowed for easier and more efficient installation. No extra work is required before

Continued on page 45

View of the QUAROX® PLUS nets with pit underneath.



GBE barrier during installation showing mesh panels pre-installed at factory.



1 - Rockfall barriers

Our flexible rockfall barriers are designed for impact energies ranging from 100 to 8'000 kJ. They are successfully tested in a 1:1 field test and certified in accordance with the Swiss and ETAG Guidelines for rockfall net approvals.

2 - Slope stabilisation

The TECCO® SYSTEM® is appropriate for stabilising steep soil, sediment and rock slopes as well as for retaining walls. The mesh is anchored with soil or rock nails behind the sliding layer pretensioned at a defined force using spike plates at the surface.



We protect people and infrastructure from the forces of nature

3 - Rockfall drape

The TECCO® rockfall drape is a safe and economical alternative for situations, where the catchment area is too small and the calculated rockfall bounce heights as well as the expected kinetic energies are too high for a dynamic rockfall barrier.

4 - Rock slope protection

The SPIDER® spiral rope net is suitable to protect rocks that threaten to break off or slide down from a slope, rock ledges and overhangs as well as unstable rocks formations.

5 - Shallow landslide barriers

Comprehensive 1:1 tests in collaboration with the Swiss Federal Research WSL in three test installations have verified the function of our shallow landslide barriers. In contrast to flexible debris flow barriers, shallow landslide barriers are intended to be applied on unchannelised slopes.

6 - Debris flow barriers

Each of our flexible ring net barriers can stop as much as 1'000 m³ of material derived from rocky torrents containing boulders, trees and other vegetation, while allowing continued water flow; culverts are kept from clogging; road and railway embankments are protected.

Please contact our specialists if you require further information.



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HIGH-STRENGTH GEOGRID REINFORCEMENT MATERIALS

Fibertex South Africa – distributors in South Africa for the German manufactured Naue Geosynthetics range of geogrids – supplies durable PET (polyester) and PP (polypropylene) high-strength geogrid reinforcement materials for engineering applications, including mining, environmental, infrastructure and marine engineering projects.



Secugrid's high strength monolithic welded junctions provide a structurally sound and stable geogrid suitable for basal reinforcement and mechanically stabilised earth walls, including veneer stabilisation and segmental retaining walls.



Fibertex South Africa also supplies Combigrid®, a combination Secugrid/Geotextile composite product. Combigrid delivers reinforcement, filtration, separation and drainage all in one product and is predominantly used in conjunction with soft and low CBR soil, where reinforcing in combination with separation and filtration is needed.



"Secugrid® – a high-performance, soil reinforcement product produced with state-of-the-art manufacturing technology – strengthens naturally unstable soil and subgrades to be able to withstand the loading conditions imposed by modern engineering demands," says Darryn Meisel, national sales manager, Fibertex South Africa.

"Secugrid is available in both biaxial form, for use in basal reinforcement applications and uniaxial form, for use in other markets. These applications comprise mechanically stabilised earth walls, including veneer stabilisation, the segmental retaining wall market, embankment reinforcement and pile cap platforms.

"Secugrid is available in biaxial grades of up to 80 kN/m (ultimate tensile strength) and in uniaxial grades of up to 400 kN/m, or 1 200 kN/m with Secugrid HS®. However, realistic design conditions demand a strength transfer in the range of less than 2%, which is the critical factor."

Geogrid reinforcement decreases the dependency on base course thickness, also extending service life and reducing long-term maintenance needs.

Secugrid is manufactured from extruded monolithic PET or PP strands that are drawn to orientate the polymers into high-tenacity flat bars to achieve a high modulus i.e. high strength at low elongations. This, combined with the NAUE patented welding technology, provides a structurally sound and stable geogrid.

Furthermore, the surface of the bars are embossed, inducing additional frictional interaction with the soil.

This enables the Secugrid to pick up the load transfer quickly through both an interlocking and

frictional effect, with little or no movement in the overlying soil materials.

Secugrid is supplied in rolls and is easy to handle; quick and efficient to install, with minimal demand on labour resources. The product is also highly resistant to biological and chemical degradation and installation damage.

Secugrid is a robust reinforcement material that can be easily and safely installed during virtually all weather conditions, without the need for heavy equipment or special construction techniques.

Panels are joined and continuity is assured with simple overlaps depending on the application. Standard cutting tools can be used for on-site trimming and various geometrical shapes for steep sided slopes can be formed when necessary.

In addition to the standard Secugrid range, Fibertex South Africa also supplies Combigrid® – a combination Secugrid/Geotextile composite product. Combigrid delivers reinforcement, filtration, separation and drainage all in one product. This product is predominantly used in conjunction with soft and low 'California Bearing Ratio' (CBR) soil, where reinforcing in combination with separation and filtration is needed. For example, in base and embankment reinforcement and load transfer platforms of pile caps.

These geogrids are manufactured to stringent international specifications, including EN ISO 9001:2000, ensuring uniformity and high quality.

Fibertex South Africa supplies an extensive range of environmentally-friendly geosynthetic products from its KwaZulu-Natal, Gauteng and Western Cape facilities that encompasses nonwoven and woven geotextiles, gabions and mattresses, drainage pipes and fittings and erosion control and cellular confinement solutions.

The company also supplies soil reinforcing products, including geogrids and geocells, as well as geosynthetic clay liners and geomembranes as part of composite lining systems used in modern landfills and for other environmental protection applications. ❏

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Bridging your expectations

Continued from page 42

unrolling down the slope. Up to 30% reduction in installation time have been reported by contractors. The QUAROX® fits unobtrusively on the slopes and can be coloured using power coating to give it an even better visual appeal. The chain link construction of the cable nets offer much better force transmission than traditional connection by cross clips. Standard support ropes, seaming ropes and shackles are used for the installation.

Other open pit mines where Geobruigg had supplied material for draping solutions, include Sishen Mine, Venetia Mine and Letseng Mine.

Rockfall barriers

At other local mines in South Africa, Geobruigg had been involved in the installation of rockfall barriers as another measure to mitigate rockfalls. Rockfall barriers have the advantage that if a stable foundation can be achieved it is possible to effectively protect the area below the fence without the need to access onto the berm and without enlarging berms. Geobruigg's range of barriers include the GBE and RXE rockfall protection barriers. GBE barriers have passed the approval test in accordance with the ETAG 027 guidelines laid down by the European Organisation for Technical Approvals.

The test involved a vertical drop of at least 25 m/s (90 km/h). All GBE barriers are registered with an official ETA approval number and bear the CE conformity marking. GBE barriers up to 3 000 kJ are pre-assembled as standard and delivered to construction sites with suitable nets mounted to the posts. Furthermore the GBE barriers have a considerably smaller carbon footprint than concrete galleries or other steel constructions.

The RXE barriers had been certified to absorb impacts of up to 8 000 kJ, which equates to a rock weighing 20 metric tonnes travelling at over 100 km/h. RXE barriers have been designed to meet the toughest of challenges, and boasts a low deflection. During maximum impact events, a 1 000 kJ system (RXE-1000) will deflect by only 4,36 m. This implies that the barriers can be installed closer to the object or building to be protected or on traffic routes. It is therefore simple to install. Pre-assembled components also speed up the installation process.

Geobruigg, a reliable partner

It is the task of its engineers (and partners) to analyse the problem together with the client in detail and then, together with local consultants, to present solutions. Painstaking planning is not the only thing you can expect



Installation of the QUAROX® PLUS rolled cable net.

from them, however; since it has its own production plants on four continents, it can offer not only short delivery paths and times, but also optimal local customer services. With a view towards a trouble-free execution, it delivers pre-assembled and clearly identified system components right to the construction site. There Geobruigg provides support, if desired, including technical support – from installation right on up until acceptance of the structure. Geobruigg's South African office is based in Honeydew. <

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LATERAL SUPPORT

in Windhoek

Source: Niel de Klerk

The new office of the Prime Minister of Namibia is being constructed next to the existing Ministry of Finance building. The site location overlooks the city of Windhoek from a hilltop and inspired the architect's vision of designing an environmentally friendly building, rising out of the Khomas Hochland.

➤ Furthermore, in order to minimise its geographical footprint, the multi-storey building will have a basement staff car park.

Analysis of the mica schist (a crystalline metamorphic rock) formation was undertaken by Stefanutti Stocks Geotechnical and its design engineer, and indicated that the material dipped in a northwesterly direction.

This meant that the excavation's southerly and easterly walls would be most vulnerable and as the excavation will also be at its deepest here (18,9 m high at its highest point with a 200 mm thick off-the-gun gunite

finish) precise lateral support is required.

Bulk earthworks and site preparation for the building saw a total of 53 000 m³ of rock removed. However, as the excavations progressed the soil conditions required the appointment of a blasting contractor.

Some 10 000 m³ of hard rock was blasted over weekends due to local blasting regulations (which specify the evacuation of within a 500 m radius) and the site's proximity of the Ministry of Finance and Parliament.

Once the excavations were completed Stefanutti Stocks Geotechnical began with the installation of the lateral support to

EYE-CATCHING RETAINING WALL

Auas Hills Retirement Village, situated in Auasblick, is a sought after Retirement Village in Windhoek.

➤ It provides a tranquil setting and caters for all the needs of the more senior citizens, providing facilities like a well equipped restaurant where you can enjoy nice meals, an onsite laundry, a day care centre, pharmacy, physiotherapist, biocineticist and a high care centre (should it be necessary).

During the planning stages it became evident that earth retaining measure would be needed to stabilise the exposed embankments resulting from excavation activities. Steffanutti Stocks, the main contractor on site, approached Namwall, Windhoek based Namibian licensee for Terraforce, to provide a design for Terraforce block retaining walls.

Says Chris Schutte, of Namwall: "We consulted with Terrasafe, Terraforce's professional design service, and had a design ready in no time.

Most of the proposed rock face block walls were pretty straight forward, with the higher ones requiring a double skin of L12 blocks for extra reinforcement. In addition to the walls inside the property, a river running alongside the retirement village needed erosion control

retaining walls, in case of heavy water run-off during the rainy season. In total around 25 000 blocks were installed."

The project was completed in February 2015, with landscaping by Andre's Landscaping adding the final touches to the walls. ■





A Furukawa drill rig drilling 200 mm diameter holes for soil nail installation.



Pictured is a typical section through lateral support wall.

Gunite consists of crusher dust, sand and cement. On site water is added to this dry mixture while being sprayed with a compressor at +-7 bar. The lateral support to the new office of the Prime Minister is a permanent gunite wall, i.e. no additional structure will be constructed in front of it, and it must support the retained soil over the three-metre spans between the slabs of the building for the lifetime of the building. These lateral support walls will require two layers of reinforcing mesh and gunite with a design strength of 25 MPa.

the walls, consisting of 7 200 metres of temporary soil nails with a permanent 4 170 m² gunite wall.

The wall movement of all four walls was measured weekly throughout the 26-week duration of the project. This measurement process, undertaken to guarantee quality, includes the surveying of fixed points on the wall by means of a total-station as well as a plumb-bob system at the highest points of the walls.

Every morning, prior to work commencing on site, the plumb-bob system was measured and recorded in the daily site diary. Surveying of all wall movement reflectors was undertaken on a weekly basis,



usually on a Friday morning at sunrise before any operations on site would start.

The lateral support project ran over a period of 105 days and was completed on schedule in the middle of May 2015. The construction of the buildings have however been put on hold due to the drought the country is experiencing. <

The Stefanutti Stocks Geotechnical site crew, comprising of South African expats and a number of local Namibian residents who have been trained as rockcreter operators and nozzle men.



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CROWN
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Understanding WOOD PRESERVATION

There are two types of wood preservation; primary (industrial) and secondary (DIY). Primary wood preservation is the impregnation of timber with a wood preservative chemical like CCA, Creosote, Borate, TBTN-P or Azole Permethrin, using prescribed industrial processes.

> This increases the durability and resistance to fungal attack, wood borers and termites. This pre-treatment prior to use is prescribed in SANS standards and mandatory compliance is regulated through regulations and compulsory specifications, along with third party product certification.

Supplemental or remedial preservatives on the other hand contain biocides which are included in mainly solvent or oil based solutions (in some cases wood finishes or sealers), and are applied in a DIY setting by brush, paint or spray to stop further attack. These require an on-going maintenance program to remain effective as it is merely a surface application with minimal penetration.

It's important to note that most exterior wood sealers or varnishes, contain no biocides and only protect against weathering, moisture and UV rays, but not against fungal and insect attack and should rather be referred to as protectants than preservatives.

Why preserve timber?

The natural durability of our commercially grown and used plantation species like Pinus and Eucalyptus (gum), is low, rendering it susceptible to insect and fungal attack; therefore it is imperative to preserve the timber.

Choosing the correct treated timber

The following SANS standards apply to treated timber:

- SANS 457 – droppers, guardrail posts, building, fencing and agricultural wooden poles
- SANS 753 and 754 – wooden poles for transmission and telephone lines.
- SANS 1288 – All other preservative treated timber, e.g. sawn structural, flooring, etc.

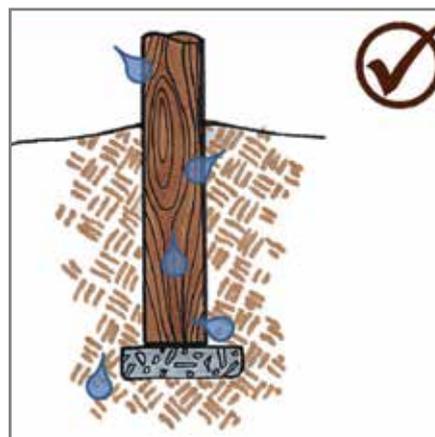
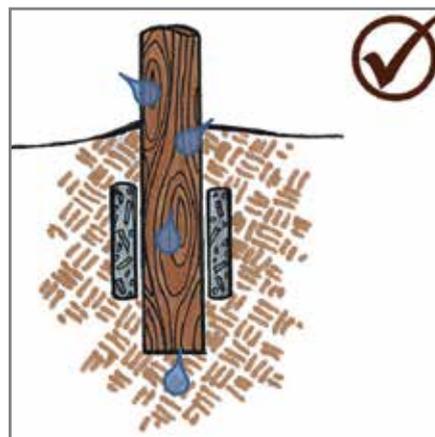
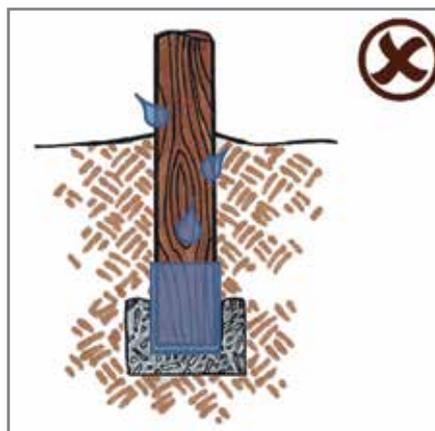
These standards specify a Hazard Class system (H Classes), which categorises treated timber into different end-use applications based on different exposure conditions and risk of biological attack.

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 applica-

tions). 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



Safety precautions and warnings

When sanding and sawing CCA treated wood wear a dust mask and safety glasses, and work in a well-ventilated area. Wash work clothes separately. Treated wood must not be used for: firewood, baby toys, furniture which may be chewed on by infants, food utensils or storage containers, beehives, nor should treated wood shavings or sawdust be used for animal litter or where it can become a component of animal feed.

Disposal

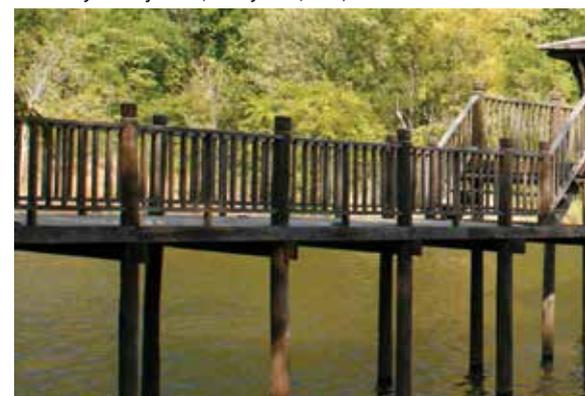
Treated timber waste is not regarded as hazardous waste material; however, treated wood off-cuts and waste should not be allowed to accumulate, but should be disposed of at a registered disposal or landfill site. It is important not to burn treated wood off-cuts and waste or use it for firewood for food 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.

Choose the correct hazard (H) class

H6 – High Hazard: Prolonged immersion in sea water (marine piling, jetty cross-bracing, landing steps, retaining wall, etc.)



H5 – High Hazard: Outside in contact with heavy wet soil or in fresh water (piling, substructure for walkways and jetties, vineyards, etc.)





H4 – High Hazard: Outside in the ground, subject to periodic wetting and leaching (fencing and structural posts, landscaping stakes, pergolas, etc.)



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H3 – Moderate Hazard: Outside above ground, subject to periodic wetting and leaching (cladding, decking, stairs, balustrates, log homes, etc.)



H2 – Low Hazard: Inside above ground, protected from wetting and leaching (roof trusses, framing, panelling, laminated beams, flooring, etc.)



New and innovative TIMBER FASTENERS

For 60 years, Simpson Strong-Tie has been recognised as an innovative manufacturer of high quality construction products across a broad range of products including connectors, fasteners, anchors and repair, protect and strengthening systems.

The company's success can be attributed to its focus of helping its customers make stronger and safer structures. A customer oriented focus along with a commitment to research and development of new ways for construction has been critical in making Simpson Strong-Tie synonymous with high quality construction solutions.

In the past Simpson Strong-Tie within South Africa promoted one of its popular tools, the Quik Drive® auto feed fastening system. The Quik Drive® systems are ideal for a broad range of fastening applications to increase productivity with quick-loading screw strips, precise counter-sink adjustment, and a patented auto-advance mechanism. All designed to deliver speed and accuracy when using screws for many applications.

The Quik Drive® fastening system provides consistent performance, no wastage as every screw on the collated strip can be driven and all whilst providing labour saving speed of install. Perhaps best of all, the system allows fastening from a standing position for decking and other timber and flooring applications. The range includes fasteners for decking in galvanised steel and stainless steel as well as specific fasteners for timber to steel applications. All of our fasteners are designed and manufactured to a high standard to ensure that their

performance is to the high standard that is expected from all Simpson products.

Simpson Strong-Tie has also released a range of structural wood screws that are able to replace bolts for some timber to timber applications. The SDWS screw is suitable for the connection of multi-ply Trusses as well as purlin to truss connections and truss to top plate connections.





PROMOTING TREATED TIMBER AND THE USE OF TREATED TIMBER PRODUCTS PRODUCED BY SAWPA MEMBERS

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



H2



H3



H4



H5



H6

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:

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With engineered design values for all sizes they can also be used for fastening glulam and solid timber members in cabin, shed and stable construction where performance is important. Imagine the speed of using a screw without pre-drilling as opposed to a bolt? Knowing that the screw has loads that allow it to replace bolts is a great benefit when fastener structural timber members of all types and sizes. The SDWS screw is a great alternative for timber fence pole connections and the connection of timber frame panels with a double barrier coating to ensure that it has better corrosion properties than some galvanised fasteners.

The features on the screw allow for quick installation, saving time and money while achieving high clamping force with tested engineering loads so they can be used with confidence. We also include clear head markings so that the screws are identifiable after installation.

Improve the quality and durability of your work whilst reducing time and money spent on the job with the Simpson Strong-Tie® Quik Drive® and structural screw fastening solutions. For more technical details, distribution or an on-site demonstration, contact the company's Cape Town offices. <



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Truck Bodies



CAPPING prestigious Reddford House School

LCP Roofing, South African leader in roof truss technology, recently supplied and installed an impressive 8 820 m² of timber roof trusses of varying styles and configurations at the prestigious Reddford House School in Northcliff, Randburg.

> The highly acclaimed Reddford House School enjoys easy access from the nearby N1 Western Bypass Highway. The site is expansive and is home to two main buildings, including an Early Learning Centre and junior/senior primary school, which are both accessed via a centralised gatehouse.

The architectural design and layout of both the main buildings allow for optimal functioning and maximum usage of the space, and upon arrival, the sheer size and aesthetics of the structures make an immediate and profound impact on the viewer.

LCP Roofing was tasked with fabricating and erecting exposed timber feature trusses at the gatehouse, main building entrances, piazzas and the main hall. The client brief called for a number of exposed timber roof trusses in as many viable spaces in the buildings as possible, and even the walkways were to be exposed and supported by laminated Pine beams at the eaves. While structural soundness was paramount, the aesthetic value of the project was a prominent consideration for the client.

“At LCP Roofing, we’re no strangers to supplying exposed timber roof trusses and are finding that this trend is on the rise,” says Paul Guassardo, LCP Roofing sales representative. “Exposed timber roof trusses are beautiful to look at and add a sense of elegance, grandeur and volume to a space, so it made sense that the brief called for extensive use of exposed timber roof trusses, which reflect and pay homage to the values and ethos of the school below.”

The architect, Michael Bishop of Century Property Developments, provided detailed sketches of the client’s requirements, to which the LCP Roofing team answered with precision, ingenuity and attention to detail. According to Lyndsay Cotton, LCP Roofing general manager, “There was certainly nothing small about this project and it represented an exciting challenge for our team to put our resources and expertise to the test. Our highly competent design office turned the concept sketches into workable blueprints that allowed the aesthetic components of the project to push boundaries, all while maintaining the highest level of structural integrity, collectively making for an outstanding end result.”

Entrances leading on to double-volume piazzas and wide covered walkways framing a central playground, evoke a sense of quality, comfort and security, and the main hall, which is situated in the junior/senior primary school building is the proverbial jewel in the crown with its vast, 19,5 metre wide span exposed modified scissor-with-top-hat trusses that draw – and hold – the eye upwards.

“The trusses in the main hall proved to be quite challenging, not only from a design perspective, but from a logistical point of view. With a pitch of 27 degrees over such a span, a one-piece truss with a continuous top and bottom chord would simply be too big to deliver,” remarks Guassardo.

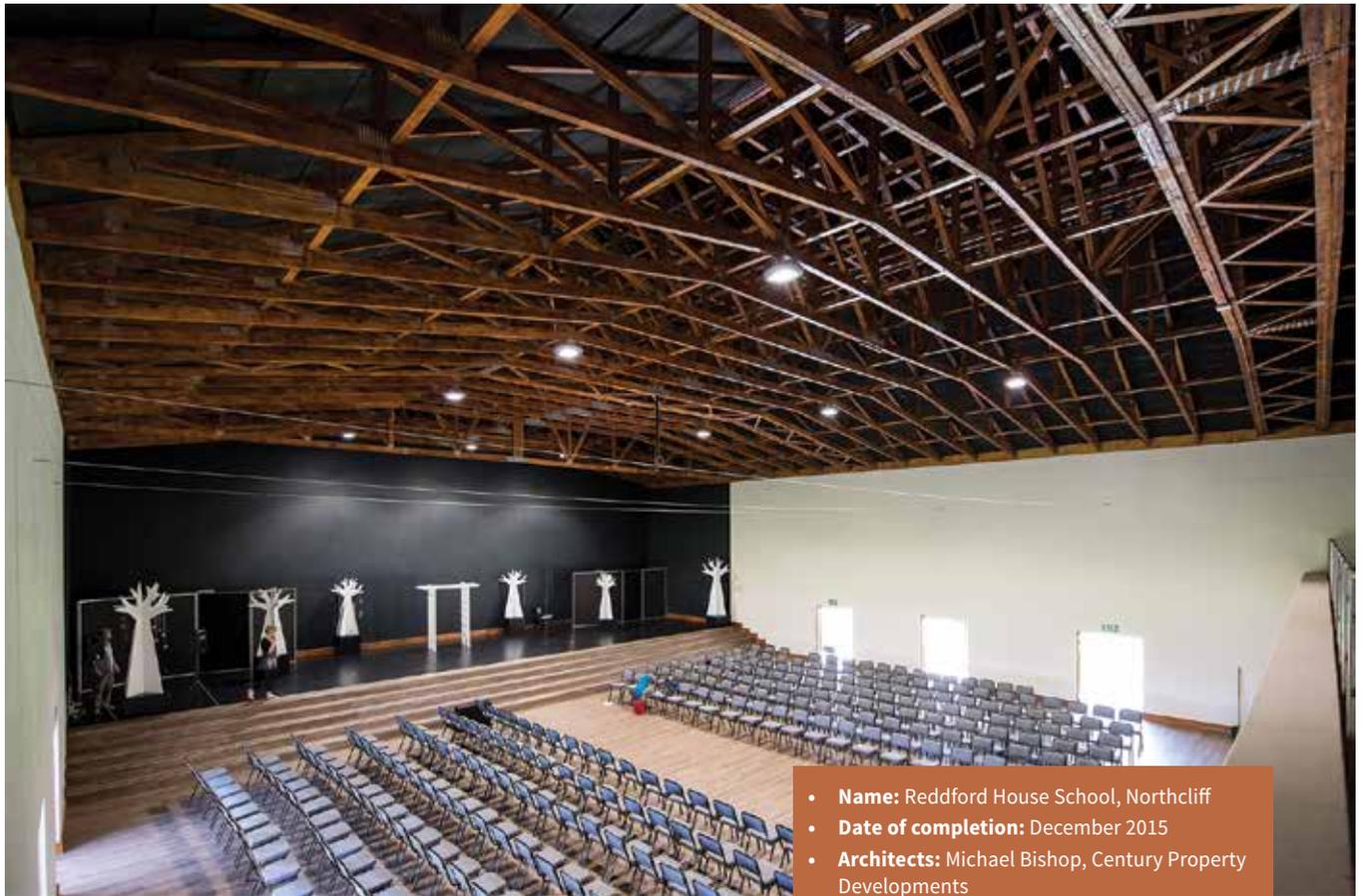
Once completed, the modified design, as per industry requirements, was sent to LCP Roofing’s supporting engineers for final specification on the specific fixing, which was ultimately the use of a sliding shoe on the wall plate on one side of the building as well as the necessary bracing details.

Once fabricated and delivered, the scissor trusses had to be assembled on site and the top hat trusses were erected only once the exposed scissor trusses were in place. A mobile crane was required to hoist the 19,5 metre span trusses above the double volume of the hall and then to lower them, one by one, into position. The crane was only available for a limited period of time, so the LCP Roofing team worked as efficiently as possible, using the apron of scaffolding along the side of the walls of the hall provided by the principal contractor.

Life lines were not an option with the trusses having to be lowered from above, but once the trusses were in place and temporarily braced, these were put in place and permanent bracing and anchoring could be done. The top hat trusses were then erected and fixed on top of the modified scissor trusses.

Timber usage, sustainability and energy efficiency

Timber used in the fabrication of the trusses was a combination of Grade 5 and 7 structural SA Pine as well as structural SA Pine laminated timber beams. “The various grades of timber are determined by the



- **Name:** Reddford House School, Northcliff
- **Date of completion:** December 2015
- **Architects:** Michael Bishop, Century Property Developments
- **Main contractor:** Murray & Dickson
- **Roofing supplier & erector:** LCP Roofing

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software we use under license from International Truss Systems for the design and fabrication of timber roof trusses,” notes Cotton, who adds, “Many factors, like the span of the building, the pitch of the roof, the type of covering required, and the type and location of ceilings to be installed, help determine the grade of timber required for a roof structure. According to a strict (and necessary) requirement imposed by the National Building Regulations, all timber used in this project was structural timber.”

Specifically sourced from sustainable and responsibly managed plantations, all timber used by LCP Roofing is considered a renewable resource. “Through effective, responsibly managed and sustainable forestry, farming of structural timber enjoys great success in South Africa, ensuring us the availability of structural timber as a raw material well into the future,” says Guassardo. “The entire production process, from transforming a tree into usable timber, transportation thereof, fabrication and final erection to form a structure, requires less energy in comparison to readying other structural materials for the same application, and has a much lighter impact on the environment.”

In an effort to reduce the energy embodied in erecting the timber roof trusses, apart from the erection of the roof trusses in the main hall, the entire school’s roof structure was responsibly erected and handled manually, negating the continuous use of expensive and energy-hungry lifting equipment and machinery. In addition, solar geysers and panels were installed, which will go a long way to reduce electricity usage and associated costs for the school into the future, enhancing the structure’s continued sustainability.

“Reddford House School is a well-respected institution with the highest standards in all regards. Having been appointed as a sub-contractor for this project represented a unique opportunity for our team and while the project requirements were challenging, they were refreshingly stimulating and pushed the LCP Roofing team to dig deep for elegant solutions to complex requirements,” says Cotton.

He concludes, “The end result is an impressive, expansive roof structure that will house the school for many years to come and, on the underside, exquisite timber roof trusses that are worthy of being exposed and that pay tribute to an institution committed to educational excellence.”



FEEDERS BOOST road quality

By Paul Crankshaw

As road authorities around the world lean towards specifying the use of material feeders to improve asphalt paving quality, Wirtgen South Africa has put its Vögele MT3000 unit out on test for Power Construction on the N14 highway rehabilitation project between Krugersdorp and Pretoria.

➤ The N14 is a critical arterial route from the southern and western regions of Gauteng to the north, and the multimillion-rand project will repair paving and give this stretch of road another 20 years of design life.

The features and reliability of the Vögele Powerfeeder range, according to Wirtgen SA (a wholly owned subsidiary of Wirtgen Group), are expected to make these units a popular choice for contractors in southern Africa – especially when economic conditions allow greater investment in road maintenance and new road networks. The Vögele brand holds about a 60% share of the global feeder market.

“Continuous paving is clearly the future of quality roads in many countries, and feeders are a key element of this process,” said Michael Hecker, senior sales manager S. Europe-Africa of Germany-based manufacturers Joseph Vögele AG. “Every interruption to paving – such as asphalt running out, jolting from a feed truck docking into the paver, or material segregation – immediately affects the quality of a paved road. So it is not surprising that the use of a feeder is increasingly becoming mandatory in invitations to tender for large road contracts.”

Established and emerging contractors

Wirtgen SA sees substantial future opportunity in the road building sector in southern Africa despite the current depressed environment – through the company’s branch and dealer network in South Africa, Botswana, Malawi, Mozambique, Namibia and Zimbabwe; its Gauteng office also manages the Lesotho market, and its Durban branch the Swaziland market.

“We believe that many roads built over past generations are now needing rehabilitation,” said managing director Heinrich Schulenburg, “and we are very active in this market through our feeder, paver, milling and recycling product lines.”

Schulenburg emphasised the company’s efforts to align its sales strategy to customer needs, especially in finding affordable financial options for acquiring and operating machines in this difficult economic climate.

“This is also to accommodate the entry of emerging contractors into the road construction sector,” he said. “It is not always an easy niche to break into, so we are working closely with these customers from an early stage in the tendering process, to provide workable solutions to the challenges they face.”

He said the introduction of the MT3000 feeder range to Southern Africa had been positively received, with three machines already sold; he expected the local reputation of the Wirtgen Group to attract new and existing customers, spurred by the engineering quality and operational efficiency of the units.

More capacity for non-stop paving

To avoid standing time for the paver, a continuous supply of mix is vital; this requires

the logistics of asphalt delivery to be efficient and finely tuned, and it needs large quantities of mix to be transferred easily and reliably between truck, feeder and paver. The Vögele MT3000 boasts a large receiving hopper that allows it to take the load of a complete 25 t feed-truck in about one minute. This allows a minimum of 35 t of mix to be accommodated in the overall system of feeder and paver, so that up to a maximum of 1 200 t can be conveyed every hour.

“This means that the paver always has enough material, and can handle high daily lay-down rates of 4 000 t or more,” said Hecker. “This is particularly important in major road projects such as highway rehabilitation, where fast lay-down rates are necessary to avoid traffic disruptions and to ensure efficient delivery of public services.”

A paver working with a Powerfeeder can achieve higher continuous paving speeds of up to 5-7 metres per minute.

Non-contact feed process

Another important element of uninterrupted asphalt paving is ensuring no contact in the transfer of material between the feeder and the paver. To accomplish this, Vögele uses a robust, sensor-based distance control system that employs mechanical or optical sensors that make sure the feeder automatically maintains the correct distance from the paver.

“Our MT3000-2 Offset model uses a control system comprising three individual lasers,” said Hecker. “The system calculates

Asphalt is tipped into a Vögele MT3000-2 Offset feeder, in turn conveying mix into a Vögele paver on the N14 highway maintenance contract in Gauteng.



SERVICE CONTRACT TRANSFERS RISK

Babcock International in Africa is one of the continent's industry leaders in providing comprehensive infrastructure and reliable technical support to some of the world's leading heavy duty machinery brands.

As the exclusive regional distributor of Volvo and SDLG construction equipment, Tadano and SENNEBOGEN cranes, Winget concrete handling machinery, and rigid and articulated haulers from Terex Trucks, Babcock has built long-term relationships with its customers by delivering to the highest standards long after the sale has been made.

David Vaughan and Ben Buys, sales director and operations director respectively for Babcock's Equipment division, discuss how Babcock's tailor-made aftersales service contracts are increasing productivity for customers, protecting the residual value of owners' machinery, and transferring risks associated with maintenance away from its customers.

"Our long term replacement strategies, fleet maintenance and technologically advanced services are proving to be increasingly attractive options to our customers, particularly in the mining industry where machines operate long hours and any downtime translates into lost revenue," says Vaughan.

According to Buys, Babcock is currently ranked among the top three companies in southern Africa in terms of servicing facilities and technological training. He adds that a major portion of Babcock's turnover is generated by customer service contracts with over 500



premier brand name machines on contract at the present time.

He explains that as part of Babcock's comprehensive after-market support capabilities, every customer has access to the following services: Power by the Hour, Volvo CareTrack, and a re-build offering.



Power by the Hour

Power by the Hour provides the owner with a fixed maintenance cost over an extended period of time based on a fixed sum per hour of machine usage. Machine owners are therefore assured of an accurate cost projection and largely avoid the costs associated with breakdowns. The contract includes the option of purchasing an extended warranty to give customers further peace of mind.

These tailor-made contracts transfer the risk of component failure away from the customer and relieve the owner of the need to stock components. There is no inventory for the customer to carry as Babcock technicians are equipped with all the necessary components and tools to service the machinery on site, thus improving up-time and productivity.

ment telematics system which transfers data from machinery to Babcock's dedicated internal service department. This remote monitoring system can be used to set service reminders in advance allowing sufficient time for the necessary resources to be deployed, and as an early warning system for potential component breakdown.

Re-Build

The rebuild offer is specifically geared towards the mining sector where machinery rapidly clocks up high production hours. Once a machine's warranty has lapsed, customers are offered the option of refurbishment as opposed to trading in or buying new, where possible. This cost-saving alternative provides further hours of productivity from the refurbished machine, while Babcock parts and services extend the warranty for an additional 12 months. ■

CareTrack

CareTrack is the Volvo Construction Equip-

ensuring that the distance remains constant, even if one or more sensors are blocked – by passing workers, for instance."

The system also includes an anti-collision feature and an emergency stop function, should the feeder stop for some reason – so the feeder operator can focus fully on the transfer of material.

Importance of homogenisation

"Good paving needs asphalt to arrive on site

in an optimal condition," he said. "Too often, of course, this does not happen – as it is not unusual for the mix to become thermally segregated due to cooling near the sides and floor of the tippers."

To address these problems, Power-feeders are equipped with transverse conical augers in the base of the receiving hopper, which homogenise the material so that the slightly cooler material from the tipper bin is evenly mixed with the warmer parts before it leaves the feeder hopper. Then, as the mix

is conveyed from the bin, its temperature is stabilised by a system of non-contacting, infra-red heating panels. Along with the trough-shaped design of the conveyor, this ensures that no mix remains stuck to the conveyor.

A specially designed extra hopper in the Vögele paver is optimised for efficient material flow and also prevents the mix from sticking – so that it is fed into the paving process without leaving residues.

"The technology not only counteracts thermal segregation, but also mechanical segregation," said Hecker. "These aspects complement each other, because an ideal temperature distribution can only ensure a durable road if the grain size distribution in the mix is right."

He said the MT3000 range also boasted persuasive cost-of-ownership costs, including fuel consumption of just 17 litres of diesel at a lay-down rate of 300 t/h – compared to the equivalent 40 litres among some competitors. Transport costs are lowered by the shorter length of the unit and its compact 3 m height. ◀

LEFT: As the tipper deposits mix into the MT3000's hopper, the transverse conical augers homogenise the material to optimise road surface quality. RIGHT: The simply arranged operator's console on the MT3000, and the ergonomics of the operator's platform, enhances safety and ease of operation.



PREFERRED COMPACT MACHINE SUPPLIER

“Wacker Neuson has made a difference to my business and I plan to replace my entire fleet of machines with Wacker Neuson equipment in the very near future,” states Leon van Vuuren, owner of Floor Maintenance Equipment Services.

Based in Benoni, Gauteng, Floor Maintenance Equipment Services has been trading in South Africa for 21 years. In addition to repairs and maintenance on industrial cleaning equipment, the company also rents out compact equipment to amongst others, the construction, airport, road building and food and beverage industries.

Van Vuuren was extremely impressed with his first 701 skid steer loader that he purchased from Wacker Neuson a little over a year ago. “When I later needed to upgrade to a bigger model to meet different application requirements, I had no hesitation in deciding to buy the larger Wacker Neuson 901 skid steer loader and I’ve never looked back. These machines deliver top quality power, are exceptionally operator-friendly and easy to manoeuvre, features which my customers truly appreciate.”

Using many different attachments such as milling tools, augers, forks, buckets and breakers on his skid steer loaders, Van Vuuren appreciates the fact that both machines can conveniently take virtually any attachment, including hi-flow or standard-flow. “This remarkable versatility saves me a lot of time and money,” he adds.

When it comes to after-sales service, Leon says here too Wacker Neuson comes up trumps and he compliments the company’s sales team and Regional President for sub-Saharan Africa, Eugene Brown, for their helpful and hands-on approach. “I will always highly recommend Wacker Neuson to anyone. When there is a problem, Wacker Neuson sorts it out, and with their national footprint, my life is made much easier.”

As I build my Wacker Neuson fleet, I look forward to further strengthening the relationship with this professional company who is without any doubt my preferred compact equipment supplier,” says Van Vuuren.

“We are really fortunate to have customers like Leon, who are prepared to walk the path with us in building a strong reliable partnership between our companies,” says Brown. ■



Wacker Neuson South Africa – preferred compact machine supplier for Floor Maintenance Equipment Services.



Wacker Neuson 901 skid steer loader delivers top quality power for Floor Maintenance Equipment Services.

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IPSOS QUALITY AWARDS

Isuzu was named one of the top performing brands by customers in the latest Ipsos Quality Awards for sales and service experience in the Light Commercial Vehicle segment.

The coveted Ipsos awards measure the vehicle owners’ satisfaction when purchasing and servicing a vehicle and recognition is given to top achievers in the following categories:

- Passenger Vehicle (PC) Purchasing Experience
- PC Servicing Experience
- Light Commercial Vehicle (LCV) Purchasing Experience
- LCV Servicing Experience

Isuzu scooped two gold awards, one for Purchasing Experience (LCV) and one for Servicing Experience (LCV) and after achieving gold four years in a row, Isuzu earned the platinum award for consistently achieving excellence in the LCV Purchasing Experience.

Brian Olson, General Motors sub-Saharan South Africa vice president of sales, service and marketing, commended the sales and after sales teams for excellent performance.

“Putting the customer at the centre of every-

thing we do, is one of our core values and we are pleased that Isuzu delivered on this promise. We continuously strive to meet and exceed our customers’ expectations and the IPSOS Award is testimony to this,” says Olson.

The legendary Isuzu KB is proudly built at GMSA’s plant in Port Elizabeth for almost 40 years. “Our skilled workforce knows what it takes to build a bakkie. Over the decades the men and women on the lines have repeatedly proven their ability to not only build in durability, but quality too,” says Olson.

He further explained that GMSA spends more than 60 000 hours per year to train sales and technical staff with critical skills necessary to deal with customers and products and to improve the overall quality of customer experience. “We pride ourselves in supporting our customers and their Isuzu’s with factory trained technicians, using only Genuine parts in our bakkies. Isuzu has an outstanding reputation for being trustworthy and reliable. We are committed to provide our customers with



Patrick Busschau, business unit director of Ipsos hands over the Platinum Award to Brian Olson, General Motors sub-Saharan South Africa vice president of sales, service and marketing.

service of the highest standard,” says Olson.

Ipsos, which is one of the world’s largest market research companies, has been conducting syndicated market research on behalf of the South African automotive industry since 1991, albeit under various names: Proactive Marketing, Synovate and Ipsos. ■

KERBS AND PAVERS FOR MEDICAL FACILITY

In June 2015 the construction of the new 200 bed Modderfontein Private Hospital began. This new development estimated at a cost of R200-million will include a sports clinic and a 100 bed sub-acute facility with a parking area suitable to accommodate the vast number of visitors and emergency vehicles expected at the hospital.



Technicrete ISG was contracted to supply the precast concrete kerbs and interlocking pavers for the project by Rhino Civils. "While price was a pressing consideration when sourcing kerbing and pavers for the Modderfontein Private Hospital, it was not the only one. Service and especially reliable delivery are other key elements that we consider before choosing a supplier for projects we are subcontracting to," says Grant Oberem, contract's director for Rhino Civils.

"Technicrete met all of our required criteria; in addition, their products offered a very high quality and aesthetically pleasing finish, which is important to the surrounds of a healthcare facility. We at Rhino Civils have earthworks, kerb laying and paving teams with 15-20 years of experience between them. The fact that our kerb and paving teams can install between 100 m of kerbing and approximately 800 – 1 000 m² of paving per day makes the partnership one of natural synergy: the superior Technicrete products installed professionally by the Rhino Civils team resulting in an outstanding finish," says Oberem.

ZS Coetzee, Technicrete ISG's sales manager for Gauteng adds, "Rhino Civils sourced Figure 3 barrier kerbs and Figure 7 semi mountable kerbs in addition to Double Zig Zag (DZZ) 60 mm and 80 mm grey pavers. Our products speak for themselves.

They have been chosen for many major projects over the years and are highly regarded within the industry and end-users for their durability and quality. The kerbs can be used as edge restraints in the construction of roads, kerbs and gutter systems while the DZZ interlocking pavers form a continuous and hard wearing surface that is ideally suited for commercial parking areas as well as heavy-duty industrial areas, roadways and depots, making the DZZ extremely application versatile," says Coetzee. The Modderfontein Private Hospital project was completed in April 2016. ❏

CONTRACTORS' RESPONSIBILITY

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Many industrial organisations make use of contractors to fulfil certain aspects of their operations. The contractor sends their employees to report to the client's site to fulfil their duties, yet these employees are not part of the industrial organisation.

Many companies have now made it the responsibility of the contractor to test their own employees prior to arriving on site.

Subcontractors' employees who test positive for alcohol and drugs on industrial sites are typically blacklisted from the site for up to five years and after a number of strikes the company themselves may be blacklisted.

The Occupational Health and Safety Act provides that employers should not allow any person who is under the influence, or who appears to be under the influence of alcohol or

drugs to enter into the workplace. As the site owner is liable for any accidents or incidents that occur on its premises, it is vital for contractors who work with them to conduct alcohol and drug testing on all their own staff.

The benefits

Performing regular alcohol and drug testing on employees can help a company lower its accident rates and reduce financial losses associated with these accidents.

It also lowers absenteeism rates and reduces alcohol abuse in the workplace, leading

employees to perform their jobs more effectively.

It is vital for contractors to invest in reliable breathalysers that can test quickly and efficiently so they can test as many people as possible. It is important to purchase business equipment as an investment, rather than buying the cheapest model, as a less costly model may malfunction or break more often, costing time and money in repairs.

Cheaper models may also stop working after around five hundred tests, requiring them to be recalibrated, whereas a quality model may perform at least ten thousand tests before it needs recalibration.

The breathalyser should also be SABS approved and use an electro-chemical fuel cell sensor, as it provides the most reliable readings and is favoured by the Commission for Conciliation, Mediation and Arbitration (CCMA) and the labour courts when there are disputes. ❏



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GLOBAL ACQUISITION FOR FALL ARREST BUSINESS

MSA Africa's potential for growth in local market share in 2016 is considerable, following the late-2015 acquisition of UK-based Latchways by the MSA Group. Latchways is a specialist in the design and manufacture of horizontal lifelines and vertical fall arrest systems that are used in the utilities, telecoms, construction and aircraft markets.



> Latchways employs around 250 people globally and had 2015 revenues of approximately USD50-million. The transaction is valued at around USD190-million, and significantly broadens the global MSA Group's existing line of fall protection products, while strengthening the company's position in the global fall protection market, which is estimated to be up to USD2-billion globally.

MSA Africa director Colin Oliver indicates that the Latchways range is entirely different, yet perfectly complementary to the MSA range of fall protection solutions. He believes that the product range now has a better reach into Africa, thanks to a larger network of existing resellers and distributors that have direct support from the OEM.

"This synergistic partnership offers a high-quality turnkey solution to the market that is backed up with unrivalled after-sales service. Adding the Latchways range to our existing solutions is beneficial to our customers, as we now provide the end-user with a comprehensive portfolio of fall arrest solutions that can be used individually, or in conjunction with one another," he states.

Oliver anticipates that MSA Africa has the potential to grow its fall arrest business significantly during the course of 2016. "This acquisition holds enormous potential for us to dramatically expand our specialised fall protection portfolio to potentially become the largest across existing sub-Saharan African markets, while penetrating new sectors, such as aviation," he concludes. ■

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CEMENTING GROWTH OF CONCRETE PRODUCT MANUFACTURERS

South Africa is home to a vibrant concrete product manufacturing industry, ranging from small to large scale manufacturers, with many of these turning to an independent third party to advise them on best practice in terms of concrete technologies.



> AfriSam's Centre of Product Excellence has been assisting the country's leading concrete product manufacturers (CPMs) to optimise their concrete mix designs while at the same time reduce their total manufacturing costs by advising them on the best selection of materials for their production processes.

Mike McDonald, manager of AfriSam's Centre of Product Excellence, says having access to this level of technical input and knowledge transfer is a significant advantage for many of these companies that do not have internal cement technologists.

Importantly, the AfriSam Centre of Product Excellence has also helped many new players establish a presence in the market by imparting essential knowledge on the cement, aggregates and sand required to manufacture a quality product, and particularly early on in the conceptualisation stages of these factories.

McDonald says incorrect selection of materials not only has a significant impact on the quality of the end concrete product, but also on the cost of manufacturing.

One of AfriSam's strengths is its vast footprint with 17 aggregate quarries countrywide that produce materials according to the South African National Standards (SANS) 1083 specification.

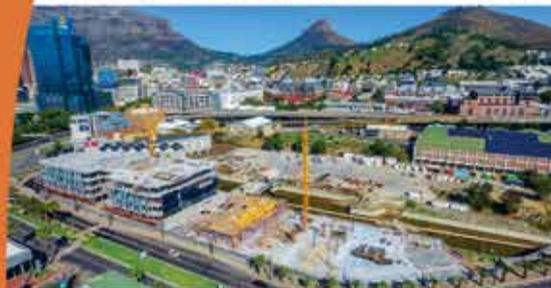
Based on its close interaction and collaboration with this market, AfriSam has also developed a cement that meets the unique requirements

of the sophisticated Gauteng CPM market. AfriSam's Rapid Hard cement meets the high early and late strength requirements of the industry.

By using this AfriSam cement, CPMs have also reduced their cement consumption, while achieving better finishes and durability traits of their concrete products. ■



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