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> CONTENTS

04 SOUTH AFRICAN INFRASTRUCTURE PROJECTS How project management can maximise these economic drivers.

06 VITAL ROLE INCREASINGLY IGNORED Quantity surveyors are often seen as dispensable.

08 SELLING TAILORED SOLUTIONS Scania, albeit a truck manufacturer, says it does not sell trucks, but solutions.

11 BOLD GREEN AND SOLAR ENERGY TARGETS Growthpoint property has 23 certified green buildings in its portfolio.

12 OFF-GRID SA HOME HAILED International recognition for House Rhino outside Port Elizabeth.

14 R1,1-BILLION MAKEOVER FOR THE PAVILION Significant expansion will make this centre more competitive.

18 STRINGENT DEMANDS IN GREEN STAR QUEST Coping with tough demands in the refurbishment of Total House.

21 THE ECONOMICS OF SUPERTALL BUILDINGS New technology has led to buildings becoming taller.

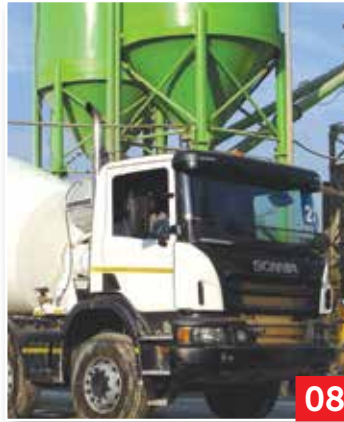
22 SWAZI CONTRACTS SHOW COMPANY'S METTLE Various contracts have shown Franki Africa's prowess.

24 NORTHERN CAPE SILO SLIDE Six new wheat silos were slip formed in Kimberley.

26 INNOVATIVE AND IMPRESSIVE The Century City Square project redefines 'fast track projects'.

30 GROWTH THREAT Ailing airport infrastructure is a major threat to Africa's development.

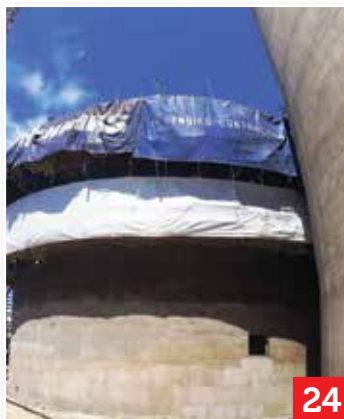
36 2016 DIRECTION Isuzu Truck South Africa has embarked on becoming an 'enterprise'.



08



18



24



26



16 COVER STORY

The 12 kg GBH 12-52 D Professional rotary hammer from Bosch offers maximum performance in its class during drilling and chiselling. The tool is powered by a 1 700 watt motor which delivers 19 joules of impact energy. Its performance is therefore much higher than the predecessor model. It is especially suitable for horizontal demolition work, correction tasks or chiselling tasks which call for high chiselling performance.

1

REGULARS

4 Marketplace

12 Property

18 Environment and Sustainability

18 Project Profile

26 Project and Contracts

38 Equipment

42 Products and Services

44 Diary and Appointments

EDITOR'S

COMMENT



Today, more than half of the world's population lives in cities. At the current rate of urbanisation, this will increase to two thirds by 2030. This is according to Allianz's report 'The megacity state: the world's biggest cities shaping our future'.



The Chinese government is planning to connect multiple cities. Greater Shanghai will then theoretically have a population of 170 million.

2

Most massive cities are in Northern America, Latin America and Europe while Asia and Africa have some of the fastest growing cities in the world. Cities with 10 million or more inhabitants are called 'mega-cities' (Johannesburg, with a population of 9,7 million, is close to being called a mega-city – it will have a projected population of 11,9 million by 2030).

The report states that by 2030 a new kind of city will emerge: gigacities. These cities, albeit almost unimaginable, will have 50 million inhabitants. In China such cities will soon become a reality. The Chinese government is planning to connect multiple cities in five urban conurbations that will see the greater Shanghai having a population (in theory) of 170 million by 2020.

In 1950, there were just two cities that, in today's terms, were deemed megacities (New York and Tokyo). In 2015 there were 29 (of which 16 were in Asia).

By 2030 there will be 41 – Johannesburg one of them. Tokyo (38 million), Delhi (25,7 million) and Shanghai (23,7 million) are currently the

largest megacities and will remain so through 2030. By that time 12 new megacities will have emerged – 10 of these will be in Asia and Africa. Cairo will then be the biggest African city (24,5 million inhabitants), followed by Lagos (24,2 million), Kinshasa (20 million), Johannesburg (11,9 million) and Luanda (10,4 million).

A challenge for sustainability

The gigantic concentration of people in cities will have huge challenges for sustainable development – especially given the fact that cities, even though they make up only 2% of the world's land area, are responsible for 70% of the greenhouse gases produced.

Questions that will need answering are how to find a balance between growth, quality of life and climate protection. The report provides some solutions as to the structure such cities could have: these include green roofs, solar film on building fronts, waste-to-power plants, smart-city grids and many more.

The challenge for such cities are also wider

such as providing sufficient jobs and housing for inhabitants, basic sanitation, energy, healthcare, education and transport services.

Megacities in especially the developed world (America and Europe) are faced with a stagnant (or negative growth rate) while those in Asia and Africa grow extremely fast, which will have its own challenges.

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The 1 to 5 of a complete offering

1 The print edition

Already published for 33 years, the magazine reaches a carefully managed target audience every month (ABC 2 696 – second quarter 2015).

2 Website

www.constructionworldmagazine.co.za with the sections Marketplace, Environment & Sustainability, Property, Projects & Contracts, Equipment and Products & Services, is updated daily. It carries up-to-date news, in-depth articles, product and equipment announcements and project news.

News and announcements are shared with our Twitter, LinkedIn and Facebook following.

3 Online edition

It is powered by FlippingBook Publisher, a software application that allows the user to turn pages, zoom in, print and email articles.

All advertisers in the print edition of the magazine receive a hyperlink in the online version to their websites.

4 eConstruction World

A growing mailing list (in excess of 4 000) receive our bi-monthly *eConstruction World* newsletter. It informs our targeted readership and directs readers to the print edition and the website.

5 Best Project Awards

Construction World hosts its prestigious Best Projects Awards annually, now in its 14th year. The December issue is dedicated to the winners and entrants and is an overview of activity in the construction world – the ideal vehicle to associate your brand with excellence.

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CROWN
PUBLICATIONS

Making good on South African INFRASTRUCTURE PROJECTS

By Mark A. Langley

Projections are that GDP for Africa will increase fivefold from 2000 to 2019, supported by key transport, energy and communications infrastructure projects, and South Africa is expected to play a large role. Mark Langley, president and CEO of the Project Management Institute (PMI), discusses how to maximise the success of these economic drivers.



South Africa has committed to substantial infrastructure investments spanning multiple industries that are critical to the nation's economic growth and long term development. With R84,3-billion already having been spent on such projects and some of them already behind schedule, it is critical that measures be taken to increase the likelihood that these projects will deliver on their objectives and do so within scope, deadline, and budget.

South Africa, like many countries, suffers from a shortage of qualified project and programme managers whose skills are integral to maximising the return on investments in key areas, such as the ones South Africa is making in Eskom power stations. A recent study showed that there will be 1,57 million new project management jobs globally each year between now and 2020, with a dearth of qualified people to fill that pipeline.

While this is a situation that is set to worsen globally, South Africa may be positioned to weather the situation better than many other countries. An increasing number of tertiary institutions – Stellenbosch University, for example – are offering project management curricula. As a result of the profession's maturation across the whole of the continent, PMI currently represents more than 10 000 project managers in Africa.

We have offices throughout the world and have seen other positive industry trends elsewhere. About 10 years ago in China there were fewer than five project management degree programmes offered countrywide. China began investing in this area and within a year there were more than 90 degree programmes focusing on project management training and education. On top of that, the government began creating genuine career paths for people entering into project management.


But talent is only one of several issues South Africa and other BRICS nations must address to improve returns on investments. PMI conducted a global study with the Economist Intelligence Unit in 2013 around organisations' strategy and implementation. Specifically, we asked executives: "How many of you think that strategy implementation is important?" Eighty-eight per cent responded that they thought it was important, yet a significant majority also acknowledged they struggle to bridge the gap between strategy formulation and its day-to-day implementation. Since all strategic change happens through projects and programmes, it is easy to see why many organisations fail to deliver value to their stakeholders – and why only 54% of an organisation's strategic initiatives meet their goals.

The bottom-line consequences of this performance rate are considerable. In Africa, organisations report wasting the equivalent of R88-million for every R1-billion invested in projects due to poor project performance. At PMI, we are committed to raising awareness of the amount of money that is wasted due to poor project management and the inability

to execute on strategic initiatives, and to providing insights about how the best-performing organisations waste less money and deliver more successful projects.

From the outset, project management needs to take into account the full life cycle of the project – not just the elements of production or the final delivery. This is necessary so that you don't overlook the downstream costs of maintenance. An example here would be a lack of maintenance leading to downtime of a power station resulting in the inability to achieve the desired 800 MW output. Another example of incomplete or immature planning could be the building of coal-powered stations when long term planning calls for prioritisation of gas-powered stations.

Regardless of the type of project, a key success factor in project management is the presence of an engaged executive sponsor – a member of senior management who makes the business case for a project, champions its value and obtains the necessary organisational resources to make the project viable. Where a project or programme manager leads, the sponsor operates at the highest level of an organisation's management structure to layout the requirements and to hold others to account. The sponsor initiates and signs off on the project, promoting the change and benefits. When this engaged executive involvement is absent, we see projects fail because there is no one with a full understanding across and up the organisation, and navigating, and advocating for, changes throughout the organisation.

The governance of a project is a complicated process, involving the management of risk, access to capital, and many other factors. Organisational leaders need to understand this and drive the way forward. With focus and energy, a clear understanding of what needs to be done, and a desire to achieve established goals, there is no doubt that South Africa can take a position as a leader in driving tremendous GDP growth across the entire continent in the years ahead. 

4



Mark A. Langley is the President and CEO of the Project Management Institute. Langley, who is based in Philadelphia in the USA, was recently in South Africa for the PMI Africa Conference showcasing project management in developing Africa.

WEARCHECK NOW PART OF TORRE

Condition monitoring specialists WearCheck and her Set Point Group sister companies have been acquired by Torre Industries, a dynamic JSE-listed industrial entity underpinned by strong brands and strong products.

➤ The scientific analysis of used oil from mechanical and electrical systems is WearCheck's core condition monitoring service, which is used by a range of industries such as power generation, turbine, earthmoving, industrial, transport, shipping and aircraft. Additional services include the analysis of fuels, transformer oils, coolants, greases and filters.

WearCheck was founded nearly 40 years ago in Pinetown, Durban, and has expanded to operate a network of ten laboratories across the African continent and beyond.

Today, WearCheck has evolved into a 'one-stop shop' for condition monitoring, which is dedicated to the optimisation of plant performance management, and offers an additional range of monitoring techniques such as vibration monitoring, laser alignment, thermal imaging, balancing, the testing and control of the efficiency of combustion, heat transfer, and milling.

The integration with Torre Industries will have no negative impact on WearCheck customers, and the company will continue with normal operations.

WearCheck managing director, Neil Robinson, views the merge in a positive light. "We are pleased to be part of Torre – a solid, well-renowned group in the industry, and one which shares WearCheck's high standards of customer satisfaction, continued investment in technology, and ongoing staff training and education.

"The integration process will be phased in over several months, and we will continue to keep customers informed of any changes or improvements. We would like to reassure our customers that, as we are integrated into the Torre family, we are excited at the opportunities for development and growth that will evolve."

Torre is an integral business in sectors such as mining, automotive, construction and industrial. The company has shown steady growth since its listing on the JSE in 2012.

Serving customers in selected high growth markets with the provision of equipment, parts, financing and support, Torre's focus is the value-added sale and rental of branded capital equipment, the distribution of high quality parts and components, the delivery of critical



WearCheck managing director Neil Robinson believes the merger of the condition monitoring specialists into the Torre Industries group, holds exciting growth opportunities for the future.

support services and the provision of financing solutions in support of their customers' expansion programmes.

Torre's business units include parts and components, which has vast product and brand solutions for the automotive, commercial, off-highway, industrial and construction sectors, as well as aftermarket repair parts and components for earthmoving equipment in the mining industry. ■



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BUILDING TRUST



VITAL ROLE increasingly ignored

South Africa's shrinking economy, coupled with soaring building costs, have made construction cost control more important than ever. "Yet there is an alarming tendency, particularly on major government contracts, to totally omit the quantity surveyor from the professional team," cautions Larry Feinberg, executive director of the Association of SA Quantity Surveyors (ASAQS).

"This could lead to spiralling costs and a total lack of control on management of what could be multi-million rand projects: economic wastage that South Africa, facing a devastating drought and other major threats to our economy, can now ill afford," he states. "Corruption, sadly, has also become a fact of life in our country, and here also the cost-factoring and expenditure control a QS can provide play essential preventative roles." Feinberg says although quantity surveying is by no means a new profession, there still seems to be surprising ignorance about the vital role a quantity surveyor plays in – and can contribute to – building projects.

"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," Feinberg added.

Bert van den Heever, president of ASAQS, outlined the vital input a QS could bring to a construction project:

"A QS manages all costs relating to building, civil engineering and mining projects, from the initial estimates to the final figures. He or she seeks to minimise the costs of a project and enhance value for money, while still achieving the required standards and quality. Many of these standards are specified by statutory building regulations, which the QS will understand and see that these are adhered to.

"A QS may be employed by either the client or the contractor, working in an office or on site. They should be involved in a project from the start, preparing estimates and costs of the work. When the project is in progress, the QS will keep track of any variations to the contract that may affect costs and create reports to show profitability. The title of the job, in simplified terms, could also be construction cost consultant or commercial manager," Van den Heever explains.

The QS responsibilities vary depending on the project being worked on, but can include:

- Preparing tender and contract documents, including Bills of Quantities with the architect and/or the client;
- Undertaking cost analyses for repair and maintenance project work;
- Assisting in establishing a client's requirements and undertaking feasibility studies;
- Performing risk, value management and cost control;
- Advising on procurement strategy;

Larry Feinberg, executive director of ASAQS. "Too often, the inclusion of a QS in a project's professional team is seen as a dispensable, additional cost," he states.



- Identifying, analysing and developing responses to commercial risks;
- Preparing and analysing costings for tenders;
- Allocating work to subcontractors;
- Providing advice on contractual claims;
- Analysing outcomes and writing detailed progress reports;
- Valuing completed work and arranging payments;
- Maintaining awareness of the different building contracts in current use; and
- Understanding the implications of Health, Safety and Environmental regulations.

"In today's business environment, quantity surveyors are also expected to provide essential guidance and input regarding sustainable construction, as well as play a far bigger role than ever in post-occupancy matters, such as life cycle costing and facilities management," he adds.

Other services that can be provided by a quantity surveyor with experience and specialised knowledge can include:

- Offering advice on property taxation;
- Assisting clients in locating and accessing additional and alternative sources of funds;
- Enabling clients to initiate construction projects; and
- Advising on the maintenance costs of specific buildings. ◀

6

CONTROLLING INTEREST

Transaction agreements have been signed for the black-owned Masimong Group – which is led by SA Chamber of Mines president Mike Teke – to acquire a 51% interest in the Liviero Group, South Africa's largest privately owned construction, civil engineering and contract mining business, for an undisclosed sum.

Teke, who is chairman of the Masimong Group, says that the deal remains conditional on the receipt of Competition Commission approval only. Commenting on Masimong's rationale for this transaction, he states: "Our acquisition of a controlling share in Liviero gives us direct exposure to a well-established business that has the size and scale to play a key role in critical growth sectors of the South African economy. It also supports our strategic goal to become a major black industrial player in South Africa."

Liviero Group CEO Neil Cloete says that the agreement represents the beginning of an exciting new era for the 31-year-old Liviero Group. "With Masimong's acquisition of a majority stake in Liviero, the company will become the country's largest black-controlled multi-disciplinary contractor," he states. "Masimong brings varied expertise, energy, opportunities and a compelling shared vision to take the Liviero Group to the next level. Along with enhanced opportunities to contribute to crucial infrastructure development projects, and the achievement of South Africa's economic and social development goals, we will enjoy a stronger and more sustainable position

Latest edition of **BUILDING SYSTEM STANDARD**

The Association of South African Quantity Surveyors (ASAQS) has launched the seventh edition of its Standard System of Measuring Building Work, an invaluable source of reference – particularly for tender documents – for both the quantity surveying as well as building professions.

> The latest edition of what many in the construction sector call 'The QS Bible', was launched at a special function at the ASAQS head office in Midrand by Dr Corné de Leeuw, former president of ASAQS, and for decades the driving force in the delivery of standardised ASAQS documentation.

The Standard System contains rules about how the labour and materials required to erect a structure should be reflected and clearly defined in Bills of Quantities. Contractors base their tenders and quotations on such Bills of Quantities, so the Standard System is regarded as an indispensable tool in the industry – and has been for many years.

Dr De Leeuw told the guests that the launch of the latest Standard System was a milestone event for the entire African continent as it would soon be followed by the publication of the 'Standard Method of Measuring Building Work in Africa' – a very similar source of reference but to be published and distributed by the Africa Association of Quantity Surveyors (AAQS).

"Although many countries in Africa have their own standard systems, they will now, when using ASAQS' latest Standard System, for the first time be able to employ Model Bill of Quantities with items aligned to their own standard systems. This standardisation will make it easier for quan-

in the market, for the benefit of all of our stakeholders, including our employees, clients, suppliers and unions," he concludes. **▣**

Liviero Group chairman Luca Liviero (left) and Mike Teke, chairman of the Masimong Group, which is to acquire a controlling interest in multi-disciplinary contractor Liviero.



Dr Corné de Leeuw, former ASAQS president and for decades the driving force behind the delivery of the ASAQS Standard System of Measuring Building Work, received special framed recognition of his 'visionary leadership' from ASAQS president, Bert van den Heever (left), at the launch of the seventh edition of probably the building sector's most important source of reference. On right is Larry Feinberg, executive director of ASAQS.

7

tity surveyors to relocate and work within various countries in Africa, and will also simplify the operations of SA-based international contractors when working in other parts of Africa," Dr De Leeuw explained.

The move towards tabulation and a more simplified and user-friendly format initiated in the last revision of the sixth edition of the Standard System – which is also widely used at universities and technicians – was continued in the latest edition which is now also more suitable for IT applications.

In August 2013, ASAQS appointed a committee consisting of Prof Thys Siglé (chairman), and ASAQS members, Elmarie Edwardes and Rufus de Villiers, to produce a seventh Standard System of Measuring Building Work, incorporating updated and additional information as well as revisions where these were required.

In association with Master Builders South Africa (MBSA), a draft was prepared and comment and input were invited from various quantity surveying practices and associations prior to the publication of the seventh edition.

The first edition of the Standard System of Measuring Building Work in South Africa was published by the Transvaal Society of Quantity Surveyors in 1906. Thereafter, further editions were published at irregular intervals on a national level. The sixth edition was published in 1991 with first and second revisions published in 1999 and in 2013, respectively.

Bert van den Heever, president of ASAQS, paid tribute to the 'visionary leadership' of Dr De Leeuw who was the driving force behind the delivery of the new Standard System and worked closely with the committee who handled the publication of the latest edition.

"He has provided immeasurable service to ASAQS for many decades. He was president of ASAQS back in 1985 and now, 30 years later, has again been prepared to 'project manage' the latest revision which was completed in just two years compared to the nine years it took to produce the previous Standard System," he stated. **▣**

Selling TAILORED SOLUTIONS

Since it was established in 1891, Sweden's Scania has built a solid reputation in the long haul truck sector. With the re-launch of its construction range, this stellar reputation is standing it in good stead to make inroads into the Southern African construction industry.

Construction World spoke to Alexander Taftman, Scania South Africa's product and marketing director.

What is Scania's unique selling point?

We are not selling vehicles, but solutions – we focus on the customer's complete need as we do not believe in the idea of 'one size fits all'.

Packages are tailored for each application. This is achieved by investigating the customer's specific application: his challenges – we need to help him solve a problem and we need to do it better than anyone else. This includes the hardware needs (vehicle), operational conditions, a mapping of how the vehicles are operated, turnaround times, payload expectations, and fuel consumption.

Only once these are defined, we decide what the ideal body for the vehicle will be. Thereafter service and maintenance needs are determined, we ensure that the correct driver training takes place (for construction and mining it is important that drivers are trained in the environment in which they will operate), what the optimal fleet management system will be to best maintain and control costs, and determine the best finance and insurance package.

8

How are you working towards, as your corporate literature states, Scania being the number one choice for customers?

We design a proposal around the customer's needs. The best way to maximise the efficiency of the solution, is to allow the customer to focus on what he knows best, while we focus on what we know best.

How is the Scania brand perceived in South Africa?

It is a brand that is known mainly for its long haul trucks and it is time to prove to the market that it can be just as good when used in the construction industry.

What makes Scania a successful company?

We keep our promises and 'walk the talk'. At the same time we also strive toward exceeding our customers' expectations and build strong relationships with them to ensure that that we are both successful.

What differentiates the in-house financial services that Scania offers from other traditional bankers and insurers?

Our solution is differentiated by the fact that we understand transport – more than a traditional bank would. This enables us to look beyond the balance sheet and give customers a package that is tailored to their unique needs.

Define what Scania understands 'provider of sustainable transport' to be?

Sustainability is key – it is the only route to the future. We define sustainability according to the three Ps: planet, people, and profitability.

Planet The way in which we interact with the planet currently is unsustainable – we have a few decades in which to arrest the damage we are doing to the earth. Industry needs to come up with solutions that are sustainable in the long term. The need for transport will not decrease, but the nature of transport needs to change – we need to have solutions that look different from those that are offered today.

People This refers to jobs and security. Alternative fuels to diesel such as gas, ethanol and biodiesel can be produced locally to generate jobs and this will also limit the transporting of fuel.

Profitability We need to come up with solutions that are efficient and financially viable. There should not be a major trade-off to go from diesel to gas or ethanol – one should be able to do this at the same cost.

What is Scania's strategy for 2016?

We have primarily been targeting the long haul truck market for many years. In 2006 it was decided to expand Scania into different applications: distribution and construction. From 2011 we also started expanding into mining. We re-launched the Scania construction range at 2015's BAUMA CONEXPO AFRICA in Johannesburg.

In 2016 the strategy is to expand these construction solutions into further applications and to broaden the offering for the construction industry.

The Scania off-road trucks that are used in construction are said to be the toughest Scania has ever built. What makes them ideal for the construction industry?

We looked at the drivers of the construction market that make it earn money and designed a vehicle around that.

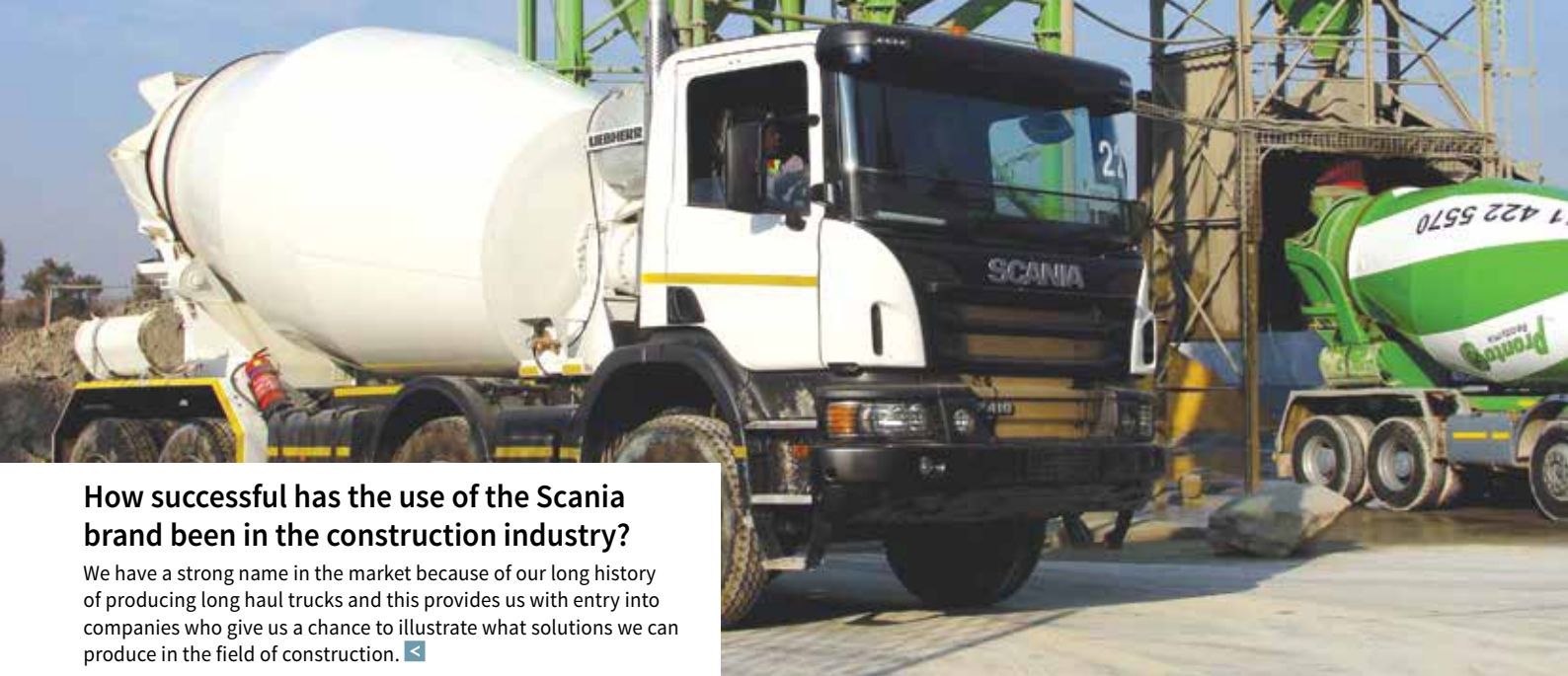
This is specifically with regard to payload. The load has to be maximised and the weight of the body and vehicle minimised. This is a triangular formula where you have a breaking point: if you make the vehicle too light, in relation to the load, it is not going to last, which will negatively impact uptime.

As uptime is crucial, we have designed a vehicle around maximised uptime and minimised TOC (total operating cost). If the vehicle is active 24/7, stopping only to refuel or for planned maintenance, you have maximised your income source. The opposite is true for a vehicle that breaks down continuously.

What models are available?

We have tippers, mixers, skip loaders, heavy haulers, brick transporters, flatbeds and staff transporters.





How successful has the use of the Scania brand been in the construction industry?

We have a strong name in the market because of our long history of producing long haul trucks and this provides us with entry into companies who give us a chance to illustrate what solutions we can produce in the field of construction. <

FEASIBILITY STUDY FOR AFRICA'S LARGEST INTERNATIONAL AIRPORT

GIBB Engineering, South Africa's leading black-owned engineering consulting firm, recently completed a feasibility study to evaluate and investigate the construction and operational feasibility of connecting the existing Western Precinct to the Midfield Development at the OR Tambo International Airport in Johannesburg.

> The study, which started in January 2015, cemented the agreement between GIBB and Airports Company of South Africa (ACSA).

The research, headed up by GIBB's associate engineer for dams, hydropower and underground works, Monique Wainstein, in collaboration with Sumeshin Naidoo, business development manager in GIBB's transportation sector, developed a three-phased approach which will invariably lead to the airport being divided across the two major terminal precincts by an underground tunnel. The tunnel aims to bridge the geographical gap between the aircraft stands and the cargo/terminal buildings.

GIBB saw a clear need for connecting these precincts and this particular study focuses on:

- Airside transportation connectivity, for the transportation of bags, airside passengers, freight and general airside support vehicles;
- Airside technical operational connectivity, for general airport operational access such as fire and rescue, marshalling, and security patrolling; and

- Bulk services connectivity, which could potentially include, but is not limited to data links, electrical supply, water supply, and fuel supply.

"The tunnel connectivity is key to the future master planning and infrastructure development of the airport. The tunnel will enable the linking of the current Western Precinct (existing terminal and associated aprons) to the new future cargo and new mid-field terminal developments. This linkage, once fully constructed and operational, will provide access to shorter connection times of people, baggage and services within the current infrastructure and future airside developments.

"Passengers will experience seamless travel between terminals and between airline partners without fully understanding the complex operations behind the scenes that will be taking place to ensure that their travel demands are met," commented Naidoo.

"In addition, aviation service providers (baggage handlers, fuel re-fuellers, marshallers) will benefit from having shorter distance and travel times to get to servicing aircraft. Airlines will be able to improve aircraft connection times and ensure that aircraft can spend more time in-flight than waiting on the ground to be serviced and/or filled up with passengers. This project, if it proceeds to construction, will support ACSA's initiatives to reduce their carbon emissions and carbon footprint," he added.

The scope of work defined in Phase III of the study evaluates the tunnel connectivity time and a possible route between the two terminals, an overall assessment on the closure of aircraft facilities during the construction, the cost implications, the duration of the project, the advantages of the new connecting tunnel and the viable tunnel and road connector assess points. <

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DISTRIBUTOR in Southern Africa

Terex Trucks, which was fully acquired by Volvo Construction Equipment (Sweden) in June 2014, has appointed Babcock International as the official distributor of its rigid and articulated haulers in Southern Africa, effective 1 October 2015. In addition to supplying new machines, Babcock will also provide parts and other essential aftermarket support services to customers in South Africa and neighbouring countries.



> Headquartered in Motherwell, Scotland, UK, Terex Trucks is a manufacturer of off-highway rigid and articulated trucks that are used in mining, quarry and construction applications around the world.

The Volvo acquisition, which includes ranges of rigid dump trucks with payloads from 32 to 91 tons and articulated dump trucks from 25 to 38 tons payloads, will greatly complement the other Volvo Construction Equipment products that Babcock represents.

Paul Douglas, long-standing managing director of Terex Trucks,

confirms the company's ongoing commitment to its products, customers and dealers. "Our new Volvo-owned, yet independent, status gives us the best of both worlds," says Douglas. "We retain our organisation structure in its current form with its entrepreneurial spirit, customer focus and speed of execution, with the added benefit that being part of a global leader in the construction and equipment industry brings with it."

The acquisition has given rise to the strengthening of the Terex Trucks distributor and dealer network globally. "We have seen a large increase in distributor interest since the acquisition has been made," says Douglas.

Babcock is well geared to incorporate the Terex Trucks business into their current infrastructure, especially with the opening of their state-of-the-art branch in Middelburg which will serve as the head office for the Terex Trucks brand. This branch has been designed with large work bays that will accommodate trucks up to 100 tons.

Commenting on the appointment of Babcock, Paul Douglas says, "We are very impressed with the commitment to customer support that Babcock embraces. We are convinced this will be a great partnership which will leverage the strengths of Babcock and Terex Trucks in a win-win for end users."

Roger O'Callaghan, CEO – Babcock International Group Africa, regards the move as highly beneficial to the two companies. "Babcock is very excited to incorporate Terex Trucks into our current portfolio. We believe the additional products complement our existing range and give us an opportunity to provide new customers with the Babcock 'trusted to deliver' service. We have a long and successful relationship with our Volvo CE partners and look forward to an equally rewarding relationship with our new Terex Trucks friends."

There has also been positive feedback from Babcock's sales and marketing division who are upbeat about the inclusion of Terex Trucks into their product portfolio, according to Dave Vaughan, sales director for equipment at Babcock.

"What is abundantly clear, in the short time we have been dealing with Terex Trucks, is that the rugged and simplistic design of the Terex truck is perfectly suited for the harsh local conditions in which our customers operate.

"The addition of these machines into our product portfolio will strengthen our offering considerably and allow us to engage in markets in which we were previously unable to participate. The Babcock Group is delighted to represent Terex Trucks in southern Africa and looks forward to offering our new and existing customers the high levels of service they deserve," says Vaughan. <

10



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Bold green and solar ENERGY TARGETS

Growthpoint Properties has targeted boosting its solar energy generation capacity to over 6 MW by mid-2016 to become one of the largest generators of rooftop solar power in South Africa.

➤ It has also targeted growing its portfolio of Green Star SA certified buildings to 50, reinforcing its position as the holder of the biggest portfolio of certified green buildings in the country.

Growthpoint is South Africa's largest REIT and a JSE ALSI Top 40 Index company. As a Platinum Founding Member of the Green Building Council South Africa (GBCSA), Growthpoint remains on the cutting edge of environmentally responsible technologies and designs with its growing portfolio of award-winning, green-rated buildings. It has made green building, energy efficiency and reducing operational costs a key priority for the current financial year.

Norbert Sasse, CEO of Growthpoint Properties, comments: "We are constantly seeking new and innovative ways to put our environmental commitment into action and reducing the operating costs for our tenants with meaningful, quantifiable results.

"Our green buildings, energy efficiency initiatives and sustainable energy generation contribute positively to the environment. They also create places where businesses and communities can enjoy the benefits of quality, healthy, energy-efficient environments in which to work, shop and relax."

Growthpoint's environmental strategy also benefits from the latest in green leadership globally. Rudolf Pienaar, Growthpoint's office divisional director, was recently appointed to the World Green Building Council's (World GBC) Board of Directors. Pienaar is also deputy chairman of the GBCSA.

"With the shared insight that comes from the World GBC, through the GBCSA, we can integrate the latest global perspectives on sustainability strategies into our local property industry," says Pienaar. "That is exactly what we are doing in Growthpoint's own portfolio."

Werner van Antwerpen, who heads Growthpoint's specialised sustainability divi-

sion, says: "Growthpoint currently owns or co-owns the largest portfolio of Green Star SA certified buildings of any company in South Africa, with 23 buildings rated so far. Our goal is to have over 50 Growthpoint buildings certified using the GBCSA Green Star SA rating tools by the end of our 2016 financial year, on 30 June 2016."

Growthpoint already has 28 of its standing office buildings in the process of being certified. Van Antwerpen says this process will take approximately eight months from start to finish.

He explains: "Achieving certifications for our green buildings highlights the quality of our portfolio and increases the marketability of our properties."

In addition to building a leading portfolio of eco-friendly buildings, Growthpoint is also taking pressure off South Africa's electricity grid with alternative energy by generating solar power at more and more of its buildings across the country.

Growthpoint has conducted several investigations to identify which of its buildings are suitable for solar power electricity generation. Extensive design and analysis has been done on various buildings.

Solar capacity already installed totals 1 215 kWp and is generated at its properties including, Lincoln on the Lake in Umhlanga, InfoTech in Pretoria, Waterfall Mall in Rustenburg and Bayside Mall in Cape Town. Solar installations approved and currently



Rudolf Pienaar, Growthpoint's office divisional director.

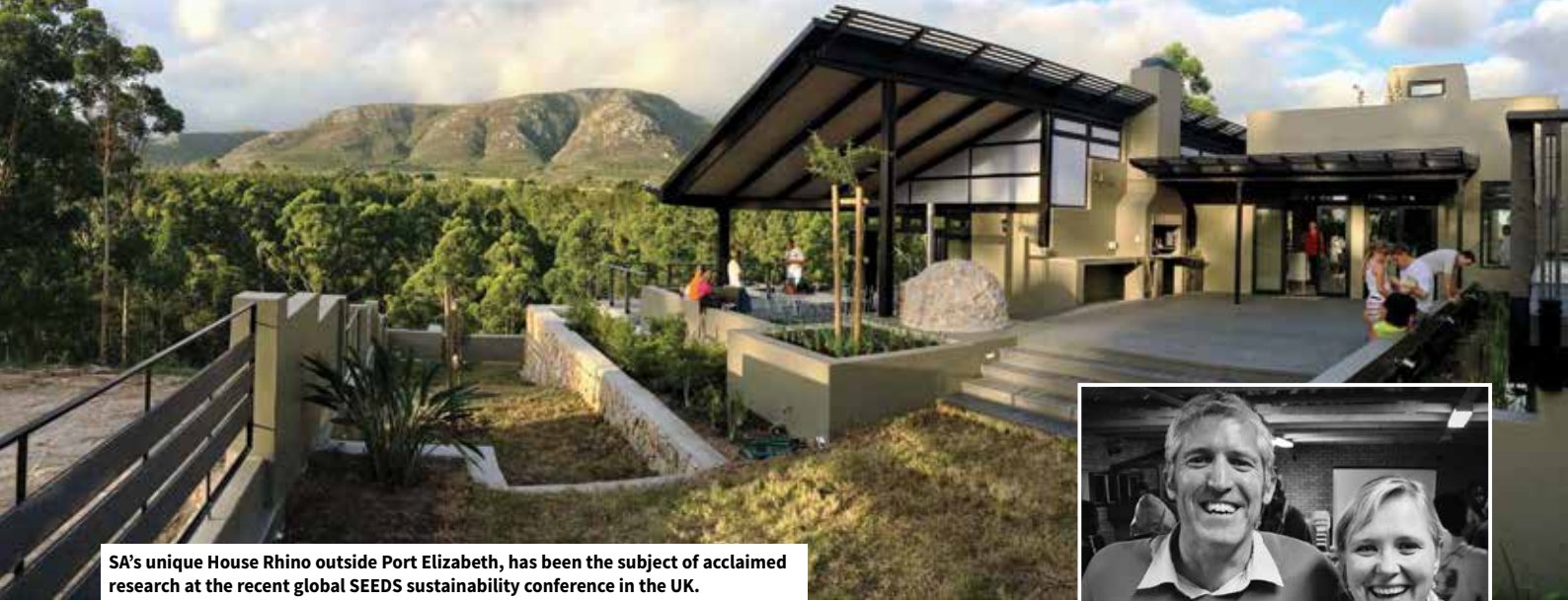
underway at Growthpoint's buildings will add a further 4 827,5 kW to the total. These include installations at the V&A Waterfront, 33 Bree and De Waterkant, Airport Industria, and The Constantia Village in Cape Town; Northgate in Johannesburg; and, Kolonnade and Brooklyn Mall in Pretoria.

Much attention is also being given to get building shareholders also on board. "Once these projects are complete, our solar rooftop generation capacity will be one of the largest in the country at over 6 MW. To put this into perspective, the RustMo1Project solar farm project in Rustenburg currently has a capacity of 7 MW," Van Antwerpen explains.

"These efforts with solar energy alone will contribute greatly to neutralising our direct carbon emissions," says Van Antwerpen. "Our commitment to green building, however, doesn't stop here and we look forward to making an even greater impact on the environment in the future." ◀



Growthpoint currently owns or co-owns the largest portfolio of Green Star SA certified buildings of any company in South Africa, with 23 buildings rated so far.



SA's unique House Rhino outside Port Elizabeth, has been the subject of acclaimed research at the recent global SEEDS sustainability conference in the UK.

OFF-GRID SA home hailed

One of South Africa's most unique off-grid homes, a model for future sustainable living, has been hailed at a global conference in the UK where a paper on its development has been named as the best piece of research.

12

> African Energy-Plus construction: A case study of House Rhino received the Chair's Award at the recent Sustainable Ecological Engineering Design for Society (SEEDS) international conference at Leeds Beckett University in the UK.

The study of the unique off-grid eco-home, House Rhino at Crossways Farm Village outside Port Elizabeth, was compiled by two Nelson Mandela Metropolitan University (NMMU) academics and presented to delegates from around the world gathered at the prestigious UK sustainability conference.

- The Rhino Group has been in operation for 44 years, serving corporate, industrial, agricultural and residential clients across the country.
- Rhino Group offers unique solutions-driven products covering the areas of food, water, energy and sustainability.
- Companies within the Rhino Group stable include Rhino Lighting, Rhino Energy, Rhino Intercept, Rhino Agrivantage, Rhino Greenbuilding, Rhino Plastics, Rhino Water, and Rhino Integrated Solutions, among others.

The research report by NMMU Department of Construction Management academics Chris Allen and Katharina Crafford reinforces the growing call for housing developments worldwide to incorporate sustainable, 'energy-plus' homes.

House Rhino is unique to South Africa and, according to Allen, one of about 50 globally to incorporate unique water and energy-centric eco-building solutions, making it an energy-plus home. Energy-plus homes make use of energy efficient appliances while producing more energy from renewable energy sources attached to the home than is used from external sources, such as the electricity grid, according to Wikipedia.

"Due to the energy crisis that South Africa has experienced over the past seven years, challenging preconceived ideas by creating attractive, affordable, energy efficient buildings has become critical to offsetting massive cost increases for electricity whilst providing a proof of concept project that professionals can reference," reads the research report.

Allen has returned to NMMU ecstatic following the symposium where he presented the study to his academic peers.

"The Chair's Award is the pick by chairperson for the conference, Prof Chris Gorse, for the best paper at the conference. Awards were also given in a variety of other categories linked to the various themes," explained Allen.

"It is obviously significant that from his perspective, he believed that it was the best paper at the conference – I would suggest from a new knowledge perspective. He subsequently discussed with me the possibility of incorporating the paper in an international journal, as well as the possibility of a book incorporating it alongside other research from around the world of a similar nature."

Brian van Niekerk, House Rhino developer and MD of the sustainable solutions company behind the project, Rhino Group, said the acceptance of the research showed a shift in the global mind-set towards the benefits of eco-wise building.

"In 2012 we took all our products and inte-



NMMU Department of Construction Management academics Chris Allen and Katharina Crafford co-authored research on unique SA energy-plus home, House Rhino, which was hailed at the SEEDS global sustainability conference recently.

grated them into developing House Rhino," said Van Niekerk. "This gave us the opportunity to build and integrate the unique off-grid solutions at the house, and at the same time expand our understanding into a number of new products and services."

The paper's abstract reads: "This paper reports on a case study of an energy-plus residential building in South Africa, one of the first of this project type on the African continent. House Rhino ... provided an unprecedented opportunity to research the potential for a residential energy-plus building as a proof of concept for a future where energy and water are rare commodities.

House Rhino combines active and passive features in a modern residential design that has been created as a living lab."

The paper also notes: "Findings include that an energy-plus building can be constructed in a warm climate environment at a competitive price ... The results of the research suggest that although the benefits of sustainable construction are well known, the ability to create viable energy-plus buildings using alternative construction techniques can now be proven in a warm climate environment." **<**

NMMU academic Chris Allen (right) is handed the Chair's Award for best piece of research at the recent SEEDS global sustainability symposium in Leeds by delegate Colin Harrop.



A FIRST FOR SUB-SAHARAN AFRICA

A Cape Town based company is the first in sub-Saharan Africa to offer an environmentally-friendly method of pre-treating architectural aluminium prior to powder coating.

Blue Willow Aluminium has built an automated processing plant in line with International Best Practice which is Hexavalent chromium-free for environmentally-friendly pre-treatment manufacturing. Recognised as a human carcinogen if inhaled, Hexavalent chromium is also what infamously contaminated groundwater in Hinkley, United States, leading to a lawsuit with a multi-million dollar settlement and the movie 'Erin Brockovich'.

"We have built the first plant in sub-Saharan Africa that fully complies with International Legislation and are proud to have created a processing plant which includes the most environmentally advanced and technically sophisticated chemical processes for preparation of architectural aluminium prior to powder-coating," said Blue Willow Aluminium GM, Schalk Pretorius of the Atlantis Industrial plant.

"Our guaranteed quality comes from the constant reproducible production standards generated by the automated system. Previously, local companies had the frustration of irregular quality with high wastage factors, and were forced to import and hold substantial stock to counter the inconsistencies of local alternatives. Blue Willow Aluminium has filled a growing need in the local market for access to world-class powder coating technology, which results in aluminium of an equally high quality."

The pre-treatment process begins with the production of ultra-pure water, used throughout the process to provide a transitional medium from one chemical process to the next.

All water fed into the system is used in the process, including the reverse osmosis waste stream. Once the water has fulfilled its function through the pre-treatment process, it is automatically treated and then re-utilized in the garden irrigation system. "The process is so advanced the recycled water is, in fact, cleaner than municipal water that goes into the pre-treatment plant," Pretorius said.

Aluminium pre-treatment is done in two chemical zones at ambient temperature. The first zone deoxidises the aluminium by removing the oxidised surface layer including all contamination contained with the surface microstructure. The second zone forms a reaction layer with the aluminium, providing galvanic protection, a layer for powder-paint to adhere and, bare corrosion protection of the aluminium while in transition after the pre-treatment step to the final powder-coating process.

The powder coating system installed at Blue Willow Aluminium is the most efficient and fastest colour change system available on the market - Nordson's most advanced system available globally. Offering absolute and consistent process controls, the system incorporates the ColorMax Booth, the Encore HD Application equipment, powder feed pumps and the Spectrum HD powder feed centre. "This state-of-the-art powder coating system is truly cutting edge and completes Blue Willow Aluminium's outstanding service offering."

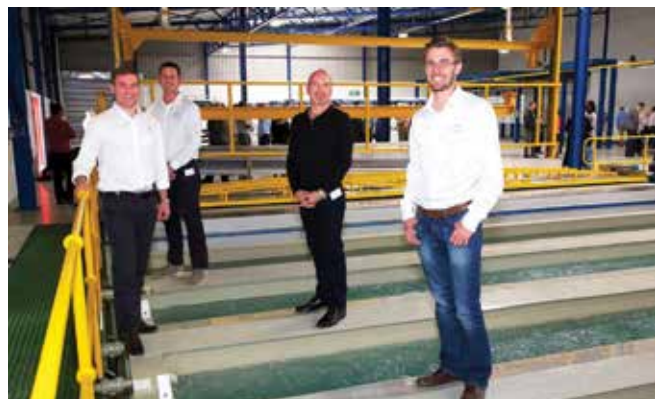
Ultra pure water used in the pre-treatment process.



The green pre-treatment facility.



Schalk Pretorius (right) MD of Blue Willow Aluminium, Shawn Williams (wet chemical process technology partner), Jean van der Westhuizen (technical director) and Heinrich Primic (sales director).



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R1,1-BILLION MAKEOVER for The Pavilion

The Pavilion shopping centre in Durban is set to get a massive R1,1-billion makeover and expansion designed to strikingly reposition the centre, significantly increasing its leisure and retail offering.



Pareto CEO - Marius Muller



This was announced by Pareto Limited, the owners of The Pavilion, in October at the SA Council of Shopping Centres' 19th Annual Congress, which took place at Durban's International Convention Centre.

Marius Muller, CEO of Pareto, comments: "We are really excited to finally reveal this fantastic development at The Pavilion, which will take the centre up to around 139 000 m² in size and entrench it as one of Durban's and SA's top super-regional shopping centres. This major makeover project will be the biggest investment in an expansion of The Pavilion since it opened two decades ago."

The development has been approved by the Pareto board and has also secured relevant municipal approvals.

Muller says: "At more than a billion rand, this development is going to take The Pavilion to a whole other level. The centre is going to be transformed with great new attractions, the most spectacular of which is a glass-encased roof-top fine dining and leisure area to be called Sky@Pav. The development will also see the opening of well-known international retail stores, some of which are not currently represented in the KZN market.

"Pareto is in advanced negotiations with global fashion retailers to take up space at the expanded centre. At the moment, we cannot reveal the fashion brands coming in. But, what I can say is that a new international fashion entrant into the South African market will be anchoring the new retail section and will be occupying two levels. The iconic UK-based toy retailer Hamleys is also on the cards for The Pavilion."

Another major brand and new offering coming into the centre as part of the expansion is Virgin Active, which will open a 3 200 m² gym.

Explains Muller: "The Pavilion is one of South Africa's leading shopping and entertainment destinations and amongst the top five largest malls in the country. This expansion is demand driven, but also aimed at making sure The Pavilion retains its position in the market by securing the major international brands coming into South Africa and expanding its offering in-line with the latest trends."

He adds: "Illustrating the significance of this latest expansion, the development will see the number of retail stores and other outlets at the centre increase from 240 currently to around 320 upon completion. The Pavilion will increase from 119 000 m² to approximately 139 000m², making it just smaller in size to Sandton City and Menlyn Park Shopping Centre in Pareto's portfolio."

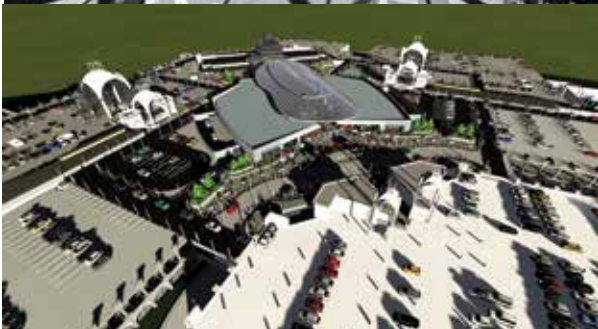
The 20 000 m² expansion will include about 14 000 m² to accommodate new retail offerings, 2 500 m² for the new Sky@Pav roof-top feature and space for the Virgin Active. The development will also include 1 505 new parking bays.

"We are undertaking this massive expansion in order to also re-position The Pavilion within its market in Durban; for its existing customer base to remain loyal; and, to attract new tenants and customers to the centre. Furthermore, the growing need for space from existing and potential tenants, both local and international, necessitates the planned reconfiguration and extension. Our announcement of this mega expansion comes in the wake of Pareto completing a R220-million upgrade at The Pavilion last year, which included a stunning all-new food court and expanded cinema and entertainment offering.

"Increased competition in its catchment area, as well as competition from super-regional shopping centres such as Gateway that are able to accommodate international tenants like ZARA, meant that we needed to do something groundbreaking at The Pavilion. With this R1,1-billion project, we are doing just that," says Muller.

Citing IPD and market research, Muller explains that The Pavilion currently provides significantly less stores when compared to other super-regional shopping centres, such as Gateway, which has more than 400. He says Pareto and The Pavilion's centre management were finalising plans to try to ensure any disruptions linked to construction would be kept to a minimum, and both tenants and shoppers would be kept up to date on the development. ◀

14



LANDMARK CARLETONVILLE MALL

Carletonville Mall – the new R330-million 26 000 m² shopping destination in the famous gold-mining town on Gauteng's West Rand opened its doors on Thursday, 29 October 2015.

➤ Developed by Bentel Group, the mall brings top quality shopping under one roof to serve not only the Carletonville community, but the neighbouring township of Khutsong and a regional market that includes Westonaria, Fochville and people travelling to Potchefstroom.

Mayor of the Merafong City Local Municipality, Mogale-Letsie, and directors of Bentel Group officially opened Carletonville Mall, ahead of the month-end weekend and in time for the December holidays. Festivities continued into the weekend with a carnival and other activities.

"Carletonville Mall is a landmark development for us and we are thrilled to open the mall, which the community can be proud of. With more than 80 retail stores, eateries and service outlets, Carletonville Mall will offer the best shopping variety and experience in the area," says Selwyn Bentel, director of Bentel Group.

He adds: "This major development has not only created much needed jobs, but will see spend being retained in Carletonville, with locals not having to travel out of town or to multiple retail stores to fulfil their shopping needs. Carletonville Mall has been designed

with the shopper in mind, with ample parking, three entrances and an easy-to-negotiate layout. All this will make shopping at the mall a convenient and pleasurable experience."

The mall is on a prime site in gold-rich Carletonville on Station Road, which has direct access to the R501 primary provincial road to Potchefstroom in North West Province. With a new railway bridge, road interchange and pedestrian access bridge being built near the new Carletonville Mall, access to the centre for shoppers will be significantly improved and travel time reduced. A new road – the extension to Grundling Street – has been constructed linking to the mall and giving easy vehicle access to the suburbs of Carletonville.

Bentel comments: "Carletonville's current retail offering is widely spread through the CBD. The new mall provides a centralised and convenient shopping experience for all and increases the variety and quality of shopping for the region."

Bentel Group, based in East Rand, is one of Gauteng's leading privately-owned property investment and development companies. Carletonville Mall is just one of the commercial



Selwyn Bentel, director of Bentel Group, centre, at the opening of the new R330-million Carletonville Mall, with his brother, Bentel Group director, Aubrey Bentel, right, and Rene Blankers, portfolio manager at Bentel Group.

property projects by Bentel Group. There are several other developments underway or on the drawing board for the group.

The group is led by Selwyn and Aubrey Bentel, who have a number of well-known developments behind their name such as East Rand Retail Park in Boksburg, Retail Crossing on the West Rand, and the Dis-Chem Head Office and Distribution Centre in Midrand. ■

ACHIMOTA RETAIL CENTRE IN GHANA OPEN

Atterbury Property's latest shopping mall development to be completed in Ghana – the R800-million Achimota Retail Centre located in north-eastern Accra – opened its doors recently to the delight of locals.

➤ Thousands of shoppers and curious locals descended on the brand new, 15 000 m² retail destination, which provides top-quality shopping for the first time on this scale under one roof in this part of the Ghanaian capital.

Roux Gerber, West Africa head of developments of Atterbury Property, comments: "After 18 months of construction, we are thrilled to open the Achimota Retail Centre, which takes shopping to whole new level in this region of Ghana."

Achimota Retail Centre is anchored by South Africa's Shoprite and local Ghanaian food and general merchandise retail chain, Palace. South African and local Ghanaian retail brands part of the tenant mix include Jet, Mr Price, MTN, Nallem, Foods Inn, CompuGhana and KFC, among others.

The centre – a single level mall – is home to 51 line stores, offering convenience, retail and fashion brands, as well as a restaurant and food court. It has basement parking for 250 cars and a further 335 open air parking bays.

Says Gerber: "This is a leading edge retail development in north-eastern Accra, with the mall offering a comprehensive tenant mix and top-notch shopping experience. But, what's even better is that it has a very strong local constituent, with more than half of the stores being local Ghanaian retail brands and offerings.

"In fact, Achimota Retail Centre is the first shopping mall in Ghana to have a traditional 'chop bar', offering local delicacies in a modern mall environment. This is sure to be a hit with locals and visitors alike. The mall's food court is certainly going to become a place to meet and enjoy good food, with nine fast food and restaurant outlets. Children's games and other recreational activities are also part of the mix at the mall."

Located on a prime 4 ha site in the town Dome and alongside the Accra-Nsawam Highway, Achimota Retail Centre boasts a contemporary design. Its design includes sustainability features such as grey water harvesting, environmentally conscious landscaping and a building management system. Local Ghanaian architecture firm, Multi Card Consult, designed the mall in a joint venture with South Africa's Boogertman + Partners.

Gerber says: "Atterbury is proud to have delivered yet another world-class shopping centre to the people of Ghana. Atterbury, as a shareholder in AttAfrica, has been involved in the development of the new West Hill Mall, the redevelopment and expansion of the Accra Mall, and now are happy to open the Achimota Retail Centre. We are also currently developing the new Kumasi City Mall in the city of Kumasi, which is our fourth mall project in Ghana and is scheduled to open in April 2017." ■



The most powerful Bosch Professional ROTARY HAMMER

The 12 kg GBH 12-52 D Professional rotary hammer from Bosch offers maximum performance in its class during drilling and chiselling. The tool is powered by a 1 700 watt motor which delivers 19 joules of impact energy.



16

Its performance is therefore much higher than the predecessor model. It is therefore especially suitable for horizontal demolition work, correction tasks or chiselling tasks which call for high chiselling performance. In combination with the high removal rate, this ensures faster work progress.

Simple chiselling, long service life

The rotary hammer has a trigger lock for simple chiselling in continuous operation. The trigger lock is automatically activated as soon as the user switches from drilling mode to chiselling mode.

The tool is designed for tough applications. Robust metal components ensure a long service life for the tools. Other features of the rotary hammers include constant electronics for continuous performance, as well as a service display which shows when a carbon brush has to be changed.

Everything from a single source

Bosch offers tradespeople a complete system comprising professional power tools, dust extraction systems and accessories. The new 12 kg rotary hammers are part of this system. Tradespeople can use the related extraction systems from Bosch for drilling and chiselling, and therefore work more efficiently while

simultaneously protecting their health and the tools.

The GBH 12-52 D Professional rotary hammers are available at specialist retail outlets. They are supplied in a carrying case which contains a great deal of space for accessories. [<](#)

- **Improved performance thanks to a 1 700 watt motor and 19 joules of impact energy.**
- **Longer operation time possible thanks to reduced vibration levels.**



Tool specifications	GBH 12-52 D Professional
Rated power input	1 700 W
Single impact energy	19 J
Maximum drilling diameter	52 mm
Maximum hole size with hollow drill bit	150 mm
Vibration level (drilling/chiselling)	20/15 m/s ²
Vibration dampening	No
Weight	11,5 kg
Compatible with Bosch dust extraction systems for drilling	<ul style="list-style-type: none"> • GDE 68 Professional • GDE 162 Professional
Compatible with Bosch dust extraction systems for chiselling	GDE max Professional



The Power Tools Division of the Bosch Group is the world market leader for power tools, power tool accessories and measuring tools. In 2014, its roughly 19 000 associates generated sales of €4,2-billion, about 85% of which was outside of Germany. With brands such as Bosch, Skil and Dremel, the division stands for customer focus and great engineering progress. The core success factors are innovative strength and pace of innovation. The division generated about 35% of its sales in 2014 with products that have been on the market for less than two years. In 2015, Bosch Power Tools will again launch more than 100 new products into the German market in its four business segments: power tools, accessories, measuring tools and garden tools.

The Bosch Group is a leading global supplier of technology and services. It employs roughly 360 000 associates worldwide (as of April 2015). The company generated sales of €49-billion in 2014. Its operations are divided into four business sectors: mobility solutions, industrial technology, consumer goods, and energy and building technology.

The Bosch Group comprises Robert Bosch GmbH and its roughly 440 subsidiary and regional companies in some 60 countries. Including its sales and service partners, Bosch is represented in roughly 150 countries. This worldwide development, manufacturing, and sales network is the foundation for further growth. In 2014, Bosch applied for some 4 600 patents worldwide.

The Bosch Group's strategic objective is to create solutions for a connected life. Bosch improves quality of life worldwide with products and services that are innovative and spark enthusiasm. In short, Bosch creates technology that is 'invented for life'.

Real Bosch!

STRINGENT DEMANDS

in green star quest

Pretoria building contractors, J.C. van der Linde & Venter Projects, successfully coped with the challenging demands of complying with the Green Building Council of South Africa's Green Star rating construction requirements for the refurbishment and redevelopment of Total House in Rosebank.

Arrie Venter, contracts director at J.C. van der Linde & Venter Projects, who was in charge of the R95-million construction contract, says the project is significant in that it represents one of the first refurbishment projects to strive for a GBCSA 4 Star Green Star rating.

Hazardous Materials survey

"This, of course, involves both demolition and rebuilding – and provided unprecedented challenges for us, as contractors, right from the outset. For example, before we could start any demolition work on the old building, constructed in 1998, a Hazardous Materials (Hazmat) survey had to be undertaken. J.C. van der Linde & Venter Projects therefore appointed special environmental consultants to guide us through the project, for which we had to regularly report to the client's Green Star Consultants, P.J. Carew Consulting, specialists in evaluating and designing strategies for the improved environmental performance of buildings."

Venter said the requirements of the Hazmat survey was extensive and included aspects such as a soil assessment (to determine if the current soil would meet Green Star rating requirements or had to be replaced by new soil), as well as a thorough investigation of the eco-qualities of the existing building's structural components. "A detailed report had to be filed to – and approved by – the Green Star Consultants before we could lift a brick from the old building."

This followed the formulation of an Environmental Management Plan (EMP) and Waste

Management Plan (WMP), both drawn up for J.C. van der Linde & Venter Projects by its own appointed environmental consultants.

Included in the EMP were commitments by the contractors on a wide variety of building operations that would normally have been regarded as routine e.g. how and where the contractors' paint brushes would be washed, and how the contractors would prevent oil leaks on site.

The WMP, on the other hand, laid down strict requirements on how demolished components would be disposed of. "For example, we had to create three waste skips: one for items that could be recycled, another for material that would be disposed of in landfill, and another for contaminated components. The old Total House had a sprawling glass façade and it is interesting to note that the many square metres of glass could not be re-used because it was laminated: laminated glazing cannot be recycled," Venter observes.

To meet other 4 Star Green Star rating compliance regulations, the building contractors had to use paint and adhesives with acceptably low VOC levels.

"The cementitious products also had to be approved on behalf of the client by P.J. Carew Consulting. We approached the concrete ready mix supplier to design a 'project specific' concrete mix that would meet the Green Star requirements as well as the engineers' design criteria. The concrete reinforcement also had to be sourced from a supplier that utilises reinforcement steel with a post-consumer recycled scrap metal content in excess of 90%."



Total House was renovated, re-vamped and redesigned to comply with a GBCSA 4 Star Green Star rating. Application has been lodged for this coveted rating for both the construction and design of the final building. The building demolition and upgrade had to meet the requirements of the stringent SA National Building Regulations, which places particular emphasis on safety. Total South Africa also required an additional 1 000 m² of office space to accommodate increasing staff numbers and to allow for future growth.

18



Professional team

- **Client:** Total South Africa
- **Main contractor:** J.C. van der Linde & Venter Projects
- **Principal agent and project manager:** Capex Projects
- **Quantity surveyor:** Schoombie Hartmann
- **Architect:** Axient Architects
- **Interior designer:** Paragon Interiors
- **Consulting structural engineer:** BSM Baker
- **Environmental consultant:** P.J. Carew Consulting
- **Electrical consultant:** Fhatani Consulting Engineers
- **Mechanical consultant:** Adaptive Resource Engineers



The interior challenges

Once work had shifted inside the building, the contractors faced new challenges. For example, to demolish the existing lift shaft, only hand tools could be used as the shaft was virtually adjacent to the room that housed Total Africa's strategically vital computer servers and sophisticated equipment. "Any damage to the operations of the server room would have had disastrous consequences for Total," Venter recalls.

Axient Architects' design for the new building comprised a new central core in the middle of the existing building, stretching from the lower basement right up to the mezzanine level, in which a new central staircase, lift and escalators had to be installed. Consequently, the contractors had to virtually carve a large diameter hole through three floors of the existing building, utilising an intricate method of demolition. Piling for the foundations for the new lift and staircase structure had to be done with a special piling rig due to the limited space available in the existing lower basement. Nick Mallandain, principal architect at Axient, explains: "For J.C. van der Linde & Venter Projects, this procedure was the main element from which the rest of the building work would follow, so the contractors' programming of construction was based from this point."

To create the additional 1 000 m² of office space as innovatively devised by the consulting structural engineers, BSM Baker, it was necessary for Axient to redesign the roof truss structure to add more height in a specific grid area. This meant J.C. van der Linde & Venter Projects had to remove 1 000 m² of the existing hollow tube trusses and replace it with castellated beams.

Nick Mallandain adds some of the other challenges faced by the entire professional team in this extensive refurbishment contract:

"The old entrance to the building was on the east side but this was problematic in that the space was not efficiently used and faced a public transport centre. So the idea to move it to the north made sense. A double volume area existed already and because it faced the sun at its harshest it made seating staff in this area impractical. This gave us, as architects, the perfect opportunity to position the entrance here, creating the necessary additional parking around it. Paragon Interiors created an impressive new reception area – with seated waiting areas and green walls – to bring life into the building. For J.C. vd Linde & Venter Projects, however, there was a big task of excavating down to the lower basement to construct a new stairwell up to the newly positioned entrance as well as civil works for the new parking area and entrance.

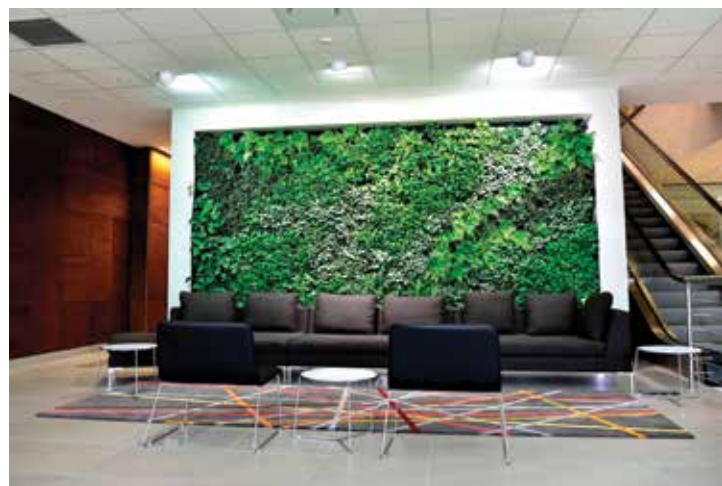
"The two existing atrium areas were reduced from 12 x 24 m to 12 x 12 m. In these voids, Paragon Interiors had the idea to create cantilevered meeting rooms. Working in close cooperation, the engineers, architects, interior designers, and main contractors, managed to successfully create the meeting pods.

"In fact, team work was important throughout. As part of Total South Africa's new corporate branding strategy, the entire professional team were called on to provide maximum skills and expertise. The new building provides an inspiring environment for its staff, emphasises the client's brand strength, and shows how an existing building can be refurbished and redesigned to high environmental standards through the combined input of dedicated professionals. The role that the main contractors played in ensuring that the

client was ultimately able to apply for a 4 Star Green Star rating was important and praiseworthy," Mallandain adds.

Kim Hutchins, project manager from Capex Projects, says: "Any alteration or refurbishment project is a challenge. When you add the requirements to meet Green Building criteria, the task becomes even more daunting. A lot of these requirements covered new ground for both the professional team and building contractors, but Arrie Venter and the team from J.C. van der Linde & Venter Projects rose to the task at hand and proved a highly efficient and cooperative company to work with. Much of the credit for the success of the project must go to them."

J.C. van der Linde & Venter Projects handed over the site in May 2015. The prolonged strike in the steel industry – which had severely delayed the availability of building materials – coupled with alterations to the original design, and early summer rains that started just when the old roof had been opened, led to an extension of the original contract 12-month contract. <



LANGE development's FIRST

Echo Group company, Topfloor, has supplied over 16 000 m² of prestressed hollow-core concrete flooring slabs for the construction of Lange Formal Township, the Western Cape's first multi-storey, loadbearing reinforced concrete block-masonry development.

PHOTOS, TOP TO BOTTOM:

Three of the Lange Housing Project's apartment blocks nearing completion.

A Lange apartment block under construction with Topfloor's prestressed slabs clearly visible.

A close up of some Topfloor hollow-core slabs used at Lange.



Eighteen low-income rental apartment blocks are being built by main contractor, the Power Construction Group, which formed an integral part of the project's architectural and engineering development teams.

Built for the City of Cape Town and situated on the Cape Flats off the N2, the development's anticipated completion date was November 2015.

Each block houses twenty five 35 m² apartments comprising two bedrooms, kitchen/lounge, bathroom and balcony. Moreover, insulated roofing and solar heating are included to meet conservation requirements and reduce the cost of living for the occupants.

In addition to the hollow-core concrete flooring slabs, Topfloor also provided the Power Group with precast staircases. Other precast concrete elements included high-strength concrete blocks, modular precast concrete doorframes and windows, as well as poly-fibre balcony railings.

According to Power Group, director Johnny Moore, precast hollow-core slabs were an integral part of the structural design criteria and saved months in construction time.

"No shuttering was required nor curing time for wet concrete which meant that other services could begin work as soon as the slabs were installed. Further time-savers were the smooth soffits and rough finishes on the upper sides of the slabs. This enabled the soffits to be painted without the need for skimming and made screed bonding on the top sides hassle-free. All of these time-saving advantages meant substantial cost savings for the client.

"Topfloor was involved in the primary as well as secondary planning stages and helped resolve details such as the staircase/slab interfaces and pull-up bars for the reinforcing of the walkway balustrades," said Moore.

The Lange buildings have been designed to comply with seismic codes and this meant that Topfloor had to provide pre-cut openings for seismic-stress connections. In addition, Topfloor supplied cut-outs for plumbing ducts.

Topfloor general manager, Wessel Prinsloo, says another advantage of using hollow-core flooring is its superior thermal and sound insulation properties. "Moreover, hollow-core slabs are produced in a well-managed factory environment which ensures high and consistent quality levels."

The professional team which initiated Lange's design concept was led by Dieter Boessow of Architect Associates. Together with Power Construction's project engineers and consulting engineers, Aurecon, and independent construction consultant, Gunter Koch, they succeeded in setting a new standard and establishing a new trend in cost-effective economic housing delivery in the Western Cape.

Moore concluded by saying that the fiscal benefits gained with this project points the way forward in labour-intensive skills development and job-creation potential. ◀

An aerial view of the Lange Formal Township housing development.



The economics of **SUPERTALL** buildings

Cutting-edge built environment technologies, rapid urbanisation and visionary developers have led to buildings becoming taller and taller.

> The 828 m supertall Burj Khalifa in Dubai, United Arab Emirates, was the defining tall building project for many years, but this title will soon be eclipsed by many other planned tall buildings, such as the 850 m Sky City in China and the 1 001 m Kingdom Tower in Jeddah, Saudi Arabia.

Aurecon's tall buildings leader, Dr Andy Davids, explains that "Overall, supertall buildings are an efficient use of space and they also free up ground space for roads and farms, as well as parks and other public spaces. In many markets, this is what is needed and why tall buildings make sense. The most compelling business case however, is that iconic buildings such as supertall towers mark a place and increase the value of all assets surrounding that place. This is a very powerful driver in the business case for such projects where a master developer owns the land within the circle of influence of the supertall marker. Tall buildings aren't just status symbols, they're physically and economically needed in today's cities," asserts Davids.

"Another key feature of the current generation of supertall buildings is that they are no longer 'single use' buildings. Most projects over 100 levels provide a mix of uses, including hotel, serviced apartments, residential, office and observation experiences all in the one building. This is essentially a physical manifestation of today's complex business case, and the provision of such a variety of spaces poses significant technical challenges," says Davids.

Tall buildings need to be built quickly to be financially feasible

The lure of a supertall structure lies in its ability to mark a time and a space. To be financially viable, however, a supertall building must be designed so that it can be built quickly.

"Engineering consultancies should keep asking themselves how long the owner and their bankers will wait for a return on investment. It took seven years to build the 828 m tall Burj Khalifa, and all future supertall buildings will be looking at a similar timeframe.

Even if engineering advances can shorten that time, it is unlikely to be a dramatic shortening," says Davids.

"Engineers need to pick up the pace for the economics of a supertall building to make sense for the owner. For this reason, building designs often favour simple floor formwork and rapid wall formwork. Construction crews are then able to repeat the same job on every floor. Once they achieve a level of familiarity with their tasks, the labour cost will plateau and, more importantly, the speed of construction per floor will increase," explains Davids.

Another way we might see faster construction times on supertall buildings is by having construction work take place on two levels, as was achieved for the Emirates Towers in Dubai. Lower levels tend to be more complex than those higher up, so if we can create two construction 'fronts' in the form of a secondary base level above the lower levels, then work on the upper construction front can continue, while work simultaneously occurs on the more difficult podium levels.

Prefabricated and modular solutions can also pose a possible solution when it comes to reducing the time and cost of traditional techniques. The construction of the Sky City in Changsha, south-central China, has stalled but the planned skyscraper is intended to be constructed using prefabricated pieces.

"Sky City uses an Ikea-like assembly method where parts of the building are fabricated in factories off site, transported to the job and then assembled on site. Considerable time is still spent preparing and storing the pieces in order to deliver a very short completion time for assembly on site," says Davids.

While the beginning-to-end construction time is reduced compared with more conventional techniques, Davids says that it's important to recognise that it's not as dramatic as simply comparing the shortened erection phase with a more traditional alternative.

"Preparation of components under factory conditions should deliver consistent material quality and also lead to a significant reduction in material wastage. As with all prefabricated systems, considerable investment in a factory is required while the architectural design of prefabricated structures can be a little limited. But, all things considered, the idea is credible and feasible, although it probably won't be suited to all markets," says Davids.

Tall buildings require a business case

Owners aren't always able to wait over a decade to start seeing a return on their investment. What many people don't realise about some of the world's tallest buildings, including the Burj Khalifa, is that the owners had to think



Aurecon's tall buildings leader, Dr Andy Davids.

ABOVE: An artist impression of Sky City, China.

outside of the box to find a good business case for the project.

"Few people will be aware of the business case around the creation of the Burj Khalifa. The real magic of this building is that its owners also own the land and properties around it. The owners can charge a premium for these buildings, in addition to the income derived from the Burj Khalifa, because people are willing to pay for the prestige and views associated with being so close to the landmark. Also, the Y-shaped design of the Burj Khalifa ensures that occupants are never more than one room away from the stunning view, making tenancy more attractive," says Davids.

As the number of supertall buildings grows, engineering consultancies are in the prime position to create a business case for the developer and the developer's clients.

"Being able to craft a financial model where the increase in the land value and the benefit to the citizens as well as tenants is clear, will enable owners to invest in these magnificent structures," concludes Davids. <



The site for the new international hotel and conference centre site in Ezulwini, Swaziland.

SWAZI CONTRACTS SHOW company's mettle

For years Franki Africa has shown its prowess in working in Africa whether in the surrounding SADC region or even further afield in countries tens of thousands of kilometres from Franki's base in Johannesburg, South Africa.

22

Many other firms – especially in the geotechnical field where the logistics of housing teams of people and moving massive, specialised machinery in remote and challenging conditions – have failed where Franki has been unusually successful. The stories of the latest contracts in Swaziland are examples of this success and also demonstrate the power of the Franki pile and of being part of the Keller group.

Ninety-two thousand, five hundred and seventy-two. That's the total non-LTI (Lost Time Incident) man hours worked on the four Frankipile Swaziland contracts that commenced in October 2014. The human resources included a total of 74 local labourers, who were employed on all the contracts. The equipment included six Franki piling rigs, three piling cranes, a service crane and seven auger rigs.

Frankipile Swaziland submitted four tenders in 2014, all of which were for the design and construction of piled foundations. These tenders were based on Pre-Drilled Driven Cast-In-Situ piles (Franki piles), whereas the competitors selected the Continuous Flight Augur (CFA)-type pile.

Two of the tenders submitted were to the Swaziland Ministry of Economic Planning – one for the new International Conference Centre (ICC) and the other for a new Five Star Hotel (FISH) in Ezulwini. According to Franki project manager, Devendra Lalbasanth, the tenders submitted for both contracts incorporated the Franki pile as opposed to the CFA pile alternatives submitted by competitors.

"These high profile contracts required low-risk technical solutions," says Lalbasanth, "and the Franki pile provided the guarantees that were sought by the professional team."

International Conference Centre

Of concern to most of the professional team was Frankipile Swaziland's ability to adhere to the contractual programmes, should both contracts be simultaneously awarded to them. "We managed to allay these fears by stressing the power of the backing of the greater Keller/Franki Africa group, should additional resources have been required," Lalbasanth says.

As these contracts were to be undertaken under the new Swaziland Construction Regulations which stipulate that a Joint Venture with a local construction company was required, Frankipile Swaziland teamed up with Roots Civils on both contracts.

The piling contract for the ICC called for the installation of 1 562 No. Franki piles. "One of the challenges encountered on this project was the presence of boulders and although this was highlighted during the bid clarification, the actual quantity and extent of the boulder formation were unexpected. This complication was resolved through the removal of near-surface boulders, coring through the boulders with a Casagrande B180 piling rig, founding the pile on large boulders or spanning the boulders in consultation with the structural engineer," says Lalbasanth.

The work was completed in May 2015 and a working pile load test, which was under-

taken in the area where the soils were deemed the poorest across the entire site, produced highly favourable results. Pile Echo Testing (PET) tests are being undertaken on every pile as the main contractor excavates and correctly trims each pile.

Five star hotel

Piling to the FISH Contract, which comprised the installation of 1 016 No. Franki piles, was completed in April this year. The conditions on the FISH site were more favourable than those encountered on the ICC site with a working pile load test producing very favourable results. The structural engineer appointed a representative on site who monitored quality and progress on a daily basis and Franki continuously received positive feedback from them on its performance including its adherence to the stringent safety protocol. In addition, an external safety audit praised Franki's achievements in no uncertain terms which, according to Lalbasanth, is testament to the attitude and commitment of the site management towards the safety and well-being of all who were involved.

The other two jobs were for, firstly, the Hlane bridge, which was awarded to Franki by Inyatsi Construction in February 2015. This project commenced in late March 2015 and was completed within two weeks.

Secondly the MVA Head Office, in Mbabane, where Franki was the lowest at tender stage and, after further value engineering, the client appointed Franki as the piling subcontractor to Stefanutti Stocks. The scope of works was to install a total of 252 No. Franki piles of which 80% were tested using the PET method. A working pile test was also carried out and the results were well within the acceptable criteria. This contract was successfully completed in early December 2014.

The Franki pile

The successful completion of work in Swazi-



Piling at the MVA head office, Mbabane.

land over the past six months is primarily attributable to a committed and motivated workforce, as well as to the utilisation of one of our most highly-favoured products, the world-renowned Franki pile.

The Franki pile has been used extensively throughout Southern Africa for nearly 60 years, and is still today one of the most popular pile types. With a wide range of pile sizes and the advantages of the enlarged base, the Franki pile is suited to structures that vary

from single storey residential buildings to multi-storey office blocks, stadiums and other such structures.

The positive features of the Franki pile are legendary: it is often a very economical system; there is an extensive range of pile sizes; the pile has an excellent load/deflection performance; noise levels are relatively low; and the pile has excellent tension load capacity.

“The main benefit that is gained from these features is that the founding level for

the Franki pile is often at a considerably higher elevation than that necessary for other piling systems. This often results in a significantly more efficient overall solution while pile cap deflections remain within acceptable limits,” says Lalbasanth.

Finally, says Lalbasanth, these projects have also provided Frankipile Swaziland with the opportunity of employing local labour which, in turn, facilitated skills transfer and economic upliftment in the area. <



Setting up plant at the ICC and FISH Contracts.

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NORTHERN CAPE SILO SLIDE

An innovation solution, applied by Chryso Southern Africa, contributed to the successful completion by Renniks Construction of six grain and wheat silos in Kimberley in the Northern Cape using slip forming construction methodology.

20 increases the cohesiveness of the concrete and prevents bleeding and segregation, improves the finishability of the concrete and assists construction by giving the concrete its sliding effect.

“We also used another admixture – CHRYSO®Omega 101. This product also facilitated the finishability of the concrete. Its air entraining properties assisted by replacing the lack of fines in the mix and helped with greater workability,” Brouard says. “By facilitating greater workability of the concrete, there was sufficient time created to allow concrete to be placed into the form around the entire circumference of the silo and vibrated and for the sliding process to proceed without interruptions.

It was important to achieve the correct slump as should the slump have been too high, the sliding process may have been delayed. In addition, it would have been very difficult to slide if the slump was too low. Since CHRYSO®Omega 101 is a multi-dose admixture it allowed the contractor to create concrete with the slump best suited for the project.

The sliding system had shutters 1,2 metres in height and tapered at both sides which meant that the silo narrowed with every lift. There were 24 jacks set 2,3 metres apart. Kamoo explains that the design of the structure determined the number of jacks. “The wall thickness, the amount of steel used and the number of cast items also determines how far apart the jacks should be placed. If the jacks are too far apart there would have been a lot of friction between the concrete and the shutters causing damage to the concrete,” he says.

Planning is of the utmost importance with concrete slides. Since slip forming is a continuous process teams have to work 12 hour shifts. “One has to have a reliable and consistent supply of cement, admixtures, sand and stone to site to facilitate this continuous operation. With Chryso we received good service and the mix design is always done professionally,” Kamoo concludes. <

> These large silos, 33 metres in height with a 200 mm wall thickness, used a total of 6 300 m³ of concrete and were commissioned by GWK, a leader in the agribusiness.

24

Renniks Construction has a long spanning relationship with Chryso Southern Africa and is one of the few South African companies that has specialist slip forming capabilities.

The two companies have worked together on many projects; most notably, the Fulton Award winning Impala Shaft #16 project.

“Slip forming is a sliding construction methodology that requires the assembly of a sliding system at ground level. This system is lifted incrementally as concrete is poured; creating a structure with no joints. Reinforcing is fixed into position as the slide progresses so as not to slow down the placement of concrete. Once the required height of the concrete structure is reached the sliding system is dismantled,” explains Wayne Kamoo, site manager at Renniks Construction.

Brenton Brouard, Chryso Southern Africa’s technical manager: concrete, says that Chryso Southern Africa played a key role in the concrete mix design for the project.

“The particles of the river sand in the area are not as rounded as that of conventional river sand. We therefore decided to use a greater amount of crusher sand than usual. However, this could have caused a potential problem as there were fewer fines in the overall grading of the blend,” Brouard says. “Typically, concrete used in a slide should be cohesive with sufficient fines. The concrete has to have good finishability properties in order to create the ‘slip effect’. If there is material segregation with aggregates protruding, then the slide will not be smooth and there will be difficulty in incrementally lifting the sliding system.”

As a solution, Brouard elected to use an admixture called CHRYSO®Quad 20. “This admixture was an ideal choice for the Kimberley project because we were working with a concrete which, comparatively speaking, lacked fines. CHRYSO®Quad

Construction of six grain and wheat silos in Kimberley in the Northern Cape using slip forming construction methodology.



“Slip forming is a sliding construction methodology that requires the assembly of a sliding system at ground level. This system is lifted incrementally as concrete is poured; creating a structure with no joints.”



CHRYSO®Omega 101 also facilitated the finishability of the concrete.

CHRYSO®Quad 20 increases the cohesiveness of the concrete and prevents bleeding and segregation, improves the finishability of the concrete and assists construction by giving the concrete its sliding effect.



From left: Brenton Brouard, Chryso Southern Africa's technical manager: concrete; Greyling Jansen, Chryso Southern Africa technical sales representative and Wayne Kamoo, site manager at Renniks Construction.



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IMPRESSIVE and INNOVATIVE

Fast track projects are common today, however the construction of the Century City Square Project with five separate buildings, each with complexities of design, being constructed on a super basement within a confined working area, has required innovative thinking in terms of risk management and operational logistics.



> This flagship development for the Rabie Property Group forms part of the burgeoning precinct on the N1, 10 km from the Cape Town CBD.

Century City Square is pioneering a new 4 star mixed-use Green Building Council of South Africa rating, ensuring that sustainable green design principles are implemented where possible.

26

Risk management

Prior to the project commencing, a detailed and rigorous risk assessment was compiled and this was taken on board by the project team. Continuous in-contract risk management reviews are done with ongoing monitoring and challenging of identified risks. An essential part of the review process is to

look at potential risks, identify opportunities and ascertain how these can be managed through the system. This approach has led to the use of new and innovative technologies and methodologies on the project.

Project management, logistics and coordination are critical elements to the success of the project. Contractor, Murray & Roberts Western Cape established a single site office from which all work is coordinated and this has limited duplication of infrastructure, reducing costs for the client. The contractor selected a team with recent big project experience and depth of expertise to ensure delivery of the project programme. In addition, careful selection of sub-contractors and the splitting of some of the sub-contracts also assisted in mitigating risk.

Quantifiable time

During the 19,5 month contract period, Murray & Roberts Western Cape has to interface with multiple consultants as each section of the development has its own professional team. The use of multiple consultants facilitates access to different resource pools as well as diverse experience, both of which has a positive impact on the project itself. This does, however, require sound project management skills as well as solid processes and procedures to ensure that everyone is on the same page and working towards the same goal. At peak there will be in excess of 60 subcontractors on site.

Added to the project management complexity is that various components of Century City Square have different completion dates. Work started on 13 May 2014 with final completion scheduled for 11 February 2016. There are, however, numerous interim completions required from 21 September 2015 onwards and it is essential that all these disparate elements dovetail to meet the construction programme.

Design innovation

The complexity and scope of the project is evident in that it comprises a 19 500 m² super basement on top of which the five individual buildings are being built. These include an office tower, a boutique hotel, a mixed-use office and apartment building and a conference centre over two levels. The latter has an additional three levels of office space as well as a 20 000 m² parking garage over six levels.

The strong architectural form of the conference centre has been taken through to



A rear view of the conference centre and annex offices with The Apex, Matrix and parking garage in the background.



The glass clad The Apex with the conference centre in the background and the scaffold clad Century City Hotel and Matrix structures to the right.

Project information

- **Project start date:** 13 May 2014
- **Project end date:** 11 February 2016
- **Client:** Rabie Property Group
- **Project team:** Century City Square
- **Main contractor:** Murray & Roberts Western Cape
- **Architect:** Vivid Architects
- **Principal agent:** Vivid Architects
- **Project manager:** Rabie Property Group
- **Quantity surveyor:** B&L
- **Consulting engineer:** Aurecon
- Project value: R664 078 524 (inclusive of VAT)

the 125 room hotel and this forms an L-shaped footprint that is offset by the dramatically curved glass facades of the seven storey free-standing office building known as The Apex.

Effective and efficient construction methodologies have been used to future proof the structures and ensure optimal response to climate, envelope and occupancy which varies daily and seasonally. The buildings share an overall environmental strategy that encompasses transport, health, energy, water and waste. Aspects such as air quality, thermal comfort, adequate lighting and glare control, access to daylight and views, and sound levels have all been factored into the design which at the same time prioritises comfort, productivity and health of the occupants.

Furthermore, the site was previously built on and it is within the urban edge and therefore assists in reducing urban sprawl.

Looking in more detail at the conference centre, the ground floor houses conference halls, front and back of house areas and a coffee shop. On the first floor, adjacent to conference meeting rooms and pre assembly areas, is a 500 m² office suite while the second to fourth floors house office areas of 1 100 m² each (or 3 300 m² in total). The total office space provided by the conference centre is 3 800 m².

The Century City Hotel, which has five levels and will cater mainly for conference delegates, is linked to the L-shaped Matrix Building which will house showrooms, offices and apartments. The Matrix Building incorporates traditional or 'retro' finishes in direct contrast to the more modern look of the Apex Building. There are manmade canals on two sides of Century City Square, and the



Sections of the Conference Centre and The Apex will have canal frontage, the construction of which is illustrated above.



The Energy Lane roadway will run through the site between the conference centre (LHS) and The Apex (RHS) and bridge across the canal that can be seen, under construction, in the foreground.



canal system will ultimately link to the Ratanga Junction Theme Park.

With the project site being bordered on two sides by the canals and sitting within a ring road system, the logistics of moving materials to the various work areas has necessitated careful and detailed planning to ensure the efficient running of the operation.

Environmental impact consideration

28

From a construction perspective, the environmental impact of materials as well as the handling thereof was carefully considered. The decision was made at an early stage to partner with a local readymix contractor to erect a concrete batch plant adjacent to the site for the supply of all the concrete requirements for the project.

This key performance indicator has proved its worth both in terms of cost and time savings. Over the project duration some 40 000 m³ of concrete will be supplied and having the batch plant in such close proximity to the project site has the minimised transportation of materials. It has also ensured consistency of supply with readymix being available as and when required, avoiding any delivery delays. The concrete is a special mix design which includes locally sourced materials and a percentage of cement replacement, thereby reducing the carbon footprint of the project.

A mobile concrete pump is being used to facilitate pumping of readymix for the horizontal elements. The formwork soffits will total 66 943 m².

The strategic positioning of four tower cranes in support of the materials handling and structural activities has optimised reach and access across the site. To enhance crane time, thereby maximising productivity, use is being made of relief operators and banksmen.

Another time saving factor is that all guest rooms in the hotel are a dry wall construction as opposed to brick and mortar. This also allows better quality control.

The decision was made to construct from east to west as the property on the eastern side of the site was going to be occupied from early on in the project time frame. By adopting this directional approach, the impact of noise and vibration could be reduced in this sector as activities such as piling were completed prior to the occupancy.

Sustainable construction

The design of Century City Square includes a large proportion of natural material finishes such as facebrick, brick paving, tiling and cladding. In addition to this, there is a fair amount of off-shutter concrete finish which is maintenance friendly. This allows the development to blend into the environment and it will require less maintenance in the longer term.

Part of the scope of work included road construction, realignment and extension. Certain materials excavated during the project have been reused as road fill material. This is in line with both the client's requirements and Murray & Roberts Western Cape's proactive approach to conservation of non-renewable resources such as aggregates, where possible.

Recycling of in excess of 80% of all waste generated on site is being undertaken. Following best practice methodologies, this process is fully documented and verifiable.

Murray & Roberts Western Cape received a Five Star Health & Safety rating on this project from the Western Cape Master Builders Association. In addition the project placed 1st in its category in the Western Cape Master Builders Association Regional Health and Safety Competition, and as a result the project has recently been audited in the Master Builders South Africa National Health and Safety competition. This underpins the consistently high performance ratings achieved in the client's monthly HSE audits.

Health and safety

Significantly the site recently passed the

1 million manhours worked milestone without sustaining an LTI. The success achieved in the safety arena can be attributed to the development of a sound health and safety culture on the project with ownership taken by all levels and supported by a proactive health and safety team. This extends to contractors who are encouraged to meet the same best practice standards on site.

Construction innovation

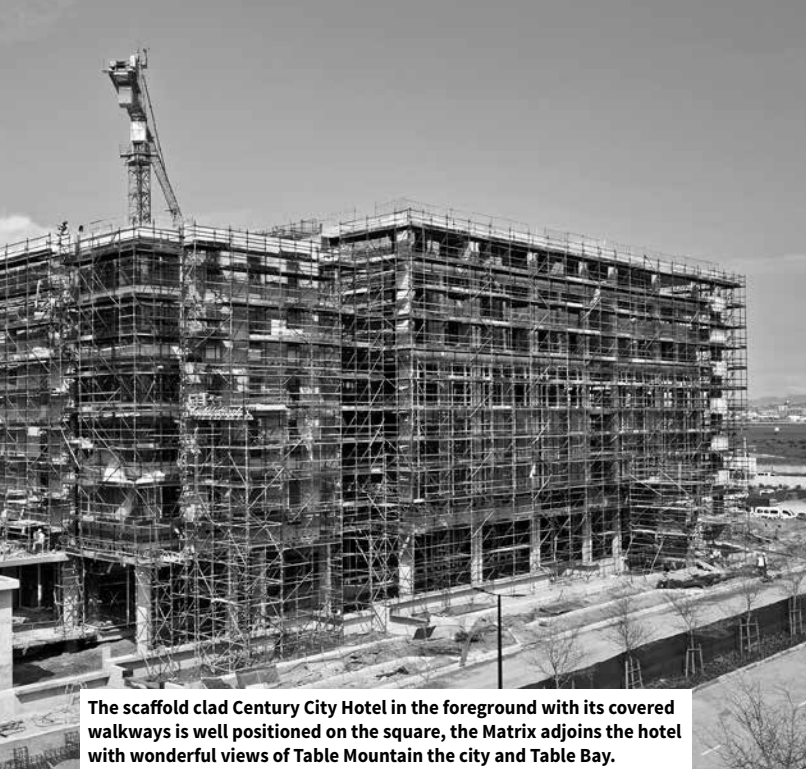
Innovative use of construction methodologies and safety equipment has resulted in the flush glazed cladding on The Apex being installed from the building interior. This was made possible because of the innovative safety edge protection system which Murray & Roberts Western Cape pioneered on a previous project. This safety curtain system, which uses the curtain support cables as life lines, allows access for working on the façade edges in a safe manner.

Strict quality control protocols were established from the start on the project and a high level of proactive interaction from all parties has ensured that high standards are being maintained. Quality assurance programmes are in place and are underpinned by a quality control inspection regime.

Corporate social investment

As part of its ongoing intention to advance skills and training to a wider segment of the market, Murray & Roberts Western Cape committed to recruiting new matriculants who wanted to spend a year in industry to decide if construction would be a viable career option for them. This initiative, which is clearly underpinned by this knowledge sharing philosophy, is the 'Go for Gold' programme which has seen a number of learners spending time on notable Murray & Roberts projects such as the Century City Square Project.

The project's success to date is attributed to the strong ethic of partnership across the board. ◀



The scaffold clad Century City Hotel in the foreground with its covered walkways is well positioned on the square, the Matrix adjoins the hotel with wonderful views of Table Mountain the city and Table Bay.



The Apex will house restaurants at ground level with both canal and square frontage providing a convenient meeting place for those visiting, working or living in Century City Square.

Aspects such as air quality, thermal comfort, adequate lighting and glare control, access to daylight and views, and sound levels have all been factored into the design which at the same time prioritises comfort, productivity and health of the occupants.

29

LEVELS

THEODOLITES

GPS

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GROWTH THREAT

A re-look at Africa's aging airport infrastructure has become increasingly critical as the region positions itself as an attractive and sustainable investment destination. This is especially true if investment in airport infrastructure is to keep pace with the investment promotion and demand this creates at regional level in terms of both tourism and commercial demands.



➤ "Poor records of safety and security, distance and limited connectivity, investment in education and training, lack of adequate resources and infrastructure and a lack of regulation are among the main challenges faced by the African aviation industry. Aviation as a transportation method provides the economy with significant growth," said Sumeshin Naidoo, technical executive at GIBB, South Africa's leading black-owned engineering consulting firm.

With Zimbabwe's Harare International Airport facing possible closure due to safety concerns, the reliability of airport infrastructure on the continent is being highlighted.

"Even though measures by the Civil Aviation Authority of Zimbabwe (CAAZ) have been undertaken, if sufficient developments on the airport rehabilitation is not completed within three years, the transportation hub will face permanent closure," said Naidoo.

The same is true in South Africa. With transportation being a significant contributor of economic growth and social development, the South African government has, since 1994, been instrumental in upgrading airport infrastructure, with a reported R22-billion having been invested in South Africa for the upgrade of airports, nationally. The question is what this investment means in terms of impact and timeframe.

Naidoo commented, "The solid infrastructure and regular maintenance of airport runways and airfield systems should be of the highest importance for all African countries as a preventative measure to avoid airport closures. With air travel and airlines increasing in nature and usage, it is imperative that the trust and safety of citizens is priority."

Among the array of GIBB's aviation projects, is the specialisation in airport pavement management systems. Since 1998, GIBB has provided their expertise in pavement management systems to many African airports, resulting in more efficiency, safety timely management and maintenance of airport runway infrastructure. These have resulted in the longer lifespan of runway infrastructure.

Naidoo added, "There is more that can be done to improve the continent's airports. A recent article published by AnswersAfrica.com illustrated eight of the continent's

airports labelled as the worst in Africa, which signifies, that as a continent, we need to do much more. Significant improvement must be made or the option to rebuild will be inevitable, as in the case of Sudan's Khartoum International Airport."

GIBB has investigated and designed optimal runway friction system solutions for use on runway surfacing, with the goal of improving the state of airport runways in Southern Africa. GIBB ensures that local conditions, access to raw materials and construction methods suitable for the geographic

region of the airport's location is factored into designs. "By assisting and developing infrastructure using our specialised teams and understanding of the continent's unique challenges and development needs, GIBB is playing an active role in bridging the infrastructure gap on the rest of the African continent," stated Naidoo

"To have effective commercial airports, African countries must adopt proper maintenance protocols with a full implementation rollout. Addressing these challenges could significantly boost future growth for the aviation industry. An investment in infrastructure development, safety, security and regulatory frameworks is of principle importance if African airports and African airlines are to become truly global competitors," he concluded. ❏

30

NEW ACQUISITION

Much Asphalt has acquired SprayPave from Basil Read Limited for about R78,6-million. This acquisition includes ground-breaking technology recently procured by SprayPave that will have significant benefits for customers of both companies.

➤ Much Asphalt is the largest commercial producer of hot and cold asphalt products in Southern Africa and celebrated its 50th anniversary in 2015.

SprayPave is one of South Africa's leading manufacturers and suppliers of bitumen, modified binders and emulsions for road construction in South Africa. The business joins Much Asphalt with 34 years of experience.

Of particular interest is SprayPave's recent purchase of a multistage bitumen reactor from Technix Industries in New Zealand, which is still to be shipped prior to commissioning in Cape Town. This plant is capable of modifying bituminous products from one grade to another and will enable predictable

From left: Bennie Greyling (managing director: Much Asphalt); and Steven Single (managing director: SprayPave).



and repeatable modification of bitumen on a molecular level.

With Performance Grade (PG) bitumen specifications soon to be implemented in South Africa, this technology will be ideal for the conversion of locally available bitumen and other feedstocks into high specification multigrade bitumen. The new PG specifications aim to improve the assessment of binders with regard to deformation resistance, fatigue properties, long term performance and cracking potential.

The multigrade bitumen technology is well entrenched in Europe and Australia and is an ideal fit with the new PG specifications.

SprayPave also owns one of the few IATRA scan units in Southern Africa that can undertake SARA (saturates, aromates, resins and asphaltenes) analysis to ensure that quality bitumen is produced at its facilities in Alberton, Durban and Cape Town.

"We are pleased to be acquiring a business that not only comes with cutting edge technology that will add value to Much Asphalt and its customers, but also commitment to customer service, employee health and safety, and environmental responsibility," says Much Asphalt managing director, Bennie Greyling.

The transaction is subject to Competition Commission approval. ❏

PROS OF CONCRETE STRIP ROADS

South Africa has yet to fully discover and utilise the benefits of concrete strip roads, says Bryan Perrie, MD of The Concrete Institute.

> Perrie says concrete strip roads, laid as wheel tracks, are economic and durable and particularly suitable as farm roads or roads in rural areas. "They can, therefore, be of invaluable use to the agricultural sector as well as communities living in outlying rural areas," Perrie states.

He says although concrete strip roads have proved themselves in many countries, the South African governmental road building sector as well as private land-owners have not yet fully realised the advantages, or fully utilised, concrete strip roads. Such roads are a particularly useful means of making steep rural farm roads passable in all weathers.

"In the wet summer months, many potential visitors to inland private game reserves avoid visiting the reserves and lodges with sedan vehicles for fear of getting stuck in the mud. Concrete strip roads, particularly in very muddy areas, could therefore boost tourism numbers. Strip roads are widely used in, for example, SANParks resorts like the Mountain Zebra National Park

RIGHT: Concrete strip roads can make steep rural farm roads passable in all weathers, as illustrated here at the Mountain Zebra National Park near Cradock.

FAR RIGHT: Bryan Perrie, MD of The Concrete Institute, acted as consultant for the laying of the wide-spread concrete strip road network in Knysna's upmarket Pezula Estate.

BELOW: Concrete strip roads have been widely used in the upgrading of the iSimangaliso Wetland Park near St Lucia.

near Cradock, KZN Wildlife Ezemvelo resorts such as in the Drakensberg and at the iSimangaliso Wetland Park at St Lucia, and at the upmarket Pezula Private Estate near Knysna on the Garden Route," Perrie, who acted as consultant for the construction of the Pezula strip roads, adds.

"Strip roads can be built without expensive or sophisticated equipment and by comparatively unskilled labour that has received just basic instruction. No reinforcement of the concrete is necessary. Furthermore, laying the strip roads can be done in short lengths, so their construction can be slotted in when labour and time are available.

"The strip roads can be made relatively skid-resistant simply by wood floating the concrete as a final operation. For a strong

skid-resistant finish, the concrete can be broomed transversely to the direction of traffic to produce a multitude of fine grooves across it. Light cars and LDVs can, under normal circumstances, use new concrete strip roads after three days of curing, and trucks of 1,5 ton capacity after 7 days of curing." ❏



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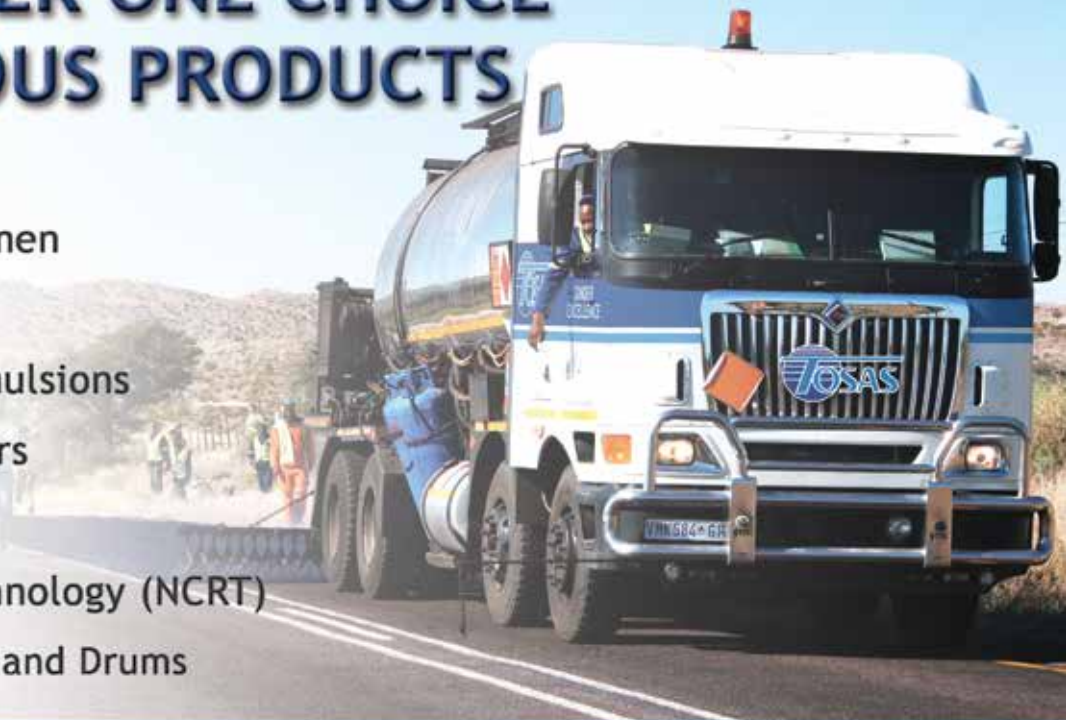
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REINFORCING Simon Vermooten Road



Additional lanes were created on Simon Vermooten Road.



Base layerworks being constructed over the reinforcing RockGrid PC layer.

32

Consultation with Kaytech's Christiaan van Wyk significantly cut the costs on a huge road upgrade project in Pretoria East. Traffic congestion on Simon Vermooten Road, an important arterial route from Mamelodi and the eastern suburbs to the N4 Highway, had reached critical proportions.

RockGrid PC was chosen over lime to mitigate the embankment's high PI.



A decision by the City of Tshwane Municipality to double the size of the road included adding an extra lane to the bridge at the intersection of the N4. The multi-million rand contract was awarded to construction group, Liviero Civils with Aurecon as consulting engineers.

The previous construction of the road embankment was found to consist of a G9 fill material whose high Plasticity Index (PI) explained the evidence of cracking in the layerworks. Having first considered the use of lime to reduce the PI of the fill material, engineers decided to contact Kaytech for possibly a better solution.

Wouter van Zyl of Kaytech suggested the use of its unique RockGrid PC, the first composite reinforcing geotextile to be manufactured in South Africa. Wherever soft soils with low bearing capacity are encountered, RockGrid PC will provide the most economical and time-saving solution. It consists of a nonwoven layer in conjunction with high tenacity, bi-axially orientated, multifilament polyester yarns, the combination of which guarantees the unique characteristics of the product. The high tensile modulus of RockGrid PC provides excellent reinforcement characteristics and minimum creep deformation compared to polyethylene or polypropylene grids or woven fabrics.

By mid 2014, 4 000 m² of RockGrid PC 100/100 had been installed along one section of the route, thereby providing a robust reinforcement layer upon which the new road could be constructed. Graded material was imported for construction of the layerworks above.

The high tensile modulus of RockGrid PC provides excellent reinforcement with minimal deformation, while its nonwoven component provides high resistance to installation stresses. Only RockGrid PC provides sufficient drainage capacity to drastically reduce flow paths in the reinforced soil. Due to this water transmissivity, RockGrid PC facilitates the reduction of pore water pressure and improves shear characteristics, thereby increasing stability.

This installation of RockGrid PC covered only a section of the full project which has been subjected to numerous delays including heavy rains and the subsequent decision to incorporate Tshwane's Bus Rapid Transport (BRT) system. This necessitated the redrawing of plans to include future BRT stations on the median of the road as well as another extra lane on the bridge to accommodate the BRT system.

Kaytech will continue supplying its RockGrid PC which, compared to the use of lime, has already saved a considerable amount of time and money. Once completed, the upgrade to Simon Vermooten Road will greatly reduce travelling time for the thousands of commuters working in the city. ◀

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MASSIVE CAPACITY

upgrades planning completed

The Hatch Goba/RHDHV Joint Venture has completed the planning process and preliminary design for a section of the Durban Gauteng Corridor upgrade project. Seen as the most important freight corridor in the country, the project has a design window up to 2047.

Hatch Goba, as lead consultant, in consultation with the South African National Roads Agency (SANRAL), undertook the planning and preliminary design of the section from Paradise Valley just west of Durban to Cedara, north of Pietermaritzburg, in conjunction with Royal HaskoningDHV as joint venture (JV) partner. Acer (Africa) was the lead environmental practitioner, while Stratecon was the economic assessment specialist.

The JV's scope of work focused initially on the compilation of a preliminary design report that took into account all existing data, from traffic analysis to Lidar surveys, bridge scans and materials data.

The upgrade proposals contained in this report then had to be refined further by means of micro-simulation modelling.

"The big driver for completing the preliminary design was to identify where SANRAL needed to acquire more land," Freck Serton,

director: roads at Hatch Goba explains. Where possible, development is to take place towards the inside of the median, but it does exceed the current road reserve in certain places.

"We have identified all of these areas, and the land acquisition process is underway at the moment.

"We were also required to evaluate the existing pavement and, together with the outcomes of traffic analysis, indicate a pavement strategy to sustain current and future traffic loadings," Serton notes. The required capacity upgrades to the N3 main line had to provide a Level of Service D in 2047.

"An important part of our brief was not just to provide capacity, but also to look at safety upgrades in terms of the road alignment," Serton emphasises.

This entailed evaluating the existing alignments, both horizontally and vertically, and then proposing upgrades to mitigate any unsafe conditions.

The current planning represents 'the ultimate development of the N3' and is the result of a long process.

"Our original appointment was for an upgrade from four to six lanes but the traffic analysis showed that, even then, sections of the road would reach capacity pretty soon, around 2020 to 2025, at which point more lanes would again need to be added."

SANRAL then revised the project's scope of work to consider a 30-year design period with implementation estimated to commence in 2017. This planning was done in consultation with other stakeholders as part of the SIP2 programme and, in particular, Transnet's Freight Demand Model. In order to have sufficient capacity up until and including 2047, the road would need to be upgraded to an eight-lane facility, with four lanes in each direction.

"Climbing and crawler lanes are also required, so in certain places it even becomes 10 lanes," Serton highlights. It is recognised that an authority cannot build itself out of capacity and while the plan is for an eight-lane freeway (ten lanes for steep areas), SANRAL's current network already has such lanes in other high-traffic areas.

The proposed solution is a massive upgrade of the N3 between the Candella Road Overpass, just east of the EB Cloete Interchange at Durban, and Cedara, just north of Pietermaritzburg. Most of the construction work is estimated to begin in 2017.

One of the key challenges facing SANRAL with the upgrade is the high-capital outlay required. The construction phase is unfunded at this stage, but is being discussed at a national level through the Presidential Infrastructure Coordinating Commission (PICC), which coordinates all the government's infrastructure projects.

The total construction works (in 2014 prices, including design and supervision fees) for the 2017 portion of the project equates to R17,9-billion, while the 2027 portion will cost R4-billion.

SANRAL has broken the project down into 10 packages for the detail design and construction stages. "The tender process for the appointment of consulting engineers for these stages is underway. Some have been awarded, while a couple still have to be awarded," Serton confirms.

Serton attributes the success of the planning process to date to the close working relationship between all the professional participants in the JV, and the interaction with SANRAL as the main client.

"This is a flagship project for all involved. It is a testament to both the expertise and experience of all the JV members and SANRAL," he concludes. <

Hatch Goba's extensive road infrastructure experience includes the Umgeni Interchange upgrade project for SANRAL.





Hatch Goba undertook the planning, preliminary design from Paradise Valley, west of Durban, to Cedara, north of Pietermaritzburg.

INSET: Hatch Goba's Ian Jackson, Freek Serton and John McCall with their commendation for the Umgeni Road Interchange project at the 2015 CESA awards for excellence.



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2016 DIRECTION

In a revolutionary change of strategy, Isuzu Truck South Africa has moved away from the traditional role of dedicated truck OEM (Original Equipment Manufacturer) to that of an 'Enterprise' with an African geographic footprint. Operating out of Johannesburg, a new venture has been established, Isuzu Motors sub-Saharan Africa (IMSSA), in support of Isuzu's objective of being the No 1 brand in Africa. During 2013 and 2014 Isuzu Motors of Japan supplied over 25 000 Isuzu trucks into Africa.



In addition Isuzu is South Africa's top-selling, chassis-cab, forward-control configuration truck – excluding panel vans and heavy buses – selling over 4 000 units per annum for both 2013 and 2014 with a sustained and steady growth over eight years. Isuzu truck South Africa is utilising its South Africa success to drive opportunities on the African continent.

36

And establishing market leadership in Africa is far more than playing the role of a traditional truck OEM to send large volumes of semi-finished truck product outside a factory gate. Isuzu Truck SA chief operations officer, Craig Uren states, "As an enterprise, we are now involved in the delivery of complete truck product solution to that ensures product quality/design is suitable for African market conditions where we serve nine countries."

AMT entrenches Isuzu product leadership

AMTs (Automated Manual Transmission) a hard-working, proven and reliable technology and has been a standard feature in long-distance, line-haul, extra-heavy rigs since the nineties on South African roads. Now AMT is rapidly becoming both an entrenched and preferred truck drive-line technology that fleet owners specify across all segments for medium, heavy and extra-heavy trucks.

Isuzu was the first truck manufacturer to introduce in medium and

heavy trucks with outstanding success. Isuzu AMT transmissions were launched the medium range N-Series during 2008 and in the heavy F-Series in 2011. This has resulted in Isuzu AMT equipped models now attaining 51,7% of Isuzu Truck South Africa total volume sales in 2014.

Full control of KANU & ACT

In an integrated move to improve the logistical for complete trucks with cargo bodies, Isuzu Truck SA has taken the lead in becoming the first major brand-leading truck manufacturer in South Africa to offer a complete solution. Says Uren, "We have now invested in a totally owned truck body builder subsidiary – KANU Commercial Body Construction to focus on rear truck bodies."

Uren goes on to add: "In addition we have acquired 100% of Automotive Chassis Technologies (ACT) that conducts off-line customising and chassis modifications as an extension to the Isuzu truck production line. Both KANU and ACT are Port Elizabeth-based. This provides centralized control over design, quality and warranty plus the ability to schedule the supply chain into our dealers without distressing overstocking in limited dealer facilities. It requires an 'Enterprise' approach."

Unique body-builder quality project

With the exception of vans over 3 500 kg gross vehicle mass – vans are sold as a complete finished product - all new trucks enter the SA road transport industry as an unfinished product. This means they have to be completed with cargo-body and equipment by local suppliers. This applies in addition to many truck tractors that require mobile cranes, power-take-offs, hydraulic fittings, fifth wheels appropriate to the task and other equipment. A truck chassis cab is useless without the cargo-body or productive equipment to complete the vehicle for a specific application.

Isuzu Truck SA has launched a unique, unilateral program to improve the engineering quality, durability and on-road safety of cargo bodies and all equipment that is chassis-mounted or fitted to Isuzu trucks in Africa.

Genuine original parts

Trucks will use parts – they are working machines with work outputs measured in ton/kilometres. It's all part of the total cost of ownership (TCO) and Isuzu Trucks have recognised this as an important factor in sustaining market leadership. In line with this Isuzu Trucks have launched an aggressive parts marketing campaign to align prices that reflect real value coupled to quality standards ensuring replacement parts deliver full service life for lowest TCO.

"It's not just about price," says Wayne Morgan, Isuzu Truck national

Isuzu Truck SA chief operations officer, Craig Uren.



Sipho Sandla, general manager of the KANU/ACT operation in Port Elizabeth.





service manager. “We have examined technical competitiveness of ‘cheaper’ parts on the market and find disturbing differences. Take an Isuzu genuine clutch assembly for example – the genuine Isuzu truck part has 17 differing components while the ‘copy’ clutch consists of only nine components that reduce clutch performance, reliability and durability.”

Morgan conclude: “Major wearing Isuzu truck parts have been subjected to price alignments that make the choice for a genuine Isuzu truck part a ‘no-brainer’ – it’s worth investigating.”

The key to a sustainable ‘Enterprise’

Service is a word that describes customer needs well beyond the gates of an OEM. Service is an aftermarket ‘Enterprise’ activity – it’s all about how customers use a truck and achieve lowest total cost of ownership. Service is about monitoring truck applications from cradle to grave and

variable warranties that Isuzu Truck SA is now introducing as a new and innovative value to operating an Isuzu truck.

Uren offers a final and powerful vision of where this new concept of ‘Enterprise’ is heading – “Isuzu Trucks’ franchise culture ... is to offer customers the best ‘Aftersales’ experiences and in doing so we sell trucks.”

The KANU acquisition will see Isuzu Trucks change from being a typical commercial OEM to an enterprise type of business that has the capacity to initiate and build products according to client specifications.





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EVOLVING backhoe loader LEGEND

The year 2015 marks the 30th anniversary of Caterpillar's first backhoe loader and coincides with the worldwide release of the latest generation F2 series – the next advance in on-site performance, where lowest cost of ownership is the deciding key factor.



Who would have guessed that back in the 1980s Caterpillar had yet to field its first backhoe loader, when today these Cat® units are an integral part of the earthmoving landscape, with more than 300 000 units now sold worldwide?

It all began with the roll-out of the A-Series in 1985. The B Series followed in 1989 and built on the solid foundation established by the first generation models to firmly entrench the Cat backhoe as a class leader. The year 1996 saw the launch of the C Series, followed subsequently by the D, E, F and now F2, in 2001, 2006, 2012 and 2015 respectively.

Historically, the first exploratory engineering drawings for the A Series were put to paper in 1982, and in 1983 Caterpillar's Desford manufacturing plant, situated near Leicester, England (at the time responsible for the assembly of forklifts trucks), was chosen as the fabrication centre for the first Cat backhoe. History has shown that their pioneering efforts have been a major success.

Caterpillar's introductory unit, the Cat 416A (in centre pivot configuration) was immediately recognisable by its distinctive boom tilt cylinder design, narrow loader tower and divergent loader arms. Launched with an operating weigh of approximately 6 087 kg and a lift capacity (at full height) of 2 381 kg, the engine delivered a net flywheel power of 46 kW at 2 400 rpm.

Technological advancements over time have included the development of the industry's first true excavator style boom (enabling excellent clearance over objects), which remains a signature trademark of the Cat backhoe.

Coupled with this, production capabilities have been further enhanced by the development of a 205 degree rotation bucket linkage: the high degree of rotation enables deeper vertical wall excavation, which simplifies trenching tasks, thus in turn increasing productivity. Meanwhile, overall durability has been further enhanced by industry



The Cat 428F2 is powered by a Cat 3054C engine with a net power rating (ISO 9249) of 64,9 kW. F2 units feature a new step design with reduced height, which enhances cab access/egress safety, with a bottom step that is resiliently mounted to prevent damage from debris.

38

leading hydraulic and electrical components, plus heavy duty linkages and structures.

Key focus areas for Caterpillar's research and development engineers include safety, ergonomics, operator functionality, fuel efficiency and enhanced power delivery, all of which feature prominently on the F2 model line-up, comprising the Cat 416F2 centre pivot model, and the Cat 422F2, 428F2, 432F2, 434F2 and 444F2 side-shift units. All are powered by fuel efficient Tier II Cat 3054C mechanically turbo charged engines.

Machines sold into southern Africa come equipped with a new generation four speed manual transmission (in forward and reverse). Top speed remains at around 40 km/h.

The F2's upgraded hydraulics system provides improvements in oil flow for optimum delivery: the 422F2 from 125 litres per minute (L/m) to 132 l/min; the 428F2 and 434F2 from 125 l/min to 160 l/min; and the 432F2 and 444F2 from 156 l/min to 163 l/min.

"Essentially, what this means is the achievement of high bucket dig forces whatever the engine speed, providing excellent control, whilst reducing fuel consumption," explains Barloworld Equipment product marketing manager for Cat Building Construction products, Design Naicker.

Pilot controls (where specified) provide low effort operation, with the ability to switch between excavator or backhoe control patterns with the press of a button.

A hydraulic quick coupler for the hoe is available direct from the factory, whilst 'twist to disconnect' couplings are fitted for all work tools. The previous F Series features 'push to

connect' quick disconnect couplings.

F2 models feature a restyled cab for a more modern look, which has been designed throughout with the operator in mind, including enhanced visibility to the loader attachment when at full height. Except for the curved front window, all other glass areas are flat, enabling quick, low-cost replacement. Sound levels in the cab are now best in class at 74 dB.

As an option, F2-Series units can be fitted with a radio featuring blue-tooth connectivity, facilitating communication with job-site personnel. A new keypad security system (with up to 25 unique codes) provides added protection for the machine, and a choice of cellular or satellite technology is available for use with the ProductLink™ telematics system.

ProductLink enables machine owners to view near real-time machine positioning, utilisation and mechanical health data via the VisonLink™ online portal. This capability forms part of Barloworld's Equipment Management Solutions (EMS) suite.

"Helping to build the world's infrastructure for the past three decades, Caterpillar's backhoes loaders keep on working and are certain to continue playing their part in building the future for many subsequent generations," adds Naicker.

Today, Cat backhoe loaders command a global footprint, with 11 models manufactured across three plants, namely Desford, Thiruvallur, India; and Campo Largo, Brazil. F2 machines destined for the southern African regional will continue to be sourced from the UK. ◀



The development of the industry's first true excavator style boom (enabling excellent clearance over objects), remains a signature trademark of the Cat backhoe.



In-cab, a new LCD display provides the information needed to monitor machine performance. New switches feature improved back lighting for easy use in all ambient-light conditions, and longer-life LED rear lights are now standard. (This cab view shows the machine specified with mechanical controls.)

The new Cat F2 Series backhoe loader range builds on 30 years of concentrated Caterpillar research and development and remains the class leader across all industries.



On the F2-Series, the lock-up torque converter provides a direct ratio between power pack and driveline when in the roading gears. This results in a 16% decrease in fuel consumption and an 11% increased average speed. The lock-up torque converter is an invaluable addition when travelling between job sites.



CHALLENGING HEAVY LIFTS FOR WIND FARMS

The Vestas wind farm projects at Grahamstown, Saldanha, Great Kei Municipality, Tsitsikamma and Grassridge will see a substantial amount of renewable energy filtered into the national grid, with a subsequent reduction in carbon emissions. Johnson Crane Hire has completed heavy lifts for three of these wind farm projects and is currently busy with the Tsitsikamma wind farm heavy lift.

> The wind farms are located in areas that experience high winds, and this poses a challenge when performing the lifts. Leveraging many years of experience on a wide variety of projects across a number of industries, the Johnson Crane Hire's team of skilled engineers and operators has overcome the inclement weather conditions and difficult logistics.

There are seven 3 MW V-112 turbines on the Chaba Wind Farm which will feed 21 MW of power back into the grid once energised and commissioned.

This will power 14 000 South African homes. Waainek Wind Farm will have eight turbines capable of producing 3 MW of power each and a combined installed capacity of 24,6 MW.

This represents 1,3% of the national target for onshore wind energy and is sufficient energy to power 16 000 South African households.

Johnson Crane Hire was responsible for the lifting of all the turbines and associated componentry for both wind farms. The lifts at Chaba

took a month, while those at Waainek took six weeks. Prior to the erection of the Liebherr 750 ton LG 1750 lattice boom truck mount on the hard stand on site, all the wind turbine components were preplaced on a laydown area.

The placement of the components is a critical element of the lift itself as it is necessary that they be located within the crane's safe working load area. Brandon Grange, project manager at Johnson Crane Hire, says that the design of the Liebherr LG 1750 allows for easy relocation between sites with increased mobility on sites with varying terrain.

Each turbine comprises a base tower, a mid tower and a top tower section as well as a nacelle, the drive train, the hub and three rotor blades. With the exception of the base tower section which is pre-installed, all other components needed to be lifted into position for final installation and commissioning. Each turbine has an 84 metre hub height and a 112 metre rotor diameter.



ABOVE: The ability to overcome inclement weather and difficult logistics are testament to Johnson Crane Hire's vast experience and expertise.

BELOW: Johnson Crane Hire was responsible for lifting all turbines and associated componentry for Chaba and Waainek wind farms.



The second tower has a length of 28,8 metres, a 3,9 metre diameter and weighs 58 tons. The top tower has a length of 30 metres, 3,3 metre diameter and a 42 ton weight. The nacelle, excluding the drive train, weighs 70 tons and is 12 metres in length with a 4 metre width and a height of 3,1 metres. The drive train is 7 metres long, 3,5 metres wide and 3,2 metres high with a weight of 58 tons. The three blades, which were individually lifted into position, each have a length of 55 metres, a width of 3,9 metres and a height of 2,6 metres, with a weight of 12,3 tons.

The LG 1750 was stripped after completion of the Waainek project and was immediately relocated to the next wind farm project at Tsitsikamma Wind Farm, which is 40 km outside Jeffreys Bay. ■

LOYAL FOR 25 YEARS

The quarry 'Les Carrières de L'Ariana', a family business in the Raoued-Ariana region of Tunisia, purchased its first Case 821 wheel loader in 1989. Founder Mohamed Djelassi was so delighted with its performance and the support he received from his Case dealer Sotradies, that the company remains loyal to the brand and dealer to this day – even after his son, Omar Djelassi took over the management of the company in 2011.

> 'Les Carrières de L'Ariana', which covers an area of 14 ha, produces aggregates for the building industry and for concrete mixes. In addition to the original 821, the quarry relies on four Case wheel loaders – a 921 and a 1288 purchased in 1995 and two 921C units – to load the trucks day, day out.

"When choosing a wheel loader we look first of all for a powerful and highly reliable machine," explains Omar Djelassi, who was the company's technical director until he took over as general manager. "Case wheel loaders deliver in spades on both counts. They keep up consistently high levels of performance, with extremely fast cycles in loading the trucks and efficiency in transport applications. And they do all this with exceptionally low fuel consumption – great for our bottom line. As for their reliability, we know we can absolutely count on them to perform tirelessly, day after day in the tough conditions of the quarry."

Djelassi is very satisfied with the support 'Les Carrières de L'Ariana' receives from Case dealer Sotradies: "The good relationship with our dealer is very important to us: this and the equipment's performance are the reasons we choose Case for our equipment. Sotradies give us a very high level of after-sales support. Parts availability, which is critical to keeping our machines working, is very good. And, when necessary, Case steps in to support our dealer so that downtime is kept to an absolute minimum."

Sotradies, part of the UTIC group and Case dealer since 1996, serves construction businesses from their headquarters in Tunis and three sales points in Sousse, Sfax and Kébil. They support customers with their well equipped workshop and provide on-site technical service with their mobile workshop. ■



NEW TELEHANDLERS

Bobcat has launched the company's new T35130S 13 m and T35140S 14 m telehandlers, aimed at the construction and rental industries, with both telehandlers offering a 3,5 tonne maximum lift capacity.

The introduction of the new 13 and 14 m models follows on from the launch of the new Bobcat 10, 12, 14 and 18 m lift height telescopic handlers over the last 18 months. While they have a simpler design intended to meet the needs of rental businesses, the new T35130S and T35140S telehandlers still offer many of the advantages of the new generation models.

Particular attention has been paid to aspects such as the protection of sensitive parts, and intuitive and safe operating to meet the needs of rental users. The easy-to-use compact stabilisers ensure that the full capabilities of all the new telescopic handlers can be utilised in the most confined working areas and close to walls (minimal loss of reach).

As in other new generation machines, the T35130S and T35140S telehandlers offer advanced features such as the new Panoramic Cab which has a large parabolic windscreen providing panoramic visibility especially when handling loads at height. In the cab, there is a new dashboard with digital display and intuitive controls including a joystick with integrated forward/reverse (FNR) control for improved productivity and safety.

The working envelope for the T35130S telehandler has a maximum lift height of 12,55 m and a maximum forward reach of 8,6 m. The Bobcat T35140S telehandler has a maximum lift height of 13,6 m and a maximum forward reach of 9,8 m. ■



T35130S – brief specifications

- Stabilisers
- Maximum lifting capacity: 3 500 kg
- Maximum lifting height: 12 550 mm
- Maximum horizontal reach: 8 600 mm
- Maximum travel speed: 30 km/h



EAST LONDON OPEN DAY

High Power Equipment Africa (HPE Africa) hosted an open day at its East London branch recently, to celebrate the opening of new premises in Meisies Halt.

"This function, which generated great interest from the local community, is likely to become an annual event in East London," says HPE Africa's East London branch manager, Jaco van Wyk. "Guests included key players from diverse sectors – quarries, plant hire, construction, contractors and second hand equipment dealers."

"A highlight of the event was a competition where customers were invited to operate the relatively newly launched Hyundai backhoe loader H930S. The rules were simple – all the operator had to do was pick up three soccer balls and place them into tyres.

"Frans Nel from Schrier Plant Hire, who achieved this in the quickest time, without dropping any balls, won a replica model of the Hyundai backhoe loader."

Also on display were Hyundai R220-9S and R300-9S excavators and HL760-9S front end loaders. HPE Africa's H930S backhoe loaders, designed for efficient performance, low operating costs and minimal maintenance requirements, are supported by a two year/3 000 hour warranty.

The company's portfolio also includes Soosan hydraulic breaker attachments that withstand harsh operating conditions on mines and quarries, as well as in plant hire and demolition projects.

The East London operation, with a well equipped workshop, also offers a support service that encompasses an OEM parts, repair and maintenance facility. Repairs and services include minor and major component replacement, as well as re-building and refurbishment of units. The company also offers maintenance programmes which are carried out in line with planned downtime schedules. Operator familiarisation courses ensure optimum performance and extended life from every machine. ■

High Power Equipment Africa hosted an open day at its East London branch, to celebrate the opening of new premises in Meisies Halt.



A highlight of the event was a competition where customers were invited to operate the newly launched Hyundai backhoe loader H930S. Frans Nel (left) from Schrier Plant Hire, won a replica model of the Hyundai backhoe loader. With him are Jaco van Wyk, East London branch manager, HPE Africa (centre) and Cuan Schrier, owner of Schrier Plant Hire (right).



FIRE RETARDANT BUILDINGS

Kwikspace, sub-Saharan Africa's leader in prefabricated modular building solutions has delivered specialised site constructed fire-proof buildings, unique to Kwikspace's 40 mm polyurethane panel offering, to the Clanwilliam Dam site.

> The dam, owned by the Department of Water Affairs, is a gravity dam that was built in 1935 and constructed from concrete to resist large volumes of water pressure. The dam wall is set to be raised by 13 metres and is one of South Africa's largest projects set to be completed in a five year roll-out plan.

Kwikspace's involvement has played an integral supporting role to the success of the larger Clanwilliam Dam project and has erected

two main building structures comprising two pre-fabricated office blocks next to each other: the contractor's block (952 m²) with 40 offices and the engineer's block (607 m²) providing 25 offices. The project includes five buildings in total, three of which are workshops with portal frames and sheeted cladding and roller shutter vehicle access doors.

The fire retardant feature of the buildings is comprised of panels that are manufactured

with a magnesium oxide portion sandwiched between the outer panels. This provides a fire safety feature where, in the event of fire, the panels will resist burning for up to 30 minutes. All the walls are filled with insulating material and lined on the inside with approved materials.

The buildings will provide comfortable, air-conditioned office space with high quality finishes to engineering, design, management, administrative and construction supervision personnel. Attention to detail includes windows that were fitted with burglar proofing and mesh fly-screens, thermally insulated ceilings with air-conditioning/ heater units and flooring fitted to client specifications.

Solar geyser and energy saving electric installations and the planting of indigenous grasses were also part of the eco-friendly turnkey solution provided by Kwikspace. A special rainwater harvesting system was designed and implemented to supplement normal water supply to the offices. Local labour and semi-skilled personnel were employed throughout the course of the construction period.

Comments Kwikspace executive manager, Con de Villiers: "Our expertise in rapid site setups in remote locations has ensured that the two-and-a-half month on-site construction deadline was successfully met, all under challenging weather conditions and a severe sloping site."

Kwikspace is ISO 9001 certified and conforms to the South African Bureaus of Standards (SABS) and SANS 10400 for all their building designs, unless otherwise specified by the client's local standards. ■



42

AFRICA'S LARGEST PUMP RENTAL HUB

Forever the industry trailblazer, Xylem South Africa opened its new pump rental hub – the largest of its kind on the African continent.

> The expert team at Xylem South Africa, a part of the global water solutions behemoth, Xylem Inc., has been hard at work over the past few months in preparation for the opening of its new rental hub premises in Gauteng.

This new purpose-built facility opened its doors on 1 October – expanding Xylem's global investment into emerging markets and augmented rental development into Africa.

The rental hub offers customers ease of access and greater affordability to world-class pump rental solutions within a centralised hub.

Over the past few years Xylem South Africa has positioned itself as the go-to company for pumping solutions. The company operates within the entire water cycle and is deeply entrenched as a trusted name in the mining, construction, municipal, agricultural, marine, disaster relief and residential spheres.

The company has greatly expanded its regional footprint with branches currently servicing clients in Gauteng, North West, Western Cape, Limpopo, Eastern Cape and Mpumalanga. With this strong national presence, the team at Xylem South Africa in conjunction with its global parent company, decided to invest into the expansion of Xylem's rental service offering in sub-Saharan Africa.

"We saw a greater need for tailor-made rental solutions developing in South Africa and its neighbouring countries," explains Dirk Bekker, rental manager at Xylem South Africa.

"There are many benefits to rental solutions. Clients can focus on core business, they can scale up their fleet, clients pay only for the equip-

ment and services they need to minimise operating costs, Xylem designs, builds, tests and rents its own equipment – we'll always select and apply the right solution for our clients' needs. Renting can assist clients in reducing capital expenditure while still retaining access to top of the range, world-leading pump brands," he adds.

The hub operates nationally through Xylem's regional depots and delivery and transport options to other areas can be discussed upon request.

Flexibility and adaptability is key with the Rental Hub – the knowledgeable and experienced technical specialists at Xylem's rental hub will be able to put together hands-on solutions for customers – while backing it up with solid technical advice and comprehensive maintenance strategies.

Xylem SA MD, Pierre Fourie.



EXPANDING INTO BURGEONING MOZAMBIQUE

The Chryso Southern Africa Group has strengthened its presence in Mozambique through the appointment of a permanent representative for products from both Chryso and the Group's subsidiary, a.b.e. Construction Chemicals.

> Luis Ferreira, business development manager – export for Chryso Southern Africa, says Paul Soares, an experienced construction industry professional based in Maputo, has been tasked to identify new business in the fast-growing Mozambican capital and other economic hotspots in the country, follow up on existing business, and provide technical assistance to the Chryso Group's distributors and customers.

"Soares has extensive experience of the local construction industry and will call on all new and existing construction companies in Mozambique to provide product and technical knowledge, and encourage specifications for the Chryso Group's products. Customers will still acquire the relevant products from our existing distributors in the segments and respective areas in which they currently operate, but Paul will provide the essential technical back-up and identify opportunities for the application of our products," Ferreira stated.

He said there was now soaring demand for building materials in Mozambique with multi-storey luxury hotels, office blocks and apartment buildings rapidly being constructed to replace demolished colonial-era structures.

"Mozambique has experienced economic average growth of close to 8% per year for the past 14 years. A major construction boom is under way there. After devastation by civil war for 15 years, the country is poised to become the world's biggest coal exporter within the next decade, while the recent discovery of two massive gas fields in its waters has turned the region into an energy hotspot, promising a massive economic bonanza," Ferreira added.

"Topping the list of the industrial sectors benefiting from this phenomenal growth is the construction sector, with transport and communications also growing rapidly. The Chryso Southern Africa Group can supply vital products to all these sectors and we therefore see tremendous growth potential in Mozambique. The appointment of a full-time technical consultant for both Chryso and a.b.e. products will not only sustain our already important role in the Mozambican infrastructural development but will help to substantially expand our market share in our neighbouring country," he stated. ☒

"This will ultimately result in less down-time and higher productivity for clients. Coupled with the costs saved on initial capital layout on pumps or related systems – the sky is the limit for our customers. We place great value on providing the best solutions for businesses that place their trust in us," Bekker explains.

With the rental hub ready to service both Southern Africa and the



Chryso SA supplied the admixtures and demoulding oil for the production of concrete railway sleepers for Mozambique's Tete to Ncala railway line



a.b.e. Construction Chemicals supplied its unigum torch-on bitumen membrane for the waterproofing of Maputo's Universidade Eduardo Mondlane.



Paul Soares, the Chryso Group's new representative in Mozambique.

wider African continent, with bespoke pump rental solutions – Xylem's commitment to expansion into emerging markets is underscored. Water as a scarce resource – both in operations and for consumption is of particular concern in Africa. Xylem is set to assist in addressing this concern through its constant technical developments and through investment into its areas of operation. ☒



NEW CESA CEO

Consulting Engineering South Africa (CESA) is pleased to announce the appointment of Christopher (Chris) Campbell as its new chief executive officer. He assumed office on 1 December 2015.

The position was left vacant earlier this year when the incumbent Lefadi Makibinyane resigned to pursue other career opportunities.

CESA President Abe Thela says that it gives him great pleasure to welcome Campbell to lead the organisation. "He understands the industry, having worked for several consulting engineering companies in various capacities, is the immediate Past President of the Engineering Council of South Africa (ECSA), has several years of experience in the Transnet Group and most recently held an executive position in the Precast Concrete business unit of the Aveng Group, Aveng Infraset," adds Thela.

Campbell also has a wealth of experience in the international engineering institutional environment, having held the position of Vice President, World Federation of Engineering Organisations, a UNESCO related non-government organisation, which has had ongoing interaction with FIDIC, the International body to which CESA is affiliated.

"He will be able to relate to how clients perceive the consulting engineering industry and I am confident that he will take CESA to greater heights," proclaims Thela.

Campbell, is a registered professional engineer, having started his



career as a draughtsman in 1981 from his humble roots in Newclare, Johannesburg, having matriculated as a bursary student from St. Barnabas College then located next to Sophiatown, Johannesburg, in 1980. He progressed to the level of senior technician, with a Higher National Diploma in Civil Engineering in 1986 and eventually obtained a BSc Civil Engineering degree (summa cum laude) in 1995 at the Florida A & M University in the USA. In addition, he holds various certificates and diplomas in management and leadership. ▣

Corobrik



Christie van Niekerk, executive committee member.



Christopher du Trevou, executive committee member.



Heinrich von Wielligh, factory manager at the Corobrik Midrand factory.



Barry Lelong, executive committee member.



Nokuthula Tshabalala, human resources manager.

Capital Equipment Group



Graham Clare, branch manager, KwaZulu-Natal, Criterion Equipment, is now also acting branch manager, KwaZulu-Natal, CSE - Construction Specialised Equipment.

Consulting Engineers South Africa

Lynne Pretorius, President.



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Jaco Grobler, general manager.





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