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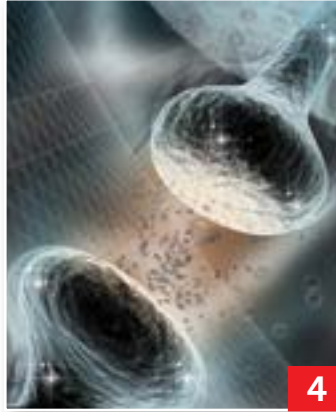
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Strategic planning and increasing capacity through a well-stocked and mobile fleet of crushing equipment have resulted in B&E International being awarded a number of crushing contracts for roads projects in the greater Free State region. **ON THE COVER:** purpose built units for producing high specification materials for asphalt plants.

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EDITOR'S

COMMENT



In a recent report, Brian Maina – a private equity analyst with RisCura, says that in order for Africa to improve its often dire infrastructure deficit, African countries need to collaborate with neighbours to execute infrastructure projects.



East Africa is following a collaborative approach to attract investment and so realise the much needed infrastructure development in the area.

2

Figures show how severe this infrastructure shortfall is: in China 1 MW of power is installed for every 250 people, while in Ethiopia this number goes up to 45 000 people for every 1 MW installed. African railway infrastructure fares even worse. China, despite its population of 1 357 380 000 people, has railway installed for 3 700 people per 1 km, while in Ethiopia this increases to a dizzying 45 000 people for 1 km.

Hampering factors

There is no doubt that infrastructure investment is a catalyst for economic growth, however, to attract major foreign investments, Maina says, the cost of doing business in certain countries have to dramatically improve, specifically transport and energy costs. Governments are the principal agents for such improvement – as such some government in especially the Eastern African region have chosen a co-operative approach to create a more optimal context to attract investors and to lobby as a collective unit to get funding.

Some governments, however, maintain the status quo. Its decision is based on two factors: independent implementation of infrastructure projects maximise political mileage and the

temptation of benefitting from large scale projects that supersedes civil interest. In addition, says Maina, countries within the continent compete internally and aiding competitor countries by reducing their cost of doing business is a counterproductive system.

Shining example

In East Africa, the collaboration between Burundi, Djibouti, Ethiopia, Kenya, Uganda, Rwanda and South Sudan is a case in point.

The collaboration between these countries have various outcomes and benefits: it provides access to a bigger market as the combined populations of the various countries increase potential markets. On its own a country like Rwanda with 11 million people cannot be competitive – but with Kenya and Uganda the 93 million people in this region has more clout. To achieve this, immigration and infrastructure plans have to be harmonised says Maina.

The second outcome will be cheaper (and more competitive) energy costs. At the moment, Maina says, the Kenyan cost for one kWh is USD15 cents. In other African countries it is as little as USD8 cents (Egypt). Electricity costs in East Africa will be lowered

by cross border transmission lines which will enable the selling of excess power to neighbours and to access cheaper power. Ethiopia for instance, will earn revenue from the sale of electricity that will be generated at the Gibe III hydroelectric project. The country has the potential to generate some 45 000 MW of hydroelectric power – which Maina says will cost between USD3-10 cents per kWh. Once realised, the region will be energy competitive.

The third outcome, says Maina, is that the joint infrastructure projects will give countries the ability to bring projects to fruition. Various railways connecting important hubs are planned or being constructed.

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SYNAPSE RISK ENGINEERING

Risk Management as a discipline is often construed as ‘highly technical’. More often than not, clients and end users of risk management reports are left confused or unsure in terms of the value risk management can add at virtually any level viz. corporate and/or project application. In this thinking piece, a philosophical view is considered in terms of the ‘missing link’ between the vast body of ‘risk management’ knowledge and that of tangible value add.



By Simon van Wyk, an expert in risk management at Aurecon. He is an associate member of IRMSA, a corporate member of the Disaster Management Institute of Southern Africa (DMISA), as well as a Professional natural scientist with the South African Council for Natural Scientific Professions (SACNASP).

The context of this article is the consulting services sector, in which risk management is virtually mandatory on most capital projects. Have you ever considered that the risk management profession relies on various approaches, methodologies and analysis tools, which are either informed by international best practice standards such as ISO 31000: 2009, with tools and techniques as contained in ISO 31010: 2009, of which clients have varying levels of exposure and understanding? This question spawns a fundamental and critical view that risk consulting services often run the risk of not meeting client expectations.

To address the disparity, this article seeks to provide some guiding questions that could be considered when engaging clients, to ensure a common alignment at the onset of a new project or service offering.

The disconnect – think before you consult

4

Synapse is defined as ‘a junction between two nerve cells consisting of a minute gap across which impulses pass by diffusion of a neurotransmitter’. In layman’s terms, this means a structure that permits information to flow from one nerve cell to another. As this definition suggests, a connection is made via impulses and it can be stated that the same phenomenon applies when engaging in risk consulting services across multiple clients.

Stephen Covey famously quoted ‘start with the end in mind’. This basic yet powerful point of departure is viewed as a fundamental step towards mapping the appropriate application of risk management services which a client/project may require. The ‘disconnect’ becomes evident when a risk consultant applies a vast wealth of knowledge to a particular project which may still be construed as inadequate viz. the proverbial *throwing of the book at the problem*. This disconnect can be illustrated below (refer to Figure 1).

This illustrates the potential disparity between what a client may

want versus what risk consultants may deem necessary (subject to project context). The figure represents the myriad available tools and techniques that could be used to identify and assess risks, as opposed to what the client needs to consider prudent to the project context.

The complexity becomes evident when engaging clients within different markets. In some instances, risk management forms part of their way of doing business, whereas other clients use different methodologies such as Cost/Benefit Analysis, hence the analogy of reflecting a level of balancing.

Establish optimum risk service

Optimal Risk Service (ORS) delivery needs to be mapped and a mutual agreement ought to be found between the risk consultant and the client. ORS is a state in which the level of risk service provided meets both client and best practice demands.

As stated earlier, *throwing the book at the problem* does not equate to the best practicable risk solution viz. optimisation may be way off. Risk consulting organisations have a benefit to offer in that they have an array of technical expertise, best practice knowledge and experience, which should be leveraged in the correct way to benefit client and projects alike. In order to achieve ‘risk optimisation’, it remains crucial to determine exactly what clients need and then to advocate best practice tools and techniques to meet the demands of sound risk management for their project.

The basic principles that one may consider to achieve an ORS are as follows:

1. Establish the client’s expectations – engage to determine what ‘they’ really want.
2. Establish the client’s level of risk maturity – apply Synapse Risk Engineering.
3. Make the connection between ‘what is needed’ and ‘what adds genuine value’.
4. Fill in the gaps to arrive at best practice levels.

Don't over analyse

Based on a specific need, risk management makes use of several value-adding tools and techniques that can be utilised to provide metrics that are needed to inform sound decision making. Generally, two views are taken: qualitative assessment and quantitative assessment.

The qualitative assessment is used to inform an order of risk ranking typically using two sets of criteria, such as Consequence/Likelihood and/or for process orientated applications Frequency, Probability and Severity/Impact can be considered. Quantification of risk relies heavily on sophisticated modelling programmes and methods such as Monte Carlo Analysis (e.g. @Risk), which provides a probabilistic view around the level of uncertainty against a preset criterion running repeated algorithms.

These ‘traditional’ approaches are very useful in assisting clients with information upon which to take key decisions, however it has



Figure 1: Conceptual view depicting the disconnect between a client’s expectations and that of a risk consultant.

NEW REGISTRATION SYSTEM

The Engineering Council of South Africa (ECSA) hosted over 300 registered engineers to discuss the New Registration System (NRS) with the aim of eliciting input and support from the profession, to ensure that a collaborative approach is taken in concluding the adoption of the NRS.

> Siphso Madonsela, chief executive officer of ECSA emphasised that ECSA is in an era where consultation has become a central part of all dialogue as an organisation. ECSA has used a series of national road shows to go beyond the call of duty with its members. "People are not just satisfied with consultation announcements issued in the media. They want to have a personal interaction with ECSA and we encourage this and appreciate their input," he said, emphasising the importance of this engagement.

Madonsela added that South Africa's engineering sector is at the leading edge of setting standards for education and registration. "The standards must be applicable to the profession, and therefore it is important that you, as representatives of the profession, should find a voice, and have a contribution in shaping those standards going forward," he added.

At the crux of the event was the review of the NRS. Through ECSA Council member, Alec Hay, the engineers reviewed the NRS and its requirements and categories. This process undertook to outline and understand the NRS, and the issues defining the new system, as it relates to professional engineers, technologists, certified engineers and technicians. Included in this was consideration

for candidates and other specified categories in the engineering sector.

In responding to why ECSA would need a NRS, Hay explained that ECSA has a responsibility to conform with the competency standards focus of the Engineering Professions Act. "There is a need to harmonise and consolidate policies, in aligning with accepted international standards – for which ECSA is ranked relatively high," said Hay. "We want to maximise on our time in peer evaluation, and provide better information and guidance to applicants as they register with ECSA," he added.

Feedback from the profession indicated that engineers were open to the NRS, albeit with some work required to fully understand the system. There were issues raised around continuous professional development (CPD) and the point's allocation of the system; as well as the registration status of academics, who are not functioning in the profession, but who are linked directly to the education systems that feed the profession with candidates.

Engineers felt strongly about the removal of the essay test as part of the registration process, as it tested the candidate's ability to express his/her ideas and logical thinking. ECSA resolved to take this particular point into consideration, in identifying alternative methods of reviewing a candidate engineer's thinking abilities.

The engagement brought to light the plight



Siphso Madonsela, chief executive officer of ECSA.

of several foreign engineers who had been struggling to confirm their Pr. Eng status, despite appropriate qualifications, albeit attained in foreign countries.

These individuals queried the legacy registration system, which had not seen them fit to be registered as professional engineers, but which rather classified them as technologists. ECSA undertook to look personally into these matters, to ensure resolution on each matter.

A question was also raised about how candidate engineers can be connected with potential mentors, as there was a need to support younger aspirant engineers. "We need to grow the professions and grow youngsters," said ECSA vice president, Adrian Peters, in his closing remarks. "We need to develop the profession. It's not about exclusion – it's about inclusion," he said. <

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to be stated that there are more elaborate methodologies such as Decision Tree Analysis, Bow Tie Analysis and Sophisticated Neural Networks. As this paragraph suggests, risk assessment can become extremely technical and it can well be argued that it should be as the whole point of risk management is to predict the level of uncertainty around a project or organisation key objectives.

SRE: Guiding questions

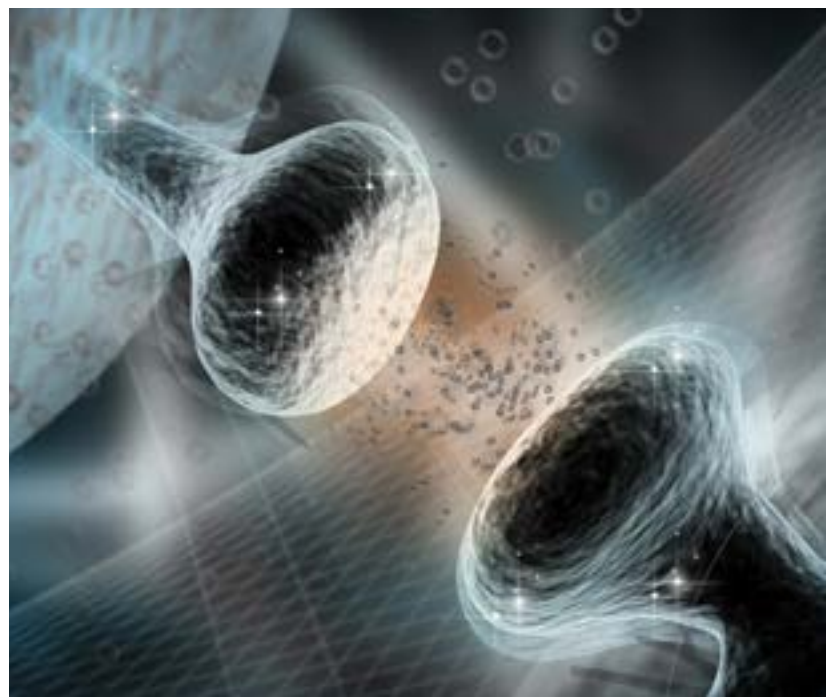
The rationale that informs the need for SRE is the balance of knowledge transfer between the risk consultant and the client, which is typically misaligned.

Concluding remarks

The intent of this thinking piece is to remind risk consultants that there may be a vast difference between what 'we offer' versus what the client actually needs or wants. It stands to reason that risk consultants may apply unnecessary levels of analysis on a project, which detracts from a client's expectations thus negating the value add of sound risk management and the consequent value add that it may play in terms of assisting with decision making. Clients are generally willing to follow the path of 'best practice' if they are informed about what the process entails.

Conversely, if an approach is adopted whereby a bullish view is taken by the risk consultant to apply unnecessary risk analysis techniques (thereby overanalysing), the impact to the project can be

quite significant. Box and Draper stated in 1987 that 'all models are wrong, but some are useful', and it is with this notional view that risk consultants should consider the best 'fit-for-purpose' practices when applying international best methodologies. <



350TH ANNIVERSARY

Saint-Gobain, the world leader in the habitat and construction market, this year celebrates 350 years of providing innovative solutions in 64 countries across the globe, including South Africa. Celebratory activities, that will make a difference to people and their habitats, will take place throughout the year.



Saint-Gobain South Africa plans to embrace the anniversary theme of 350 reasons to believe in the future, with a specific focus on education. The celebratory 350 campaign initiatives to be rolled out in South Africa are in line with the objectives of the international Saint-Gobain Initiatives Foundation, to use the company's expertise to assist disadvantaged communities.

Adopt-a-School project

Saint-Gobain has partnered with the The Adopt-a-School Foundation, a project of the Shanduka Foundation, a non-profit organisation that supports the creation and enhancement of a conducive learning

and teaching environment in disadvantaged schools.

After an in depth needs analysis was conducted at a number of schools across South Africa, three schools have been identified for assistance by Saint-Gobain. The company will provide a kitchen, a classroom and ablution facilities in schools situated in the Western Cape, KZN and Gauteng. These projects are due to commence in May and will be completed to coincide with the group's global anniversary month in October.

Saint-Gobain employees will be actively involved in the projects, and will assist learners at each school with supplies and immediate schooling needs. This initiative will encourage employee engagement across the group in South Africa.

Architecture for Social Gain Awards

This campaign has been conceptualised by Saint-Gobain in close association with the South African Institute of Architects, to recognise and reward talent in the design of spaces that allow learning and development. This is not just another design competition.

The three categories for entry include FUTURE (concepts and proposals), BUILT (existing projects) and the ADOPT-a-School proposal for structures to be built to brief. Certificates will be awarded to professional and student winners in each category with the top adjudicated entry in each category

winning the prize of a trip to Paris in October to take part in the global Saint-Gobain 350 anniversary celebrations.

A 350 year history

Since its creation in 1665 in Paris, Saint-Gobain has adapted to the changes of the world and overcome many challenges it faced. Backed by its experience and its corporate culture, the company has its sights set on tomorrow, and knows that there are many "reasons to believe".

The 350 anniversary celebration themes are based on six central pillars including:

1. The world has no boundaries
2. Sustainable habitat is within our reach
3. Innovation is transforming the world
4. Talent is infinite
5. Habitat for everyone is achievable
6. Saint-Gobain builds on the past and plans for the future

"This anniversary is an opportunity and an occasion to remind everyone of the strength that is acquired through 350 years of history and 350 years of ongoing innovations. Our experience means we understand and focus on the long term. It also gives us the composure and agility to adapt to the ever-changing world. Our history is proof that we are a company that has consistently pushed back boundaries and taken up technological challenges. As we look back over our past and examine today's world and what we do, we are convinced that there are many reasons to believe in the future. So, it is with our sights set on the future and innovation that we are celebrating this anniversary. It is our optimism that we want to share with you in 2015," says Pierre-Andre de Chalendar, chairman and CEO of Saint-Gobain. <

The 350 years celebratory signage on the exterior of the Saint-Gobain South African headquarters in Samrand, Gauteng.



ABOUT SAINT-GOBAIN

In 2015, Saint-Gobain is celebrating its 350th anniversary. Backed by its experience and its capacity to continuously innovate, Saint-Gobain, the world leader in the habitat and construction market, designs, manufactures and distributes high-performance and building materials providing innovative solutions to the challenges of growth, energy efficiency and environmental protection. With 2013 sales of €42-billion, Saint-Gobain operates in 64 countries and has nearly 190 000 employees.



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PREDICTING growth beyond 2020

A slow and steady recovery in the construction industry is being predicted over the next five years with gradually returning business confidence driving new investments in the industry and its key suppliers.

ABOVE: Readymix concrete allows for some innovative building techniques to be used to meet Government's promise to build 1,5 million houses by 2020.

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> As the largest supplier of materials for construction projects, the readymix concrete industry is seeing increasingly more investment in the market in anticipation of more buoyant and profitable times in future. Large cement suppliers have already made acquisitions of some of the major readymix companies and talks are apparently afoot for more acquisitions and mergers at the top end of the market.

The reasons for the shift in optimism are based on a number of positive factors that are seeping into the market in the form of a rising number of plans being passed and far easier access to mortgage bonds. In addition, the allure of Government's R800-billion infrastructure investment plan for the period up to 2020 and its promise to build 1,5 million RDP houses by the same period (at a cost of over R30-billion per annum), is proving to be a big incentive for investment in the building materials industry.

Investment returning

According to a recent report compiled by BMI on behalf of the Southern Africa Readymix Association (Sarma) and the closely allied Aggregate and Sand Producers Association of Southern Africa (Aspasa), tough market conditions since the worldwide recession has led to under utilisation of manufacturers

capacity. In addition it has stifled investment in the construction and related industries and led to some stagnation of the readymix concrete industry.

South Africa's slow recovery has also led to the large construction companies sourcing up to 60% of their revenue abroad. The viability of transporting heavy building materials over long distances is poor and as a result the lack of investment from these firms has dampened growth to an extent.

Positive growth signs and returning investment is however bringing back a more positive sentiment to the market. Simultaneously, the increasing demand is also leading to a large number of new operators establishing themselves in the sector which is effectively absorbing any real growth that the established players would have otherwise enjoyed.

Trending upwards

Commenting on the report, Nico Pienaar, who sits on the boards of both Sarma and Aspasa, said that signs of renewed growth are positive, but are expected to be slow and measured, at least for the next two years. Some negative factors including electricity shortages and low demand globally for commodities may slow growth and have a negative effect on business sentiments locally.

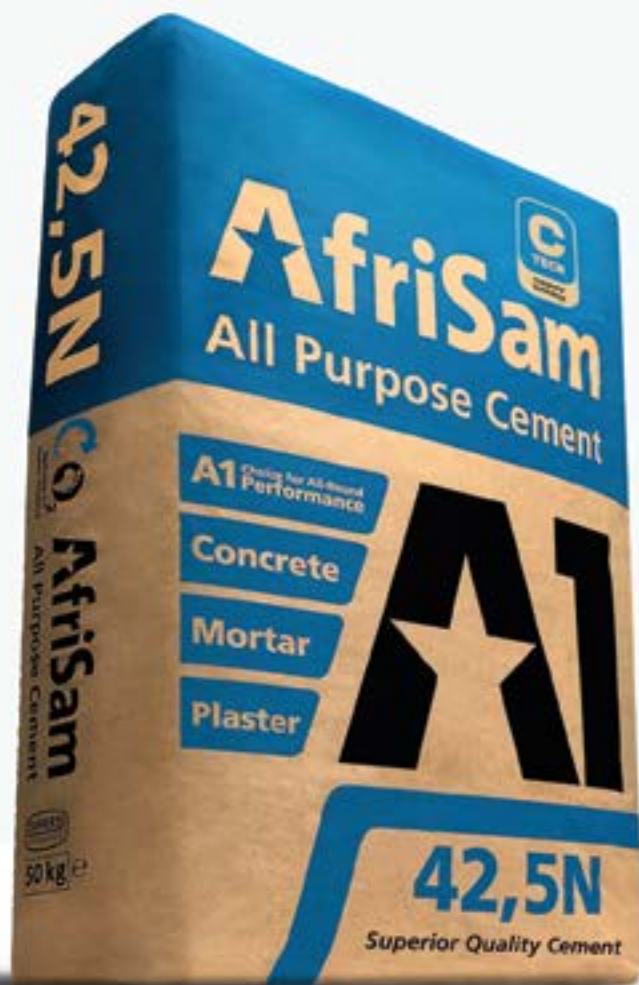
However, he said, positives outweigh the negatives and stability in interest rates and rising house prices all tend towards supporting growth. Residential building plans passed are particularly encouraging especially in the affordable housing market, while retail centre construction is also growing at a good rate.

"One of the positive outcomes of the recent recession is the trend for businesses to return to quality and specification of quality produced materials.

"In our industry there is increased co-operation between professional bodies who are working towards the specification of only accredited building materials to be used on site to avoid failures and possible disaster in the event of structures collapsing.

Member benefit

"Companies can no longer afford the risk of buying unregulated products and as a result we are seeing a number of large consulting engineering firms, contractors, municipalities and industry bodies writing-in clauses specifying only accredited materials to be used on their sites. This is obviously positive for Aspasa and Sarma members who should win-back lost ground as a result of start-up operators undercutting prices etc," concluded Pienaar. <



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EDUCATION-to-EMPLOYMENT

organisation opens in Gauteng

‘Go for Gold’, a non-profit education-to-employment organisation established in Cape Town in the Western Cape in 1999, has established a new branch in Johannesburg. “We are very excited about the fact that we are opening our first branch in Gauteng,” says Bridget-Ann Mullins, ‘Go for Gold’ co-director.

➤ “So far we have 35 Grade 11 students who have commenced classes. We are looking forward to seeing them through to successful careers in the built environment and technical professions.”

The ‘Go for Gold’ initiative was established in 1999 in response to the high level of youth unemployment in South Africa. “One of the things that make us unique is that we were actually started by a company in the construction industry to look at transforming the built environment and technical professions in South Africa,” Mullins says.

‘Go for Gold’ has developed a four-phase model aimed at developing future skilled graduate professionals. Phase 1 consists of scholars being transported to a Go for Gold

campus to further their studies in mathematics and science in particular. They are also taught computer skills and life skills. This training continues until the end of Grade 12 when all the candidates are interviewed for built environment internships, which comprises Phase 2.

Phase 3 involves attending a tertiary institution, with these studies sponsored by the relevant companies. The final phase is full-time employment in the construction industry. Each phase’s successful candidates become involved in mentoring those candidates in lower phases.

Mullins says that the programme offers comprehensive skills training and development that ultimately results in gainful employment. “As we can well imagine in our own career paths, from high school to university and then onto our first jobs, and then consider how all the gaps and challenges in that process are exacerbated further if you come from a difficult socio-economic background. Thus we try and address those gaps by working closely with individual candidates and mentoring them constantly along the way.”

BOTTOM LEFT: Francis Chemaly, director of H&I Construction and ‘Go for Gold’ board member, delivered an address at the official launch of the ‘Go for Gold’ Johannesburg branch.

From left, Noxolo Mgodlwa, project manager for ‘Go for Gold’ in Johannesburg and Pheli Mbambo, HR executive at SAFCEC.

Mullins adds that ‘Go for Gold’ is making a significant contribution to inculcating professional skills in the construction industry in South Africa. “The statistics on the number of qualified engineers in South Africa are atrocious. We not only need more engineers, but we also need to foster more engineers from disadvantaged communities in order to be able to impact on youth unemployment and poverty levels.”

The ‘Go for Gold’ programme also provides an opportunity for mathematics and science teachers to brush up on their teaching skills. “Our Saturday classes are open to teachers from the schools we work with. We do share our resources with them as well, so there is a definite spill-over effect,” Mullins says.

Looking at 2015, Mullins reveals that ‘Go for Gold’ aims to consolidate its presence in Gauteng following the establishment of its new branch. “We are piloting in Gauteng and we really want to ensure it works because we believe that, due to its size, Gauteng can be three times as big and successful as the Western Cape.”

‘Go for Gold’ is also working in partnership with another non-profit organisation in Port Elizabeth in order to set up a similar education-to-employment initiative in the Eastern Cape. “That is really exciting as it is the first time we are collaborating in such a joint venture.

“We have also started looking at consulting work to see how we can share our model and our expertise while still remaining true to our core purpose. We want to grow nationally, so that we are able to use this successful education to employment model to influence other industries as well. ◀

Wesley Mullins, an alumni of ‘Go for Gold’ now working at Sutherland Engineering, shared his experiences on his journey from Grade 11 to date.

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From left: Zanele Mira, Thobisizwe Sithole, France Mathabela and Nomhle Pontshi, Grade 11 learners from Lesiba Secondary School in Daveyton, in the Go for Gold Programme.



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12

A1 Civil Engineering Contractors

Prerequisites for entries

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

Criteria for category A1

- Construction innovation technology
- Corporate social investment
- Design innovation
- Environmental impact consideration
- Health and safety
- Quantifiable time, cost and quality
- Risk management

Special issue

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

A2 Building Contractors

Prerequisites for entries

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

Criteria for category A2

- Construction innovation technology
- Corporate social investment
- Design innovation
- Environmental impact consideration
- Health and safety
- Quantifiable time, cost and quality
- Risk management

A3 Civil Engineering and Building Contractors (outside South Africa)

Prerequisites for entries

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

Criteria for category A3 (As per category A1 and A2)

B Specialist Contractors or Suppliers

Prerequisites for entries

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

Criteria for category B

- Construction technology innovation
- Corporate social investment
- Environmental impact consideration
- Health and safety

Awards evening

The awards evening, in the form of a cocktail function, will be held on **Wednesday, 4 November 2015** at the Royal Johannesburg and Kensington Golf Club, Johannesburg.



Professional Services*

Prerequisites for entries

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

Criteria for category C

- Construction innovation technology
- Corporate social investment
- Design
- Environmental impact consideration
- Health and safety
- Quantifiable time cost and quality
- Risk management

*An award for both consulting engineering AND architects will be made.



Public Private Partnerships

Prerequisites for entries

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

Criteria for category D

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

Submitting entries

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

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



The AfriSam Innovation Award for Sustainable Construction

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

Prerequisites for entries

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

This category will be judged on the project's

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

Criteria for category D

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

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Judging

A panel of independent judges from the construction industry has been appointed. They are Trueman Goba, chairman of Hatch Goba; Naude Klopper, former president of Building Industries Federation of SA; and Rob Newberry, managing director of Newberry Development (past president of the Chartered Institute of Building).

Each criterion as set out for the various categories will be scored out of 10. (10 being the highest score and one being the lowest). **It is VERY important that entries address the criteria for the particular category it is entering. Not every criterion may be applicable to the contract and obviously need not be addressed.**

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

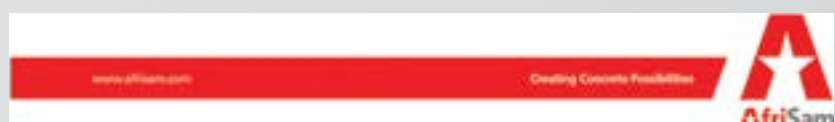
Deadlines

Deadline for entries is **Friday, 11 September 2015** at 17:00.

Contact

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

Main sponsor:



TRIPLE GREEN buildings in 24 months

Leading private property company Amdec has set its sights on tripling the number of green buildings in its property portfolio over the next two years. Having already earned Green Star SA ratings for two of its buildings in the last two years, Amdec plans to boost its pace of investing in green buildings by taking this number to six in the coming 24 months.

> James Wilson, Amdec CEO, comments: "We take a multifaceted approach to sustainability and energy-efficiency. So, while we intend to pursue more Green Star SA ratings for all our new developments, and some of our existing ones, we are also adding more resource-efficient features to all our assets, whether there is a rating tool available for them or not. This helps take strain off our power grid, and our building users' pockets, as well as being good for the environment and helping communities prosper."

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The bigger picture

By considering the bigger picture, Amdec's green building ethos has a far-reaching positive impact. Its holistic approach to green buildings is helping to change the way people think and live.

"An important part of green building is educating and transforming communities, updating legislation and government processes, and changing how we experience development," explains Josef Quraishi, head of sustainability and green building for the Amdec group.

"Our macro view considers a building's inherent relationship with its surrounds, ensuring it contributes to the sustainability of its community and natural setting," explains Quraishi. "When we develop, we

look at the broader context of investing in communities. A thriving community is good for business, the more attractive a community is, the more desirable our buildings become."

Green building is growing apace in South Africa and Amdec, an active partner to the Green Building Council South Africa (GBCSA), is helping it move into the future. In fact, Quraishi, was closely involved with developing the GBCSA's Socio Economic Category Pilot, which has been embraced by the World Green Building Council.

As the owners in what can undoubtedly be considered South Africa's first sustainable green precinct, Melrose Arch, which was developed ahead of its time and before the formal green building wave began in South Africa, Amdec knows first-hand the benefits an environmentally sound foundation adds to green building. That's because the green inner-workings of Melrose Arch support more than a single building, they underpin a whole precinct.

Impressive ratings

It is here that Amdec has earned its two Green Star SA ratings: 40 on Oak was South Africa's first multi-unit residential project certified under the Green Star SA system, with a 4-Star Green Star SA Pilot certification and The WorleyParsons head office was awarded a 4-Star Green Star SA Office v1 Design rating.

As part of its multiunit residential rating at 40 on Oak, Amdec cut energy consumption for each apartment by 50% and water consumption by 40% making the Melrose Arch apartments even more desirable. For the green rated office, it lowered energy consumption by 40% and water consumption by 50%.

Melrose Arch will also play a leading role in its future targeted green star ratings, two of which have already been registered at GBCSA.

Melrose Arch is packed with ingenious designs and small, smart green touches that also create an enjoyable environment. It includes a central district cooling plant

that utilised evaporative cooling so its buildings use less air conditioning than usual, it uses gas and has integrated recycling. Its mixed-uses and pedestrianisation reduces the need for cars, it also benefits from good access to public transport.

In short, Melrose Arch is an enabling platform for sustainable buildings. It is this revelation that is inspiring Amdec to create even more environments that facilitate more green buildings

Quraishi says that as companies transform the way they think about business, from being purely profit driven, to a paradigm that considers people, planet and profit, so property developers need to respond.

Inefficient buildings stand to become obsolete faster, being less sustainable and Quraishi highlights that green buildings make for happy tenants too. "They boost productivity and profitability by creating healthy workspaces that also mean lower absenteeism. So they are commercially desirable."

Developing macro plans for green precincts can help deliver more green buildings, and bigger positive impacts.

"In fact, we are considering taking our next R4-billion mega development of a 128 000 ha mixed-use suburb in Port Elizabeth, entirely off the grid," says Quraishi.

With soaring energy costs, clients across Amdec's portfolio of assets, including its Evergreen Lifestyle Villages, enjoy the benefits of Amdec's energy-efficient, water-efficient and cost-efficient focus. Amdec's approach to green building goes beyond active green building technologies, also incorporating more subtle elements of green building in design and orientation.

Of course, the commercial sustainability of a building is essential, and is typically at the forefront of every developers mind. It is fundamental to pushing the green button for a project.

For existing buildings, Quraishi explains that Amdec has prioritised getting ratings for single-tenants buildings. "Then we'll move on to our multi-tenanted buildings, which can be more challenging," he concludes. **<**



James Wilson, CEO of Amdec Group.

The WorleyParsons head office building in Melrose Arch, which was awarded a 4-Star Green Star SA Office v1 Design rating by the Green Building Council of South Africa.





RENEWABLE REVOLUTION IS WELL UNDERWAY

While South Africa grapples with constrained power supply and regular load shedding, a quiet revolution in renewable energy is taking place – often in remote and unnoticed parts of the country.

➤ According to Craig Pace, director at international heavy lift, abnormal transport and installations specialist Vanguard, this revolution has already brought substantial benefits, saving the economy billions of rands in diesel and coal that Eskom would have to have burnt to keep the lights on.

"A recent report from the Council for Scientific and Industrial Research (CSIR) shows that the 1 600 MW of renewable energy installed by December 2014 has saved the country over R5-billion," said Pace.

He said that 32 renewable energy projects had already been completed and connected to the grid, with government planning to more than double this figure by reaching 3 625 MW by 2030.

"What is really encouraging about these developments is that they are producing electricity at a very competitive cost – so that the net financial benefits of renewables will remain positive even in future when the national grid is less constrained," he said.

ABOVE LEFT: Vanguard transporting an 87 tonne tower section with Vanguard Tower Clamps on a gooseneck 10 Axle Goldhofer THP-SL modular trailer combination for Metrowind's Van Stadens wind farm. **ABOVE RIGHT:** Vanguard's GTK1100 crane erecting a wind turbine generator on Grassridge wind farm.

The Integrated Energy Research Centre at CSIR reported that the cost per kilowatt/hour (kWh) of renewable energy for new projects is now well below R1 for solar photo-voltaic (PV) production and between 60c-80c for wind projects.

"The government's three Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) bid windows have procured more than 60 renewables projects, with combined capacity of 3 900 MW," said Pace. "Another 77 bids were received in the fourth REIPPPP window last year, indicating the enthusiasm and investment appetite of many foreign companies."

The private investment associated with the projects procured to date amounts to R140-billion.

Vanguard has been integrally involved with a number of pioneering wind farms around South Africa in recent years, according to Pace.

"We have engineered efficient solutions for dealing with the large and complex wind turbine components being imported for wind farm projects – from discharging the vessel, specialised transport requirements to the hard stands, on-site lifting/erection and electrical installations of 108 wind turbine generators," he said.

Among the recent contracts completed have been the West Coast One wind farm near Vredenburg on the Western Cape coast, where Vanguard erected 20 Vestas V90 2 MW turbine generators with its GTK1100 crane, and the Chaba wind farm near Komga in the Eastern Cape, where the company discharged seven Vestas V112-3 MW wind turbine generators from the vessel, off-loaded into a storage area, and reloaded for transport to the wind farm.

Other projects include the Grassridge wind farm, also near Port Elizabeth, the Noblesfontein wind farm near Victoria West in the Northern Cape, and Metrowind's Van Stadens wind farm in the Eastern Cape.

"These contracts have shown that Vanguard is the only South African-owned company with the expertise and capacity – including fully-licensed and registered equipment – to offer a full turnkey project solution to the growing wind-energy market," said Pace.

"Our commitment to clients is always to deliver on time and within budget, without compromising safety."

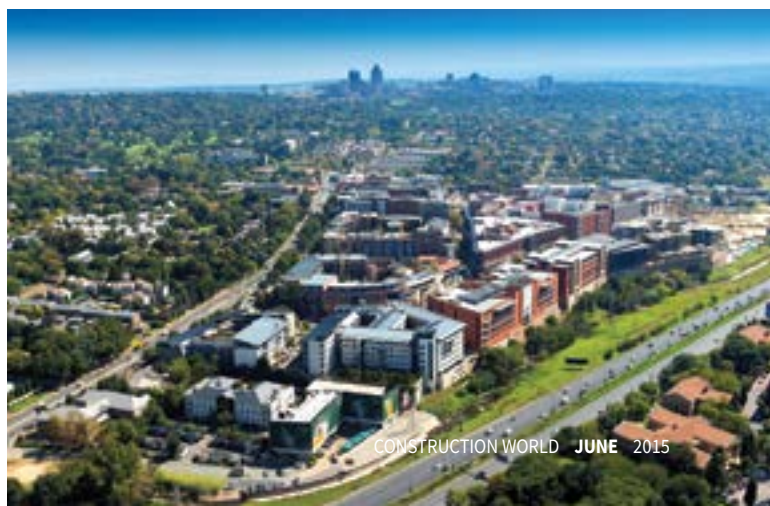
Vanguard's fleet of specialised equipment includes the GTK 1100 telescopic mobile tower crane – the only unit in the southern hemisphere – which has proved invaluable in many of the wind farm installations. ■

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40 on Oak in Melrose Arch, which was South Africa's first multi-unit residential project certified under the Green Star SA system.



An aerial view of Melrose Arch in Johannesburg. Owned by the Amdec Group, it is home to the group's first two Green Star SA rated buildings.



Lake Turkana **WIND POWER** project

Following the November 2014 signing of a contract to deliver project management services to Lake Turkana Wind Power's wind farm project in Kenya, WorleyParsons has begun to mobilise its project management teams on site in the Loyangalani District, Marsabit West County, in the Turkana region.

> The 32-month project, which will establish the biggest wind farm of its kind in sub-Saharan Africa and represents one of the biggest single private investment in Kenya's history, aims to supply 300 MW of reliable, low cost wind turbine generator capacity to the Kenyan national grid, equivalent to about 20% of the country's current installed electricity generating capacity.

The project is part of the Kenyan government's drive to generate 5000 MW for the country by 2017.

"This is the biggest renewable energy project WorleyParsons RSA has undertaken to date," says the company's Denver Dreyer. "We've already forged a proud track record in the renewable energy space and being awarded this contract is testament to our ability as a partner of choice for energy developers in remote locations. As one of Kenya's top three capex projects, it is of strategic importance that we deliver this undertaking to the country in a manner that will ensure it will be of lasting benefit to its people."

WorleyParsons will provide overall project management, engineering review and construction management services and was also awarded a pre-mobilisation contract to develop management philosophies/protocols and align contractors to allow the project to begin at a robust pace.

Rizwan Fazal of Lake Turkana Wind Power says: "WorleyParsons brings an invaluable combination of local and international knowledge and experience to this project. Both the international and local organisations have reputations for delivering world class projects and we are delighted to have them on board for this critical undertaking."

The Project Management team comprises a core group of WorleyParsons project leaders, supplemented with professional personnel sourced locally in Kenya, as part of its localisation philosophy. These professionals will have a unique opportunity to work on a project of this magnitude and to gain specialised skills.

The team is split between WorleyParsons' Nairobi project office and the Turkana site office, which is located at a distance of 12 hours by road in a 4x4 from Nairobi, or 1,5 hours by chartered flight. This remote, desert-like environment is inhabited by about 10 nomadic tribes, with the closest village about 40 km away.

The site was selected following an extensive survey of the region that focused on environmental, social and sustainability, technology and commercial considerations.

The survey took into account the remoteness and security of the area, the strength and stability of the winds, proven available technology, the benign environmental setting, low population density, fresh

water availability and road accessibility.

The project spans an area of 160 km² and the scope includes 365 wind turbines of 850 kW each, an electric grid collection system and a high voltage substation, as well as upgrades to 200 km of existing road, an internal site road network and a 160 man self-contained village for the turbine contractor's team.

The village, that incorporates a bank and a medical facility, will later house personnel for the operational phase of the project. The Kenyan government has undertaken to finance and construct a 428 km transmission line that will link into the national grid at Nairobi.

WorleyParsons project manager on the Lake Turkana Wind Project, Stefan van Niekerk, says logistics will be one of the biggest challenges, as a high volume of components need to be transported from the Port at Mombasa to the project site, a distance about 1 200 km, over a 12-month period from Q1 2016.

Although each contractor will take responsibility for its own logistics, WorleyParsons will oversee the process in terms of facility inspections, quality checks and testing, and delivery schedules.

Corporate Social Investment is a key deliverable for WorleyParsons and the team is currently investigating opportunities to contribute to local communities. Informal donations have already been made to a local school.

WorleyParsons RSA is one of the largest engineering contractors in South Africa, offering Advisory, Select, Delivery and Improve (sustaining capital) services into sub-Saharan Africa across the customer sectors of mining, hydrocarbons, power and infrastructure. **<**

WorleyParsons RSA's Denver Dreyer.



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V&A WATERFRONT'S newest hotel

Cape Town's V&A Waterfront will soon be home to international hotel group Carlson Rezidor's first new concept in Europe, Africa and the Middle East (EMEA).

➤ The Radisson Red in the Silo District is on track to welcome its first guests towards the end of 2016. The new upscale lifestyle select concept hotel is being developed and funded by the V&A Waterfront at a total capital cost of R380-million.

David Green, CEO of the V&A Waterfront, said, "A concept as fresh, exciting and innovative as Radisson Red will perfectly complement the existing hotel offering at the V&A Waterfront. I have no doubt that the proposed innovations of the concept will be incredibly well received by business and leisure travellers alike and make their hotel experience unlike any other."

This hotel straddles the 3 and 4 star segments. According to a Pam Golding Hospitality Hotel Market Overview, the 3-star market in Cape Town is the best performing, with an annual occupancy of 71,5% while the 4-star market remains the largest in terms of room nights sold. The 3-star sector has seen uninterrupted occupancy growth, with minimal supply entering the market in recent years.

While Cape Town is going into a period of intensive supply development, the number of rooms that would enter the market would still be marginally less than the supply that entered between 2007 and 2010, when almost all supply was positioned in the 5-star category.

The report concludes that with the additional supply, the market will enjoy almost uninterrupted demand growth, increasing to 71% in 2016.

Ideally positioned for the business traveller, the leisure traveller is not discounted. South Africa's tourism industry is expected to grow 3,4% this year, faster than the forecast 2% in the wider economy, according to

new research released recently by the World Travel and Tourism Council.

Nestled between the Zeitz Museum of Contemporary Art Africa (Zeitz MOCAA) and the office and housing developments that will comprise the Silo District, the Radisson Red will be tech and design savvy, relevant and pragmatic, and focus on creating an experience that is truly guest-centric.

The hotel's offerings will include flexible, functional guest rooms, paperless check-in, and 24/7 deli and bar, and will total 235 rooms.

Developed in partnership with dynamic international hotel group Carlson Rezidor, 'Radisson Red' is a new upscale lifestyle select brand in the group's portfolio, and is perfectly suited to Cape Town's most visited destination, the V&A Waterfront.

"With more than 24 million visitors annually, we believe the V&A Waterfront is an attractive prospect for this new hotel,"

said Wolfgang M. Neumann, president and CEO of Rezidor.

"We are delighted to announce the first Radisson Red in EMEA in a location as prominent as the V&A Waterfront – giving our new brand both local and global visibility, and being a perfect match with the brand's values: Radisson Red is inspired by the trends and lifestyle of the Millennium and is totally tapped into modern, high-octane and high-tech travellers", said Neumann.

Martin Kearns, development executive at the V&A Waterfront, said, "The hotel will add to the mixed-use appeal of the Silo District, and will offer convenient and accessible accommodation to not only the international business traveller, but locals alike."

The V&A is currently home to 6 five-star hotels, 2 four-star hotels and 2 three-star hotels. The Radisson Red will be the first new build since the One & Only in 2009. The newest of the Waterfront hotels is the Queen Victoria, the result of the refurbishment of an existing building in 2011.

Carlson Rezidor currently operates five hotels offering almost 800 rooms globally, all under the Radisson Blu, Radisson Red and Park Inn by Radisson brands. <



NEW HEAD OFFICE IN WAVERLEY OFFICE PARK

Sekela Xabiso has recently moved in to its new head office in Waverley Office Park, the first phase of which is now complete. The first two buildings in this office park consist of 5 000 m² of space across two buildings. Barrow Properties recently leased the bulk of Building 1 to auditing firm Sekela Xabiso with 1 500 m² still available for lease in the office park.

> Position remains one of the strongest factors for commercial properties especially in Johannesburg where quick and easy access to main arterial routes provides much needed relief from traffic congestion and time-consuming delays.

In line with this, Barrow Properties has developed a new office park – Waverley Office Park – where the recently completed building's glass façade has already become a recognisable landmark.

The excellent visibility and accessibility afforded by its prime location alongside the M1 highway with its close proximity to the Corlett Drive on and off-ramp has created significant interest in the development. It is placed directly opposite the well-known Melrose Arch precinct, albeit at far more attractive rental rates, while still having access to the business and lifestyle amenities afforded by this urban centre.

Looking at the style of the building architect Ivan Schlapobersky describes it as 'modern' and explains that the philosophy behind the

design was to maximise the view over the M1 towards Sandton, while also creating an energy efficient building.

"This proved quite a challenge but was achieved by creating a double glass façade on the west of the building facing the highway, with a space of 1 m between the facades.

"This had the effect of deflecting the heat of the sun while still capturing the view allowing the cars on the highway to appear as if they were dancing across the reflective outer glass façade."

He adds that both buildings within the development also make maximum use of the rooftops for entertainment with stunning views over Sandton. Facilities on the roof include lawn, braais and built in kitchens with a covered roof in Building 1 and a pergola in Building 2.

Construction is commencing on the second phase of the Waverley Office Park.

Two more buildings with highway frontage will be added to the office park providing an additional 5 500m² of rentable office space. These buildings are ideally suited to tenants



looking for 2 000 m² or 3 500 m² in stand-alone buildings. ■

About Barrow Group:

The Barrow Group comprises Barrow Construction and Barrow Properties. Barrow Properties is involved in the assembly, acquisition and development of land for commercial purposes. The main focus is on office development in and around Johannesburg. Completed buildings are generally made available for sale or lease. Barrow Construction is responsible for all the construction work on the projects but is also involved in contract work for third party clients and is active in the tender market. The group is family-owned and managed with the fifth generation currently at the helm.

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SET TO BECOME A CORPORATE REIT



James Templeton, CEO of Emira.

Emira Property Fund has announced details of its strategic conversion to an internally managed Corporate REIT, listed on the JSE. Emira is presently a Collective Investment Scheme in Property, which is alternatively known as a Property Unit Trust (PUT).

> James Templeton, CEO of Emira, explains that by converting to a Corporate REIT Emira will simplify and improve its structure, trigger greater shareholder rights for its investors, and gain added functionality for its business.

Templeton comments: "Emira will be the same business with the same strategy, management team, assets and prospects, but benefit from the foundation of a more streamlined, competitive structure that is better understood by investors worldwide."

Emira is invested in a quality diversified portfolio of office, retail and industrial properties. Its assets comprise 148 properties valued at R12,5-billion. Emira is also internationally diversified through its direct interest in ASX-listed Growthpoint Properties Australia (GOZ), valued over R700-million,

with total assets now at R13,5-billion. In September 2010, Emira effectively internalised its management company but, as a PUT REIT, needed to keep the legal entity of its external management company. In 2013 Emira was granted REIT status by the JSE and in 2014, after extensive consultation, the FSB issued a document laying out the process for a PUT REIT to convert to a Corporate REIT.

Now, by converting to a Corporate REIT, Emira will remove its external management structure permanently and move its simplified business into a new legal entity, called Emira Property Fund Limited (New Emira). New Emira will be listed on the JSE as a diversified Corporate REIT. As a Corporate REIT, New Emira will no longer report to the FSB, but to the JSE instead. ■

NEW TECHNOLOGY COMPANY

Atterbury and Attacq today announced the creation of a new technology company to drive its initiative to best understand consumer behaviour at shopping centres, by engaging with customers through multiple digital media.



The new company is called FATTi, coined by combining the words Wi-Fi and Atterbury, and is managed by Adrian Maguire.

FATTi has deployed a solution that enables site analytics, giving Atterbury and Attacq's retail property managers an all-round view of shopping centre performance and customer behaviour. This will help it create better shopping experiences, which means happier customers. The result: better enjoyed and better performing shopping malls.

Maguire says: "In simple terms, never before has it been so easy to connect with specific visitor groupings. Promotions can be targeted at specific audiences, grouped by age, gender, interest, location and even the times they visit a shopping centre. Essentially we are merging the best of retail shopping with the best of online shopping."

He adds: "We know that it's more important than ever for retail property professionals to be led by consumer changes. Fierce competition from Internet and other shopping channels, coupled with the increasing expectation for a memorable shopping experience, means that shopping centres need to do better to succeed. Those that monitor and respond to emerging customer patterns have the best chance of outperforming."

By forming FATTi, Atterbury and Attacq are poised to manage the changing environment in shopping centres.

FATTi's ground-breaking, cloud-based software, combines information from a wide range of sources, to provide Atterbury an unprecedented 360-degree view of Atterbury's business. It also gives a unique insight into untapped opportunities across any single shopping centre, and for Atterbury and Attacq's entire portfolio of retail properties.

Maguire adds: "By deploying this software or APP, with the necessary hardware through our centres, a broad range of metrics become available to our centre managers. With this, they can quickly calculate immediate priorities for attention, revealing previously unnoticed performance patterns and enabling sharper decisions."

This is a 100% custom-made solution for Atterbury and Attacq, developed by combining the talents of market leaders in different disciplines to create a single value proposition, which starts and ends with the customer.

The value proposition uses information from a mall's end-users, to create completely personalised solutions that deliver the right message to the right customer at the right time.

Combining the social benefits of the shopping environment and private digital channels, the bricks-and-mortar mall and its retailers, can now effortlessly interact with visitors and potential visitors within the mall catchment area.

Thanks to FATTi, customers at Atterbury and Attacq malls will be the ultimate

winners. These shopping centres include, among others, Newtown Junction, Garden Route Mall and Lynnwood Bridge Retail.

Retailers at its malls will benefit greatly too. Soon, all Atterbury and Attacq centres will offer retailers the power to unlock more meaningful omnichannel shopping experiences, by seamlessly merging mall and online retail together.

"By allowing visitors to register and download the mall application, Atterbury and Attacq can offer their tenants the true benefit and convenience of loyalty-based promotions, discount tokens, Mobile online payment for parking and access to world-class Wi-Fi.

"This is a typical package, but benefits can be varied for each shopping centre," notes Maguire. The APP is optimised for iPhone and Android, with Windows next in line.

Atterbury and Attacq will also see rewards, by ensuring every square metre of its retail space generates the maximum return on investment.

"Attracting visitor volumes simply isn't enough. With FATTi, we aim to encourage a steady flow of traffic around every area of any centre," tells Maguire.

The first mall where the FATTi solution went live was Newtown Junction in the Joburg CBD – in December 2014. FATTi is being piloted at Newtown Junction and the initial results have been good.

Maguire reports: "The next step is taking it to market systematically. We're looking at an aggressive roll-out that, at first, focuses on shopping centres larger than 25 000 m². Of course, FATTi offers value for all sizes of shopping centres and even mixed used developments, but the benefits of analytics are exponential for larger malls, so this is the best place to start." 



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Strategic planning and increasing capacity through a well-stocked and mobile fleet of crushing equipment have resulted in B&E International being awarded a number of crushing contracts for roads projects in the greater Free State region.

Dewald Janse van Rensburg, managing director, says that B&E International takes a very proactive stance with respect to servicing its customer base in the infrastructure market and this offers several major benefits to contractors in that sector.

Customising crushing and screening solutions

“Understanding customers’ business models and their operations are key to the success

of any company that provides product or services. Furthermore, it is our ability to customise crushing and screening solutions that underpins our business philosophy of customer centricity. This allows us to ensure that final crushed product meets the specific material requirements of each individual contract. Ultimately our solutions are aimed at increasing the efficiency and productivity of the operation and ensuring fit for purpose material for layerworks and surface material,” says Janse van Rensburg.

Extensive experience gained in supplying product for a diversity of infrastructural projects has allowed the company to amass



2.

a wealth of knowledge not only in basic crushing and screening, but additionally in the multitude of elements that come into play in individual applications and sites. This is evidenced in the choice of quarry sites, the selection of the correct materials and the layout and design of the crushing and screening plant.

Prior to the award of a specific roads contract, the company undertakes a comprehensive assessment of the region and locates source quarries in close proximity to the actual roadworks contracts from which it would be able to supply the material to the contractors. This philosophy translates into substantial savings for both the contractor and for the client due to the reduced haulage distance.

Janse van Rensburg explains that locating a source requires an immense effort and an understanding of a number of market

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factors. "Once possible locations are found, test drilling is undertaken at the quarry site. In some instances this could involve core drilling. It is essential that we test the material to ensure that is suitable and moreover that once it is crushed, it will meet the project specifications." All test results are independently verified to ensure that material is within the contractual requirements.

The environment

B&E International places great emphasis on environmental stewardship, so all source quarries are required to meet statutory regulations. The company employs the services of sister company, GreenMined to undertake all environmental studies, ensure regulatory compliance and secure mining permits. Such intensive up front planning and investment is a differentiator in the company's status as a reputable supplier to roadworks and infrastructure contractors.

Janse van Rensburg stresses that the fundamental objective when designing a plant is to provide a solution that will meet the required production output while complying with the environmental regulations in the sector in which it operates. "Furthermore it must not only be capable of operating at a competitive cost, but reliability should be a non-negotiable factor, since unplanned shutdowns are not only expensive but also negatively affect production output."

The advantage of mobility

Mobility is a major advantage in B&E International's offering. A large fleet of latest technology equipment which provides a large throughput capability and can be mobilised rapidly, allows the company to react quickly and efficiently to client demands.

"Our support infrastructure is now containerised and permanently mounted on trailers. This allows for rapid deployment and greater flexibility in terms of moving from site to site," Janse van Rensburg points out.

"By adopting a pre-emptive approach we have the ability and capability to provide the larger quantities required to service contracts. An example where this strategy has worked well is in the Free State region where we have been supplying aggregates to four different contracts since February 2014, with a scheduled completion date of June 2015 for the final supply," says Janse van Rensburg.

Free State projects

B&E International supplied one million tons of crushed material for the layerworks and surfacing material on a 30 kilometre stretch of the N8 close to Thaba-Nchu. The company is also currently supplying material to an adjacent contract at Sannaspos near Bloemfontein. To date B&E International has supplied 500 000 tons of layerworks and surface material on this 30 kilometre road contract.

"We also supplied 200 000 tons of material for a 12 kilometre double carriageway contract on the N8 between Bloemfontein and Kloofeind. We secured our own source for half the material and the balance was crushed at Raumix Aggregate's Petra Quarry," adds Janse van Rensburg.

The current Bloemfontein N1 Bypass

1. A complete solution from B&E International for the client in one package.
2. High capacity latest technology mobile crushing plant operated by B&E International.
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contract is a 32 kilometre dual carriageway. The material being supplied to this contract is extremely specialised, with an asphalt base.

The total contract supply will entail 230 000 tons of material which is split into four fractions. The contractor will mill a portion of the existing layer and this material will be recycled and mixed with the crushed material to form the new asphalt base.

B&E International boasts some of the most modern crushing and screening equipment in the market and produces road stone and quality concrete sand, base course, concrete aggregates, water bound Macadam, ballast and filter media. ◀



4.

NOOITGEDAGT WATER TREATMENT Works EXPANSION

The second phase of a multi-million rand water works operation has been launched, aimed at increasing the amount of clean water to the residents of Port Elizabeth, at a lower cost to ratepayers.

The development was announced today by AfriCoast Consulting Engineers, which took control of the impressive Nooitgedagt Water Treatment Works (WTW) site last month.

AfriCoast is the engineering consultancy appointed for the R126,4-million project which will double the clean water supply from the Nooitgedagt WTW to the Nelson Mandela Bay area by February 2017, effectively meeting the region's increasing demands for water.

Stuart Fergusson, acting director of water management and bulk supply for the Nelson Mandela Bay Municipality (NMBM), said the Nooitgedagt-Coega Low Level Scheme (NCLLS) was identified as the city's next available water augmentation project.

"The Metro's water demand is increasing at a rate in excess of three per cent per

annum. To satisfy this ever increasing water demand, the national Department of Water and Sanitation initiated a study to evaluate and prioritise all available water resources to the Algoa Bay region. The Nooitgedagt Coega Low Level Scheme was identified as the next water augmentation project available to the Metro," Fergusson explained.

"Construction of Phase Two of the Nooitgedagt WTW has commenced and will be followed by Phase Three and a further 45 Mℓ reservoir at Olifantskop."

The new extension includes the use of the cutting-edge filter technology and the use of ultra violet (UV) light for better quality and increased volumes of water supply to Nelson Mandela Bay, a water stressed area.

"The new system is more efficient than older false-floor and nozzle systems used in the past, allowing more water to be filtered over longer periods with less frequent back-washing and cleaning of the filters needed. This, in turn leads to operational cost savings for the metro and ratepayers," said Kevin McRae, executive manager for water and sanitation at AfriCoast Consulting Engineers.

The use of UV light as part of the disinfection process is also a first for the NMBM. "The decision to make use of UV was based on a number of factors, including better water quality and reduced consumption of chlorine gas. Chlorine will still be used for final disinfection."

According to McRae, UV light is 100% effective in destroying harmful organisms such as cryptosporidium and giardia species which can cause gastrointestinal tract infections.

"The presence of these has not been detected in the raw water supplied to Nooitgedagt WTW to date. But considering the distance raw water travels from the Gariep Dam to the treatment works and the increasing levels of pollution experienced in our rivers, the possibility of them being encountered in the future cannot be ruled out," said McRae.

The project will double the treatment capacity of the Nooitgedagt WTW from 70-mega litres per day (Mℓ/d) to 140 Mℓ/d and will also provide the new low-lift pump station to complete the NCLLS to Port Elizabeth – where construction was recently completed.

Once this extension is completed it will supply approximately 100 Mℓ/d through the Low Level Scheme, relieving pressure on the supply from the western dams system and reducing pumping costs.

The Low Level Scheme, which has a pumping height of 90 metres less than the existing High Level Scheme, will bring about an energy saving of some 18 000 kilowatt hours per day (kWh/day). In financial terms this equates to R1,32-million annually in electricity cost savings for the NMBM once completed. This is due to Low Level Scheme pumps using almost 20% less power than the High Level Scheme pumps.

The work is scheduled for completion in February 2017. The third phase, which is in the final design stage awaiting approval from the NMBM, will see the extension of Nooitgedagt WTW reach its full design capacity of 160 Mℓ/day, (210 Mℓ/d peak capacity) making it the largest water treatment works serving Port Elizabeth.

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Members of the project team (from left): Edzard Verseput (Nelson Mandela Bay Municipality – NMBM – project engineer), Stuart Fergusson (NMBM acting director of water management & bulk supply), Simon Atkins (Kaltron project engineer), Kiewiet Viljoen (Hidro-Tech project manager) and Kevin McRae (executive manager: water & sanitation at AfriCoast Consulting Engineers) who will manage the phase two expansion of the Nooitgedagt Water Treatments works for the Nelson Mandela Bay Municipality.



Project team members (from left): Tiaan Jonker (Ruwacon Quantity Surveyor), Johann Vos (Ruwacon contracts manager), Kevin McRae (executive manager: water & sanitation at AfriCoast Consulting Engineers) and Binks Marais (surveyor) on site where the expansion of the Nooitgedagt Water Treatment Works second phase will be built.

Fast facts

- Second phase of Nooitgedagt Water Treatment Works extension site handed over was in March 2015. The expansion will be completed in February 2017.
- The project is worth R126,4-million and is funded by the Nelson Mandela Bay Municipality.
- The project doubles the capacity of the Nooitgedagt Water Treatment Works to 140-million litres per day.
- Cutting edge, modern equipment is used.
- Ultra violet light is used as an integral part of the disinfection process.

UNIQUE GREEN WALL DESIGN

The Al Jalila Children's Specialty Hospital, an initiative of His Highness Shaikh Mohammed bin Rashid Al Maktoum, vice-president and prime minister of the UAE, and ruler of Dubai, is not only dedicated entirely to children but also designed by combining innovative aspects of design and construction with the healing process in mind.

> Says Al Maidoor, director-general of the Dubai Health Authority (DHA): "The hospital will be the first-of-its-kind facility, offering super-specialty and multi-spectrum pediatric care under one roof for the children of the UAE and the region."

Al Maidoor adds that of the total area, nearly half has been dedicated for gardens and for landscaping including a 'healing garden' with bright flowering shrubs, herbs and medicinal plants: "The use of natural light, greenery and healing landscape are aimed at offering a high level of indoor air quality, reducing noise and creating a pleasant environment.

The development will be highlighted by several energy saving initiatives including sustainable construction techniques to reduce energy use, including an active wall façade system to reduce ambient temperature inside the hospital, rooftop gardens that provide greater insulation and recycled water for irrigation purposes."

When Italian architects and engineers Studio Altieri International were looking for green building materials to use landscaping on hospital grounds, they came across Terraforce, a South African developed hollow core, plant friendly concrete retaining wall system.

Manufactured under license in the UAE and region by Consent LLC, the Terraforce system is akin to a living wall, the unique hollow-core design of the interlocking blocks allowing plants to become a part of the wall. By using water wise plants and a good irrigation system, a sustainable, yet durable green wall can be created.

On request by Studio Altieri, Consent proposed a design for a number of earth retaining and noise reduction issues on the expansive site.

This design is a unique variation for Terraforce, and was put together by Bryan Newby, a Namibian based specialist Terraforce installer, Simon Knutton, a Johannesburg based consulting engineer with extensive experience in designing Terraforce walls, and the input from the Terraforce head office in Cape Town.

Once the proposal was accepted, Al Aamal Construction Co. LLC was appointed as the sub-contractor, who, under the guidance of Newby, started with the installation in 2013.

Construction of the walls started with the placement of 1 800 x 1 000 x 300 precast foundations, 600 mm below the finished ground level, onto which Terraforce L16 blocks were installed – double skin and concrete filled – to the finished ground level.

Subsequently the blocks were placed double skin, soil filled and in the rock-face finish at an inclination of 80 degrees.

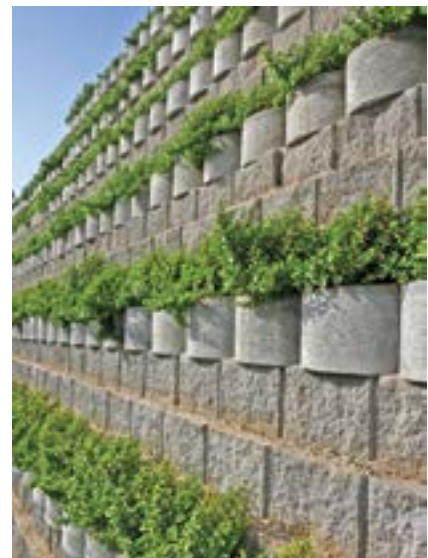
As the wall progressed, the innovative facade of this Terraforce wall design came into play, by reversing and moving forward slightly every third row of blocks, to provide a plant supportive pocket that could also accommodate an efficient, easy maintenance dripper irrigation system.

Out of these pockets, water-wise plants would eventually drape over the side of the block, softening the near vertical concrete surface with curtains of greenery.



Sinan Awad of Al Alamal Construction on site.

Water-wise plants drape over the block rows.



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A unique design: reversing, moving forward every 3rd row of blocks, providing plant supportive pockets.



Wall before planting of the block rows at the new Jalila Childrens Hospital, first of its kind in Dubai and the region.



SA'S LARGEST 'HOLISTIC HOUSING DEVELOPMENT'

Developers behind what aims to be South Africa's largest mixed-use residential development, the multi-billion rand Coega Ridge holistic housing estate between Motherwell and Coega outside Port Elizabeth, have announced strides in making the mammoth project a reality.

Nu-Way executive director Jordan Mann announced to government and private sector delegates at the Eastern Cape Construction Summit in Port Elizabeth at the end of March, that the project was on track to break ground in 2018 and had the backing of the Coega Development Corporation (CDC).

"This project will alleviate Nelson Mandela Bay's housing backlog of 87 000 units by almost half through the construction of 40 000 housing units," said Mann. "Not only will Coega Ridge help substantially dent the metro's housing shortage, but as the Coega IDZ attracts more and more top industries, we will build the housing they will need, as our project caters for all tenure groups."

Mann said up to 5 000 jobs per month would be created during the construction



Nu-Way executive director Jordan Mann (left) is flanked by Eastern Cape MEC for Finance, Economic Development, Environmental Affairs and Tourism, Sakhumzi Somyo, at the recent Eastern Cape Construction Summit.

phase, which was on track to start in 2018, and that the entire project had a capital expenditure value of R20-billion.

A new waste water treatment plant planned for the Coega IDZ, adjacent to Nu-Way's Coega Ridge development site, was a huge boost for housing project, he said.

"The sewer pipeline which will run from Coega to Motherwell will help unlock the greater Coega Ridge project," said Mann, who has been working closely with municipal and provincial stakeholders for several years to make the project a reality.

Earmarked for 3 200 hectares of land along the R335 to Addo, Nu-Way Housing Developments was in August last year given the green light by the provincial Department of Economic Development, Environmental Affairs and Tourism (DEDEAT) to proceed with town planning for the project.

Coega Ridge would also include community facilities in addition to schools, a university, a technical college, a hospital, neighbourhood shopping centres, and a regional shopping centre spanning up to 110 000 m², said Mann.

Project civil engineers Aurecon are confident that enough services are in

place to begin the first phase of the estate – about 5 000 housing units.

However, a bulk waste water treatment works in the IDZ would unlock the greater development, said Mann.

Award-winning housing expert, Lance del Monte, who is involved in the Coega Ridge planning, said the development would go a long way to addressing the city's housing backlog.

"This is a mega project which will certainly go a far way to addressing the backlog," said Del Monte, who has commenced with the conceptual stages of the project's town planning for Nu-Way.

According to Mann, town planning for the project could be completed by 2017, after which – pending approval from all relevant provincial and local stakeholders – ground on Phase One could break. The project would unfold over six to 10 years, he said.

At a national housing indaba in Johannesburg last October hosted by Human Settlements Minister Lindiwe Sisulu's, Nu-Way signed government's housing charter which maps out the plan to reduce South Africa's housing backlog of 2,3 million units. ■

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Says Holger Rust, Cape Town based founder of Terraforce, after he visited the site February 2015: "This must be the most efficient irrigation system ever. The exposed pipe is hidden by the plants (portulacaria afra) within three months.

Each plant has a dripper and water provision for each plant can be accurately controlled with a timer and wastage of the precious resource is reduced to a minimum. Further the system is extremely maintenance friendly and repairs are a breeze."

The walls reduce noise and create a pleasant environment.



As the wall increased in height, backfill was brought in, compacted to specification with reinforcing layers of high strength geo-grid every second course, to the final height of up to 8 m. Near the top of and mid-way of the walls, a non-woven geo-textile cut-off filter layer was installed.

Bryan Newby stayed on in Dubai for a few months, working with the team mostly at night to avoid the intense summer heat. Later Sinan Awad took over the supervision of the contract, which is still on-going. ◀



A pipe runs along each row, dripping water into each block.

Project information

- **Main contractor:** Al Futtaim Carillion
- **Architect:** Studio Altieri International
- **Consulting engineers:** Eng. Adnan Saffarini Office,
- **Subcontractor:** Al Alamal Construction LLC
- **Terraforce design engineer:** Knutton Consulting Engineers
- **Terraforce consultant:** Bryan Newby
- **Terraforce licensed UAE manufacturers:** Consent LLC

ACCESS AND SAFETY SYSTEMS

Two teams of expert rope access technicians from Skyriders have been contracted to install access and safety systems on large civil structures, in addition to providing standby rescue services.

Skyriders was commissioned in early-2015 by the appointed contractor, a large listed multi-disciplinary construction and engineering group. Skyriders marketing manager Mike Zinn notes that an eight-man team is responsible for establishing, inspecting and maintaining the access systems, while a four-man team will provide standby rescue for all personnel at the petrochemical plant over the next 14 months.

According to Zinn, Skyriders has been involved in similar projects at power stations nationwide, and this experience has helped the teams to overcome the challenges they now face with confidence. "The men are working in hazardous conditions accompanied by high winds and heavy rain from time to time. Given their past experiences, they are working flexible shifts to avoid any weather disruptions."

Zinn points out that rope access is a safer and more cost-effective alternative to the more traditional means of access in a number of applications, especially on tall structures at industrial sites, including; smoke stacks, cooling towers and boilers. "Rope access applies practical rope work to enable workers to access difficult-to-reach locations, without the use of costly and time-consuming alternative means."

Suspended in their secure position, Zinn states that rope access technicians are able to carry out numerous tasks relating to inspection, protective coating, maintenance and surveying. With regards to safety, he indicates the four-man Skyriders team is responsible for numerous rescue tasks in any application over 2 m above ground.

"Large construction projects like Kusile and Medupi for example have hundreds of workers operating high above ground on tall structures such as the cooling towers, boilers, inclined conveyors – which they gain access to via numerous means, including; cranes, cherry pickers, lifts and scaffolding. As a result, there is always the inherent risk of a fall or entrapment, or mechanical breakdown, and the highly-skilled and experienced Skyriders teams of rope access technicians are on call to rescue workers in the quickest, safest and least distressing manner possible," Zinn explains.

A rope access technician with Level 3 certification, the highest level of rope access training, forms part of the Skyriders rescue team. Obtaining Level 3 certification is a rigorous process that requires a minimum of 1 000 working hours to be logged at Level 2 before qualifying for training. This



Workers operating high above ground.

ensures that, in the event of an at-height emergency, the safety of all onsite workers is in more than capable hands.

Due to the large-scale nature of the project, Zinn says Skyriders is committed to providing the safest and most cost-effective method of accessing the work site, in the most non-intrusive manner for workers. "The project is going well and we look forward to undertaking similar jobs in the future," he concludes. ■

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MACLEAR BULK SANITATION UPGRADE TO START

Situated in the foothills of the Drakensberg, in the Eastern Cape, is the town of Maclear – famous for its wild trout, rock art, dinosaur footprints and spectacular scenery.

Of vital importance to the Joe Gqabi District Municipality in which Maclear falls, is the improvement and upgrade of the town's bulk sewer infrastructure.

"The upgrade to the town's sewage infrastructure will see it complying to the Department of Water Affairs (DWA) Green Drop standards for discharge quality effluent, preventing pollution into the nearby Mooi River, meeting existing and projected demand, and assisting with the elimination of bucket sanitation," explained project leader Victor de Wet of consulting engineers GIBB, charged with the design and supervision of the phased upgrade.

GIBB was appointed for Phases I and II of the project which involved the collector sewer

from Greenfields (Phase I) and the first phase of the construction of the Maclear Wastewater Treatment Works (WWTW).

The third phase which is scheduled to commence in June 2015 includes the construction of the WWTW, the construction of the main sewerage pump station and the closing down and rehabilitation of the old sewerage ponds.

"We applied all the latest design and system technologies at Maclear, taking cognisance of the availability of equipment and expertise in the area and services available from suppliers. In addition, GIBB provided operational and maintenance guidance, and the setting up of the process together with the training of operators for the Maclear WWTW and surround-

South African black-owned consulting engineering firm, GIBB, announced its partnership with the largest architectural firm in the country, SVA. The partnership will strengthen the skillset of both companies and grow its confidence in Africa.

With an impressive track record of delivery spanning over 70 years, SVA has successfully delivered over 1 000 architectural projects.

In partnership with SVA, GIBB will now be able to offer clients a full range of architectural services including Master Planning, Urban Design and Building Design.

ing plant operators in the area," said De Wet.

In detail, Phase III comprises completing and extending the capacity of the existing WWTW from 700 kl/day to its full capacity of 1 400 kl/day which involves construction of a second reactor and secondary settling tank, a chlorine contact tank and related mechanical and electrical work.

The proposed new bulk sewerage pump station (Maclear Town PS) will receive the entire town's wastewater together with the upgraded Fourie Street reticulation.

"Environmental assessments were carried out for future Phase IV and V projects, and the Maclear Town PS and temporary pump station will be located within DWA restricted areas. This raised concerns of providing river protection against pollution during spillage incidents.

"Additional rising main segments connecting to a steel pipe bridge crossing are also in sensitive river bank protection areas," said De Wet.

"The future Phase IV and V projects envisage full waterborne sewerage reticulation for the entire town of Maclear and its adjacent townships," he concluded.



Wastewater Treatment Works Reactor and Secondary Settling Tank.

COMPREHENSIVE RANGE SUPPLIED

DPI Plastics – a leading water reticulation, drainage pipe and fitting systems manufacturer has supplied a comprehensive range of Durodrain uPVC pipes valued at R4,4-million to the R16-million City of Matlosana sewerage upgrade project.

DPI Plastics was commissioned by the appointed contractor to supply over 4,3 km of the pipes in 560 mm, 500 mm, 400 mm and 160 mm diameters to the upgrade project in the town of Jouberton. DPI Plastics product manager Renier Snyman notes that the order for the 560 mm Durodrain pipes is to date the largest diameter locally manufactured sewerage pipe supplied to a project.

"The larger bore ensures that greater volumes of sewerage is conveyed in gravity sewers. This improves efficiency when compared to 500 mm sewer pipes, which was until recently the largest size available locally. I am confident that demand for larger bore sewerage pipes will continue, as they provide an excellent balance of durability, efficiency and affordability," he explains.

The pipeline was upgraded and expanded due to an increase in population in the area, and varying diameters were required to meet flow rate requirements. The supply project began April 2014, and was completed four months later, in line with specified budgets and deadlines.

DPI Plastics is also the only local manufacturer capable of producing

630 mm uPVC sewer pipes, thanks to its state-of-the-art Krauss Maffei extrusion line, which is capable of producing up to 22 tons of SANS-approved PVC piping products per day.

According to Snyman, PVC is more cost effective and boasts a longer life expectancy, compared to industry standard steel, concrete and HDPE, which are often prone to corrosion damage caused by methane and chemicals over time.

"PVC boasts a smooth inside wall, which results in a low friction coefficient, thereby ensuring resistance to algae growth, which is a common cause of blockage in sewerage systems. Integral joints with rubber seals result in effective sealing and resists root ingress," says Snyman.

Another major advantage of the Durodrain range is the fact that it employs 'Best Practice PVC' methods, which include pipes being manufactured in ISO 9001 accredited factories that minimise wastage by recycling materials; the responsible use of additives and stabilisers; and a reduced carbon footprint when compared to alternative materials and manufacturers.

Snyman adds that PVC is considerably lighter than steel or concrete. "This means that pipes can be transported more efficiently by truck, which reduces fuel consumption and improves turnaround times. The lightweight characteristics of the pipes also ensures that onsite installation times are dramatically improved," he concludes.



MINTEK LAB WILL HELP COMBAT DEADLY DISEASES

A new R13-million ISO 3 Cleanroom and BSL3 Laboratory was recently completed by consultants Royal HaskoningDHV for Mintek in Johannesburg. The facility will allow for the rapid development and production of diagnostic devices that are capable of diagnosing illnesses such as malaria in its early stages. Early diagnosis and subsequent treatment is a crucial life saver for those afflicted and is a major step forward in disease control for the country.

Walter van der Linde, project manager and mechanical engineer in Royal HaskoningDHV's specialised cleanrooms division explained that there are very few design specialists in the country capable of meeting the exacting specifications required for BSL 3 graded laboratories and ISO 3 cleanrooms in South Africa – Royal HaskoningDHV being one of them. "The contract involved the design and site supervision of an ISO 3 Cleanroom, a BSL 3 Laboratory and manufacturing lab for rapid diagnostic devices including all mechanical, electrical, lab layout and structural services.

"The electrical services included the lighting, electrical reticulation to support the mechanical equipment, the switched socket outlets and power supply to the general lab equipment. Various services are supported by UPS and generator power," he explained.

The mechanical services included the Environmental Control System, the UDAFs (Uni-directional Airflow), Autoclave, the effluent system, the fumigation pass-through hatch, wet and gas services and the bio-safety cabinets.

"The cleanrooms team was also responsible for the lab layout and specifying the partitioning type and the shell of the clean rooms and bio safety laboratory. Input from our structural engineers was required to design the platforms which supported the Air Handling Unit (AHU), Safe Change Filter Housing and the Exhaust Fans," he added.

Energy efficiency and sustainability were uppermost in our designer's mind and features incorporated in the Mintek design include:

- Chillers with a high coefficient of performance.
- The smallest required amount of fresh air is introduced to the AHUs in order to pressurise the laboratories while meeting the National Building Regulations.
- The laboratories are sealed to ensure that there are no unintentional conditioned air leaks.
- Insulated Chromadek panelling serves as the partitioning and walls of the laboratories.

"The specialised nature of cleanroom design means that within an existing facility, there are bound to be challenges to overcome and the Mintek installation was no different in this regard," said Van der Linde. "The available plant space was limited to start with and this was a challenging issue which we resolved with the help of our structural engineers who designed the two platforms." ■



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New head office receives two **FIVE STAR RATINGS**

WSP | Parsons Brinckerhoff in Africa, one of the largest multi-disciplinary engineering consultancies on the continent, recently announced that the new Group Five head office has achieved both a Design and As Built 5 Star Green Star rating from the Green Building Council of South Africa (GBCSA). The building, located at Waterfall Estate in Midrand and developed by ATTACQ, received the award in recognition of the environmental sustainability of the building.

Project background

The project came about after Group Five made the strategic decision to consolidate all its offices into a new head office and approached WSP to be their sustainable design and building consultants. Alison Groves, sustainability consultant, WSP | Parsons Brinckerhoff, Building Services, Africa, says, "As the sustainable design consultants for this project, we were involved with, and oversaw, all crucial elements of the project related to the sustainability of the building. From the schematic design stage, right through the construction phase, to the comprehensive reporting and hand-over, we helped Group Five to ensure that the building reflects the company's commitment to environmental sustainability."

Construction of Group Five's new 24 000 m² head office started in October 2012. The building was awarded a 5 Star Green Star SA Design certification in 2013 under the GBCSA's Office v1 Rating Tool. Once construction was completed a comprehensive assessment was undertaken, and in February the building was then awarded a 5 Star Green Star As Built Certification under the Office v1 Rating Tool of the GBCSA.

Indoor environment quality

The primary role of a sustainable building is to provide a comfortable and healthy environment for the occupants of and visitors to the building. To that end the building has been designed to achieve a minimum 150% improvement on required fresh air rates and to ensure good quality air for all office usable areas. In addition, CO₂ sensors provide constant air quality readings to the Building Management System (BMS) which will automatically adjust fresh air rates should CO₂ levels rise. Additionally, the building has been designed to combat daylight glare, while 80% of the office's usable areas have access to an outside view. Internal air quality is preserved by the use of low volatile organic

compounds paints, carpets, and sealants, and dedicated tenant exhaust risers extract printer fumes at the source, reducing the build-up of harmful indoor pollutants.

Energy and water ecology

"It is important that energy savings are achieved without inconveniencing building users or relying on individuals to take responsibility for energy saving. Occupancy sensors are one example of how automation can realise significant energy savings in a building. Energy meters are extensively used to monitor energy use and identify unusual or excessive consumption. This is an important mechanism to manage the building, and optimise operating schedules. Group Five also took the decision to install ammonia chillers which operate at higher levels of efficiency to conventional chillers. Additionally, a thermal storage system has been provided to reduce peak energy demand on the national power grid," says Groves.

In terms of water, low flow rate fixtures and fittings were installed throughout the building. These fittings restrict flow, but do not impact on comfort and utility. Further water savings are achieved by capturing rainwater for reuse in irrigation and sanitation. Water meters have been installed throughout the building which continually monitor all major water usages and aid in early detection of water leaks. The project elected to use air cooled heat rejection for the ammonia chillers, removing a huge water burden from the operation of the building and ensuring air conditioning resilience in a potentially water stressed future.

"The site is positioned adjacent to the Juksei River. It was vitally important that the project didn't increase the runoff rate into the river, and to ensure the quality of stormwater leaving the site is free from pollutants. To this end, the landscape and stormwater management systems were designed to work together. Two large attenuation dams were built to reduce and infiltrate storm-



L13, L18, L22



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L11, L12, L15, L16

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Alison Groves,
sustainability consultant,
WSP | Parsons
Brinckerhoff, Building
Services, Africa.

water. The dams themselves form important features in the landscape and provide a habitat for wild life and birds,” says Groves. “The bulk of the landscape has used indigenous plants that are well suited to survival without irrigation. These plants are more resilient to local pests and as a result require fewer insecticides and artificial fertilisers in order to thrive. Additionally, the gardens planted between the wings of the building use drip irrigation and are regulated by soil moisture sensors, where these areas also predominately use rainwater for irrigation.”

Transport

The project provided the minimum parking bays as required by the local authority. In addition, five percent of these bays are designed for motorbike parking and a further five percent are reserved for fuel efficient vehicles. The Waterfall Estate has numerous bicycle routes and is designing the precinct with ‘complete roads’. Bicycle storage facilities are provided, as are showers and lockers. As attitudes to bicycle commuting change, Group Five will have the facilities in place that will allow building users to make that choice more easily.

“The site is currently served by the Sunninghill Gautrain bus and we anticipate that, as development increases in the vicinity, the public transport offering will also improve. This will continue to create access to alternative means of transport for the building’s occupants,” adds Groves.

WSP also worked closely with the project team to ensure the materials used at this site were in line with sustainability requirements – and that overall the greenhouse gas emissions associated with the operational phase of the Group Five Head Office were reduced as far as possible. The team worked closely with Group Five in the 12 month handover period, which included monthly monitoring, quarterly reporting and a full re-commissioning at the end of the project.

“As a construction company, Group Five sought to be on the forefront of sustainable design – bringing best practice initiatives into their very own building. The building is a great example of what can be achieved when partners who share a passion for sustainable design meet,” concludes Groves. <

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SA's greenest RESIDENCE

Using Innovative Building Technology and optimal architectural design, Stellenbosch University's new 208-bed student residence, which is currently under construction, will help address the major accommodation shortage at the university.

> The R43-million Tygerberg campus residence, which is being built by student accommodation group, STAG African, will make use of Light Steel Frame Building and incorporate energy-saving features such as LED lighting and heat pumps, which will use 50% less electricity than a standard building. The residence, which is due for completion in November 2015, has set its sights on being the greenest residence in Africa.

"Sustainability and innovation are at the forefront of our green agenda; more than being a key focus for the university, our students expect it," Pieter Kloppers, the director of student communities at the

University of Stellenbosch said. "Based on the success of Ubuntu House, our first green residence developed by STAG African, we look forward to the completion of the new residence, which will go a long way in addressing the accommodation shortage at our Tygerberg medical campus."

By focusing on the student themselves, STAG African have pioneered a cost effective, green alternative to building. "We wanted an optimal architectural design that ensured every square metre of the building was designed specifically for the needs of the student," John Schooling, MD of STAG African said.

While campuses are expanding, taking on more students and adding new departments, the one area of university life that is lagging is the issue of student accommodation. "The cost of student accommodation is very expensive; the national norm is around R280 000 per bed – for a lot of universities, that's unaffordable. We looked around for a building method that we could apply to the South African context and discovered a substantially cheaper solution to bricks and mortar; something that is much better," Schooling said.

Used to build the Eiffel Tower, the Empire State Building and the old and new



World Trade Centres, Innovative Building Technology has been widely used in many developed countries. Not only does it reduce carbon footprint, it also dramatically reduces the cost and time taken to construct buildings. "Using this technology, we can reduce building time by 40% and the costs associated to it dramatically. For universities, where cost ultimately is the deciding factor, it's an obvious choice. By default, it addresses the student's need for a green living environment," Schooling said.

"Accommodation for students is more than providing a place to sleep; it's about creating communities; a listening, learning and living environment. This is crucial to the success of the housing facilities provided by the university," Kloppers said. "Student housing, over and above providing a place to sleep, creates a sense of belonging; for many, it's where real integration and camaraderie takes place – its importance cannot not be underestimated." <

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CMA AWARDS FOR EXCELLENCE 2016 ANNOUNCED

The Concrete Manufacturers Association NPC (CMA) has announced that its Awards for Excellence competition will be run during 2015/16. PPC, the leading supplier of cement in Southern Africa, is the anchor sponsor of the competition.

- Aesthetics Residential (Private Single Dwellings)
- Community Upliftment
- Technical Excellence
- Innovation
- Precast for Life

Entries will be judged on the contribution precast concrete elements make in one or more of the competition categories, i.e. the same project could be entered into more than one category. For example, a township paving project could contest several if not all six categories.

Six floating trophies will be presented to the manufacturers of the precast concrete elements in the nominated categories. In addition, commendation awards will be made to three runners-up per category providing these entries meet the standards of the judges.

Entry leaflets, which cover the rules of the competition, and entry forms can be downloaded off www.cma.org.za.

Trophies and commendation awards will be presented at a gala dinner ceremony which will take place at Summerplace in Johannesburg, on 23 April 2016.

According to Echo Group managing director, Monique Eggebeen, who chairs the CMA's Awards committee, the essential purpose of the awards is to recognise excellence in the use of precast concrete and to honour those professionally associated with its diverse applications.

"This is the pinnacle event in the precast concrete construction calendar and it presents an outstanding opportunity for CMA members, both large and small, to showcase their products and to establish themselves as trendsetters in the use of precast concrete," says Eggebeen.

The competition is open to all providing the precast products entered for the competition were made by a CMA member. Entries must be submitted by no later than 16 October 2015.

There are six award categories in this year's competition:

- Aesthetics Commercial



Winners of the CMA's 2012 Awards for Excellence completion.



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BUILT to SERVE the community

The heart of Warwick Junction is beating with new life in the form of the recently constructed community building, Denis Hurley Centre.

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➤ Replacing the demolished 106-year-old parish centre which sits adjacent to the Emmanuel Cathedral, the new community centre is named after the former archbishop of Durban, Denis Hurley, who actively spoke out against the atrocities of apartheid for five decades. Hurley believed a church should be a 'community serving humanity' and this centre will allow for his work to continue.

Gonzalo Prieto of Ruben Reddy Architects said the aim was to make the multi-faith establishment as energy efficient as possible to cut down on future costs.

Tight budget

"We had a tight budget so we needed to make practical use of the materials and not rely on the finishes. We decided that face brick would be the right choice."

Prieto said they opted for Corobrik's range, selecting 65 000 silvergrey travertine FBX face bricks, 50 000 non-face plaster and 20 000 non-face extra bricks.

Given Durban's summer heat, Corobrik sales manager, Pat Moon, said the silvergrey travertine was the perfect choice.

"The light colour of the face brick has reflective properties which will minimise heat retention within the building," said Moon. "Being colourfast with excellent resilience the face bricks will well withstand the elements so there will be very little maintenance later on. It is a great cost-saving choice, particularly for a community centre, such as this, where funds will go towards the upliftment of those visiting the centre,

rather than the upkeep of this magnificent building." Moon said the clay bricks also have a natural propensity to absorb and release humidity from the atmosphere on Durban's typical summer days. It is this attribute that helps keep indoor humidity at the 40%-60% level necessary for supporting healthy living.

An architectural perspective

Architect, Prieto, echoed Moon's views, saying the travertine fitted in with all the ideals of resistance and low maintenance.

"We wanted a contemporary look but didn't want to go for the traditional brick colours of red and orange, so we opted for the silvergrey travertine."

Initially the plan was to have no air conditioning throughout the building, relying rather on natural ventilation, however it was eventually decided the bigger multi-purpose rooms would need air conditioning in summer. To maximise on natural light yet reduce radiant heat so as to not direct too much of the budget towards glass, Prieto said long, narrow windows which were deeply recessed provided light while protecting the inside from the sun.

The triangular site proved challenging initially but Prieto decided to use this to their advantage, giving the building character and personality. "We introduced an atrium which resolved a number of issues. Firstly it introduces light into all the public spaces so there is no need for artificial lighting. We avoided the need for corridors, the only one being on the ground floor, so all the public spaces are interlinked and it feels much more spacious than it actually is. Secondly, it ventilates the building and, with the windows open it creates a draft."

The atrium cools the building using an extract system which creates a negative flow of air out of the building, drawing the hot air from each level.

Sustainability

Greg Hayhoe, contracts manager for GVK Siya Zama Building Contractors, further explained that the tinted glazing on the

windows also has heat abating properties while letting in light.

Commenting on the building's sustainability, Hayhoe said, "The finishes within the building are also minimalistic to save on costs and maintenance. These include polished concrete floors, off shutter ceilings and the third floor ceilings have acoustic and insulating properties.

"The roof is chromadeck sheeting on a 100 mm thick factorylite insulation which provides optimum insulation."

In accordance with the municipality's stipulations, water tanks and a pump were built in the basement for the sprinkler system. The heat pump provides hot water for the showers however all the ablutions use only cold water.

Originally the plan was to renovate the old parish centre, but it was so rundown that it wasn't financially viable.

Hayhoe explained, "The building was an AMAFA heritage site but, unfortunately, very little of the existing building or materials were worth recycling because of the state of disrepair."

However, he explained that they did manage to salvage some components of the former centre which have been incorporated into the new centre. These include handrails from the staircase, decorative cast iron air grilles and 500 bricks which have been recycled to build the counter in the café.

Whereas the old centre had three floors, the Denis Hurley Centre has four floors catering for the three social programmes which assist the sick, hungry and homeless.

The ground floor has a room for the feeding scheme where people are given a meal and can shower. This leads into the clinic where screening and first aid is administered and finally a room for the refugee programme.

The centre also houses a library, with information on the history of South Africa, a prayer room, caretaker's apartment and a number of multipurpose rooms. ◀

COPING WITH UNDERGROUND WATER

Gauteng Piling provided the foundation auger piles for the latest extension to the Cresta Shopping Centre on the border of Northcliff and Cresta in Johannesburg.

> Auger piles are deep foundation elements that are cast-in-place using flights of various diameters. The process is carried out by auger drills that excavate the piling holes drilled into the soil to pre-designed depths. After reaching the required depths, the auger hole is cleaned, and concrete is placed into the hole from a ready mix truck. Reinforcing steel is then lowered into the wet concrete. The technique is globally popular and used to support a wide spectrum of structures, from towering buildings, tanks, towers and bridges.

Martin Eygelaar, contracts manager of MBA North member, Gauteng Piling, said the Cresta contract called for 113 auger piles, ranging from 250 mm to 1 050 mm in diameter, and depths that varied from 6 to 7,5 metres. Gauteng Piling employed a Williams LDH digger with 5 m 5 t-m torque; and a Soilmec RTAH hydraulic drilling rig.

A high level of underground moisture, discovered after the piling operations had penetrated the first layer of rock, posed an unexpected challenge for Gauteng Piling at Cresta. "This meant we had to revert to the 'drill-and-cast' piling method which substantially speeds up routine auger piling operations to cope with the fact that the pile bore cannot be sealed against water ingress. For our 'drill-and-cast' operations, a concrete truck was on standby right next to the drill rig. When the flight had reached the required depth, the operator immediately lifted the extracted soil to the surface, and concrete was then hastily cast – within seconds, in fact – to prevent water ingress and the piles from collapsing," Eygelaar explained.

The main contractor for the Cresta extensions is the NMC Group, a



Gauteng Piling pictured in action providing the foundations for extensions to the Cresta Shopping Centre.

company which has employed Gauteng Piling's foundation services for various other contracts in the past, including the Peglerae Hospital in Rustenburg, and the extensions to the East Rand Mall in Boksburg, which NMC is currently constructing.

The piling company also provided foundations for previous extensions to the Cresta shopping complex. <

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Metolong's innovative

CEMENT and **FLY ASH****Project background**

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

The region has historically suffered from water shortages and the scheme will improve water delivery to domestic users and the country's textile industry, an important source of employment.

Metolong Dam is a 83 m high roller compacted concrete (RCC) dam with a design crest length of 280 m, constructed on the Phuthiatsana River, approximately 35 km from Maseru. Contractor, Sinohydro, established an on-site batch facility to provide the estimated requirement of 330 000 m³ of RCC and 40 000 m³ of conventional vibrated concrete (CVC). The Beijing based contractor is a global top-ranking construction and hydropower group that is involved in a range of projects on the African continent, and has worked on major international projects such as China's Three Gorges Dam, the world's largest dam.

Fly ash

Ash Resources, Lafarge South Africa's leading fly ash company, had established a relationship with Sinohydro three years previously on a project in Zambia and were also supplying fly ash for other sections of the MDWSP. This facilitated the initial introduction of Lafarge South Africa to Sinohydro as a major, technically sophisticated company that could supply all of the contractor's requirements for cement and fly ash. It was both commercially and practically of interest to Sinohydro and was in line with the recently introduced 'One Lafarge' approach to major infrastructure developments, aimed at ensuring customers receive the optimum all-round benefits from the company's resources. It further reflects Lafarge South Africa's policy of building long term relationships by delivering true value.

In South Africa, cement for water infrastructure projects is traditionally dominated by CEM I products. Engineers and contractors are cautious about changing established practice, whereas Lafarge SA had phased out CEM I cements and, some years earlier, had developed a complete range of innovative fly ash extended products. The challenge that the company faced was to

convince the project team of the merits of its CEM II product.

Technical innovation

Realising that Heat of Hydration would be a significant concern, Lafarge SA proposed their premium technical cement, Powercrete Plus CEM II 42,5R. This formulation is a Low Heat cement and also has the capability of being extended further on site with additional fly ash. The engineers and the contractor were not familiar with this versatile, high performance product. It took a two-year determined selling campaign, with strong technical support from Lafarge SA's highly regarded accredited civil engineering testing facility, Quality Department Southern Africa (QDSA), to achieve a change in the technical mindset and the commercial breakthrough. A significant selling point was the same quality and source of fly ash being incorporated in the cement as would be used for on-site concrete batching.

The role of QDSA

Arising from discussions with the consultants and main contractor Sinohydro, QDSA was requested to conduct laboratory evaluations of the RCC (Roller Compacted Concrete) mix and the CVC (Conventional Vibrated Concrete) mix. The outcome was that based on QDSA's recommendation, Powercrete Plus premium technical cement and DuraPozz® classified siliceous fly ash from Ash Resources' Lethabo facility were used as binder material, with the RCC mix containing 66% and the CVC mix (grade 25/38) 52% fly ash respectively.

Trials using the CEM II Powercrete Plus achieved similar results to those obtained during a trial mix programme by the consultants using a type CEM I product. This impressed both the consultants and the contractor, whose previous experience did not include RCC dams constructed using a CEM II cement. A significant factor in favour of Powercrete Plus was that it is a Low Heat Cement with a typical Heat of Hydration

Project information

- **Client:** Sinohydro
- **Project start date:** 2012
- **Project end date:** End of 2014
- **Main contractor:** Sinohydro
- **Principal agent:** Metolong Authority
- **Consulting engineer:** Arcus GIBB

value of 227 J/g, compared with the EN 197-1 criterion of < 270 J/g at 41 h.

Throughout the dam's construction, QDSA has continued to provide technical support. Its laboratory is equipped to undertake Heat of Hydration testing in accordance with EN 196-9, and Lafarge's cement team supplies the consultants with Heat of Hydration results, together with Powercrete Plus batch chemical analyses on a monthly basis. This gives the client the security of confirmed consistent levels of fly ash extension in the product.

Cement performance

Lafarge's Powercrete Plus has performed exceptionally well, exceeding the contractor's expectations. The consistent quality of the product and its good strength performance has enabled the contractor to systematically reduce the cement content of some of the mixes from the initial design levels.

Quality fly ash extending concrete performance

The use of Ash Resources' classified fly ash, DuraPozz®, has become virtually a standard component of concrete for controlling the heat of hydration in major water retaining structures. This is now especially the case since DuraPozz® complies with the new and more stringent SANS 50450 specification for category 'S' fly ashes. The consistent

It was both commercially and practically of interest to Sinohydro and was in line with the recently introduced 'One Lafarge' approach to major infrastructure developments, aimed at ensuring customers receive the optimum all-round benefits from the company's resources.



Project highlights

In its building material supply performance for the construction of Metolong Dam, Lafarge South Africa has clearly demonstrated the meaning of the Lafarge Group's brand signature *Building better cities*. The company's 'One Lafarge' true partnership approach with the main contractor has technically, commercially and logistically contributed innovative solutions to help the construction of a project rather than merely being a commodity building material supplier. The project will uplift a key economic area around the capital city of Lesotho.

The longer term impact is that Lafarge has achieved a significant technical breakthrough in the choice of cement for RCC dam construction in Southern Africa. Its innovative CEM II Powercrete Plus cement offers:

- Strength performance on a par with traditional CEM I products.
- Reduced heat of hydration.
- Better workability.
- Versatility on site through being able to be blended further with fly ash to meet project requirements for a cost-effective variety of mixes.
- Better flowability of CVC mixes over long distances from a fixed on site batch plant.
- Creates concrete with essentially the same matrix as with a CEM I cement but is denser, more durable and impermeable.



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high quality product is not only a significant contributor to lower temperatures but the peak temperatures also occur at a later age.

In addition to controlling heat of hydration, incorporating DuraPozz® produces highly effective mix designs that enhance the ultimate strength and durability properties of concrete, while also aiding construction with the improved workability and 'flowability' of the mixes.

Delivery capability

Lafarge South Africa's extensive production facility footprint (five fly ash plants and three cement plants), means that it is in the unique position of being able to guarantee supply of large quantities of consistent high quality cement and fly ash for major projects.

In addition, the company's logistics teams have a proud track record for ensuring product is always available on a customer's project site no matter what delivery challenges may be encountered.

In complying with the contractor's requirement of an eight day estimated usage stock on site, the project has not once run short of cement or fly ash. The excellent performance of the Lafarge production plants has meant that it has not been necessary to make use of any backup production facilities.

The abnormal rainy season in early 2014 had a significant impact on the Metolong Dam construction programme, which has contributed to pushing back the anticipated completion time from the second quarter to the last quarter of 2014 (the contract time was also extended by the total amount of

concrete needing to be placed increasing from the estimates at the start of the contract). Delivering to the Metolong project site had its own challenges: in addition to coping with border crossing delays, the final 18 km section of dirt road was frequently flooded and damaged by the rains.

Apart from this, the nature of dam construction leads to considerable variance in building material usage – when the conditions were right, the contractor did major non-stop pours and the consumption of cementitious materials increased dramatically. The contractor is extremely complimentary about the success of Lafarge South Africa in overcoming these delivery challenges.

Environment impact

Ash Resources' environmentally-friendly fly ash plays two important 'green engineering' roles. It is a key ingredient in Lafarge South Africa's range of lower carbon footprint cement products, and it has a direct role on site for further extension of the Powercrete Plus cement:

- Recycling a material that was originally considered a waste product of the Eskom coal-fired power stations, as a value-added cementitious building material.
- Reducing process and energy input carbon dioxide (CO₂) emissions. Each ton of fly ash used in cement and concrete saves approximately 1 ton of CO₂ emissions and reduces dependence on non-renewable raw materials. (During the last 12 years, the use of Ash

Resources' fly ash by the local cement, readymix and construction industries, has saved South Africa in excess of 17,5 million tons of greenhouse gas emissions).

- Reducing the consumption of non-renewable natural resources.
- Reducing the size of power station landfill sites.
- Improving concrete durability, prolonging the life cycle of concrete structures.

Health and safety

Safety is a non-negotiable number one priority at Lafarge South Africa and includes contractors working on the company's sites as well as transport contractors. Contractor drivers have embraced the Lafarge safety training, as well as the rigorous procedures for checking the road worthiness of road tankers before they are allowed to be filled at the supplying plant.

Lafarge South Africa strives to create a partnership with transporters in the drive for excellence in safety performance. In this way, the company is viewed as a trusted advisor on safety procedures rather than being viewed as merely a commodity supplier. The drivers' safe working behaviour also makes them an ambassador for the Lafarge brand.

Ash Resources has supplied the Metolong Dam project for the last two years without a Lost-Time Injury at its Lethabo production plant or to its transport contractors. Similarly, Lafarge Lichtenburg Cement Works, in the North West Province, has supplied Powercrete Plus without a Lost Time Injury on the plant or to its transport contractors. <



Stewardship for our **LIVING PLANET INDEX**

Every single engineering activity contributes to the measurement of the earth's Living Planet Index. We should be asking ourselves how well does our scorecard tally and does it demonstrate a constant, conscious effort of stewardship of our natural resources? Is our design, choice of materials and the maintenance of the structures, which intervene in the landscape, for mankind's benefit the best we can do?

A summary of some comments by Mathis Wacker and Andre Schneider (Global footprint network & Global advisory SA) which can be applied to the engineers' strategic decision-making framework.

- There is a strong competitive advantage to be gained by business if they manage the ecological risks and opportunities.
- A business can establish the benchmarks, set qualitative targets and evaluate alternatives for future activities.
- A demonstration of such market foresight can set the direction for the industry and communicate strategic strength to be the leaders in specific sectors.

Engineering interventions: their maintenance and stewardship

The definition of maintenance is: the process of preserving a condition or situation or the state of being preserved.

The definition of stewardship is: an ethic that embodies the responsible planning and management of resources.

Both these activities of stewardship and maintenance of engineering interventions presupposes that the responsible person or team cares enough and will act appropriately. Can we make this idea more simple by suggesting that each of these activities is thought of as onerous, but need not be so if the actions to process is easy to understand and readily available.

An example that required little explanation and was easy to understand is the separation of waste according to the colour coded bins to separate paper from glass and biodegradable products. This has proved to be a global initiative to solve a waste management problem engineered in simplicity and an example of the application to good stewardship.

Businesses that apply ecological responsibility

There is a great opportunity for any business to choose an appropriate platform to declare its ecological responsibility and compliance within its particular industry.

Those companies who have started to accumulate credits after many years of commitment to ecological responsible engineering interventions and are set to continuously grow their historical register of sound stewardship. It takes active involvement and



Mechanically stabilised earth wall (MSEW), MacRes (Umgeni interchange, KZN).

a conscious decision to support good stewardship and the maintenance of engineering interventions. The reward to a business is the repeat business, the marketing position and proof of its sector leadership.

A simple aspect of stewardship is the observation and monitoring of performance

The first reason to monitor an engineering intervention is the demonstration of due care to the performance and ongoing satisfaction of the functionality for the client. When a project team embraces a sustainable ecological design and endeavour to be selective of the materials so as to reduce the carbon footprint, they will create a flagship status and demonstrate their laudable acclaim for stewardship.

The SECI group with its head office in Italy has joined the long list of international companies promoting a global ideal of ecological stewardship and encourages its subsidiary companies such as Maccaferri Africa, to respect the need for ecological stewardship in its offerings of engineering interventions.

It is required that they demonstrate active involvement into the stewardship of sectors that are sensitive to the road network, wetlands, river systems, mining sectors and marine environment. The choice of whether to propose a 'hard' but durable and longer life span engineering solution versus a more ecological, 'greener' solution with a sufficient lifespan, but which may be more susceptible to extreme environmental factors such as flooding and drought, challenges the engineering professional on this loyalty to stewardship.

A clear understanding of these two options encourages the engineers and specialists at Maccaferri Africa, to ensure all solutions and engineering interventions maximise the ecological benefits of materials proposed. Accordingly performance monitoring of many retaining structures in the mining, roads, airports and marine environments have been implemented and seek to develop a corporate attitude of responsible stewardship.

When will we be counted in, by our ecological correct decisions to solve industrial and private sector problems?

The answer is: When we can say that

> We are constantly being warned and reminded that the annual human demand on resources are exceeding what can be regenerated by the earth.

Because we are able to measure, can calculate the footprint and can assess what pressure this exerts on the planets ecological assets, engineering professionals are required to work with greater wisdom, take personal and collective action as a professional body that continues to prove they will be remembered as worthy stewards during their working life.

Hydraulic structures, gabions and mattresses (Hornlee, Western Cape).





Mechanically stabilised earth wall (MSEW), green Terramesh (Lamontville, KZN).



Mechanically stabilised earth wall (MSEW), Terramesh, Green Terramesh and Paraproducts (Hazyview slip repair on road D1043, Mpumalanga).

we have carefully measured and calculated the ecological impact of our choice of materials, applied this concept to our designs and prescribed methods to maintain our engineering interventions; gave easy to understand and executable instructions on how to maintain the functionality and protect its environmental impact from our intervention, instigated the process of keeping accurate records to monitor and understand the engineering interventions performance, rather than back analysing why the system or structure is failing in performance.

Perhaps then we can stand humbly to accept the honour of good stewardship. <

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GO!DURBAN moves ahead in 2015

The eThekweni Municipality’s GO!Durban Integrated Rapid Public Transport Network (IRPTN), possibly one of the largest service delivery projects in the transport sector ever undertaken in South Africa, “will continue to progress at a rapid pace in 2015,” says head of the eThekweni Transport Authority, Thami Manyathi.

GO!Durban began rolling out major milestones in 2014 which included the awarding of five major construction tenders, the signing of an MOA with the leadership of the mini-bus taxi industry, the unveiling of the project’s Empowerment Charter, the launch of the city’s NMT (Non-Motorised Transport Network), the consolidation of the cashless MUVO smartcard system, engagements with community stakeholders, businesses and the eThekweni citizens, as well as the launch of a mobile marketing bus and other key brand awareness events.

Construction of the dedicated lanes for buses commenced on the C3 corridor from Bridge City in KwaMashu to Pinetown, in various segments over the 24 km stretch of road which comprises a large portion of the provincial MR577. Construction also began on an underpass that will extend under the M25 (Curnick Ndlovu Highway) connecting the Bridge City Precinct to the Phoenix Industrial Area. This year, work will

be advanced on this route, and construction will commence on the Bridge City Depot and Terminal in KwaMashu. Construction will also begin on the stations with the first one being constructed in New Germany.

Memorandum of agreement

The signing of the Memorandum of Agreement with the minibus taxi leadership took place in February last year. Key taxi leadership agreed to the process and the manner in which the industry would be negotiating their participation in the new system. “This was not a signing of how they would be participating but how a mutually beneficial negotiation process would take place,” explains Manyathi. “We appointed technical advisors in November last year, to support the taxi industry in the negotiations going forward. As part of this process we have planned roadshows for industry stakeholders and these should begin soon. These roadshows will provide opportunities for them to engage with these advisors and give

input into their participation in the process of how they will negotiate their involvement. Furthermore we hope to sign an MOA with the bus operators soon, so that a similar process can be mapped out for them.

“Five major construction tenders were awarded in 2014, totalling R2,2-billion, R890-million of which was awarded to black owned companies. A further R367-million of the total amount has been allocated to enterprise development,” explains Manyathi. “Then in October we unveiled the unique GO!Durban Empowerment Charter, which is not a preferencing policy, nor an embellishment of the BEE regulations, but is a series of additional specifications added by the GO!Durban project to all contracts awarded on the project.

“This unveiling created an opportunity for various stakeholders to understand the empowerment of the project and how it is set up to support local communities and businesses through a share in the Equity, Skills Development, Enterprise Development and Corporate Social Investment or Socio-Economic Development. We also began a process of developing a skills database last year in each affected ward which will provide the city and the contractors with information pertaining to the skills available in the affected wards and employing from it.

The key success of this development made possible by execution of the Empowerment Charter is the employment of over 3 700 local labourers from the affected wards along this first corridor to date, and the capacity building that is taking place with various local SMME’s that are being used in the construction.

The cashless MUVO SmartCard which has been introduced into the City’s current public transport was consolidated in 2014 and is now fully operational with over 115 000 cards registered and issued to date. “This means by the time we are operational in 2016, many commuters will be familiar with the idea and the benefits of a cashless system,” says Manyathi.

Another milestone

Another important milestone that was reached in 2014 was the launch of the Non-Motorised Transport Network in August. Here the Mayor, James Nxumalo, revealed the plans for sidewalks, off-road paths, safe crossings, pedestrian bridges and cycle areas that will enable and encourage people to walk and cycle through the city.

The temporary Traffic Management Centre (TMC) based at the ETA will be completed this year to support the C3 operations when it becomes operational in 2016, and a contract for the construction of the

Construction of the dedicated Bus Rapid Transit lane on the MR577 (Provincial road) looking east from the bridge over the Umgeni River.





Construction of the dedicated Bus Rapid Transit lane on the MR577 (provincial road) through KwaDabeka.

new TMC in the Centrum site will be awarded in 2015. The TMC is essential for the running of GO!Durban but the development will also facilitate the growth of an essential Civic Square which will include the main city bus terminal, the new Central Library and other municipal service departments. This Civic Square will then link to the ICC, the Durban Exhibition Centre, the CBD, beachfront through walkways, cycle lanes and pedestrianised parts of the inner city area.

In an endeavour to consolidate the project and assist the public in understanding the complexities of this new system, GO!Durban will open an information centre which will act as a central hub for the business of delivering the actual project, attracting investors and partners and other developers to it. ❏



Construction on Josiah Gumede Avenue, Pinetown.

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ALL ROUND SUPPORT at Eteza

Lafarge South Africa is in a unique position to provide the construction industry with building materials and solutions through having a strong presence in all of its construction related business lines of cement, aggregates, ready-mixed concrete, fly ash and gypsum plasterboard.

> The company focuses strongly on the needs of its customers and their projects to develop innovative holistic product supply solutions. The approach is proving to be highly effective, offering customers peace of mind and better value in a competitive marketplace.

Lafarge South Africa is the local presence of the international Lafarge Group, a world leader in building materials. The Group's brand baseline *Building better cities* is founded on the huge global trend to urbanisation and reflects Lafarge's commitment to help create cities that are desirable, sustainable environments for all people. This means contributing to better solutions that meet the needs of communities for decent housing, hospitals, schools and offices, together with the associated infrastructure to connect and service cities, such as roads, airports, water and power utilities.

All round support at Eteza

A recent example of Lafarge South Africa's efficient integrated service was on the SANRAL contract to construct an overload control facility and full diamond interchange at Eteza on the N2 in KwaZulu-Natal. The main contractor was concerned about two main concrete issues. The driver of the project was their ability to place the Continuous Reinforced Concrete Pavement (CRCP) on time and within specification, when the closest commercial ready-mixed concrete plant was 45 km from the project site. The second concern was ameliorating the Heat of Hydration (HOH) in the extremely hot, humid conditions.

Lafarge's successful offer to supply all main building materials, concrete, cement, fly ash, and 165 000 t of road aggregates, as well as 4 500 t of the company's specialised cementitious roadbinder, RoadCem 32,5N, made it viable to provide a Lafarge mobile concrete batching plant on site. This enabled the required combined total of 13 000 m³ of CRCP mix and other Conventionally Vibrated Concrete (CVC) to be supplied without compromising the quality or integrity of the concrete.

The solution to assisting the contractor to control heat of hydration was the supply of 6 500 t of Lafarge's Powercrete Plus CEM II 42,5R premium technical cement. This unique product is not only a Low Heat Cement with a typical Heat of Hydration value of 227 J/g (compared with the EN 197-1 criterion of < 270 J/g at 41h), but it can also be extended further on site with fly ash to meet the various mix requirements.

Meeting a tight durability specification

Similar support was provided to the main contractor on the SANRAL contract to upgrade Section 14 of the N1 freeway between Trompsburg Interchange and Fonteintjie, a distance of 20,8 km. The site is some 120 km from the nearest fixed commercial ready-mixed concrete plant and this represented a potentially significant risk in terms of compliance with the tight durability specification.



Lafarge South Africa offers fully-integrated support for major infrastructure projects, including ready-mixed concrete, cement, aggregates, fly ash and on-site mobile batching plants. Current projects range from the N2 freeway upgrade at Eteza to the Lower Tugela bulk water scheme.

The solution from Lafarge South Africa was to position a mobile concrete batching plant optimally on site to service the major concrete pours and take on the durability risk. This was conditional on being awarded the full supply package of building materials. The successful outcome was the supply of 10 000 m³ CVC concrete, on-specification and on-time. This involved the supply 3 500 t of Lafarge Powercrete Plus 42,5R cement, 7 000 t of aggregates, 1 000 t of fly ash, as well as 8 000 t of cementitious roadbinder, RoadCem.

“Our construction contractor customers are appreciating the benefits of having their building materials supplied and managed from a single reliable source,” comments Lafarge South Africa’s, Mike Fisher, infrastructure road & rail development manager. “By matching the extensive capabilities of Lafarge South Africa with the needs of the specific construction project and the individual construction company, we achieve consistent quality and better value all round for the stakeholders.”



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Rescuing roads from **MOLE DAMAGE**

Since its initial development, Kaytech's innovative Mole Barrier product has helped to extend the life of many rehabilitated roads in the south western Cape which had been mole-damaged. Mole Barrier has also been specified for use on numerous newly constructed roads in the region and these have been successfully protected from mole infestation.

> The Cape Dune Mole Rat, endemic to South Africa and found only in the southern and south western regions of the country, is not actually a mole but a species of solitary burrowing rodent whose natural habitat is sandy shorelines and riverbanks that are dominated by grasslands and sedges.



The network of underground tunnels formed by this rodent leads to severe difficulties in road settlement and collapse and increases road maintenance costs in the Western Cape.

Upon inspection of various sites, engineers from the City of Cape Town Metropolitan Municipality (CoCT) have noticed the tell-tale signs of mole rat damage. These include uneven road surfaces, massive decompression spots resulting in pot-holes, cracks in the asphalt as well as the obvious mole-heaps.

To ensure the durability of the approved upgrades for these roads, consultants had no hesitation in specifying Kaytech's Mole Barrier as the most effective solution to the problem.

Mole Barrier, which consists of 2 mm thick, abrasion-resistant, flexible HDPE sheeting, is specifically manufactured for Kaytech to prevent the lateral burrowing of the Cape Dune Mole Rat and similar rodents. Supplied in 1 m x 20 m rolls, Mole Barrier sheets are installed vertically with a 100 mm overlap. It is a robust product and is puncture and tear-resistant; its smooth surface offers no purchase for the creature's powerful curved claws and long incisor teeth.

Over the last five years a number of road projects in the CoCT metropolitan area have been successfully armoured against the Mole rat using Mole Barrier. The layer works of the access road to Muizenberg's Coastal Park Landfill Site were severely damaged.

Consulting Engineers, Jeffares & Green, specified Mole Barrier and by the project's completion Requard Construction had installed 2 000 m of the sheeting into the new layerworks. Later that year 600 m of Mole Barrier (1 m x 1 m) were installed by Empower Roads when Imperial Road in Mitchell's Plain was upgraded.

As part of the Bus Rapid Transit (BRT) system, portions of Orumba Road and Racecourse Road in Milneron were widened to accommodate the new bus lanes. Since the Cape Dune Mole Rat can easily damage newly constructed layerworks, the presence of numerous mole-heaps in the area suggested to HHO's design engineers that these new lanes were also at risk. As protection, 2 000 m of Mole Barrier were installed by contractor, Exeo Kholeka.

In a very large project undertaken by Kaulani Civils, 5 900 linear metres of Mole Barrier were installed along the 7 km long Botfontein Road in Kraaifontein during its rehabilitation. The proximity of farms to the road suggests there are colonies of moles present along the road. The contractor was impressed with the ease of installation of Mole Barrier and was able to complete between 700 m and 800 m per week.

Also in the Kraaifontein area is the new Scottsdene Housing Development. After design engineers from Bigen in Johannesburg, had initially specified concrete barriers to prevent mole infestation of the new roads, Kaytech suggested using Mole Barrier, demonstrating its ease of installation and cost effectiveness.

This resulted in West Coast Civils and Brink & Heath, in a joint venture, installing over 5 000 linear metres of Mole Barrier. A Kaytech representative will visit Scottsdene in the foreseeable future to check that no mole damage has occurred since installation.

More recently, Road Smart Asphaltting has installed 600 linear metres of Mole Barrier along Bonteheuwel's Netreg Road, as well as Empower Asphaltting which did 600 linear metres along the widened road network of the Soetwater Camp Site near Kommetjie. No installation problems were experienced in either of these projects.

Undoubtedly the definitive solution for this specific problem Kaytech's unique Mole Barrier has been approved by the City of Cape Town's Roads Department, to the extent that it is now found in their annual tender documents. Mole Barrier has saved the City of Cape Town from otherwise expensive and extensive road rehabilitation work. <

The simple installation of mole barrier and the mole barrier in position.

CONCRETE FOR EAST RAND BUS LANES

Concrete is the preferred material for the new concrete bus lanes of the Ekurhuleni Integrated Rapid Public Transport Network (IRPTN) now under construction on the East Rand.

> The bus lanes of Phase I of IRPTN will cover some 38 km to link Tembisa, Kempton Park CBD, Oliver Tambo International Airport, Boksburg CBD, and Vosloorus. Commissioned by the Ekurhuleni Metropolitan Municipality, the IRPTN will, on completion, be an integrated and expansive Bus Rapid Transit (BRT) network incorporating existing and new buses, state-of-the-art bus stops and stations. The BRT routes will be supported by complementary and feeder services such as new taxi routes, revitalised rail networks, enhanced walkways and cycle paths.

The new public transport network will include 4 m wide, red pigmented, dedicated concrete bus lanes located in the middle of the network's main roads. Consulting engineers, UWP, is handling the design of the IRPTN in a joint venture with Pretoria-based consulting engineers, SMEC. The Concrete Institute's cncPave computerised concrete road design program was used for the design of the new bus lanes.

Bryan Perrie, managing director of The Concrete Institute, who has played an advisory role on site for contractors involved in the segmentalised IRPTN, says continuously reinforced concrete pavements are proving extremely popular globally for heavily trafficked routes such as bus lanes and were also used for major sections of the Gauteng Freeway Improvement Project (GFIP).

"CRCP is constructed with steel reinforcing bars placed within the concrete along the entire length of the pavement. CRCP naturally forms tight transverse cracks to evenly transfer loads. The reinforcing bars control the width of the transverse cracks that form and hold them tightly

closed. It is not generally realised that the narrow, closely-spaced transverse cracks do not impair the structural integrity of the pavement. CRCP provides a continuous, smooth-riding surface capable of withstanding heavy traffic loads in adverse environmental conditions. Because of its greater durability, longer life expectancy, and minimal maintenance requirements, CRCP can provide the best long term value of any pavement type."

He said The Concrete Institute's cncPave design program is constantly being updated to keep abreast with new developments and technology. The program can predict the performance of all concrete pavements, including Ultra-thin Continuously Reinforced Concrete Pavements (UTCRCRP). The latest version of the cncPave program has recently been released and is now web-based.

Construction on the Ekurhuleni IRPTN dedicated bus lanes, surfaced sidewalks, pedestrian walkways and cycle paths is already underway and contractors are currently on site at:

- Reverend RTJ Namane Drive between George Nyanga Road and DM Marokane Road, Tembisa;
- Brian Mazibuko Drive East and West, Tembisa;
- Pretoria Road, between Beukes Road and Riebeeck Park Rail Station, Kempton Park; and
- Rondebult Road, between Wildesering Road and Barry Marais Road, Boksburg.

Phase II of the IRPTN will involve construction on the main trunk route, Reverend RTJ Namane Drive, between Flint Mazibuko and Brian Mazibuko Drive, which will be widened from one lane to four lanes. ■



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Leveraging its **FLEET** and **EXPERIENCE**

With 45 years' experience in the general plant hire industry, SPH Kundalila is perfectly positioned to offer industry access to its extensive fleet of equipment. Established as Saldanha Plant Hire in the Western Cape in the late 1960s, SPH Kundalila has amassed a wealth of knowledge and grown its fleet to over 320 items of plant to cater to the ongoing demands by industry.

> SPH Kundalila has a vast geographic base and specialises in materials handling, crushing and screening, loading and hauling, rehabilitation and other turnkey solutions. The company has concentrated its efforts on the mining industry and has proved its mettle in the demanding and harsh environments encountered in the market sector.

"As a natural evolution and as a result of the demand from our existing customer base and new customers, we have extrapolated this experience, expertise and capacity to other market sectors," Graeme Campbell, group commercial and operations manager, says.

In addition to 60 articulated dump trucks, 40 mobile screens, five mobile jaw crushers two mobile cone crushers, 20 excavators, 10 graders and 20 tipper trucks, the company is the largest owner of Cat 950H front end loaders in the southern hemisphere. All equipment is maintained to the highest standards by means of on-site workshops staffed by highly skilled technical personnel.

Campbell points out that the company enjoys the benefit of priority support from a number of major OEMs. "This stands us in good stead when we require components or when we need fast turn-around on our equipment. This benefit is then passed on to the client who is assured of minimised downtime and maximised productivity."

He stresses the fact that the company focuses on acquiring an understanding of the customer's specific application and being able to supply the most appropriate items of plant so that that they are capable of achieving the desired outcome in a reliable, timeous and quality-centred manner.

"Reliability in fact should be perceived as an inscrutable reflection of quality equipment that has been maintained according to stringent OEM standards. By taking a hard-line approach with regard to the sourced quality of our equipment and ensuring that preventative maintenance and regular, scheduled servicing forms part of the service level agreement we have with our clients, we are able to enhance worksite productivity," Campbell emphasises.

All operators are trained to perform daily preventive maintenance tasks, which drastically reduces the normal downtime associated with taking an item out of service for offsite maintenance to be performed. An emphasis on maintaining equipment according to OEM specifications provides the assurance of optimum reliability and performance. This not only benefits the client in terms of timeous completion of tasks, but also extends the longevity of each piece of equipment.

The company has operational offices in Gauteng and outlets close to its customers' operations across the country, with the exception of KwaZulu-Natal. "We are able to leverage the skills, expertise and experience built up whilst operating our fleet for so many years. The comprehensive nature of the fleet means that we are able to tackle infrastructure projects, roads and earthworks contracts, and general construction projects," Campbell concludes. <

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REPLANT, REUSE and RECYCLE

Waste and water management in the mining sector may be considered to be costly by many and may be logistically and technologically complex, but it remains imperative for mining houses.

> Elaine Crewe, CEO of BAUMA CONEXPO AFRICA says, "There are some simple actions that can be taken over the life of a mine, which at the end of its production cycle, can have a monumental impact in land rehabilitation."

Kenmare Resources, an Irish company with a Moma Titanium Mine in Mozambique, for example initiated a simple yet effective waste management activity of growing trees. Back in 2012, the company reported that it had doubled the capacity of its nursery, which had been constructed for the rehabilitation of its mined areas. It increased the type of plants being grown from six to 18 and twelve hectares of mined land were rehabilitated and prepared for handing back to the local government. In addition, three trial plots were established on the rehabilitation areas to determine the appropriate soil fertility enhancement strategies to be used.

"Mines should have recycling projects in play," adds Crewe. "At this year's BAUMA CONEXPO AFRICA we will showcase waste and water management by focusing on environmental technology through hosting IFAT Environmental Technology Forum Africa

- Water, Sewage, Refuse and Recycling - Solutions for the Mining and Construction Industry." This forum, she says, will bring together suppliers and consumers of innovative solutions and technologies in the areas of water, sewage, refuse and recycling.

Crewe emphasises that water management is a critical focus area in Mining. "Water is the ultimate enabler of living and in Southern Africa we do not have high levels of water security. Added to that, we depend highly on shared fresh water resources, with two or more member States sharing more than 70% of these," she says. "Mining and Construction companies can play a proactive part in addressing this risk."

Patrick Hulley, managing director of Wilo Pumps SA who will be exhibiting at IFAT Environmental Technology Forum Africa says, "It is absolutely crucial for companies to manage the available water resources effectively and to ensure that they participate in a well-defined water management strategy. Yet there is much room for improvement in the definition and implementation of such strategies, which are also a key factor in Corporate Social Responsibility." He points out that some of the challenges within the Water sector in SADC include the increased demand for potable water, a lack of understanding surrounding the consequences of not managing water resources effectively, a further lack of maintenance practices and a lag in new technology acceptance.

Wilo has researched and developed numerous technologies that contribute to effective water management strategies. For example, an innovative Ceram Coating is a method of coating parts of a pump, which in turn reduces friction and raises pump efficiency. He notes a waste management example of a "highly efficient Solid Separation system, which allows for the more



Elaine Crewe, CEO of BAUMA CONEXPO AFRICA.

effective collection and transport of water and waste water to treatment plants which results in uptime of the operations to move waste water from and around cities and other areas."

Crewe concludes: "Any negative environmental and social impacts of a mine, both in the short and long term, need to be mitigated against. As a resource rich continent, those with mines in Africa have a responsibility to protect, even nurture the local people and land within their operations. The good news is that there are technologies available through which to do this." <

BAUMA CONEXPO AFRICA

BAUMA CONEXPO AFRICA, International Trade Fair for Construction Machinery, Building Material Machines, Mining Machines and Construction Vehicles takes place between 15 and 18 September 2015, at the Johannesburg Expo Centre (JEC). The premiere of Bauma Africa in September 2013 attracted 754 exhibitors from 38 countries and 14 700 visitors from over 100 countries. Covering a total of 60 000 m² of exhibition space (40 100 m² net) this is the biggest event for the sector in Africa.

50



RECENT FAMILY ADDITION

The Warrior 600 is the most recent addition to the Warrior™ mobile screening product family. The most compact heavy duty mobile screen makes the Warrior range the widest in the market with six machines of varying size to meet a variety of customer requirements.

> Ease of transport is only one of many exciting features on this new model. The Warrior 600 screen is highly versatile with its ground-breaking simple conversion from 3-Way Split mode to

SOLUTION FOR LEADING CONTRACTOR

Murray and Dickson Construction has purchased a Sandvik QA331 mobile double deck screen from Pilot Crushtec International for use in a current pipeline construction in Alberton, south of Johannesburg.

The screen is being used to generate <20 mm size product from excavated material which is then used as a backfill to cover the piping. It is presently producing material at a rate of 80 tonnes per hour but can comfortably exceed this output.

One of the main considerations concerning the choice of equipment was mobility as contractors are required to move the screen on a daily basis as the project progresses.

"The Sandvik QA331 is the ideal choice to meet these circumstances as it is compact and easy to transport," says Nicolan Govender, national sales manager of Sandvik's Southern Africa distributor, Pilot Crushtec International.

"The QA331 is becoming a firm favourite among contractors. It is versatile, excels in recycling operations and is highly mobile. Operating costs are critically important to contractors and



Sandvik QA331 mobile double deck screen was purchased from Pilot Crushtec International.

the fuel efficient CAT power plant ensures that diesel expenses are kept to a minimum."

"One of the contract managers on the site had previously bought equipment from us and based on his past experience imme-

diately sought our advice in selecting the optimum product for the job. This really substantiates our claim that at Pilot Crushtec International we don't sell products but rather provide solutions." ❏



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LOYALTY PROGRAMME ATTRACTS FIRST TIME BUYER

Great Karoo Crushers opted for Pilot Crushtec International when the Durbanville based company sourced a new triple deck screen for use in a major roads project in the Free State.

> National sales manager Nicolan Govender reports that the sale was instigated by the company's Western Cape regional distributor Innovex, which is consolidating a solid sales and service presence within the region.

"The customer needed a heavy duty screen that is capable of producing large volumes of aggregate in a variety of sizes and the Pilot Modular/TRIO TD6118 screen is ideal for this purpose," says Govender.

This is the first occasion that the purchasing company and its joint owners Haw and Inglis has purchased a Pilot Crushtec International product; a decision which Govender believes was influenced by two very important factors.

"Firstly, we have a well established service footprint that provides back up to the customer irrespective of whether the screen is operating in the Free State or in the Cape. Secondly Great Karoo Crushers was impressed by the benefits of our Pilot Premio Loyalty Programme, something which is unique to the industry."

The Pilot Modular/TRIO TD6118 is a heavy duty semi-mobile modular inclined screen intended to work in a diversity of challenging applications including quarrying, mining, recycling and construction. Its triple screen design makes it an ideal product for screening scalping and sizing a wide range of materials for operators and contractors engaged in these industries. ❏

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Crushtec InstallLink team working onsite installing the Pilot Modular/TRIO TD6118 screen.

➡ 2-Way Split mode which can be completed in minutes. It has been specifically designed for operators for whom versatility, manoeuvrability and transportation are of key importance.

The Warrior 600 also features a highly aggressive 8' x 4' screenbox capable of 6 g of acceleration. The high-strength, high amplitude, two-bearing screenbox promotes easy handling and separation of large items from material fines in recycling tasks, such as soils from tree stumps and logs, fines and rock from overburden and blasted rock. User benefits include a rapid set-up time and ease of operation aided by hydraulic folding side conveyors, rigid feed hopper sides and two speed tracks. ❏



About Terex

Terex Corporation is a lifting and material handling solutions company reporting in five business segments: aerial work platforms, construction, cranes, material handling and port solutions and materials processing. Terex manufactures a broad range of equipment serving customers in various industries, including the construction, infrastructure, manufacturing, shipping, transportation, refining, energy, utility, quarrying and mining industries.

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EXPANDING INTO SA

Minsk Automobile Plant (MAZ) is a state-run automotive manufacturer in Belarus, one of the largest in Eastern Europe. The company is now planning on expanding into South Africa and hopes to use it as a springboard for expanding elsewhere in Africa.

> MAZ has been involved in producing modern middle-tonnage and heavy-duty motor vehicles and buses for various purposes with a gross mass of 10 to 55 tons (and road trains up to 72 tons) for 60 years.

History

The company was started shortly after the Second World War. The plant manufactures heavy-duty trucks, buses, trolleybuses, road tractors and semi-trailers for semi-trailer trucks, and cranes.

At the end of Soviet times, MAZ was the largest manufacturer of heavy trucks in the Soviet Union, and the only one for some truck categories. After the Soviet Union dissolved, MAZ production was reduced substantially. The production of public transport vehicles was a result of the diversification in the company, as was the expansion into other continents. The plan to expand into South Africa is part of this diversification.

Today

Nowadays MAZ is one of the largest manufacturers in Europe for modern heavy-duty motor vehicles and buses with a gross mass of between 18 and 55 tons. These are modified for various purposes. MAZ manufactures 22 000 automobiles, 7 500 trailers and semi-trailers, and 2 500 buses annually.

Its broad client base covers government departments, corporate organisations and private fleets. This is an indication of our ability to maintain and honor the agreement we have with clients.

MAZ internationally

Now MAZ supplies vehicles to numerous countries all over the world, gradually expanding its sales footprint. Various territories have joint assembly productions. These joint assemblies are located in Lithuania, Latvia, Serbia, Turkey, Azerbaijan, Iran, Egypt, Vietnam and Venezuela. It is a very effective, highly profitable and mutually advantageous practice for our partners.

Now South Africa has been added to his list. Together with thousands of other users of MAZ trucks and buses worldwide, South African clients now get the chance of sharing a feeling of reliability and trust in MAZ's products.

Practicalities

To offer its products to clients in South Africa, MAZ is being involved in homologation process to ensure conformity of its vehicles with SABS standards in the second half of 2015, <



Tipper – MAZ-656587-320-700 (8×4)

Engine Cummins ISLe 375 30 (375 hp) Euro-3, gearbox; ZF 16S1825TO (16-speeds), fuel tank – 300 l; tires 315/80R22.5 (Matador), spring suspension; ABS; ASR; small restyling cabin; one folding sleeping place; car stereo; fog lights; speedometer; right hand steering; payload capacity – 26 900 kg; volume of platform – 21 m³; rear unloading; air conditioner.

Tipper – MAZ-656087-321-700 (6×4)

Tropicalised construction, Right-hand steering; Engine Cummins ISLe 375 30 (375 hp, Euro-3) Gearbox ZF 16S1820TO 16 speed; Speed meter device – speedometer Fuel tank capacity – 300 l; Tires 315/80R22,5, ABS; Small cabin; air conditioner; safety belts; headrests U-shaped platform with rear unloading; Platform capacity – 15,4 m³; Carrying capacity – 20 750 kg; Toolbox; fire extinguisher; medical kit; warning triangle; waxing.

Fifth-wheel truck with hydraulic power take-off – MAZ-646087-8329-712 (6×4)

Tropicalised construction; Right-hand steering; Engine Cummins ISLe 375 30 (375 h.p., Euro-3); Gearbox ZF 16S1820TO 16 speed; Speed meter device – speedometer; Hydraulic equipment; Fuel tank capacity – 500 l; Tires 12.00; R20; ABS; Large cabin with low-level roof and a sleeping place; Air conditioner; safety belts; headrests; Loading on fifth-wheel – 23 000 kg; Height of fifth-wheel – 1 380 mm; Toolbox; fire extinguisher; medical kit; warning triangle.





Tipper semitrailer – kMAZ-953000-025(for operating with the fifth-wheel truck)

Tropicalised construction; Tires 12.00R20; ABS; Quantity of axels/wheels:3/12+1; Platform type – tipper; Platform capacity – 25 m³; Loading capacity – 35 000 kg; loading on fifth; wheel of the truck – 17 000 kg; Height of fifth-wheel – 1 360 mm

TOP PERFORMER

In the seven months since being appointed an approved DAF dealership, Central Commercial Truck (CCT) in Estoire, Bloemfontein, has become one of Babcock's top performing South African DAF dealerships in terms of vehicles sold per month.

➤ Headed up by Bertus Kritzinger, who brings 30 years of experience in transportation to bear on the local market, CCT offers a full spectrum of DAF services, from truck sales, service and repairs, to financing.

"We concentrate on our customers' unique requirements," says Kritzinger. "We conduct a comprehensive analysis of their transport requirements to determine their needs and to provide a vehicle that will optimise payload and fuel efficiency in their particular application. Trailord SA, our sister company, provides the DAF customer with state-of-the-art trailers that achieve up to three tons more payload than our competitors' trailers. This product alliance places CCT and DAF well ahead of the market.

"In the Free State and Northern Cape regions, our subsidiary Trailfin assists our sales personnel to obtain finance, while our dedicated financial team provides clients with cash flow projections and cost saving methods to achieve higher profit margins."

Kritzinger adds that while the goal of every dealership is to achieve maximum sales volumes, CCT has also made it the company's

mission to offer customers a full package. The dealership is open from 07h30 to 17h00 six days a week, with a full spares stockholding and parts distribution centre. Three service bays are manned by two qualified mechanics. The workshop manager and mechanics are on 24 hours' standby for parts supply and break-downs throughout the Free State and Northern Cape Provinces.

"We want to grow with our local transport companies and establish DAF as a well proven and reliable brand in South Africa," he comments. "It's not difficult to get our customers excited about DAF trucks – with Babcock's backing, they're proving to be absolute gems in the South African transport industry. They are built to be strong, reliable and fuel efficient and drivers love the cab comfort and volume, which enhances the whole driving experience."

Babcock International's Transport Solutions business is the sole importer and distributor of DAF trucks, parts and service in Southern Africa, offering a comprehensive, end to end solution. ❏

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Introducing the MINSK AUTOMOBILE PLANT

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- 60 years of producing middle-tonnage and heavy-duty motor vehicles and buses
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- Conforms with international and importer country requests and standards
- After-sales service
- Operating personnel training

TOWED VEHICLES

Special-purpose quality machinery for the implementation of agricultural, construction and road work.

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TRUCKS

We boast a long term manufacturing history, balancing price and quality. Design is aimed at finding innovative ideas to improve the technical equipment characteristics while achieving maximum comfort.

SPECIAL VEHICLES ON MAZ CHASSIS

A variety of trailer equipment for the carriage of various goods is available. Consumers are attracted by reliability, ease of use, quality and pricing.





The new Hino Isando dealership is an impressive facility.

FLAGSHIP dealership opened

Super Group, a leading transport logistics and mobility group which was founded in 1986 and is listed on the Johannesburg Securities Exchange, has opened a flagship Hino dealership in Isando, which is well-situated in the industrial and commercial hub of Gauteng.

Hino Isando is the 22nd exclusive dealership in the Hino network of 64 dealers and the cost of the development – excluding the land – was in excess of R25-million.

The dealership has been operating since last November, but the official opening only took place on 21 April 2015. However, the importance of the official opening was at such a high level that it was attended by Junsuke Ando, the general manager of Hino Motors' Africa and Europe Division. He said that although the majority of Hino sales take place in Japan and South-East Asia the continent of Africa was a region showing rapid growth with high potential.

Junsuke added: "Hino recognises that there will be no Hino global success without Hino success here in South Africa. For this reason we are delighted that a high profile public company such as the Super Group has made a substantial investment in a new Hino dealership."

"We are very proud of the manner in which the Hino brand is flourishing in the ultra-competitive South African truck market and this latest investment in a new dealership is another sign of confidence in a brand which has been in South Africa since 1965 and remains the market leader in Japan," said Calvyn Hamman, the senior vice president, sales and marketing of Toyota SA Motors, of which Hino SA forms a part.

"We are very pleased with the commitment from Super Group through Graeme Watson, the chief executive officer, and Alistair Rawstorne, the chief operating officer, and really appreciate the strategy and planning put into place by Roelf Strydom, franchise executive for the Toyota Group within Super Group and Patrick

Arthur, the dealer principal, in bringing this new dealership to life.

"This is a further example of confidence in the Hino brand as last year we had the renaming of Hino Pretoria North to Hino Tshwane and relocation to spacious new premises in Pretoria West as well as the appointment of a Hino dealer in Cradock which was an open point we were happy to fill. In addition most of our dealers have either rebuilt or substantially refurbished their facilities over the past three years so we believe we are now well set for future growth," added Hamman.

Hino Isando is currently staffed by 17 people, but this number is planned to grow to 35 as the dealership gains sales

and service momentum. The facility has six double work spaces making 12 bays and there is space for another six double bays for future development. There is an extensive parts stock on site and this is replenished at least twice a day.

The workshop facility is equipped to undertake Certificate of Fitness (COF) testing but still awaiting full accreditation to conduct COF inspections. It also has an express pit lane to minimise downtime for urgent work when required.

The facility is already eco-friendly in that all the lights are movement-sensor-controlled and plans are in place to recycle rain water for the wash bay.

"Hino South Africa is fully committed to supporting Hino Isando to ensure its success, using Hino Total Support as one of our key strategies, because the establishment of a strong dealer network is a critical part of our 2020 strategy to achieve a market leadership position in South Africa," concluded senior vice president, Calvyn Hamman.



From left: Calvyn Hamman, senior vice president sales and marketing, TSAM; Patrick Arthur, dealer principal of Hino Isando; Ernie Trautmann, vice president of Hino SA; Junsuke Ando, general manager Europe and Africa Division, Hino Motors Limited and Tetsuji Hitokata, managing director of Hino Motors Europe.

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South Africa's transport system has always faced many challenges, amongst which is having adequately safe means of transporting labourers and equipment. We have all seen the proverbial image of workers sitting at the back of a vehicle that is laden with equipment on a busy road.

> This concerning safety hazard has been the cause of avoidable carnage on our roads and has necessitated the recent 13th Amendment to the National Road Traffic Act which outlines that people and equipment may not be carried on the back of a goods vehicle at the same time – unless they are separated by a partition. This is where Isuzu Trucks has taken the lead in offering standard crew-cab models for both medium and heavy-duty trucks.

Isuzu Trucks' straight-forward, no-compromise solution is an integrated crew-cab that seats up to seven people in the same degree

of safety as the driver with seat-belts for every passenger. Isuzu Trucks' N-Series crew-cab models NMR 250 and NPR 400 can seat 6 and 7 respectively – both including the driver. The NPR 400 crew cab model has a significant feature not found on any medium-class truck providing unique technical advantage – an automated manual transmission designated as an AMT.

A seamless Isuzu AMT gear-shift turns an average driver into a good driver. This allows a driver to focus safely on ever-changing road conditions in heavy traffic synchronising with engine technologies to further improve fuel consumption through automatic gear selection. Eliminating clutch replacement also reduces downtime and total lifetime ownership costs. It also means increased safety for driver and crew.

In terms of practical application, numerous industries can benefit from Isuzu's crew-cab models, including municipal operations, artisan operatives, small fire-fighting operations, garden services, large production and events companies, construction workers and forestry industries. When staff know and feel that their safety is a priority, this can raise morale and subsequently, productivity. All Isuzu's models come standard with ABS braking systems and are manufactured to global safety standards under the ISO 9001 certification.

The NPS 300 4x4 Crew and the NPS 300 4x4 SWA (single wheel application) crew cab models opens another market to the local operators. These models are ideal for government and municipal use and any industry which requires transportation of both labour and goods. Currently, the NPS 300 4x4 Crew models are used in forestry and fire fighting applications.

The heavy-duty Isuzu F-Series range offers the Isuzu FSR 750 Crew in manual or AMT derivative. It is a 13 500 kg GVM truck offering fully-homologated seating for seven – a driver and six passengers. The electro-hydraulic cab tilt mechanism allows quick access for any maintenance. The 13 500 kg GVM on the FSR 750 includes a very useful body and payload allowance of approximately 9 300 kg – actual payload could range from 7 000 to 8 000 depending on cargo body mass.

Craig Uren, Isuzu Truck South Africa chief operating officer, says, "The crew cab was developed as a solution in response to our customer's challenges around safety of workers. As more industries become increasingly cognisant of safety standards and seek to comply with the recent 13th Amendment to the National Road Traffic Act, we see the crew-cab models going from strength to strength." **<**

ABOUT REGULATION 247

Regulation 247 came into being with the 13th Amendment to the National Road Traffic act published in Government Gazette 29865 – 4 May 2007. It stipulates that, no person shall operate on a public road with goods vehicle conveying persons unless that portion of the vehicle in which such persons are being conveyed is enclosed to a height of – (a) at least 350 millimetres above the surface upon which such person is seated; or (b) at least 900 millimetres above the surface on which such person is standing, in a manner and with a material of sufficient strength to prevent such person from falling from such vehicle when it is motion. Provided that no such person shall be conveyed in the goods compartment together with any tools or goods, except their personal effects, unless that portion in which such persons are being conveyed is separated by means of a partition, from the portion in which such goods are being conveyed. There is a restriction on the number of passengers which may be accommodated in the truck cab – Regulation 233.

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GETTING TO GRIPS

with Africa's operating conditions

Reef Fuel Injection Services offers a full diagnostic and fault analysis service to help its customers get to grips with the harsh operating conditions in Africa. "Fuel contamination is a major problem in Africa, whether it is just dirt and water in the filling station tanks or buying blended diesel at the roadside because it is cheaper," says Warren Hauser, operations manager.

➤ While older fuel systems could tolerate a certain level of fuel contamination, the newer systems comprise advanced electronics and are much more susceptible to fuel contamination. Hauser says that apart from having the necessary technical expertise on hand, Reef Fuel Injection Services has invested in the latest diagnostic equipment.

Hauser says that the current technological focus is on fuel economy and emissions levels and that there have been huge advancements made. He adds that it is important for South Africa to remain up to date with the latest international trends. "If you do not keep up, you get left behind and the competition can close in."

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Accessing latest advances

South Africa is able to access the latest advances once these have been through the developmental stages in the international arena, meaning that the adoption of new trends is far easier and efficient. However, Hauser points out that not all global technology is applicable to the African market, which has to contend with remote locations and difficult operating conditions.

Reef Fuel Injection Services is helping to reduce the downtime of its Caterpillar customers by offering an in-field fuel system diagnosis. "We can pinpoint what the exact problem is, right down to a specific faulty fuel injector, which we can then remove and rebuild, as well as recalibrate the rest. This provides a massive cost-saving for our customers in that we are able to test injectors individually, rather than having

to replace or repair a full set," Hauser says.

"This is a unique service offering that places us at the forefront of the automotive repair industry in South Africa," Hauser says. He adds that the service is available for Caterpillar common rail and electronic fuel injection systems, as well as Caterpillar HEUI (Hydraulically Actuated Electronically Controlled Unit Injector) systems.

In other developments, Reef Fuel Injection Services has also been accredited by Bosch to conduct warranty repairs for its CP4 common rail direct fuel injection system, a standard feature on many of the latest passenger and light commercial vehicles. The latest trend in direct fuel injection systems is higher injector pressures to improve atomisation of the diesel, which results in a more complete burn and hence less harmful emissions. The added benefit is improved fuel efficiency and less consumption.

"These issues are very much in the spotlight at present, particularly in terms of rising fuel costs and increasingly stringent environmental regulations. However, the latest systems such as Bosch's CP4 require specialised test equipment, which is where Reef Fuel Injection Services stands to play a major role," Hauser says.

The company has the capability to run up, test and report on Bosch's CP4 system, as well as to rebuild and calibrate. "The diagnostic aspect is critical, especially the calibration. If the injector pressures are out of specification, it can result in substantial damage to an engine. Therefore the perceived cost-savings of having such repairs done cheaply at a non-approved repair facility are very much short term," Hauser says.

Growth

Looking at growth opportunities, Hauser says that Africa is a definite focus. "We have a few notable customers and are trying to grow

Warren Hauser, operations manager at Reef Fuel Injection Services, operating the Hartridge CRI (Common Rail Injector) machine.



that market continually. It is a very important new market for us and we have the necessary infrastructure and skills in place in order to be able to service multinational companies."

Reef Fuel Injection Services is a subsidiary of Metric Automotive Engineering, which is positioning itself as a world-class diesel engine component refurbishment centre. "Everyone thinks that engine rebuilds or repairs can only be done properly in Europe or America. However, we have facilities here that are comparable to anywhere in the world. In addition, it is a lot cheaper to carry out such repairs or rebuilds locally due to the exchange rate," Hauser says.

Metric Automotive Engineering is South Africa's most comprehensively equipped heavy diesel engine and component re-manufacturer. Established as a family business in 1969, the company has a strong ethos of investing in both quality equipment and expert personnel. This attitude towards customer service and constant product innovation has sustained the company since its inception.

It can refurbish large diesel engine components and offers services such as cylinder head remanufacture, cylinder block line boring, milling, honing and boring, camshaft grinding, crankshaft grinding, engine assembly and dynamometer testing.

The company continues to make significant investments in the latest technology to improve the quality and capacity of its repair and rebuild services. These investments include a new Rottler F109 extra heavy duty multi-purpose CNC machining centre and a Berco RTM 575 crankshaft grinding machine. "This will also facilitate access to the diesel locomotive and marine engine sectors, where the engines are much larger than standard," Hauser concludes. ◀

The service is available for Caterpillar common rail and electronic fuel injection systems, as well as Caterpillar HEUI (Hydraulically Actuated Electronically Controlled Unit Injector) systems.





ABOVE, LEFT TO RIGHT: Reef Fuel Injection Services offers a full diagnostic and fault analysis service. Assessing Stage 3 shimming requirements using digital hardware and Bosch Stage 3 software at Reef Fuel Injection Services. State-of-the-art clean room at Reef Fuel Injection Services where assembly is done.

LAB CAPACITY BOOSTED WITH NEW EQUIPMENT

WearCheck, Africa's leading condition monitoring company, recently invested over R2-million on brand new cutting-edge laboratory equipment. The shopping list included a new Gas Chromatograph (GC), a new Inductively Coupled Plasma spectrometer (ICP) and a new High Performance Liquid Chromatograph (HPLC).



All the new equipment uses top of the range technology to ensure WearCheck's legacy of accuracy and reliability of sample results and diagnoses. While the company has already invested extensively in GC, ICP and HPLC technology over many years – the laboratory capacity has been significantly boosted with the addition of the latest testing equipment.

WearCheck serves the earthmoving, industrial, transport, shipping, aircraft and electrical industries through the scientific analysis of used oil from mechanical and electrical systems. Additional services include the analysis of fuels, transformer oils, coolants, greases and filters. The new laboratory equipment will benefit customers across all industries, and particularly transformer analysis.

An expansive network now includes 10 WearCheck laboratories spanning the continent and beyond, including Gauteng, KwaZulu-Natal, Mpumalanga Province, and international laboratories in India, Dubai, Ghana, Mozambique and Zambia – at Lumwana mine and Kitwe – with a presence in Cape Town, Rustenburg, Steelpoort, Port Elizabeth, Zimbabwe and Namibia.

ICP spectrometry analysis provides high-speed detection and identification of trace elements at very low concentrations in oil to determine the levels of wear metals, contaminants and oil additives in lubricating oils. The ICP has been installed in WearCheck's Middelburg laboratory.

The HPLC separates compounds within a transformer oil sample, revealing the presence and quantity of trace degradation products, which in turn provides information on the operation of the transformer and whether there has been any breakdown of insulating material.

The GC separates and analyses compounds that can be vaporised without decomposition, revealing critical information about the presence of contaminants via the composition of the oil sample. The new GC and the HPLC are in operation in WearCheck's speciality laboratory (WSL) in Johannesburg, and have enabled more samples to be processed in a faster turnaround time.

Managing director Neil Robinson explains, 'The concept of analysing oil samples from a machine or component is similar to that of taking a blood sample from a person – the results determine the health status of the unit. WearCheck's highly-skilled diagnostic team then analyses the results and recommends how to rectify any abnormal findings.'



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One of WearCheck's new ICPs (Inductively Coupled Plasma spectrometers) that has been installed at their Middelburg laboratory is pictured here.

Robinson is committed to ongoing investment in new technology to ensure that all laboratory equipment is state-of-the-art and rivals, often surpassing, its local and international counterparts. All laboratories are largely automated and integrated with the latest information technology. Research and development plays a major part in WearCheck's commitment to continual improvement. ■

LEFT: WearCheck's managing director, Neil Robinson, is confident that WearCheck's ongoing commitment to remain at the forefront of laboratory innovation, will ensure that the company remain at the helm of the condition monitoring industry. **RIGHT:** Loshini Govender, manager of WearCheck's speciality laboratory (WSL), is happy to have cutting edge technology that boosts the laboratory's capacity.



Renewed focus on **ALTERNATIVE FUELS**

With a global focus towards alternative energy sources to reduce pollutants and greenhouse gases, renewable energy sources show significant promise as an alternative transport fuel for fleets.

➤ Using natural gas and alternative fuels as an energy source for mobility has been widely proven to be cost effective and more eco-friendly, and there are currently more than 16 million vehicles globally operating on alternative fuel. In addition the evolution to alternative energy sources helps conserve non-renewable energy sources such as fossil fuels, which results in less consumption and lower fuel prices. This has been one element in the recent reduction of crude oil prices.

South Africa has been slow in adopting alternative energy sources, but there is a renewed focus on using natural gas for mobility. Various South African companies and public sector entities have been working closely together to create a renewable energy strategy – the infrastructure to support this initiative will be expanded exponentially in the near future.

“There are currently less than 15 filling stations in South Africa that offer CNG or LPG re-fuelling facilities, and we strongly suspect the lack of infrastructure is one of the main reasons why most large fleet operators have not yet adopted this technology,” said Murray Price, managing director of Eqstra Fleet Management. “Considering that CNG and LPG offer substantially lower carbon emissions and a fuel saving in excess of 40%, we would urge corporates to consider adopting this technology.”

“In our view, there should be at least 20 to 30 sites in central JHB/ Gauteng alone before it becomes feasible to operate a regional fleet on CNG/LPG. Indications are that this critical mass could be achieved in the next two years, as more companies convert to this alternative technology. Despite this limited infrastructure, there are solutions available to assist fleet operators should they decide to take this route. Sasol, for example, has added LPG fuel pumps at certain of their fuel stations and with time these would be more readily available. In addition, mobile filling stations are available to corporates with a fleet size larger than 50 vehicles,” he added.

In a number of case studies Eqstra has established that using CNG as an alternative to petrol realised a cost saving of 30,8% for fuel over a distance of 3 000 km.

Other advantages of using CNG as an alternative fuel include:

- Abundant reserves of CNG gas are yet untapped,
- 90% lower carbon monoxide emissions than petrol,
- 25% lower CO₂ emission and 40% lower NOx emissions, and
- Reduced fuel fraud risk.

Using LPG realised a cost saving of 4,13% over the same distance. LPG is more readily available than CNG. As it is refined from petrol, it is subject to higher pricing, but it also offers the following advantages:

- 75% lower carbon monoxide emissions,
- 85% lower hydrocarbon emission,
- 40% lower NOx emissions,
- Better fuel efficiency, and
- Reduced fuel fraud risk.

Additionally, in both cases many suppliers will offer reduced prices based on usage and VAT can be claimed on CNG transactions as well.

Hydrogen injection offers a third alternative for diesel vehicles. Hydrogen injectors inject a small amount of oxyhydrogen (HHO) into the fuel before the ignition phase. The HHO diesel mix has a shorter combustion period which provides better efficiencies and cleaner engines with a subsequent decrease in carbon emissions.

Advantages of using hydrogen injection include the following:

- HHO reduces carbon monoxide up to 90%. Carbon monoxide is a fuel and HHO is a catalyst which promotes its combustion,
- HHO reduces hydrocarbons between 10 – 90%,
- HHO reduces particulates, especially organic particulates, between 10 – 70%,
- HHO reduces EGT(exhaust gas temperature) from 500 – 1500F (depending on engine load.),
- Only a small and very specific amount of



Murray Price, managing director of Eqstra Fleet Management.

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HHO is needed. The amount of HHO will vary depending on the size and engine capacity,

- Horsepower is increased between 3% and 12% depending on the engine and the grade of diesel used,
- HHO improves and cleans heavily carbonized engines. In some long term tests fuel efficiency improved between 10% and 20% by cleaning the engine. Up to 80% of this efficiency was maintained after removing the device, and
- HHO works best when the vehicle is travelling at certain speed or above. There is no benefit when the engine is idling.

“The petrol price has shown an average increase of 13% Y-o-Y since 2003,” concluded Price. “Even with recent price reductions, and with fuel contributing more than 45% of total fleet costs, the use of alternative fuels offer a viable solution to reduce costs as well as carbon emissions.” <



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Hydrostatic drive unit concrete dumpers, available from Lambson's Hire, are ideally suited to the arduous operating conditions found on South African construction and building sites.



Lambson's Hire has stocked its countrywide fleet with Wacker Neuson 1,6 ton and 3 ton dumpers to meet customer demand for reliable and hardworking equipment.

Ideal for **TOUGH** operating conditions

Hydrostatic drive unit concrete dumpers are ideally suited to the arduous operating conditions found on South African construction and building sites. This is according to Devin van Zyl, CEO of Lambson's Hire. Lambson's Hire has stocked its countrywide fleet with Wacker Neuson 1,6 ton and 3 ton dumpers to meet customer demand for reliable and hardworking equipment.

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> Van Zyl explains that many dumpers suffer from gearbox failure, resulting in unwanted downtime and frustration for customers. "However, by opting for hydrostatic drive units this problem area will be eliminated. Feedback from customers, combined with extensive research and testing, forms the basis of all our equipment choices. We need to know that the machines we send to site will perform according to spec and remain operational for as long as possible. While adequate maintenance plays a large role in the uptime of our equipment, it is even more important to make the right selection upfront."

The heavy duty mid-size dumper range provides greater utility for building processes and logistics. The swivel-tipping skip, available on both the 1,6 and 3 tonner, comes with a 180° tilt facilitating precision dumping of material and is perfect for applications where exact placement of concrete is a prerequisite.

The range features hydrostatic permanent two wheel drive on the 1,6 ton and twin-lock four wheel drive on the 3 ton as standard. This makes on site travel, at continuously variable speeds of up to 16 km/h on the 1,6 ton version and 25 km/h on the 3 ton version, effortless even on the roughest and most uneven surfaces.

Operator friendly hydrostatic controls are provided by the hydrostatic drive system, eliminating the need for gear changes whilst driving. The operator is thus able to concentrate on negotiating around and over any site obstacles, making these dumpers extremely easy and safe to use. The dumpers feature a clearly laid out instrument panel and have wide, robust leg protection, further adding to operator ease of use.

The absence of a clutch and gears means that maintenance is reduced to a minimum, resulting in maximised operational time on site and minimised overall operating costs.

The dumpers are ideal for surface construction work, civil engineering, road building, quarrying, industry, demolition and rubble handling, waste disposal, forestry, farming, landscaping and public works.

"The success of our fleet is based on understanding exactly which equipment works in specific environments. Our team is able to consult with customers and provide them with the right item of plant for their particular application. The selection is based on a number of factors including intended use of the equipment, site conditions, hours of service required and whether other complementary equipment is being used. Through the extensive experience our skilled personnel have garnered over the years, they are able to take the tedium out of plant selection for our customers," Van Zyl points out. <

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NEW ROBUST SERIES

CSE Equipment – the Capital Equipment Group (CEG) of Invicta Holdings Limited – has extended its range of Case backhoe loaders, with the launch locally of the robust 570T series.

> “Case Construction Equipment continuously upgrades and improves the design of its extensive range of earthmoving equipment to meet changing market demands,” says Brenton Kemp, managing director of CSE Equipment. “What is notable about Case machines is their suitability for efficient use in diverse applications, including harsh operating conditions in construction, on the mines and in agriculture, as well as on urban job sites.

“These entry level 570T backhoe loaders have been designed for improved productivity, reduced noise levels, enhanced on-site safety and low maintenance requirements. Key features of this series include the excellent performance and high torque delivered by the fuel-efficient engine, the robust S-styled boom for improved digging and lifting and the heavy-duty front axle, which is also available in a 4WD option. These machines, with a large cab for improved operator comfort, have also been designed for effortless serviceability.”

The turbocharged, four-cylinder FPT Industrial S8000 engine delivers up to 86 hp and ensures reduced fuel consumption. The power shuttle transmission provides four speeds forwards and reverse, delivering up to 402 Nm of torque at 1 300 rpm.

Hydraulically shifted clutches and control valves ensure smooth direction and travel speed shifts. The 4WD option of this series and the 100% locking differential fitted to the rear axle improves mobility and loaded performance, where job site conditions are muddy and where



extra traction is essential. The Case 570T has a maximum ground level reach of 5 583 mm with the Extendhoe dipper version.

This design improves visibility to the bucket and the self-levelling mechanism during the lifting phase enables precise control, enhancing productivity. Large box section structures with thick, multi-plate fabrications, casting and forgings are used in high stress areas.

The front axle is designed to handle heavy-duty applications, even in extreme conditions. The steering cylinder is a double effect type and is mounted above the centre pivot in a well-protected area behind the beam. The tight steering angle, with oscillation of approximately 11°, ensures stability on the roughest terrains, improving bucket retention and maintaining productivity.

The multi-purpose 4-in-1 bucket copes efficiently with different working conditions of digging, loading and unloading, flattening and levelling applications.

Wide door openings, which are equipped with door retainers, allow easy entrance for the operator and also improve air ventilation. The spacious cab is ergonomically designed with all controls conveniently placed for easy reach and faster operation.

The ROPS/FOPS design offers maximum safety and protection against roll over and falling objects. Large-sized glass windows and a one-piece rear glass, with no pillars, provide excellent all-round visibility.

This series has been designed for minimal downtime and reduced maintenance requirements. A single piece tilting engine canopy enables top and side access, from ground level. The braking system uses the machine's main hydraulic oil reservoir, which means there is no requirement for a separate filler.

For enhanced security on site, the T-series has new features. These include a secure oil cap breather on the hydraulic tank to prevent contamination, the engine canopy lock is situated in the cab to avoid vandalism and a lockable battery box inhibits theft from site.

Hydraulic and steering pressure control points are conveniently located between the cab and fuel tank for effortless checking. Large capacity fuel tanks ensure longer working hours between refills – this increases operational hours on site. The Case electronic service tool enables rapid rail engine diagnostics, which reduces downtime.

For easy maintenance, greasing points are protected from dust and damage, hydraulic connections are well guarded, flexible and easy to use. The dozing blade on the 4-in-1 bucket can be easily replaced when worn. ■

These entry level 570T backhoe loaders have been designed for improved productivity, reduced noise levels, enhanced on-site safety and low maintenance requirements.

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DESIGN AWARD FOR RAMMER.

The international iF Product Design Award 2015 goes to the Atlas Copco LT 6005 Rammer series. For over 60 years, the iF Design Award has been recognised all over the world as a label of design excellence, identifying outstanding achievements in design.

> “Thorough research and a tight cooperation between R&D and our Industrial Design Team has been success factors in the development of the new LT Rammers,” says Fredrik Hägglund, manager technical development light compaction equipment. “With a strong user focus, we managed to increase the balance of the machine, making it extremely easy to handle.”

The new Atlas Copco LT Rammers are designed for compaction work in confined areas. The product is a result of research and customer input. One of the major improvements is the slimmer design that facilitates handling. For example the visibility is considerably enhanced. In order to get full visibility of the foot, the operator needs to lean 50% less to the

side. The user grip area is increased by 300% for better control. Improved safety, reduced weight, high compaction efficiency and ergonomics are other user-friendly features that the jury found appealing.

“Easy service is a high priority for our customers. With the new design we have managed to meet those high expectations. And even though receiving the iF Product Design Award was an honour, the real joy lays in the knowledge that we can offer our customers a great product,” concludes Fredrik Hägglund. ■

The LT 6005 Rammer Series from Atlas Copco is designed for compaction work in confined areas with a slimmer design that facilitates handling.



TOWER cranes for major South African DAM PROJECT

Potain tower cranes will dominate the horizon on a major project by the Department of Water and Sanitation (DWS) to raise the Clanwilliam Dam wall.



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A Potain tower crane played an important materials handling role in the construction of De Hoop Dam.



Potain tower cranes are used on large dam projects throughout the world.



This will be the largest dam construction project undertaken by DWS after the De Hoop Dam project, where Potain tower cranes were also deployed. The latest project is a showcase for local supplier SA French in using tower cranes for such complex civil engineering projects.

SA French, a division of Torre Industrial Holdings, will supply a MD 485 tower crane, which is adaptable to a variety of job sites due to its modular design and efficient load handling capabilities. In addition, its Optima controls provide for smooth speed changes and high productivity. It will also supply a Potain MC310 crane, expected on-site in early May. The 25 t Potain MD 485 tower crane will pour the bulk of the concrete work at the Clanwilliam Dam, supplemented by the Potain MC 310 for smaller lifts.

The MD 485 tower crane was used with great success at the De Hoop Dam project on the Steelpoort River near Burgersfort in Limpopo Province. It has been dismantled and transported to the Clanwilliam Dam on the Olifants River in the Western Cape. The extensive experience that SA French gained at De Hoop will facilitate the construction process at Clanwilliam and help drive down the overall cost for the client.

“The methodology of using tower cranes for dam construction is largely cast in stone, and a lot of the knowledge and experience we gained at De Hoop and other DWS dams will be easily transferrable to Clanwilliam,” says Quentin van Breda, managing director, SA French. A major accomplishment at De Hoop was relocating the Potain MD 485 tower on two separate occasions.

An example of SA French’s proactive approach to meeting specific client needs was its recommendation that simultaneous erection of the two tower cranes would result in a considerable cost and time saving. The company will have a team on-site for the commissioning process, while DWS will use its own operators. “Part of our in-house offering is to train any certified operators that the client may require,” Van Breda says.

Upfront planning is critical in meeting health and safety requirements, as well as ensuring that all lifts are carried out as accurately and as quickly as possible. This is a key feature of the total lifting solution offered by SA French, which includes its considerable expertise backed by an extensive reference base in complex engineering projects, all of which is complemented by Potain’s market-leading tower crane technology.

SA French’s longstanding relationship with DWS, starting with the former Department of Water Affairs on the Braam Raubenheimer Dam near Lydenburg in 1982, was cemented by its successful involvement at the De Hoop Dam. This relationship played a vital role in it securing its latest contract. “Our long term relationships add additional value in terms of our comprehensive service and support,” Van Breda says.

Tower cranes are particularly suited to dam construction, as such projects require very specific lifts at certain radii. The number of lifts required on a dam site in terms of piping, valves and pumps does not justify the use of a crawler crane from a cost-effectiveness perspective, Van Breda notes.

“More often than that these lifts relate to the massive pipe structures that need to be handled and put in place. The only cranes that can handle these structures efficiently in terms of the combination of the height and the required radius are tower cranes,” Van Breda says. Some of the pipe sections at De Hoop, for example, ranged from eight to 10 tons.

Clanwilliam Dam project

The Clanwilliam Dam project is expected to use Roller Compacted Concrete (RCC), which DWS pioneered at De Hoop. This comprises large, dry aggregate in the form of rock, sand and cement that is compacted to form the bulk of the dam wall. RCC is a far more cost-effective option than traditional concrete dam walls. It also allows for more compact and sophisticated spillway sections, which necessitates the use of tower cranes in these constrained construction sites.

The main driver for the Clanwilliam Dam project is believed to be the burgeoning viticulture industry in the Western Cape. The concrete gravity dam was built originally in 1935 and raised in the 1960s by the addition of 13 crest gates with pre-stressed cables. The dam wall is currently 43 m high, with a net storage capacity of 122 million cubic metres.

The latest project aims to increase the Full Supply Level (FSL) of the dam by raising the dam wall by 13 m, providing an additional 70 million cubic metres of water a year to downstream farmers. This will also involve realigning a portion of the N7 road. In addition, the gravel access road on the eastern side of the dam will have to be realigned to allow for maintenance access to the top of the dam wall. ◀

DIAMOND BLADES

The Bosch Best for Universal diamond blades offer users up to 30% more cutting speed than other premium blades. Bosch Power Tools SA Accessories senior brand manager, Campbell Mhodi notes that the blades provide a superior lifetime even when used in rough conditions.

➤ According to Mhodi, the Best for Universal diamond blades have two innovative product features which set them apart from other blades on the market. "The SpeedteQ segment shape of the blades allows for increased speed when cutting thanks to the reduced friction and the constant segment length and spacing. The 3DteQ Diamond Array technology maximises the cutting capacity of the blade due to its optimal diamond distribution.

The Universal diamond blades are designed for specialised professionals, such as restorers, bricklayers, pavers and roofers. "These blades are designed with the skilled and well trained craftsman in mind. The focus is on productivity, innovation, and accessories for specific applications and a broad range of tools."

The high cutting speed allows the user to deliver all work on time, cutting through hard construction materials with ease. The Best for Universal diamond blades can be used for cutting reinforced and non-reinforced concrete, brick, masonry, and natural stone.

Mhodi points out that there are universal diamond cutters for angle grinders, table and petrol saws. The Best for Universal diamond blades are ideal for general building materials such as reinforced and non-reinforced concrete, masonry, brick, granite, cast iron pipe. The blades have a segment height of up to 15 mm for a long lifetime, even in demanding materials.

"The blades feature laser welded diamond cutting segments, which ensures the strength and durability of the blades. The Bosch Best for Universal diamond blades are available in 115 mm and 300 mm diameters for angle grinders and from 300 mm to 450 mm for table and petrol saws. These blades are the ideal solution for any professional craftsman, as they have been specially designed to allow for increased high speed in multiple applications," concludes Mhodi. ❏

Bosch Universal diamond cutting blade.

Bosch Universal cutting blades has various ranges for various applications.



GROWING THE EMS PLATFORM

In January 2014, Barloworld rolled out the Cat Equipment Management Solutions (EMS) telematic suite across its Southern African dealer footprint. Now, over a year later, there are more than 4 000 machines reporting to the Cat VisionLink™ internet portal via Product Link™, the onboard transmitting hardware, either through GSM cellular connection, or satellite.

➤ Most new Cat machines leave the factory with Product Link fitted as standard. "Retrofit kits are available for older machines," explains Barloworld Equipment senior product manager, Wally Parsons. Automatically set for international roaming, Product Link provides seamless cross-border coverage.

Offered in five levels, Cat EMS meets every operational scope requirement, from plant hire and construction fleets to full-scale mine sites. Benefits of registering machines on the EMS programme include peace of mind; cost reductions; better resale; safety; higher mechanical availability; and improved utilisation.

Key EMS features include near real-time fuel level information; machine filtering by job site/geographical location; multiple machine tracking; payload displays on medium and large wheel loaders; and geo-fencing capabilities.

Machine tracking and reporting is the responsibility of the Equipment Monitoring Bureau. This is a control room based at the Barloworld Condition Monitoring Centre in Boksburg, Johannesburg.

At the Bureau, a dedicated Barloworld Equipment team tracks individual machine data feeds downloaded via their onboard ECM (Electronic Control Module) units. ECM alerts sent via VisionLink notify fleet owners when standard protocols have been exceeded. Examples of typical alerts are 'engine over speed', 'high torque converter oil temperature', 'machine abuse', and 'implement hydraulic oil temperature high'.

The five Cat EMS packaged options are Level 1 Access; Level 2 Inform; Level 3 Advise; Level 4 Support; and Level 5 Manage.

In terms of summary overview, Level 1 Access enables users to enter the VisionLink portal to know where their equipment is and what it's doing with remote, near real-time information.

Level 2 Inform enables users to manage equipment health and utilisation trends compared to benchmarks via automated reporting.

With Level 3 Advise, the package moves beyond pure reporting to include expert dealer recommendations. A Barloworld Equipment condition monitoring adviser provides valuable advice about maintenance, utilisation and repair, drawing from the data trend analysis generated. These recommendations work hand-in-hand with a conditioning monitoring programme that can include in-field machine inspections, and fluid analysis via the Cat S-O-S SM Services programme.

Level 4 Support builds on Level 3 and caters for larger fleet owners, entailing the outsourcing of fleet maintenance, parts or repairs to a Barloworld Equipment technical services team, backed by the full EMS and S-O-S suite, plus a dedicated condition monitoring adviser.

For mining customers, Level 5 Manage is in turn a negotiated maintenance and repair contract option where Barloworld Equipment has sole responsibility within predetermined maintenance pricing structures for agreed machine rolling availability targets.

Cat S-O-S Services fuel and oil analysis programmes are either optional or inclusive depending on the EMS level selected. The Cat S-O-S Services laboratory for the Southern African region is housed at the Barloworld Condition Monitoring Centre. "Cat S-O-S Services are an essential component in machine life cycle costing, predictive and preventative maintenance strategies," Parsons stresses, adding that VisionLink enables users to view machine health data and Cat S-O-S sample results through the same portal. ❏



COURSE IN HIGH DEMAND

The response of contractors to the Light Steel Frame Building (LSFB) training courses presented by SASFA is testament to the growing popularity of the LSFB method in South Africa. This is according to SASFA director John Barnard.

> "We recently successfully presented our 6-day contractors training course to a full house for the 17th time," says Barnard. "The fact is that this course has grown significantly in popularity as an expanding number of building contractors, developers, architects and engineers become increasingly interested in learning about LSFB - because of the demand on them to use the method as a building solution.

The most recent course had 16 participants bringing to 281 the total number of students who have successfully completed the programme since its inception in 2009.

Barnard says that to ensure that the theoretical concepts are well understood, the course includes a practical component, consisting of setting out of wall frames, squaring, levelling, and erection of walls, erection of roof trusses, installation of plumbing, external cladding (FC boards, OSB and FC planks), insulation and internal lining (gypsum board), and internal joint finishing. "Finally, it is illustrated how difficult it is to make a hole in 15 mm thick gypsum board, and how easy and quick it is to repair," he says.

Students generally come from all over the country for this course and usually have had prior building industry experience.

Barnard made special mention of the SASFA

members who give their support to the course. "We could not do this without Lafarge Gypsum, Everite, Saint Gobain, Global Innovative Building Systems, Marshall Hinds, Kare and Simpson Strong-tie and Bosch Tools. We thank them for their support and time," concluded Barnard.

SASFA is planning to present the course in Durban, in July, and Cape Town, in



The 24 m³ house that was erected by the students as part of the training course.

September. Indicate your interest to attend by e-mail to info@sasfa.co.za.



Willem Venter from Lafarge Gypsum explaining the correct installation of gypsum board.



Neal Bernhardt from Bosch Power Tools explaining the use of their products on a LSF building site.

UWP Consulting



Christiaan de Villiers, technical director in the structures division, Stellenbosch.



Leon de Jager, associate in the water division, Pretoria.



Cobus van Dyk, associate in the management services division, East London.



Thomas McEwen, associate in the transportation division, Cape Town.

Sechaba Kou, associate in the structures division, Bloemfontein.



Vert Energy



Johnny Canada, technical services manager, electric power generation.



Steven Ward, service technicians, electric power generation.



Charles Mthiyane, service technicians, electric power generation.

Terex Washing Systems



Iain Walker, global sales director.

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