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> CONTENTS

04 QSS COULD HELP STAMP OUT CORRUPTION South Africa should follow Nigeria's example.

06 MAYBE SA'S FIRST GREEN SCHOOL? A Johannesburg school may be the first educational facility to go green.

14 SOLAR PHOTOVOLTAIC ENERGY FOR CORPORATE BUILDINGS Including green electrical generation in design.

16 SANDTON AN EPICENTRE FOR GREEN BUILDING IN AFRICA The annual Green Building Convention has moved.

25 COMPLETED ON SCHEDULE AND BUDGET The Mulilo-Sonnedix-Prieska PV project is a R1,3-billion project.

28 BUILDING ALMOST ENTIRELY WITH SCRAP MATERIALS A highly unusual challenge for De Leeuw in Namibia.

31 MAITLAND RIVER MOUTH PIPELINE Sika was involved in a refurbishment project.

36 AWARDS FOR EXCELLENCE Three of the five trophy winners in the CMA Awards were roads related.

40 PULLING OUT ALL THE STOPS ON ROAD BUILD Raubex is using quality materials on a Free State project.

44 TRIED AND TRUSTED Roadspan explains why it used Vögele machines.

46 TOWARDS A TRANSPORTATION DIVISION Basil Read's Roads Division is becoming a transportation division.

50 UNDERSTANDING CHANGES IN LEGISLATION There have been changes to environmental authorisations.

62 SERVICES TO KEEP CONSTRUCTION WHEELS TURNING Connectivity is driving the quality of Scania's services.



20 ON THE COVER

Reviewing the FAW commercial vehicle range, it is clear that FAW China has made great headway in adapting its products to match customer demands across various world regions.

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1

REGULARS

4 Marketplace

14 Environment & Sustainability

18 Property

22 Project & Contracts

58 Equipment

64 Products & Services

EDITOR'S COMMENT



Infrastructure will play a vital role in how African economies can diversify its offering – to make them both competitive and less reliant on the Far East. Pictured in the Kwale mineral sands export facility in Kenya.



In this issue there is an interview with Bruce Morton, the executive officer of Basil Read's Roads Division. He explains why this division is increasingly becoming a transportation division. For him, it is no longer about a roads division building a product, in isolation. It is about the bigger picture: how roads form part of a country's infrastructure; how it can become part of the national imperative.

2

This is applicable in the African context where infrastructure is so lacking. The wealth of commodities that Africa possesses can often not be transported to ports to, in turn, create wealth for the countries of origin.

Sadly, there has now – following a drop in commodity prices and China's weaker demand for Africa's resources, been a slowdown in the demand of even those commodities that can be transported to ports.

It seems to be a vicious cycle and one can only predict that there may now be even less need to develop infrastructure networks. This does not have to be the case.

The New Partnership for Africa's Development (Nepad) says that because of these reasons (lower commodity prices and a cooldown in China), African economies are slumping and GDP growth stagnating in the continent's emerging markets.

Opportunity despite the slump

According to Nepad Business Foundation CEO, Lynette Chen, stimulating the African continent's future economic growth will depend on how quickly African countries can diversify what they export – and so move away from reliance on single-resource exportation.

Over and above this, there will have to be an increase in inter-African trade. For this, a vast improvement in the African transportation infrastructure is needed – such as the east to west and north to south routes that Morton mentioned during the interview. A result of the lack of adequate transportation is that the cost of trading has remained high – this in turn preventing potential African exports from competing on global and even regional markets.

Wilhelm du Plessis
Editor

Two reminders:

- Best Projects 2016 is now open for entries. Please see the overview of the awards and entry requirements on page 12.
- *Sustainable Construction World* will be published in October. This will be our second sustainable supplement. 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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Qs could **HELP STAMP OUT** corruption

The South African government should follow Nigeria's example by employing reputable quantity surveyors to stamp out corruption and inflated construction costs in the building industry, the Association of South African Quantity Surveyors (ASAQS), has urged.

> Larry Feinberg, executive director of ASAQS, says the government of Nigeria – which has one of the highest building costs in the world – has formally asked quantity surveyors in that country to join the campaign to stamp out corruption, particularly in the local construction industry.

“The Nigerian government has recently urged the Quantity Surveyors' Registration Board of Nigeria (QSRBN) to co-operate with key national institutions and anti-corruption agencies to wipe out corruption. The Nigerian government believes that quantity surveyors have a major role to play in achieving value-for-money and cost-efficiency in the implementation of projects both in the public and private sectors of the national economy. It is time the South African government took note of this contention.

“Nigeria realises that the expertise of construction economists – particularly quantity surveyors – hold the key to unravelling the mystery behind high project costs, often ostensibly caused by ‘perceived risks’ that are converted into monetary values added to the overall project costs,” Feinberg stated.

He said the Nigerian Minister of Lands, Housing and Urban Development, Akon Eyakeni, recently stated that these inflationary ‘perceived risks’ could include design, funding, high interest rates, security, and foreign exchange fluctuations. She stated that these risks had a huge impact on the cost of projects in Nigeria and suggested that

reputable quantity surveyors should design templates for determining cost bands and ranges for various types of projects to ‘instill sanity’ in the planning and preparation of capital budgets.

Feinberg said ASAQS had already issued a warning that the tendency to omit cost-controlling quantity surveyors from public sector projects could lead to spiralling construction costs and would encourage corruption. “We are, therefore, gratified to note that the South African Ministry of Finance has included quantity surveyors in the team appointed to investigate costs relating to the recent Constitutional Court finding on the Nkandla project. But it is imperative that the services of credible and responsible quantity surveyors be employed right at the outset of any major public sector project so that costs are controlled, and potential corruption avoided, right from the outset of any project.”

ASAQS believes that sustainable development cannot be achieved when the activities of certain economic agents are mired in corruption and unethical practices. “As long as the costs of construction projects in South Africa are not professionally verified and controlled, each one will pose a threat to the economic welfare of our country. South Africa should formally adopt a value-for-money principle to fight corruption in the construction sector,” Feinberg stated.

“The Nigerian Quantity Surveyors' Registration Board believes that Cost Auditing should be recognised as a critical leg in the public sector procurement value chain, and that this should apply to national as well as regional governments where, as in South Africa, it appears that the level of cost inflation is at its highest peak. ASAQS believes that the South African government should strongly note the QSRBN call on its government to establish Project Cost Auditing and Monitoring departments in all appropriate state departments, staffed by registered quantity surveyors as construction cost management experts to stamp out corruption and rampant building costs.”

Feinberg added that it was also essential to employ only the services of reputable and registered quantity surveyors as this



South Africa should formally adopt a value-for-money principle managed by accredited quantity surveyors to fight corruption in the construction sector, ASAQS executive director, Larry Feinberg, has urged.

would ensure that a professional regulatory body monitored the ethics and conduct of its member to guard against collusion to inflate the costs of construction projects. “ASAQS regularly receives reports of unqualified quantity surveyors operating in various parts of South Africa. Entrusting the cost-factoring and expenditure control on multi-million rand projects to such bogus ‘professionals’ would merely exacerbate the situation and create more opportunities for corruption,” he warned.

He said although quantity surveying was by no means a new profession, there still seemed to be alarming ignorance about the vital role a QS played in, and could contribute to, building projects in both the public and private sector.

“Too often the inclusion of a QS in a project's professional team is seen as a dispensable, additional cost. However, a competent QS – such as the members of ASAQS – will provide the certainty and control a project needs, while also helping to reduce costs. Major building projects tend to be complex undertakings right from the outset, and can get even more complicated when design changes are introduced without the client and professional team realising the cost factors involved. This is when the skills of a QS are particularly essential. He or she will handle any unforeseen procurements and project management revisions so architects and the rest of the professional team can concentrate on their own tasks,” he added. **<**

“As long as the costs of construction projects in South Africa are not professionally verified and controlled, each one will pose a threat to the economic welfare of our country.”



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Maybe SA's first GREEN SCHOOL?

KBAC Flooring has donated about 800 m² of used Interface carpet tiles to South Africa's first Streetlight School which opened in Johannesburg in mid-January this year.

The Streetlight School project has been registered for a 4-Star Green Star SA Interiors rating with the Green Building Council of South Africa (GBCSA) by leading Johannesburg sustainability specialists, Solid Green Consulting. If the rating is awarded, it will be the first Green Star-rated school in South Africa. The site for the first Streetlight School is Jeppe Park Primary, near the Johannesburg CBD.

The carpet tiles, donated and installed by KBAC Flooring, were uplifted from a project for which the company had supplied new Interface carpet tiles. Interface – exclusively distributed in South Africa by KBAC Flooring – has won global acclaim for internationally leading the way in sustainable flooring.

Lesley Fidrmuc, interface consultant for KBAC Flooring, arranged the donation after an approach from Solid Green Consulting with which she had worked closely on sustainable flooring projects in the past.

Jessé Hamman, interior green consultant at Solid Green says that sustainable flooring is essential in achieving a Green Star SA Interiors rating. "Emphasis is placed on using certified flooring products manufactured in an ISO14001-responsible factory, or on reused flooring products, or products that have a product stewardship in place, such as a take-back scheme. The responsibility lies not only with the supplier but also with the design professional to ensure that responsibly manufactured materials are used in such projects," Hamman explained.

Fidrmuc says the donation to what could become the country's first Greenstar-rated school, is in line with KBAC's local adaptation of Interface's 'Re-entry' programme which in Europe aims to prevent carpeting that has become worn out, outdated, or no longer regarded as fashionable, ending up in landfills by recycling the old carpet tiles into the production line for new flooring.

"Due to the high costs of shipping used South African flooring overseas to be included in the Interface Re-Entry programme for recycling at the factory mills in the Netherlands, a local 'Re-Use' initiative – which also has strong social responsibility elements – has been created by KBAC Flooring.



A classroom at the first Streetlight School with carpet tiles supplied by KBAC Flooring.



It is hoped that Jeppe Park Primary School, just south of the Johannesburg CBD, will become SA's first Green Star-rated school.

6

"Carpet dumped in landfills are not bio-degradable due to the high oil content in the nylon fibres and backing used to produce the carpets. So, to keep old carpets from landfills, KBAC Flooring now seeks needy organisations and institutions – such as Streetlight Schools – that can utilise the still very usable carpeting, and donates the uplifted flooring to them as part of our Re-Use programme," Fidrmuc added.

Neil Duncan, chief financial officer of KBAC Flooring, said the company had no hesitation in donating the 800 square metres of Interface 'Cubic' Sunflower colour, carpet tiles to the Streetlight School. "KBAC Flooring also installed the carpet tiles free of charge, using a low VOC adhesive. We are extremely proud to have contributed to this admirable initiative and hope to continue providing assistance as the concept is rolled out further. In fact, Hanneltjie Smit, sales consultant for KBAC, has already secured a donation by Tuffloor of some of the company's black interlocking tiles which KBAC installed free of charge in the open area outside the school's classrooms to further assist the Streetlight Schools initiative," he added. <

MASSIVE STUDENT CHAPTER ROADSHOWS

According to the Construction Industry Development Board (cidb) report of October 2015, South Africa's unemployment rate currently stands at 25%. The construction industry is an important player in job creation, not only in the construction sectors, but in other sectors of the economy.

Despite such contributions that the Built Environment has, students who graduate in this field every year struggle to get employment. Some of the students complete their studies and register as candidates with the SACPCMP but in their respective workplace, they do not get exposure and experience for all required competencies and thus delay them in becoming professionals despite having the formal qualifications.



All these problems create serious challenges in the transformation of the industry. In fact, the numbers of registered persons within the SACPCMP still do not reflect the current South African demographics in spite of the 1994 democratic breakthrough.

The SACPCMP thus is taking practical steps to address this anomaly which has not changed despite the huge investments that government



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CONCRETE CONVERSATION PIECES

Participating in national Library Week, The Concrete Institute (TCI) Information Centre invited staff to enter a special competition to see who could create the most innovative small concrete 'conversation pieces' for their desks.

> Susan Battison, the Institute's Information Specialist, says the motive behind the 'First Impressions' competition was to showcase how easy it is to work with concrete, and also to show the material's renowned versatility.

"At the same time, our fun competition's education element was in line with the Library and Information Association of SA (LIASA) '#libraries4lifelonglearning' theme for 2016, and endorsed the LIASA viewpoint that libraries have a major role to play in the development of a knowledgeable nation," Battison explained.

John Roxburgh, lecturer at TCI School of Concrete Technology, provided the staff with expert guidelines on creating the conversation pieces, entitled 'First Impressions', which now have pride of place at their workstations in the TCI offices in Midrand.

Guest judge for the competition was Michelle Fick, Chryso South Africa's executive relationship and projects manager. Three prizes were awarded, plus another for the entry with the best title. ■

INVESTING IN ITS STAFF

Providing the opportunity for skills development and upliftment is an important contribution by any employer to its employees. Ocon Brick, through its collaboration with the Triple E educational institution, has been providing its staff with the opportunity to acquire new skills through selected Adult Basic Education Training (ABET) courses.

> Ocon Brick employees enrolled for courses such as writing skills, numeracy and communication skills and recently these employees were awarded Certificates of Completion for their different course levels ranging from Level One right through to Level Four at an awards ceremony held in March 2016.

Ocon Brick human resource manager, Ben Mpele said "We are pleased to see that, with support from Ocon Brick, some of the Level Four certified employees will be moving on to study 'Business Practices'.

"This a major step forward for these candidates should they choose to run their own business in the future. We have admired their commitment to their studies while still performing their duties in the workplace.

"It is important for our employees to know that we fully support their development irrespective of what it is that they decide to study and that it is in this way that longer lasting relationships are formed between organisations and their employees."

Ocon Brick is committed to making sure that each employee receives the support they require as they move on to their higher levels of study. While this course was attended by an all women team of employees, the courses are open to both men and women employees.

ABET is a unique South African programme that offers basic adult education through flexible, developmental and targeted learning programmes aimed at fulfilling the learning needs in the country and provides nationally recognised certificates upon course completion

Ocon Brick, one of South Africa's largest manufacturers of clay stock bricks, is part of the IS Group of companies which includes Technicrete and Rocla, and received their seventh PMR Gold Arrow Award in 2015 for excellence for its contribution and service to the construction industry. ■

Ocon Brick employees receiving their Certificates of Completion.



and the private sector have made into infrastructure development in our country since the advent of democracy in 1994.

SACPCMP will this year hold massive Roadshows in all accredited institutions in raising awareness to students and industry participants on the importance of registering with the SACPCMP Student Chapter Category.

The Student Chapter is a category meant for students enrolled full/part time in an undergraduate and/or post graduate with a major in Building Science or Construction Management. This initiative mainly serves as a valuable link between the students, registered persons as well as companies in the built environment for purposes of mentorship and their professional

development; thereby creating opportunities for vacation work, job shadowing, internships and mentoring.

"SACPCMP will be steadfast in creating linkages, network and relationships between the industry and students in the Built Environment disciplines," says Nomvula Rakolote, SACPCMP registrar. SACPCMP would also want to assist learners in Grades 10, 11 and 12 to choose these professions in the not so distant future. The Student Chapter has been positioned in such a manner that the secondary school students also benefit from it.

This is through getting guidance on which units to consider at the university level in order to be professionals in the Construction industry. ■



The four prize winners in The Concrete Institute Information Centre's Library Week competition for staff members, pose with their conversation pieces and the guest judge for the occasion, Michelle Fick, of Chryso SA (at the back). From left: Susan Battison (whose entry, Key Conversation, won the 'Best Title' prize); Phumeza Ngugudo (Rock of the Past), Maggie Kgatla (African Perspective) and Kizzy Shipalana (Harmony).



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CPUT STUDENTS BENEFIT

Corobrik partnered with the Cape Peninsula University of Technology (CPUT) for the third time in the highly beneficial CPUT-Corobrik Construction Week.



During this educational programme, some 80 landscape technology students, from foundation level through to second-year, participate in specialised lectures, workshops and demonstrations, ending with a hands-on landscaping project.

This worthwhile partnership developed in 2013 when Corobrik assisted CPUT by delivering lectures for architecture students, after which they were approached for the donation of building materials.

“After meeting with the university we agreed to, not only donate building materials, but get involved in the training as well,” explained Christie van Niekerk, Corobrik manager for the Western Cape. “We feel it is vital for students to get some real-world experience and, through this programme, they are afforded the opportunity to interact with manufacturers, industry members and professional bodies at the workshop, after which they put this newfound knowledge to practical use.”

Construction Week was held at the CPUT nursery on the Bellville Campus where students were treated to a series of lectures on paving techniques, all facilitated by Corobrik representatives. Corobrik’s training co-ordinator, Ismail Rothman, compiled lectures while Corobrik’s architectural representatives, Werner Oelofse and Siyanda Mapekula, assisted with organising and lecturing.

Focus was placed on both hard and soft landscape construction which included paving and hard landscape surface treatments such

BOTH PHOTOS: Cape Peninsula University of Technology students pave the courtyard at the Matthew Goniwe 2 residence on the Bellville campus during the Corobrik-CPUT Construction Week. Photos: Christine Price.

as ornamental gravel, tree and groundcover planting and tree staking. Students had the opportunity to learn about technical construction which incorporated material and plant specifications, construction detailing, drawings and documentation.

Corobrik donated 3 500 units of Meadow Paver PB as well as 3 600 units of 50 mm Constantia Paver PB for the paving practical. To complete the project, students worked in groups to design the paving, always in consultation with the lecturers.

“In addition to helping develop students through this hands-on training experience, we want this project to also benefit the rest of the CPUT students while enhancing the urban environment of the university with our natural clay pavers,” explained Van Niekerk.

To this end, a very particular site was chosen for the paving project. OLYMUA is a student non-profit organisation based at CPUT which established a successful vegetable-growing pilot project in the courtyard of the Matthew Goniwe 2 residence on the Bellville campus. The aims of OLYMUA include promoting healthy eating habits while alleviating students’ financial constraints by growing healthy, organic vegetables for its students.

In an effort to contribute to this initiative, students participating in the Corobrik-CPUT Construction Week were tasked with designing and installing the hard landscaping framework, including paths and raised planter beds, for the vegetable garden. Initially the students worked a full week on site followed by a successive five Monday afternoons until completion.

“Corobrik is so pleased to be a part of this fantastic initiative,” continued Van Niekerk. “There is such a need for continued skills and developmental training, even among professionals. Construction Week allows for interaction with experts in the field as well as skills training between students in different years.

“The end result really goes to show that a lot has been gained during the week and students will be able to enjoy this space for years to come.”

Commenting on the successful partnership, Gerhard Griesel, lecturer from CPUT’s Landscape Technology Programme said: “It is a privilege for CPUT to be in partnership with Corobrik. This intervention has provided students with exciting and unique practical learning opportunities. Without Corobrik’s generous contribution we would not be able to expose students to hard landscaping construction at this scale. Ultimately the Corobrik-CPUT Construction Week has far-reaching effects as students are empowered in terms of skills for future work environments as well as contributing to the community.”



NEW NATIONAL PRESIDENT FOR THE CSSA

At its Annual General Meeting on 30 March 2016, Hanlie Turner was inaugurated as the Concrete Society's new national president for 2016/2017.

> Turner, who is a technical information specialist with cement company PPC, has been a member of the Concrete Society for many years and has held several voluntary positions in the organisation including chairperson of the inland branch and more recently as national vice-president.

The outgoing President Tseli Maliehe, of Ibhayi Contracting in Port Elizabeth, told members attending the meeting that he was confident that the Society was being placed in good hands under Turner's leadership, guidance and enthusiasm for all things concrete.

In accepting the chain of office, Turner said that she was honoured to accept the responsibilities that went with it and, at the same time, thrilled that in some small way she is a part of the industry that shapes our skylines and in many aspects defines our civilisation.

"It is a task I will not take lightly, as I cherish what the Concrete Society stands for, and that sense of belonging", Turner continued.

"The Concrete Society ticks all the boxes of what a professional interest group is all about, the

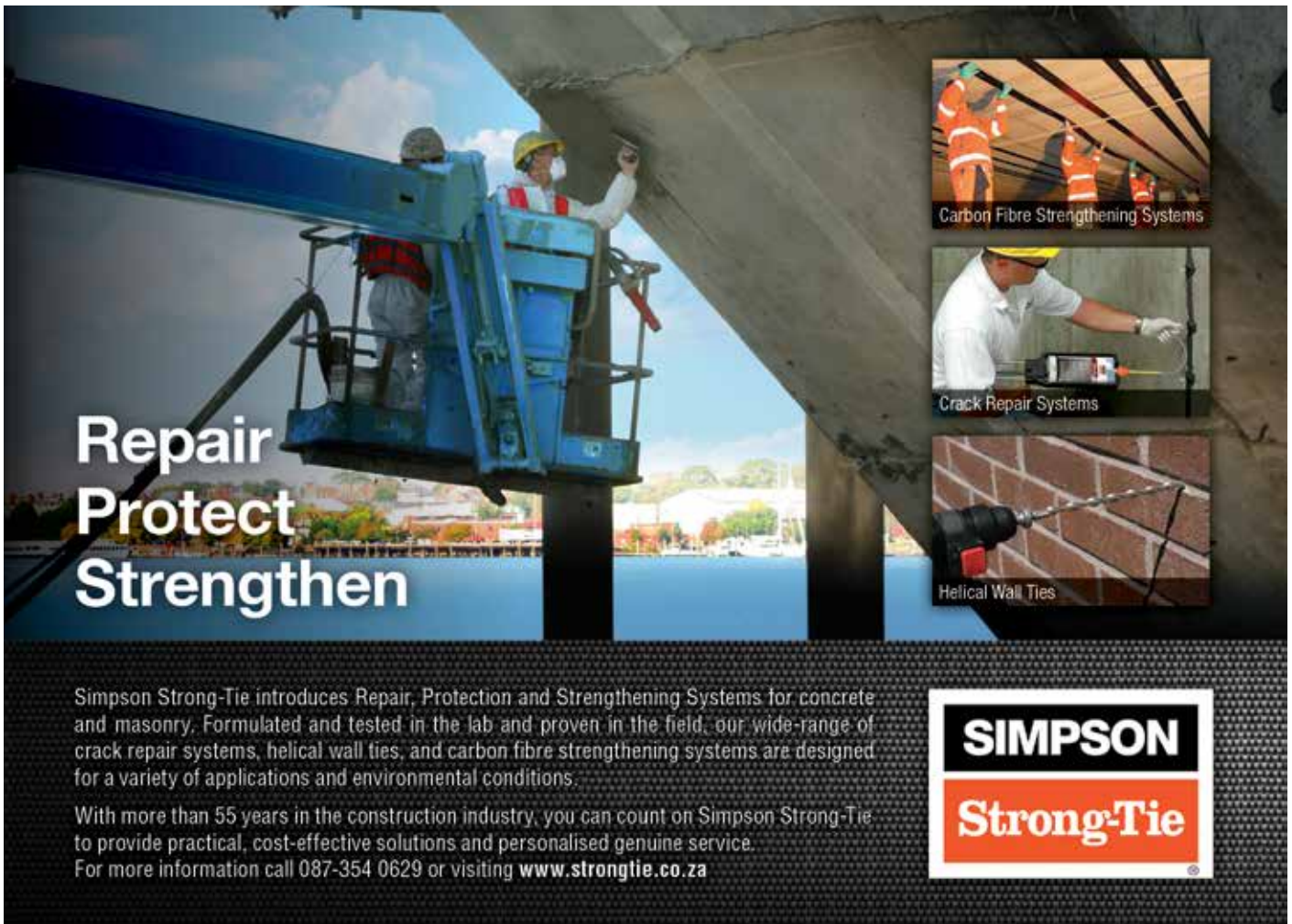


Hanlie Turner with outgoing president, Tseli Maliehe.

real value-add being the networking opportunities created at both branch and national level."

"Members' personal level of involvement with the Concrete Society will determine the value they can add to their job, their personal and professional development, and the strategic insights they could gather. I urge all members to leverage their membership of the Society at all these levels".

The Concrete Society of Southern Africa is a technical, non-profit organisation whose members – companies and individuals – comprise like-minded professionals who have a passion for concrete, and who keep themselves up to date in the latest technology and thinking in all concrete-related matters. Its mission is to promote excellence in concrete and provide a platform for networking and sharing of knowledge.



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2 BEST PROJECTS 16

FIRST 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, 2 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.

[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](#)



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

SOLAR PHOTOVOLTAIC ENERGY for corporate buildings

There are two main synergies which can be incorporated into modern building design to reduce the dependency of electrical generation on fossil fuels. These synergies are to reduce the overall energy need of the building through the use of energy efficient methods, and to meet some of the energy needs by implementing a renewable energy system.

> This is according to Rupesh Vaga, project engineer, EES Africa, who points out that even though alternative means of generating electricity are being researched and implemented, current electricity generation is still predominantly based on the burning of fossil fuels, which have a huge negative environmental impact.

EES Africa is an ISO 9001:2008 certified company providing management, engineering and auditing services to a range of industries throughout Africa. It has been instrumental in the implementation of the Renewable Energy Independent Power Producers Procurement Programme (REIPPPP) projects in South Africa to date.

14

“There are many renewable energy sources that can be used in a building, such as solar, wind, geothermal and biomass. These options should be evaluated carefully and research should be conducted before considering an appropriate design,” Vaga advocates.

Explaining the unique benefits of the solar option for South Africa’s weather conditions, Vaga continues: “In South Africa we are particularly lucky to have ample hours of sunlight and the solar resource that can supply energy.”

Solar panels

Photovoltaic (PV) arrays convert the light energy absorbed by panels into electricity. These panels are placed on the roof of a building and can be mounted on the roof of parking areas exposed to sunlight. The electricity produced by the panels can be stored in batteries and used to power various devices or systems.

Solar panel power gains

“Conversion of solar energy to electricity can however be a challenge, especially when low irradiance and high temperatures occur. It is

therefore essential to implement methods which aim to optimise the power gains of the solar arrays,” states Vaga. “This can be done through maximum power point tracking (MPPT) and solar panel tracking.”

Maximum power point tracking (MPPT)

MPPT is a method that aims to obtain the maximum power from the solar cells by finding the point where the maximum power is obtained. MPPT optimises the match between the solar array and the battery bank or grid. By implementing this type of controller, the user can obtain about 20-45% power gain in winter and 10-15% in summer. The use of a MPPT is recommended when implementing a PV system.

Solar panel tracking

Panel tracking is another method that can be implemented to enhance the power gain of the panels. The solar panels are mounted on a mechanical lever that is designed to follow the movement of the sun throughout the day, thus optimising output power. This method can improve power gains by about 35% in winter and 15% in summer. It can be implemented in conjunction with MPPT.

Black River Office Park in Cape Town is currently working on a project to produce 1,9 gigawatt (1,9 million kilowatt) hours per year. The system is currently the biggest roof mounted PV system in South Africa. Capex costs of such a system are relatively expensive, but the costs can apparently be recovered within seven years of the operational life span of the system.

Solar windows

“Solar window technology is another method can be used on the façade of buildings to add both aesthetic appeal and functionality,” says Vaga. “Today’s skyscrapers use a great deal of glass to create appeal and modernisation. This can be used to power the building.”

A thin PV film that uses the solar energy and converts this energy to electricity is placed on the glass. New developments in this field have brought about innovation, which ensures that the windows are fully transparent. This innovation may soon change the way modern buildings are designed.

Tshedimosetso House in Pretoria is the first building on the continent to implement a PV façade. Two different types of power generating glass which had never been tested in Africa have been used. The system, which produces 16,8 kW of power, is connected to an inverter, which has been integrated into the building’s grid system.

The current electricity crisis in South Africa has resulted in investigation into and implementation of alternative energy sources. PV renewable energy should be considered for the rooves of corporate buildings to reduce dependency on fossil fuels. Solar windows can be implemented after the building is built and can also reduce dependency on the grid. Be energy smart and invest in your future energy needs today. **<**



About EES

Established in 2001, EES Africa specialises in the integration of multiple system infrastructure including ICT, data centres, audio visual, life safety, security and building automation systems. As an ISO 9001:2008 certified company, its vision is to be Africa’s management, engineering and auditing professional service provider of choice. The EES Value Proposition focuses on translating technology into tangible deliverables for clients.

ENVIRONMENTAL approach to business

Constantly striving to improve their standards is paying dividends for multi-national group PFE International in recycling truck tyres into rubber crumb.

> Rubber crumb is an end product that previously had little useful application, but PFE International CEO and Van Dyck Carpets director Dr Mehran Zarrebini says the requirement on businesses to develop sustainable products was a key challenge facing industry in the 21st century.

Not adopting environmental practices in the short-term would translate into the world's demise. Companies ignoring that reality were forgetting the bigger picture, specifically environmental sustainability.

The group produces broadloom carpets, carpet tiles, area rugs, polypropylene staple fibre, bulk continuous filament yarn, artificial hair, polypropylene continuous filament yarn, polypropylene tape, master batches, concrete fibre and rubber crumb. A number of other products derived from rubber crumb are manufactured by the group which include acoustic underlays and acoustic cradles.

Critical in tackling global environmental issues was viewing compliance as an opportunity to the lowest environmental standards for as long as possible.

"It is economically and consciously sound to comply with the most stringent rules before they are enforced. This yields substantial first-mover advantages in terms of fostering innovation," Zarrebini said.

Thereafter came instigating sustainable value chains, effectively reducing the consumption of non-renewable resources to boost efficiency.

"In an increasingly environmentally aware society, consumers prefer eco-friendly offerings and are prepared to pay the premiums to secure them, offering businesses a competitive advantage in redesigning existing products or developing new ones," he said.

However, creating a sustainable business model did not merely entail rethinking customer value propositions, but developing innovative ways for building revenue and delivering services in tandem with other companies.

Within Van Dyck this meant supplying the UK flooring industry with an acoustic underlay manufactured from rubber crumb as a result of the recycling from sister company Mathe Group. Mathe recycles truck tyres, breaking down the rubber to crumb and



Dr Mehran Zarrebini, PFE International CEO and Van Dyck Carpets director.

recycling the steel and Van Dyck converts the crumb into acoustic underlays used under soft and resilient flooring and acoustic cradles used in the built environment to eliminate variations in the structural floor surface and to accommodate services. Both products effectively reduce noise while being environmentally beneficial.

Van Dyck acquired a 49% stake in the Mathe Group in 2014 to secure a raw material supply and diversify its supply chain. Zarrebini said currently South Africa dumps 10 million tyres annually of which 48% are truck tyres, prompting the USD1,5-million (R20-million) investment into a newly commissioned factory that began operations in March 2016.

Construction of the UK Olympic Village used 1,5 million acoustic cradles produced from the rubber crumb, effectively filling more than seven export containers.

Sister company Envirobuild produces rubber paving blocks and tiles used extensively in children's playgrounds and old-age complexes to minimise injuries following falls.

In 2015 Van Dyck recycled approximately 40 000 truck tyres. This would increase to 150 000 with the new plant and the company was negotiating to divert the recycled steel to either a Germiston-based foundry or exported to South Korea for use in the shipbuilding industry. Zarrebini said leadership must be shown from company directors in order to be effective in changing a company's environmental approach and developing a low carbon economy.

The current economic system had placed substantial pressure on the planet while only catering to the demands of 25% of its inhabitants. "Companies have to develop


innovative solutions, but that will only happen when executives recognise the simple truth that sustainability equals innovation," Zarrebini said.

PFE International's environmental journey began reactively with its ISO 9001 accreditation. Thereafter the group proactively secured its ISO 14001 and ISO 14064 accreditations. Last year Van Dyck Carpets became the first African organisation to achieve the Carbon Trust Standard for Carbon, an international mark of excellence recognising success in reducing carbon emissions.

The accreditation acknowledges organisations that take a best practice approach to measuring and managing their greenhouse gas emissions and achieving real reductions year-on-year. The company was now implementing the ISO 50001 accreditation.

Zarrebini said their initiatives had resulted in a 2,8% reduction in direct costs applied to company facilities and vehicles; 30% reduction in electricity and steam purchased and 12,2% reduction in environmental elements. This included purchased goods and services, capital goods, fuel and energy related activities, exports and distribution, waste generated from operations, business travel and employee commuting.

Additional savings came via transport and distribution processing of products sold; the use of sold products; end-of-life treatment of products sold; leased assets and investments with the total investment translating into a 55% reduction in PFE International's environmental footprint.

The group had achieved a 14% reduction in carbon dioxide emission year-on-year 2012 to 2013; another 8% the following year and 10% in 2015. 

"It is economically and consciously sound to comply with the most stringent rules before they are enforced."



Sandton is an **EPICENTRE** for **GREEN** building in Africa

16

Home to a burgeoning list of green buildings – including some of the largest and most cutting edge on the continent – Sandton Central and the broader Sandton node is an epicentre for green building in Africa.



Elaine Jack, city improvement district manager of the Sandton Central Management District.

> Now Sandton Central’s landmark Sandton Convention Centre has been selected to host the Annual Green Building Convention for the first time, which will put the spotlight on Sandton and Gauteng as a hub of green building.

Elaine Jack, city improvement district manager of the Sandton Central Management District (SCMD), which manages the public urban spaces of SA’s cosmopolitan financial hub, comments: “With among the largest number of standing and under construction green buildings in Africa – many of which are ground-breaking sustainable developments – it is fitting that the Green Building Council South Africa (GBCSA) has decided to move its Green Building Convention to Sandton.”

Jack adds: “Ever since it was launched eight years ago, it has been hosted in Cape Town, and this year for the first time the convention will be hosted in Sandton. It is South Africa’s flagship green building and sustainability event, and will put the spotlight on Sandton as a major centre of green building activity in Africa when it takes place in July.

“The Sandton node is home to possibly the largest collection of green rated buildings

of any CBD in Africa, with more than 20 certified projects by the GBCSA. In fact, the first ever Green Star SA rated building in the country to be officially certified by the GBCSA back in 2009 was Nedbank Phase II, the landmark head office building of Nedbank on the corner of Rivonia Road and Maude Street in the Sandton CBD.”

After being awarded a 4 Star Green Star SA Office Design V1 rating in 2009, Nedbank Phase II secured the 4 Star Green Star SA Office V1 ‘As Built’ certification in 2010. Some of the sustainable features of this pioneering green building include a rainwater harvesting system and blackwater treatment system, an energy-efficient lighting system as well as highly efficient water fixtures and fittings. The rainwater harvesting and blackwater treatment systems provide recycled water for all non-portable water uses such as irrigation, toilet flushing and for cooling towers, while the water efficient plumbing reduces outflows to the sewerage system by 50%.

There are several ground-breaking new office buildings under construction in Sandton Central that are green developments. This includes the multi-billion rand new Discovery head-office being developed by Growthpoint and Zenprop, and designed

as a 5 Star Green Star SA building; Sasol’s new global headquarters, which opens later this year and is aiming for a 5 Star Green Star SA rating from the GBCSA; and, Alice Lane Phase III, the final development in Abland and Pivotal Property Fund’s massive Alice Lane development.

“The new Discovery and Sasol head office buildings are two of the largest green buildings developments in Africa. They are going to be cutting edge marvels of green building and sustainability when they are complete, and will add to Sandton’s ever-growing list of landmark green buildings,” says Jack.

She adds: “Besides being SA’s financial hub, what adds to Sandton Central’s appeal from a broader sustainability perspective, is that it is home to one of the main Gautrain stations. Many of the new green buildings to come up in Sandton are surrounding or in close proximity to the Sandton Gautrain Station.

“Sustainable public transport and eco-mobility form a crucial part of Sandton’s future as a major hub. New and even existing buildings in Sandton that are targeting a green building certification, can benefit from the Gautrain and other eco-mobility projects, like the Rea Vaya Bus Rapid Transit System in the future, in terms of the sustainable public transport element of the GBCSA’s Green Star certification scheme.”

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New MIXED-USE development

Leading South African property developer and investor Atterbury recently announced it will undertake a prime new multibillion-rand development in Pretoria.



Louis van der Watt, CEO of Atterbury and Carl Erasmus.

> Atterbury's latest venture will be a modern, mixed-use commercial development on about 85 ha of prime land, at the high-profile juncture of the N1 and R21 highways.

The development will be similar to Atterbury's staggering development Waterfall in Midrand, albeit on a different scale. Waterfall includes Southern Africa's largest single-phase shopping centre development, Mall of Africa, which opened on 28 April. Atterbury is the developer and 20% co-owner of Mall of Africa.

The new Pretoria mixed-use precinct will be constructed on the landmark property belonging to the Erasmus family on the last portion of the original Waterkloof farm in Pretoria. It will be developed by Atterbury in a joint venture the Erasmus Trust.

Carl Erasmus explains the land, which has played a significant role in the history of Pretoria, has belonged to the Erasmus family for generations and many prestigious developments have taken place on the Waterkloof farm over the years.

Erasmus says: "Despite receiving many and generous approaches to buy the land over the years, we turned them all down in

favour of working with Atterbury to realise the vision for this land."

Louis van der Watt, CEO of Atterbury says: "We're thrilled to work with the Erasmus Trust for this landmark development. Because this land was held by one family for so long, its unique size and leading location present an exciting opportunity to develop a unique mixed-use infill development that creates meaningful value."

Atterbury has a unique understanding of this type of greenfields development at which it excels. Besides its groundbreaking development at Waterfall adjacent to the Allandale Road exit of the N1 Highway, Atterbury also developed the 75 000 m² Lynnwood Bridge mixed-use commercial precinct in Pretoria, directly adjacent to the Lynnwood Road exit of the N1 Highway. With these developments, and many others across South Africa and beyond its borders, Atterbury has established a track record of delivering what it sets out to do.

James Ehlers, MD of Atterbury Property Developments, says: "Atterbury is confident about South Africa and remains positive to invest in quality developments. We're committed to and excited about the work we

do and look forward to once again creating value from the ground up."

Ehlers stresses the Erasmus land is ideal for a development similar to Waterfall and Lynnwood Bridge.

"Through our involvement in these iconic projects, Atterbury has established skills across the board. We have built up a top team of people with the experience and expertise to create quality, modern mixed-use nodes, from developing their infrastructure and top structure to the different uses of property for retail, office, commercial and residential uses."

Atterbury expects to begin development of the Erasmus land early next year. "While the rezoning process for the land is still being finalised, we envisage the development to include specialised retail, a significant residential component, a good balance of offices and some logistics warehouses that take the best advantage of the excellent highway frontage," says Ehlers.

The Erasmus land enjoys a prime site bordering to the N1 and R21 highways, with Solomon Mahlangu Drive at its northern border. It provides easy access to Johannesburg, Pretoria, Pretoria East and OR Tambo International Airport.

In addition, as part of the development, Atterbury is also considering investing in roads and other infrastructure to benefit the area. Once re-zoning is confirmed, the new development will be meticulously planned to position commercial properties for peak functionality, access and visibility. Equal attention will be given to the residential units, which Atterbury intends to undertake in partnership with a specialist residential developer.

The project will be developed out over five to seven years, driven by market demand. Already, Ehlers confirms, the demand is strong. "We are talking to specific retailers who want to be part of this development and there is a huge demand for housing in the area," says Ehlers.

"We expect different facets of the project to be constructed simultaneously, which will result in a bustling construction site, similar to what you see at Waterfall right now." <

18

The location of Atterbury mixed-use development.



FIVE YEARS OF MALL OF THE NORTH

Mall of the North in Polokwane, an icon of Limpopo's capital city, celebrated its fifth anniversary on Thursday, 14 April. Offering shoppers the largest and most comprehensive selection of shops, restaurants and the only cinema complex in Limpopo, Mall of the North has celebrated many major achievements since its launch in 2011.



> "Looking back over the last five years, we are more than pleased with what we have achieved so far. From a zero base in at the beginning of 2011, our shopper numbers have grown each year to nearly 8,5 million annually," says Sumari de Ridder, general manager for Mall of the North. The 75 000 m² shopping mall is unmatched in its dominance in the region.

Trading at Mall of the North has also grown from strength to strength. "We have achieved double-digit turnover growth every year since our opening," reports de Ridder.

From May to December 2011, during the Mall of the North's first calendar year, the shop-

ping centre achieved just below R1-billion in turnover. In 2015, this figure had doubled to nearly R2-billion.

"Our retailers play a very big role in the success we have achieved so far," adds De Ridder. "We are happy to say that most of our original tenants are still with us and we feel privileged to be able to celebrate this birthday with them."

The Mall of the North has, however, made some retail improvements over the past five years, to ensure its offering remains in step with the latest trends. De Ridder believes adding tenants like Cotton On, Foschini Kids, and Soda Bloc have proved a major attraction within the province, contributing significantly to improving

the mall and the first-class shopping experience it provides. A major attraction to both visitors and residents within the province, Mall of the North has become a crucial part of the local economy as one of the biggest ratepayers in Polokwane.

It has also created at least 2 000 jobs. From its very inception, Mall of the North has been actively committed to supporting its surrounding communities and being a good citizen.

"Most of all, on our fifth anniversary, we really appreciate the wonderful and loyal customers who welcomed us into their community and have continued to support us. They have made Mall of the North the success story it is today," says De Ridder. ■

WATERPROOFING ROOFTOP GARDEN

Situated on a hilltop in Midrand, Gauteng, is the spectacular Waterfall Equestrian Estate where some of Johannesburg's most luxurious homes lie nestled in beautifully landscaped grounds. It was here that Kaytech supplied an innovative drainage system that would effectively maintain the integrity of a rooftop garden.

> Besides the magnificent homes, the estate boasts stables, paddocks and an equestrian arena that add to its sustainable and integrated ecology. In keeping with this environment, Rekopane Landscapers suggested the creation of a rooftop garden as a special feature on one of the homes.

When approached by the landscapers for assistance in the vitally important drainage of the rooftop garden, Kaytech's Winnie van der Merwe suggested a four-component system consisting of a layer of bidim A4, a layer of Flownet, a third layer of Kaytape and a final layer of bidim A2.

Rekopane Landscapers commenced the project by installing waterproofing directly onto the roof. For protection of this waterproofing, bidim A4 was installed. Bidim is Kaytech's multi-graded continuous filament, nonwoven, needlepunched geotextile manufactured from 100% recycled polyester.

The needlepunching process provides several advantages including an appreciable thickness, high porosity and a high drainage capacity. When incorporated in a subsoil drain, bidim allows the highest possible throughflow rate while still providing excellent filtration characteristics.

To control the flowpath of water, Flownet DN3, a heavy-duty, extruded, HDPE drainage net with directional flow, was installed over the bidim A4. Used as a drainage core, Flownet replaces the need for stone aggregate in subsoil and structural drains.

A layer of Kaytape S270 was subsequently rolled out over the Flownet. This slit film, woven polypropylene tape geotextile acts as a high modulus separator that, in this application, would keep open the flowpaths and prevent the low modulus bidim intruding into the Flownet openings.

The composite drain was completed with the installation of a top filter layer of bidim A2. In total, 100 m² of each product was used for the drainage of the roof garden. To add filtration diameter to the drainage system and to help prevent clogging of the bidim, a layer of high quality, clean river sand (50 mm thick) was placed over the drainage system and covered with a final layer of topsoil.

Rekopane Landscapers was highly impressed with the ease and speed of installation of these high quality Kaytech products that enabled them to complete the entire project within one day. ■



The final bidim A2 layer separates the cover soil from the woven tape underneath.



FAW IS 'FIT FOR PURPOSE'

in construction sector

Reviewing the FAW commercial vehicle range, it is clear that FAW China has made great headway in adapting its products to match customer demands across various world regions.



The vehicles from the FAW stable have taken on more modern designs, new technical innovations where appropriate, increased

quality production, safer environments for all, and ethical practices, as their modern-day mantra. This ethos has enabled FAW worldwide to provide ever better vehicles, which remain easy to drive, easy to maintain and service, and positively contribute to lowering the total cost of fleet operations.

Added to this is a growing respect for the Chinese brand. Similar to Japanese products post-WW2, international acceptance has had to be earned. Over the last few years FAW has proved the brand's claims of being robust and durable without compromising performance or payload. FAW has proved it can produce good quality vehicles at an affordable price despite global economic challenges.

Furthermore, FAW Vehicle Manufacturers SA has proved its commitment to listening to customers, as is evident from the numerous adaptations and special adjustments applied to locally built FAW trucks to suit unique African challenges.

So too in the local construction sector, FAW vehicles are becoming more and more visible on sites as public and private infrastructure projects continue to spur the sector on and progressively move the industry forward. However this is not without increasing cost pressures and demand for excellent operational efficiencies.

Affordable, reliable and cost-effective construction vehicles – whether company-owned, hired or contracted through a second-tier operator – are essential to every successful and profitable construction project.

Cheng Zhang, marketing and strategy manager, and spokesperson for FAW Vehicle Manufacturers SA, says: "In the construction sector specifically, FAW vehicles have gained good traction owing to our broad range of tippers, mixers trucks and dropside or flat-deck options.

"FAW delivers on all the requirements of running an effective fleet – whether it is a multi-vehicle fleet or a single unit. Choosing a FAW vehicle will provide great cost efficiencies in terms of capital outlay, uptime, low fuel consumption, reliable parts supply and affordable maintenance," he affirms.

Mixer trucks

FAW provides purpose-fit mixer trucks able to run cubic payloads of either 6 m³ or 8 m³ with the FAW 33.330FC and the FAW 35.340FC respectively.

The mixer trucks can conquer the rigors of any building site. There are few mixers to match FAW strength and long-lasting working capability. Both mixer models offer easy driveability because of a strong chassis frame, the high standards of all materials and processes used in the manufacture of the truck, the drivetrain and the mixer body. The operating profiles of the FAW mixers are excellent – especially considering their good fuel consumption figures, be it driving or idling. The mixer trucks are reputed to display very low mechanical wear and tear.

Tippers

Exceptionally robust chassis and build materials are the cornerstones of FAW tippers, which provide consistently good service on even the 'meanest' of sites. Treacherous entry/exit slopes, dust, gravel, loose sand and stone – in fact, any terrain to challenge most trucks FAW tippers can handle.

The FAW tippers range include the FAW 8.140FD with 3,5 m³ load capacity, the FAW 16.240FD with 6 m³ load capacity, the FAW 28.280FD with 10 m³ and the FAW 35.340 FD with 15 m³ load capacity. Whether it's the 4X2, 6X4 or the 8x4 tipper respectively, the FAW tippers can provide what any construction project demands. Supporting FAW's uptime promise is a host of aftersales back-up services, and maintenance and parts supply through a wide dealer network.

FAW trucks

Serving the construction industry does not end with mixer trucks and tipper vehicles. FAW also offers a broad range of vehicles to carry anything – from steel girders, palletised bricks, boxed tiles and bagged construction materials; and can take payloads from 5 tonne on its newest addition – the FAW 8.140FL – to over 35 tonne on its extra-heavy-weight 28.460FT 6x4 truck tractor, depending on trailer configurations.

Whatever a customer requires – a FAW truck can do the job; affordably and cost effectively, with exceptional reliability.

Success on the move

The Coega plant in the Eastern Cape is slowly adding to its production line, in tune with demands from customers across a board range of applications – in construction, mining, long-haul and distribution sectors.

The local plant's bodybuilding facility, adjacent to the main plant, is reviewing the various Africa customer requests for locally built bodies onto the FAW chassis cabs coming from the main production line.

The plant and training facilities, which were opened in 2014, have allowed the company to provide its Southern African client base the benefits of sourcing their vehicles from a plant on the same continent.

Earlier this year another 10 FAW J5 tippers units left the local Coega-based production plant for Tanzania.

A growing number of Africa truck dealers who traditionally placed their orders with FAW China continue to move their orders to originate out of South Africa owing to the shorter lead-time for delivery, the high levels of quality from the South African plant, and the reduced cost of sourcing FAW vehicles here.

Cheng Zhang explains: "There are many advantages of sourcing FAW products from our South African base – the most important being time-to-market in the Africa countries, and of course for the SADC and AU, the added advantage which comes from the import/export duty agreements," he adds.

From the cost point of view, the African buyer can save vehicle import duty between 25% and 40%. Another advantage importing through FAW locally is that customers can get their vehicles within 30 days of order; much sooner than from China, which normally requires three months between order placement and delivery.

FAW SA says it plans to support sales in almost all the right-hand drive African countries. "However, our plan is to assemble the left-hand drive vehicles to supply to the African Union countries in future, where they too can get duty advantages".

The Tanzania dealer noted that among their best sellers is the FAW 28.280FD 15 m³ tippers used in the many projects and proving to be a stalwart product in the African construction sector. With its high payload capacity, it provides good return on investment for most any operation.

For aftersales support, FAW SA is already supplying parts to those African dealers who import SA-spec models. Some dealers who import local spec models from FAW, still source their parts stock from China directly, because the purchase process is familiar to them and uptime is not affected.

FAW Vehicle Manufacturers SA indicated



“FAW delivers on all the requirements of running an effective fleet – whether it is a multi-vehicle fleet or a single unit. Choosing a FAW vehicle will provide great cost efficiencies in terms of capital outlay, uptime, low fuel consumption, reliable parts supply and affordable maintenance.”



that it constantly considers which of its global truck offerings in medium, heavy and extra-heavy ranges are feasible for building locally.

“However, we remain circumspect on drastically changing our local production complexity by adding too many different models produced at our Coega-based plant.”

Cheng Zhang concludes: “It remains in our interest to keep our production plant simple, and to continue to maintain the highest levels of quality, rather than chase huge production diversity. We remain committed to our core value – Quality at a Fair Price. FAW prides itself on giving optimum value for money and this, combined with a world-class product, what made ours one of the champion brands in the region’s truck industry.”



Fast-track projects receive a **LIFT** from **POTAIN**

It is easy to recognise a Madison Construction site in the country. Apart from the quick rate in which its buildings go up, all of the building contractor's sites feature at least one Potain crane. This is the only tower crane brand that the building arm of Stor-Age, a specialist storage property developer, uses for all its lifting requirements.

> One can expect to see many more Potains as Stor-Age embarks on a drive to double its storage facilities nationwide over the next five years.

Two of its projects are already well under way in strategically located suburbs in Johannesburg, Gauteng.

Storage in Essexwold

In Essexwold, Madison Construction is developing a storage facility comprising two basements and two floors. A Potain MCT 88 crane is being used to lift scaffolding and raw material in the preparation stages of the build. It will then move onto handling the formwork and building materials as well as help place the trusses and steel sheeting to complete the roof. In addition, it will be put to good use lifting pallets containing all the necessary finishings that will be unpacked inside the structure and installed throughout after the roof has been completed.

Like most of Madison Construction's builds, this is a fast track project that is expected to be completed within eight months.

The sheer speed at which the contractor erects these buildings for its parent company means that it sticks to the business of building shying away from owning its own fleet of construction equipment.

This includes all its tower cranes, which it rents from SA French, the local agent for Potain. "We did consider buying a few pre-owned cranes a while back, but decided against it. Owning cranes is certainly not our profession. We are adept at building, and definitely don't want to start dabbling in the intricacies of storing, maintaining and transporting them. "Apart from being extremely specialised, it is very costly and time consuming," says Leon de Klerk, contracts manager at Madison Construction.

This is the fourth Potain that De Klerk has been exposed to working on various projects for Madison Construction, and he says every rental crane supplied by this division of Torre Lifting Solutions that he has worked with is in immaculate condition.

This is especially the case with the Potain MCT 88 being used on this site. "It is well maintained and in a really good shape. A lot

of work goes into preparing them for their various rental projects," says De Klerk.

The seamless installation of the crane has given the team some respite on this challenging site. It was erected and ready to use in two days. "By the second day, the electricians were able to commission it and all the load tests were done," he says.

This professional service has been welcomed by De Klerk and his team considering the complex start to the project.

With the site completely water logged due to its proximity to a river, Madison Construction had to excavate up to six metres deep to remove the wet ground, spoiling about 15 000 m³ of material from the 2 500 m² site. Meanwhile, a third of the site had to be blasted due to the significant rock outcrops in the large excavation.

This meant that an unusually large foundation had to be built to support the crane. It is 4,5 metres high and anchored into solid bedrock, and adequately designed to support the crane as it gets on with its activities. The Potain MCT 88 is being supported by a mobile crane due to the space restrictions; another significant challenge facing the contractor.

The site is sandwiched between the N3 highway, an Eskom high voltage transmission line and a river forcing the contractor to pump up to 6 000 litres of water a day from the site, and there is just not enough space to introduce a second crane as initially intended.

While this structure can be built without a crane, De Klerk says it will take up to three times longer, and he welcomes the Potain MCT 88, which is supplied with a competent operator.

The crane can lift 1,1 t at 50 metres and has a maximum lifting capacity of 5 t at 13,7 metres. It is equipped with a 52 metre jib and chassis and its hook height is 30 metres.

"These are very impressive features and one of the many reasons that we prefer using Potain," says De Klerk. Initially, he only wanted a 100 t crane, but SA French did not



1.

have any available at the time so it brought a 160 t unit to the site at no extra cost to the contractor.

Sunninghill

Werner Killian, also one of Madison Construction's contracts managers, was involved in the design of the civil works on this site including the foundation for the crane. He is also overseeing 1 000 m² of storage space being developed in Sunninghill, where a Potain MC85B is being put through its paces.

This is the third time that he has used a Potain crane from SA French and discloses that the value proposition the company brings to Madison Construction's sites is a competitive rental rate and excellent backup service. "Price, quality and service play a major role in helping us decide with who we should partner," says Killian. In general, Madison Construction insists that all its supply chain partners respond to its needs six days a week.

This building crew is also on an extremely tight construction schedule and is expected to complete the structure within the next four to six months. The building will comprise a basement and five levels. The Potain MC85B can lift 1,3 t at 50 metres, and has a maximum lifting capacity of 5 t at 15 metres. It is equipped with a 50 metre jib and chassis and has a hook height of 34,5 metres.

A Potain MCT 88 crane is being used to lift scaffolding and raw material in the preparation stages of the build.



2.



3. 4.



1. Another Potain crane is being used in Sunninghill, where Stor-Age is developing more storage space.

2. An unusually large foundation had to be built to support the crane on waterlogged ground conditions.

3. The site is extremely congested so the contractor was restricted to using one tower and mobile crane.

4. The crane was delivered to site and assembled in as little as two days.

The crane is lifting and placing concrete and formwork as well as the materials needed, such as bricks and reinforcing, for the build. The crane will also help place the trusses and sheeting for the roof, before being removed from the site by SA French, a much easier task than at the highly congested site in Essex-

wold, which De Klerk says "SA French will handle with ease".

Both Killian and De Klerk agree that the building industry will always stick with the tried-and-tested and as such they look forward to working with SA French on more Stor-Age projects. <

CLASS ROOM SPACE

The urgent need for classrooms at Hawston High School, near Hermanus in the Western Cape recently arose due to its new brick and mortar building being declared condemned owing to structural problems.

> Providing a rapid solution to ensure that learning would not be hampered, Kwikspace Modular Buildings (Kwikspace) – a leading manufacturer of prefabricated buildings – responded by relocating its units which were no longer in use at Steynville Primary School in Piketberg to the school in need.

This project entailed the relocation and delivery of 34 classrooms, two admin units, four ablution units, one feeding kitchen and two storage containers. The set-up of these modular buildings thus meant that an estimated figure of over 1 000 learners would be provided with suitable classrooms and amenities.

Comments Leon du Plessis, regional manager at Kwikspace: "Education has the power to significantly enhance the future of South Africa's economic strength; however, the lack of suitable infrastructure has the power to inhibit this outcome. Our buildings have proven to be an ideal solution to meet the need for suitable classroom space, particularly in instances such as this one where buildings are required as a matter of urgency."



Kwikspace's units are manufactured using fully insulated polyurethane injected panels – technology which is continually being enhanced. It has been proven that this technology allows temperatures to be effectively controlled and noise to be significantly reduced, and thus teachers and learners are able to function in a comfortable learning environment.

Due to the successful delivery of these units, learners and teachers were able to settle into their learning routines in the least amount of time possible. <

EXPERTS oversee REPAIRS

Repairs and maintenance to the Castle of Good Hope are being carried out by specialists in the construction, renovation and recycling of buildings, GVK-Siya Zama. These are being done under the expert eye of award-winning architect Dr Gabriel Fagan and his wife Dr Gwen Fagan and with the help of Martine Robinson, a long standing staff member.

> The couple has been involved with the restoration of the Castle and subsequent repair projects since 1968 – making overseeing the preservation of South Africa's oldest building their lives' work.

24

GVK-Siya Zama project manager Rupert Rademan says, "The way the team from Gabriel Fagan Architects have communicated the repair and maintenance scope of work to us has been amazing. They share their knowledge and years of research, taking the time to explain the history behind each room we renovate. The Fagans have challenged us to work with materials and methodologies not commonly used in the last 100 years and are well equipped to answer any questions raised by our construction team. Their expertise has enabled us to ensure that all that the history is perfectly captured throughout the building."

Of working with GVK-Siya Zama, Gwen states, "The members of the team are doing fantastic work. They are handling the intricate repairs as well as the preservation of historical elements very well." She hopes that the Castle will be maintained for future generations to enjoy.

Fagan's career spans more than six

decades. Gwen, who was originally a medical doctor, changed professions and joined her husband's architectural firm in 1969 as a historical researcher and landscape planner. In 1995, she received her PhD in landscape architecture. Between them, the nonagenarians have three honorary doctorates.

Overwhelming responsibility

According to Gabriel, "The conservation of a citadel like the Castle is a creative process involving the overwhelming responsibility of intervening in a prime historical artefact."

Regarding the restoration procedures that have taken place over the years, he explains that it was essential for the building to first be assessed for its cultural, architectural and social value. Its rarity value also had to be judged by comparing it with similar buildings both nationally and internationally. This saw the Fagan's visiting Mauritius, the Seychelles and Sri Lanka where the history of the fortifications matched that at the Cape.

The building was then examined for further clues to its history. This included an examination of the walls, roofs and ceiling to assess the safety and value of existing structures. The doors, windows and 87 different fireplaces were also measured and recorded to produce accurate plans and schedules.

With numerous additions having been made to the building over the past three centuries, the Fagans were challenged with the decision of what to remove and what to retain. Items that were demolished included a toilet block in the inner courtyard dating back to the Second World War, derelict saw-tooth buildings used for storage and parking together with a fig tree that almost obscured the famous Castle bell tower and was swallowing historic sentry boxes and blocking the sewers in the front courtyard.

Recreation of elements

Some elements had to be recreated. For instance, the piers on the gateway leading to the Castle entrance were crowned by lions, with an arched lamp support between them. However, a collapsing flagpole brought the whole lot down, with the lions shattering into small fragments. The remains were boxed to avoid further damage and shipped, along with

the pier capitals, to a special workshop where efforts were made to determine the origin of the clay. Specialist restorer, Jan Corewijn, reassembled the lions, made models and recast them. Today they rest safely in the Castle's museum whilst replicas recline on the piers at the entrance.

Additionally, the gable on the inner side of the entrance, built by Governor Simon van der Stel in 1684, was struck and severely cracked by a lightning bolt. Fagan visited the Earl of Balcarras in Scotland to inspect the notebooks of former Castle resident, Lady Anne Barnard. A panorama done by her in the late 18th century clearly showed the figures of the gods Neptune and Mercury upon the gable. These were reconstructed and the surfaces painted as Lady Anne had depicted them. A similar procedure was undertaken to restore the weather vane above the bell tower which today, with its gold leaf paint, glints now and again in the sun.

During the course of the repair work, a number of hidden historical and architectural treasures were uncovered. Amongst these were a kitchen in the curtain wall between the Leerdam and Buuren bastions, paintings on interior walls, the Dolphin Pool with its fountain and surrounding balustrade and pillars.

Most of the work on the Castle has consisted of the stabilisation of the original structure which had deteriorated as a result of years of neglect.

One of the most challenging aspects of the repair process has been the refurbishment of the moat which had been filled and turned into a garden early in the 20th century. "Having seen the beautiful moat around the Dutch fort at Jaffna in Sri Lanka, we persuaded the Department of Public Works to restore the Castle moat," says Fagan. Archaeologists were called in to identify the original stone walls. Mountain water, which originally filled the moat but was then flowing into the sea, was diverted from the Capel Slood (a narrow water channel constructed for irrigation) under Darling Street and is now used to irrigate the plants on the banks. In addition, specific vegetation was planted to keep the water clean and, with advice from the Department of Fisheries, fish were added. "This worked so well that the moat has become an asset to Cape Town," shares Fagan.

Another difficulty encountered was the installation of modern requirements, such as the establishment of access points for wheelchair-bound visitors, without impacting on the sensitive environment.

"There are many reasons why we refurbish, recycle or restore old buildings, ranging from economics to simple nostalgia or in the case of the Castle, severe structural deterioration. However, the greatest value of old buildings for all of us is that we can identify ourselves through the continuous thread of our communal culture with previous generations and so by better understanding them, reaffirm our own values," concludes Fagan. <





Aerial view of a portion of the Mulilo-Sonnedix-Prieska PV project, a 125 hectare solar PV project valued at R1,3-billion and situated 50 km south-west of Prieska in the Northern Cape.

COMPLETED ON SCHEDULE AND BUDGET

The Mulilo-Sonnedix-Prieska PV project, a 125 hectare solar PV project valued at R1,3-billion and situated 50 km south-west of Prieska in the Northern Cape, is already nearing completion, on schedule, on budget and is set to connect to the grid in the third quarter of this year.

➤ The Northern Free State area of Prieska is fast becoming the solar capital of the country and the 86 MW project, which covers an area equal to 125 football or rugby fields, is expected to power 86 000 homes.

Farid Mouceur, Sonnedix country manager, said that the project, which is being developed under the renewable energy independent power producers programme (REIPPPP), will be run under the auspices of the Department of Energy. "The project will connect to the grid later this year and has an expected 20 year lifespan, which we will operate with a local team."

Juwi Renewable Energies, the South African subsidiary of the international juwi group, is building the Mulilo Sonnedix Prieska PV solar park in the Northern Cape Province for Independent Power Producer (IPP) Sonnedix. When complete, the 125 hectares site (approximately 2 km by 1 km) will host 275 000 PV modules, connected by 990 km of cable. Even if the technology is not complicated, the logistics behind coordinating such a project are tremendous.

"As the EPC we do the design and the engineering - we procure all of the materials and services, every single thing down to the last nut and bolt, and we put it all together on site. So we have integrated a lot of services and a lot of functionality to deliver a project that performs at a guaranteed level for the investor," said Greg Austin, MD of juwi.

The RE industry has made a considerable impact on the Northern Cape region in terms of job creation and opportunities for South African suppliers.

"For us it is important to use as many South African suppliers as possible. Most of our large equipment, solar modules, the mounting structures, the inverter station, is all procured through a local South African entity. Some of the components are imported as they are not manufactured in South Africa, but our full supply base is South African for this project," said Austin.

According to Mouceur, 850 jobs have been created on the Prieska project, with over 500 going to local people living in the region.

"The lifestyle of the many people has really changed. Many came with nothing and are now supervisors, junior supervisors, team leaders, forklift drivers. This solar project gives the community of the Siyathemba area a lot, a lot of hope," said Piet Olyn, project community liaison officer. ■



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25

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Construction sites **PUMPING** with **ADMIXTU**

Pumping concrete is perhaps one of the most challenging aspects within the construction environment, and with the increased move towards taller structures, it is one which contractors need to understand.



Just as important as understanding the concrete pumping process is the role played by admixtures in controlling the way in which concrete behaves from mixing to final curing.

Eddie Correia, executive vice president at Chryso Southern Africa, says that without the use of admixtures pumping concrete would not be an economically viable construction methodology.

“Without admixtures the concrete mix would have to be modified to make it pumpable and this could include altering the sand/aggregate ratio or even the water content. This is most undesirable as it could adversely affect the concrete’s physical characteristics,” Correia says.

“The key to the overall success of concrete pumping is all about getting the right mix in terms of paste, paste volume and admixture selection, and this is where it is important to secure access to a company with the necessary level of applications knowledge to ensure that the most appropriate admixture is selected for the mix design and the construction project,” Correia says.

One of the most important objectives that will ensure successful pumping is to achieve a dense, cohesive concrete mix with sufficient paste volume. This will enable the correct level of workability of the concrete. Good aggregate coating is essential with the primary goal to attain a high level of plasticity which will allow the material to be moulded and shaped to hold the required form, thereby facilitating the pumping operation.

Correia says that even where the available aggregates are not of a high standard it is possible through the introduction of an appropriate admixture to produce medium to high workability of the concrete. An example would be use of Chryso’s Quad 20 which enables greater cohesion and is not sensitive to mix designs. Where admixtures are sensitive to mix designs the risk of material segregation is ever present.

“Segregation can be a serious risk and must be guarded against at all costs. Where material segregates and the water separates out of the mix – in other words where water washes out of the paste – there is a strong possibility of blockages occurring in the pipeline,” Correia explains.

Superplasticisers from the Chryso® Fluid range will assist in creating a favourable water/cement ratio by reducing the amount of water, and this also prevents shrinking, cracking and porous concrete.

Significantly, Chryso® has developed Fill Free® technology which assists contractors to produce concrete that is cohesive and yet still has a moderate viscosity. This modified PCE-technology was developed to have non-thixotropic properties and makes use of Chryso® superplasticisers.

Superplasticisers, otherwise known as water reducing agents, enable good aggregate coating by dispersing the cement grains thereby minimising agglomeration of the mix and increasing plasticity and therefore workability of the concrete.

Pumping pressure and material grading

Other factors that could contribute to segregation are pumping pressure and material grading. If the pumping pressure used is too high excessive pressure is placed on the mix and this could force segregation of the concrete during pumping. Likewise if the grading of the aggregates is incorrect, they will be pushed out during pumping and this will result in blockages in the pump and/or pipeline.

Correia explains that when being pumped concrete moves in the form of a cylinder and is separated from the pipeline wall by a lubricating layer made up of water, cement and fine aggregate or sand. It is essential that this lubricating film is achieved on all sides of the pipe and that the requisite workability is attained so the concrete can be pushed or transported through this channel.

Chryso® Fill Free® technology facilitates a cohesive concrete paste which is less sticky. This is important as stickiness can produce lower cleaning efforts in the pipeline and also increase the resistance of the flow of the concrete in the pipeline. A paste that is too sticky will also make it difficult to maintain a constant rate of pumping.

“Again, this is where superplasticisers are invaluable in achieving the plasticity and workability needed for the concrete paste to pass easily through reducers and move through bends in the pump and pipeline without causing blockages,” he says.

Paste volume

Typically paste volume is determined by the aggregate type and shape as well as the grading curves of the mix. In addition to this, both the water/cement and water/binder ratios of the mix design and appropriate admixture selection play critical roles. Correia cautions that simply changing the ratio of components in a mix design is not the answer.

One of the ways to increase the volume of the paste is to increase the air content in the mix through the use of an air-entraining admixture. This will allow small stable bubbles to be developed in the paste and enable sand particles to move by each other more freely, increasing the plasticity of the mix without the need to add additional water.

Caution must be used, however, in the appropriate selection of the air-entraining admixture. The introduction of too much air into the mix can create a ‘concertina effect’ in the pipes that will affect pumping distances.

Without the use of admixtures pumping, concrete would not be an economically viable construction methodology.



Chryso® Fluid Optima 100 was used on the Impala Platinum No 16 shaft to give the mix extended workability without affecting the setting time.



RES

Pumping technique can also contribute to exacerbating the situation and the hopper should always be completely full to ensure that air is not sucked into the pump and that a constant pumping pressure can be maintained. It is also important that the integrity of the equipment being used is sound as a leaking pump or pipes will introduce air and affect the pumping pressure.

“It is vital to look at the concrete pumping application and determine the most appropriate admixture that will fulfil the requirement. This will also ensure the integrity of the final concrete product,” he says. Use of chemical admixtures means that concrete can now be pumped under a broad range of conditions, and this includes farther, higher and faster than previously possible. Admixtures also enhance the physical properties of the hardened concrete.

Correia says that adjusting or changing the admixture selection can facilitate the required properties for pumping. “It is also important to understand that one superplasticiser will not suit every concrete application or type of cement as each is specifically designed to achieve a maximum performance with a certain type of cement chemistry,” Correia says. He again points to the need for construction companies to ensure that a fit-for-purpose concrete mix design is achieved that will fulfil the specific project requirements.

Examples throughout the world

A good example of a project where Chryso® Fill Free® technology is being used is the World One residential buildings in Mumbai India. At a height of 442 metres, these will be the tallest residential buildings in the world and the high strength concrete superstructure, with 100 MPa walls, uses the innovative Fill Free® admixture technology. Correia says the extreme pumpability offered by the product is ideal for such a super tall structure.

Local examples of projects that have used Chryso® admixtures to achieve concrete pumping success are the Impala Platinum No 16 shaft and the Michelangelo Towers.

At the time of construction, No 16 Shaft was the tallest mining headgear in the world with its structure reaching 132 metres high with 109 metres above the ground. With wall thicknesses between 550 mm and 950 mm, the shaft structure has a width of 20 metres and a breadth of 21 metres. Construction was achieved using slip forming methodology and Chryso® Fluid Optima 100 was used to give the mix extended workability without affecting the setting time.

Correia says that this enabled the contractor to speed up the pace of construction and resulted in cost savings on the project.

Chryso® Omega 140 and Chryso® Optima 100 was used during the construction of the Michelangelo Towers. This admixture was selected to reduce pump pressure which facilitated pumping of the concrete to the top of the structure at 143 metres. <

It is vital to look at the concrete pumping application and determine the most appropriate admixture that will fulfil the requirement.



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BUILDING almost entirely with SCRAP MATERIALS

For many centuries, quantity surveyors were regarded as financial managers for conventional building projects. But the 'green revolution' has changed all that. Nowadays, a quantity surveyor has to be able to control costs for the most unusual type of structure – even one built almost entirely with scrap materials.



This has, in fact, been the highly unusual challenge for De Leeuw Namibia, a subsidiary of South Africa's renowned quantity surveyors, the De Leeuw Group, a long-standing member firm of the SA Association of Quantity Surveyors (ASAQS).

Chris de Wet, chairman of the De Leeuw Group and former director of ASAQS, says the De Leeuw Group has in the past 58 years been involved in a wide variety of building projects ranging from elaborate and towering skyscrapers, multi-billion rand civil engineering contracts, to relatively out-of-ordinary assignments like ship conversion or the building of a rose farm. For most of these projects, the quantity surveyor's tried and trusted Bills of Quantities formula applied. But now, in a new era, there are immense sustainability challenges to his profession that excite the veteran quantity surveyor.

De Wet explains: "Green building' challenges the norm as never before, and calls for unique thinking from the entire project team – from the client all the way to the contractor. The quantity surveyor plays a leading and vital role in estimating the costs and managing financial control until completion of a project. So, when faced with a green project like no other, even the most experienced QS is literally thrown in the deep end with no previous records from which costing models could be drawn. Indeed, past experience was no guideline when my colleagues in Windhoek were appointed as quantity surveyors for the construction of a building that can best be described as a monument to alternative and cost-effective methods of building. It was a project that pushed the skills of the quantity surveyor to the limit," De Wet comments.

Sustainable architecture

Designed by acclaimed sustainability architect, Nina Maritz, of Nina Maritz Architects in Windhoek, De Leeuw Namibia had to manage the total financial process applicable to the building of the new Habitat Resource & Development Centre on behalf of the Namibian Ministry of Regional & Local Government, Housing and Rural Development. "This

project employed virtually revolutionary alternative building techniques that showed that not all man-made structures have to have an adverse impact on the environment, while emphatically endorsing the merits of recycling. It posed the kind of challenge a quantity surveyor seldom has to face: adherence to design while working with reclaimed material that had been destined for landfills or, in some cases, even physically retrieved from scrap heaps," De Wet recalls.

Comprising offices, a library, conversance centre, workshops and ablutions, the 2 110 square metres structure in Katutura, on the outskirts of the Namibian capital, is used to advise and train the public on how to start small-scale businesses in the housing market.

Herman Martins, director of De Leeuw Namibia, says some of the innovative – and totally unexpected – materials required by the Nina Maritz design of this landmark structure included the use of:

- Old motor vehicle tyres for both interior and exterior walls, retaining walls, roads, and flower beds.
- Pre-owned hardware door and, window frames, ironmongery, and scrap sheeting for a variety of applications, including discarded fridge racks that form part of a decorative security gate, and steel sheeting that was used as the backing of fluorescent light fittings.
- Bags filled with wool and lavender, stitched together to form an innovative wool and reed ceiling.
- Bricks made from natural soil and as little cement as possible to reduce the overall embodied energy and cost of the structure.
- Recycled oil drums and dried branches of the Namibian prosopis tree to make the roof of the Centre's refuse yards.
- Sandbags used for wall building material - with viewing 'windows' to show the visitor the somewhat startling, but effective, contents, of the walls.
- Gabion walls, made from concrete test cubes, concrete rubble and stone.
- Droppers made from prosopis tree trunks soaked in motor oil as protective coating instead of the more ecologically hazardous alternatives for wood protection.

- Old beverage cans to build single-skin walls.
- Recycled ceramic tiles applied as ablation décor, motor car oil filters and old printing plates used as lamp shades, and discarded CDs employed as part of novel lighting chandeliers.

Martins adds: "Architect Nina Maritz came up with innovative ways to improve the building's energy efficiency. All of its energy needs are supplied from a roof-top solar system. Her novel design to reduce the building's total draw on energy furthermore includes a passive down-draft system that cools the conversance facility and library, while natural light and cross ventilation further reduce the structure's electrical demand."

He says one of the challenges of the project De Leeuw Namibia faced was getting the professional team and the builders to break the norm, and think beyond construction conventions. Some of the challenges that had to be overcome included:

- An unusually high number of design changes caused by the fact that scrap dealers tend to sell to the first potential buyer so a lot of the windows and door frames originally selected for the building had been sold to a third party by the time a contractor was appointed.
- Estimating the cost of the building materials was extremely difficult. "We had to resort to informal discussions with contractors and our 'gut feeling' of how much some of the materials would cost," Martins recalls.
- The government tender insisted on transparency so the awarding of tenders could not be based on selection nor negotiations.
- De Leeuw Namibia had to undertake weekly site visits to assess the unpredictable waste factor of some materials, and to establish if some of the waste could be re-used to minimise the financial impact of the waste volumes.
- The concept of 'actual-cost-plus-profit' had to be employed for items like old wheelbarrows which were cut in half, flattened and welded together to form screens.



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2a.



2b.



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1. The Namibian Habitat Resource & Development Centre with its tyre retaining walls, rooftop solar installation and downdraft ventilation system.

Martins and his colleagues also organised a special workshop for tenderers who were in contention to handle the project to provide and share as much information as possible between the various parties so that an acceptable Bill of Quantities could be drawn up.

Other key members of the professional team for this landmark project were Burman & Partner, the civil and structural engineers; G.S. Fainsinger & Associates, the electrical and mechanical engineers; and Groenewald Properties, the main contractors. ❏

- 2. Walls and retaining walls were built with old motor car tyres (a and b).
- 3. Old beverage cans were used to build attractive single-skin perimeter walls.
- 4. Painted Hydroform bricks reduced the need for cement, lowered the embodied energy of the building and its development costs.



4.



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SIGNIFICANT PORT ELIZABETH INVESTMENT PROPOSAL

Emfuleni Resorts recently outlined its proposal to develop a R1,3-billion mixed use development on currently under-utilised land in the Boardwalk Precinct in Port Elizabeth. The Boardwalk Mall would include a retail mall, a multi-purpose events venue, entertainment offerings and corporate offices. Emfuleni, together with partners Parktown Capital, believe that the current site offers exceptional opportunities for all.



Emfuleni will contribute its land in return for an equity stake. Parktown Capital are leading the development and tenancing, with Sun International ensuring that the mix and design are complementary to its existing business, which should drive footfall and business to the entire precinct. Set on a 13,3 hectare site within The Boardwalk precinct – envisioned in its final form to be a mixed-use lifestyle node situated together with the natural landmark of Hobie Beach – The Boardwalk

Mall's components have been designed to meet the needs of PE's residents and visitors.

30

Emfuleni is making application to the Eastern Cape Gambling and Betting Board to amend its casino licence for an additional 20 years beyond its current expiry date of October 2025 in return for this investment. In 2000, Sun International and Emfuleni originally invested over R500-million to build the Boardwalk and a further R1-billion to extend its licence thereafter.

Designed to complement The Boardwalk's other leisure offerings and serve the needs of surrounding communities, the project will provide local residents and visitors with a range of retail offerings, activities and attractions. This will be an essential new component of the broader Boardwalk precinct, identified and earmarked by the Nelson Mandela Bay Metro as an important growth node that will accelerate the Metro's economic growth, job creation and increased returns to the Province.

The project is designed to deliver on the Eastern Cape Provincial Government's objectives in terms of job creation and black economic empowerment. As many as 8 500 new jobs are envisaged to be created during a two year construction period and 1 500 jobs during operations.

The new development is planned to include:

- A 35 000 m² mall, offering restaurants, high-end convenience, and niche retail with eateries and entertainment. It will be arranged

around a revised water feature and the new Sun Park that will be used to support and host special events and entertainment

- A 2 570 m² multi-purpose events venue
- A 2 000 m² Magic Company including a Laser Tag facility and bowling alley
- 1 832 m² of movie theatres
- 4 000 m² of corporate offices
- 3 000 parking bays

The Boardwalk Mall will be appropriately and sensitively themed to fit within the urban fabric of The Boardwalk as a whole in terms of both its visual impact as well as the anticipated impact from the expected influx of visitors.

The Boardwalk Consortium also proposes to provide a more effective and relevant entertainment icon for the City: the vibrant new Sun Park. The Sun Park will occupy an area of about half a rugby field, around and incorporating the revised fountain water feature. It is designed to be a community-centred entertainment zone to stage and host a wide range of activities from sports events to staged concerts, open-air cinema, wine-tastings and corporate launches/tourism exhibitions. The venue will also form part of Sun International's national concert/show circuit.

The range of restaurants and bars at The Boardwalk Mall will represent a vibrant mix to suit all tastes and all ages, and are spread around the perimeter of the shopping centre. Both fine dining and popular local brands will be offered.

Retail planned for the Boardwalk Mall will showcase both local and imported goods. Shops will be positioned close to all major public entrances and will appeal to a broad cross-section of residents. Quick service food and beverage offerings will be located close to the proposed Sun Park with easy access to the dedicated children's play area, the crèche, and the Magic Company.

Said Bongi Siwisa, chairman of Emfuleni Resorts, "The Boardwalk Consortium believes this development fulfils all the requirements for a considered, well-planned addition to this critical node, and that from the day it opens it will become a popular regional destination attraction for Nelson Mandela Bay. An investment of this size – the largest ever in tourism and hospitality in Port Elizabeth, amply demonstrates our belief and confidence in the long term potential of the Metro and the Province." ■



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MAITLAND RIVER MOUTH PIPELINE

Last year Port Elizabeth's Nelson Mandela Bay Municipality determined that after more than 20 years without maintenance, the city's main water pipeline at Maitland River Mouth was in need of refurbishment. Engineers from Aurecon turned to Sika to supply its highly durable products for waterproofing and protection of the pipeline itself, as well as repairs to the concrete base structures supporting the pipeline.



Forming part of Sika's Concrete Repair and Protection System, Sika FerroGard-903+ and Sika MonoTop-610 were specified by Sika's John Zehmke. "Corrosion protection provided by these products increases the service life and reduces the maintenance life cycle of reinforced concrete. SP Excel Plant & Civil were contracted to apply the numerous Sika products," said Zehmke.

As a Migratory Corrosion Inhibitor (MCI), Sika FerroGard-903+ was spray applied onto the concrete to form a protective monomolecular layer on the surface of the reinforcing steel.

This passivation of the steel delays the onset of chloride-induced corrosion and reduces the rate of corrosion.

Based on organic compounds, Sika FerroGard-903+ does not alter the water vapour diffusion of concrete, prevents development of

incipient anodes and its easy application makes it suitable for use where other repair or prevention options are not affordable.

Sika MonoTop-610, a cementitious, polymer modified, one-component, bonding slurry and primer with active corrosion inhibitors, was used for protection of the reinforcing steel. It provides excellent adhesion and good resistance to water and chloride penetration.

For repairs on the deteriorated concrete, Sika Rep, a one component, cement-based multi-purpose patching and repair mortar was used. It is shrinkage compensated, vapour permeable and provides excellent adhesion.

SikaGrout-212, a high performance, non-corrosive, cementitious grout was used for repairing concrete. Easy to mix with an adjustable consistency, it provides rapid strength development and high final strengths. It expands by

gas generation whilst still in the plastic state of curing, resisting the tendency of grouts to shrink away from restraining surfaces during the setting phase.

Remaining cracks in the concrete were injected with Sikadur-52 ZA, a two-part, solvent-free, low viscosity injection liquid, based on high strength epoxy resins. It not only forms an effective barrier against water infiltration and corrosion promoting media, but also structurally bonds concrete sections together.

"All of these high performance Sika products used enable easy mixing and application. Upon completion of this yearlong project, 432 m² of concrete were completely rehabilitated thereby significantly increasing the expected lifespan of this vital pipeline," concluded Zehmke. ■

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CRITICAL

to ensure lasting road design



As more and more South Africans invest in cars of their own, our local road infrastructure continues to remain under pressure both in terms of new road development and existing road maintenance.

32

> A lack of product knowledge and inadequate understanding of the properties of different construction materials is further adding to this challenge, with many contractors starting to rely on consultants to meet skills and delivery-related gaps. Thabiso Maloa, technical consultant at PPC, argues that closer partnerships with suppliers can lead to better results and should thus be explored. By simply refining spreading calculations and exploring alternative application techniques for example, contractors can not only improve efficiency and quality but also positively impact bottom line while constructing roads that are built to last.

A critical enabler

Just one element in South Africa's greater transport system, our road infrastructure remains a critical enabler across the country. "Even though we continue to see improved integration across various transport platforms in line with global trends, our roads are still our primary connectors – supported by rail, ship and air transport infrastructure," explains Thabiso Maloa, technical consultant at PPC. "Because of the significant investment a road represents it's important to ensure that they're not only built correctly, but also appropriately maintained to ensure extended lifespan. As new or 'challenger' construction companies start moving into this opportunity space, there is a need for suppliers

and manufacturers of road materials and solutions to step up and initiate value-adding partnerships that ensure delivery objectives can be met."

Maloa notes that PPC's experience in the market shows that challenges in road construction often occur at the very beginning of the projects. "A lack of product knowledge and inadequate understanding of materials' properties can mean that projects are compromised from the outset both from a quality and cost perspective. There are additionally very few credible testing laboratories across the country. As a result, a disproportionate amount of time is often spent retesting or trying to analyse soil samples and develop mix designs – all of which have a material cost in terms of time and money."

Combination of solutions

With many regions across the country having soil with high clay content (or plastic index), contractors also often need to approach road design in these areas using a combination of solutions. "While the starting point is product selection (i.e. using a product like PPC Sure-road that has been extended with limestone), project managers need to test throughout construction to improve unconfined compressive strength and indirect tensile strength of the road." These tests should include materials design testing, process control testing (to ensure that constructed layers meet the required standards) and comparative testing

– to determine whether two or more laboratories obtain the same results.

PPC's response to the above has been to work with accredited laboratories to facilitate testing and create custom designs based on the needs of clients – at no additional cost. "We also work closely with consulting engineers throughout the project: from design to final laying of the road."

Maloa adds that something as simple as bulk spreading can also make a massive difference in the rollout, completion and future maintenance of the road. "Here one's solution provider can prove invaluable from the outset. We've found that by working with project managers to understand spreading calculations and designing the product mix appropriately, and then facilitating strength and moisture control tests, we can provide a seamless bulk spreading solution. This includes planning a delivery schedule so that product arrives on time, communicating with the site manager and, most importantly, assigning a specific driver to a site to enable project understanding and efficiency. Drivers are briefed extensively to ensure proper speed control throughout the bulk spreading process – saving time and money both in the short and long term, due to the ongoing focus on quality."

With the construction and maintenance of roads set to remain a regional and national priority well into the future, Maloa explains that taking a solutions-driven approach with suppliers can potentially give construction companies an edge in the market: "Partnerships remain key to long term success both for smaller and large scale projects.

By drawing on the expertise and cost efficiencies suppliers can unlock in contracts, road developers can ensure they not only deliver on time and within budget, but create and maintain roads that meet the country's needs." <

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The complex **MADE SIMPLE**

Good design – what does that mean in terms of a construction machine? For example, can the operator effortlessly understand all the functions and operate the machine intuitively? Good design also means structuring it in such a way as to prevent operating errors.

➤ At Hamm, the implementation of this knowledge has ranked among the key aspects of product design for decades. It is against this background that highly user-friendly rollers have been developed at Hamm since the 1990s. Hamm has now developed Easy Drive for the current machine generation.

This new operating concept for all model series enables intuitive operation and offers ergonomically optimal operator platforms. Hamm already received the iF Design Award for it at the beginning of 2015. Now the Easy Drive operating concept has again been accoladed for outstanding design, and twice over no less: as the Universal Design expert favorite 2016 and as the Universal Design consumer favorite 2016.

Modern construction machines contain countless processors, SIM cards and other high-tech components – all in all, they are complex tools with which the operators have to solve ever more challenging tasks. In order to achieve this, an intelligent, clearly structured operating concept is needed.

Minimising complexity

The Universal Design competition is devoted to this particular topic. It seeks out products whose form and handling matches the needs of the widest possible circle of users. Here, complexity is to be reduced to a minimum.

Easy Drive means that all rollers have the same colours for the same function groups and there is a common design, adapted to the specific functions of the series. Here, the operating elements for the same functions are always in the same position on the operator's platform.

Last but not least, the products should be as error-tolerant as possible, well-designed and long-lasting.

Targeted development towards a successful design

Products meeting these requirements do not come about by chance. Rather, they are the subject of an extensive design process that adopts an integrated approach to solving the tasks. Hamm has done exactly that and considered the operating concept as a key component of the complex construction machines. The development requirements were minimum learning and familiarisation times, clearly laid-out operating units, intuitive operation – across all model series and all rollers.

Integrated development process

In order to achieve these targets, Hamm has integrated personnel from design, sales, product management, service, production, marketing, controlling and procurement in the development process. They were complemented by specialists in working methods, ergonomics and design. Working as a team, they have developed a scientifically based, machine-independent basic operating structure in the form of Easy Drive. It is modular in

design and will function on both the current and forthcoming rollers.

Easy to operate and ergonomically unrivalled

The latest findings in the area of ergonomics were incorporated in the development. Working with specialists, Hamm has for example defined the sizes, positions and adjustment ranges for seats, arm rests, steering wheel, dashboard and mirror and adapted them to the different machine types. Thanks to the wealth of adjustment options, drivers will quickly find a healthy sitting position in the Easy Drive machines. From there, they can operate the rollers intuitively, so that they can respond quickly and correctly in every situation even without extensive previous knowledge.

Design award from experts and users

At the beginning of 2015, Hamm received the globally coveted iF Design Award for the Easy Drive operating concept. Next, the operating concept was also exceptionally well-received by the jurors of the Universal Design competition.

On this occasion, Easy Drive even received two awards: on the one hand, the 'Universal Design expert favorite 2016' prize, awarded by a jury of experts, and on the other, the 'Universal Design consumer favorite 2016' prize, awarded by a 50-strong user jury.

Available since 2015

If you would like to experience Easy Drive for yourself, you can do so because the operating concept has been available on the DV+ series tandem rollers since 2015 and is highly rated by users. Since the beginning of 2016 it is also being gradually integrated in the HD+ series tandem rollers and the H series compactors. ◀



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AWARDS FOR EXCELLENCE

The results of the CMA Awards for Excellence competition, announced at a gala dinner function in Johannesburg on 23 April, suggest that advances in precast concrete technology were significant influencers in this year's judging process.

> The judges had no hesitation in awarding the concrete cladding of No. 1 Silo at Cape Town's V&A Waterfront the Aesthetics Commercial Trophy. Besides its striking visual appeal, which showcases the beauty of precast concrete construction at its best, the project also involved high levels of skilled precast concrete engineering.

Similarly, the judges were unequivocal in nominating the Gouda Wind Farm concrete tower project for the Technical Excellence Trophy, which again reflects substantial levels of technical engineering input. It is a project with a pronounced innovative bias, being the first time that a South African wind farm used precast concrete segments in the construction of its towers, which in this instance were 100 m high. Not surprisingly, the project was also entered into the Innovation category where it prevailed as a Commendation Winner.

Judging

Entries closed on 16 October last year and the judging took place on 23 November at the Johannesburg offices of PPC Cement, the main sponsor of this year's event. The five

judges, all leading professionals in the field of construction, comprised:

- Landscape architect and director of Arla Consulting, Antoinette de Beer
- Architect and media manager of Paragon Architects, Hugh Fraser
- Civil engineer and president of the South African Institution of Civil Engineering (SAICE), Malcolm Pautz
- Civil engineer and a director of Nyeleti Consulting, Abe Thela
- Quantity surveyor and managing director of Bert van der Heever Bourekenaars Ingelyf, Bert van der Heever.

Interest in this year's completion was far greater than in 2012 when the CMA was celebrating its 40th anniversary. This was borne out by the number of entries which spiked from 77 in 2012 to 117.

Precast for roads

Three of this year's trophy winners were roads or people traffic related: the paving of gravel roads in Walmer Township, Port Elizabeth; the Castle Bottom Kerb and paving blocks for the Waterfront at Knysna Quays project in Knysna.

Trophy winners

This year's five trophy winners were as follows:

- Concrete Units – the Aesthetics Commercial trophy for casting the precast concrete panelling for No. 1 Silo at Cape Town's V&A Waterfront.
- Shukuma Bricks – the Community Upliftment trophy for providing concrete pavers for the paving of gravel roads in Walmer Township, Port Elizabeth.
- Concrete Units – the Technical Excellence trophy for manufacturing 782 precast concrete wind tower segments for the Gouda Wind Farm project in the Western Cape.
- Bosun – the Innovation trophy for introducing the Castle Bottom Kerb.

COMMUNITY UPLIFTMENT TROPHY WINNER

Walmer Township, Port Elizabeth, Eastern Cape

This Nelson Mandela Bay Metropolitan Municipality project formed part of the Triennial Premix Tender Works Packages. It involved upgrading roads in Walmer Township, and in addition to creating jobs, simultaneously provided local community members with an opportunity of learning valuable skills.

In total 25 people were hired and they showed a tremendous willingness to learn the following skills:

- Laying pavers, kerbs and channels
- Pricing bill of quantities for future tenders
- Measurement
- Management of labour
- Invoicing

What were once dusty gravel roads were transformed into aesthetically pleasing and practical low-maintenance surfaces using 80 mm interlock pavers manufactured by Shukuma Bricks.

Judges' comments

The depth of involvement by the community beyond mere employment ensured that valuable skills filtered down.

Product information

80 mm Interlock pavers class 40/2.6 (grey)

Project team

- Client: Nelson Mandela Bay Metropolitan Municipality
- Engineer: Worley Parsons
- Main contractor: Rand Civils
- Manufacturer of precast concrete elements: Shukuma Bricks



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- SmartStone – the Precast for Life trophy for supplying Fan Cobble paving blocks for the Waterfront at Knysna Quays project in Knysna.

Apart from the Aesthetic Residential category all other categories posted two commendation winners each.

The Aesthetic Commercial commendation winners were: SmartStone Midrand and Bosun, the former for supplying pavers and coping for the Thaba Moshate Hotel Casino and Convention resort in Limpopo, and the latter for providing drycast paving blocks for the courtyard of BMW's head office refurbishment project in Midrand.

C.E.L. Paving Products and Hydraform each won a Community Upliftment commendation. C.E.L. produced 6 400 m² of paving for surfacing gravel roads in Kassiesbaai/ Arniston in the Western Cape, and Hydraform supplied concrete block making machines for the Radway Green Housing project in the same province.

The two Technical Excellence commendation winners were Concrete Units and Aveng Infraset. Concrete Units won the award for manufacturing precast concrete rock print panels for the Mouille Point Sea wall Project in Cape Town and Aveng Infraset for providing non-standard portal culverts for the Tweefontein Optimisation project in Mphumalanga.



Concrete Units' precast concrete expertise was rewarded a fourth time, in this instance an Innovation commendation award for the Gouda Wind farm towers for which it also won the Technical Excellence trophy. The other Innovation commendation award was won by Rocla for casting 128 precast concrete cabins for housing photovoltaic equipment in the Free State and Northern Cape. <

INNOVATION TROPHY WINNER

Castle Bottom Kerb

The Castle Bottom Kerb is patented (SA2012/09544), clear evidence of innovation. Prerequisites for a patent are that an invention should be novel and hold clear advantages over existing and similar products.

Advantages of Castle Bottom Kerbs:

- Cavities provide grip for installers making for much easier handling.
- The cavities make the kerb much easier and quicker to install. In instances where unlevelled screed surfaces force installers to lift fill and relay conventional kerbs, Castle Bottom Kerbs are much easier to manoeuvre into place.
- Because the Castle Bottom Kerb has more load points it sinks into the screed, providing much better adhesion in all directions.

- The Castle Bottom Kerb eliminates air pockets in the screed which could create weaknesses under the kerb after installation.

Judges' comments

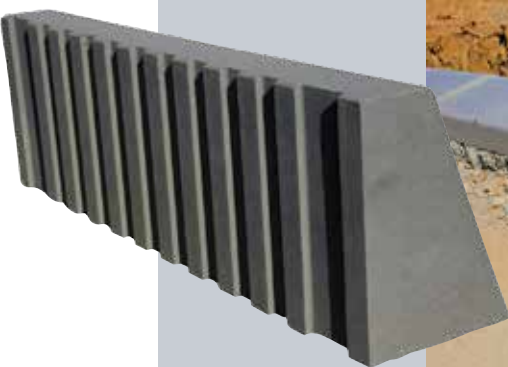
An effective and cost-effective alternative to satisfy extreme technical demands, made this an impressive solution.

Product information

Castle Bottom Kerb

Manufacturer of precast elements:

Bosun



PRECAST FOR LIFE TROPHY WINNER

The Waterfront Knysna Quays, Western Cape

A trip along the Garden Route is not complete without a visit to the famous Knysna Waterfront. Arguably one of the most popular leisure and shopping destinations in the region, boasting a superior marina, the waterfront offer various restaurants, boutiques and other speciality shops.

This project was completed in October 1998. Signature Fan cobbles line the marina and offer an overflow area for the restaurants. After 17 years these cobbles are still beautiful and their installation pristine.

Judges' comments

Has withstood the harsh climatic conditions and heavy pedestrian traffic.

Product information

Fan Cobbles (charcoal)

Project team

- Owner: SA Ports and Harbours
- Main contractor: Asla Construction
- Manufacturer of precast elements: SmartStone George

BAUMA 2016 SHOW IS A SUCCESS FOR CASE

CASE Construction Equipment made a big impression at the bauma 2016 exhibition, attracting a high number of visitors from all continents on its stand throughout the week.

> The layout of the stand reflected the brand's focus on the customers, making it easy for visitors to find the offer for their business in the display organised by sector: Urban Construction, Infrastructure, Quarrying and Recycling. CASE machines and Iveco vehicles were shown together to highlight how the two lines provide a complete solution for construction businesses.

The CASE Europe Africa Middle East team was on the stand throughout the show to welcome customers from across the region and discuss their requirements. The Service and Parts teams and CNH Industrial Capital were also available to explain all the ways the brand is able to support customers in partnership with its dealers, providing complete business solutions that include tailored financing packages, extended warranty, planned maintenance programmes, competitive cost of ownership, and efficient parts and technical service.

The brand showcased its full line of equipment and services, complemented by Iveco

vehicles for the construction industry, on its 3 216 square metre stand. At the show CASE unveiled new D Series crawler excavator models for the European markets, the 580ST backhoe loader featuring the new backhoe boom and loader arm, and new features for the CASE® SiteWatch™ and CASE® SiteControl™ systems.

A team of dancers and acrobats provided entertainment and led visitors into the heart of the CASE stand, where they performed with three machines.

An immersive CASE experience

Following its successful introduction at Intermat 2015, CASE offered once again its stand experience app, which led visitors on a guided tour, providing access to multimedia material on the products and services on display as they walked around the stand.

An excavator simulator provided visitors the opportunity to experience what it is like to operate a CASE machine. This proved to be one of the stand's biggest attractions, with over



Franco Invernizzi, global brand marketing and Africa Middle East sales and marketing of CNH.

750 visitors proving themselves in the driving simulator contest that challenged participants to uncover the CASE logo against the clock, rewarding every day's fastest operator with an action camera.

The brand also organised a twice-daily shuttle to a gravel pit located in the nearby village

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Raubex is stabilising the sub-base to a depth of 350 mm with AfriSam's Roadstab 32.5N CEM ii B-L cement.



Some 20 000 tons of AfriSam's Roadstab 32.5N CEM ii B-L cement will be used on this project.

PULLING OUT ALL THE STOPS ON ROAD BUILD

While quality of materials is a prerequisite for any construction project, it is also the ability to guarantee an uninterrupted supply of cement that has proved to be a major competitive edge for AfriSam on recent road overhaul projects in the Free State.

> The largest building materials producer in South Africa has supplied cement for stabilisation activities on three South African National Roads Agency Limited (SANRAL) projects in the province.

This includes the more recent order for 20 000 ton of cement by Raubex Construction which is upgrading the National Route 1 from Sydenham (km 28,8) to Glen Lyon (km 62,4) in Bloemfontein.

Raubex is working with Roadmac Surfacing on this heavy upgrade, which will prolong the life of the road by up to 20 years. Raubex is building the pavement, while Roadmac Surfacing is handling the bitumen-treated-base (BTB) course as well as the surfacing components of the works.

As such, the sub-base component of the project is absolutely critical to Raubex. And

Johan Acron, the company's contracts manager on this project, is impressed by the consistent supply of quality cement the construction team is receiving from AfriSam. He says this has definitely helped Raubex forge well ahead of schedule on the works programme.

The supply of cement on all three of Raubex's recent projects in the province has been managed by AfriSam's Stefan Roos who ensures that two loads of cement, each comprising 1 440 bags, are delivered to the site every day.

This cement is delivered from AfriSam's depot in Bloemfontein. It is located a mere five kilometres from the construction site, and receives a regular supply of the material by rail from the company's Ulco clinkering and grinding operation in the Northern Cape.

As Roos notes, should an emergency arise, the cement producer can guarantee that

it will have cement on site within an hour.

The first loads arrive at 4:00 and subcontractors start unpacking and spreading the cement, ahead of the stabilisation operations.

The sub-base is an essential component of the high specification road infrastructure, which also comprises a 120 mm thick BTB layer. Work starts with the measurement of the natural ground levels, followed by the milling of 50 mm of the base of the existing pavement. Raubex is stabilising the sub-base to a depth of 350 mm with AfriSam's Roadstab 32.5N CEM ii B-L cement. Some 20 000 tons will be used on this project.

On two of these contracts, Raubex used mechanical spreading, a service that is also supplied by AfriSam. However, on this contract, it has opted for manual spreading practices to meet SANRAL's objective of developing small, medium and micro enterprises on all of its builds.

While building activity may have slowed down in Bloemfontein, Roos remains optimistic about the future. He definitely has reason to be, considering the growth the city has enjoyed over the past few years, and the infrastructure needed to support this. ■

40

of Aschheim, where it offered test drives on the latest CASE products for aggregates applications.

CASE graders wins award

The CASE 856C grader, marketed in the European

countries, won the *Diesel Progress Excellence in Equipment Engineering Award* in the Graders category.

The award, which is organised by Diesel Progress magazine and ZF, recognises the

achievements in engineering and design of engine-powered machinery.

CASE further expanded the offering in its CASE SiteControl™ range with the new RTK+ correction signal delivered via GSM. This service is delivered by a high-density RTK network of over 500 base stations owned by CNH Industrial. This enables the customer to work almost anywhere without the need for a fixed base station for the RTK correction signals.

This is the biggest network in the market, and it uses the very latest technology with consequent unique benefits. The signal is more stable and accurate: if one of the base stations slips out of service, another one takes over without disrupting the signal or affecting its accuracy.

CASE also introduced a new backhoe design with in-line cylinder geometry and inner Extendahoe on its 580ST model.

This is the ideal solution for operators who want exceptional breakout force and great reach. Alternatively, customers can choose the existing well-known CASE boom with overlapping cylinders and protected outer extendahoe. It has a shorter boom, resulting in lower transport height. ◀

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AGGREGATES KEY to civilisation

South Africans need approximately 9 kg of sand and stone per day in order to function and live unimpeded in our modern society.

Quarrying statistics reveal that per capita we need this amount in order to continue our daily lives with shelter and access to public infrastructure. At about 3 tonnes of aggregates per person per annum South Africa ranks low compared with developed countries such as Canada (13,9 tonnes), Finland (14,9 tonnes) and Australia (7,5 tonnes). We are on par with other developing countries such as Brazil (3,8 tonnes) and Russia (3,9 tonnes) but lag behind China (11,1 tonnes) by a considerable margin.

These and other interesting facts came to light as aggregate associations from across the globe met in Cape Town to discuss the state of the global industry recently. The Global Aggregates Information Network (GAIN) brings together world authorities, including the Aggregate and Sand Producers Association of Southern Africa (Aspasa), to share information and issues facing quarry operators the world over.

legislation worldwide and Aspasa members are audited annually to ensure that they comply with these and our own strict requirements. That is why it is so important for Government, municipalities, construction company owners and all those involved in the construction chain to get involved and ensure that they support the part of the industry that actually cares about communities' wellbeing and the sustainability of the entire construction industry," adds Pienaar.

Nico Pienaar of Aspasa.



Global aggregate usage.

| Producer | Billion tonnes BNT |
|----------------------|--------------------|
| Worldwide production | 40 |
| China | 15 |
| India | 5 |
| Americas | 5,2 |
| Europe | 2,6 |
| Africa | 3,3 |
| Oceania | 1,7 |

Interesting facts from GAIN

Developing regions typically use 3-4 tonnes per capita, while developed regions with low economic growth and flat terrain, typically use 4-8 tonnes. Developed regions, with rugged terrain and high to medium-growth typically use 8-12 tonnes per capita. Developed regions with rich economies, rugged terrain and severe climates typically use up to 16 tonnes per capita.

Close to home

"Few people realise the important role that aggregates play in our lives and even bemoan the fact that quarries need to operate anywhere near their neighbourhoods. Yet it was revealed that transporting these civilisation building materials over distances longer than 50 km can have an escalating effect that can drive construction prices far beyond viable prices," says Aspasa director Nico Pienaar.

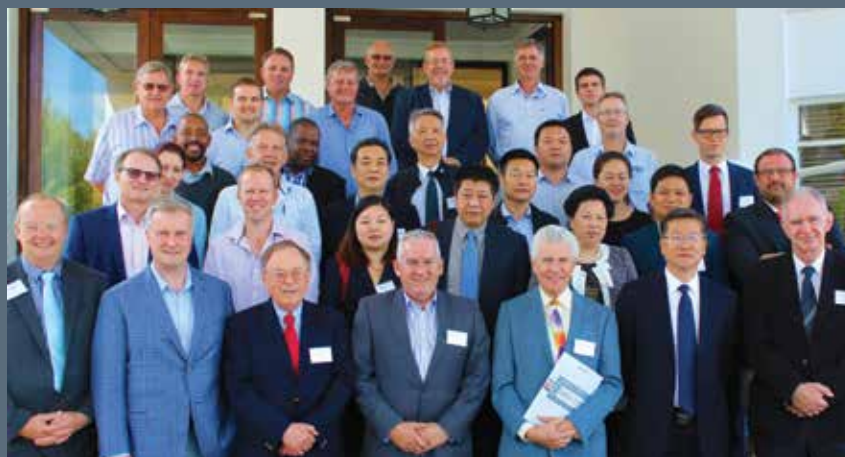
He explains that aggregates make up approximately three quarters of the mass of any traditional construction project including our roads, bridges, ports, railways, harbours, hospitals, public and private buildings, as well as our homes and other essential infrastructure. "If we stopped producing aggregates today, we would revert back to a similar state as the stone age, without buildings, glass or many of the other commodities that drives technology and civilisation today.

"Through organisations like GAIN and regional associations such as Aspasa we are however striving to become responsible citizens and are working towards becoming a completely sustainable industry that causes minimal harm to the environment and that enhances the livelihoods of the communities within our surroundings.

Progressive industry

"South Africa has some of the toughest health, safety and environmental protection

Global aggregates bodies meet



Aggregates associations from across the globe gathered in Cape Town recently to dissect issues facing the worlds' sand and stone suppliers and pave a path towards more sustainable exploitation of a dwindling resource.

Members of the Global Aggregates Information Network (GAIN) represent aggregates associations of diverse countries and focusses on improving supply, as well as issues that may threaten the industry. Despite a seemingly endless supply of sand and stones underfoot and around us, only certain materials are suitable for the purposes of building and construction and these are being rapidly depleted in urbanised areas.

The result is that crucial building materials either need to be transported over long, costly distances, or suitable land resources need to be identified and excluded from development plans in order to ensure that materials are available to develop surrounding areas. These were some of the major concerns debated by the network at the recent Cape Town conference.

CONTINUOUS IMPROVEMENTS IN THE MIX

Comar Plant Design & Manufacturing is currently commissioning Actop Asphalt's second continuous mix plant. The plant, with its high 120 tph continuous mix capacity, is also capable of handling 40% recycled asphalt (RA).

➤ "This is a significant development for both Actop Asphalt and B&E International," says Ken Basson, director of plant and engineering at B&E International. "There are not that many plants operating in the country with a 40% RA handling capacity."

The plant was supplied with a drying drum, pugmill, four cold feed bins, two RA feed bins and a bag house to reduce emissions. A filler feed system allows dust from the bag house to be reintroduced into the system. The plant also features a 100 t hot storage capacity.

Basson says that Comar Plant Design & Manufacturing has received very favourable feedback on the performance of the plant from its customer.

"Significantly, Comar Plant Design & Manufacturing recently expanded its in-house engineering team who is dedicated to continuously improving Comar plants and lowering the total cost of ownership," he says. "There is an increased focus on innovation within the company's R&D department and this is being directed towards developing highly energy efficient plants with a high RAP capability".

A major competitive edge for Comar Plant Design & Manufacturing is that it is the only local manufacturer of asphalt plants. The plants are manufactured in Johannesburg and KwaZulu-Natal. This allows customers to benefit from quick delivery times, while the high local content means that wear items are readily available. Field and aftersales service support is now provided from both these centres.



Actop Asphalt's second Comar continuous mix plant, with its high 120 t/h continuous mix capacity, is also capable of handling 40% recycled asphalt (RA).

Meanwhile, Basson says Comar Plant Design & Manufacturing also puts its design and engineering resources to good use retrofitting and optimising customers' existing plants; even if they are from other suppliers.

"Here, the focus is on improving production, reducing operating costs and aligning older plants with current environmental regulations and requirements," says Basson.

All of Comar Plant Design & Manufacturing's trailers are homologated making the plants roadworthy from the day they roll out of the manufacturing facilities and onto construction sites around the country.

"The 'green' infrastructure movement sees many of South Africa's roads authorities push for higher RA content in its road construction programmes, and South African consulting engineers and contractors have a local asphalt plant designer and manufacturer with the abilities to help them achieve this objective," Basson concludes. ■

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Roadspan was established in 2008 and is a roads surfacing & rehabilitation contractor and asphalt supplier with five static plants centrally located throughout South Africa and a mobile plant which can be moved to any region as needed.

> *Construction World* spoke to Roadspan's Graham Thorpe about the company and why he uses Vögele machines. Roadspan recently acquired two Vögele machines: a Universal Class Super 1800-3 tracked paver and an MT 3000-2 Offset*. Roadspan is one of the first companies in the South African market who has invested in the Vögele MT3000-Offset machine from the Wirtgen Group. These machines are both used on Roadspan's Machadodorp project.

44

Who are your clients?

We work for SANRAL, municipalities as well as private concerns. Although we are part of WBHO (Roadspan was acquired by WBHO in 2009), we have maintained some autonomy and can do work for other companies.

What are some of your major current projects?

The biggest project that we are currently working on is on the N3. This is due to finish in June. A project near Mt. Edgecombe is imminent and will run for most of 2017. In addition we have major projects at Machadodorp (N4) and on the R24 near Rustenburg (both with WBHO).

Do you work across the border ?

Yes, we have just completed a big project in Mozambique in joint venture with WBHO. Our mobile plant is still in the area as we are awaiting the next section of the project to be awarded.

How big is the division – in terms of staff?

We have between 300 and 350 staff – this includes wage staff.

Which project is utilising the two Vögele machines in which you recently invested?

These machines will be used on the Machadodorp project – once trials have been completed they will be used on this project for the next year.

Why did you choose to acquire the two Vögele machines?

I use Vögele machines all the time. I have five Vögele pavers at the moment. The reason why we acquired these machines is that the price was good and it does not have as many wearing parts as some others have – and it is easy to move. Other brands are difficult to move – the MT3000 is abnormal in width, but the height makes it easier to move around to sites around the country.

What, according to you, sets this machine apart from competitors?

Machines used for this function are very much alike. What sets the Vögele machines apart is that it does not have as many wearing parts, while maintenance and keeping the machine clean is easier. In addition, the cost was a major factor. The machines also loads onto a lowbed easier than other machines.

How much was the capital investment for these two machines?

Combined, It was an investment of about R10-million.

How easy is the machine to operate?

One of the machines was used on the Rustenburg R24 site for a SANRAL demonstration. Wirtgen provided operator training and within an hour the operator knew how to use the machine. The ErgoPlus drive system that the machines are equipped with is simple to operate. **<**



MT 3000-2 Offset

The MT 3000-2i Offset is a cutting-edge feeder providing for a high and consistent flow of mix on different applications, be it a conventional road building site to be supplied with mix or a trench running alongside the roadway that needs to be backfilled. An innovative material transfer concept provides for maximum conveying capacity and the ErgoPlus operating system ensures easy and safe operation of the machine.

- Uninterrupted paving thanks to a total storage capacity (material feeder and paver) of 45 ton with a conveying capacity of 1 200 t/h.
- Non-contacting material transfer ensures maximum paving quality.
- Homogenised material in the receiving hopper of the material feeder due to conical augers.
- Wide range of applications thanks to the pivoting and inclining conveyor.
- Reliable material transfer based on automatic distance control and anti-collision protection.
- Optimum overview and safety thanks to the convenient and practical ErgoPlus operating system.
- Enormous power alongside low consumption from the powerful Deutz diesel engine delivering 160 kW at 2 000 rpm.
- Outstanding mobility in any terrain and steering precision provided by crawler tracks with powerful separate drives.





Jacques Horn, sales executive with Wirtgen South Africa says, "Thorpe and his team at Roadspan have been using Vögele equipment as well as other machinery from Wirtgen for many years. Because of this journey over the years, it was probably one of the reasons why – when the Wirtgen Group was given the opportunity to introduce a solution, in this specific application of the road construction process, we offered a solution that could really make a difference.

"There is a whole spectrum of differentiating factors, from levels of engineering to overall design of what we offered that we believed will have a positive impact on Roadspan's business. One example is the diesel fuel consumption. The evidence of this is experienced in the day-to-day operation with intelligently designed energy efficient diesel engines, without compromising on performance and productivity.

This was one of a concerns and challenges we were made aware of. We are fortunate to be in a position that we are able to provide effective solutions that are also sustainable."

Universal Class SUPER 1800-3

The SUPER 1800-3 is the most powerful tracked paver in its performance class and ideal for a wide variety of paving applications. The paver conceived for a maximum pave width of 10 m while based on a machine length of just 6 m handles motorway projects with the same high perfection as it copes with confined spaces when tackling roundabouts.

The innovative and easy-to-learn ErgoPlus3 provides ergonomic working conditions tailored to real-life use.

- Maximum pave width 10 m
- Laydown rate up to 700 tonnes/h
- Laydown rate up to 700 tonnes/h
- Transport width 2,55 m
- The 'PaveDock Assistant' enhances process safety during transfer of the mix
- ErgoPlus 3 with a number of additional ergonomic and functional advantages
- 'Vögele EcoPlus' low-emissions package significantly reduces fuel consumption and noise levels.

**In Europe all models have an 'i' after the model name – this refers to 'Intelligent Emission Control' – linked to their stringent emission control laws, which apply to Tier4 engines.*



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Binding roads, linking people

Towards a **TRANSPORTATION** division

Basil Read's Roads Division executive officer, Bruce Morton, spoke to *Wilhelm du Plessis* about how the Roads Division is increasingly becoming a transportation division, capable of servicing the needs of its clients.



Basil Read's Roads Division executive officer, Bruce Morton.

What is the focus of the Roads Division?

The Roads Division has, historically, always been a strong part of Basil Read's business. We see ourselves as the premier road builder in the country and we strive to provide a level of quality that sets us apart.

We have predominantly focused on larger national and international clients. Our main client locally is the South African National Roads Agency Limited (SANRAL) – we work on its concession routes and national routes – as well as the provincial routes that it increasingly manages. We also want to focus on private concessionaires and also larger municipalities – it is a market that we are looking at entering. We are generally not involved in smaller municipal road construction projects – unless it is linked to other work that Basil Read is undertaking. The company has a Developments Division that develops projects such as Cosmo City, Malibongwe Ridge and Savannah City and where our capacity and skills to construct road networks and civil services is utilised.

The Basil Read Roads Division is increas-

ingly becoming a transportation division servicing all transportation infrastructure requirements. The recently completed St Helena Airport is an example of this: the Roads Division supplied many of the expertise and capacity of the multi-disciplinary project team that developed and built the airport. There are many synergies between doing mass earthworks for an airport, port or railway and roadworks.

How big is the division?

At the moment its annual revenue is between R1,3-R1,5-billion. It undertakes between six to eight large projects (R500-million plus projects) at any given time. This represents about a third of Basil Read's total revenue. It has 50 dedicated senior managers and approximately 1 700 to 1 800 people on site.

Do you do work in Southern Africa? What are the difficulties?

We do yes, but these projects are client, funding and competition dependent. We have completed a number of projects in Namibia, but this market is currently flooded with international contractors.

We have offices and some minor operations in Mozambique and Botswana. As we focus on larger roads and earthworks projects, the work we do cross-border is linked to the national imperative of providing transportation links or large infrastructure development. At the moment road building in Mozambique is linked to the development of the major gas fields in the North of the country. These gas fields are not progressing at the anticipated speed due to various reasons and thus there is less road building and earthworks projects being undertaken than anticipated.

It is a logistical challenge to work cross border. In general, African border control is

The Roads Division's work at Coega illustrates that it is moving from a roads only to a more transport orientated division.





In Mpumalanga the division is upgrading a section of the road between Greylingstad and Standerton and the road between Standerton and Platrand.

not as integrated as for instance European border control. In addition, distance becomes a real issue. We currently have a project in Zambia – the transportation of bitumen from South Africa to the site takes between a week and 10 days.

Many of these cross border projects are large projects funded by government. When governments run into financial difficulty, infrastructure plans, which are incorrectly viewed as less necessary for the financial well-being of the country, are downscaled or cancelled. Unfortunately infrastructure plays a vital role in unlocking the potential of those countries.

What specialised services do you offer your road clients?

Basil Read historically contained a number of subsidiaries – these subsidiaries have been disposed of or merged into the company which has been restructured into a number

of divisions now focussed on what we call the heavy construction environment and mining. Some of the thought processes and intellectual property of these subsidiaries, particularly the design and build and engineering processes that went into why we acquired them, still exists within the divisions and we leverage off this capability.

In addition, our Roads Division is unique as not all the staff come from a construction only background – some are engineers with significant experience in the design and management of infrastructure projects while we even employ a former client.

Equipment does not make a difference – the people of a company makes the difference. We have a vast amount of intellectual property – from experienced project managers to young engineers who we are assisting in getting professional registration. We are fortunate to have experienced and highly capable people from senior managers

to final level grader operators who have over 20 years' service with the company.

One area where we can add value is in design and build. For example, the St Helena Airport project has two senior designers – they work for Basil Read and are therefore not subcontracted. Our ability to undertake design build provides us with flexibility in terms of looking at alternatives.

How do you decide between a concrete or bitumen pavement?

I have been fortunate to work worldwide. In developed countries – Europe, North America, Australasia, there is a difference in philosophy and in the order of how planning flows from the client, to the engineer and to the contractor. Africa is quite traditional when it comes to the design and construction concept. Most of the time the design is already completed for the contractor ahead of time – the client has made a decision with

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At Basil Read, we trust that due to our unyielding pursuit of excellence over more than six decades, we are firmly placed as one of the top companies within the construction sector. This is backed by best of breed technology, continuously evolving expertise, absolute integrity and an uncompromising approach to quality. Our diverse portfolio of long standing clients is testimony to exactly that.

At Basil Read, we take into consideration how we engage with the world. For this reason, sustainability of operations that positively impact our economy, society and environment are fully integrated in our very DNA. We believe that this is how a true icon is born.





A recently completed project is the rehabilitation of Bruma Lake – Basil Read Roads Division is currently doing load testing of the reconstructed bridge.



engineer on how to move forward with the project.

Basil Read provides the Client with alternatives such as providing a concrete (rigid) alternative to the proposed bitumen pavement (flexible).

Unfortunately road construction (and infrastructure in general) is generally based on current economic imperatives: our forecast is about four to five years. Some clients (such as concessionaires and certain roads agencies) can take a long term view and invest in concrete roads – these last longer, but are initially more expensive.

The St Helena Airport runway is a concrete runway – there the imperatives were different: not based solely on initial infrastructure cost, but how to maintain a runway over the long term in a very remote location.

What is the division's unique selling point Price? Technology?

Our ability to offer alternatives to the design that we are presented with, is a unique selling point. Price can be a unique selling point in

Current major projects

Project: Upgrade of National Route 61 section 7 from Baziya to Mthatha

- Client: SANRAL
- Duration: 36 months
- Value: R504 103 892
- Scope: Widening to a 13,4 m surfaced width, additional auxiliary lanes, 14 major culverts, etc.

Project: Marine works for the Admin Craft Basin at the Port of Ngqura

- Client: Transnet Capital Projects
- Duration: 20 months
- Value: R376 158 453
- Scope: Preparation of Eastern Reclamation Site to receive land based excavated material, excavation and dredging of approximately 656 00 0m³ of material.

Project: Ashton to Montagu road (13,4 kms) in the Western Cape

- Client: Western Cape Government: Department of Transport and Public Works
- Duration: 36 months
- Value: R583-million
- Scope: Rehabilitation of TR 31 from Ashton to Montagu through Cogmanskloof, the reconstruction and widening of the existing pavement layers, three of the existing river bridges are to be replaced with new structures, the stormwater systems are to be upgraded, retaining walls on both the mountain and river side of the road will have to be installed.

Project: Polokwane Eastern Ring Road Phase II

- Client: SANRAL
- Duration: 36 months
- Value: R641-million
- Scope: Re-Alignment of the N1-27 towards the south of Polokwane over 4,2 km, development and widening of the N1-27 ring road as a four lane divided dual carriageway over 19 km, and construction of six new bridges.

Project: National Route 1 section 29: Construction of the Musina Ring Road

- Client: SANRAL
- Duration: 30 months
- Value: R556-million
- Scope: Construction of a 4 lane dual carriageway Greenfields bypass of approximately 8 km, Construction of the Musina interchange and Freedom Street overpass and Nancefield (R572) Interchange, Construction of Toynton Road and the Mac Transco railway line road-over-rail-bridge, re-alignment and construction of Harper road.

a competitive market, but in the long run, clients then allow contractors to build inferior products because they use the cheapest price as a unique selling point.

On a building, inferior construction can be spotted early on. It is very hard to build a road that fails within six months – some of our international clients and roads agencies are learning this the hard way: the saving they initially regarded as beneficial often results in an inferior product.

Our diverse team is another unique selling point. We have the expertise within the company to try and find a solution. This is the direction the Division is moving towards – solutions driven – where construction and engineering move closer together and one does not simply provide a client with a product that they decided upon as their solution very early in the process and without input from the contractor on constructability and cost efficiency issues.

What is your opinion of the current status quo of construction?

It is a concern that the rollout of infrastructure projects is not happening faster throughout southern Africa. Infrastructure provision is one of the ways to stimulate an economy. Added to that is the fact that wealth in the broader African context cannot be created when there is a lack of reliable transportation links – it is a continent with tremendous wealth, but these resources are landlocked and can often not be transported to a port.

It is a tough time in the construction industry – we are, hopefully, at the end of a long negative cycle. There is opportunity in this though – it allows Basil Read to refor-

mulate the way we do business and to start working closer to the client instead of being reactive and relying on work to come our way: the St Helena Airport project is an example of this – we actively 'created' work on a design and construct basis. Through projects undertaken within our Developments Division we have a model to create work across the company.

Locally South Africa has an immense need for housing, sanitation and water supply. Housing is one sector that will develop work for the company as a whole and which we are very excited about. <



BEAUTIFUL BRIDGE ABUTMENTS

In the field of retaining walls, engineers are often faced with two choices: specifying a structural yet unattractive wall, or specifying an attractive wall that isn't structural.

> Hollow core, interlocking precast blocks offer a good looking and cost-effective alternative solution to cast-in-place abutments, vertical piers, or reinforced concrete grade beams. They are plantable and easy to handle, yet have proven to stand the test of time.

Consent LLC, Terraforce Licensee in the United Arab Emirates and GCC region, has been involved in the installation and design of numerous road side Terraforce retaining walls, most notably the erosion control and landscaping of three large interchanges on the Salwa International Highway.

The Salwa highway is the major arterial connection between Saudi Arabia and the coastal capital of Qatar, Doha. All traffic coming into the city of Doha, including from the United Arab Emirates, enters via this route. The QR441-million project allows faster commuting for motorists between Abu Samra and Doha and includes a dual four lane highway with 10 major interchanges, three camel crossing underpasses and twenty two Qatar Petroleum culverts.

At Interchanges 15, 17 and 24, a detail was prepared by design engineers of Parsons International Limited, one of the world's largest engineering and construction consultants for

private industries and government agencies, for a series of terraces on the inside faces of all four quadrants of the conventional clover leaf interchanges.

Their original design, which closely mapped the original ground profiles – a series of tapered and curved embankments running parallel with the edge of the ramps – called for precast walling, but after AG Middle East (AGME), the appointed landscaping contractor, proposed the use of the Terraforce L16 blocks, based on the successful use of the product on Palm Jumeirah island, the alternative designs supplied by Simon Knutton of Knutton Consulting – a well established engineering consultancy in South Africa – were accepted.

The Mirdif interchange, situated at the intersection of Al Khawaneej and Algeria roads in Mirdif, Dubai, was designed by Mirjana Engineering and Huesker Synthetics. It replaces an existing crossroads which failed to accommodate increasing traffic volumes generated by the development of surrounding residential areas. Once the Terraforce design was approved, construction was supervised by joint venture between Aurecon and Al Burj Consultants.

The Terraforce blocks proved particularly suitable, given the limited space available that required steep side slopes. These were retained with Terraforce L16 (split face) composite retaining walls and vertical Freyssinet panel retaining walls, reducing the impact on surrounding land and facilities. The blocks were used to support both sides of the four ramps, as well as the approaches to the cross road. ■



L13, L18, L22



Terrafix



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4x4 Multi



L11, L12, L15, L16

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Understanding **CHANGES** in **LEGISLATION**

Many crushing and screening operators may not be aware that there have been major changes to the regulations with respect to environmental authorisations and these companies can no longer simply operate a crushing and screening plant without environmental authorisation.



This is according to Sonette Smit, managing director and senior environmental consultant, at Greenmined Environmental, who explains that previously such a contractor would have identified a mining site (quarry or borrow pit), applied for a mining permit and then set up a crushing and screening operation.

“This is no longer possible,” she cautions, pointing out that crushing and screening and washing of material was not previously a listed activity in terms of NEMA National Environment Management Act. “This changed, however, on 8 December 2014 when it became a listed activity and all such operations now need to comply with the regulations,” Smit continues.

She adds that it can be confusing for contractors as the requirements of those contractors that are operating a crushing, screening and washing operation in a borrow pit or quarry are different to those for a contractor that is crushing, screening and washing material from a road cutting, a dump or rubble on a construction site.

First contractor

The first contractor, extracting material from the borrow pit or quarry, will at least need a mining permit including a full environmental impact assessment (EIA) which takes a minimum of 297 days and this needs to be in place before any crushing activity can commence on the proposed site.

Second contractor

The second contractor, who is crushing material from a road cutting, dump or building rubble, only needs a full environmental impact assessment (EIA) and this application also takes a minimum of 297 days through the Department of Mineral Resources. Smit says more specialist studies are conducted for a full EIA as opposed to those done for a basic assessment.

She says that the changes in the first scenario where a contractor will be crushing and screening from a borrow pit or quarry are

significant; especially in that the changes in legislation mean the application goes through one system only, covering authorisation for water, mining and environmental listed activities. The intention of the simultaneous processing of these applications at one department is to remove unnecessary red tape.

In the past

In the past the operator would only have had to apply for authorisation at each department – a mining permit/right which would have included an approved environmental management plan, Water Use Authorisation at the Department of Water and Sanitation and Environmental Authorisation at the Department of Environmental Affairs, where applicable. The new application is completely different. Changes in legislation have seen the regulations surrounding the Environmental Act, the Water Affairs Act and the Mineral and Petroleum Resources Development Act combined into a single system.

Smit says that while this is advantageous for crushing and screening operations as well as mines and quarries, the distinct lack of understanding around the requirements has made this quite daunting for individuals within these operations.

The applications in themselves are not necessarily that complicated, however some of the terminology and information may seem foreign to non-scientists and the process could become onerous for personnel who have not handled this type of application previously.

Greenmined environmental

Greenmined Environmental is well positioned to handle applications for both the first and second scenarios as described above. The company, established in 2012, has a solid track record underpinned by the depth that resides within its team; these qualified and skilled individuals have over twenty years of professional service and experience in the environmental sector. It is through this level of expertise that the company is able to offer comprehensive environmental services and



Sonette Smit, managing director and senior environmental consultant, at Greenmined Environmental.



Requirements for operating a crushing, screening and washing operation in a borrow pit or quarry are different to those for crushing, screening and washing material from a road cutting, a dump or rubble on a construction site.



Many operators may not be aware there have been major changes to the regulations with respect to environmental authorisations.



Greenmined Environmental has a solid track record underpinned by the depth that resides within its team.

solutions to the mineral resources and energy sectors in South Africa.

“Our major differentiator is that we have a comprehensive understanding of the duties as well as the rights of the applicant or licence holder, and this proficiency of knowledge enables our team to cut through any unnecessary time wastage that could occur,” Smit says.

Furthermore, Greenmined Environmental has sound relationships with the relevant

government departments and these are of great value to its client base, enabling this specialist environmental consultancy to obtain the necessary authorisations in the shortest possible time.

Other market differentiators that the consultancy offers are immediate access to its in-house legal advisor who assists with the processes according to the legislative time frame and its occupational hygienist who is

able to implement occupation hygiene monitoring programmes applicable to specific sites.

“Time is always of the essence when dealing with applications such as these, especially when hold ups can impact on a project’s production schedule, and this is why we believe we are seeing an increase in crushing and screening operators making use of our services for these applications,” Smit concludes. ◀



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CONSULTING engineering industry: the REALITY

The Consulting Engineers South Africa (CESA) Bi-annual Economic and Capacity Survey for the period July to December 2015, just released, indicates that times are tough and getting tougher with industry confidence at its lowest in 16 years.

The report indicates that the consulting engineering industry will have to adapt to a low growth environment as the outlook for infrastructure spending is hampered by poor economic growth, lower than expected revenue by government, international economic instability and price volatility, and low private sector confidence. Over 540 firms employing just over 24 315 staff, who collectively earn a total fee income of R23,4-billion per annum, are members of CESA.

Three key factors continue to influence the global outlook these are the gradual slowdown and rebalancing of the Chinese economy; lower prices for energy and other commodities; and the gradual tightening of US monetary policy. GDP growth in South Africa slowed to 0,6 percent q-q, from 0,7 percent q-q in the previous quarter.

Chris Campbell, CESA CEO believes, "Government needs a strong focus on the implementation of more of its strategic infrastructure projects as detailed in the National Development Plan in order to mitigate the decline in the economy and improve investor confidence." He further reiterated that "Engineers in South Africa stand ready to partner with government in eradicating the leakage from the fiscus, not only through water which does not reach domestic households, but also through poorly spent monies or corrupt practices which have led to payment for poor quality and even non-existent services in the infrastructure space."

Fee earnings – softer growth outlook

Consulting Engineering fee earnings in the last six months of 2015 increased by around 6 percent, against an expected decrease of between 2 percent and 3 percent. Larger firms reported muted growth of 2 percent on average for the last six months, while stronger growth was reported by medium and smaller firms (up by 31 percent and 11 percent respectively). Although respondents expect earnings to fall by 5 percent in nominal terms during the first six months of 2016, compared with the second half of 2015.

Industry confidence levels

Confidence levels fell to their lowest level in 16 years, and were significantly weaker in the last six months of 2015, compared to expectations in the June 2015 survey. Levels fell from an expected

Chris Campbell, CESA CEO.



2015's winner in the Professional Services category for Best Projects was Aurecon for its work at the Preekstoel Water Treatment Works.

56% satisfaction rate to 39,4%, and although business conditions are expected to improve slightly to a satisfaction rate of 48% (first six months of 2016) and 44% (last six months of 2016), levels are well below the average of the last five years. Satisfaction amongst firms is at historically low levels, surpassed only by the 1998/99 recession caused by the Asian financial crisis.

Gross fixed capital formation in medium term

Gross fixed capital formation (GFCF) as a percentage of GDP averaged at 20,7% in 2014, but slowed to 20,6 percent in the 1st quarter of 2015, compared to an average of 21,1% in 2013. The NDP has what may seem a somewhat unachievable target of 30% contribution of GFCF to GDP by 2030.

Transformation of the industry

The appointment of Black executive staff (including Black, Asian and Coloured) increased to 39,5 percent from 38 percent and 36 percent in the previous two surveys. The appointment of Black executive staff has steadily increased from 28,1 percent in the June 2012 survey. This shows real significant progress in terms of industry transformation.

Procurement

Regulation issues, including the procurement of consulting engineering services, remain one of the biggest challenges faced by the industry. Procurement is currently based on price and broad-based black economic empowerment (BBBEE) points, with functionality or quality having a minimum threshold, thus being largely price driven. This is affecting tender prices, as firms sometimes tender below cost in view of the diminished availability of projects. A further challenge to the industry is to find a way to standardise the procurement procedures applied by the different government departments. Procurement procedures should be standard for the country, or at least for the specific tier of government.

Unrealistic tendering fees remain a concern for members, while the extended time it takes in which to finalise a proposal is affecting profitability in the industry.

Fraud and corruption is affecting the ethos of our society, with a lot of talk and little action accompanying the growing evidence of corruption. CESA is aware that members are under pressure from contractors and corrupt officials, to certify payment for work not completed. This is regarded as an extremely serious matter for CESA and as such will be relentless in holding those in power accountable.

Unlocking greater private sector participation is seen as a critical element to fast track delivery which will support engineering fees and as such engineering development in the industry. Private sector participation in this context refers to involvement on a more technical level (and not as a client), to improve municipal capacity and efficiency.

Service delivery, especially at municipal level remains a critical burning issue. The consulting engineering industry is threatened by incapacitated local and provincial governments. As major clients to the industry, it is important that these institutions become more effective, more proactive in identifying needs and priorities and more efficient in project implementation and – management.

The involvement of non-CESA members in government tenders and procurement continues to threaten the standard and performance of the industry. Large local firms are tendering at rates on small projects that are not competitive for small local firms just to maintain a flow of cash. ◀





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Construction World spoke to Mareta le Roux, the brand manager for Plascon Industrial about their unique offering to industry.

Provide background to Plascon?

Since its inception in 1889, Plascon has established itself as a market leader. The brand is known for innovation, quality and customer service. Since 2011, it has been part of the Kansai Paint Company – a market leader in Japan and top 10 global player.

The Kansai Paint Company specialises in industrial and protective coatings that are based on cutting-edge technologies. Kansai Plascon focuses on decorative applications for the consumer and trade markets, as well as applications for the industrial, PC, and automotive markets.

What is your B-BEEE rating?

The company has a level 4 B-BEEE rating.

What products/services can you offer the construction industry?

We offer a full range of products for both decorative and protective purposes. For decorative purposes, we offer broad-wall applications. For industrial applications, we offer metal coatings, wood coatings, road and concrete marking coatings and floor coatings. For any metal surface, we offer high quality and high performance products.

Colour selection for industrial coatings happens via three different colour systems: Inspired colour system (water-based offering), Alchemy colour system (industrial coatings – light metal applications) and the Prochroma system (protective coatings products used in C1 – C5 environments).

In terms of high performance requirements for corrosion protection, guarantees are offered based on the product specification – this depends on customer requirement and budget. On-site inspections happen prior

to application, which enables us to provide optimal specifications based on the macro and micro environment.

During application, work is monitored throughout by a technical specialist from Plascon. This includes surface preparation, how the primers are applied, and ensuring that the dry film thickness is adequate before applying the top coat. Upon completion a full inspection is done, and the customer receives a report on the completion of the work. This is in addition to the fact that we deliver the product to the site, provide product training and use preferred applicators.

What innovative products are available for industry?

Kansai Plascon is a market leader in product innovations for industrial application – this includes wood, metal and road marking coatings.

The *Aquanova system (primer and topcoat)* is a premium water-based solution for coating metal. It consists of a water-based epoxy primer and a two-pack water-based polyurethane topcoat for use in extreme environments and achieves ultra-high performance.

The *Aquanova primer* contains highly advanced anti-corrosive technology and has been rigorously laboratory tested. The advanced anti-corrosion technology allows for salt spray resistance up to 1 000 hours. It also has particularly good corrosion resistance against creep.

The *Aquanova topcoat* is a durable two-pack system for interior or exterior application and is formulated with advanced polyurethane technology. This water-based polyurethane technology results in the product having excellent solvent resistance and weathering properties.

Aquaduo is a direct to metal WB coating that serves as both a primer and topcoat in one and can be directly applied to prepared mild and galvanised steel. It can be tinted to over 1 400 colours and non-toxic pigments provide anti-corrosion protection that minimises rust formation.

A brick and concrete marking paint was recently introduced into the Road marking range and is the first in the market to specialise in solvent based moisture tolerant marking paint for concrete and interlocking brick surfaces.

It was specifically developed for this

application and outperforms conventional road marking paints.

What products do you offer industry to build in a sustainable way?

Sustainability is part of our operational ethos and drives our decisions when it comes to new products. In the industrial coatings market, Kansai Plascon boasts market leading innovation.

Traditionally, industrial coatings were products that contained large amounts of solvents and other toxic chemicals that were harmful to the environment and the applicator. Kansai Plascon's water-based technology coatings offer environmentally aware solutions and opportunities for a wide range of industrial applications. With these leading technologies, we guarantee the quality and performance of our products while simultaneously reinforcing our commitment to the environment.

The industrial water-based range consist of metal coatings (*Aquanova system*, *Direct-to-Metal Aquaduo* – tintable to over 1 400 colours), wood coatings for interior wood (*Plascosafe* range for furniture and floors) and road marking (*Aqualine*, which is SABS approved).

Our water-based product range contains low amounts of VOCs, offers excellent durability, quick drying time and has low odour. These are highly innovative, premium products backed by technical expertise

We're committed to effective management of the ISO 14001:2004 Environmental Management Standard and continued compliance with all relevant environmental legislation and codes of practice. 🌱



Mareta le Roux, brand manager for Plascon Industrial.



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

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



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ASSET MANAGEMENT SYSTEM FOR MANGAUNG

The successful implementation of this project was celebrated recently at a cocktail function held at SMEC South Africa's Bloemfontein office. Connie Rampai, Mangaung deputy mayor, and Nthabiseng Mokotjo, mayoral committee member for finance, were presented with the SMEC International Award for Best Africa Project.

The procurement and implementation of the Asset Management system is one of a number of interventions by Mangaung's executive management to boost the municipality's audit outcome. "We are looking forward to enhancing the functionality of the asset management system even further," commented Rampai. "In so doing, we will be able to improve the quality of municipal services rendered to the community."

SMEC South Africa CEO Kostas Rontiris emphasised the importance of working with clients to build partnerships and transfer skills once a project is complete. "We aim to create a sustainable environment so that when we complete a project, clients can carry on with it, using the training and innovation we have put in place," Rontiris explained.

This success of this project was as a result of a significant collaboration between technical and financial departments in the metro. It is a major improvement to move from over 30 spreadsheet registers all into a single system.

All assets are tied into an integrated GIS platform, with supporting photos and other asset information (for example, operating manuals, inspection data, etc.) now being accessible through the system. A GIS-enabled mobile application was also implemented. Within one hour, metro staff were able to verify over 50 assets to the auditor general.

SMEC has worked with over 100 clients worldwide to provide a full range of asset management services that meet the specific needs of the asset lifecycle, Tom Bürge, General Manager Asset Management, Africa Division, comments.

The company provides consulting, project management and capacity building services for a wide variety of government, utility and process industries. Its capability in asset management has been developed and refined through more than 30 years of continuous technical assistance, training and institutional strengthening for government departments and private industry.

"Exposure to both public and private enter-



CLOCKWISE:

SMEC assists both the private sector and government departments.

Nomzamo just outside Strand is an example of sustainable assets.

Tom Bürge is GM of the newly-formed Asset Management division at SMEC South Africa.

prises means we will be able to understand Asset Management in both profit and service delivery focused environments. The Mangaung project is an excellent example of the value that SMEC can add to both municipalities and local government departments," Bürge adds.

"This is a real market differentiator for SMEC South Africa, especially compared to the other asset management service providers in Africa. It positions us to make a significant difference to the bottom line of our clients," he concludes. ❏

56

How do you ensure the quality of your service?

Our extensive distribution network includes three manufacturing sites in South Africa and five African operations to ensure that Plascon is available wherever our customers are located. We deliver road marking products on site anywhere in South Africa, from Johannesburg to the middle of the Karoo.

The Plascon Advisory Service, launched in 2000, handles calls from stores, consumers, contractors, architects and interior designers. It fields calls on everything from high-end technical requirements to all consumer needs, including surface preparation, product selection, colour tinting and calls for onsite technical assistance.

How are products developed?

We have state-of-the art laboratories focusing

on Industrial and Protective coating product development in Mobeni, Durban and a research centre at Stellenbosch University.

There is a strong internal drive to develop water-based products for the industrial and protective coatings markets that is traditionally dominated by solvent based products. We are therefore continuing to develop more sustainable products as an alternative to existing products. These water-based products are marketed to customers through trials and applications, while customers are educated and trained on water-based alternatives. There is a strong perception in the market that solvent based products perform better in the industrial and protective coating environments, so communicating the benefits of water-based products is key to successfully introducing them in the market.

Furthermore, we develop products for special applications together with customers.

These products are developed to meet certain requirements from the customer, such as drying times, film thickness, colour, moisture tolerance, etc.

What would you say is your unique selling proposition?

The ability to develop products for specific customer requirements – our three colour systems – capable of tinting thousands of colours including international RAL standard colours, SABS colours, etc.

In addition, our distribution network, onsite delivery support, technical expertise and training offered to customers, sets us apart.

Lastly I would say our 360o product offering: we have coatings for almost every surface and application – from interior/exterior walls, to ceilings, roofs, floors, light steel, structural steel, wood, concrete, etc. ❏

ONE OF DURBAN'S MOST SUSTAINABLE BUILDINGS

AECOM has inaugurated its new KwaZulu-Natal head office in Umhlanga Ridge, believed to be the first building in Durban to have achieved a five Green Star rating from the Green Building Council of South Africa.



AECOM has unveiled its new Umhlanga Ridge head office.

> The building's four Green Star rating for interior design was expected to be ratified within the next couple of weeks, according to Imraan Mahomed, Business Unit Lead for Buildings & Places in the Durban hub. He was speaking at the official inauguration of the head office on the evening of Tuesday 12 April 2016.

This proactive approach to sustainability and energy efficiency was emblematic of the innovation and passion that AECOM brought to the built environment in the province.

"In line with our economy's key theme of growth, Durban is poised to grow substantially over the next couple of decades. AECOM's values, professionalism and technical expertise are very much aligned with this.

"Today we are more than just consulting engineers, architects and

FROM LEFT TO RIGHT:

Carlos Poñe, chief executive, Africa, AECOM; Imraan Mahomed, business unit lead, buildings & places, Durban hub, AECOM; and Steve Morriss, chief executive for Europe, India, Middle East & Africa, AECOM.

quantity surveyors. From master planning through to feasibility design and detailed engineering design on all discipline fronts, to contract delivery via alternative mechanisms such as EPC and EPCM, we are a true partner to our clients," Mahomed asserted.

"The vision of the City of Durban is to be the most liveable and caring city in South Africa by 2030. AECOM's expertise is key in delivering this vision, both in the public and private sector, whether that be projects related to the provision of basic water and sanitation, or roads in rural areas, right through to high-end private-sector development in the regeneration of our CBD, commercial, retail and tourism projects, all the way to the delivery of the Commonwealth Games in 2022."

Carlos Poñe, newly-appointed chief executive – Africa commented that the ongoing development of Durban played a critical role in the promotion of the tourism industry in KwaZulu-Natal. Poñe added that AECOM was also playing a vital role in mitigating the impact of the recent ongoing drought in South Africa. "We have a team of scientists and engineers here that is world-class."

Steve Morriss, chief executive for Europe, India, Middle East and Africa, hailed the inauguration of the Durban hub as a historic milestone for the company. "It is a physical manifestation of our commitment to this city, country and continent. We anticipate to grow our business in Durban significantly."

Morriss concluded that the Durban office would provide expert support for AECOM worldwide, with South Africa as the centre of its expansion into Africa. <



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Newest generation **HYDRAULIC** excavators

Doosan's newest generation hydraulic excavators – the heavy duty DX225LCA series – has been designed for greater operator comfort, improved fuel efficiency, enhanced productivity and minimal maintenance requirements.



“There are currently 360 20T Doosan DX excavators in operation in the local market and we expect the improved DX225LCA series to further consolidate Doosan's position as a leading supplier in this size class of equipment,” says Chris Whitehead, national sales manager, DISA Equipment, trading as Doosan, part of the Capital Equipment Group (CEG) of Invicta Holdings Limited. “These robust excavators, which are now available in Southern Africa, are fitted with special features to ensure optimum efficiency and extended service life in harsh local operating conditions.

“Design features for the African market include a Tier II mechanical engine for reduced operating costs, a heavy duty boom and arm, as well as standard hydraulic piping for hammer applications. These machines also have an improved H Class bucket and are supported by Doosan with a 2 year/ 4 000 hour warranty.

“This series features a range of new technologies that deliver effective control over the machine's power and also simplify maintenance procedures. As a result, efficiency and machine durability are increased, productivity is improved and operational costs are lowered.”

Finite Element Analysis

High performance materials, combined with advanced computer assisted design techniques, including Finite Element Analysis (FEA) are used by Doosan to create robust structures and all materials and components are tested under the most extreme conditions.

FEA has been used to calculate the best distribution loads throughout the boom structure. The new strengthened boom of this series has increased material thickness which limits element fatigue, thus increasing reliability and extending component life. A polymer shim added to the bucket pivot maintains precise control over the equipment. Cast elements are used in the arm assembly and reinforcement is added around the bosses for additional strength and extended service life.

All welded structures have been designed to limit stresses. The lateral chassis is welded and rigidly attached to the undercarriage. Tracks are composed of sealed, self-lubricating links, which are isolated from external contamination for dependability in all conditions. Tracks are locked by mechanically bolted pins. The hydraulic track adjuster has a shock absorbing tension mechanism.

Engines

Doosan's high strength excavators have a new 6-cylinder water cooled engine that is optimised and electronically controlled to boost production, maximise fuel efficiency and ensure harmful emissions remain well below the values required for Tier II engines.

The 21,5 T operating weight of these excavators is enhanced by new specifications that include a 0,92 m³ bucket capacity, a digging depth of 5 755 mm, a digging reach of 8 950 mm and a digging height of 9 750 mm. The engine rated power is 110 kW (148 HP) at 1 900 rpm. Maximum engine torque is 61,5 kg/m/1 400 rpm.

For optimum control, the e-POS system (Electronic Power Optimising System) provides a perfect synchronised communication link between the engine's electronic control unit and the hydraulic system. A controller area network system facilitates a constant flow of information between the engine and hydraulic system, ensuring power is delivered exactly as it is needed.

This hydraulic system enables independent or combined operations. Two travel speeds offer either increased torque or high speed tracking and an auto deceleration system and cross sensing pump ensure fuel savings. Two variable displacement axial piston pumps have maximum flow capacity of 2 x 206,5 l/min to reduce cycle times, while a high capacity gear pump, with a maximum flow of 2 x 28,5 l/min, improves pilot line efficiency.

The choice between standard and power operating modes optimises performance in all conditions, including harsh environments. Standard mode uses 85% engine power for general work and power mode uses 100% engine power for heavy tasks.

Operations

The conveniently situated multi-function colour LCD monitor panel has standard features for simple control and efficient operation. These controls include mode selection, precise flow rate regulation, auto deceleration and display selection. Maintenance and oil change intervals can be displayed, a self-diagnosis function allows technical problems to be quickly resolved and an operational memory provides a graphic display of the machine's status.

Levelling operations, movement of lifted loads and tricky manoeuvres are all controlled easily and precisely with control levers. Buttons integrated on the levers are used to operate additional equipment, like grabs, crushers and grippers.

Ergonomics

Ultimately an excavator's work rate depends on the performance of the operator. For this reason, Doosan's new DX225LCA machines have been designed with the latest ergonomics which enhance efficient operation, improve safety and offer greater comfort.

New features include a spacious, all weather sound-suppressed cab with a clear all round view, effective air conditioning and an adjustable seat, with an optional air suspension system to reduce vibrations. For improved safety, there are large handrails and a wide step with anti-slip plates, right and left rear view mirrors, a travel alarm and safety glass.

This series has been designed for easy maintenance and reduced downtime. A PC monitoring function enables connection to the e-POS system. Various parameters can be checked during maintenance, including pump pressure, engine rotation and engine speed. This information can be stored and printed for analysis.

Doosan earthmoving equipment – which encompasses track, wheel and mini excavators, articulated dump trucks (ADT's), as well as wheel loaders and various attachments – has been designed to cope efficiently and safely in Africa's harsh operating conditions. <

Doosan's newest generation hydraulic DX225LCA excavators are fitted with special features to ensure optimum efficiency and extended service life in harsh local operating conditions.



A CLEAN SWEEP WITH C SERIES BROOMS

Caterpillar's latest generation C-Series angle and pickup brooms for fitment on skid steer, compact track, multi terrain and compact wheel loaders are now available locally.

> These brooms come in two sweeping widths, with their drop core design enabling fast bristle replacement without the need to remove hydraulic hoses. A quick coupler facilitates easy work tool inter-changeability.

"Essentially, Cat enhanced the C-Series for improved durability, serviceability, efficiency and power delivery, ensuring optimum coverage when cleaning and removing dirt, rock and other debris in a variety of construction, industrial and landscape settings," explains Barloworld Equipment product and application specialist, Craig Christie. He adds that these brooms are also ideal for paving, specialty trades, recycling, demolition, and airport maintenance applications.

Pickup brooms sweep and deposit material into an integrated hopper bucket for easy removal and dumping. Bidirectional travel is enabled. However, the optimum sweeping style is forward, resulting in over-the-brush pickup. The Cat BP115C and BP118C pickup brooms replace the BP15B and BP18B with notable changes in terms of overall width and height, greater unit weight and improved hydraulic flow range. Unit weights for the BP115C and BP118C are 526 kg and 570 kg (previously 435 kg and 468 kg respectively) and overall width 1 990 mm and 2 295 mm (previously 1 912 mm and 2 217 mm). The required hydraulic flow range (l/min) is now 42-86 for both units compared to 30-86 on the B-Series. Brush speed is also marginally up across the board.

Windrow action

Angle brooms use a windrowing action to move loose debris ahead and to the side of the surface being swept. They can be oriented straight or angled up to 30° left or right of centre in forward travel. Like the BP (pick-up broom models) the Cat BA118C angle broom has also undergone some increased dimensional changes, although in this case the unit weight is now down from 417 kg on the BA18 to 401 kg on the BA118C.

Alongside the BP (pickup) and BA (angle) broom models, Caterpillar continues to field the utility broom series for skid steers and other compact machines, namely the Cat BU115 and BU118. Their role is essentially to sweep and collect light debris on smooth surfaces in forward or reverse travel. They can also be adjusted for greater bristle down-force in tough applications, such as sweeping course material out of a cold planer cut.

"Succinctly put, a clean work site offers more than just aesthetic value: removing debris results in improved productivity and a safer working environment," Christie adds. ■



The BA118C angle broom is compatible with a wide machine range, from the Cat 216B3 skid steer to the Cat 908H2 compact wheel loader.

Polypropylene/wire convoluted brushes provide optimum results for sweeping. Optional all-polypropylene and all-steel wire convoluted brushes are available for specialty applications.



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HIGH IMPACT power

Purpose-built for the robust applications typically found in Africa, Caterpillar's B20, B30 and B35 top mount hammers (TM) are now available locally for diverse markets that include municipal, general construction, demolition, quarrying and mining.



Cat B-Series hammers are designed with mounting brackets specifically built to Cat linkages, as well as the genuine connecting lines and valves to match Cat implement hydraulic kits.

➤ These units are designed for fitment across a broad spectrum of Cat carriers: the B20 TM is an ideal match for the Cat 320D2 L; the BM30 TM for Cat 323D2 L and Cat 329D2 L machines; and the B35 TM for Cat 336D2 L and Cat 340D2 L excavators.

"A distinctive feature is their excellent power-to-weight ratio, outstanding impact output, and simplicity," points out Barloworld Equipment product and application specialist, Craig Christie, adding that the weld-free hydraulic kit mounting supplied is a standard feature. "This high pressure accumulator protects the carrier's hydraulic circuit

by absorbing pulsation spikes created during the firing stroke."

Caterpillar's B-Series gas fired hammers are characterised by their top-mount (rectangular) style, which increases impact power by keeping hammer and stick forces in line. The top-mount style also provides a larger work area and excellent operator visibility. Additionally, the top-mount bracket configuration transfers far fewer forces and corresponding bending stresses into the end of the stick, lowering the overall impact on machine structures. Hammer speed/frequency can be adjusted easily to suit specific applications.

In terms of maintenance, the full length side plate design provides personnel with much easier access to service points and change-outs. A prime example is the field replaceable lower tool bushing. Tools come in moil, cone, chisel and blunt specifications and all are manufactured using high grade heat-treated steel.

"Every aspect of these hammers has been designed and tested to provide years of trouble-free daily operation," adds Christie. ◀



The top-mount (rectangular) style increases impact power by keeping hammer and stick forces in line.

Hammer specifications

| Unit B20 | TMB30 | TM B35 | TM |
|--------------------------|---------|---------|---------|
| Working weight kg | 1 881 | 2 387 | 3 105 |
| Impact rate BPM | 400-800 | 350-700 | 250-550 |
| Operating pressure bar | 160-180 | 160-180 | 160-180 |
| Relief pressure bar | 240-250 | 240-250 | 240-250 |
| Oil flow LPM | 125-150 | 160-190 | 180-220 |
| Accumulator pressure bar | 60 | 60 | 60 |
| Back head pressure bar | 6 | 6 | 9 |
| Tool diameter mm | 135 | 150 | 153 |
| Pressure line size mm | 25 | 25 | 32 |
| Carrier weight range ton | 18-25 | 25-32 | 32-40 |

60

NEW CEO APPOINTMENT

Leading screening and vibrating equipment solutions provider Aury Africa is pleased to announce the appointment of Xiaoming Yuan as the company's new CEO. Yuan, who officially took up the position in June 2015, has more than 20 years' experience in the coal mining, construction, engineering enterprise and heavy duty industries.



CEO of Aury Africa, Xiaoming Yuan.

➤ Yuan aims to help management set up a solid technical expertise team. "I have over the years gained extensive knowledge and understanding of mining, mineral processing operations and equipment sales, and have full support of the major shareholders," he explains. Despite challenges such as the economic impact on the mining industry, learning the South African market, setting up a sound team and growing the company's technical capabilities, Yuan is confident of overcoming these challenges by reinforcing a detailed

strategic plan to ensure success. "We will focus on a thorough analysis of the local mining market, more time will be spent in South Africa and we will be getting technical support from Australia. Since the mining industry will be at a low for another three to five years, we have to work even harder to survive. But the potential after this down-turning period will be significant," Yuan concludes. ◀

PEWA 2016 showcase

Cummins, a global power leader and corporation of complementary business units that design, manufacture, distribute and service diesel and natural gas engines and related technologies, showcased the long-awaited QSK95 Series of high-horsepower generator sets at Africa's highly acclaimed Power & Electricity World Africa (PEWA) Exhibition.



➤ PEWA is the annual forum where industry professionals gather to acquire ideas on developing sustainable, clean and bankable world class energy for projects on the continent.

The QSK95 is specifically designed and engineered for critical applications that demand a robust, reliable source of power to ensure uninterrupted operations, for applications such as hospitals, sports stadiums, office buildings, data centers and the like. For operators that seek to maximise uptime, the QSK95 Series of generator sets exceeds industry standards by providing 100 percent, one-step load acceptance in less than 10 seconds.

Commenting at the launch, Andre Kuhn, GM of Power Generation for Cummins Southern Africa said, "This incredible innovative product enjoys ratings of up to 3 500 kW and delivers high-horsepower output while achieving installation economies with an innovative small-footprint design. Innovation is about unlocking and unleashing new ways of thinking, doing and delivering against a background of continuous improvement. We are very excited about bringing this product to the Southern African market, especially in light of the current energy situation."

Cummins enjoys 90 years of experience in power generation and as a world leader in the design and manufacture of pre-integrated generator sets, ranging from 17 kVA to 3 750 kVA, produces its own components; from engines, alternators, transfer switches to control systems. Leading the industry in advanced emissions solutions, the company ensures that generator sets meet the required emission standards.

Enjoying a strong history of emission leadership has enabled the company to develop its own emission solutions which are packaged in accordance with regulations and requirements.

Kenneth Gaynor, PowerGen Leader Southern Africa concluded,

More reliable. Less downtime. The QSK95 Genset boasts huge capabilities for the Southern African marketplace.

"Innovation is more than a word at Cummins, it is also a value that we live by. It is our pledge to our customers that we are committed to bringing them innovative, sustainable and reliable power solutions. More dependability. It's what we call The Power of More."

Cummins Southern Africa is headquartered in Johannesburg, with branches in Longmeadow, Bloemfontein, Cape Town, Durban and Port Elizabeth; as well as Zambia, Botswana, Mozambique and Zimbabwe. The company also enjoys a wide range of dealer networks in support of its widespread Southern Africa footprint. ◀



Andre Kuhn, GM of Power Generation for Cummins Southern Africa.

61

About Cummins

Cummins, a global power leader, is a corporation of complementary business units that design, manufacture, distribute and service diesel and natural gas engines and related technologies, including fuel systems, controls, air handling, filtration, emission solutions and electrical power generation systems.

Headquartered in Columbus, Indiana, USA Cummins currently employs approximately 54 600 people worldwide and serves customers in approximately 190 countries and territories through a network of approximately 600 company-owned and independent distributor locations and approximately 7 200 dealer locations. Cummins earned USD1,65 billion on sales of USD19,2 billion in 2014.

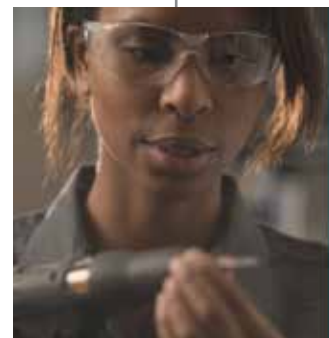
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ONLINE ANNUAL REPORT

Atlas Copco, a leading provider of sustainable productivity solutions, published its Annual Report for 2015 on the Group's website.

The annual report reflects Atlas Copco's mission of creating sustainable, profitable growth and integrates financial, sustainability and governance information in order to describe the Group in a comprehensive and cohesive manner. Whether the reader is a shareholder, customer or other stakeholder, the annual report shows Atlas Copco's vision, mission, strategy, structure and governance, how the Group does business as well as its long-term performance.

The Annual Report can be downloaded from Atlas Copco's website: <http://www.atlascopcogroup.com/investor-relations/>



SERVICES to keep construction WHEELS TURNING

By Paul Crankshaw

Connectivity is increasingly driving the quality of partnerships between Scania and its customers – and no less so than on construction sites around Southern Africa.



“In the modern era, we build relationships on our ability to connect – with our customers, with our trucks, with drivers, and with our cross-border support network,” says Theunes van der Westhuizen, area manager for connected services for Scania South Africa. Technology now allows the monitoring of the vital statistics of each vehicle, remotely communicating this data to a central fleet management system.

“Only by enhancing our customers’ operational performance can we add real value to their operations, and we do this by ensuring high vehicle availability and performance,” says Van der Westhuizen. “Communication technology is now a vital tool in every sector for bringing us closer to our customers and to address their needs quicker and more efficiently.”

Remote support

Construction contractors face particular challenges in their working environments, which are often in rural areas quite remote from the nearest dealer or support infrastructure. Scania’s connected and contracted services address these demands by monitoring vehicles as they work, and tracking performance so that driver behaviour can be fine-tuned for better results.

“All Scania trucks assembled in South Africa are linked electronically with our fleet management system,” he says. “The moment a vehicle is entered on our warranty system, there is a valuable stream of information available to the customer on a weekly, monthly or annual basis.”

The monitoring hardware in each truck – the on-board control unit – comes at no additional cost to the customer, providing key data on indicators such as fuel consumption, carbon footprint, hours driven and periods of idling. Insight into driver behaviour is also available, indicating whether their driving habits are optimal, how these change from month to month, and other issues that impact on cost and performance.

“These connected services assist us in supporting the customer remotely, irrespective of where the vehicle is located at any point in time,” he says. “Customers will ask us to look at a vehicle’s data remotely and to advise on the appropriate solutions.”

The system keeps the vehicle in contact with Scania’s South Africa’s headquarters in Aeroton, south of Johannesburg, even when it has crossed borders into other Southern African countries – with no extra ‘roaming’ charges for the operator.

Help on the road

The data from each vehicle’s control unit makes the work of Scania’s 24-7 breakdown assistance much more effective. This aspect of Scania’s connected services responds to vehicle breakdowns, providing an around-the-clock call centre service; by tapping into the fleet management system, consultants can access the fault codes directly from the vehicle – giving the technical experts a much clearer picture of what is wrong.

“This helps our mechanics to be better prepared – which may have particular relevance for a construction truck on a remote work site,” he says. “When down-time is costly and distances from dealer to site are long, you want the technical person to be able to solve the problem first time around if the repair allows it. Connectivity allows the mechanic to be better informed, and to source the right parts and tools before leaving the workshop.”

The breakdown service stretches across Southern Africa, so a customer working on a construction site in the Democratic Republic of Congo will still be able to contact the Johannesburg call centre for help. Rather than the operator trying to negotiate directly with the local dealership, this is done centrally – drawing on the resources and expertise of the relevant Scania dealership or contracted workshop.

“We have strong links with the Scania dealerships in Angola, DRC, Botswana, Mozambique, Namibia and Tanzania and we are integrated through the same Scania systems to allow seamless processing of customer requests,” he says. “The contracted workshops in Malawi, Zambia and Zimbabwe are also bound by the same stringent standards.”

As with all aspects of the customer relationship, there are quality assurance systems to monitor that performance is in line with expectation; time stamps in the system record reaction time and repair completion, showing how long it takes a mechanic to arrive on site, and the duration of repairs.

“We take over the detailed logistics of the repair operation, so that the customer is not unduly distracted from getting on with his job,” Van der Westhuizen explains. “For us, this is what it means to be a partner in a productive relationship – to take responsibility for ensuring optimal productivity from





Theunes van der Westhuizen, area manager for connected services.

our trucks so that the customer can focus on running and building their business.”

Drivers of success

A key aspect of Scania’s services to customers is to improve the quality and behaviour of drivers. For this purpose, a two-day product knowledge training course is offered for drivers at the company’s driving academy. Training on site is also an option.

“The value of this process lies in combining our training with the monitoring capacity of our fleet information system,” says Van der Westhuizen. “We educate the driver using real vehicles, which tracks their performance during training; the idea is for

the employers to be able to compare the behaviour in the training session with their performance after training – when they are back on the job.”

He said that this helps to track the learning process and ensure that the skills are being applied in the workplace – where they really count. It also brings hard data to bear on the employers’ assessment of driver quality, so that the right employees can be targeted with the appropriate follow-up training.

“Driver behaviour is a vital aspect of the complete solution that we want to provide to our customers, and we integrate this with the information that the fleet management system is providing,” he states. “The sale of

the truck to the customer is only the beginning of an ongoing relationship that needs constant attention and engagement.”

Contracted services

Scania provides contracted services as a comprehensive package to cover the cost of repairs and maintenance of the range of construction and other vehicles in the range.

“There are various options that we offer customers, including extended warranties, to ensure the maximum possible up-time – which is often the first priority for contractors working on tight construction deadlines,” he says. “This gives the owner peace of mind, knowing that their monthly costs are fixed and that the vehicles will operate at peak performance with little risk of unforeseen down-time.”

The value of these arrangements is not limited to smaller operators with minimal infrastructure, according to Van der Westhuizen; even larger companies with their own workshops can make good use of these offerings.

“If you are a large construction company, for instance, with your own workshop facilities, Scania can even take over the management of your workshop activities in accordance with your specific requirements, carrying out the necessary maintenance and repairs so that you can focus on your core business. We obviously have a depth of capacity and expertise in working on our vehicles, as well as the necessary systems and tools, so for us it is easier to ensure the high levels of up-time that the customer would like,” he concludes. ◀



CLIMATE-SMART entrance solutions

ASSA ABLOY Entrance Systems Cape Town meets the growing demand for climate-smart door opening solutions for climate-smart buildings in the Western Cape.

ASSA ABLOY Entrance Systems as the perfect business partner for the supply and installation of innovative, aesthetic, safe, convenient automatic entrance solutions for retail and industrial applications with over a century of combined engineering experience and specialised application knowledge.

Recognising a gap in the Western Cape market for an entrance solutions specialist, ASSA ABLOY Entrance Systems established the Cape Town branch in 2008 with branch manager, Morgan Adams, bringing a great deal of expertise to the door solutions table.

According to Adams, ASSA ABLOY Entrance Systems is part of the global crusade to preserve precious dwindling resources. In cold climates or seasons, every effort is made to reduce heating costs and vice versa in warm climates or seasons. The Western Cape is known for its cold wet winters and strong south-easterly wind, affectionately known as the Cape Doctor.

Automatic door systems including revolving doors and sliders from ASSA ABLOY Entrance Systems present economical solutions for reducing draughts and maintaining the internal climate of a building which deliver numerous benefits such as reduced electricity bills and an ambient internal climate for optimum comfort.

The vast array of successfully completed projects bear testament to the professionalism and dedication of the Western Cape team. Working in close partnership with leading installation and architectural firms such as Neo Aluminium, Glassmen West Coast and PG Aluminium, ASSA ABLOY Entrance System's Cape Town recently completed front entrance installations for a variety of different industries including a motor

vehicle dealership in Paarl, a financial institution and library in Cape Town city centre, Tygerberg Hospital's emergency entrance, etc.

Despite the current economic doldrums, the Western Cape market remains buoyant and there are clear opportunities for growth through new door sales. But as important to a company like ASSA ABLOY Entrance Systems that offers specialised products to a niche market, is service. It is the key to future growth.

ASSA ABLOY Entrance Systems thus ensures that it matches its high quality product offering with equally high service levels to offer door solutions that are second to none. Once an installation has been completed, customers are asked to comment on ASSA ABLOY Entrance System's products and service by completing a short questionnaire. Adams reports that they receive good feedback of customer satisfaction across-the-board.

ASSA ABLOY Entrance Systems Cape Town strives to increase their knowledge of their customers demand to realise their ambition to be able to supply high quality entrance solutions and services to facilitate the fast, safe and convenient flow of people, goods and vehicles into and out of buildings.

ASSA ABLOY Entrance Systems is a leading supplier of entrance automation solutions for the front, interior and back of buildings that ensure efficient flow of goods and people. With its worldwide presence it offers products and services dedicated to satisfying end-user needs for safe, secure, convenient and sustainable operations. Its product brands, Besam, Megadoor and Albany are globally recognised.

ASSA ABLOY Entrance Systems Cape Town meets the growing demand for climate-smart door opening solutions in the Western Cape.



Climate-smart entrance solutions from ASSA ABLOY Entrance Systems keep the Cape Doctor at bay.

THE CLEAR CHOICE FOR GENERATIONS TO COME

Arch Wood Protection's introduction of Vacsol® Azure® timber preservative to the South African market in 2012 has extended its range of alternatives in wood preservation with an organic, solvent-based product that is metal free and biodegradable.



➤ With a shifting emphasis on product re-assurance, Vacsol® Azure® timber preservative ticks all the boxes with its Ecospecifier Global endorsement that this treated wood exhibits ecological and preferable health characteristics.

"We are constantly looking for opportunities to lead in the supply of wood protection products that meet the demands of our customers and ultimately the end-user. By remaining focused on the current and future industry trends, we are confident that Vacsol® Azure® timber preservative will add to our capacity to expand the globally recognized range of Tanalised® products in our local market," said Doug Sayce, general manager of Arch Wood Protection.

Since its launch four years ago, Vacsol® Azure® timber preservative has already made its mark as the first metal-free Light Organic Solvent Preservative (LOSP) that provides treated timber with greater dimensional stability than conventional water borne wood preservative products. Furthermore, it is rated among the contributing products to the achievement of the Green Building rating tool credits.

This tri-functional wood preservative contains advanced organic azole fungicides and a synthetic pyrethroid as an insecticide/termiticide for the effective protection of timber against fungal decay, woodborers and insect attack. It is used to treat wood products in a vessel using a double vacuum process to ensure that the wood preservative penetrates and is retained within the sapwood. Being metal free, it is therefore biodegradable and regarded as safer than previous tin-based solvent wood preservatives.

Vacsol® Azure® timber preservative is best applied for the treatment of plywood, fingerjointed, laminated and engineered wood products. The preservation solution is a clear, amber coloured liquid and on application transforms wood to a beautiful natural light honey shade.

As a certified environmentally friendly product, it is perfectly suited to applications involving human contact. These are identified as Hazard Class H2 (interior above ground) and H3 (exterior above ground) applications such as balconies and decks, internal cladding, flooring and ceiling, laminated beams, thatching poles, lathes and wood features. In H3 applications, it is highly recommended that the treated timber is coated with a water repellent penetrating sealant after installation. ■

SEMINAR ATTRACTS TIMBER LEADERS

The American Hardwood Export Council (AHEC), the leading international trade association for the American hardwood industry, has successfully hosted a seminar in Cape Town, which was attended by over 35 specifiers, importers, traders, and end users of hardwoods.

➤ Aimed at helping attendees obtain a better understanding of the physical properties, grades and the potential for applications offered by the different species of American hardwoods, the high-impact event also emphasised the wide variety of American hardwood species, their environmental credentials, as well as their importance in sustainable design.

The highlight of the seminar was a discourse on the wide variety of American hardwood species as well as their solid environmental credentials and their importance in sustainable design. Roderick Wiles, AHEC regional director, provided an introduction to American hardwoods, covering topics including sustainable forest management and selection harvesting in the United States, hardwood production, US hardwood species and suitability for applications. Neil Summers, AHEC's Technical Consultant talked on new market opportunities for American hardwoods. His presentation covered thermally-modified American hardwoods (TMT) and also looked at the potential for American hardwoods in structural applications and cross-laminated timber (CLT).

In addition, Dana Spessert, chief inspector, National Hardwood Lumber Association (NHLA) provided an introduction to grading American hardwood lumber and a practical demonstration of the NHLA Rules for grading American hardwood lumber. Although the NHLA grading rules were originally conceived for the U.S. marketplace, a reasonable knowledge is essential for buyers worldwide in order to attain their expected degree of quality. With this in mind, the seminar aimed at making the most of Spessert's valuable experience, which encompasses over 27 years as an inspector of hardwood lumber, in a bid to educate buyers of hardwoods in South Africa.

Speaking at the event's side-lines, Roderick Wiles said, "With its long and proven record of sustainability and continuity of supply, the US hardwood industry offers high quality timber to address the demands of global customers. With this in kind, AHEC is taking major initiatives to educate buyers, end users and specifiers across the globe. South Africa is an established market, with an increasing volume of hardwoods being consumed in the country and our presence through this seminar is part of our strategy to support the efforts of our export companies and achieve further growth for U.S. hardwoods globally." ■



Roderick Wiles,
AHEC regional
director.

ACHIEVING GROWTH

amid economic uncertainty

During challenging economic times, TAL continues to buck local market trends through steady growth. TAL GM Chaitan Manga gives his perspective on how the company consistently manages to outperform market indicators.



A myriad of South African companies are being placed under increasing financial constraints as a result of the poor performance and volatility of the rand. Manufacturers importing raw materials from abroad are particularly hard-hit by a double-edged sword – rising production costs and a customer base with diminishing purchasing power. TAL is no exception to this trend.

Despite these challenges, Manga indicates that the company increased sales volumes and staff numbers during 2015. He attributes this ongoing success to the company's proactive approach in swiftly adapting to change. "We import from US dollar and Euro regions, and the poor exchange rate performance has meant price increases well above inflation.

"In order to prevent these increases being passed on to our customer base, we have streamlined internal efficiencies within our own organisation, thereby mitigating exponential costs in the market place, while not only preventing job losses, but in fact creating employment opportunities and consolidating our position as the market leader in South Africa and sub-Saharan Africa," he explains.

With interest rates increasing by 50 basis points in February, and economists predicting further rate hikes during the course of the year, Manga reveals that there has been a noticeable trend of consumers moving away from new project developments, and instead opting to take the renovation and DIY routes in an attempt to offset rising costs. This has worked to TAL's advantage.

"TAL is a trusted brand that has earned a reputation for offering high-quality products that are backed up by excellent after-sales support. In a challenging economic climate, we don't compromise on quality and integrity to achieve short term cost savings. This is evident in the loyalty of our customers, who understand that they receive unrivalled long-term value through TAL," says Manga.

Innovation is key to competitiveness

According to Manga, TAL's corporate culture and commitment to product innovation ensures that South Africa remains at the forefront of international tiling and flooring trends. "We have invested substantially into

a state-of-the-art laboratory that features a team of dedicated chemists that test local products and benchmark them to international standards."

TAL also boasts a new product development team that attends industry conferences around the globe, in order to remain abreast of the latest international trends. "There is always room for improvement and, by attending these conferences in more industrialised markets, we are able to ensure that the South African market is immediately exposed to new innovations," adds Manga.

TAL is ISO 9001:2008 quality management system certified and its products are designed, manufactured and tested according to its high-quality standards. TAL places a strong emphasis on environmental responsibility, and most of its products conform to the requirements stipulated by the Green Building Council of South Africa in lowering emissions of harmful volatile organic compounds.

A rich heritage spanning five decades

TAL's South African legacy spans over 50 years, from modest beginnings in the 1960s to becoming a major leader in the tile adhesive market. In the 1970s, TAL successfully converted the local tile market from mortar (sand and cement) fixing to tile adhesive fixing. TAL also pioneered rapid-set technology in tile adhesives and developed self-levelling screeds to meet the evolving needs of the South African contracts market.

This strong foundation in South Africa serves as a platform for the company to achieve measurable growth across sub-Saharan Africa. Manga points out that this market generally relies on mortar fixing. "Although initially cheaper, this process is more time-consuming and requires more material. Our aim is to educate this market on the benefits of adhesive fixing. We have dedicated teams that regularly visit and train contractors throughout the region to ensure success at grassroots level."

TAL is also experiencing steady growth with its construction product division that specialises in underlayments and concrete decorative overlayments, industrial resin flooring and waterproofing. "TAL continues to develop its reputation for being a one-stop-shop for all tiling and flooring solutions, by offering a comprehensive range of high-



TAL general manager, Chaitan Manga.

quality products for all of these needs."

Looking ahead, Manga anticipates 2016 to be another challenging year. "To date, we have displayed our resilience and adaptability by achieving growth in difficult conditions. Although there are not many signs of economic improvement for 2016, we remain optimistic of maintaining continued growth, not only in South Africa, but across the continent," he concludes.

TOWARDS FIRE SAFETY

In the event of a fire, have you taken the necessary precautions to limit the spread of flames, heat and smoke, and increase fire safety, resulting in sufficient time to evacuate the building?



These critical steps can save lives, reduce material damage, minimise business loss, protect the structure of buildings and keep them accessible after the fire.

Den Braven proudly presents the FireProtect® range for passive fire protection.

FireProtect® is a complete range of fully certified and approved passive fire products, for application in expansion and connection joints, openings and surface penetrations, between fire compartments.

Passive fire protection products are the primary materials included in the construction of a building. By correctly applying these products, the fundamental and legal requirements of compartmentalisation can be met.

Additionally, they contribute to the structural stability of a building and provide time to safely evacuate or clear it. Passive fire

AUTOMATIC TANK GAUGING

LAS, which is based in South Africa, has been the market leading equipment and service supplier in the High Accuracy Tank Level Measurement market in sub-Saharan Africa for the past 25 years.



In our quest to continue providing clients with better, more updated solutions to suit their requirements staying ahead of the game with cost effective solutions yet more stringent control on environmental and ergonomic impact, LAS partnered with a UK based company that was able to fulfil these exact needs. Motherwell Tank Gauging (MTG) is a new name in Southern Africa but they are part of Motherwell Tank Protection whom provided the



protection limits the spread of flames and smoke, which also limits the transfer and spreading of fire between fire compartments.

The Den Braven Fire Protect range consists of an FP Acrylic sealant, FP Silicone sealant, FP Hybrid sealant and FP PU foam filler. Each of these specialised products can have fire retardancy of up to four hours and international fire certifications.

Den Braven is known as one of the leading developers and manufacturers of sealants, adhesives and PU expansion foams and is considered to be an authority in the field of dedicated concepts that provide complete solutions – locally and internationally.

For further technical specifications and fire certifications please see the technical data sheets available on the Den Braven website or call the Den Braven sales team for technical assistance. ❏

Tank Storage industry with solutions for the past 150 years. They have traditionally been targeting UK and European markets and only relative recently started branching out with a larger global footprint.

Motherwell Tank Gauging's comprehensive range of ATG equipment provides a complete custody transfer solution from a selection of either Servo or Radar gauges, auxiliary equipment such as averaging temperature probes with or without water sensing, optional interfacing units for SCADA or DCS interfacing to Inventory Control Firmware.

LAS values MTG's offering as we consider it perfectly suitable for sub-Saharan African applications for the following reasons:

- Custody Transfer (OIML R85) approvals
- User Friendly HMI for ease of operation and reduced training needs
- Simplified site installation architecture with resultant reduced cost and increased system reliability
- Standardised communication modes vs proprietary protocols simplifying 3rd party integration
- Hi-tech, accurate measurement yet simplified installation and maintenance
- Features available on MTG equipment are available as standard features vs costly options on competitor models
- Features available on MTG Inventory Control Firmware is available as standard features vs costly options on competitor firmware

- MTG are constantly developing their instruments and firmware to stay ahead of competitors at all times. Radar gauges are now available with 'lightning fast' processors, minimising level measurement delays, traditionally a problem for radar level measurement. Updates however remain compatible with predecessor models. Exiting new inventory control firmware underway due for release late 2017 with unprecedented features.

LAS looks forward to taking the African journey with Motherwell Tank Gauging bringing a new approach to Custody Transfer Level Measurement to African clients where it was believed that such installations are costly investments reserved for only a few big role players. ❏



67



ULTRAPIPE PROMOTES PVC RECYCLING

DPI Plastics introduced its Ultracor multi-layer SANS 1601 sewer pipe to the South African market in 2002. This consisted of three virgin or 'first use' layers: namely, an inner and outer PVC wall, together with a foamed inner core.

When compared to its sewer pipe predecessor (the SANS 791 Durodrain pipe), Ultracor was a lighter, more cost-effective and material-efficient sewer pipe that quickly gained ground in the market.

Over the years, extensive research and development by DPI Plastics and its ongoing commitment to increase its use of recycled PVC resulted in the development of Ultrapipe, which represented the ongoing evolution of Ultracor.

Ultrapipe also utilises 'skins' manufactured from virgin PVC material. However, the foamed core is manufactured from recycled PVC.

The skins cover the core and are in contact



LEFT: Renier Snyman, technical and product manager at DPI Plastics. RIGHT: PVC is the most popular material for sewer pipes due to its high strength and stiffness.



with the effluent and surrounding environment.

While specifiers and contractors were initially hesitant to use this greener alternative, today Ultrapipe outsells Ultracor sewer pipe at a ratio of 4:1 as consumers choose more environment-friendly alternatives to traditional sewer products.

"PVC is the most popular material for sewer pipes worldwide due to its high strength and stiffness, toughness, low cost, ease of installation, chemical resistance and full system availability of pipes and fittings," Renier Snyman, technical and product manager, DPI Plastics, points out.

"As per the SANS 1601 standard, we are only allowed to utilise recycled material from our own processes. We therefore have full history of the raw material and its ingredients, providing greater confidence and peace of mind for our customers," Snyman comments.

Ultrapipe complies with the minimum stiffness requirements of SANS 1601. It is manufactured in both medium-duty (200 KPa or SN 4) and heavy-duty (400 KPa or SN 8) versions. "Our full range of PVC sewer fittings are rated heavy-duty, and can therefore be used with any class of sewer pipe. In fact, the stiffness of our fittings far exceeds 400 KPa," Snyman notes.

DPI Plastics was also the first company in South Africa to introduce ribbed fittings, providing lower weight with increased performance. "The size and shape of the ribs on our fittings was optimised to provide high stiffness and maintain overall rigidity," Snyman explains.

Ultrapipe is available in the popular size range of 110 mm up to 250 mm. It is supplied with integral sockets and rubber seals, or can be joined by solvent welding, providing leak-free restrained joints. ■

EXTRA DIMENSION TO VITREOUS ENAMEL STEEL

Vitreous enamel steel, produced locally by Vitrex in Boksburg, has become synonymous with diverse architectural applications worldwide. Now the product has been specified for yet another innovative – and almost unexpected – application: as a new table top material for a global restaurant chain.

Durban-based interior designers, Egg Designs, discovered the unique durability and rugged nature of vitreous enamel steel and promptly decided that the product

Vitreous enamel steel, produced by Vitrex in Boksburg and traditionally used in architectural applications, is now being used as table top material for Nando's restaurants.



should be applied as bespoke table tops for two new outlets of the Nando's international restaurant chain. Nando's, established in South Africa in 1987, now has more than 1 000 outlets in more than 30 countries.

Cristian Cottino, sales & marketing director of Vitrex in Boksburg, says Egg Designs approached Vitrex to provide the vitreous enamel steel table tops for Nando's O.R. Tambo International Airport and West Street, Durban, restaurants.

"The table tops feature blue enamel graphics on a white background. The graphics were digitally printed prior to the final firing of the table tops. Special graphics, such as those designed by Egg Designs for Nando's tables, are no obstacle for our production line as Vitrex's vitreous enamel steel surfaces can incorporate virtually any graphics including the work of artists, or special effects such as metallic or wood grain finishes," he states.

Cottino says the 32 mm deep tops are 1 300 mm in diameter and factory-fitted with a core to receive a set of crafted metal legs.

Egg Design has been contracted to design the interior of Nando's restaurants in South Africa in line with the new design philosophy, including

the design and manufacture of the various furniture elements. The two branches for which Vitrex supplied the table tops were the first to be completed in Nando's national revamp.

Greg Dry, one of the founders of Egg Designs, says the Portuguese roots of Nando's influenced his decision to opt for a 'kombuis tafel' concept for the new restaurant tables. "We did some research and found that vitreous enamel steel had the hardwearing attributes we were looking for and that Vitrex could provide both limitless colour and print options. Vitreous enamel steel is also impervious and therefore the ideal material on which to serve food. We believe that the future design possibilities of vitreous enamel steel is limitless and are extremely excited about increasingly using it, not only in our designs for Nando's, but also in other interior designs as we continue our association with Vitrex."

Dry says he believes that as vitreous enamel steel is increasingly seen in Egg Designs interior landscapes in future, the product's relatively under-utilised capacity in this creative field in South Africa will be discovered and increasingly specified by the design fraternity. "Nando's are pushing the boundaries in every aspect of design and allowing Egg Designs to implement this innovative application of an established form of architectural cladding shows the restaurant chain's commitment to lead the field."

The interior designer says the "absolute passion, commitment and exceptional professionalism" displayed by Vitrex in the execution of this order bore testimony to the company's success as a global player. ■



“How can we adjust to the new realities of the construction sector?”

“Adapt with the right partner.”

It's becoming more of a challenge to achieve desired results in the South African Construction Sector. You need a partner entrenched in its intricacies to build new solutions. With our Commercial Property Finance, Lending and Asset Financing capabilities, we're well equipped to help you find new ways forward.

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