

# African Review

September 2015

of BUSINESS and TECHNOLOGY

P42



## The business benefits of a 4WD vehicle

P82

# Environmentally-sustainable engineering



**Construction and Mining**  
Technologies and trade at **bauma Conexpo P90**

**Power**  
Renewable energy industry and trade **P52**

**Finance**  
UK lists for West African regional bourse **P32**



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THE NEW SPIRIT OF AFRICA

# Editor's Note

This issue of African Review of Business and Technology offers insights into investment and technology across multiple industries and sectors. From page 20 to page 37, there are articles offering analyses of business, finance and technology in Mozambique and Cameroon, and in stocks and insurance markets. Pages 38 through to 45 address developments in technology and transportation, with articles on software for business, cloud computing, all-wheel drive vehicles and materials handling; water and power features, from page 46 to 59, with assessments of wastewater management and water purification, investment in East Africa, power grid technologies and solar power in Nigeria and in South Africa. From page 60 to page 107, this issue covers manufacturing, and construction and mining. There are, within this section, feature articles on welding, and on additive manufacturing technologies. There are reports on making working environments safer, and on building affordable housing. Pages within this section include reports on equipment and engineering, with analyses of loaders, crushers, and tunnelling. Investment in infrastructure and mineral extraction is addressed, in particular, through our preview of bauma Conexpo Africa.

Andrew Croft, Editor



Main cover picture: Joest Kwatani  
Inset, bottom left: Torre Lifting Solutions  
Inset, top right: LandRover

## Contents



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### REGULARS

#### 04 Agenda:

Developments in African business and technology

#### 14 Bulletin:

Innovations in energy and economy

#### 108 Solutions:

The latest additions to product portfolios

### FEATURES

#### 20 Business and Finance

Mobiles for health in Mozambique; Polana Serena; Chinese investment in Cameroon; West Africa's regional bourse reaches London; and innovative insurance initiatives

#### 38 Technology and Transport

Business apps in Africa; cloud computing for SMEs; the value of 4WD transport; robotics for port storage; and a fleet of pick-ups for construction sites

#### 46 Water and Power

Wastewater management with laboratory information management systems and processes for water purification; increasingly efficient grid technology; and power provision from solar generation, in Nigeria and in South Africa

#### 60 Manufacturing

New standards in welding; additive manufacturing technologies; and safer workplaces

#### 64 Construction and Mining

Water management systems; a new high-speed railway in North Africa; building affordable homes in South Africa; new standards for elevators; compact loaders and attachments; environmentally-sustainable engineering; a high-performance jaw crusher; micro-tunnelling technology; finance for new infrastructure; rental solutions to improve heavy lifting; improving facilities with traffic doors; construction and mining potentials and solutions at bauma Conexpo; the latest screeners; and an appraisal of mining technologies

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# Agenda / North

## IBM and Mubadala establish IT pan-industrial ecosystem

Technology group **IBM** and investment enterprise **Mubadala Development Company** have formed a partnership to bring IBM Watson to the Middle East and North Africa (MENA). The companies are collaborating to deliver powerful Watson cloud-based cognitive computing to healthcare, retail, education, banking and finance organizations. The new joint venture will also create a broad regional ecosystem of partners, entrepreneurs, start-ups and app developers who will apply Watson in innovative ways throughout MENA.

Watson represents a new era in computing in which systems are able to interact in natural language, analyse large volumes of unstructured data, respond to complex questions with evidence-based answers, and discover new actionable patterns and insights. The availability of Watson in MENA demonstrates Mubadala's strong commitment to spurring innovation and growing the technology ecosystem throughout the region. The collaboration with IBM exemplifies Mubadala's philosophy to capitalize on investment opportunities in various industries such as information and communications technology (ICT) to support the diversification of Abu Dhabi's economy and strengthen its competitive position in high-growth sectors both locally and internationally. IBM in turn, will draw on Mubadala's deep regional market knowledge to drive the adoption of cognitive computing technology across MENA.

**International Data Corporation (IDC)** projects that spending on ICT products and services in the region will cross the \$270 billion mark in 2015, making this area of the world the second-fastest growing IT market.

"This new joint venture with IBM will put both the UAE and broader MENA region on the leading edge for adoption of this breakthrough



IBM and Mubadala to bring Watson to the MENA region

technology," said Homaid Al Shemmari, CEO of aerospace & engineering services at Mubadala. "We are confident that together we can continue to accelerate the region's knowledge-based economy by empowering businesses to capitalize on new opportunities with this world class technology."

"This collaboration is another important demonstration of IBM's commitment to bringing Watson to all corners of the world and accelerating adoption of cognitive computing as the new technology standard for innovation," said Mike Rhodin, senior vice president, IBM Watson. "Mubadala's strong relationships throughout the MENA region will enable local organizations and entrepreneurs access to Watson to transform their work."

## Sustainable investment in Egyptian sanitation

A new project in Egypt is set to improve sanitation services for more than 800,000 poor Egyptians in the Nile Delta, where there is need to increase access to water, waste disposal, and health services. The US\$550mn **World Bank** programme focuses on enhancing access to sanitation services for the rural poor and addressing the pollution of the Nile from untreated sewage.

The Sustainable Rural Sanitation Services initiative aims at empowering local service delivery and connecting rural poor to working sanitation systems in the Delta governorates of Daqahliya, Sharqiya, and Beheira in Lower Egypt.

"One of our strategic areas for supporting Egypt is improving service delivery especially for the poor," said Asad Alam, World Bank country director for Egypt, Yemen and Djibouti. "The programme will improve the well-being of rural Egyptians who suffer from poor access to sanitation services and face serious environmental and health threats."

In the Nile Delta, the situation is of concern due to high groundwater levels and discharge of untreated sewage directly into the Nile's Al Salam Canal and Rosetta Branch, thus, polluting Egypt's scarce freshwater resources and jeopardizing the health of millions of

Egyptians. The prevalence of diarrhoea in children under the age of five is very high and disproportionately impacts the poorest.

Under the programme, responsibility and accountability will be decentralised to governorate level sanitation utilities. Transparent and predictable fiscal transfers will be introduced and will be linked to service performance. Systems will be put in place to ensure bottom-up accountability utilising citizens report cards, grievance mechanisms and audit reforms.

"The programme is supporting the Egyptian government's efforts to increase access to rural sanitation by shifting to a decentralised model that empowers the governorate level water and sanitation companies and makes them accountable to their citizens and stakeholders," said Gustavo Saltiel, World Bank programme team leader.

The current portfolio of the World Bank in Egypt includes 26 projects for a total commitment of US\$5.92bn. The World Bank finances projects for faster delivery of benefits to the people of Egypt in key sectors including energy, transport, water and sanitation, agriculture and irrigation, housing, social protection, as well as health and education.

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# Agenda / East

## TS6000 tractors go to BSML in Kenya



**N**ew Holland distributor **CMC Motors** has delivered over 50 TS6000 2WD tractors to **Butali Sugar Mills Limited (BSML)** in Western Kenya. These units join the company's fleet of over 200 New Holland 90 horsepower TS90 and TS6000 tractors.

Butali Sugar Mills has a raw cane crushing capacity of 2,500 TCD (tonnes crushed per day). The mills are fed by 30,000 contracted farmers scattered within the Western Sugarcane belt. To collect the cane from the farms, BSML runs a fleet of 200 New Holland tractors pulling sugarcane wagons, with each unit operating 20 hours per day spread over three shifts. With the addition of the fifty new units, BSML owns the biggest fleet of TS6000 2WD tractors in Sub-Saharan Africa.

BSML managing director Sanjay Patel said, "We work our tractors hard, ferrying sugarcane from the fields to our mill on a daily basis with a radius of 30 km around the factory. The robust design of this tractor and the modifications made in the TS Series over the years, especially keeping the mechanics simple to operate and maintain, have made this tractor ideal for our business. We renew our fleet regularly - in fact, our units are never more than five years old. We have a long history of business with New Holland and have owned New Holland tractors for many years."

## Maersk's new market growth

"What we are selling is at best a plain vanilla container. It is still as strong as it ever was and with basic care it will last for decades, but it often needs some repair which is why we're focusing mainly on those markets where they can be repaired for lower cost," said **Maersk Line Container Sales** managing director Rune Sorensen recently. In Kenya, Jacob Bolo is leading the effort as head of sales for Maersk Line East Africa. Besides a few large traders that are regular customers, most of his time is spent trying to get to know the retail 'end-users' of shipping containers which can be difficult if they hire freight forwarders to handle their shipping business. Mr Bolo said, "The opportunity in Kenya and East Africa is strong, also in the hinterlands like Uganda and Sudan where there are consistent container shortages. We haven't been in the market long but already I'd say the market knowledge of Maersk Line Container Sales is gradually increasing, there are more customers asking about us."

## IBM invests in East African youth skills initiative

Technology corporation **IBM** is investing US\$60mn in a skills development programme in 50 universities and polytechnics in East Africa. A huge chunk will be invested in Kenya where a cloud system will be built. Learning content will be provided in partnership with the **Kenya Education Network (Kenet)**. Students will take the courses for free on the IBM-Kenet cloud. Currently, 13 universities in Africa are using the programme with at least 1,000 students enrolled and 100 lecturers being trained on the system. Kenet is expected to work with IBM in advancing knowledge in various education levels. Last year, IBM announced a US\$1.2bn investment in new cloud resources to provide clients with localised data management solutions.

"With the new cloud investments, IBM will be able to meet its client's needs for choice, compliance and data residency. It will also enhance speed agility and choice," noted Amit Dave IBM chief technology officer, systems and technology for the Middle East and Africa region, during a presentation in Kenya.

According to Kenyan Education Secretary Jacob Kaimenyi, the IBM cloud would benefit over 80 universities in the region, in South Sudan, Uganda, Burundi, Rwanda and Kenya. He observed, "We need the right people with the right skills as the economy grows. This project will supplement the government's digital literacy programme."

The government plans to roll out laptop project for primary school in the coming year. It also plans to develop digital content, build teachers' capacity and build computer laboratories in primary schools. At least 60,000 primary school teachers will be trained for them to disseminate the information to their learners. The **Kenya Institute of Curriculum Development (KICD)** has digitised content in seven subjects for Class 1-3 and is piloting it in selected schools in readiness for the roll-out. To ensure the laptop programme is effective, the government has connected 12,000 primary schools to Kenya's power grid.

*Mwangi Mumero*

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# Agenda / South

## Granite CSD starts alternative securities settlement service

South Africa's **Financial Services Board (FSB-South Africa)** has granted **Granite Central Securities Depository (Pty) Ltd** a financial market infrastructure licence, the first of its kind under the nation's Financial Markets Act (2012) to settle securities, specifically in SA's debt securities market.

Granite CSD is South Africa's first independent central securities depository (CSD) to settle securities, specifically in the debt securities market in the country. Granite CSD plans to commence operations in the first quarter of 2016, and will initially be focused on the bond market, with money market and other products tabled for introduction in the near future. The emphasis will be on providing the debt market with a streamlined, efficient and cost effective service with shorter settlement intervals and a stronger focus on innovation and settlement risk reduction. This marks a significant challenge to the status quo which has until now operated in a monopoly scenario, with investors compelled to settle securities through a single service provider.

Granite's CSD model will operate under a user-owned, user governed structure. This model will allow for investment opportunities from the various financial market institutions, including debt issuers, authorised users, international banks, South African banks, asset managers, dealer brokers, and other parties for whom greater involvement in the strategy of a CSD would be beneficial to the market.

"Our model, and entry into the market, is intended to provide people with an alternative to the status quo, from our operations to our strategy, through a user-owned model," said Leon Rossouw, founder and CEO of Granite CSD. "It will give access to all market participants, with a representative governance structure that will fulfil shareholder objectives. Furthermore, it will support liquidity in the South African debt market by providing

more frequent settlement cycles and settlement stability."

Rossouw, a veteran of the financial markets industry, identified the need for innovation and improved service delivery in the post-trade environment due to the slow delivery of proposed new efficiencies and settlement risk mitigation for bonds.

"The time is right to launch a service like Granite CSD because to date, the local markets have not yet benefited from the proposed delivery of improved efficiencies agreed to by the incumbent CSD, as well as the need for international and continental expansion to settle debt instruments," Rossouw said.

Granite CSD will reduce the time-to-market solutions of bond products and services, and will offer post-trade confirmation matching services for authorised users and clients who choose to settle their transactions on its platform. It will facilitate web enquiries on account movements and balances, and will provide issuer ownership registers after the close of every business day. Granite CSD will also allow for central securities accounts to be opened at "beneficial ownership" level by clients through their central securities depository participants (CSDP) at the CSD.

The Granite CSD system has also developed a solution whereby SAMOS participant banks can collateralise their end of day inter-bank loans and as such reduce uncollateralised positions between banks.

While Granite CSD launches with two settlement cycles each day, set to coincide with the status quo, it plans to introduce more frequent settlement runs during the day, running as often as hourly, and as late as 18h00 for internal settlements. Transactions due for settlement on the same day can be reported for settlement at any time during that trade day, with settlement happening on the same day provided the seller can deliver the assets and payment can be secured.

## Energy experts assess power challenges

A delegation of power sector stakeholders from across sub-Saharan Africa travelled to Cape Town, South Africa, recently to participate in an international forum on African power. The delegation, comprising 20 high-ranking public and private sector power industry stakeholders, travelled to South Africa to attend the 2015 editions of **Power-Gen Africa** and **DistribuTECH Africa** in mid-July, where pan-African and international speakers and exhibitors gathered to assess the challenges, solutions and technologies to address power shortfalls across the continent. The three-day African power generation and distribution conferences and expo focused on infrastructure and regulatory issues, as well as attracting the necessary foreign investment to meet the growing energy needs of the continent.

Nigel Blackaby, Power-Gen Africa event director & conference director for event organiser **PennWell's** International Power Group, said, "Meeting the continent's power demands is now more important than ever before.

With an investment of around US\$450bn needed in Africa's power infrastructure to reduce power outages and reach the 600mn sub-Saharan Africans who do not have access to electricity, collaboration and integration are going to be crucial."

Gilman Kasiga, co-founder & CEO of **EA Power**, based in Tanzania, remarked that the region was rich in hydro, geothermal and natural gas potential, and that private sector investment would be key to exploiting these resources. However, the right commercial models and tariff structures needed to be in place to drive this private investment.

Mr Kasiga observed, "This is the first time I have attended Power-Gen Africa. It has been a useful opportunity for me to make new connections and get a better understanding of the regional issues."

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# Agenda / West

## Louis Berger to work on Senegalese road section

The **Millennium Challenge Account (MCA)** has selected a **Louis Berger**-led consortium for the implementation of the third phase of a major road rehabilitation programme in Senegal, the Ziguinchor-Tanaff-Kolda-Velingara section of National Highway 6.

Work associated with this project brings the total value of consultancy services delivered by the consortium over the three project phases to nearly US\$9.4mn.

Macky Sall, President of Senegal, inaugurated the Abdoul Diallo Bridge, a project component and a major MCA Senegal achievement. This bridge is part of

the 252km (156 miles) road linking Kolda and Ziguinchor to the west and Tambacounda to the east of the country.

“Modernisation of the bridge and of National Highway 6 - both considered to be of paramount importance for Senegal’s socioeconomic development - will increase local farmers’ access to domestic and international markets,” said Pascal Houdeau, deputy general manager of operations for West and East Africa.

In earlier phases of the project, which started in 2010, Louis Berger drafted a resettlement action plan, prepared tender

documents and provided technical assistance during procurement processes. The current road rehabilitation programme has an important social component, including public information and awareness campaigns on topics ranging from river clean up practices to sexually transmitted illness, HIV prevention and AIDS treatments. Over the life of the programme, Louis Berger has helped develop social community infrastructure, such as construction of new water boreholes, modernisation of local markets, school fencing and improvement of pasture ponds, barns and community stoves.

## Ceona sets up strategic partnership with Interoil Angola

A SURF contractor with heavy subsea construction capabilities, **Ceona** has expanded its West African reach after entering into a strategic partnership with **Interoil Angola Lda**.

The partnership will see Interoil Angola, which is a key player in offshore support vessel management in West Africa, support Ceona’s plans to expand into Angola.

Ceona is already active in West Africa through its **Ceona-Seaweld** joint venture in Ghana as well as the company’s strategic partnership with **Marine Platforms Limited** in Nigeria.

Bill Hickie, Ceona’s VP business development, said, “Interoil Angola is a well-established company and an approved supplier by the major operators in the region. It is also one of the few Angolan organisations that has a licence for vessel management. Partnering with them enables Ceona to officially enter the Angolan market, where our flagship Ceona Amazon vessel is highly suited for work offshore, and at the same time continue to grow our strong footprint across West Africa.”

Headquartered in Luanda and with a yard in Sonils, Interoil Angola’s core business is managing support vessels in-country. The company, which is registered with Sonangol, offers oil and gas services in strategic alliance with reliable and proven technical partners.

Ceona has already established an impressive track record which has seen it expand into West Africa, the Gulf of Mexico and Brazil. The Ceona Amazon is a powerful, purpose-built hybrid vessel that can execute complex logistical projects in remote, harsh and deepwater territories. Designed to deliver full flexible or full rigid pipelay, she can change easily and quickly between each mode and is extremely weather resilient. With a deck area of 4,600m<sup>2</sup> and the ability to carry 9,500te of pipe on deck and in her two holds, the Amazon is custom designed for full deepwater field development needs. Her two 400te cranes, which have been



The Ceona Amazon pipelay vessel

designed to operate in tandem to support work in water depths of up to 3,000m (10,000 ft), enable her to easily install large manifolds and heavy subsea structures. This combined with the vertical-lay pipelay system featuring a top tension of 600te, capable of laying rigid pipe to 3,000m (10,000 ft) water depth make her a vessel of choice for all deepwater field development needs.

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# Bulletin / Energy

## OPIC, Kipeto Energy commit funds to Kenyan wind power

As part of the US **Power Africa** initiative, **Overseas Private Investment Corporation (OPIC)** has committed US\$233mn in debt financing to support construction and operation of the Kipeto Wind Power Project in Kajiado, Kenya; the 100-MW, grid-connected wind power facility located south of Nairobi

“**GE Africa is The sole supplier of equipment for the 100MW Kipeto Wind Power Project, located about 50km from Nairobi; the Kipeto project is expected to make a significant contribution to the installed energy capacity in the country where up to 80 per cent of the population currently lacks access to electricity**”

will be, when complete, one of the first utility-scale wind projects to come online in Kenya, where over 75 per cent of the population still lack access to reliable electricity.

## Solektra and Akon complete solar deployment in Benin

Energy enterprise **Akon Lighting Africa** and its key partner **Solektra International** have been installing the last of the 1,500 solar-powered street lamps and 2,200 solar kits agreed under the tender Solektra won early in 2015, targeting 124 localities; “We have already installed over 75 per cent of the equipment and the authorities are most satisfied by the work done by our teams in the field.” said Samba Bathily, CEO of Solektra.

## Philips lighting helps Ghanaian National Theatre control costs

Diversified technology company **Philips** recently unveiled the newly-illuminated **National Theatre of Ghana**, which has installed connected LED technology to boost the beautification of the city of Accra, while also cutting energy consumption by up to 80 per cent as compared to the existing conventional lighting; the new lighting



The National Theater of Ghana in Accra, illuminated by Philips

system is installed throughout the entire façade of the National Theatre, enhancing its distinctive architectural structure and contributing to the building’s energy saving performance.

## Gide advises on major solar energy project in Mali

Legal enterprise **Gide** is advising a consortium of investors on a solar power plant project in Mali involving a public-private partnership between **IFC InfraVentures**, a member of the **World Bank** group, **Scatec Solar**, a Norwegian integrated independent solar power producer, and local developer **Africa Power**; the project includes the financing, construction and operation of a 33MW solar power plant in Segou, 240km east from Bamako, for a total cost of EUR52mn (US\$56.8mn).

## Investment guarantees for Ghana’s energy transformation

The **World Bank** has recently approved a record investment of US\$700mn in guarantees for Ghana’s Sankofa Gas Project, which is set to help address the country’s

“**The Sankofa Gas Project is a good example of how Africa can address its infrastructure challenges and lay the foundation for sustained economic growth by providing affordable and reliable power to its population.**”

- Makhtar Diop,  
vice president, Africa region,  
World Bank

serious energy shortages by developing new sources of clean and affordable natural gas for domestic power generation; there is a unique combination of two guarantees for the project – an **IDA** guarantee of US\$500mn to support timely payments for gas purchases by **Ghana National Petroleum Corporation** and an **IBRD** enclave loan guarantee of US\$200mn to enable the project to secure financing from its private sponsors.

## WEG engineers new contactors to help save energy costs

The new generation of **WEG** contactors has been engineered to facilitate energy savings as well as the optimisation of space within electric panels, using only non-toxic and eco-friendly materials; the company’s CWB range of contactors accommodates surge suppressors directly in

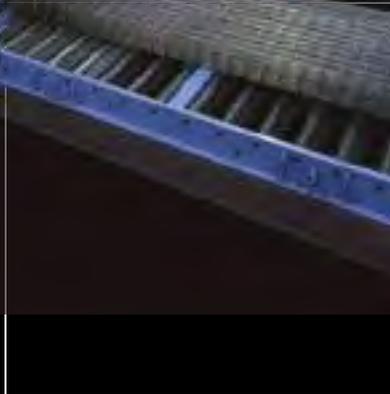
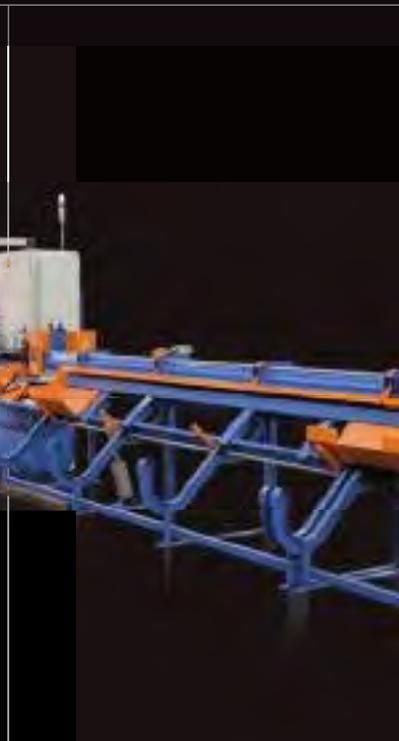


the device, saving space and also allowing easy access for maintenance or replacement, while coil replacement can be accomplished without the need for any tools.

The new WEG contactors have been engineered to facilitate energy savings as well as the optimisation of space within electric panels



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# Bulletin / Economy

## MENA governments consider introducing new tax measures

To preserve economic and social stability and continue with development plans, governments in the Middle East and North Africa (MENA) region are considering tax measures to broaden their revenue base and increase tax yields; the evolving tax landscape in the MENA region was discussed at the **EY MENA Tax Conference** held recently in London, in the UK, attended by EY Tax



**Fiscal policy initiatives are now focusing on ways to broaden the revenue base, promote investment in projects that create value addition to existing oil and gas export projects and stimulate investment in the non-oil and gas sector.”**

- Sherif El-Kilany, MENA tax

specialists and senior finance and tax executives from major European companies with investments in the MENA region.

## Financial boost for businesses in Sao Tome and Principe

**IFC** has committed to its first long-term financial investment in Sao Tome and Principe, in the form of a risk sharing facility with **Banco Internacional de Sao Tome e Principe (BISTP)**; the investment is supported by donor funds from the **Government of Japan**, helping to address a large financing gap in the island archipelago where two-thirds of the population lives on less than US\$1.50 a day.

## GE to invest US\$14.7mn in East African healthcare

Technology and services group **GE** has announced a series of new commitments



**Sub-Saharan Africa will need to create an average of 15-20mn new jobs per year over the next three decades to meet the current growth.”**

- GE Africa,

**Future of Work white paper**

aimed at addressing some of the most critical health challenges in East Africa through a sustained focus on skills development and capacity building. Among the investments, GE announced the establishment of the GE Healthcare Skills and Training Institute in Kenya, GE's dedicated healthcare skills advancement centre in Africa, and a US\$1.7mn GE Foundation grant for a Biomedical Equipment Training and Safe Surgery programmes in Ethiopia.

## IMF disseminates research on government revenue

The **IMF** has published for the first time the World Revenue Longitudinal Dataset (WoRLD), which provides data on tax and non-tax revenues for 186 countries over the period 1990-2013, and includes broad country coverage and time periods; Vitor Gaspar, director of the IMF's fiscal affairs department, said the purpose of releasing the database for general use is to “encourage and facilitate informed discussion and analysis of tax policy and administration for the full range of countries, the need for which was highlighted most recently during the Financing for Development conference in Addis Ababa”.

## ECA publishes notes on North African transport and trade

The **Economic Commission for Africa (ECA)** has published a report on International Transport and Trade facilitation in North Africa, which offers analyses of sub-regional policies, regulatory frameworks, transport and trade infrastructures, and suggests reforms and practical measures to facilitate trade and the transport, control and clearing of goods when crossing the sub-region's main land borders (Algeria, Libya, Egypt, Mauritania, Morocco, Sudan and Tunisia); “The aim of this study is to help promote the growth of trade by proposing, on the basis of a diagnosis of the existing situation in member countries, a regional outline plan to facilitate interstate transport, transit and trade in the North Africa region, along with measures and actions that would sustainably enhance the performance of customs administrations and the quality of logistics services while boosting the economic integration process”, explained Mrs Karima Bounemra Ben Soltane, director of the ECA office for North Africa.

## The measures required to reform SA's tax administration

South African businesses must access local tax expertise, invest in sound business systems, and take the time to understand local tax frameworks and regulations if they are to succeed as they expand into new territories in sub-Saharan Africa, according to Gerhard Hartman, head of department: Sage HR & Payroll International Division; Mr Hartman said, “Sophisticated legislation in South Africa and tools such as e-filing mean our environment is very mature, but other African countries are quickly catching up - for example, Kenya with its iTax system.”

# Elkon's expansion in Africa

With 40 years of experience supplying the world's largest companies and having more than 2,800 Concrete Batching Plants all over the world, Elkon is not only the biggest manufacturer in Turkey but also in Europe. The company's sales amount to 300 units of Concrete Batching Plants per year.

Along with its international expansion and continuing growth all over the world, up to now Elkon has supplied more than 400 Concrete Batching Plants to 33 African countries.

The Dangote Group, which is the largest industrial conglomerate in West Africa, has expanded its business range by starting a road construction project in Lagos, Nigeria, making a joint venture with Andrade Gutierrez from Brazil, which is one of the biggest contractor companies in the world. As a result of having lots of satisfied customers



The Elkon Mobile Master-135 Jaguar Mobile Concrete Batching Plant

and also due to its good reputation in Nigeria, Elkon has contributed to reducing the time required for decision-making.

Thanks to the combination of personal and efficient assistance and Elkon's ability to figure out its customer's requirements, Dangote decided to place an order for one unit of Elkon's Mobile Master-135 Jaguar Mobile Concrete Batching Plant, with 110cbm/h production capacity.

Jarlsø Group, which has wide experience in

building power plants all over Africa, including in Togo, Ghana, Uganda, Sierra Leone, and Mozambique, etc, had also been considering conducting ready-mix operations in Togo and Ghana, where it started its operations with three units of Elkon's Stationary Concrete Batching Plants.

Korea's SsangYong Engineering & Construction Company, which is one of the most important contractors in the world decided to place an order of one unit of the Stationary Concrete Batching Plant and one unit of the Mobile Concrete Batching Plant to be installed in Equatorial Guinea to supply high-quality concrete in greater volume for the construction of a terminal, a seven-storied administration block, and other objects.

Previously, SsangYong E&C had already acquired four Elkon Concrete Batching Plants, which are now in operation.

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# African Review/On the Web

A selection of product innovations and recent service developments for African business  
Full information can be found on [www.africanreview.com](http://www.africanreview.com)

## Ghana turns to nuclear to address deficit

Ghana has taken an important step on the road to achieving nuclear power, passing the Ghana Nuclear Regulatory Bill.

The bill, which is currently awaiting Presidential Assent before being officially signed into law, details the establishment of a regulatory authority to ensure the safe and responsible use of nuclear materials.

A number of relevant international conventions were also ratified by the legislation, including the Convention on Early Notification of a Nuclear Accident, the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency and the Convention on Supplementary Compensation for Nuclear Damage.

[www.africanreview.com/energy-a-power](http://www.africanreview.com/energy-a-power)



Ghana is hoping that nuclear energy will help to propel the country's economy. (Photo: Vaclav Volrab)

## Konecranes and Terex establish new merger

Finland-based equipment manufacturer Konecranes has merged with US machinery giant Terex to create a global lifting and materials handling solutions company called Konecranes Terex Plc.

The merger will bring together two companies with a global presence in materials handling, lifting services and equipment servicing solutions. The newly-formed company will be expected to increase both partners' global scale of operations, especially in low-cost emerging markets.

The deal will also lead to an enhanced presence for both firms in sectors such as industrial lifting and ports, according to Konecranes.

[www.africanreview.com/construction-a-mining](http://www.africanreview.com/construction-a-mining)

## Chinese airline adds Nairobi to network

China Southern Airlines has embarked on its maiden flight to Kenya's Jomo Kenyatta International Airport (JKIA) and commenced direct flights from Guangzhou to Nairobi.

The carrier will offer three flights per week using the

Airbus A330-200 aircraft, which has a capacity of 300 passengers.

After Mauritius, Nairobi has become the second destination in Africa to which China Southern Airlines flies directly.

[www.africanreview.com/transport-a-logistics](http://www.africanreview.com/transport-a-logistics)



China Southern Airlines now flies direct from Guangzhou to Nairobi (Photo: Edwin leong)

## Kilimanjaro airport set for refurbishment

Kilimanjaro International Airport (KIA) in Tanzania is to undergo a US\$42mn upgrade that will see rehabilitation and extension of various facilities to cope with increased passenger numbers.

BAM International has been awarded a contract that includes the refurbishment of the terminal building and construction of a new parallel taxiway.

In the terminal building, configuration will be carried out to create a central commercial lounge and separate waiting areas for domestic and international passengers.

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## Ford to assemble pickup trucks in Nigeria



Ford South Africa president Jeff Nemeth (left) and Coscharis Motors Limited president Cosmas Maduka at the announcement of the new manufacturing facility in Nigeria, where the Ford Ranger will be assembled (Photo: Ford Motor Company)

Ford Motor Company has announced that it will begin assembly of the Ford Ranger pickup truck in Nigeria from Q4 2015 as part of its expansion plans for the Middle East and Africa.

The pickup will be assembled in Ikeja, Lagos State. For the project, Ford will partner with its dealer group Coscharis Motors.

Ford Middle East and Africa president Jim Benintende said, "Assembling Ford Ranger trucks in Africa's largest economy is an important milestone in our Middle East and Africa growth plan. With Coscharis we have the right partner and with the Ford Ranger we have the right product to deliver a world-class truck that Nigerian customers want and value."

[www.africanreview.com/transport-a-logistics](http://www.africanreview.com/transport-a-logistics)

## Rwanda to explore 10 mining concessions

Rwanda has signed mining contracts with six mining companies to exploit 10 mining concessions that could potentially bring about profits to the tune of US\$45mn over the next five years.

The concessions are in the western part of Rwanda and will bring in investments of about around US\$9mn. Of the six companies awarded contracts, five are from Rwanda and one from India.

After tourism, mining is the highest income generator for the East African nation.

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# Mobile makes health better in Mozambique

The current state of mHealth in a key southeastern nation, with respect to nutrition, public health needs, and data surveillance and management

There is a particularly acute requirement to address nutrition and maternal and child health in Mozambique. Research recently undertaken by the GSMA, which represents the interests of mobile communications network operators, technologists and other communications industry stakeholders worldwide, highlights the need to address healthcare provision in the country, and the opportunities to be availed by technological support for healthcare development.

According to a 2015 Mobile for Development Country Feasibility Report, published by the GSMA, infant mortality rates are approximately 63 deaths per 1,000 births and mortality of children under five reached approximately 90 deaths per 1000. Of the total mHealth interventions tracked by the GSMA, 50 per cent are concerned with infant and child health. Only 22 per cent of these interventions are concerned with child nutrition.

In Mozambique mobile is uniquely positioned to tackle and improve on this health feature, through its coverage and capacity to reach the largest possible audiences.

There is a shortage of health personnel in Mozambique (approximately 0.46 maternal and child nurses/1,000). The National Community Health Worker (CHW) programme seeks to tackle this imbalance by improving opportunities, remuneration rates and long-term prospects for personnel and training. mHealth services tracked by the GSMA, that report their numbers and target health workers, reached 1,183 facilities by Q4 2014, while services that target women and children reached 593 facilities. Scaling up and integrating mobile services with health personnel resources will greatly assist national strategies to improve overall health indicators while retaining staff, particularly if used in the areas of training and retention.

Additional health considerations in



Mozambique include stunting levels - which, at 42.3 per cent, are above the critical population threshold of 40 per cent. The majority of stunting occurs in rural areas. Currently the rate is 47 per cent in rural areas versus 35 per cent in urban areas. In terms of absolute numbers, children affected by stunting grew by approximately 60,000 between 2008 and 2011. Six per cent of children suffer wasting, 15 per cent are underweight, and four per cent are severely underweight. Child anaemia (in children under five) is 69 per cent and maternal anaemia is 54 per cent.

## How mobile tech can make it better

Current mobile communications technology can tackle these challenges, by disseminating information on efficient nutrient intake across the country and into difficult to reach rural districts. The potential addressable market for maternal segments alone is 1.1mn (women who are literate and pregnant or have a child under five) in Mozambique. This is forecast to rise to 1.22mn by 2020.

The Mozambican health sector faces a number of challenges. One of the most pressing is the need to better utilise its limited health personnel through the use of efficiency tools, time saving processes and human resource planning/management. There are clear opportunities for mHealth actors to develop the provision of information and decision support services in the country, incorporating retention strategies and

training features to bridge gaps in the nation's health sector. And there is a strong alignment between the core aims of the Mozambique Ministry of Health (MISAU) and the GSMA's mHealth initiative, with respect to reaching maternal and infant segments with health and nutritional information.

## Stakeholder support and interventions

The prospects are good for tangible and sustainable improvements in healthcare delivery, on the back of interventions by technology stakeholders. The Mozambican government has instituted a number of initiatives to tackle the lack of health personnel in-country. Its National CHW programme is closely aligned to the work being undertaken by the GSMA and mobile technologists. Specifically, mobile provides an easy route to connect CHWs in regions where health needs are under serviced, providing access to standardised health content and allowing data to be pushed to beneficiaries in the field. Capacity can also be increased on-the-fly due to the in-built scalability of mobile.

## Rolling in a regulatory framework

Regulation that is conducive to mHealth development and that balances the needs of public sector organisations and patients with commercial realities is rare within Sub-Saharan African (SSA). Mozambique has not developed any regulation to date that is specific to mHealth. However, there exists a progressive attitude in the legislation process.

One example is the development of the Telecoms Strategy Policy through the instigation of a public consultation involving mobile operators and relevant stakeholders. This open attitude will assist in the process of developing regulation that is specific and pertinent to the unique requirements of mHealth, leading to a market environment that is more conducive to successful mHealth. ■

# Greater growth, but less room for movement

**B**usinesses can take heart from Mozambican economic attributes, despite recent travails the country has experienced. The country's economic performance continues to be stronger than most other countries in Sub-Saharan Africa. Indeed, the IMF has determined that the nation's growth may be expected to reach seven per cent in 2015, and average around eight per cent between 2016- and 2019.

Of particular interest to potential and recurring investors would be Mozambique's plans to develop further oil and gas operations and infrastructure around the Rovuma basin, with funds of as much as US\$100bn ready to transform the country into potentially becomes the third largest liquefied natural gas (LNG) exporter globally.

Perhaps most encouraging is the governmental focus on the diversification of revenues and investment vehicles to benefit associated commercial activity, and also to make the nation's economic growth both inclusive and expansive, creating employment opportunities across a number of skill sets.

#### Acting prudently to ensure sustainability

Inflation is a concern, and the government would be well-advised to act cautiously, to ensure that prices do not check production unnecessarily. Inflation remained low in 2014, at 1.1 per cent, but a resurgence in agricultural production, amongst other factors, could see it as high as 5.5 per cent during 2015. This would be in line with the

Mozambican government's medium term target of 5-6 per cent, but this may be achieved only with active policy engagement by public and private sector entities. Allied to this concern is the recent rate of fiscal expansion (in 2014), whereby the nation's overall fiscal deficit grew to over 10 per cent of its gross domestic product (GDP). The government has begun efforts, principally through its 2015 budget, to return public finances to sustainable conditions, but it must generate a fiscal adjustment of more than three per cent of GDP in order to stabilise public debt over the medium-term. The room for fiscal movement is marginal, so prudent borrowing is essential, as are tangible, audited returns on investment in public sector projects wherever possible. ■

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# Mozambique's rapid economic growth

Mozambique is on its way to transforming its economy, with a newly elected president and the expected launch of natural gas projects in the country

The Mozambican economy gained strong momentum in 2014 with a real GDP growth of 7.5 per cent, compared to 7.1 per cent in 2013. This growth rate was below initial projections mostly due to lower than expected coal production, and military tensions in the country's central region. FDI, one of the key drivers of growth, experienced a 28 per cent reduction from the record levels of 2013, reaching US\$4.2bn which equates to around 22 per cent of GDP.

Public expenditure, another driving force behind economic growth, rose to a record 41.4 per cent in 2014. The main sectors booming are construction, services to enterprises, extractive, transport and communications.

## Economy by Sector

When analyzing GDP, tertiary activities amount to 55.8 per cent, the secondary sector 14.9 per cent and the primary sector 34.1 per cent. The agriculture sector remains very important for the Mozambican economy, especially from an employment point of view. According to recent statistics, the country employs about 80 per cent of the population and contributed an estimated 29.4 per cent to GDP last year.

The country's agricultural sector was further underperforming, with an estimated 4.6 per cent growth in 2014 due to low productivity as the sector remains in dire need of technology transfer and investment. Rural areas are also susceptible to drought, floods and cyclones, with their important cash crops being tobacco, sugar, cotton and timber. Mozambique still has to import a huge share of its food needs.

Bigger investments such as the tripartite JapanBrazilMozambique ProSavana project and other foreign investments from China and Vietnam have been affected by issues such as access to land and/or poor



The 175MW Central Térmica de Ressano Garcia gas fired plant is expected to supply electricity to more than two million Mozambicans.

infrastructure. This has led to a new "Law on Agriculture, Food Security and Nutrition", which is being drafted and is scheduled to be debated and approved during 2015.

The extractive sector was the fastest expanding sector in 2014 at 22 per cent, propelled by a boost of coal exports. Since 2007 multibillion dollar investments were made in mega coal mines and transport infrastructure. However, since then international coal prices halved and exports have been hampered by infrastructure and logistic inefficiencies.

Currently all coal mining projects are operating at a loss. Rio Tinto decided to exit the country with a loss of nearly US\$4bn, selling its Benga project to India's International Coal Ventures for US\$50mn.

Vale has also stated that it was seeking to sell part of its stake in the Moatize project, its US\$4.5bn investment in a 900 km railway from Moatize, through Malawi, to the Nacala port in northern Mozambique.

A new law, The Rovuma Law, regulates the concession contract with oil and gas exploration company Anadarko and Italy's ENI for the construction of a US\$20bn onshore LNG plant.

However, the current depression of international oil markets could slowdown the process in getting the final investment outcome.

The manufacturing sector has recruited 2.8 per cent of the work force and is dominated by the ozal aluminium smelting plant which accounts for a quarter of all exports.

In 2014, a US\$150mn landmark deal by China Tong Jian Investment Company and the Mozambican government was made in an automotive assembly plant.

Power demand continues to grow at an annual rate of 15 per cent, requiring a structural investment boost to the sector. The US\$5bn joint Sociedade Transmissão de Energia (STE) power line Mphanda Nkuwa Dam project is crucial for unlocking development in the power sector. However the project has been postponed since 2012 due to shareholding issues.

In 2014, the first largescale gasfired power plant in Mozambique was opened. Mozambican natural gas produced in the Pande fields is the natural gas source for the 175MW Central Térmica de Ressano Garcia (CTRG) plant. ■



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# China cultivates commerce in Cameroon

Lessons on how community engagement can be aligned to the development of agroforestry by Asian investors

**W**hen a continent as forest rich as Africa becomes the target of direct foreign investment – no matter what the origin – what are the risks and negative impacts on communities, agriculture and forestry?

After considering this question at the micro-level, the Center for International Forestry Research (CIFOR) published its deliberations in a study of Hevecam, a rubber company on Cameroon's Atlantic coast.

Through studying just one company – which evolved from state owned, to foreign owned, to majority Chinese owned – the study's authors evaluated whether Chinese companies have a lower sense of social and environmental accountability than other investors. "Our research shows the situation is much more nuanced and complex than the sometimes untested, negative views about Chinese foreign direct investment in Africa would indicate," said Samuel Assembe-Mvondo, a CIFOR scientist based in Cameroon, and lead author of the study.

## One company, several problems

Hevecam was created in 1975 as a state-owned Cameroonian company. Two decades later it was sold to Singapore's Golden Millennium Group (GMG). Then, in 2008, Chinese state-owned company Sinochem bought 90 per cent of GMG's shares.

So, was there a marked difference in attitude between state-owned and private, Chinese and non-Chinese management of the same company?

"One thing that is sure is that the current owners have inherited a number of unresolved problems that go back many years," said CIFOR's Louis Putzel, another author of the study. "The degree to which they are able to resolve those problems will be a real test of their ability to implement policies to satisfy the needs of their workers and local communities, while protecting the natural environment."

One issue dates back to the early days of the national rubber industry. To make way for company operations, the Cameroonian government reclassified 41,339 hectares (ha) of forest as public estate for state investment.

That didn't contravene any laws, but it did undermine historically well-documented land entitlements of two ethnic minorities – the Bulu and the Bagyeli people.

## Increase productivity, maximise profit

From 1998 the Singaporean owner's strategy was to increase productivity of cultivation areas and maximize profits. Ten years later, Sinochem focused on expanding the plantations, improving production with new research facilities and nurseries, and bringing in a new policy on sanitation, security and environment.

But there was a downside to all of that activity. The report states that GMG (both Singapore- and Chinese-owned) seems to have respected only a few of the provisions of the privatization agreement.

"There were issues like higher wages not being given, and the expansion of plantations to create new jobs, to name just a few," said Putzel. "And smaller issues as well – like improved workers' living quarters."

In 2011 the employees went on strike, hoping to pressure Sinochem (by then the majority shareholder) to change the management strategy which it inherited.

It took mediation from the Cameroonian Minister of Labor and the signing of a memorandum of understanding (MoU) to end the strike the following year, which, according to Putzel, "indicates the continued importance of State involvement, to negotiate the balance of interests between companies and the people".

## Does people power work?

Sinochem is now making "positive efforts" to improve its corporate social responsibility efforts, the report states, including a one-off bonus of US\$400 to each of its workers, plus

free health insurance and added equipment and medicines for the company hospital.

"Under Chinese ownership, there are some indications that a higher standard of corporate social responsibility is now being applied than previously," said Putzel. "But there's still long way to go to improve social relations with local communities, who have suffered from many decades of unfulfilled claims regarding land ownership and rights."

There's also recently been strained relations between village planters and both the company and state, when "to their dismay, the planters realized that the company was heavily under-pricing their products" and so, started selling to a competitor. GMG increased the price it paid but then asked "government authorities and the local police to prevent trucks from the competitor's company from entering the site, thus preventing the rival company from buying from the local villages".

"While the company's target of maximum profit is understandable, if it occurs at the expense of employees and local communities, that's not good for the company in the end," said Assembe-Mvondo.

The company management – pushed by local officials – committed to negotiations to earmark 2,000ha of 7,000ha of forest land used for rubber production for local communities to manage.

"This is a key outcome," said Putzel. "While the conversion of natural forest, in whatever condition, is always matter of great concern, the involvement of local communities in managing at least a share of the resource is an important step towards ensuring benefits are also shared."

Assembe-Mvondo observed that Sinochem's new corporate social responsibility efforts are understood to be, to some extent, beginning to improve their relations with local communities, but added that the real results would be revealed with time. ■

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# African enterprise after the asset boom

Sub-Saharan Africa is in the early stages of a more challenging era for growth. Analysts say the region will grapple with lower commodity prices, a slowdown in China, economic fragility in Europe and continuing currency depreciation. Exports will diminish as both growth drivers such as private consumption and investment – both private and public – will become proportionally more important.

“Our forecasts for real GDP growth indicate that the 10 fastest growing economies in sub-Saharan Africa over the coming five years – excluding South Sudan due to extreme base effects – will be Burkina Faso, the Republic of Congo, Cote d’Ivoire, the Democratic Republic of Congo (DRC), Ethiopia, Kenya, Mozambique, Rwanda, Tanzania and Zambia,” said Lisa Lewin, global economist at London-based economic researchers, BMI Research.

According to Lewin, a few key themes emerge in the dynamics that will drive the outperformance. These are: lower oil prices that will provide a boost to several economies, the mining industry, which is still an important growth propellant, burgeoning consumer markets (albeit from a low base), and government policies that will play pivotal

roles in the outperformance of several economies. There are clear losers and winners from the sharp, structural decline in oil prices that took place over the second half of 2014. Of the losers, a number of oil-exporting countries, including Angola and Nigeria, are highly dependent on oil for fiscal and export revenues. “Over the coming year, these countries face a painful adjustment characterised by a sharp economic slowdown and a severe deterioration of fiscal and current account balances. Nigeria will drop out of the top 10 league of fast-growing sub-Saharan economies as growth slows,” said Lewin.

Lower prices will also affect the oil and gas industry. BMI analysts believe that exploration and development activity will be curtailed.

“The projects most at risk include ‘unconventionals’ (shale plays in South Africa), ‘ultra-deepwater’ and ‘pre-salt’ projects offshore West Africa as well as East African liquefied natural gas (LNG). Although we still expect the East African LNG boom to proceed, projects face major bureaucratic, regulatory and logistical hurdles. As a result, we forecast substantial delays to first oil in Mozambique and Tanzania,” the analysts say. On a positive note, SSA’s net oil importers are enjoying a tax cut of sorts. “In our view, Kenya, Senegal, Tanzania and Zimbabwe are best-positioned to benefit in this respect. These countries all run large trade deficits, due in part to a hefty oil import bill.”

Several economies poised for outperformance have something in common: a prolific mining industry. Mining output is projected to rise significantly in Congo-Brazzaville (iron ore), the DRC (gold and copper), Mozambique (coal) and Zambia (copper), despite depressed commodity prices, with associated investment contributing to growth. Although the mining industry is generally encountering capital expenditure cuts, due to reduced profitability caused by subdued commodity prices, Lewin believes “there will still be pockets of growth”.

## The dynamics of demand

The list of outperformers also highlights the growing importance of domestic demand. Private consumption is expected to rise across the board in sub-Saharan Africa, with brighter prospects for consumer markets in Ethiopia and the DRC, not least due to the sheer size of their populations – 99mn and 71mn respectively. Consumption growth will, however, be concentrated in the lower-middle income classes, with rising demand for low-margin, high-volume goods such as beer and toiletries rather than luxury goods such as cars and laptops.

In a number of the countries mentioned, government involvement is a key driver of growth, especially through a state-led push to upgrade physical infrastructure. For example, the governments in Cote d’Ivoire and Ethiopia are investing heavily in infrastructure – often with financing from Chinese entities – in a bid to improve the operational environment. ‘One of the most commonly-cited impediments to doing business in sub-Saharan Africa is a lack of physical infrastructure, so a leap forward in this regard can mean that economy steals a march on its peers,’ said Lewin. ■

Jon Offei-Ansah



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# The Next Step for KBL

After having made an impact in construction, irrigation and mining, Kirloskar Brothers Limited (KBL) is now looking forward to helping Africa with its impending water woes.

**W**ater scarcity is a huge global threat. According to Population Action International, nearly 2.8 billion of the global population in 48 countries faces the threat of water scarcity by the year 2025. Out of these 48 countries, about 40 are from West Asia, North Africa and Sub-Saharan Africa. The threat of water scarcity has pressed governments and water conservationists to focus on the utility of water pumps and recycling water.

With rapid urbanization, the pump sector has seen a spike in demand. According to the Global Water Pumps Market Forecast and Opportunities, 2020 report by Research and Markets, the market for water pumps is expected to cross US \$54bn by 2020, mainly fuelled by the need for water and wastewater management projects.

A major player in the sector, Kirloskar Brothers Limited (KBL) is listed in this report as one of the few companies worldwide that provide customised and enhanced pump solutions. Established in the year 1888 and incorporated in 1920, KBL is the flagship company of India's Kirloskar Group, and is a market leader in fluid management. The company provides fluid management solutions for large infrastructure projects in water supply, power plants, irrigation, oil and gas, marine and defence. KBL engineers and manufactures industrial, agriculture and domestic pumps, valves and hydro turbines.

### A Pan-African solution provider

In addition to fluid management solutions, KBL manufactures concrete volute pumps, condensate extraction pumps, and medium-sized boiler feed water pumps for the energy sector. KBL is one of the few pump manufacturers in the



Nearly 40 nations in Africa and Asia could face water shortage by 2025

world with the expertise to manufacture the relatively large-sized pumps.

The Indian conglomerate's 90 percent acquisition of South Africa's Braybar Pumps for US\$110mn, has also led to the expansion of the company's footprint into South Africa's mining industry. Braybar Pumps is actively involved in the production of rubber-lined slurry pumps and high-head multistage pumps and a range of other products for the mining industry.

### Manufacturing might

Manufacturing of pumps and related equipment usually takes place at the major manufacturing facilities located within and outside India. In India, Kirloskarvadi is the biggest and the most prolific manufacturing unit for the company. However, a substantial amount of manufacturing is done in KBL's facilities in South Africa and Egypt.

### 'Africa a high potential market'

KBL has earmarked Africa as a potential nation for activity, and has

tapped into sectors such as water management, irrigation and construction to increase its foothold. The company has installed pumps for the Department of Water Affairs of Namibia, Malawi and Tanzania, HSC and VT pumps for Rand Water & Kroonstad, South Africa Municipality, Mopani Copper Mines in Zambia, Lusaka Water & Sewerage Board among others.

Further on, KBL plans to consolidate its presence in Africa by promoting R&D in sectors that need assistance and guidance, by pooling in think-tanks and technology institutes that could provide insights. Based on the success stories in Senegal and Egypt, KBL is convinced that they could expand their footprint deeper into Africa. The company's irrigation project in Senegal has resulted in reducing the West African nation's import bill by half, and has chosen Egypt to be its Partner in Progress. Recognising that Africa has different and unique requirements, KBL is likely to formulate different plans to ensure a meaningful impact across the continent. ■

# Africa fights for higher global share of FDI

The FDI Report 2015 from fDi intelligence, a data division of the Financial Times group, has named Africa the world's fastest-growing region for foreign direct investment

Although net foreign direct investment (FDI) inflows to Africa remained static at US\$54bn during 2014, according to Geneva-based United Nations Conference on Trade and Development (UNCTAD), planned capital expenditure into Africa surged to US\$128bn, a year-on-year increase of 136 per cent, based on Ernst and Young's (EY) 2015 Africa Attractiveness Survey and the average investment reached US\$174.5mn per project, up from US\$67.8m in 2013. This bodes well for the continent's outlook, with FDIs being stimulated by megadeals, instead of numerous smaller deals.

In a year when the global greenfield FDI market grew a paltry one per cent, Africa enjoyed a 65 per cent surge in capital investment in 2014 over the previous year, to US\$87bn (the number of projects up six per cent).

The growth was balanced between the continent's two halves: capital investment into North Africa (led by Egypt) more than doubled from US\$10bn to US\$26bn while sub-Saharan Africa (SSA) saw its investment levels rise from US\$42bn to US\$61bn. "With increased FDI and continued macro-economic growth, I believe that Africa will be an economic powerhouse in the future. The region is abounding with untapped opportunities and has much scope for growth," said Charles Brewer, managing director of DHL Express sub-Saharan Africa.

Noticeable factors spurring FDI to Africa include abundant natural resources, improving business climate, infrastructure development, rising intra-African FDI; expansion by emerging-market firms (increasingly from Arabian Gulf) and non-traditional investors (private equity); and fast moving consumer goods (FMCG) markets. FDI is primarily market-driven, thus economies that achieved strong

Table 1: Top-10 Recipients of FDI in Africa in 2014, US\$m

	Inward FDI 1/	Total 2010-14	FDI Stock 2/ 2014	As % of GDP
South Africa	5,712	26,450	145,384	41.5
Congo, the Rep.	5,502	13,676	22,010	156.1
Mozambique	4,902	21,283	25,577	157
Egypt	4,783	21,392	87,882	30.7
Nigeria	4,694	32,443	86,671	15.2
Morocco	3,582	13,750	51,664	48.3
Ghana	3,357	15,640	23,205	60.1
Zambia	2,484	8,471	15,009	55.6
Tanzania	2,142	9,115	17,013	34.1
Congo (DRC)	2,063	12,099	7,694	23.4

Source: World Investment Report 2015.

1/ FDI represents net inflows of investment to acquire a lasting management interest (10% or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. 2/ FDI stock represents the value of the share of affiliate enterprise at book value or historical cost, reflecting prices at the time when the investment was made and reserves (including retained profits) attributable to the parent firm, plus net debt of affiliate to parent co.

economic growth also attracted growing volumes of FDI.

"There are challenges, but we need to start having a different conversation about Africa where we focus on the positive stories. For us, the story of Africa is a story of progress, growth, a story of political and economic vibrancy. Africa itself is also helping to push up investments," said Michael Lalor, head of Africa Business Centre at E&Y's Johannesburg office.

## Diverse investors

There are four groups of transnational corporations (TNCs) operating in Africa. These include companies from advanced (OECD) economies with tepid growth, that need to find new ways to expand; those based in Brazil, Russia, India and China (BRIC) or Arabian Gulf markets looking to fuel their growth; TNCs seeking intra-Africa trade opportunities; and companies already operating in Africa that are keen to expand their footprint on the continent.

Inward FDI from the emerging economies mainly sought natural resources, but is now increasingly diversifying into agriculture,

manufacturing, infrastructure-related and services sectors. This increases the potential for technology transfers and boosts productivity in host countries.

TNCs from developing economies continue to invest in Africa, targeting assets relinquished by developed-country TNCs. Although latter accounts for lion's share of FDI stock, the investment of former is increasing, as reflected in cross-border mergers and acquisitions (M&As) and announced greenfield projects. Chinese and Indians are particularly pro-active with Tata (India) investing in Algeria in 2014 and ONGC Videsh Ltd acquiring a 10 per cent stake in Mozambique's gasfield for US\$2.6bn, while Chinese firms are investing in South Africa's solar panel industry.

The surge of non-traditional investors, notably from the United Arab Emirates (led by Dubai) is a new trend. UAE accounted for six per cent of total capital expenditure related to greenfield projects into Africa during 2014, targeting consumer industries, infrastructure and services. Emirates Telecoms Corp; bought a 53 per cent stake in Morocco's Itissalat Al Maghrib SA ? a

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foreign affiliate of Vivendi (France) – for US\$5.7bn. Other major deals included Qatar National Bank, among top-10 Arab lenders, which paid US\$500mn to become the largest shareholder in pan-African group Ecobank.

### New planned investments

Mega deals (in pipeline) reported over the past year included:

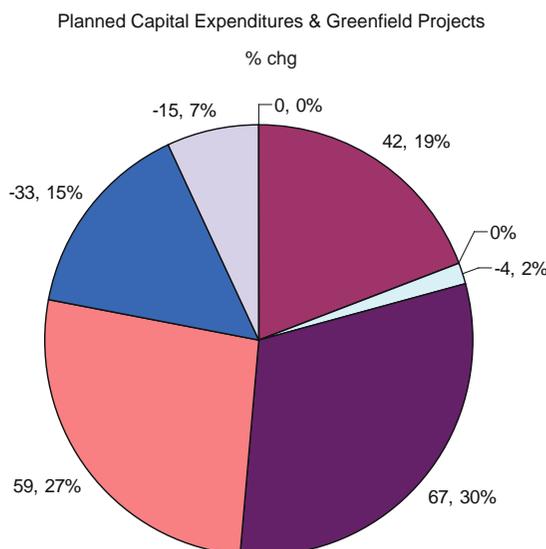
- Total, French oil major plans investing US\$16bn to develop Angola's Kaombo offshore oilfield in Angola;
- Skypower FAS energy, a subsidiary of Canada-based SkyPower, is to build an US\$5bn solar power plant in Nigeria – expected online in 2019 with a nameplate capacity of 3,000MW.
- Meridian port Services, a subsidiary of Denmark-based AP Moller-Maersk, is expanding Ghana's Tema Port. The US\$1bn project will see the development of four deep-water berths and an access channel for larger vessels, increasing the port's throughput capacity to 3.5mn twenty-foot equivalent unit (TEUs).
- Greece-based Mac Optic, a petrochemical specialist, plans to establish a refinery (costing US\$5bn) in Egypt that will require 250,000 bpd of oil.
- Berven Group International Development (US) signed an agreement with Congo-Brazzaville to build the country's second oil refinery for US\$1.6bn.

The US private equity groups are also making inroads into Africa. KKR invested US\$200mn in Ethiopian rose producer Afriflora and Carlyle mobilised nearly US\$700mn for its first-ever SSA fund in early 2014, which it began to use by investing in South African vehicle retailer TiAuto, and taking an 18 per cent stake worth US\$50mn in Nigeria's Diamond Bank. Blackstone entered into a partnership with Africa's richest businessman Aliko Dangote to invest across the region – within diverse sub-sectors.

### Labour-intensive sectors

Services remains the largest sector in Africa's stock of FDI; during the 2003-2014 – a period of commodity boom – 38 per cent of planned capital expenditure (and 55 per cent of greenfield projects) were targeted at services, outpacing both manufacturing and primary sectors. Service-oriented FDI contributes to African countries' participation in global value chains (GVCs), as large part of value added in trade consists of services.

Recent trends reflect growing importance of services and manufacturing



Source: FDI Markets

investments. The former recorded three-fifths and over two-fifths, respectively, of announced greenfield FDI projects and planned capital expenditures in 2014, while some 38 per cent of greenfield projects and 33 per cent of related capital spending were in manufacturing, mostly in electronic equipment, motor vehicles and agri-business.

In Nigeria, Nissan (Japan), Peugeot (France) and Hyundai (South Korea) started auto assembly in 2014. Nigeria's Automotive Industry Plan seeks to integrate Nigeria within the automotive regional

of smartphones and a region-wide drive to expand broadband connections. India's Bharti group undertook 11 greenfield investment projects in Nigeria and Uganda in 2014 alone, adding to its existing investment in 13 other African countries, in order to establish a Wi-Fi network across Africa.

MTN (South Africa) is one prominent investor, establishing data centres, sales offices and 4G projects in Côte d'Ivoire, Ghana, Swaziland and Uganda in 2013. Mauritian companies are also prominent: in 2013, Smile Telecoms and Liquid Telecom

Table 3: Announced Greenfield FDI Projects by Industry, 2013-14 (US\$m)

Sector/Industry	Africa as Destination		Africa as Investors	
	2013	2014	2013	2014
<b>TOTAL</b>	55,124	88,295	17,402	13,386
<b>PRIMARY</b>	6,114	21,974	7	48
Mining, Quarrying & Petroleum	3,750	21,974	7	48
<b>MANUFACTURING</b>	14,722	28,787	8,013	3,848
Food, Beverages & Tobacco	1,437	2,099	535	1,214
Textiles, Clothing & Leather	1,744	2,091	126	23
Non-metallic Mineral products	3,921	2,213	2,805	1,918
Motor vehicles & other				
Transport equipment	1,642	1,585	98	15
<b>SERVICES</b>	34,287	37,534	9,382	9,490
Electricity, Gas & Water	11,537	10,648		125
Construction	3,536	9,229	1,005	462
Transport, Storage & Communications	7,774	5,909	2,919	2,305
Business services	7,099	6,323	2,656	4,949

Source: UNCTAD, FDI database.

value chains. Food/ beverages are another beneficiary of Africa's expanding consumer markets, with several large deals in 2014; e.g. Danone (France) bought a 40 per cent stake in Kenya-based Brookside Dairy, East Africa's largest milk processor.

The growth of telecommunications FDI reflects buoyant consumer spending, unsaturated markets, greater affordability

established several greenfield projects across SSA, with a view to constructing a cross-border 4G and fibre-optic network.

### Regional commercial collaboration

In 2014, African investors accounted for more than 11 per cent of announced greenfield FDI projects on the continent (mostly in transport, storage, and communications), while intra-African M&As

accounted for 44.5 per cent of total cross-border M&A purchases by African firms in 2014 according to UNCTAD database, with Nigeria and South Africa representing the bulk of sales and purchases. South African firms remained No.1 investors: Nedbank acquired a one-fifth stake in Togo's Ecobank for US\$500mn, while Shoprite unveiled plans to open 30 new stores in SSA during 2015.

Intra-African FDI has played a key role in driving Africa's burgeoning financial industry, which accounted for about half of intra-Africa greenfield investment projects between 2003 and early 2014. It is led by top-tier banks from South Africa (FirstRand and Standard Bank); Nigeria (United Bank for Africa); and Kenya (Kenya Commercial Bank and Guaranty Trust Bank).

Nigeria has invested an estimated US\$1bn in Ghana's service industry in recent years. Leading Moroccan banks (led by Attijariwafa Bank) are investing in the development of the West African financial system.

The geographical spread of these services is impressive: Standard Bank (Africa's No.1 lender by capital and assets) operates in 20 countries; Ecobank in 36; and

**Table 4: Announced Greenfield FDI Projects by Region/Country, 2013-14 (US\$m)**

Partner Region	Africa as Destination		Africa as Investors	
	2013	2014	2013	2014
WORLD	55,124	88,295	17,402	13,386
Developed Economies	6,114	21,974	7	48
European Union	3,750	21,974	7	48
France	14,722	28,787	8,013	3,848
United States	1,437	2,099	535	1,214
Developing Economies	27,013	25,180	14,587	12,274
Africa	13,082	10,209	13,082	10,209
Nigeria	2,260	545	2,784	1,321
South Africa	5,379	4,789	343	176
Asia	13,735	14,886	1,421	1,769
China	289	6,132	454	92
India	5,311	1,122	83	107
Transition Economies	101	90	74	

Source: UNCTAD, FDI database.

United Bank for Africa in 19. There has also been strong expansion by North African banks – namely Moroccan-based Attijariwafa Bank and Banque Centrale Populaire. Much of regional expansion has occurred after the 2008 banking crises in developed world. For example, in response to the downturn in matured markets and deleveraging process, Standard Bank sold most its global operations and focused on becoming a true pan-African bank.

For Africa to fully realise its intra-regional trade and investment potential, further harmonisation of regional trade agreements and the inclusion of investment regimes are still needed to increase business volumes among neighbouring countries, thereby making the region less vulnerable to external shocks, whilst building greater capacity and commercial prosperity. ■

*Moin Siddiqi, economist*



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# West African stocks shared in the UK

The Bourse Régionale des Valeurs Mobilières' recent appeal to the London Stock Exchange, highlighting its potential as an investment destination

West Africa's regional stock exchange, the Bourse Régionale des Valeurs Mobilières (BRVM) is one of just two multi-country African markets, the other being the Bourse des Valeurs Mobilières d'Afrique Centrale (BVMC), which represents six member Central African countries. But the BVMC only has one listing.

The much larger BRVM, the sixth largest African stock exchange by capitalisation, is made up of eight countries of the West African Monetary Union, namely Benin, Burkina Faso, Guinea-Bissau, Cote d'Ivoire, Mali, Niger, Senegal and Togo, and lists 39 stocks.



Côte d'Ivoire's Minister of Economy and Finance, Nialé Kaba

## A regional bourse in the City of London

The BRVM chose the London Stock Exchange (LSE) to hold its high-level conference, attended by Côte d'Ivoire's Minister of Economy and Finance, Nialé Kaba. She joined top executives from several BRVM-listed companies that took part in this event.

It provided an opportunity to present the financial centre of the West African Economic and Monetary Union (UEMOA) to international, and especially British, investors at the London Stock Exchange, a premier global financial centre.

"Following the success of the BRVM Investment Days in Paris in October 2014, the British capital was the natural choice for the second round.

"The London Stock Exchange is developing co-operation with African finance and constitutes a real springboard for growth for the BRVM," explained Gabriel Fal, chairman of the BRVM's board of directors.

With market capitalisation having doubled in three years – standing at CFA7,458bn (around US\$13.8bn) on 31 December 2014 – and transaction volumes growing constantly, the BRVM is becoming a destination of choice for many international investors, eager to diversify their asset portfolio while simultaneously contributing to the development of African economies.

"Along with Johannesburg, Lagos, Casablanca and Nairobi, our regional exchange embodies this new frontier of finance that offers safe investments with high returns," said Edoh Kossi Amenounve, the chief executive of the BRVM.

After a record 2013, which saw the BRVM Top-10 and BRVM Composite indices swell by 33.85 per cent and 39.28 per cent respectively, that growth was consolidated in 2014, as the BRVM Top-10 rose by 8.60 per cent and the BRVM Composite by 11.23 per cent.

With two new entrants in recent months (Bank of Africa Senegal in December 2014 and Total Senegal in February 2015), the BRVM now has 39 listed companies.

The last company to be floated on the exchange had been Bank of Africa Côte d'Ivoire back in April 2010.

"If we add to that our inclusion in the S&P and MSCI international indices, we can see that the BRVM is now moving in a direction that is beneficial for everyone. The region's companies are raising finance, while investors are increasing the value of savings in the UEMOA zone. Lastly, more and more citizens are becoming shareholders, which is the best way for our people to take ownership of our growth drivers and means of production," Edoh Kossi Amenounve explained.

"To speed up this process, the BRVM has to attract international investors in search of emerging or pioneering financial centres. That is how we are going to deepen the market and increase its liquidity. To this end, the BRVM has brought itself into line with international

standards: our market is monitored and regulated, and what is more, it is offering returns that you can't find in the North at present," explained Gabriel Fal.

#### Driving development financing

The role of the banking and finance sector in accelerating African growth, technological innovation and telecommunications as a driver of development; the rise of the middle class and the changing retail sector; and private and sovereign debt in the face of infrastructure financing were some of the major topics addressed at the conference.

For example, Paul-Harry Althnard, the group head of securities and asset management at Ecobank (the brokerage arm of the pan-African lender), with strategic management responsibility over teams in Nigeria, Ghana, Côte d'Ivoire, Cameroon and Zimbabwe outlined the increasingly close relationship between the finance and telecom sectors.

In fact, the BRVM's two biggest sectors are utilities and financial services, and the two biggest stocks are Sonatel and Ecobank.

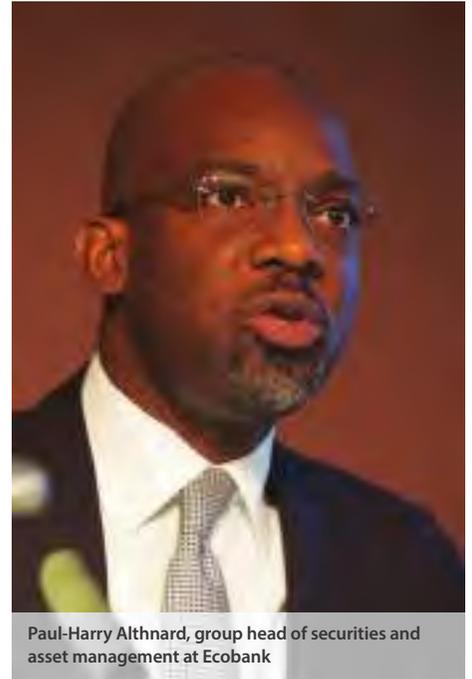
Sonatel, part owned by Orange, represents more than 36 per cent of BRVM's capitalisation at the end of last year. Over 2014, nearly three million shares in Sonatel were traded on the BRVM amounting to CFA65.56bn (around US\$112mn).

What is particularly interesting about Sonatel is that even as its mature markets in Senegal, Mali and Guinea slow down having reached saturation point, its expansion into the rest of the region's markets is made possible by the capital it can mobilise on the BRVM.

The BRVM also offers extensive bond market activity (both corporate and sovereign). Since 1998, more than 280 transactions



BVRM chairman Gabriel Fal



Paul-Harry Althnard, group head of securities and asset management at Ecobank

have been completed, raising CFA3,887.1bn (US\$7.2bn); CFA644,054bn (US\$1.2bn) in capital transactions; and CFA3243.55bn (US\$6bn) in bond issues.

In presenting its huge potential for attracting greater international investment, the BRVM can point to a remarkably positive record of growth – in 2014 witnessing an overall increase of 11.23 per cent, driven by the performance observed in nearly all sectors (the exception being agriculture).

Revised every three months to reflect the performance of the market's top 10 stocks, the BRVM 10 index increased by 8.60 per cent to 267.53 points and illustrated the dynamism of the market.

In total, by the end of 2014 the stock market recorded 104,229,601 shares traded (vs. 65,664,659 shares at the end December 2013) for a total value of CFA158.45bn (US\$158.45mn) – an increase of 12.5 per cent year on year (YoY).

The market capitalisation of the bond market also increased by 6.17 per cent to CFA1,139bn (US\$1.93bn). Traded volumes were up 162 per cent with six million bonds traded for a total value of CFA63.64bn (US\$107mn). The bond market has recorded six new issues for a total of CFA304.49bn (US\$517mn). ■

Stephen Williams

**“The BRVM is now moving in a direction that is beneficial for everyone. The region's companies are raising finance, while investors are increasing the value of savings in the UEMOA zone.”**

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## Agriculture emerges as a viable African asset class

South Africa may be suffering currently, but glimmers of hope are starting to emerge that undermine the more negative perceptions plaguing the SA economy. This was according to Johann Els, Senior Economist for Old Mutual Investment Group, presenting at its quarterly investment briefing today where he explained that while local growth is struggling under the burden of issues, such as electricity shortages, commodities under pressure and a weak rand, positive signs, such as an improving trade deficit and inflation figures, could be slightly buoying the economic outlook.

With consumers still absorbing the sting of the recently increased interest rate, the SA economy is looking shaky in a low growth bind and the rand at risk from US interest rate hikes. Els said that indicators of real economic activity have remained soft, with credit demand, especially from households, very slow, car sales falling further and the Reserve Bank's leading indicator index weakening. "This all points to little chance of any acceleration in economic growth anytime soon and the Reserve Bank now forecasts 2.1 per cent GDP growth for 2015, down from its forecast of 2.5 per cent made in December 2014."

However, Els pointed out that it doesn't all appear to be doom and gloom, with a second consecutive trade surplus recorded in June, thanks largely to recovering gold and platinum exports and falling oil imports. He said, "We estimate that this could mean a narrowing in the current account deficit to about 3.5 per cent of GDP in the second

quarter, down from 4.8% in the first quarter and 5.5 per cent in 2014."

In addition, a declining oil price, coming closer to previous lows, means that we are likely to see further petrol price cuts. Els highlighted that, while consumer spending may not be at ideal levels, consumers are under less pressure than in previous cycles, with slightly increasing disposable income growth and inflation surprising on the downside in June. "If you look at inflation plus prime rate and the forecast, we are seeing a far flatter profile compared to the previous cycle where there was a significant spike in both inflation and interest rates," says Els. "Therefore, this year might not be as dire as many assume, in fact it might even be better than last year."

Looking further afield, Els said that global market sentiment is being dominated by the imminent first hike in US interest rates since the financial crisis, as well as the economic slowdown in China. "The combination of these two forces is putting downward pressure on commodity prices and emerging market currencies, causing more difficult conditions for many developing countries," he explained.

Els pointed out that global growth recovery is still slow and inflation remains low. "While US rate hikes are likely to start soon, it will be a slow, but measured, cycle. Still, as the Fed marches closer to the beginning of the hiking cycle, markets remain unnerved by the potential ramifications of rising US rates, especially given the vulnerabilities and weak growth elsewhere in the world."



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# Insurers innovate in digital segments

Insurers who are able to innovate when it comes to the design and delivery of products and services will not only foster greater loyalty amongst their consumers, but will also help to change the perception that the industry is still playing catch up.

SSP business development manager Clinton Brown said, "African insurers have a great opportunity to improve business models and solutions in order to improve their experience and increase customer satisfaction. A recent Celent survey on innovation showed that consumers expect a high degree of innovation from their financial service providers, especially when it comes to service delivery."

Brown elaborated, "Innovation will be most widely accepted and celebrated amongst your early digital adopters consumers, so focusing technological improvements on this target group will have the highest probability of success. However, even within the digital consumers, enthusiasm for these initiatives varied by age group, suggesting that a broader; more experimental approach might most successfully resonate across the entire customer base."

#### Products to solve problems

When it comes to appealing to the less digitised consumers, innovations should be positioned as simple, non-technical solutions to everyday

problems. "Invest some resources in surveying and polling this customer base to find out what these solutions could be," Brown said.

Sales and product innovations will appeal to certain consumers, but for broad consumer resonance, administration service areas such as claims, online and mobile services, represent the most immediate innovation opportunities.

Brown cautions that innovation around products and new ways of doing business will require more buy-in from the consumer, especially if it requires a change of behaviour and necessitates the consumer giving up their personal data in exchange for the benefit. ■

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# Why companies need innovative insurers

The major risks for African business - fire, explosions and natural disasters - are the same as in other parts of the world  
(Photo: Mikhail Kryshen/Flickr)

Integration and collaboration provide the key to growth in the market for financial instruments

Businesses operating in Africa are exposed to a number of disruptive scenarios. During the past decade, growing links with global markets have supported the region's expansion and economic diversification but have also increased its vulnerability to external shocks and perils.

To protect them from potentially big losses along their regional and global expansion African businesses need global insurers with strong capitalisation, proven capability, an international network and substantial capacity to protect them from increasingly complex risks. Allianz's dedicated companies in corporate and specialty insurance, Allianz

Global Corporate & Specialty (AGCS) Africa; trade credit insurance, Euler Hermes; and reinsurance, Allianz Re are providing comprehensive risk solutions to companies operating in Africa.

"Africa is one of the fastest growing continents economically. The middle class is flourishing, the private sector is expanding into different countries in the continent, mining companies are shipping resources globally and governments and investors are investing into infrastructure and economic development. But these developments have increased local risks while exposing companies to global perils," said Ms Delphine Madou, CEO of AGCS Africa.

According to the 2015 Allianz Risk Barometer, risks facing businesses in Africa are in line with those facing businesses globally as BI and supply chain (46 per cent), natural catastrophes (30 per cent) and fire/explosion (27 per cent) are the top three major business risks in 2015. On a regional level changes to legislation and regulation, cyber crime, market stagnation, loss or reputation or brand value, socio-political upheaval, intensified competition; theft, fraud and corruption were cited as additional risks.

"The growing interdependency of many industries means African businesses are now more and more exposed to an increasing number of disruptive scenarios. Negative

▶ effects can quickly multiply. One risk can lead to several others. Natural catastrophes or cyber attacks can cause business interruption not only for one company, but to whole sectors," said Madou.

#### Credit and consultancy

So how do these companies protect corporates against these risks?

AGCS Africa has been operating in Africa since 2010 providing insurance and risk consultancy across the whole spectrum of specialty, alternative risk transfer and corporate business, which include marine, aviation, energy, engineering, entertainment, financial lines, liability, mid-corporate and property insurance.

"We have made significant progress in covering some of the leading companies in South Africa and Africa. We offer our clients significant capacity and underwriting expertise, both for standalone risks or as part

of a global programme," said Madou. "Our local and global experts have demonstrated their proven skills in underwriting and managing the most complex risks, based on years of industry-specific experience. Essentially, we exist to meet the insurance needs of our clients especially when they need us most."

Euler Hermes is a worldwide leader in trade credit insurance. "Euler Hermes plays a prominent role in helping leading South African, and in time broader African companies and exporters grow their businesses, which in turn can only benefit Africans. Our proprietary intelligence network tracks and analyses daily changes in corporate solvency of over 40 million businesses globally. This means that we cover more than 200 countries representing over 92 per cent of the global GDP," said Greg Nosworthy Managing Director of Euler Hermes South Africa.

Allianz Re provides tailoring reinsurance solutions to the diverse business needs of customers worldwide. "Africa presents one of the biggest growth market for insurers and reinsurers and Allianz Re is determined to work together with AGCS Africa and Euler Hermes to develop and grow the market by offering risk solutions that companies need in the continent," said Denis Pehar, head of client management at Allianz Re.

#### Integration for collaboration

Their main collaboration levers are anchored on shared distribution channels, integrated solutions, shared infrastructure and resources. "We look at each risk individually and work together to provide an all-inclusive solution that covers corporate and specialty risk, trade credit and reinsurance solutions across different industries and sectors," explained Madou.

"We cover clients across the entire continent through existing Allianz entities and selected network partners. Our foundation is based on deep understanding of the market, prudent risk and claims management, underwriting knowledge and expertise, as well as key relationships and partnerships." ■

**“ The growing interdependency of many industries means African businesses are now more and more exposed to an increasing number of disruptive scenarios.”**

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# Enhancing the enterprise with mobile software

Monetising mobile communications and delivering prosperity to Africa through business apps

**F**irst mover advantage may be the well-worn cliché, but there can actually be a big advantage to not being the first to adopt a technology. This is certainly true as far as the African LTE market is concerned. While some parts of Africa have followed logical technology upgrades from 3G to 4G, vast swathes of the continent are deploying greenfield LTE networks from extremely modest existing infrastructure.

Despite this, LTE adoption across Africa shows no sign of slowing down. By last year there were 22 LTE networks live across Africa with industry analysts Ovum predicting there will be 100 million African LTE subscribers by 2019. On the one hand this suggests rapid growth but on the other, this would still represent just 10 per cent of the African population.

There is strong evidence from other parts of the world that African operators will succeed in adding new LTE customers once the infrastructure is in place. Ensuring this happens will depend on the operators' ability to create new use cases built on the promise of the greater bandwidth and capacity that the technology offers. Indeed, it is likely that other LTE-centric operators like Smile Communications with subsidiaries across Uganda, Tanzania, Congo and Nigeria, will arise – especially due to the cost limitations of deploying fibre across the continent.

## Small businesses driving African prosperity

There is little doubt that the widespread availability of high bandwidth broadband across Africa is critical to the continent's economic prosperity. Much of the future anticipated growth is likely to come from the burgeoning number of young entrepreneurs and small businesses that dominate the commercial landscape of most African countries. In Ghana, for example, small businesses make up 92 per cent of all commercial organisations, likewise 91 per cent of businesses in South Africa.

The Global Entrepreneurship Monitor



The spread of mobile broadband is crucial for Africa's economic prosperity (Photo: Erik (HASH) Hersman/Flickr)

(GEM) describes Africa as home to several countries that are moving from "necessity entrepreneurship" to "opportunity entrepreneurship" – that is, entrepreneurship as a way to thrive, rather than just to survive. A recent GEM report found that sub-Saharan Africa has the highest proportion of people involved in early-stage entrepreneurial activity of anywhere in the world. Almost two-fifths of adults in Nigeria and Zambia are either starting a business, or have a business that's less than three-and-half years old.

## From potential to reality – the role of the African telco

Mobile infrastructure and the provision of mobile broadband has a critical role to play in ensuring these entrepreneurs and small businesses reach their undoubted potential. But African operators must do much more than simply provide connectivity. Most African

carriers enjoy high levels of trust with their customers – a great many African citizens rely on operators to provide critical digital services related to banking, education and healthcare – simply because there are no realistic or viable alternatives.

As LTE becomes commonplace across Africa, operators have the opportunity to create additional value to their business customers – most notably small businesses. As with other global regions, African telcos are ideally placed to benefit from the growing number of cloud-based business apps that help SMBs increase their efficiency and productivity.

## The rise of business apps

A large number of operators in developed markets have either deployed or are in the process of building a business application marketplace – a white-labelled platform for their

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Kenya's M-Farm app is tailored to the needs of small farmers, enabling them to access the latest market information and connect with buyers (Photo: CIAT/Flickr)

- ▶ SMB customers enabling them to find, buy, assign, use and centrally manage online apps. The intention is to allow the operator to act as a provider of a range of handpicked business apps that can help their SMB customers to run their businesses more effectively.

Proprietary BCSG-led research demonstrates that nearly two thirds of small business owners already have an average of three business applications in place in Europe. These typically address well-established requirements such as website, storage and email management. As technology innovation continues and awareness for new apps and paperless working practices builds, SMBs will significantly increase the number of apps they use.

#### A clear path to revenue

Unlike the provision of LTE networks, African operators can't expect instant success from building and delivering a business applications marketplace. That being said, African operators do have some advantages over their European and American counterparts. For instance, African operators still have a clear sales channel direct to their subscribers. They control what services their customers access and can monetise them accordingly. This fundamental relationship has not become blurred by so-called over-the-top service providers as they have elsewhere in the developed world.

**“As advanced mobile communications networks become increasingly commonplace, African operators are looking for innovative ways to monetise this additional bandwidth with enterprise services.”**

African operators therefore have a window of opportunity to take ownership of business app provision in the same way they own the delivery of banking services. Some operators have already started. MTN, for example, is currently trying to capitalise on the limited profile of Apple and Android-based App stores and is looking to establish its own smartphone app portal in 'Apptitude'.

#### The secrets to success

The business application marketplace is becoming better defined as a critical element to any operator-led SMB go-to-market strategy. But African SMBs are unlikely to discover the full benefits of self-service business apps themselves. If operators are to generate commercial traction amongst SMBs for these apps, they must enable telesales, direct sales and customer support agents to sell business apps through an intensive training program. Selecting a partner that has the experience and capabilities to support sales training and sales

incentive planning is a key success factor.

Operators clearly need to provide more value and differentiate their services for SMBs. Business apps are a perfect complement and an effective way to drive growth within the SMB market. If they are to succeed, business apps must be tailored to the needs of African small business, and to the market. This can mean offering apps that cover broad business use, such as payroll or bookkeeping, or apps that meet a specific vertical business need, such as farm management or retail inventory. Localised in-country market knowledge will be key to this – Ghana for example has a flourishing cosmetics and beauty industry that could be supported through targeted business apps.

African operators, if they can get cloud-based business apps right, will be able to add yet another valued service to a growing SMB customer base. In doing so, they will help Africa's emerging innovators and entrepreneurs to harness all the benefits of an establishing digital economy. ■

# SMEs and the cloud

Cloud computing offers a number of key advantages for SMEs, according to Softline co-founder Ivan Epstein

Cloud computing is the buzzword of the moment and many small business owners are starting to get excited about its promise. In 2012, just nine per cent of small and medium enterprises (SMEs) were using cloud services but, by 2014, that number had climbed to 22 per cent, according to research by World Wide Worx.

SME cloud adoption is set to expand further as bandwidth increases, connectivity costs fall and a new generation of digital entrepreneurs move into business, according to Ivan Epstein, co-founder of Softline and CEO of AAMEA (Australia, Asia, Middle East and Africa), who says there are five reasons why you should consider taking your SME into the cloud:

## 1. Less infrastructure and maintenance

With a cloud-based software application, the responsibility for IT maintenance, software upgrades and any system issues lies with the service provider, removing the need for time-consuming and expensive IT maintenance.

## 2. Flexibility to scale up or scale down your business

Cloud-based software can be accessed on a pay-as-you-go model, allowing you to increase or decrease your use as necessary. This is particularly useful if you have variable staffing needs, as you can issue as many payslips as you require per week or month.

## 3. Moving to the cloud is easy

There is no hardware or infrastructure that needs to be installed. As soon as you pay for the product online, you can get started. Many cloud-based software applications cater for users without special expertise. Sage One, for example, is written in simple language, meaning that you do not need to be a trained payroll professional to get started.

## 4. Increased security

Cloud computing can be more secure than traditional IT. Established cloud suppliers invest vast sums in securing their applications and possess technology beyond the means of any small business. There is also less risk of losing data stored on a laptop or a USB stick because everything is stored in the cloud.

## 5. Better collaboration, more flexibility

Cloud computing allows you to work anytime and anywhere – as long as you have an Internet connection and a modern browser. Your people can collaborate closely, working on the same documents in real time. ■

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# Why 4WD is the ultimate choice

Four-wheel drive vehicles can transport passengers and freight to most rural locations in Africa

**D**evelopment strategies vary widely, but most visitors to recent events like the MDG Summit in Cape Town and AidEx Africa (Nairobi) are agreed about one thing. This is that the best way to get supplies and services to almost any remote village, farm or mine is by compact four-wheel drive.

Unless you happen to have a rotating-wing aircraft, of course. The next AidEx will be held in Brussels from 18-19 November 2015 ([www.aid-expo.com](http://www.aid-expo.com)).

## From two to four

Government officials - including the military, non-governmental organisations (NGOs), commercial companies and medics alike - treasure their 4WDs because of their ability to get almost anywhere that the blacktop doesn't reach. But purchasers who want to use them for commercial-vehicle purposes have to be quite sure what type of 4WD they are buying.

Full-time 4WD means all the vehicle's wheels are constantly powered, with no action required from the driver. But such 'permanent' 4WD doesn't provide as much mobility off the road as a more costly 'part-time' system, because it allows a pair of wheels (ie one axle) to spin if traction fails.

So part-time systems incorporate selectable 4x4 or 4x2 power, connected via a mechanical lever or switch while on the move. This gives better grip on low-friction surfaces. But it quickly wears out if used permanently on a sealed road.

Finally so-called 'automatic' 4WD lets the truck or SUV operate with one axle only in default mode, until sensors detect when both axles need to be driven. It then routes power to all the wheels, varying the ratio between the axles as it judges fit. This provides the best of both worlds - but of course it comes at a price.

Many manufacturers offer special 4WD vehicles or options on conventional cars these days, many of them really designed for lightweight driving in countries where the extra traction is rarely needed. But aid and



The Land Rover Defender is preferred by the military and aid business alike (Photo: Land Rover MENA/Flickr)

development personnel everywhere favour the Land Rover (Jaguar Land Rover, now owned by Tata Motors) and Land Cruiser (Toyota) marques in particular. Because of their go-anywhere ability and general robustness; because of the wide range of engines and body styles that are on offer; and because of the total fleet management solutions offered by specialised suppliers like Guava International.

Models from both these manufacturers are familiar sights up-country in nearly all African countries today; all benefit from excellent service and after-sale facilities.

## Still working the land

Long before the Born Free idyll emerged (at the foot of Mount Kenya) the Series I Land Rover was shifting personnel and supplies reliably around unpaved Africa. A few of the late 1940s ladder-frame/box-section chassis vehicles are still at work, their selectable 4WD powered by sidevalve spark-ignition engines (not many of those are left!). They remain repairable everywhere.

But the UK-built range, which passed its one-million mark in the 1970s (it's now well over four) has subsequently been greatly extended. Assembly now takes place in several other countries, including, we hear, a brand-new joint-venture operation in

China specialising in comfortable up-market models.

Along the way a very wide variety of engines have been incorporated, including the lightweight Buick V8 design incorporated in the landmark Range Rover model launched more than 40 years ago.

Most recognisable of course is the aid business' and the military's favourite, the Defender and its derivatives. Now usually powered by a sophisticated 2.5 litre diesel this is the model that incorporates the original Series I family look.

But it just doesn't chug in the same way, and to compensate a wide range of efficient body variants are available, including strengthened 'Snatch' types, air-portable vehicles, ambulances, cold-chain retainers, fire tenders and so on. Including those very efficient people carriers, of course. Approved vehicle modifiers can come up with just about any type of vehicle you choose.

But Land Rover don't have it all their own way. Toyota provides stiff competition, and from America via the Struandale assembly plant in Port Elizabeth came GM's massive H3 Hummer. Meeting the very demanding needs of 4WD customers is big business everywhere in Africa today. ■



# MAN for the construction industry.

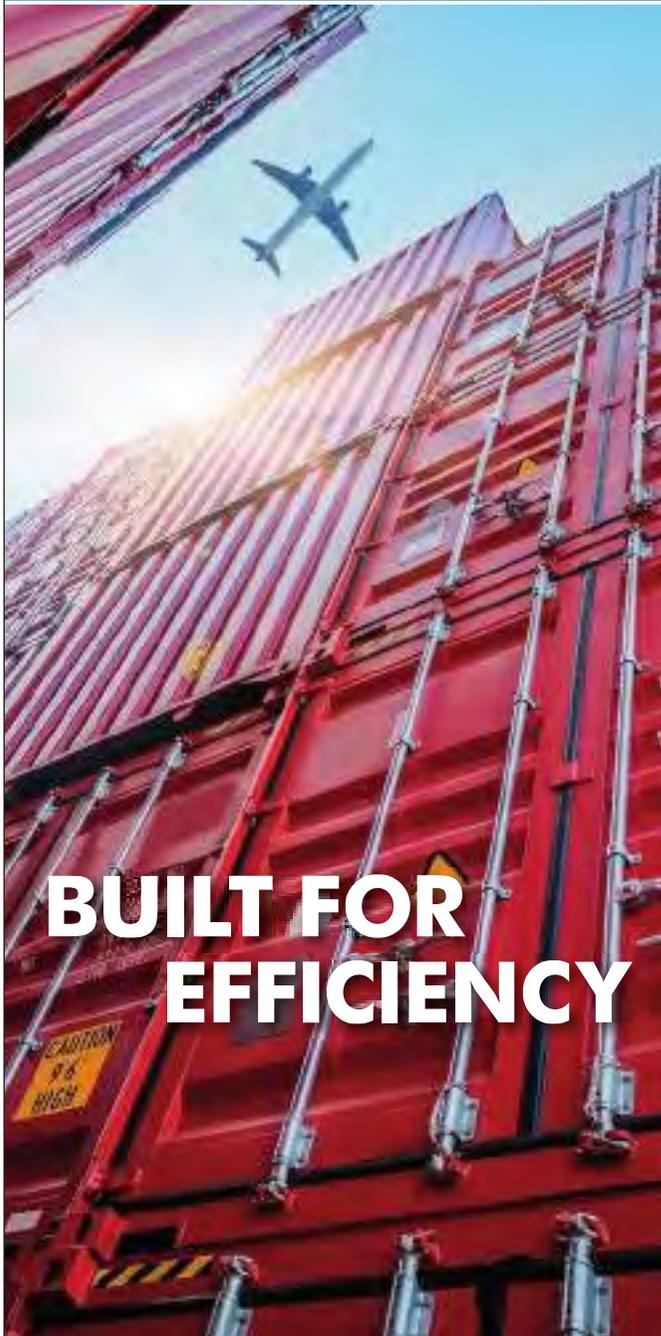
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# A system to improve port storage

## IAI's innovative robotic shipping container storage and handling system

Israel Aerospace Industries (IAI) recently introduced a robotic container management & storage system (RCMS), an innovative autonomous solution for container management and storage in ports. The RCMS is a revolutionary concept that offers a flexible and effective solution for minimizing storage operations. Containers are mounted on low-cost robotic carts that move on robotic elevators. The robotic carts and elevators increase throughput and enable optimal use of all available storage areas.

IAI is focusing on converting defence systems and applications to commercial product lines. The RCMS system is an addition to IAI's growing line of robotic products that includes TaxiBot, a semi-robotic pilot-controlled vehicle; and the prototype for Skytran, a high traffic transportation system based on magnetic technology paragliding.



IAI's robotic container management & storage system (Photo: RCMS)

### Transforming transportation and storage

IAI head of commercial robotics Ran Braier said, "This revolutionary system will change the perception of transportation and storage methods used around the world. The RCMS is a sustainable and environmentally responsible system which is energy efficient and reduces greenhouse emissions. We look forward to additional cooperation projects and new opportunities for use of robotics in ports."

With worldwide container traffic expecting an annual increase of four per cent by 2030, ports are facing challenges of an increasing number of containers and limited space, coupled with limited manpower and machinery that do not meet the market demand. The RCMS offers increased operational efficiency and significant cost savings. It can reduce up to 50 per cent of the volume at a port and also lessens the need to drain the sea during port construction, the cost of which is estimated at hundreds of millions of dollars. Containers can be loaded and unloaded 1.5 times faster than they are currently. This system has the option of cancelling the shuffling (or rearrangement) of the containers, which reduces profits and hinders the loading and unloading process. ■

# Bobcat's fleet of Foton

Construction equipment maker Bobcat's recent delivery of a fleet of 10 Foton Tunland off-road pick-ups immediately extends the reach of its service teams in South Africa, from their bases in Alrode, Rustenburg and Witbank. These are the first Foton vehicles to be purchased by Bobcat SA, which is part of the Goscor Group of companies, itself a subsidiary of the Imperial Group.

"The Foton Tunland pick-ups were selected for use by our service teams after we had undertaken practical evaluations of both the double- and single-cab models," explained the acting managing director of Bobcat SA, Andrew Lai. "The decision was based on our long relationship with the Imperial Group and the Tunland's value-for-money proposition. The fact that it uses an engine from Cummins, one of the major players in the construction equipment industry with a reputation for reliability and durability, was another plus factor.



Mr Lai added, "Our type of operation places heavy demands on the vehicles used by our field service personnel and that is why we selected the Tunland Off-Road model which was introduced locally about a year ago. We dealt with Gareth van der Westhuizen from the Imperial vehicle importers head office and were pleased with the service we received."

The Tunland Off Road models do not have four-wheel drive but a limited slip differential and high riding body, with

220mm of ground clearance, means they are well suited for operating in off road conditions such as found on farms, construction sites and the like.

Keen pricing makes the latest additions among the least expensive premium single cab pick-ups on the local market with the Comfort model, as selected by Bobcat for its fleet, coming with a comprehensive list of standard equipment including air conditioning, electric windows, a multi-function steering wheel with Bluetooth, an audio system with a radio/CD/MP3 player and AUX and USB audio inputs as well as attractively-styled 16-inch aluminium alloy wheels.

The Tunland is the first and only light commercial vehicle currently in South Africa to be equipped with the Cummins 2.8 ISF turbo diesel engine, which makes it particularly well-suited for operating in rugged and demanding conditions. ■



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# LIMS for better water treatment

**W**astewater treatment, which relies heavily on dynamic sampling programmes, has had to implement far more rigorous testing in recent years. Challenges facing wastewater treatment facilities isn't necessarily due to stricter regulations or standards but from a fundamental change in the wastewater stream itself.

The stream is more contaminated than ever, placing a heavier burden on treatment facilities to ensure safe output. Providers must dramatically increase their sample load and overall number and complexity of tests to remain in compliance with pre-existing regulations.

However, the sampling programmes could

increase throughput without financially straining the communities they serve and maintain public health, through data management. By using laboratory information management systems (LIMS), automating tests and eliminating manual procedures allows wastewater treatment systems to shoulder increased testing loads while improving efficiency and testing efficacy.

## Altering the waste stream

To treat wastewater, water treatment providers dispatch technicians to upstream sample wells across their regions to test water before it reaches a treatment facility. In the past, test results were handwritten on paper, following which a hard copy report

would be made. With a LIMS, technicians use mobile devices to record bar codes, readings and coordinates, allowing real-time (and more accurate) sample reporting and aggregation. Downstream plants can use this data to prepare for treatment ahead of time, expediting the process.

Rigorous testing is done throughout to ensure that any water exiting a treatment facility – for any eventual use – is safe. Technicians use spectrometry, chromatography and wet chemistry to analyse wastewater for harmful contaminants such as heavy metals and antibiotics. Recent reports from the Center for Disease Control, among others, show that antibiotics are being over-prescribed. They enter the



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➤ wastewater stream through human waste and improper disposal of leftover pharmaceuticals down drains and toilets. Over time, this practice can lead to the emergence of antibiotic-resistant bacteria. Testing for and eliminating antibiotics and drug-resistant bacteria is an increasingly important function of water treatment facilities. Knowing the precise levels of bacteria in water undergoing treatment is essential to determining how much chlorine to add. Similarly, wastewater contaminated with heavy metals such as lead must undergo special treatment as an extra precaution. The complex process of determining which treatment options to use is simplified using LIMS. As the platform integrates with the instruments used to track contaminant levels, LIMS can help technicians identify trends that improve treatment performance and efficiency. This data is also critical for regulatory compliance, auditing and reporting purposes, and it ultimately plays a role in determining where treated wastewater is put to use.

**Where Does Wastewater End Up?**

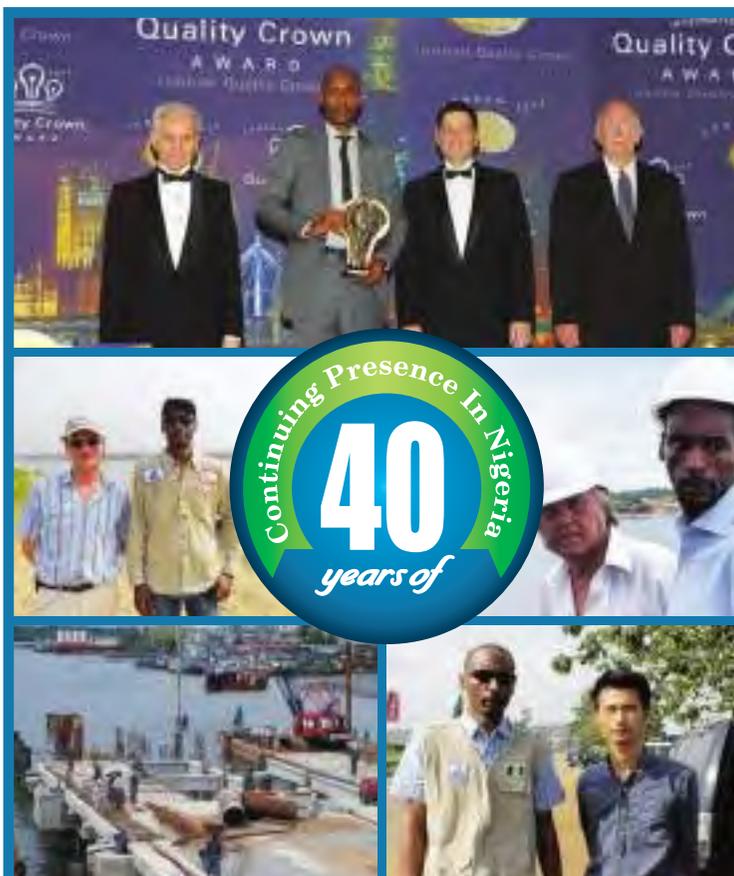
Some of the water ends up in lakes, rivers or oceans, where it must be safe enough to

avoid posing a public health risk, either through human contact or wildlife contamination. Other destinations for reclaimed water include street cleaning, plumbing, landscaping irrigation and even crop watering. This is why the broader-reaching capabilities afforded by LIMS are becoming so important for wastewater treatment providers.

Analytical instruments alone can't provide the measure of protection consumers have come to expect. The US Food and Drug Administration identified commercially available rice imported from China and Taiwan containing 120 times the acceptable level of lead. Investigation revealed that producers had watered the rice with improperly treated wastewater that contained raw industrial effluent. LIMS is key to addressing growing challenges with monitoring and compliance. Paper-based systems can no longer handle the volume of sample throughput, data management and reporting complexity in an effective manner. LIMS schedules and sampling plans are used to generate a collection run for each sampler. The collection run defines where samples must be taken, what sample bottles must be collected and what onsite tests must be performed.

Water treatment centres need to optimise the utilisation of their staff and equipment to improve efficiency and productivity. Minimising time-consuming and potentially error-prone manual processes is a key weapon in the lab manager's armoury. LIMS allows for considerable reductions of time-consuming manual processes, administrative overhead and lab operating costs. While it doesn't ensure more accuracy in testing, it does bring a discipline that enables water treatment systems to be more proactive, responsive and compliant. If upstream contamination does occur, for example, a paperless lab enabled by a LIMS is much more likely to detect and help mitigate the issue in a rapid manner – before it impacts the treatment system. LIMS also stores information about the origins of contamination, as well as where wastewater is released, enabling facilities to identify problems in near real time, trace them to the source and ensure that similar problems don't occur in the future. ■

*Jeanne Mensingh, NELAP assessor and president, Labtopia Solutions, and Colin Thurston, project director, Informatics, Thermo Fisher Scientific*



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# The quest for clean water

Why water purification methods and technologies are so important in so many areas



The problem of water contamination can be tackled at the ground level, mitigating the need to spend million on water initiatives (Image source: Sura Nualpradid/Shutterstock)

**A**cross Africa, the quality of drinking-water is probably the greatest determinant of the health of any population. In a recent *WHO Water Quality and Health Strategy* study, the organisation underscored that contaminated water is the transmission mechanism for cholera, diarrhoea, dysentery, typhoid and guinea worm infection, and estimating that diarrhoeal disease claims the lives of as many as 2.5mn people a year. Africa has the second-highest incidence of cholera in the world after the Caribbean island of Hispaniola. WHO has said there is a 'need to shift from basic responsiveness to a comprehensive, multidisciplinary approach that works with communities to improve access to safe drinking-water and sanitation', as well as one that encourages 'behavioural change'.

There are other factors aside from contagious diseases that can contaminate water such as the presence of arsenic and fluoride, growth of heavy industries and effluent methods to get rid of waste in rivers.

## A leading WHO role

WHO takes the lead in developing guidelines for all the processes and steps needed in all sorts of scenarios to ensure water safety, by considering every possible route of exposure to water-borne disease and hazards such as microbial, chemical and radiological

contaminants. A major cause of water-borne disease is excreta-contaminated water courses. WHO water quality guidelines strongly favour an integrated approach to water safety, starting with preventive risk management plans for drinking-water, recreational water, or sanitation water. A fundamental start-point is the protection of water sources from pollution, reducing contamination pro-actively, before a pollution situation even develops. In a recent statement, WHO indicated that water safety plans advocate for long-term, sustainable improvements in water quality multi-barrier approaches wherever possible, rather than for capital-intensive options for treatment with high recurrent costs and large carbon footprints.

## WHO's involved – but who else?

Together with the WHO/UNEP Libreville Declaration on Health and Environment, the African Ministers' Council on Water (AMCOW) is one of the key official instruments in Africa dealing with a guiding the continent towards a safer water future. Along with various regional bodies, the organisation is helping to introduce regional and 'sectoral' policies fundamental to reducing the incidence of water-borne diseases.

In an AMCOW announcement, Liberian President Ellen Johnson Sirleaf, who is also

Africa's Goodwill Ambassador for Water, stated at the Post-2015 High Level Thematic Consultations on Water in Monrovia, that 'global economic losses of up to US\$260bn emanate directly from poor water and sanitation access'. The delegates also stressed on the importance of inputs from every sector of society, including women, on their water woes.

## Local level responsibility

'Four percent of the global disease burden could be prevented by improving water supply, sanitation, and hygiene', according to WHO, with growing evidence that general water quality improvements will maximise health benefits. Water Safety Plans implemented at local and regional rural and urban levels can guide communities in the use of new tools and procedures to improve and protect their drinking-water. Opportunities to improve the situation overall are simple and inexpensive, often enabling the safe treatment and storage of water at the individual and household-level.

The sector in both SA and wider Africa is growing fast and more and more companies and NGOs are joining the quest for delivering pure water to Africa's whole population. ■

Tim Guest

# Monitoring climate to improve economy

The World Meteorological Organisation, African Development Bank and World Bank Group are promoting an initiative to support the modernisation and strengthening of Sub-Saharan African meteorological and hydrological services. Entitled *Strengthening Climate and Disaster Resilience in Sub-Saharan Africa*, this initiative is a direct response to the anticipated adverse impacts from climate change, including food insecurity.

"Reliable and real-time weather and climate information is a prerequisite for multiple sectors of the economy, including water, agriculture, transport, energy and public health," said Makhtar Diop, World Bank vice-president for the Africa Region.

## Inadequate infrastructure

A recent WMO survey showed that 54 per cent of the surface and 71 per cent of the upper air weather stations in the region did not report data. In addition, there is limited and often fragmented funding from development partners. "The initiative is fully aligned with the Global Framework for Climate Services and the African Ministerial Conference on

Meteorology - Integrated Strategy on Meteorology," said Michel Jarraud, secretary general of the World Meteorological Organisation (WMO).

## Guiding principles for predictive models

The initiative will improve the capacity of National Meteorological and Hydrological Services and their regional support centres to access global climate data and global models. This includes improved early warning and forecasting to help prevent damage and loss of life from catastrophic events. Partnerships and coordination among existing services would also be strengthened through information sharing frameworks.

Coordination and leveraging of financing from various sources of development and climate finance will also be carried out. The initial phase will focus on 15 countries and four regional centres. The expected results of the initiative include the widespread availability of timely and reliable forecasts at the regional, national and local levels, leading to a reduction in the impacts of weather and climate extremes on people and property. ■

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# Financing East African access to energy

How wind power could transform Africa's economic growth, with backing from key financial institutions

**A**frica is home to the second largest population on earth of just over one billion people yet 500mn people lack access to reliable and clean energy. Aging and costly infrastructure accounts for much of the inefficiencies. In Sub-Saharan Africa, only 25 per cent of the population has access to electricity compared to half in South Asia and more than 80 per cent in Latin America, the Middle East and North Africa. The hill for Africa is clearly steep but countries, such as Kenya, are looking towards wind power as a cheaper and cleaner solution to their energy deficit.

The Lake Turkana Wind Power project - otherwise known as LTWP, has been in the works for nine years. It is a symbol of success for the public private model and international co-operation that spans several countries including African multilaterals, the European Union, Denmark, Finland, Germany, Norway, the UK and the US. Once completed, it will be the largest single wind farm in Africa with a capacity of 300MW that will plug a power supply shortfall in Kenya, offer cheaper electricity to the masses, and it could very well point the way for the future of energy projects in Africa.

## Kenya's commitment to a key energy project

After some fits and starts - the most notable being the World Bank's decision not to participate in the project in 2012 - the LTWP could easily have died if not for the commitment of the Kenyan government, the African Development Bank and the private companies leading the charge - namely Aldwych International Limited and KP&P Africa BV.

The group was motivated by the clear demand for energy by Kenya's 44mn residents, where less than 25 per cent have access to clean and reliable electricity. The goal was to provide one-fifth or 20 per cent of the country's current installed power capacity of 1,664MW using wind energy, which will power 1.2-1.3mn households providing 190 to 200MW of energy per year. The project is also expected to provide two key savings. First, the country will save US\$150mn annually in foreign currency and fuel adjust costs that appear on electricity bills due to the increased use of thermal power.

With the African Development Bank's considerable weight as the senior debt lead arranger and partial risk guarantor, they helped secure funding agreements for the US\$800mn project with nearly a dozen financiers including EIB (the European Investment Bank), FMO, Standard Bank of South Africa, Nedbank, PTA Bank, DEG and America's development finance institution - OPIC. The African Trade Insurance Agency (ATI) provided insurance support to some banks and Aldwych international. The final funding tally cemented another record for the project as the largest private investment ever made in the history of Kenya.

The largest equity investor Aldwych International Limited plays a central role in the LTWP. They are the co-developers who will oversee

the construction and the operations of the project, which is expected to begin producing power in mid 2016. As one of the founding fathers, they formed LTWP to develop, finance, build and operate a wind farm in Marsabit County, approximately 10km east of Lake Turkana in north-eastern Kenya.

The project consists of wind turbine generators, an electrical collection network and substation and infrastructure development that includes road rehabilitation. The project will feed the renewable power generated into Kenya's national grid under a 20-year take or pay Power Purchase Agreement with the Kenya Power (KP). The government, through KP, formally committed to constructing a 436kV overhead transmission line from the project to a new sub-station located 90km north of Nairobi which will provide the primary source of demand for grid electricity supply.

## Protecting investment

ATI is supporting Aldwych International's US\$63mn equity investment with cover on Aldwych's subsidiary, Turkana Investments Limited. The cover protects against two main political risks - arbitration award default to mitigate the risk of breach of government obligations in the 20-year take or pay power purchase agreement, and currency transfer/conversion risk.

"We are excited about this project because it is the perfect example of the role that partners can play in supporting Africa in its quest to universalising access to clean energy on the continent," notes ATI's Chief Executive Officer, George Otieno.

Kenya plans to quadruple its energy output in the next five years with an additional 5,000MW of power. Energy expansion is a linchpin in the government's Vision 2030 plan, which aims to propel Kenya into middle income status. A big part of the government's strategy is diversification away from the hydroelectric power, which accounts for a major source of the country's electricity. Instead, Kenya is banking its future on geothermal and wind energy to achieve President Kenyatta's pledge to make certain every Kenyan has access to electricity by 2020.

The African Development Bank's 2013 wind study identified eight African countries having the greatest wind energy potential among the world's developing nations. Currently there are about 10.5 gigawatts of wind power in development across the continent with more expected to come on stream in the next few years. So far, Ethiopia, Kenya, South Africa - and recently, Senegal - are leading the charge in wind power generation. In Kenya, in addition to the LTWP, plans are well underway to construct the 61 megawatt Kingangop wind farm, located northwest of Nairobi. The US\$150mn wind plant, which has been registered under the United Nations' Clean Development Mechanism, is expected to power about 150,000 homes when it goes online in mid-2015. ■

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# Extending access to efficient energy supply

Senior figures press for much clearer commitment to increased electricity production and provision across the continent

Over 600mn people in Africa do not have access to modern energy. Sub-Saharan Africa's (SSA) electricity consumption is less than that of Spain, and on current trends it will take until 2080 for every African to have access to electricity.

The simple fact is that sub-Saharan Africa is desperately short of electricity. The International Energy Agency predicts that, while 950mn people will gain access to electricity in Africa by 2040, demographic expansion will mean that 75 per cent of Africans will still be without power.

The SSA continent's grid has a power generation capacity of just 90 gigawatts (GW) and half of it is located in one country, South Africa. Excluding South Africa, consumption averages around 162 kilowatt-hours (kWh) per capita each year. This compares to a global average of 7,000kWh.

Yet energy financing is an investment with the potential to generate high social and economic returns by increasing productivity, and improving job creation, public health and economic growth.

And there is a sense that Africa is turning a corner on the energy front, but not before time. Africa's leaders increasingly recognise that unaffordable and unreliable energy systems are a barrier to developing economies. Another element in the whole energy debate is the issue of global warming and the likely impact that this phenomena will have on the continent and the world as a whole.

The 2015 African Progress Report puts it succinctly in asking: "Can the world prevent catastrophic climate change while building the energy systems needed to sustain growth, create jobs and lift millions of people out of poverty?" The report states that finding a credible answer "goes to the heart of the defining development challenges of the 21st century".

Calling for a 10-fold increase in Africa's power generation by 2040, the Africa

Progress Panel, led by Kofi Annan, says governments should aim to lay the foundations for a low-carbon transition.

It also says that public spending on energy should be raised to 3-4 per cent of gross domestic product (GDP), supported by measures aimed at raising the tax-to-GDP ratio, avoiding excessive reliance on bond markets to raise capital that carries inherent currency risks.

## Prioritising power for the population

Given the annual US\$55bn gap in Africa's energy financing, the report continues to press for governments to prioritise the development of balanced public-private partnerships and create the conditions for expanded private investment.

It also calls for governments to look beyond national borders to accelerate the development of regional grids. One study found that by increasing regional integration, savings of more than \$40bn in capital spending would be achieved, saving the African consumer nearly \$10bn per year by 2040 as the cost of energy falls from US\$70 a megawatt-hour to US\$64 a megawatt-hour.

In two-thirds of sub-Saharan African countries less than 50 per cent of the population, mainly living in rural areas, have access to power. The average energy consumption per capita of the region is not enough to continuously power a single 50-watt light bulb.

Even in middle-income countries, such as Botswana and Ghana, the electricity penetration rate is 51 per cent and 52 per cent respectively. This is exacerbating existing structural inequality between rural and urban populations.

The International Energy Agency says that around 80 per cent of those without access to electricity live in rural areas.

Usually, it is deemed unviable to expand grid infrastructure to cover all of Africa's

extensive rural areas, but the use of many renewable energy systems in providing electricity to remote areas is an alternative.

Caroline Kende-Robb, the executive director of the Africa Progress Panel, says that Africa should aim for a judicious energy mix that will enable it to develop, which could include fossil fuels. But she cautions: "Everyone needs to ensure Africa moves on a low carbon path."

That would imply the need to develop renewable energy grids for rural and peri-urban areas, while exploiting African hydrocarbon resources, especially gas, for the generation of power for urban areas, the emerging middle classes and industrialisation programmes.

Emily Massawa, the team leader on Climate Change in the UN's Nairobi headquartered Environment Programme says: "Poverty eradication is Africa's overriding priority, with people's access to clean energy at the centre of concern.

"Renewable power is found in abundance on the continent. Large areas of the African continent are ideal for solar and wind installations, and geothermal energy is already exploited in some areas."

The renewable energy systems that are currently being focused on are solar photovoltaic (PV), wind, bio mass and pico-hydro (small-scale hydro-electric generators, used in fast moving streams and rivers), although the potential for large-scale hydro, concentrated solar and geo-thermal generation are also considered attractive.

As far as solar PV is concerned, it is generally discounted for base load generation simply because, without expensive storage options, during hours of darkness it becomes redundant.

Nevertheless, a number of large utility-scale solar PV developments have, and are, being rolled out, and the economics of renewable generation have improved.

▶ The cost of solar panels has fallen dramatically over the past decade. Bloomberg puts the current cost of solar photovoltaic generation at approximately \$0.3 per watt, down from around \$3.9/W in 2000, and \$1.85/W just five years ago.

Consequently, investors are now prepared to fund solar PV arrays such as the Rwamagana solar farm in Rwanda; Ghana's Nzema plant (one of the biggest in the world); Mali's proposed solar PV park in Segou; and South Africa's Kalkbult plant.

Concentrated solar power projects are also being developed in South Africa. The first, which is nearing completion, is at Uppington in the Northern Cape. Dubbed the Khi Solar One, and built on a 14ha site, it consists of an array of mirrors that focuses solar energy on a central tower, boiling water to drive turbines.

It is the first concentrated solar plant to be completed in Africa, although at Ouarzazate, in Morocco, is being built a 500MW plant, which will be the largest concentrated solar power plant to be constructed anywhere in the world, but this using parabolic mirrored troughs rather than a central tower.

Khi Solar One was built with investment from the Spanish company Abengoa that holds a 51 per cent stake in the project with South Africa's Industrial Development Corporation holding a minority 49 per cent interest.

Abengoa is also building a plant (like the Ouarzazate plant using parabolic mirrored troughs) at Pofadder, also in the Northern Cape Province, covering an area of 1,100ha. ▶

## Zest WEG Group makes advances in electric motor systems

The continuous pursuit for improvement and cost reduction in industry has seen a rapid evolution in the development of electric motor control and protection systems.

"To ensure that we meet all the needs of industry in this regard, as well as keeping abreast of the latest trends and developments, the Zest WEG Group has introduced the WEG range of RW\_E electronic motor protection overload relays, to complement the range of smart relays" said Stephen Cook, switchgear manager at Zest WEG Group, recently.

The WEG RW\_E electronic overload relay is designed for increased reliability in terms of the protection of low voltage three phase motors in sinusoidal 50/60 Hz networks where reliability, low power dissipation and ease of maintenance are critical requirements. The WEG RW\_E electronic overload relay has been developed in accordance with the IEC 60947-4-1 and UL 60947-4-1A (UL 508) international standards.

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### ➤ Impressive infrastructure

When it comes to hydro-electric power, the Grand Inga is a contemplated 40-gigawatt hydroelectric project in the DR Congo that could fundamentally change the electricity market in Africa.

If it were to happen, it would be the largest infrastructure project in history and has the ability to deliver more than 200 terawatt-hours of electricity – the equivalent of 13 percent of all of sub-Saharan Africa's total demand by 2040.

The total cost of power from Grand Inga, it is estimated, would roughly equate to \$28 per megawatt-hour, compared with about \$70 per megawatt-hour on average for the other available sources for the rest of the continent. But obtaining sufficient funding of around US\$80bn (US\$40bn for generation and US\$40bn for transmission) for the project is a very tall order.

But while the financiers struggle to untangle the Grand Inga's investment conundrum, the largest hydro-electric project in the world, Ethiopia's Renaissance Dam on the River Nile, is being built.

At the other end of the energy-development scale, wind turbine costs have fallen considerably – albeit not quite as spectacularly as solar PV. South Africa has been at the forefront of this and other trends, with President Jacob Zuma reporting in February that South Africa has raised R140bn (US\$11.25bn) from private investors for 3,900MW of power even as new and highly controversial coal-powered generating plants come on stream.

South Africa still relies on coal for 70 per cent of its total electricity generation even though it is the dirtiest of the hydrocarbon energy sources. Two giant new coal-fired power station, at Medupi and Kusile, are nearing construction completion.

But the surge of renewable energy systems is continuing in South Africa. Building Energy, an Italian renewable energy developer, has confirmed that it has been selected as a preferred bidder for the 140MW Roggeveld wind farm on the border between the Northern and Western Cape provinces, and the Kruisvallei hydroelectric project in Free State Province, as part of the country's renewable energy independent power producer procurement (REIPPP) initiative.

The Italian company has two other projects in South Africa on the drawing board: the Kathu solar PV power plant and the Mkuze biomass project, utilising sugar cane waste.

Africa's wind resource is best around the coasts and in the eastern highlands, but until last year (with the exception of the Cabeolica wind farm in Cape Verde, the first commercial scale public-private partnership

wind farm in Africa) it was only in North and East Africa that wind power had been developed at scale.

The Tarfaya wind farm, Africa's largest, came on line last year in Morocco, and Egypt also added massive new capacity.

In East Africa, the 16 turbine Ngong II wind farm, located 30km west of Nairobi, is now the largest in the region, but it will be dwarfed by the Lake Turkana Wind Power Project (LTWP) that should provide 20 per cent of Kenya's current installed electricity generating capacity when the US\$655mn project, comprising of 365 wind turbines, comes on line in 2016.

### Emerging technologies

There are also some new renewable energy technologies emerging, including Anglo American's development of platinum-based fuel cells that can power micro-grids for remote rural communities.

The potential for a breakthrough in energy, using the continent's own resources, is increasingly evident – as the inauguration third phase of the Azito Energie plant in Cote d'Ivoire readily demonstrates.

Also in West Africa, the Africa Finance Corporation (AFC) has secured a mandate with the West Africa Power Pool to develop IPPs both in Ghana and Benin. It is also the lead investor in a large-scale power IPP in Mozambique.

The AFC has also been instrumental at bringing the Kpone IPP in Ghana to a financial close at the end of 2014. Raising finance for

African energy projects is always a challenge because of perceived and real risk factors concerning the off-taker's ability to pay for the energy.

As Andrew Ali, the AFC's chief executive explains: "There are still a lot of bottlenecks in developing power projects. For a start, it's a complex business that requires a wide range of skills that go well beyond financing. You need to understand how power plants work, you need to be able to negotiate contracts with diverse stakeholders, and you need to be able to draw together the backers.

"It is also very costly. You can spend between 5-10 per cent of the project cost before or at the financial close, meaning that millions of dollars are needed before you have even broken ground.

"The other major barrier is that in many African countries the local power utility is not bankable. This means that there are typically a lot of discussions involved in making sure that the off-taker is creditworthy, and often investors look for government guarantees in some form."

As part of this magazine's focus on energy, in the run up to the COP meeting in Paris this December, we feature an exclusive interview with Theo Sackey, the chief executive of the Cenpower Generation Company, that is developing the Kapone plant, the largest IPP to be built in sub-Saharan Africa in the last decade. ■

*Stephen Williams*

## How African governments generate their own power

Power generation specialists Himoina recently revealed the reasons why African governments need to know about the advantages of opting to purchase equipment that allows them to supply power to various projects. During a speech at the 2015 Africa Energy Forum (AEF), Keith Webb, general manager at Himoina Middle East, explained the difference between a temporary and permanent power supply. He said, "The main reason we advise governments to acquire their own power generation equipment is because today they can provide power for the construction of a hospital and tomorrow this equipment can be moved to provide energy to a school, library or any public project", argues Keith Webb, who added that while the cost of buying the equipment is greater than the cost of renting, in the medium term the investment will already have been amortised.

Governments in Africa are changing from renting to owning equipment, to have power generation plants that may be adapted to different projects in succession. The director of sales and marketing for Himoina in Europe, Africa and Latin America, Guillermo Elum, insists on the 'plug and play model offered by the company, which allows the amount of energy supplied to increase or decrease modularly according to the needs of the project. He said, "We have extensive experience in designing power plants. One example in Africa is the 25MW power generation plant designed for the Angolan government in Cassaque, for which our Power Solution Engineering Department designed a plug and play project and our technicians have been training the technical staff of the Angola Ministry of Energy and Water (MINEA) regarding proper maintenance. Therefore, we offer much more than power generation equipment. We provide training, consulting and solutions to easily disassemble and relocate equipment to other projects where required."



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# Targeting West Africa's renewable trade

The extent to which Nigeria relies on renewable energy to boost electricity grid and economy

**R**enewable energy is taking domination in Nigeria with the country targeting to accomplish seven per cent renewable energy use by 2025. With the aid of solar energy, the country is working to provide power security to about 160mn of the country's population and boost its economy.

The solar energy project is unlocking the country's economical and industrial potentialities. It is also attracting more foreign investments, new-fangled scientific breakthroughs. Governor Babatunde Fashola of Lagos State said that the effectiveness and deliverance of substitute energy technologies have to be taken improvement of. Experts have been encouraging the authorities - noting that energy, which stimulates growth, is the bedrock of any economy. Even small and medium scale enterprises need energy if they must develop.

With the once over-dependence of Nigeria on gas to provide national grip is today being substituted with solar energy. Nigeria's plentiful renewable energy resources that were once neglected have become amongst the economic pillars of the country in the areas of solar energy, biomass, wind energy, micro hydro-energy, hydro energy, biomass and biofuel, and others. The Nigerian authorities have reckoned with the fact that one of the advantages of renewable energy is that it can be decentralised and, private investors encouraged into it. Specialists have been saying that government cannot do everything alone and that its investment is not sufficient, hence the need for private investment and other sectors to invest in renewable energy.

Professor Titilayo Kuku of the Department of Electronic and Electrical Engineering at Obafemi Awolowo University has stated, "Promotion of renewable energy and energy efficiency in Nigeria will address the challenges of power in the country. Green energy/renewable energy are cleaner sources of energy, and therefore are sustainable forms

of energy. Renewable energy can continuously be harvested because they are inexhaustible in supply and have been considered by most developing countries as an essential component of extending access to affordable energy."

## Nigeria's electricity grid

The Federal Government has to increase 2,483 megawatts (MW) to Nigeria's electricity grid from renewable sources before the end of 2015. While making a presentation on the draft policy, the director of the Electrical Inspectorate Services (EIS) of the Ministry of Power, Abayomi Adebisi, confirmed this objective. He said that this was a short-term aim, while 8,188MW and 23,134MW were medium- and long-term targets for 2020 and 2030, respectively. Adebisi added that renewable energy is predicted to contribute about 1.3 per cent of Nigeria's energy.

In the same vein, Professor Kuku extolled the invention of renewable energy owing to the crisis facing the country's electricity generation. He said, "With the current generated capacity of about 4,000MW for a population of about 160mn, with energy per capita of 30 watts, the country is in dire straits regarding energy sufficiency with the attendant consequences on all developmental indicators of employment, growth, production, cost of production, security, and general wellbeing."

## Individuals and groups support renewable energy

The Lagos State Governor Fashola has been fighting to protect the environment and stop the resultant effects of climate change. He has been encouraging the residents of Lagos, to use alternative energy sources. The state government had entered into optional sources of energy, which is seen in its solar-powered street lights project. The governor, through one of his senior special assistants on energy and mineral resources, Dr Fouad

Animashaun, at the opening of the fourth Alternative Power Exhibition in Lagos, said that science had afforded substitute alternatives for establishment of energy without obliterating the environment.

"We have the renewable lanterns, renewable cookers. These are developments that will help reduce hazards to our environment. Solar energy is going to be very useful. This is a good time to get one solar product in our houses," he said.

The importance of renewable energy has been highlighted by the fact that First City Monument Bank (FCMB) Plc, as part of its corporate social responsibility (CSR) plan, has supported the Lagos renewable energy project by funding 2,500 rechargeable solar lamps for distribution to schoolchildren. FCMB's group head, corporate communications, Mr Ikechukwu Kalu, said, "We have participated in this renewable energy project in partnership with the Lagos State Electricity Board, because the project is in line with the moral direction of giving back to society, which we share with the Lagos State Government. At FCMB, we believe that the communities in which we operate must benefit from our presence."

Kalu holds the view that the rechargeable solar energy lamps will not only support beneficiaries in their quest for knowledge, eventually leading many out of the vicious cycle of poverty, but also provides opportunities for students to be introduced to the essential paradigm of renewable energy and environmental sustainability. Lagos State Electricity Board general manager Mr Damilola Ogunbiyi said, "Our aim in providing solar lanterns to school children is to enhance their efficiency and promote studying habits in them. We see FCMB as not only our bankers, but also as our energy development partners in this laudable initiative."

The United Nations Development Programme (UNDP) has executed the Global Environment Facility (GEF)-sponsored project

aimed at promoting clean technologies and renewable energy in Nigeria. Mr Etiosa Uyigwe of GEF/UNDP confirmed in an interview with the News Agency of Nigeria (NAN) early in 2015, ahead of the GEF's commitment to the project being realised in June 2015, that it was aimed at promoting clean technologies and renewable energy in the country. He said, "GEF is sponsoring the project with about US\$4.4mn, but we are looking at complement funding from private investment. This is because for every GEF project, there must be a counterpart funding from the government or any other investor. For the counterpart in this project, we are looking at US\$150mn from private investment. This is to serve as catalyst to private investment in the renewable energy sector within the next five years in terms of generating electricity."

One of the directors-general at Nigeria's National Directorate of Employment (NDE), Malam Abubakar Muhammed, called for more funding for renewable energy projects at all levels. Represented by Mr Kunle Obayan, NDE director in charge of small scale enterprises, in Akure as 50 trainees under an NDE programme were receiving starter tools for business in solar energy technology,

Mohammed said, "We believe that the trainees in renewable energy will transform their knowledge to discovering new sources of energy and create employment potential for others. Especially, solar energy is capable

of generating employment in geometrical proportion; in design, harvesting, installation and maintenance of solar energy gadgets." ■

*Odimegwu Onwumere*

## Diamond core bits improve solar geyser installations

Diamond Products - a specialist in the manufacture, assembly and sale of diamond tools and equipment for industrial applications - offers a range of Solar Core Bits that are designed specifically for solar geyser installations, which require precisely-accurate



The Diamond Products Solar Core Bits are specifically-designed to drill through a wide variety of concrete and slate roof tiles

small holes to be drilled through roof tiles for pipe installation. Diamond Products director Darryl Gray explained recently that, if these holes are not drilled carefully, it becomes a major problem to water-proof them effectively.

"The Diamond Products Solar Core Bits are specifically-designed to drill through a wide variety of concrete and slate roof tiles. These bits deliver a perfect hole with no fracturing, chipping or breakages on the tile, thereby ensuring a better quality finished installation that is water-tight," he said.

The Diamond Products Solar Core Bits are available in standard 25mm sizes, with special sizes on request. They can be fitted to a standard 115mm grinder. Gray said, "This has made the range especially popular among plumbers and, as demand for solar power increases, so too will the demand for this innovative range of Solar Core Bits."

## Fronius takes gensets to the next level

Gensets fired with fossil fuel, often diesel up to US\$3.0 per litre. This results in a generators, can be perfectly supplemented levelised cost of electricity (LCOE) with photovoltaic technology. This holds true especially in remote regions or countries where load shedding is daily reality.

Fronius International GmbH, a global pioneer of solar technology since 1995 with headquarters in Austria, has now developed the Fronius PV-System Controller. It's a device made to enable the smooth operation of a PV co-powered genset.

Coupled with state-of-the-art inverters from Fronius, the PV-System Controller enables the highest fuel savings for any genset operator opting for such a system upgrade the Fronius PV-Genset solution.

### Fronius PV-Genset solutions are the smart investor's choice

Economically speaking, the advantages of substituting fossil fuels by using photovoltaics (PV) are self-explanatory. Thanks to advancing solar technology a kWh from PV costs 7 \$ct per kWh up to \$ct per kWh.

On the other hand, the cost of electricity from a fossil fuel powered genset mainly depends on the fuel price, delivered on site. And the midterm future trend is pointing further rise. Depending on country and region, fuel price today ranges from US\$0.

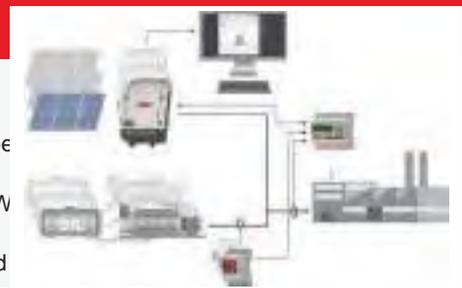
The math is clear, every substituted kW counts. Upgrading gensets with a Fronius PV-Genset solution simply pays off – and does so on average (Ø) after three years.

### Fronius PV-System Controller enables smooth operation of your genset

In systems with limited capacity, like microgrids, PV output must be curtailed dynamically to keep the genset above a specific loading. This is absolutely essential to avoid increased wear and to reduce the strain on the generator, thus keeping it healthy. The Fronius PV-System Controller guarantees an extremely quick and responsive control of the PV output.

### Easy to install for new gensets or for retrofitting existing systems

The Fronius PV-Genset Solution is the free and easy to install fuel saver. It can be commissioned by a local installer, even if it is retrofitted to an existing diesel generator system. The Fronius PV-Genset solution, which consists of Fronius inverters and the Fronius PV-System Controller, can be integrated into any genset system without



Upgrade new or existing gensets easily with a Fronius PV-Genset Solution to save fuel and money

touching the existing cabling or generator load settings.

The Fronius PV-Genset Solution is the choice to bring any single or double genset low voltage system with 50-1,500 kW genset power to the next cost efficiency level. Contact Fronius with the key technical parameters of your planned or operating genset system to receive a no obligation offer of how Fronius can bring your genset to the next cost-efficiency level with its technology.

**Hannes Wendeler**

*Sales Manager Africa & Middle East*

*wendeler.hannes@fronius.com*

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# Getting serious about solar power supply

Why new forms of energy capture and generation represent the best prospects for South African power provision

**C**learwater Mall in Gauteng, South Africa, may be the home to 250 shops and a 'premier shopping destination' for residents living in the North West suburbs of Johannesburg, but as of July it's also the home of South Africa's largest solar rooftop. On its own it's a great achievement, but what it also illustrates is South Africa's commitment to the development and usage of renewable sources of energy to bolster its beleaguered power industry.

With its new German-made KACO solar inverters adorning its rooftops, the Clearwater Mall in the Strubens Valley outside Johannesburg is a fine example of the solar energy applications that are rolling out across SA. Almost a beacon for the renewable energy industry, the picture would be rosy, were it not for the fact that renewable energy is having to bolster an energy sector beset by major issues. There's little time to experiment, renewable solutions are needed now, which is why initiatives and uses are many across the country. Clearwater Mall has actually been producing around 500kW of its own power needs throughout much of 2015, but this latest expansion sees more than triple the possible output with a 1,600kW photovoltaic system now in place. This meets pretty much one third of the 5mW needs of the malls shops, restaurants and other facilities.

## Background problems of the sector

Brown outs and black outs are a common fact of life in many countries across Africa. However, South Africa has, for many years, been different. Its economy has been the flagship of the continent and successive governments in recent times have been able to attract inward investment from major overseas markets and companies, which have seen the country's infrastructure and geopolitical situation as stable, reliable and worth investing in. The ICT sector, for one, has seen the country as a safe bet - but it is easy to undermine the hard work of the many by creating cracks in its infrastructure through an unreliable power supply.

At the end of 2014, major issues in the coal industry, including the collapse of a coal silo, forced the power utility, Eskom, to conduct the second rolling blackout in SA that the country had been subjected to in less than a year. This came as a shock to many, but at this current time the company is still conducting what it calls 'load shedding'. Here's how Eskom explains the term: 'When there is not enough electricity available to meet the demand from all Eskom customers, it could be necessary to interrupt supply to certain areas. This is called load shedding. It is different from a power outage that could occur for several other reasons.' The company says that load shedding 'is a last resort to balance electricity supply and demand' and is only applied when 'all other options' have been exhausted. Those options in a growing way include the renewable energy

installations around the country and the supply that they might be able to provide to support the grid. Gas and hydro options are included in these plans, as well as contracted and voluntary options where certain large customers undertake to reduce their demand; big customers and energy users with their own renewable solar power resources.

Eskom goes on to say that load shedding 'is an effective way to avoid total collapse of the electricity supply grid (a national black-out) which will have disastrous outcomes for South Africa. If unbalances on the power is not managed this could lead to the risk of collapse of the entire power network. If this occurs, it could take more than a week to restore power to the entire country. By rotating and shedding the load in a planned and controlled manner, the system remains stable'.

Well, however nice it is for the customer to be kept informed, for any developed nation to have to run its economy and attract inward investment with such an ongoing utility scenario is less than satisfactory. But credit where credit's due; for as it battles with these traditional power issues Eskom is also marching a renewable path, diversifying its energy mix, including its 100MW concentrated solar power (CSP) plant near Upington in the Northern Cape, for which it last year agreed a €75mn (R1.1bn, US\$83.34mn) finance contract from the European Investment Bank (EIB), to support the plant. Others involved in the funding include: the African Development Bank, Agence Française de Développement and the Clean Technology Fund (CTF).

CSP technology concentrates solar energy using large mirrors and uses this concentrated thermal energy to heat water and produce steam to drive conventional steam turbines to generate electricity. By proving this technology at Upington, Eskom will, according to company sources, be looking at deploying CSP generating technologies on a larger scale.

At the time of the investment in Upington, European Investment Bank vice president Pim van Ballekom said that the EIB expected the CSP plant to 'act as a model for similar schemes elsewhere' and that it would be continuing its support in SA for such renewable programmes as a result of a 'new mandate' that had been put in place last year.

Sounds like progress, yet still, Eskom is in a position where it keeps its customers informed of the risk of load shedding on a daily basis. Here's a flavour of what the populace reads each day so they can decide how their day might go: on 5 July this year, Eskom stated that it: 'is pleased to announce that it was able to perform maintenance without load shedding today', and on 6 July, it stated that, 'The power system is currently stable, and this will enable Eskom to perform maintenance without load shedding'. That said, 

on both days it explains in its daily statement to customers that: 'In winter the electricity demand peaks in the morning and evening as more electricity is used during these times. We appeal to all our customers to continue to reduce their electricity usage throughout the day but to be aware of the need to save more during the peak periods from 06:00 to 10:00 and 17:00 to 21:00'.

And a special note for businesses: 'Commercial customers, particularly shopping centres and office blocks, can also make a big difference by switching off non-essential lights and not leaving office equipment such as photocopiers and computers in standby mode after hours'.

But, on 9 July, Eskom announced its latest power restriction event: 'Eskom will implement stage 1 load shedding from 17:00 today, which is likely to continue until 22:00 this evening. This is due to increased electricity demand and a shortage of generation capacity resulting from technical faults at some of our power station units. Eskom would like to assure customers that load shedding is implemented as a necessary measure to protect the power system and to ensure that maintenance is carried out in order to guarantee that our supply of electricity can be maintained in the long term. Any unexpected changes on the vulnerable and constrained power system could lead to a change in the load shedding stage at short notice. As we are currently experiencing cold weather conditions across the country, we urge electricity users to consider energy efficient ways of keeping warm'.

So, despite CSP and other renewable initiatives, sounds like more help for Eskom and SA's power-generation sector is needed. ■

Tim Guest

## American solar power investment

US firm Solar Wind Energy Tower (Swet) is developing a 1,250 MW wind power plant in Turkana, northern Kenya. Already, the firm has signed an agreement with Elperta Industries of Greece for the development of the plant to boost clean energy production. The overall cost has not been disclosed. Under the deal, Elperta Industries will finance and construct the power station using Swet's patented technology. On its part, Swet will earn royalties from electricity sales from the plant.

"After evaluation, we feel this site is adequate to support of our investment. Each facility is estimated to have an installed capacity of up to 1,250 MW," said Swet's CEO Ron Pickett.

Currently, another renewable energy project in the area- the Lake Turkana Wind Power (LTWP) is underway. Meanwhile, over 20 US firms are collectively planning to invest US\$200mn in Kenyan enterprises.

During the recently-held USA-Kenya Trade Direct Business Forum in Nairobi, business representatives sought closer ties with local entrepreneurs to deepen trade ties. "We want to partner with local businesses and set up local plants that will enhance US-Kenya trade relations," said Dr Malcolm Beech, president of the Greater Washington National Business League. The US firms are seeking partnerships in energy, oil and gas, construction, education, media, health and horticulture. For instance, African Energy Resources, a US electricity firm plans to set up a US\$30mn plant that will use garbage as the raw material. Ibex Initiative Inc is looking for partners in real estate, health and energy sectors. Other firms seeking investments include Crown Jewel Hospitality, Green Fuel Solutions, Arc Angle Global Media, Biometric ID and Identity Management Solutions and Rosenthal Group.

Mwangi Mumero

## Kyocera keeps PV systems optimised

When properly planned and maintained, photovoltaic systems are an environmentally-friendly and effective method of power generation. However, each season brings its own specific challenges that need to be considered.

For instance, in summer particularly high temperatures can result in a reduced power yield and seasonal storms with squalls and heavy rain can damage the system.

In order to minimise the potential danger of these kinds of harmful effects and optimise the effectiveness of the solar power installation, Kyocera experts are on hand well before the system goes live to help select the right location, the appropriate system and correct installation methods.

Kyocera experts can also perform regular checks on the installation and its yields, thereby ensuring optimal power generation at all times as well as extending the service life of the entire system. Kyocera uses proprietary measurement devices and takes advantage of its many years of experience in the solar energy sector. Removing contamination such as bird droppings and flower pollen is also essential to ensure long-term, effective use of the system.

In the event of a fault, Kyocera's customer service team can use state-of-the-art technology such as thermographic images to quickly locate the problem, working together with installation technicians to rectify it. Kyocera inspects its own systems as well as third-party photovoltaic modules; for example, if the original manufacturer is no longer active in the market. Furthermore, service employees are on hand to provide individual training seminars to enable customers to become familiar with their own photovoltaic system.



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# Joined up working



Sub-Saharan gas market leader Afrox is leading the way in improving welding standards in the South African power generation and petrochemical industries, by conducting welding procedure qualification tests using Miller Electric's advanced PipeWorx FieldPro 350 multi-process pipe welding solution. Afrox is the exclusive local distributor of the FieldPro 350 solution, launched in 2014. Afrox business manager for manufacturing, Johan Pieterse, spoke recently of the solution as a multi-process, inverter-based welding power source, purpose-built for advanced pipe welding. He said, "PipeWorx FieldPro 350 is well-suited to site work, as it does not require a separate control cable. It sends all communication signals through the welding cables, making the system as robust as a basic stick welder."

As part of the company's commitment to improving welding standards in South Africa, Pieterse reveals that Afrox has already developed a welding procedure specifications for carbon steel pipes of various sizes. "We are now moving on to qualifying procedures for more exotic steels used in the industry. This will prove to be a game changer in terms of welding quality, productivity and skills," Pieterse said.

Pipe welding with high quality requirements is conventionally done using tungsten inert gas (TIG) welding for the weld root and the hot pass. The joint is then usually filled using stick welding, otherwise known as manual metal arc (MMA) welding. Pieterse indicates that both of these processes require high levels of skill to achieve quality, flaw-free welds. Through this process, TIG-quality welding can be achieved using the advantages of the gas metal arc welding (GMAW) process. Pieterse said, "This effectively removes the need for high-level skills for pipe welding, while simultaneously improving quality and productivity."

There are two advanced GMAW arc welding control options to operate the system. These are: regulated metal deposition (RMD) - an electronically controlled modified dip-transfer mode output solution for root-pass welds; and ProPulse - an open arc pulsed solution for fill and capping passes.

### RMD - an optimised root welding solution

The molten tip of the wire short circuits in the weld pool up to 200 times a second in a traditional short circuit cycle. RMD welding is an advanced short circuit GMAW process that produces precisely controlled metal

transfer, making it easier for the welder to control the power and the weld pool, as it boasts four distinct phases that can be identified during the short circuit welding cycle.

During the first phase, the molten metal at the end of the wire touches the weld pool, causing a short circuit. In the second phase, Peters highlights the fact that resistance heating and the associated magnetic field surrounding the wire from the rising short circuit current cause the molten metal droplet to neck down or pinch at the solid/liquid interface.

Afrox mechanisation development manager Andrew Peters said, "In phase three, the molten droplet detaches and is deposited into the weld puddle, breaking the short circuit and causing the arc to reignite, often explosively. In phase four, while the arc is melting the tip of the wire, the wire begins to approach the base metal again. The cycle then repeats, returning to phase one when the droplet touches the weld pool."

In traditional processes, short circuiting is erratic with varying intensity, often leading to different sized droplets and inconsistently high arc re-ignition currents, which cause spatter. Peters said, "From the welder's perspective, this produces an agitated weld puddle that is not easy to manipulate. Molten metal from the turbulent puddle can wash up the sides of a joint, causing lack of fusion or cold lapping."

The RMD current waveform anticipates and controls the short circuit current phase of the process to improve the consistency of the metal transfer and short circuit stability. In addition to reducing spatter, the net effect is a weld pool with less turbulence. This allows the welder to control the position of the weld pool, and avoid lapping and washing of molten metal up the side walls, thereby enabling the production of consistent quality welds in terms of both fusion and weld bead profile.

A highly-skilled stick welder can achieve an acceptable quality root weld at speeds between 75mm and 125mm/min in the vertical up

positions, and between 125mm to 200mm/min welding vertically down.

TIG welding gives a higher quality weld root, but at lower speeds of 50mm to 125mm/min, and more skilled welders are required. For pipe welding, TIG welders also have to reposition themselves around the joint several times to achieve the necessary manipulation control. RMD allows a moderately skilled welder to achieve high quality root welds at 150mm to 250mm/min using a solid wire. On pipes over 500mm in diameter, speeds up to 300mm/min are possible.

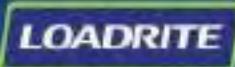
Due to the fact that the wire is continuously fed, fewer starts and stops are needed. "As a result of the higher deposition rate of the process, RMD produces a throat depth of between 3mm and 5mm, which eliminates the need for a hot pass typically applied when using the TIG process. This also offers excellent tolerance for misalignment and gaps up to 5mm can be bridged," said Peters.

#### Achieving faster fill and capping passes with ProPulse

ProPulse offers high speed and deposition rates and its focused arc cone, short arc lengths and low heat input result in a fast freezing puddle and good weld pool controllability. Narrow joints can be accommodated and both vertical up and vertical down welding is possible. A major benefit for the welder is the improved puddle control, when compared to traditional pulse or spray GMAW.

According to Peters, ProPulse operates on a hybrid constant peak voltage (CV)/constant current characteristic (CC) basis. "During the peak phase of the current waveform, the current is regulated to maintain a CV.

The peak current, therefore, varies depending on the arc length, which stabilises stick-out and gives arc length self-regulation. The pulse frequency remains constant and the background current operates according to the CC typical of TIG and MMA processes." ■







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# The future of 3D printing

The potential applications and business benefits of additive manufacturing, explored at METAV 2016

It's not often that a production process manages a mention in the main news programmes on national TV. But 3D printing has. The easily memorable term has ensured that a long-known process is achieving celebrity status and is suddenly being intensively discussed throughout the country as a revolution in manufacturing.

"The prediction that everyone will be producing his own spare part on his 3D printer at home has meanwhile proved largely erroneous," says Dr. Wilfried Schäfer, executive director at the METAV's organiser VDW (German Machine Tool Builders' Association) in Frankfurt am Main. Rather, he adds, the discussion now centres on the adoption of 3D printing or additive manufacturing (AM), as the professionals call it.



NASA testing 3D-printed rocket injectors.  
(Photo: NASA's Marshall Space Flight Centre/Flickr)

This theme is being addressed with a new concept adopted by the METAV 19th International Exhibition for Metalworking Technologies in Düsseldorf. Under the motto of 'Power your Business', from 23 to 27 February 2016 the event's Additive Manufacturing Area will be showcasing 3D printing's entire spectrum of additive processes, materials and service capabilities.

**Additive Manufacturing Area spotlights plastic and metal applications**  
The advantages of additive manufacturing are obvious. Firstly, new design ideas and product concepts with new functions now become possible, because highly complex geometries, which with conventional processes have hitherto proved impossible or prohibitively costly to manufacture, are now feasible.

Secondly, efficiency gains are achieved in terms of time and material consumption. Functions can now be integrated directly in a single production step. This is also an attractive option for component functionality in terms of material optimisation, meaning that additive manufacturing is therefore already playing a significant role in lightweight construction of aircraft and automobile parts particularly.

Thirdly, the manufacturer can responsively meet individual customers' wishes – provided the user concerned possesses the requisite experience.

Exhibitors are welcoming this initiative from the METAV's organiser, VDW. Stefan Ritt of SLM Solutions in Lübeck, says, "Additive processes create new options for lightweight construction and complex structures. The Additive Manufacturing Area showcases these potentials in plastic and metal applications." He also notes that important customer segments for additive processes, like tool and mould manufacturers and medical technology producers, are being specifically addressed at the METAV with the Moulding Area and the Medical Area.

METAV is a biennial event which has been running since 1980. The last exhibition, in 2014, attracted more than 31,000 visitors, who came to see the products and services of 610 exhibitors. ■

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# A safer workplace

A large percentage of workplace injuries are due to slips, trips and falls – accidents which are often attributed to slippery floor surfaces, unnoticed obstructions and employee distractions. According to Elaine van Rooyen, marketing manager at Andrew Mentis, by installing appropriate non-slip grating many of these accidents can be avoided.

She says that the company's non-slip Rectagrid RS40 grating provides a safe and efficient way of draining away slippery substances whilst simultaneously creating a slip resistant, high traction work area.

"This patented non-slip grating is proving so popular that we anticipate it will eventually replace serrated grating completely," says van Rooyen. "The secret to the product's success is a combination of the design, engineering and manufacturing process which results in the positive raised

sections that create multi-directional obstructions on the top of each bearer bar."

Van Rooyen explains that the pressure locking system used in the Rectagrid RS40 secures the bearer and transverse bars, resulting in an uncompromised walkway surface that is both solid and safe in all applications. "The harsh environments experienced in mineral beneficiation plants, chemical plants and the food and beverage industry provide a challenge for safe underfoot conditions. However, unlike serrated grating, the integrity of the loading capability of non-slip grating is ensured providing both mitigation against slips and trips as well as a structurally sound surface."

The choice of footwear in the workplace is often a consideration when implementing walkways and stairs. However, the non-slip characteristics of the Rectagrid RS40 are effective in all directions, so employees are

equally safe wearing leather- and rubber-soled shoes and boots.

The build-up of dirt that is typically associated with serrated grating is absent with non-slip Rectagrid RS40 grating, which is characterised by its superior self-cleaning properties. "This ability to effectively eliminate dirt as well as moisture makes this the ideal surface for inclement conditions such as industrial operations or in damp or wet conditions such as water and wastewater plants. Furthermore, maximised traction is provided by the larger surface contact area for both pedestrians and forklifts. The end result is a safe, cost effective and low maintenance underfoot surface that provides reduced employee downtime and the associated costs that result from slips and trips," van Rooyen concludes.

Andrew Mentis (Pty) Ltd has been developing steel grating since the 1950s. ■



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# The road to change

## Effective water management systems for Africa's new infrastructure

Throughout Africa, efforts are being concentrated on improving the continent's road infrastructure network, with a view to improving access to healthcare, education, employment and trading opportunities. In the process of this growth, however, it is important that construction does not come at the expense of the environment or local communities and, as Philip Wood of Polypipe explains, there are ways in which responsible road construction can contribute to water conservation and reuse.

Across Africa, there are just 204 km of road per 1,000 km<sup>2</sup>, of which only a quarter is paved. Statistics like this have prompted many agencies to act. The Program for Infrastructure Development in Africa (PIDA) committed 30 per cent of its budget to transport, aiming to grow the current network of major roads from 10,000 km to 100,000 km by 2040. Similarly, the South African Government has committed to invest US\$64.6bn in infrastructure in the three years from 2013/14.

### Tackling Africa's challenges

Africa as a continent deals with a multitude of climate conditions, from arid desert to rainforest, and rainfall in some areas can be unpredictable. Flash flooding, such as the catastrophic heavy rain and flooding that killed 170 and displaced 100,000 people in Malawi in January 2015, is a frequent occurrence while other areas suffer extended periods of drought.

This instability in precipitation leads to a clear need for efficient rainwater storage and harvesting – protecting property, livestock and people from flash flooding while enabling rainwater reuse in times of need. Incorporating effective drainage and water storage solutions when planning road infrastructure projects is one way to mitigate the effects of excessive rainfall or extreme shortage, enhancing the environmental credentials of transport projects as well as the safety of road users.

There are a number of drainage, storage and water transport options available to optimise surface water and storm water drainage, suitable for installation beneath or adjacent to the carriageway as necessary.



Ridgidrain is made from high-density polyethylene (HDPE)

Polypipe, the UK's leading manufacturer of plastic piping and water management systems, works closely with infrastructure bodies in Britain and worldwide to design bespoke solutions for the most challenging applications and these products are ideally suited to the particular challenges of road installation in Africa.

### Practical solutions

Polypipe's Ridgidrain – recently used to provide drainage for a large section of motorway in the UK – is a highly popular solution for both infrastructure upgrades and new road projects. It offers excellent hydraulic performance, high corrosion and impact resistance and a simple but secure jointing system. Available in a variety of diameters from 150 to 450 mm Ridgidrain is manufactured from lightweight, high-density polyethylene (HDPE), and can be supplied in long lengths for minimal jointing. Its flexibility and structured ring design means it can resist high traffic loads without cracking or leaking, and the pipes are less likely to

block due to an extremely smooth bore, minimising maintenance.

As well as providing a highly efficient drainage solution as a standalone product, Ridgidrain couples easily with other Polypipe products, to provide a complete soakaway or storage solution.

One example is Polystorm, a modular system of cells, allowing flexibility of shape which is ideal for shallow excavation systems, narrow strips or use in restricted areas, for both attenuation, soakaway and storage systems. Manufactured from polypropylene (PP), it is also very lightweight for quick, easy and safe handling and installation.

As Africa's road building initiatives continue to gain pace, effective water management systems are bound to play an important role in the continent's new infrastructure. With PIDA planning 250,000 km of new and upgraded minor routes; 70,000 km of basic rural routes; and nine major cross-country and coastal highways, the opportunity to upgrade and optimise water management systems is considerable. ■

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# Bridging the gap

Constructing a new high-speed railway to connect the west and east of Algeria

The new high-speed railway Oued Tlelat-Tlemcen is set to be an important part of a new modern infrastructure currently being constructed, crossing Algeria from West to East, parallel to the Mediterranean coast. Stretching 132 km, it is the largest and most ambitious interstate Trans-Maghreb project, which, when complete, will one day link the Atlantic Ocean to the Red Sea.

Italian company Società Italiana per Condotte d'Acqua Spa won the contract to manage the project, the budget for which is estimated at EUR1.5bn. With a train capable of travelling at speeds of up to 220 km/h, the line is only part of a large scale government project, creating an important infrastructure corridor that includes a high speed road, national road and a new highway.

Along the 132km path 56 bridges have to be realized for a total length of 17 km, some of which have exceptional characteristics. The longest, at 1,780m, and with a maximum height of 130 m, will become the world's biggest bridge for a high speed train railway. A total of 15 piers, the highest of which is 114m, will support the steel bridge structure composed of 13m high steel beams. The tallest piers also have a special "flower" shape at the bottom, which represents another big challenge for the project.

## Doka automatic climbing system for the piers

For the construction of the exceptionally tall piers, Doka has provided its automatic climbing formwork SKE plus. Due to their particular 'four-



The line will include 56 new bridges, supported by piers



The new railway will stretch 132 km across Algeria

petal' shape, the piers required the design of customized steel formwork panels for the outside, while, for the inside, Doka's large-area formwork Top 50 was used. In total, 16 SKE50 and 4 SKE100, plus climbing units, supported the 4.5 m tall wall formwork.

The all-hydraulic equipment of the climbing units allows for the safe climbing of all platforms gangs on the outside in a single lifting procedure, without fall hazards. The external climbing formwork was designed with extra wide pouring and reinforcement platforms to support the 10-day cycle. For safe working conditions at great heights the SKE plus system was equipped with safety accessories such as extra high railings, safety nets and access systems.

Doka also supplied the formwork for the piers' base. The flower shape of the highest piers acquired a 10 m steel formwork placed at the base of the piers. It was realised with two pouring steps; the first requiring a volume of 1,300 m<sup>3</sup> of concrete and a 150-unit vibrating system. ■

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# Equipping infrastructure enterprises across Africa

How a pan-continental enterprise enables key industrial and economic stakeholders to deliver projects to schedule and budget

**S**cott McCaw is group managing director of the Panafrican Group of companies. His knowledge of African infrastructure issues and how best to serve key stakeholders and construction companies is extensive. The Panafrican Group markets and distributes equipment across several industries, ranging from construction and mining through to agriculture and even the energy sector. The group offers one of the largest product line ups in the world, ranging from light construction grade equipment to ultra-class machines. Mr McCaw spoke recently to African Review of Business and Technology about the continent's key market dynamics, and how Panafrican Group aims to serve the continent's markets.

**African Review: You are aligned with Komatsu. Could you describe how Komatsu's equipment matches the needs of its African customers?**

**Scott McCaw:** Yes, the Panafrican Group, has been the Komatsu distributor in most of English speaking sub-Saharan Africa for over 18 years commencing in Kenya in 1997, and then growing into Tanzania, Ghana, Nigeria and now Sierra Leone. We have also recently extended our product offering in East Africa with the addition of the Wirtgen family of road and mineral technology products including Wirtgen, Vögele, Hamm, Kleemaan and Ciber and in Nigeria with the addition of the Valtra and Challenger agriculture lines.

Komatsu equipment fits the African customer very well in many ways. Firstly, as a full line equipment manufacturer, through the Panafrican Group, we can offer complete package solutions for our customers from light industrial grade (backhoe loaders, skid steers), through construction grade (excavators, dozers, wheel loaders, graders and rigid and articulated trucks) up to the larger mining size equipment, specialty paving, crushing and screening and agriculture, as well as host of attachments to



Panafrican sells the Wirtgen family of road and mineral technology products - including Vögele

ensure that the machines achieve maximum performance for the customers desired application. Although technologically advanced, the Komatsu product is also well designed for ease of operator use and performance supported by the Panafrican Group's operator training on delivery. Lastly, with tier 2 engines, combined with regional specified sandy dusty packages and poor fuel arrangements, the product is specifically adapted to address the operating conditions in the African market. This is an important element to understand as often new/used equipment will enter our markets from foreign territories (grey market) but are configured for Europe or North America making them unsuitable for African conditions.

In addition to the market designed product, the customer cannot ignore the solution and after-sales support capabilities that the Panafrican Group brings to the markets we serve. In the end, machine quality and adaptability to the market is important, but it must be backed up by sound after-sales service and parts supply to ensure the machines achieve maximum availability,

reliability and performance. At Panafrican we provide a range of customer solutions including product supply and fleet recommendations, parts supply and warehouse management, service support (depot, field service and dedicated on-site), machine management and maintenance planning, and a range of training options, backed up by one of the best warranties in the market.

When customers acquire machines, it is the complete solution that matters.

**AR: What are the core challenges in supporting key infrastructure players across Africa? How do they vary from one country to another?**

**SM:** This is a rather broad question as it varies widely by country to country and customer to customer. Furthermore, some challenges are within the control of the customers and Panafrican and others are beyond immediate control of either party, and are rather influenced by broader market movements, or regional governments.

From a customer and Panafrican broad based controllable perspective between the

parties, the common challenges in supporting the core players in the market include cost management, service and after sales support delivery and training.

From a cost management perspective, the issue is approach. Obviously capital pricing is a key element for the customer to manage costs. At Panafrican we seek to remain competitive in the market relative to our peers. There are certain OEM's where we have an inability to compete on price (such as Chinese and Korean); however the quality and engineering behind the Komatsu machine and its relative machine life and performance should command a premium to those brands. More importantly however is total cost of ownership and productivity/production. This often becomes an education, as although our machine prices may be higher than certain competitors, if the machine last longer (therefore more years of income earning potential), or requires fewer repairs (lower parts costs) or has higher availability (ie not broken down due to lack of parts, maintenance and support), then the customer actually generates higher returns. Obviously we need to tailor a solution for those customer on maintenance planning and technical support structure that enables them to gain those benefits.

Service and after sales support is another critical element and distances in our markets can often become a challenge if the customer is not looking for on-site support. This is often determined by the customer, in terms of whether they wish to self-maintain, stock parts, etc. However in working with Panafrican we can often tailor a solution to meet a wide range of service and support requirements. The key here is communication. Regardless of the approach taken, proper support and maintenance requires regular dialogue between the parties to ensure that we know how the machines are performing, and when certain service intervals are expected so we can make sure the customer has what they need when they need it. We launched Komtrax in West Africa in about 2012 and have recently launched in East Africa. This remote monitoring system allows us to actively receive important data directly from the machine, about machine performance, use, hours, warning issue, fuel burn, idle time etc, which enables us to take a more direct and proactive approach with our customers on their machine performance and maintenance.

Training would be the final one I would highlight. This applies as much to Panafrican as it does to the customer. Technical training schools in areas such as heavy duty mechanics, welders, electricians, etc. are difficult to come by in our territories as the technical schools are not well developed or



The Panafrican Group has been a key Komatsu distributor since 1997

are developing. This places the onus on distributors like ourselves, customers and the community to try and fill in the blanks. Panafrican has a strong history in training our technicians through our dedicated Komatsu training programmes (at our Komatsu/Nairobi training facility) as well as utilising industry developed training schools such as IMTT or Integrated Mining Technical Training Centre in Tanzania. To address this Panafrican has recently launched, in partnership with the College of the Rockies in Canada, Red Seal Trade Certification programmes the meet and exceed the standards of the Industry Training Authority of British Columbia, Canada. These programmes are to ensure we at Panafrican are developing to the highest training standards for our technicians (internationally recognised) and now we are commencing offering such training programmes to our customers.

As it relates to broader market movements many of the issues are consistent across our all of our territories, including infrastructure development and logistics, consistent and cost effective power supply and currency devaluation. These are common challenges across most sub-Saharan markets, but vary by degrees. In terms of specific markets influences on a year in year out basis, these relate to local election cycles (which tend to put a short terms damper on an economy), commodity dependency (ie in Nigeria - oil, in Ghana and Tanzania - gold, in Sierra Leone - iron ore, and in Kenya, - agriculture and tourism), currency volatility, and state of government affairs (combination of business friendly environment, visa process, financial stability and generally the militancy of their taxation authorities, which all go to cost of doing business). Then you have the unpredictable elements such as Ebola and security/terrorism. Ebola had devastating impacts on economic activity in Sierra Leone, Liberia and Guinea; however

thankfully, this appears to have been now addressed. As for security risks, this weighs more heavily in Nigeria and Kenya, as we all know, but the governments are addressing this.

I would say from an infrastructure standpoint, we are seeing positive movements in Kenya, Nigeria and Tanzania. All three of these countries have been active in both development and announcement of new initiatives in road, rail, port and air and improvements can be seen. As it relates to new developments, the issue will remain funding, and the international community and FDI investment will be important here as governments lack requisite funding to hit development targets on their own. We are seeing some release of Cocoa Board funds in Ghana for rural road development, but the scale remains behind the Kenyan, Tanzanian and Nigerian markets.

In terms of power, I would also suggest that the above named three countries are making the largest headway, in areas such as geothermal, gas, new coal developments, among others. This will take time, particularly for coal, however the direction is positive.

Currency devaluation is one of the more difficult ones for any of these countries to defend as they do not retain the government reserves in many instances to adequately address the volatility, and to be honest, in many instances (except maybe Ghana and Nigeria) the influence in currency is less about a country story and more about international movements and flight to quality in places like the USD.

Commodity dependency is also of great influence in regional economic development. We are seeing positive movements in Kenya to develop a mining sector as well as oil, Tanzania has positive promise with oil and gas, and Nigeria is trying to develop a mining and agriculture sector. All these initiatives are aimed at a more diversified governmental

revenue base and industry development. Ghana and Sierra Leone continue to lag in this area in my view.

Business friendly environments would be the last area I would focus on. Generally speaking these markets are open for business and I do believe the governments are attempting to attract investment in multiple sectors to push economic growth. The key for these markets is governments recognising that there is competition between countries for the limited available investment dollars. So the more onerous the mining regulations, the more difficult visas are to obtain, the more aggressive and in many cases frivolous the local taxation authorities are in their assessments, the less investment they will attract. Corruption is also another element that cannot be overlooked. These simply increase the cost of doing business and if proper economic returns are not achieved, then the companies will not stay. Generally there is much written on this in terms of corruption indexes and business friendly environments. I would say what we see on the ground is generally in line with the indexes provided by many prominent companies. Most of the countries we operate have seen upward movements in a positive direction in these rankings.

**AR: Where are the key investment targets in construction and mining through to 2016?**

**SM:** When we look at our markets, we actually split this into a few more sectors when looking at where commercial or governmental investment is targeted. These include large scale mining, alluvial mining, cement and aggregates, agriculture and forestry, civil and infrastructure and power and energy. Too often the focus is to try and compartmentalise these regions into two sectors, but to be honest the markets are more diversified than that, and the industry requirements between the above noted sectors do vary to a greater degree with different influencing factors.

For large mining generally, I would suggest that the near term and possibly mid-term outlook does not hold significant promise for new investment. Low commodity prices, excess market supply and slowing economic growth in China are among the contributors to this. Where we are seeing activity in the large mining sector are in areas of self-supply (ie where the mine is developed by a customer to feed its own manufacturing or power requirements such the recently announced coal projects by Dangote to fuel its cement plants) and areas targeting cost reduction (where we see companies moving from say owner mining to contractor, changing contractors or tendering consumables to bring



Scott McCaw, group managing director of the Panafrican Group of companies

costs down from legacy deals). I believe in the mid to longer term we will see development of larger mining in Kenya and Nigeria, but this is many years away.

For light and alluvial mining (small scale), we are seeing opportunity, albeit slowly. These smaller miners use versatile and low cost methods on smaller deposits to keep cost of production low. We believe this market has opportunity but will not see large growth and will be spotty. These opportunities are available in most of our markets, but Ghana and Tanzania and to a degree in Sierra Leone will remain the principal markets in the near term, while Kenya and Nigeria develop their nascent mining markets.

Cement and aggregates are seeing strong promise and the sector is actively building up capacity. This is on back of the expected infrastructure development in areas such as road, rail, air, vertical infrastructure and port. We are seeing strong activity in Nigeria, but developments are also occurring in Tanzania and Kenya.

Agriculture and forestry (principally agriculture) expects strong development in the coming years. Food security for basic staples remains a challenge in most of our markets as they have to supplement small scale local rural production, which is far short of meeting country demands.

Commercialisation and mechanisation of agriculture is definitely at the forefront of many government initiatives to increase land under cultivation as well as increase production on existing farm lands. This is clearly on the agenda in Nigeria and there has been recent movement in Tanzania to begin to address this. Kenya has a long history in agriculture so the issue is not new, but rather in this market they need to begin to address issues of land fragmentation and find ways to enhance mechanisation. Ghana and Sierra Leone are also seeing active markets here but we expect growth to lag given the current

economic and funding climates. This activity not only encompasses farming related equipment, but also to large land clearing, for example where in 2013 the Panafrican Group delivered approximately US\$35mn of Komatsu Equipment to the Dangote Group for sugar farm development under the backward integration initiatives in Nigeria.

Civil and Infrastructure has tremendous potential but remains dependent on funding, including very large scale projects such as the LAPSET project in Kenya. As discussed previously, we do see Kenya, Tanzania and Nigeria in the forefront here in potential. We do believe that Nigeria will remain slow as the new government gets their arms around the government's financial status. However we do believe Nigeria remains a strong potential market. Ghana and Sierra Leone will lag here as mentioned previously.

Power and energy is another market with potential as discussed previously. Kenya, Tanzania and Nigeria are the leading countries in the markets we serve for activity. When we refer to power however, we are not referring to actual power generation equipment, as this is a market we have purposely stayed away from, due to overcrowding. Furthermore we believe that these markets will solve the power issues over the coming years with the new developments coming on stream. In this sectors, we focus in the provision of machinery for infrastructure development, related mining, or pipelaying.

All in all, I would say we remain cautious in the current markets, not only given the challenges in these countries but also the global influences. However, we do see East Africa as the current market with the highest level of activity in the recent year with broad based uplift instead of a single industry focus - which is positive. Our Western markets remain hampered by currency, elections, commodity prices and governmental revenues. In West Africa, we do believe that Nigeria will emerge from the current negative influences over the next 12 months and there remains reasonably good ongoing opportunities and certainly positive market sentiment. As for Ghana, we are expecting some positive momentum to occur in 2016 leading up to the election, and in Sierra Leone, much will depend upon the development of Tonkolili and new projects.

The key to success in mixed markets such as these, is to remain versatile and variable in the approach, stay close to the markets and sectors you serve, understand the needs of the customer in their businesses and in their sectors in a targeted approach, offer solutions not product, and diversify your opportunity across markets, sectors, customers and offering, while remaining specialists in what you do. ■



Nicola Cristantielli  
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**The models in this photo are both 25 years old. But only one of them looks it.**

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**Bauma Africa Johannesburg, 15-18 September 2015 - hall 6 stand H51**

# Bricks for building communities

South African brick- and block-making machinery firm contributes to the construction of affordable homes in the Eastern Cape

As part of the South African government's commitment to development and upliftment, the Radway Green Farm community just outside of Grahamstown was to be provided with permanent shelter during a process that would offer them employment while teaching them invaluable skills.

Hydraform has been a forerunner in the industry for close to three decades, supplying interlocking block-making machinery to a growing market and offering the necessary training and skills development to inform and enhance the user's experience of the machinery. This existing model fed into the company's extended offering to deliver turnkey solutions for specialised housing delivery. Hydraform sales and marketing director Nazlie Dickson, said, "The opportunity this initiative gave us was to implement our own project and prove that a community can be transformed and enabled by participating in local construction in a short period of time and enjoy benefits beyond housing delivery."

**“ Projects like this prove that we are able to adapt to market needs, and in this case, the affordable housing market, by providing specialised and dynamic turnkey housing delivery options.”**

Beyond supplying machinery, Hydraform's participation in this project has helped create not only shelter for worthy citizens, but has involved the community in the construction of their own houses. Radway Green Farm community members have also benefited from being gainfully employed during this process and have also acquired the necessary transferable skills in both block-making using Hydraform's technology and construction.

"The community members we employed for this project previously had no transferable skills other than farming. Now they have the ability to produce blocks and build using Hydraform interlocking building technology," said Dickson.

"A key objective of the project was to ensure that the community members were not only beneficiaries of homes, but that they were trained in block-making and construction as part of their skills development. The community produced 150 000 blocks that went into building their houses."

## Mobile technology

The Hydraform block-making machinery was transported to site, ensuring a good quality product that didn't have to travel far to get to its destination, which cut down tremendously on transportation costs and rendered the product more inherently energy efficient.

The Radway Green Farm project also offered a unique set-up to test out the versatility and robust nature of the machinery. Dickson said, "The project itself is in a rural setting where there are no formal water and power facilities or supply. But this made no difference to the performance of our machinery, which is highly mobile and can produce blocks on site."



Community members employed in block production

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Hydraform block-making machinery provides smart solutions to the logistical challenges presented by a rural build and due to its innovative dry-stacking method, the final product has a lower embodied energy than traditional bricks and blocks. Dickson commented, "Hydraform blocks are not baked or fired, which saves a remarkable amount of energy. The dry-stack interlocking technology also saves construction time and cement costs as well as providing materials with less embodied energy, contributing to a structure that is greener overall. This project is a self-sustainable and independent development that included solar power generation, a waste management system as well as water delivery."

#### The future of housing delivery

Hydraform's product offering is uniquely positioned to serve developing countries in their quest for infrastructure development and stability due to its inherent adaptability. "Our products are able to work around infrastructural constraints and still deliver housing, public buildings, clinics and schools – even in the most remote areas."

The Radway Green project began in March 2015 and was completed in July 2015 – on



Hydraform has been supplying brick-making machinery for nearly 30 years (Photo: Jamie Dobson/Flickr)

time and within budget. While the project houses a number of families, restoring dignity to a previously displaced community, it is also a meaningful showcase of Hydraform's exceptional project management skills and unique technologies that are so well suited to local housing delivery.

"We were able to show that Hydraform technology can be employed by a local community allowing them the full benefit of participating in project development while

learning new and invaluable skills and, in turn, improving their living standards. Projects like this prove that we are able to adapt to market needs, and in this case, the affordable housing market, by providing specialised and dynamic turnkey housing delivery options. This extended offering means we make meaningful contributions to South Africa's job creation, skills development and community upliftment objectives," said Dickson. ■

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# Gen2 Switch from Otis raises elevator standards

Raising elevator standards with a built-in battery to allow for use during power outages

Most productivity due to ongoing load shedding in South Africa can be mitigated with the latest technological innovation from manufacturer of elevators, escalators and moving walkways Otis Pty Ltd - the Gen2 Switch elevator.

"A major advantage of the Gen2 Switch is that it is designed to continue running even during power outages thanks to a built-in battery," said Hayley Elwen, marketing and business development manager at Otis Pty Ltd. "Despite the recent increase in grid volatility leading into winter, the Gen2 Switch

provides property owners with the peace of mind that the lift in their buildings will continue running during power outages."

Under normal running mode, the Gen2 Switch power supply charges a pack of batteries, which in turn supplies power to the lift motor. In the event of a power failure, the battery pack continues to operate the lift for up to 100 trips in a seven-story building. The battery system is compatible with alternative energy sources like solar panels and wind power, while the battery is made of 97 per cent recycled materials, and is itself 90 per

cent recyclable. Unlike many other lifts, the Gen2 Switch can be plugged into a regular wall socket, negating the need for a three-phase electrical installation. It is ideally suited for residential applications with a standard power supply, or commercial sites consuming just 700 watts, which is less power than the average microwave.

The Gen2 Switch is proven to be up to 80 per cent more efficient than a conventional elevator, and is the culmination of decades of elevator efficiency improvements undertaken by Otis. ■

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# SDLG's African debutant

Chinese manufacturer chooses bauma Conexpo Africa 2015 to launch its new backhoe loader in Africa



The SDLG B877 backhoe loader  
(Photo: SDLG)

**S**handong Lingong Construction Machinery Co. (known as Lingong) is exhibiting its range of SDLG machines at this year's bauma Conexpo Africa 2015 in Johannesburg, South Africa.

Following a successful event in partnership with the brand's South African dealer, Babcock International Group at the previous bauma Africa show, the companies are once again joining forces to present a selection of the latest and best SDLG machines now available to the African market.

The star of the show, according to the manufacturer, will be its "excellent-value and highly efficient" SDLG B877 backhoe loader, which is making its African debut at the show.

**Introducing the SDLG B877 backhoe loader**  
Useful for working across multiple job sites, the SDLG B877 backhoe loader is already popular in the Middle East since it was launched at the end of 2014. Now available in Africa, SDLG expects the backhoe loader to appeal to many businesses throughout the region.

"With reliability and performance at its core, the versatile B877 is packed with features to give owners a fully-loaded machine at great value, with capabilities needed for a wide variety of projects," said Stefan Bach, SDLG business manager for

Africa. "Backhoe loaders appeal to many businesses, particularly smaller companies making their first equipment purchase, and the African market for backhoe loaders is one of the largest outside of America and Europe. We're excited to launch the new machine at this year's bauma Conexpo."

The B877 is designed for all-day operation, with a robust frame and components to ensure it can withstand the rigors of demanding job sites, while the operator's cab is designed to provide excellent visibility for job site safety. Featuring a suspension seat, air conditioning as standard, and opening rear windows, the operator cab is also designed to maintain operator comfort all day long.

The machine's powerful turbo-charged 70 kW engine is low on emissions and high on fuel economy, providing a torque reserve of 40 per cent. With its hydraulic torque converter and synchronized four-speed transmission, the B877 can reach speeds of up to 40km/h.

The B877 comes with both a special front-steering drive axle, which can be disengaged with a switch for greater efficiency at high speeds, and a rigid drive axle with closed wet brake and an electronic differential lock, for better traction in dangerous conditions. The machine's 55 degree turning radius also

ensures excellent maneuverability at congested and tight job sites.

A three-pump, four-valve hydraulic loop is designed to ensure that lifting and steering operations can occur seamlessly and simultaneously. Plus the machine's hydraulic elements are centrally arranged for easy maintenance and service, while auxiliary hydraulics can be added easily.

To offer even greater versatility, the B877 can be equipped with a variety of attachments and tools to handle a diverse range of tasks, including a multi-purpose front bucket as standard.

## SDLG returns to bauma Conexpo Africa 2015

Presented alongside the B877 at bauma Conexpo is the LG6300E SDLG excavator. With a 30 t rating and powerful digging force, the LG6300E is suited to a wide range of heavy duty applications and can accommodate up to a 1.9 m<sup>3</sup> bucket.

Visitors to the show will also have the opportunity to view a range of machines from the leading Chinese manufacturer of wheel loaders including the LG968, LG958 and LG938 wheel loaders and a G9190 motor grader. The 15.8 t G9190 grader is powered by a 148 kW Deutz engine and can deliver traction force of up to 82 kN. ■

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For many years the Cavatorta company has been producing High Security Fencing, appreciated both in Italy and abroad, used in the most extreme conditions where safety is considered a top priority : airports, military areas, high security areas such as chemical or pharmaceutical plants, prisons. The great experience in this specific sector has allowed Cavatorta to make all the perimeter fence of the international exhibition EXPO 2015 in Milan.



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# A capacity for on-road excellence

The specifications and commitment to quality that make Bobcat loaders the perfect tools for road surfacing work

All Bobcat compact loaders are equipped with the quick-change Bob-Tach attachment mounting system, allowing them to be combined quickly and safely with over 60 different families of Bobcat attachments, delivering versatility and time-saving efficiency across a huge range of different applications.

For many road surfacing contractors, Bobcat compact loaders and attachments are an integral part of the fleet of equipment they use to carry out their contracts. With their ability to turn around in their own length and fast cycle times, Bobcat loaders offer contractors the manoeuvrability and flexibility they need in the sometimes tight spaces available on site, working alongside bigger machines such as pavers and rollers on surfacing projects.

## Versatility and industry

Bobcat loaders can be used in virtually every facet of a contractor's business, from loading materials and cleaning up on sites to general handling work in their yards. Bobcat loaders and attachments are incredibly reliable and are the perfect tools in terms of the access and productivity they offer on work sites and their ease of transportation. They are excellent multi-purpose vehicles for loading and placing materials whilst hand-laying macadams and, combined with powerful Bobcat brush attachments, they are also very efficient clean up tools.

Many road contractors are equipped to carry out all types of surfacing using asphalt and bitumen macadam. Projects covered include preparation, drainage and surfacing on roads, footpaths, repairing potholes, tennis courts and other sports surfaces, playgrounds, forecourts, driveways, car parks, caravan sites, estate roads, farm roads and silage bays, industrial/transport yards, warehousing storage facilities and ports and docksides, encompassing virtually any hard standing area that requires a durable surface.



The S550H high flow skid-steer loader is one of the most popular Bobcat compact loaders for road contractors

Tarmac maintenance and pothole/patch repairs are also part of the portfolio of many contractors. The versatility offered by Bobcat compact loaders allows contractors to use the same loader with other Bobcat attachments such as surface planers to carry out repair work. Together, Bobcat loaders and attachments form a high performance road and pavement surface repair package, ideal for repairing not only potholes and surface cracks, but also for milling surfaces and for work around manholes.

## Equipped for precise performance

Bobcat loaders ensure safe, efficient operation at all times in areas inaccessible to traditional machines. Road surfacing contractors are therefore finding that Bobcat loaders are more productive than other types of equipment and complete more work in less time. Because of their compact size, they are also easier to fit on low loaders with other

equipment for lower costs and ease of transport.

One of the most popular Bobcat compact loaders for road contractors is the S550H high flow skid-steer loader model, part of the hugely successful family of 500 platform compact loaders from Bobcat.

With overall performance and cycle times up by around 16% on the previous models, 500 platform loaders have taken efficiency and productivity to new, higher levels:

- More lift capacity, lifting further and higher.
- Faster cycle times, higher breakout forces.
- Much better traction providing greater pushing and digging power.
- More hydraulic power for attachments.
- Greater uptime, reliability and ease of maintenance.

## Specified to serve a new generation

The S550H model is a radius lift path loader, 

► combining excellent manoeuvrability in tight areas with the reach and visibility needed for applications such as dumping materials over walls, backfilling or loading flatbed trucks. Powered by the Kubota V2203 4 cylinder diesel engine providing 61.0 HP (45.5 kW) of power at 2800 RPM, the S550H model has a rated operating capacity of 894 kg (ISO 14397-1) and a tipping load of 1788 kg (ISO 14397-1). The S550H loader offers a high hydraulic flow of 101.1 l/min, allowing it to be combined with a wider range of Bobcat attachments.

As in all new generation Bobcat loaders, the S550H loader incorporates a unique forward-positioned cab that moves the operator closer to the attachment and provides unmatched visibility in all directions around the machine. The height of the cab has been increased to provide additional headroom, while still keeping the overall height of the machine under 2 m to operate well in confined spaces.

Windows on the sides and rear of the cab have been increased in size to provide more visibility to the tyres and the back of the machine. The larger top window makes it easier and more comfortable for the operator to see an attachment with the lift arms raised,



The S550H model combines excellent manoeuvrability with reach and visibility

an advantage when loading trucks or performing other similar tasks.

As well as the 10% increase in size and over 30% increase in visibility, the cab on the S550H, in common with all other new generation Bobcat loaders, allows the operator to adjust the environment to their

individual preferences with ample adjustment in seat and suspension to produce the best working conditions. ■

For more information about Bobcat and Bobcat products, visit the website [www.bobcat.eu](http://www.bobcat.eu)

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# Environmentally sustainable practices

There are significant rewards available to corporates engaged in efficient sophisticated operations and progressive business models

**V**alue engineering is still an underutilised practice in the commercial property industry. Integrating mechanical engineering, environmentally sustainable development (ESD) concepts and energy efficiency into each major decision from project inception, through the design, construction, operation and decommissioning, offers an opportunity to demonstrate whole-life benefits for users of the building as well as the building owners.

Aurecon's building services professional Ashley Underwood explained recently what value engineering is and why having expertise in it should be a prerequisite when sourcing engineering consultants for projects.

"Value engineering looks at the capital cost of a project and determines whether the function and quality of the results is equal to the perceived value. It's a management approach that focuses on the benefits, payback and overall return on investment that a client will achieve instead of looking at different parts of a project in silos," says Underwood.

## The payback in green projects

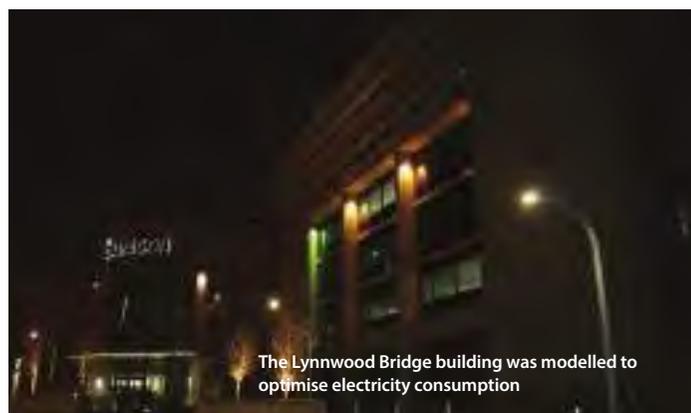
While it's easy to see the benefit of value engineering, problems arise because it is often applied late in a project. When value engineering is incorporated during the design and concept phase, consultants are able to thoroughly look at the life cycle cost of each decision, and this type of analysis includes financial payback, as well as environmental impacts such as carbon emissions and material selections.

"The rising cost of energy has essentially aligned the financial and environmental benefits for many energy-saving initiatives. With value engineering of energy-savings, you are now able to create a building that will result in a true payback for the client, but this approach needs to be implemented in the concept and design stages. The number of Green Star rated projects that Aurecon has worked on is a testament to what is achievable when combining the efforts of environmental modelling software programs, mechanical engineering expertise and buildings sciences consultants early on in a project," he said.

## Models and building mechanics

Aurecon is a recognised leader in the use of a range of powerful environmental modelling software programs to optimise the performance of buildings. The 3D modelling software takes every aspect of a building into consideration.

"Engineers and designers can improve the occupants' comfort using 3D modelling of a building's orientation and form, external shading and fabric performance. We can make real changes to the energy consumption of the building by looking at the building services as a whole, which includes aspects such as mechanical systems, hot water generation, escalators, lighting systems and any miscellaneous



The Lynnwood Bridge building was modelled to optimise electricity consumption

services such as irrigation," said Underwood.

It is important to get the right mix. Normally, the building shell, including insulation and glazing spec, is optimised to ensure high thermal comfort for the people occupying the perimeter zones of the building, while increasing insulation beyond this has only a small effect on the building's energy use.

"To achieve additional significant energy-savings, we look carefully at the mechanical and electrical systems," said Underwood. "For the electrical systems, we strive to only use energy-efficient lighting, while for the mechanical systems, we generally recommend a high efficiency plant with a range of energy-saving features such as, economy cycles, CO2 based demand control of fresh air, CO2 based demand control of car park ventilation, etc. Aurecon has developed a number of calculation procedures that helps us to ensure 3D modelling is relevant in a South African context, which is a unique value-adding benefit to our clients."

## Cost-effective engineering

Aurecon's use of 3D modelling software, coupled with the in-house calculation methodologies that the company has developed for local buildings, is only a part of the value engineering services that we offer. The fact that the mechanical engineers and building sciences professionals are able to work together to find sustainable, energy-saving solutions is the thread that ties everything together in order to provide real value for clients.

"The digital recreation of a proposed building isn't merely a placeholder or an estimate of what could potentially be achieved, it's a very accurate replica of how the building will operate and function once constructed," asserts Underwood. "We use the energy simulation results to guide the implementation of energy sub-metering strategies and then to track and manage energy use within the operational buildings."

### ► Superior practices

Aurecon achieved a first in Tshwane in 2011 when its Lynnwood Bridge Office Park building, situated alongside the N1 highway, achieved a 4 Star GreenStar SA – [Office Design v1] rating from the Green Building Council of Southern Africa. The company has recently completed another 'green' office building in the same precinct achieving a 5-Star rating, which will comprise five basement levels, as well as ground plus five floors.

The project team took a value engineering approach during the design and construction phase of the new building. Unlike the traditional model of three overlapping financial, social and environmental circles where the only commonality (or triple bottom line) is the small area in the middle, a value engineering model is a strong sustainability model. The environmental and economic benefits are a subset of the sustainability aspirations, and are the core values underpinning every aspect of the design solution.

"During the design phase of the new Lynnwood Bridge building, each energy-saving feature was modelled and calculated in order to predict how each aspect would impact the electricity consumption of the actual building. The state-of-the-art 3D modelling software, coupled with the expertise drawn from the company's global team, allowed us to create data that accurately showed the future building's performance, predict utility bills, and create energy targets to track building performance," says Underwood.

### Energy efficient implementation

One of the biggest challenges of current energy-saving initiatives in buildings is when a supplier offers a solution that won't necessarily lead to a payback for the client. Underwood stresses that the effect of any energy-saving component needs to be analysed before being adopted.

"Supplier data needs to be put into a South African context. The supplier could be providing data that is relevant for countries in Europe where there is a cooler climate, or the supplier could take a single operating point and extrapolate the data over the course of an entire year, which could lead to misleading results. In order to know for sure what your building's payback will be, clients need to take a value engineering approach and make sure they know how the building will perform once the energy-saving initiatives have been implemented," he said.

"Trying to predict the impact of a chilled beam system or an energy-efficient heating, ventilation and air conditioning (HVAC) system, for example, is impossible without looking at the entire system design holistically, doing the calculations and analysing the results. Advanced 3D modelling software gives engineers the tools they need to predict whether an energy-saving initiative is going to have a marginal or worthwhile return on investment. Clients need to partner with engineering consultancies that have the capability to analyse the effects of different initiatives if they want real value," said Underwood. ■



Aurecon's Lynnwood Bridge Office Park building achieved a 4 Star GreenStar rating

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## Engineering for accelerated infrastructure

The Engineering Council of Zimbabwe (ECZ), as host of the 2015 UNESCO Engineering Week and World Council of Civil Engineers (WCCE) General Assembly in the resort town of Victoria Falls in mid-September 2015, has promoted the concept of 'Engineering Innovation for Accelerated Infrastructure Development for Africa', under the auspices of ECZ chairperson Engineer Martin Manuhwa



Engineer Martin Manuhwa,  
chairperson, Engineering Council of  
Zimbabwe (ECZ)

The inaugural UNESCO Africa Engineering Week was hosted by the South African Department of Science and Technology (DST) and the Engineering Council of South Africa (ECSA) at the University of Johannesburg in 2014. This second Africa Engineering Week highlighted the collaboration between UNESCO, the Government of Zimbabwe (GoZ) and the Engineering Council of Zimbabwe (ECZ), the opportunities for Zimbabwe, with around 500 regional and International delegates attending, and also the opportunities to educate youth and the general public about engineering through outreach activities such as educational workshops, public awareness events, mentoring activities and university events that show how engineers are key players in the solutions to important global challenges, such as climate change mitigation and adaptation.

### The need for infrastructure engineers

A key concern highlighted at during the week is the shortage of engineers, with declining interest and low enrolment figures for young people, and especially women. Manuhwa represented the view that the engineering is vital to addressing basic human needs, improving the quality of life and creating opportunities for sustainable prosperity on a local, regional, national and global level. He said, "More young people need to choose engineering as a career and making that choice depends on access to the necessary science, mathematics, technology, and engineering (STEM) curriculum as well as having access to effective guidance, communications and role models."

The lack of engineers is hampering social and economic development worldwide. Engineering is critically important for the creation of infrastructure to alleviate poverty, accelerate industrial development and enable better healthcare, access to education and the development of an attractive environment for foreign investment.

UNESCO believes that more people would be attracted to engineering as a career if the role of engineering was more visible and better understood and is working to raise awareness of the importance of engineering for sustainable development through such initiatives as Africa Engineering Week. In Eng Manuhwa's terms, this means that the ECZ must continue to act out a leadership role "in the region and internationally", to increase the visibility of engineering and highlight its role in sustainable development.

The take-away from Africa Engineering Week is that it is critically important to encourage students to study technical subjects so that Africa's vision of developing through science, technology, engineering and mathematics (STEM) is realised. As Eng Manuhwa said, "We are also calling for curriculum with practical engineering applications so as to be able to solve our infrastructure problems. The activities during Africa Engineering Week will increase the visibility of engineering, which is particularly important in the continent where there is a great need for engineers to achieve the Sustainable Development Goals (SDGs)."

*Wallace Mawire*

# Powerscreen's premier crusher



**M**obile crushing and screening equipment provider Powerscreen has expanded its globally successful Premiertrak mobile jaw crusher product range. The Powerscreen Premiertrak 600 is a high performance primary jaw crushing plant, which is easy to set up, versatile and engineered for quarrying, demolition and mining applications that require high production capabilities, especially in hard rock. Stephen McCartney, Powerscreen international sales director said, "We are very excited to launch our Premiertrak 600 as the most recent addition to the jaw crushing range. With the flexibility of two possible configurations of diesel-hydraulic and diesel-electric, it has a high output capability of up to 600 tonnes per hour. We are confident that the Premiertrak 600 will push the boundaries of machine efficiency in the crushing and screening industry, delivering high capacity at an attractively low cost per tonne of quality finished material."

The diesel-hydraulic and diesel-electric variants of the Premiertrak 600 have been designed and constructed to deliver maximum production and performance with increased uptime and low running costs. The high capacity jaw is fed by a vibrating grizzly feeder with variable speed control and a large grizzly area to maximise removal of fine material enabling maximum wear life of jaw plates within the crusher chamber. The

bypass chute is also fitted with wear-resistant liners as standard, and incorporates an adjustable five-position deflector plate to divert material to either the product or side conveyors.

The product conveyor and tail section of the Premiertrak 600 can be raised and lowered hydraulically, whilst the optional radio control system allows the machine operator to easily clear blockages.

The machine control system incorporates a state of the art, modern interface with intuitive graphics and high resolution display for ease of operation. This is further enhanced with the automatic start/stop functionality, excellent diagnostic capability and straightforward machine adjustments.

The speed of jaw crusher on the Premiertrak 600 can be varied to suit the application and therefore optimize performance. In addition to this, the hydraulic system has been designed and configured to increase uptime and fuel efficiency.

At the heart of the Premiertrak 600, is a 1200mm x 820mm (47" x 32") modern jaw chamber incorporating a robust construction with many user-friendly features, such as a fully hydraulic CSS range of 75-200mm, (3-8") and a reversing system to clear blockages quickly for increased uptime. The aggressive stroke and high inertia flywheels ensure high production rates and excellent reduction ratios. ■



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# A trenchless technology

The micro-tunnelling technique deployed by engineering consultant Hatch Goba at the R120mn (US\$9.4mn) Mahatma Gandhi Road sewer pump relocation project in Durban. KwaZulu-Natal represented the first application of this innovative trenchless technology in South Africa.

Hatch Goba's selection of an appropriate trenchless technology had to take into account the specific constraints of this major project. "The most appropriate and least risky solution for the extension of the sewer under the congested Mahatma Gandhi Road was determined to be a trenchless method using a slurry-type Herrenknecht AVN micro-tunnelling technique," said Montso Lebitsa, Hatch Goba manager for tunnels and trenchless technology. "This type of tunnelling method is unique in South Africa, and sets the precedent for future project innovations."



Micro-tunnelling is a non-manned mechanised pipe jacking technology, whereby all jacking and alignment are controlled from a computerised control cabin at the top of jacking pit.

Specific project constraints influencing the selection of the appropriate trenchless technique were ground conditions, limited working space, the size of the sewer and the vertical alignment control. The installation



took just 24 days to complete in May 2012, which was a major achievement for the project team.

The 221 m long micro-tunnel consisted of a 113m straight section from the jacking pit, a 102m curved length with a 350m radius (to bypass the protected historic Harbour Master Building), and a 6 m straight section breaking into the existing Harbour Tunnel northern entrance. ■



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# Funding African infrastructure in Africa

Africa50 raises US\$830mn for viable projects across the continent

Infrastructure investment platform Africa50 held its constitutive general assembly recently in Casablanca, Morocco, at which twenty African countries and the African Development Bank subscribed for an initial aggregate amount of US\$830mn in share capital. These founding African countries are Benin, Cameroon, Congo, Djibouti, Egypt, Gabon, Ghana, Ivory Coast, Madagascar, Malawi, Mali, Mauritania, Morocco, Nigeria, Niger, Senegal, Sierra Leone, Sudan, The Gambia and Togo. While this first closing was available only to African countries, it is anticipated that the second and subsequent closings will be available not only to African countries that are yet to invest in Africa50, but also non-sovereign investors both in Africa and outside Africa. The second closing is expected before the end of 2015.

Speaking at this historic event, Dr. Donald Kaberuka, African Development Bank president and current chairman of the boards of directors of Africa50, said, "The large presence of African States and their financial commitments are a testimony to a shared vision to find new ways to accelerate the provision of infrastructure. Africa50 will be a step change for infrastructure financing and development in Africa."

Africa50's raison d'être is to mobilize long-term savings within and outside Africa for the financing of commercially viable infrastructure projects across Africa. Through an integrated approach, Africa50 will invest in African infrastructure projects at scale along the entire project finance value chain leveraging its innovative Project Finance and Project Development windows. The strong expression of commitment today by the African countries is a necessary first step towards attracting institutional investors, including sovereign wealth funds, pension funds, insurance companies and other sources of long-term finance around the world. Africa50's medium term capitalization is projected to reach US\$3bn.

During the Constitutive General Meeting, Africa50's founding members signed the articles of incorporation, which enshrine the



Africa50 is founded to promote and deliver infrastructure investment through corporate governance, and ethical, financial, environmental and social responsibility

highest standards of corporate governance. Africa50 is headquartered in Casablanca, Morocco. A headquarters agreement was signed with the Kingdom of Morocco that confers upon Africa50 a range of privileges and immunities similar to those enjoyed by the African Development Bank. Other decisions taken at the meeting included the appointments of the members of the boards of directors of the project finance and project development vehicles and also the appointment of KPMG as external auditors.

Mr Mohamed Bousaid, the Minister of Finance for the Kingdom of Morocco, stated that Africa50 is an idea whose time has come and that the Constitutive General Assembly is an important first step towards making it a reality. ■



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# Heavy lifts with the Johnson Crane Hire fleet

Improving capacity and best practice in project management with the roll-out of new cranes

Undertaking a heavy lift is not a case of 'one size fits all' but rather about selecting the most appropriate lifting solution for a given project or contract. This is according to Johnson Crane Hire, which boasts a heavy lifting capacity unmatched on the continent.

"Ultimately, a successful heavy lift is determined by the technical expertise of the heavy lift supplier. Johnson Crane Hire has a breadth of resident knowledge that enables it to provide best practice heavy lift solutions in a turnkey project approach that includes rigging and transportation," said James Robinson, heavy lift manager for the crawler cranes and projects division at Johnson Crane Hire. "We are able to offer flexibility in terms of heavy lifting solutions because we operate a crawler crane fleet and a hydraulic mobile crane fleet as well as alternative lifting solutions."

## New levels of commitment and capacity

Robinson pointed out that the three largest cranes in the Johnson Crane Hire fleet are its 750 ton and 600 ton lattice crawlers and its most recent addition – a 750 ton truck-mounted lattice mobile unit.

Robinson was keen to point out that lattice boom crawler cranes offer vastly greater lifting capacities when compared to mobile hydraulic crane lifting capacities. It is not uncommon to find people making the mistake of comparing one with the other as the nomenclature can be very misleading.

As an example, Robinson pointed out that the 250 ton lattice boom crawler competes against a heavy lift 400 ton hydraulic mobile crane. These machines have equivalent lifting capacity, but this not obvious to those that do not understand the differences between lattice boom machines and mobile cranes. The nomenclature should not be used as the manner in which to differentiate between capacities and capabilities.

"In explanation, a hydraulically operated mobile crane's lift capacity is rated on what is



Commissioning of a 750 t crawler crane at Liebherr

referred to as the load moment. Most hydraulic cranes are rated at their capacity at 3 metres, whereas the rating for a lattice boom crane is based on a larger load moment, which can be anywhere between 7 and 14 metres, with this capacity based on its structural integrity. In essence, a lattice boom crawler crane is capable of performing far heavier lifts and offers greater flexibility in terms of its application because of its pick and carry capability," he said.

There are also distinct limits with regard to the amount of counterweight that can be placed on a hydraulic mobile crane and this is where a crawler crane excels. The lattice boom configuration allows for the attachment of an additional counterweight, often referred to as the super-lift ballast, allowing crawler cranes to increase their load moment by balancing the load against it.

## An impressive record

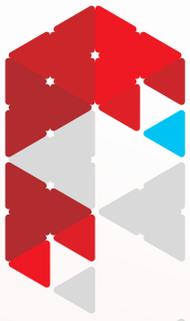
Johnson Crane Hire has a ten-year history in the crawler crane market and has amassed a

number of impressive lifts, including a recent heavy lift at Zimplats. "We were contracted to remove an old mill weighing 225 tons, with a radius of 31 metres, and to replace it with a new one weighing 170 tons. We then brought in an LR 1600-2 (600 ton) crawler crane from Europe to perform this work. The crane is now part of our permanent fleet," Robinson said.

Johnson Crane Hire also used the LR 1750 (750 ton) crawler crane to lift a 280 ton tippler in one execution in Mozambique, for the Nacala port upgrade project. The company is also actively involved in heavy lifts for the major expansion underway at a diamond mine in South Africa. A recent lift at this mine required the lifting of a 110 ton structure with luffer and full super lift configuration at a 55 metre radius, with additional lifts planned for equipment of 200 tons at 35 metres in the same configuration.

On all lifts, the company provides a full pre-lift feasibility study that includes computer simulated drawings, generating method statements, full risk assessments and load studies. Operation of the well-maintained crawler fleet is supported by an experienced technical team with in-depth knowledge.

Safety in the complex operation of heavy lifts is paramount. "Our machines are current technology and well maintained, and our operators are skilled and comprehensively trained. In addition, we implement carefully documented and implemented safety systems, which comply with all industry safety standards. This is complemented by the risk assessments conducted before each lift. We are justifiably proud of the fact that safety as a culture is ingrained in every Johnson Crane Hire employee," said Robinson. Johnson Crane Hire has an acknowledged track record in delivering fit for purpose heavy lift solutions for the power, petrochemical, refinery, industrial, mining and civil infrastructure industries, throughout Africa. ■



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Torre's business is the value added sale and rental of branded capital equipment, the distribution of high quality parts and components, the delivery of critical support services and the provision of financing solutions in support of our customers' expansion programmes.

# Saving money with Apex SCP traffic doors

How an impactful design can help to control air and moisture, and dust and dirt particulate movement

**R**estaurants, banquet halls, dining facilities and other food service businesses are constantly looking for ways to reduce costs without compromising on food quality. With the spiralling cost of food, continuous fuel price increases and annual staff salary bill growth they are forced to find creative ways to contain expenses.

Keeping food fresh and free from contaminants is a constant challenge. Airborne pollutants as well as germs transferred from door handles during opening and closing operations can play havoc with ensuring a clean and hygienic environment. Added to the problem is the aggravation of maintaining a food-friendly temperature inside food preparation areas.

The solution to cost containment and fresh dishes is an affordable and reliable Apex SCP Traffic Door. The double action door opens with a gentle pressure then slowly returns to the closed position, ensuring a hygienic and safe entry and exit for users. In addition, the

perimeter gaskets and an insulated panel on these doors allow them to be used where a temperature differential must be maintained between two areas. The design of the Apex Traffic Door furthermore helps to control air, moisture, as well as dust and dirt particulate movement from other areas.

Apex Strip Curtains & Doors managing director Wim Dessing said, "This is particularly important to businesses where sensitive food items such as chicken, meat, fish and dairy products depend on a cooler ambient temperature to prevent the introduction of pathogens and bacteria."

#### Dynamic door design

While electrically, hydraulically or pneumatically operated doors are often beyond the budget of the food preparation industry, the Apex SCP impact traffic door provides an extremely cost-effective and efficient alternative. Further cost savings are introduced with the physical construction of

the doors. The material used is selected to withstand knocks, bumps and scrapes and the hidden hinge system is engineered to provide smooth operation over many years of service. The hinge system allows the doors to swing in both an inwards and outwards motion, allowing for safe and easy passage for pedestrian traffic. The mounting system used on the Apex SCP Traffic Doors is designed to strengthen the door jamb and is offered in a range of attractive materials and décor options.

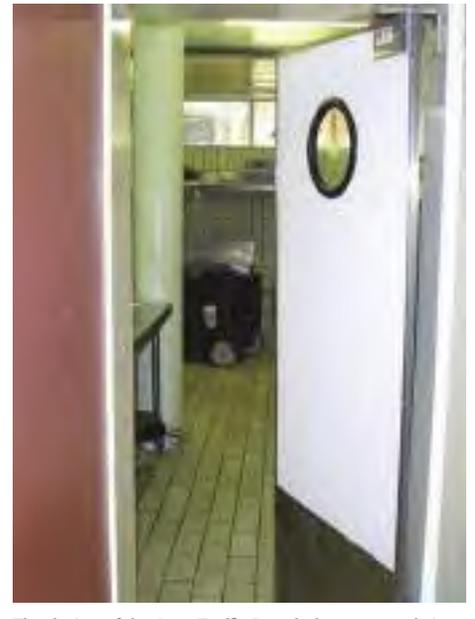
"Our team works closely with customers to devise a solution that works well for their specific application. We consider factors such as the location of the food preparation area and areas opening onto it. The volume of pedestrian and other traffic such as food trolleys is also accounted for and the visibility of the doorway from front end operations is factored in to ensure complementary aesthetics. The result is a double action impact traffic door that provides a superb return on investment," Dessing said. ■



The Apex SCP Traffic Door opens with a gentle pressure then slowly returns to the closed position



The Apex SCP impact traffic door provides an extremely cost effective and efficient alternative



The design of the Apex Traffic Door helps to control air, moisture, as well as dust and dirt particulate movement from other areas



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# Invest in opportunity at bauma Conexpo Africa

Key construction and mining event offers commercial potentials across the continent, and showcases the equipment to bring business in

The continent's key international trade fair for construction machinery, building material machines, mining machines and construction vehicles, bauma Conexpo Africa take place 15-18 September 2015 at Johannesburg Expo Centre (JEC) in Johannesburg, South Africa.

The event programme is notable, taking place for the first time alongside country specials and industry specials, Master Builders South Africa is holding its Annual Conference to coincide with the second edition of the international trade fair for construction machinery, building material machines, mining machines and construction vehicles.

## Country specials

A key part of the supporting program are the country specials which will be held in the Forum area, where various projects as well as selected African markets with the opportunities and challenges that they offer

are presented in more detail. What is currently possible in the African market? Where does it make sense to invest and what needs to be borne in mind? The presentations which focus on South Africa as well as the Southern, Eastern and Western Africa region, i.e. Ethiopia, Botswana, Kenya, Namibia, Nigeria, South Africa and Zambia, provide answers to these questions. The country specials are organized together with partners and supporting associations.

## Highlighting industry

Industry specials will also be presented. Experts and associations from the industry look at current technologies and trends within the construction machinery and mining market. The main focus is on the visions and challenges in the African market as well as possible opportunities and will include topics such as "Mining Cities" presented by the University of Stellenbosch,

"Changes to Import and Export Laws" presented by the Bowman Gilfillan Africa Group and "Doing Business in Africa" presented by Nedbank and Interget.

## Meeting South Africa's Master Builders

A further highlight is the Annual Conference of Master Builders South Africa which will take place for the first time during bauma Conexpo Africa from September 16 to 17. During the conference, members of the Master Builders Association and related industrial sectors from Southern Africa meet to encourage greater dialog between members, decision makers and experts and to discuss current developments in the construction industry. The exhibitors at bauma Conexpo Africa are also invited to present their products and services and establish contacts with participants and delegates. ■

[www.bcafrica.com](http://www.bcafrica.com)

## The first IFAT Environmental Technology Forum

Event organiser Messe München International has expanded its international network for the environmental technology sector by introducing IFAT Environmental Technology Forum in South Africa. The first IFAT Environmental Technology Forum is co-located with bauma Conexpo Africa.

Exhibitor allocation for IFAT Environmental Technology Forum Africa has begun and the organizers are very positive about the stand confirmations to date: The exhibitor target for this trade fair has already been exceeded. Among the applicants are key players in the sector, among them Endress + Hauser, Festo, Grundfos, Hammel Recyclingtechnik GmbH, Netzsch Southern Africa (Pty) Ltd, Wilo Pumps SA (Pty) Ltd and Xylem Water Solutions.

Elaine Crewe, CEO of the organisers, MMI South Africa (Pty) Ltd, is delighted, saying, "The level of response has exceeded our expectations.

Now, due to special requirements by some exhibitors wishing to exhibit larger machinery, we have made some of the outdoor exhibition area available. This was of course not part of

our original plan but is something we are very excited about. The fact that exhibitors are looking at large areas of exhibition space reinforces the strength of the IFAT global brand."

## Treatment technology for mine water

Water and in particular waste water are environmental themes of great importance in mining in South Africa. These vital aspects are being addressed by IFAT Environmental Technology Forum Africa, the premiere of which takes place from September 15 to 18, 2015 at the Johannesburg Expo Centre.

This new sector platform brings together suppliers and users of innovative solutions and technologies for water, waste water, refuse and recycling, it is being held in a market that presents great opportunities.

Around 670bn Rand (US\$52.5mn) is what South Africa must invest in the next ten years in order to modernize its water and waste-water infrastructure, according to Nomvula Mokonyane, Minister of Water Affairs and Sanitation. As well as renovating the dilapidated pipe systems and building more municipal treatment plants, the country is also faced with the challenge of dealing with the heavily polluted water draining from its mines.

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## Bauer Maschinen Group brings out its best rigs

After its successful premiere two years ago, the construction equipment trade fair bauma Conexpo Africa will open its doors once again from 15 to 18 September 2015 in Johannesburg. The Bauer Maschinen Group – the world market leader in the development and manufacture of equipment for specialist foundation engineering – will participate this year as well, exhibiting machines especially selected for the South African market. The Bauer team is looking forward to greeting numerous visitors at stand T2-130 in the open-air area of the Johannesburg Expo Centre.

The core products in Bauer's portfolio are the rotary drilling rigs of the BG series. This very successful series of Bauer Maschinen will be represented by a Bauer BG 20 H PremiumLine. The performance characteristics of this compact, highly versatile rotary drilling rig are tailored to meet the typical specifications for this class of equipment. Above all, it shows the



Klemm KR 909-1 carrying out anchoring work in Turkey

multifunctional concept of the BG rig series.

The exhibited BG 20 H will be equipped with a Kelly bar which is capable of installing bored piles up to a depth of 40 meters. The machine is pre-fitted with the equipment needed to install and operate a heavy-duty hydraulic casing oscillator. With it, temporary drill pipes can be inserted in and removed from even difficult ground conditions. The BG 20 H is also equipped with the preliminary setup for installing piles with the double rotary method (FoW). With FoW-equipment bored pile walls as retaining walls for deep excavations can be constructed adjacent to neighbouring buildings.

The wide application spectrum of specialist foundation engineering equipment will be demonstrated by two other machines manufactured by subsidiaries of Bauer Maschinen GmbH:

Hausherr System Bohrtechnik develops and manufactures hydraulic drilling rigs for use in quarries, open cast mines and the exploration of natural resources. 60 years of experience and continuous development in this field emphasize the technical competence. Hausherr machines are particularly well suited for down-the-hole drilling applications. All models of this series are also able to execute horizontal drilling operations. The HSB 3000 is a typical and powerful representative of a Hausherr series comprising nine models for drilling blast holes with a max. diameter of 165 mm to a depth of



Hausherr HSB 3000 blast borehole drilling rig in Kazakhstan

45 m. It is powered by a diesel engine in the range of 290 to 350 kW and has an operating weight of about 25 tons.

Klemm Bohrtechnik, the specialist for anchor drilling rigs in the Bauer Maschinen Group, will demonstrate its competence by exhibiting the KR 909-1, a robust universal drilling rig in the 13-ton class. This machine has been specially designed for the varied applications in the small-diameter drilling sector.

## 'Come Home to Bell' at bauma Conexpo Africa 2015

Africa's leading homegrown heavy equipment manufacturer, Bell Equipment, has spent the last several years developing partnerships with other respected global equipment brands and growing its product range across the entire spectrum of construction and mining earthmoving equipment.

At bauma Conexpo Africa 2015 Bell Equipment will occupy a prime outdoor location, Stand ES 230, where it will showcase its diverse and comprehensive range, introduce new products and give the market a taste of future machine developments.

Bell Equipment executive general manager: group marketing, Stephen Jones said, "Our stand will include a pre-production large Articulated Dump Truck from our latest E-series generation of trucks. These trucks are absolute class beaters and have been 100% locally designed and developed by our team of engineers in Richards Bay to deliver the lowest cost per ton haulage solution on the world market complemented by some of the most advanced modern technologies to set

the benchmark in safety, comfort and productivity."

Other exciting Bell products on display include the new L-series Tractor Loader Backhoe, which will go into production locally during 2016, as well as the E-series Rockscaler, which is an upgraded version of a product that has gained much acceptance in underground mining and has a number of customer-focused improvements including a



A pre-production model from the Bell E-series large articulated dump truck range will head up the company's extensive product offering that will be on display at bauma Conexpo Africa 2015

slewing boom and a sealed air-conditioned cabin as standard for improved safety.

Jones added, "In addition we will showcase our partner products including models from John Deere, Liebherr, Bomag and Finlay."

Well established across the Africa as a one-stop equipment shop, backed up by one of the most comprehensive customer support networks on the continent, Bell Equipment has themed its stand at BCA 2015 "Come Home to Bell" and aims to not only showcase its product range but also to strengthen relationships with customers and reinforce the Bell brand as a leading equipment supplier on the African continent.

"BCA 2015 presents a unique opportunity to interact with a large number of customers and potential customers over a short space of time. It is difficult to get such a high concentration of decision makers together with your equipment in one place and we look forward to being able to display our products and technologies and engage with decision-makers," said Jones.

# BKT

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# Power Team brings SPX bolting systems to bauma Conexpo Africa 2015

Hydraulic service tools specialist Power Team presents its pumps, cylinders, jacks, torque tools and accessories from its range of SPX bolting systems - including the new PE45 Infinity Series pump, at the 2015 bauma Conexpo Africa. Unlike typical hydraulic pumps, the new PE45 series offers more than twice the flow of a standard two-stage, hi-flow pump. Flow is continuously variable up to 700 bar, enabling a range of specialised torque wrench tools to operate faster and more efficiently.

The company also showcases its renowned hand-, electric-, air-, gas- and battery-powered hydraulic pumps. It presents, too, its broad range of single-acting, double-acting, low-profile and centre-hole cylinders for all lifting and pulling applications. And an innovation in lightweight cylinders, the company's aluminium cylinders, which are only half the weight of similar steel cylinders, are also on display.

Power Team presents its range of specialised torque tools, which are designed to meet the demanding requirements of proper joint integrity. This comprehensive range includes robust steel square-drive and low-clearance torque wrenches that provide a maximum torque value of 71,816 Nm. For difficult bolting applications that have corroded to the point that a hydraulic torque wrench is not an option, Power Team offers SPX Bolting Systems' hydraulic nut splitter.

The company's IJ Series inflatable air jacks, which provide up to 74 tons of lifting force, are on display. This series is available with a range of controllers that provide pressure gauge regulation and push-button inflation and deflation control of the jack.



The new PE45 Infinity electric pump series offers more than twice the flow of a standard two-stage, hi-flow pump for efficiency of specialised torque wrench tools

Power Team low-clearance torque wrenches provide a maximum torque value of 71 816 Nm



The SPX ENS hydraulic nut splitter for the removal of corroded fasteners in applications where conventional torque wrenches are ineffectual



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## Hammel, shredding at the Cape of Good Hope

In recent years, recycling has become a key topic in South Africa. The attitude towards resources has changed a great deal and the processing and subsequent treatments of industrial and commercial waste have moved increasingly into focus. The market for recycling solutions and latest technologies in this area has grown significantly.

Hammel Recyclingtechnik GmbH has been active on the market of shredding technologies for more than 20 years and can therefore provide optimal solutions. After Hammel has set foot into the local market with the latest developments in the area of wood and metal processing, our primary shredder VB 1500 DK is now in operation in the field of tire shredding as of this year.

Millions of scrap tires are scattered across waste sites or rural regions and the number is rapidly growing. Whilst some of these waste tires make their official way to recycling facilities, many of them are burned for heat generation during the winter months in the townships and rural areas. The release of harmful gases like dioxin and carbon monoxide leads to significant environmental damages. To counteract this problem, our customer in South Africa - company REDISA - is committed to the

Hammel Recyclingtechnik GmbH has been active on the market of shredding technologies for more than 20 years and can therefore provide optimal solutions



shredding and further processing of scrap tires. REDISA has several branches throughout the country and - as a state-run company - holds the sole licence for the disposal of tires.

The Hammel- primary shredder VB 1500 DK is in use in Witbank, 125 km east of Johannesburg. The largest mobile shredder worldwide is ideally suited for the shredding of waste and mega tires. The feeding of large material quantities is carried out via a two-piece, large-volume tilting hopper, each with separate

controls. Also, the highest possible mobility is achieved through its track system. The mobile SPS-control allows for an easy handling.

Through the application of the Hammel- primary shredder VB 1500 DK waste tires are shredded effectively. The end product is shredded once more and is then used for further processing in incineration plants or for the production of asphalt. Hence, existing resources are being fed back into the chain of recyclable materials.

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[www.bauer.de](http://www.bauer.de)

## 40-year legacy stands MBE Minerals in good stead

MBE Minerals South Africa, with a legacy of over 40 years on the African continent, will share its technology capabilities and services with visitors to bauma Conexpo. Managing director, Johannes Kottman explained recently that the company is focused on providing a complete technical solution to the mining sector that encompasses innovative technology, capital equipment and support services.

As one of the leading suppliers of iron ore and coal beneficiation technology, MBE Minerals offers basic and detailed engineering, components for complete plants and systems including modernisation and capacity increase measures, as well as automation and process control equipment. The company's scope of services



The robust Jones Wet High Intensity Magnetic Separator (WHIMS) from MBE Minerals SA offers a high throughput with low maintenance and energy costs



The BATAAC jig from MBE Minerals SA offers excellent separation accuracy.

includes feasibility studies, raw material testing, financing concepts, erection and commissioning, personnel training and pre- and aftersales services. Available technologies include its Pneufлот flotation, BATAAC jig, ROMJIG, Jones Wet High Intensity Magnetic Separator (WHIMS), PERMOS (LIMS), the Palla Vibrating Mill, TESKA HMS Separator and a wide variety of screens and feeders.

According to Kottman, MBE Minerals' Pneufлот technology is attracting worldwide attention as a flotation technology of the future. He said, "This technology has already surpassing the popularity of conventional technology as the flotation cell improves product quality and recovery and delivers lower operating cost while increasing efficiencies.



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# IFAT on show outdoors

**E**vent organisers managing exhibitor allocation for the 2015 IFAT Environmental Technology Forum Africa are very positive about the stand confirmations leading up to the event in September.

The exhibitor target for this trade fair, premiering in Johannesburg, was exceeded some months prior to event taking place. Among the applicants are key players in the sector, including Endress + Hauser, Festo, Grundfos, Hammel Recyclingtechnik GmbH, Netzsch Southern Africa (Pty) Ltd, Wilo Pumps SA (Pty) Ltd and Xylem Water Solutions.

Elaine Crewe, CEO of MMI South Africa (Pty) Ltd, which has organised the event, is delighted. She said, "The level of response has exceeded our expectations. Now, due to special requirements by some exhibitors wishing to exhibit larger machinery, we have made some of the outdoor exhibition area available. This was of course not part of our original plan but is something we are

very excited about. The fact that exhibitors are looking at large areas of exhibition space reinforces the strength of the IFAT global brand."

### Strong multinational support

The importance of an environmental technology trade fair for the African market, is highlighted by the strong support from national and international government ministries and industry associations: Alongside the Construction and Mining Equipment Suppliers' Association (CONMESA), the supporters of this first edition of IFAT Environmental Technology Forum Africa include the German Federal Ministry of Economic Affairs and Energy, the German Society for International Cooperation (GIZ), the Geosynthetic Group of South Africa, the National Recycling Forum, the Southern African Alternative Energy Association and the German Engineering Federation (VDMA).

### Taking up show space

MMI South Africa expects the trade fair to take up 4,000 square metres of exhibition space and attract around 2,000 visitors. IFAT Environmental Technology Forum Africa is co-located with bauma Conexpo Africa, Africa's largest trade fair for construction and mining machinery.

The subject of water - a strong focus in all the IFAT brand events - also comes under the spotlight in the supporting programme.

Two sessions are dedicated to water management in mining areas. Specific aspects under examination are: 'Groundwater and surface water' and 'Tools and concepts for river catchment management in the mining industry. Another presentation is dedicated to 'Water and energy efficiency: opportunities for municipalities and waste water treatment plants'. ■

[www.ifatforum-africa.com](http://www.ifatforum-africa.com)

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Our range of consumable products are designed to fit numerous DEM brands, and complement a vast range of mineral process equipment, wear resistant applications and process consumables.

# Comprehensive Torre Lifting Solutions portfolio on show at bauma Conexpo

Torre Lifting Solutions will use its presence on the Torre Industries stand at Bauma to showcase its comprehensive lifting solutions to the local and African market. Incorporating SA French and Elephant Lifting Equipment, Torre Lifting Solutions offers a large and diverse footprint of customised lifting and materials handling solutions from respected leading brands.

The company's quality-centric business philosophy is underpinned by its solid base of applications knowledge and experience which is enhanced by the extensive distribution network of Torre Industries. The end result is a total lifting solution from consumables to tower cranes and overhead cranes.

The company offers a genuine single supply source for tower cranes, purpose built overhead cranes, slings, shackles, concrete buckets, pallet forks and brick baskets. It is the sole southern African distributor for the reputable Potain range of tower cranes. According to technical director of Torre Lifting Solutions Quentin van Breda, it has been recognised as an Elite Dealer by Potain of France, which means a guarantee of 80% availability of spare parts on first call.

"Access to parts and consumables is critical as many of the projects on which our equipment works are of a fast-track nature. In addition to the Potain tower cranes, we also distribute a hoist range from Orbit



The ultra-compact Tusker Low Headroom Hoist is reputed to be the lowest headroom hoist available on the market

as well as offer this product on rental. Dieci telescopic handlers and self-loading mixers are a new addition to the product line up, and we operate a rental fleet of tower cranes, telescopic handlers, hoists, slings, concrete buckets, pallet forks and brick cages, with a very high utilisation rate," van Breda says. The smallest machine in the tower crane

rental fleet is a Potain IGO 22 self erecting crane with a 28 metre radius, while the largest is a Potain MD310 with a 70 metre jib and a capacity of 3 tons at 70 metres.

Notably, Torre Lifting Solutions operates a manufacturing facility in Pretoria West where lifting and material handling solutions are customised for specific application requirements. Products include EOT cranes, monorails, electric chain hoists, chain and lever blocks, winches and wire rope pulling machines, lifting and spreader beams, mechanical grabs and clamps, slings (chain, polyester and steel wire rope), shackles and rigging accessories. This market offering was recently extended with the addition of 30 ton capacity overhead crane and an ultra-compact steel wire rope hoist, which is suitable for lifting in areas where height restrictions or confined spaces are an issue.

An LME (Lifting Machinery Entity) accredited company, Torre Lifting Solutions is a complete single source solutions provider supplying customers with the design, fabrication, engineering, installation, commissioning, support and service, load testing, inspections, repair and refurbishment of all lifting equipment. All equipment is mechanically simple without compromising on the features that are required to provide reliable and safe lifting capability.

"Torre Lifting Solutions is able to leverage years of experience in the harsh operating conditions of the African market to devise customised solutions for every lifting requirement across a number of industries. Access to a highly knowledgeable technical team provides fit-for-purpose solutions that achieve increased productivity and safety, with decreased downtime and maintenance," van Breda concludes.

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## A prominent partner

Rajiv Poddar, Joint Managing Director at Balkrishna Industries Ltd (BKT), offered his perspective recently on BKT's market profile and prospects, in interview with African Review.

**African Review: Please explain the nature of your business.**

**Rajiv Poddar:** BKT is a prominent manufacturer & exporter in the OHT (off highway tires) segment. BKT is the largest tire exporter from India and enjoys significant market share across various geographies worldwide. BKT has a very exhaustive product range across the off highway tire segment. BKT has a vision to achieve 10per cent of global market share in the OHT segment.



Rajiv Poddar, Joint Managing Director at Balkrishna Industries Ltd (BKT)

**AR: With more than 25 years of global presence in the off-highway tyres segment, introduce us to your recent innovations.**

**RP:** BKT pioneered the Agriculture Radial Programme in India which was received with excellent feedback worldwide. Over the years BKT has established a strong lineage in the agriculture segment. In 2008 BKT pioneered the launch of the All Steel OTR Radial tire program in India. Going forward BKT plans to establish itself as one of the leading global player in the Giant OTR segment. BKT will roll out many new products in radial construction for OTR and Industrial segment in the coming months which will include 27.00R49,

35/65R33, 45/65R45, 33.00R51, 18.00R25 (port application), etc.

**AR: How do you ensure quality and performance in your products?**

**RP:** BKT has invested heavily in world class facilities. The new massive plant at Bhuj will take the manufacturing scale and the level of process controls to a new height. A new testing track is being developed in-house to ensure physical testing of each product in highly demanding conditions. BKT relies on a team of more than 300 highly trained quality engineers who meticulously check different parameters at every stage round the clock. On an average each tire goes through over numerous quality checks before it is released.

**AR: Introduce us to your manufacturing plants and capacities. What is the annual investment in these? Also, do you have any expansion plans in the near future?**

**RP:** BKT is currently running the most modern 'Off Highway' Tire manufacturing plants. All the 4 plants are equipped with state of the art manufacturing facilities. The new plant is Bhuj will be taking our manufacturing prowess to greater heights. It is expected to approximately double the capacity from 160,000 mtpa to 280,000 mtpa by end of 2015. ■



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In Italy Carmix manufactures off-road mobile batching plant that produces quality concrete directly on site. Carmix Marketing Director Manuela Galante told us more ahead of bauma in Johannesburg

## **African Review: What are the special advantages of using an off-road self-loading concrete mixer?**

**Manuela Galante:** With Carmix you have both the advantages of a batching plant and of a self-loading mixer. You can have great agility, combined with high productivity. The technologies, such as Promix and Load cells, allow you to produce very high quality concrete; on the other hand, Carmix plant can slew the drum at 300° to discharge concrete from over two metres height on all four sides of the machine and to cope, even when fully loaded, with slopes up to 30 per cent.

## **AR: And a short history of the business?**

**MG:** Carmix was established in 1976, by an industry specialist who had developed his expertise working for Carman, and invented the first dumpers and mixers, assembling parts for military and agricultural vehicles. Then Metalgalante was founded in 1976. The objective was to supply machines that produce high-quality concrete at any site. This led to the off-road mobile batching plant known as Carmix.



## **AR: What are the specifications of the various models available in the 4WD range?**

**MG:** The Carmix 3.5TT is one of the iconic products of the company. Its length - just over 5m with the front loader raised - can reach any place and operate in small spaces. The Carmix 3.5TT is the first model equipped with 'Promix', the new digital data monitoring system that offers the possibility to receive direct information on the concrete. This offers a competitive advantage because it makes it possible to prepare a perfect mix design, in line with the requirements of customers and regulations.

Carmix also supplies other models that differ by drum dimensions, but all sharing the same quality of construction. The largest, the Carmix 5.5XL, represents a perfect combination of what the company can offer professionals: a stand-alone plant, capable of producing large quantities of concrete directly on the building site. The drum has a capacity of 7600 litres with an effective yield per mix of 5.5m<sup>3</sup>. The company also supplies the Carmix 2.5TT, Carmix 2.5 FX and Carmix ONE models, as well as a dumper and cement silos.



## **AR: Where are these machines distributed here?**

**MG:** Nowadays we sell almost all over Africa, our main markets being Algeria, Angola, Côte d'Ivoire and Namibia. We have just appointed a new dealer in Tunisia where we have great expectations.

## **AR: Will any innovations be revealed at the local bauma-Conexpo?**

**MG:** We will show the Carmix 3.5TT with load cells and considerable space will be dedicated to Promix. This is a really innovative solution for contractors, a real portable analysis laboratory. It is a measuring instrument composed of a stainless steel gauge housed inside the drum, powered by a solar panel, with a display in the cabin which processes data in real time.

The sensor provides information regarding slump, temperature, humidity, and drum rotation speed, as well as featuring a 'ready-mix' indicator. All details are updated every ten seconds and sent to the receiver which, thanks to an intuitive display, gives the operator details of all parameters of the concrete being prepared. This information can be saved to an external computer or sent to other mobile devices over the GPS network.

## **AR: So how else are you using modern communications technology to support your products?**

**MG:** In 2015 we launched Carmix Plus, the app which uses augmented reality. We developed a digital system to allow users to access reserved digital contents from a smartphone. On the new Carmix web site ([www.carmix.com](http://www.carmix.com)) there are markers that can be downloaded; once shot they provide additional information and 3D animations. So it will be like visiting a real construction site, with concrete mixers in action and with images to show how Carmix actually loads, mixes and works!



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# Custom screening and feeding for customers

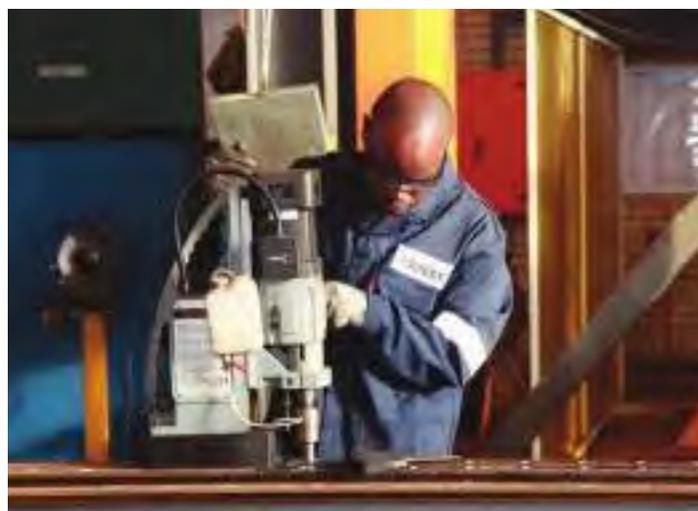
Specialist vibrating equipment manufacturer and supplier Joest Kwatani continues to demonstrate its capacity to provide turnkey screening solutions to the mining sector. A recent contract saw the company providing design, engineering, fabrication and delivery of a range of vibrating screens and feeders to a manganese mine in South Africa's Northern Cape.

"Our equipment is designed specifically to perform in heavy duty applications such as the manganese sector, where in this instance the feed rate is 900 tph," Kim Schoepflin, managing director of Joest Kwatani, said recently. "In this recent contract we adopted our 'engineered excellence' approach to meet specific customer specifications. None of the equipment we supplied was off-the-shelf, as the requirement was for bespoke, custom designed elements specifically for the project. Our involvement extended to assisting the EPCM contractor with the underpan, feed and discharge chute designs whereby we used their layouts to accommodate our screens and to indicate any interference points, in addition to providing our input into good operating procedure."

## Exacting equipment specifications

Joest Kwatani's scope of work necessitated additional infrastructure to support future requirements. The company's cope of equipment supply comprises a sizing screen, a secondary screen, a large tertiary screen, a tertiary screen counter-balance sub frame and four silo withdrawal feeders.

According to Schoepflin, the tertiary screen is one of the largest of its kind supplied into this type of application. He said, "It will be supplied complete with a counter-balance frame, which isolates the structure from the dynamic and static loading forces imparted by the vibrating screen. This allows us to design vibrating equipment that is more efficient and offers the customer a longer lifespan."



Best practice processes are used in the manufacture of Joest Kwatani screens and other equipment



Joest Kwatani's technology is characterised by its robustness and longevity, tailored to the customers' specific application and processing needs in the harsh and demanding African mining industry

The Joest Kwatani screens were customised to match the exacting metallurgical requirements of the client's processes and the associated mechanical duty. Schoepflin added, "An interesting fact about this custom designed tertiary screen is that it has a fine cut size of high open area 0.63 mm in panels, and affords the customer the necessary efficiency and capacity requirements."

## Managing machines for mining firms

Following delivery, Joest Kwatani would be on hand to assist with installation through to cold and hot commissioning. In addition, Joest Kwatani has a dedicated team comprising a branch manager, project engineer, safety officer and a number of service and maintenance personnel based at its Kathu branch office in the Northern Cape, with complete office, warehouse and spares stockholding facilities. Joest Kwatani also supplies vibrating equipment to various manganese and iron ore operations in the area, and as a result has established a solid track record in the Northern Cape.

Joest Kwatani designs and fabricates vibrating screens and feeders in-house. It has a 39-year track record of developing and supplying the African mining bulk materials handling market. Joest Kwatani's technology is characterised by its robustness and longevity, tailored to the customers' specific application and processing needs in the harsh and demanding African mining industry.

With thousands of installations throughout the continent, Joest Kwatani's machines are engineered to lower the total cost of ownership. These are commonly found in mineral sands, coal, gold, diamond, platinum, iron ore and manganese operations, with 24/7 customer service provided by the company's service centres and branch network in all the major mining areas, supported by an experienced in-house design and technology team and state-of-the-art manufacturing facilities across Joest Kwatani's 17 000 m<sup>2</sup> site area in Spartan, providing customers with common point of references for all their vibratory equipment needs. ■

# The tech in a tracked mobile screener

Versatile and adaptable, the latest mobile screeners are suitable for working in quarrying, mining, construction and demolition debris, topsoil, recycling, sand, gravel, coal and aggregate applications.

Of the current crop of advanced equipment, the Terex Finlay 873 is designed to work after a primary crusher or on its own as frontline screening machine. Its aggressive forward-facing inclined modular configuration screenbox has a 3.66mm x 1.52m (12' x 5') top deck and a 3.66mm x 1.52m (12' x 5') bottom deck giving a total screening area of 14.4m<sup>2</sup> (155ft<sup>2</sup>). Depending on the working application of the machine hydraulic adjustment can be used to vary the angle of the screen box between 13-19°. The top deck of screenbox can be fitted with a variety of screening media including; tines, bofor bars, punched plate and mesh. The bottom deck can be fitted with mesh or cascade fingers.



Terex Finlay's 873 tracked mobile heavy duty screener

The hopper has a 7m<sup>3</sup> (9.16yd<sup>3</sup>) capacity as standard with a drop rear door for use in conjunction with a mobile crusher. And the machine is equipped with three hydraulically-folding discharge conveyors, allowing for maximum stockpiling capacity and associated benefits of rapid set up and tear down times.

Moreover, the machine features galvanised access ladders and catwalks fitted as standard to both sides of the screen box. Hydraulic

raising of the screenbox discharge end provides additional clearance for screenbox and fines transfer conveyor maintenance. ■

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# Screens to suit all operational sizes

The strategic input into Joest Kwatani's work to customise scalping screens to improve throughput

Large tonnage throughputs, long drop heights, very heavy run of mine (ROM) ore boulders and large cut sizes all mean that the screen and its component parts must be specifically designed for the loads and stresses normally not experienced in dry screening processes. The scalping screen design, amplitude of stroke, excitation force, drive angle, deck angle, operating frequency and screen deck selection must be optimised to limit pegging on screen deck apertures.

Vibrating equipment manufacturer and supplier Joest Kwatani boasts an impressive footprint of screen installations throughout Africa, and this includes very large scalping screens. The company has built its reputation through a strategic map that hinges on carefully considering exacting customer needs and engineering screens for tonnage throughput, reliability and durability. Bespoke screen types operate in applications from dry to wet screening, and include single to double or triple decks in a variety of sizes.

"We source the necessary information required for appropriate design, which includes the specified tonnage throughput with its related particle size distribution table showing the maximum and minimum size of ore to be screened. Our trained metallurgists and engineers then chart the various curves of material distribution from large/coarse ROM material down to medium and even predominantly fine material," said Kenny Mayhew-Ridgers, Joest Kwatani's general manager for engineering.

## From engineering to operation

The design and engineering process involves close cooperation between the in-house design engineer and the process engineer or metallurgist. Since a multitude of factors could compromise the fatigue life of a screen's components, the team needs to be able to extrapolate the most relevant data to produce a workable solution for the customer.



Joest Kwatani recently completed one of the largest scalping screens ever produced to date

Mayhew-Ridgers said, "After gathering all the necessary information, the process and design engineers will use in-house developed process and structural sizing programmes. This will be followed by the development of a 3-D model by the engineering department in order to finally validate the design by using finite element analysis software. Once completed data pack comprising detail drawings, complete with specifications, and bill of material are put together."

In addition to customised design and engineering of scalping screens to best fit a particular application, customers need to be aware of the importance of a planned and timeous maintenance schedule. Without replacing wear parts, vital components will

be damaged and the entire integrity of dynamically operated machines will be compromised.

Joest Kwatani offers customers in-house and on-site training for both operating and maintenance personnel. A full service level agreement (SLA), tailored for individual customers, is also offered, and this is where Joest Kwatani takes over the responsibility for all servicing of the machines and guarantees the life of the machine during the period of the SLA with the mine.

"We are constantly striving to pass product improvements on to our customers and our continuous improvement programme places us at the forefront of highly engineered screening machines," Mayhew-Ridgers said. ■

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# Digging with digital machinery

How mining houses are managing a technology renaissance across the continent

**A**frican mining is undergoing a technological renaissance that should - within the next few years - result in the sector re-emerging fitter, leaner and more cost competitive than it has ever been before.

Recent research by GDS International shows that the number one focus for 103 Africa mining executives this year is investment in key infrastructure and new technology. This is despite the fall in prices of many of the key mined commodities on which Africa relies and the 'challenging' political and economic situations in countries such as South Africa, the Democratic Republic of Congo (DRC) and Zambia.

## Designs and decisions with digital support

Scott Mcgowan, global mining practice director, Africa at Wipro Ltd, said recently that only those mining houses, which are willing - or able - to deploy the latest technology in areas like robotics, sensors, automation, wearables, and connectivity, will emerge as the likely winners. This view was reinforced at a July 2015 conference organised by Caterpillar, Barloworld Equipment and the Wits School of Mining and the Wits Centre for Mechanised Mining Systems (CMMS). Presenting at the conference, Bekir Genc of the School of Mining Engineering at the University of the Witwatersrand forecast that the mine of the future "will be digital".

The Witwatersrand mining school has itself embarked on a groundbreaking four-phase

'digital mine project'. To support it, a mock-up of an underground tunnel has been built that allows Wits to simulate an underground mining environment that is used for teaching, learning and research. The project is examining smart surveying and mapping (visualisation) systems; climate control systems and energy savings; smart rock engineering systems, which can monitor rock mass movement and predict seismic events; and smart data processing, which can locate people and assets and monitor their performance, recognise actions and detect abnormalities. Smart mine design, mining planning and decision-making are also being studied.

Phase One, which involved building the mock-up of the mine, is complete. Phase Two, which will see the building of a laboratory that can host digital technologies inside the mine, is in the advanced planning stages. Meanwhile, phases Three and Four that will involve monitoring an underground environment for optimised mine design and processes, and having a digital mine, are mostly conceptual and are yet to be funded.

## New machines for mining

Advanced robotics is another area that is starting to grab the imagination of miners in Africa as well as around the world. Recently, the mining giant Anglo American and the US-based University Carnegie Mellon produced a working prototype that can enter a mine site

immediately following a blast.

The robot will eventually be capable of navigating around on its own, conduct measurements and take readings. In initial trials, it has shown that it has the ability to go into areas, which would be far too dangerous for humans to enter.

Mine transportation is increasingly becoming more automated. In July, the London listed company 'Seeing Machines' - which partners around the world with the mining vehicle giant, Caterpillar - won a US\$1.1 mn order to supply driver fatigue monitors in Zambia for a fleet of over 100 mining vehicles.

Announcing the order, the company said that the breakthrough was the result of two years spent wooing Zambia's copper producers. The installation of the face tracking technology (DSS) will be managed by local partner Probe Integrated Mining Technologies.

Ken Kroeger, Seeing Machine's chief executive, said, "A lot of effort has gone into developing the mining business both globally and in Africa and it's great to see progress."

He added that the sale "demonstrated the viability of DSS business in Africa and it will work with Caterpillar's network there to extend the reach of DSS". Caterpillar is rolling out its DSS face monitoring technology to all of its customers as well as mining fleet owners.

New ground penetrating radar technology, which can be used to rapidly gather high resolution subsurface information, is another mining tool that is beginning to show its worth. This technology, in addition to establishing where mineral and metal deposits exist, can help in determining safety like rock bursts, fractures and shear zones.

WiFi and RFID are beginning to be used innovatively in the up and coming arena of wearable technology. This technology can



**In the future, the mining houses that are deploying the latest technology in the areas of robotics, sensors, automation, wearables, and connectivity will likely emerge as the winners in the unceasing quest for operational excellence within the sector"**

- Scott Mcgowan, global mining practice director, Africa, Wipro Ltd



► enable miners to track various environmental conditions with embedded sensors, and transmit information relating to their health and stress levels. It can also allow the miner to receive relevant information from above ground.

#### Moving, isolating and protecting

Automated logistics, which have become established 'above ground' are now making their appearance 'below ground'. It allows for the fine-tuning of transportation and for breakdowns to be predicted and staff directed in real-time through mobile platforms to address failures.

Pedro Guerreiro, head of sales, energy & natural resources at SAP Africa, said that recent research undertaken by SAP shows that solutions, such as these, can reduce an operation's annual maintenance costs by over 30 per cent. Meanwhile, the first installation of a remote electrical isolation system, outside of Western Australia's iron ore industry, has now been announced in South Africa. In a deal valued at US\$1.9mn the company, Remsafe, is to install - during the course of 2015 - one of its Remote Isolation Systems at a coal mine in South Africa. The technology is used to safeguard potentially dangerous high voltage conveyor systems by removing the potential for dangerous "arc-flash" incidents typically associated with isolation of high voltage electrical switching.

For Remsafe, South Africa is an obvious market, because of its abundance of mineral resources and the large number of major mining companies, which operate some of the world's largest mines. But it also sees potential for the technology throughout Africa due to the increased focus on the risks associated with high voltage mining equipment and the need for improved safety and worker protection.

#### Links to selling and productivity

The technological links between the two giant mining nations, Australia and South Africa, remain as strong as ever. Earlier this year, the Australian listed global mining services group, Orica, announced that it is betting on attaining annual growth rates in Africa of at least 20 per cent to 2018 and it sees the continent as a "priority growth area". In February 2015, the company - which boasts a presence in seven African nations: South Africa, Ghana, Tanzania, Zambia, the Democratic Republic of the Congo, Mozambique and Senegal servicing customers in gold, copper, platinum and coal - launched its new consolidated African headquarters in the Isando industrial area near Tambo International Airport.

Orica executive global head of mining services Nick Bowen said that the company will be introducing its new laser detonators that work without wires, using an electronic signal to blast through up to 1,000 metres of rock. This capability will be "significant" for underground work as it would enable automation in unsafe mining areas.

"Orica's success in Africa will be driven by our technical offering," he said.

De Beers Consolidated Mines (DBCM) is looking to step up its South African mining activities by selling its Kimberley mine and investing in a whole swathe of new mining technologies elsewhere.

Philip Barton, the company's CEO, said, "We really believe there are a few more diamond mines left in the country that will fit into the criteria of De Beers and Anglo American. Based on the results of a fairly large number of prospecting licenses for which he have applied - of which a large portion has been granted - we will do ground geophysics that will point us to targets."

De Beers has explored South Africa for many decades. However, modern geological data collection didn't start being stored until the late 1950s and the company is still sifting through its enormous data base from these records.

"If you apply new technology and advanced theory from what we learned about kimberlites to the old data, you get interesting results. We have found from historical data that some kimberlites we knew were 10-times larger than we initially thought. We are very optimistic that we are going to find another mine this way," he said.

However, not all of Africa's miners have deep pockets and many will have their work cut out if they are to commit to investing large sums of money in new technology at a time when the price for mined materials are falling. Iron ore prices have fallen this year as has the prices for base metals such as copper and aluminium.

Coal prices have also been in the doldrums and this can only mean one thing - depressed earnings leading to more shareholder grumbles about the wisdom of embarking on expensive mine technology projects. But mining generates close to one third of the African continent's gross domestic product (GDP). And so long as the region's economy is so heavily reliant on mined raw materials, analysts such as EY say that the region's mining sector has little choice other than to bite the bullet and introduce the technological changes that will be able to pay the hoped for increased dividends in the longer run. ■

*Nnamdi Anyadike*

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# Communications

## BlackBerry's South African Leap

Mobile communications company **BlackBerry Limited** now offers BlackBerry Leap in South Africa. Consumers who want to get things done and companies looking for enterprise fleet renewals can now purchase the modern and powerful new device, which features the latest BlackBerry 10.3.1 operating system, a brilliant edge-to-edge five-inch HD display and more than a full day's battery power. Top features of the BlackBerry Leap include:

Security to Maintain Privacy – the BlackBerry Leap is equipped with support for encryption, plus built-in malware protection and back-up, wipe and restore.

Battery with full day life – with up to 25 hours of heavy use, the BlackBerry Leap will power through even the most demanding day. The impressive 2800 mAh battery and optimisation of power consumption in BlackBerry 10 gives users more than a full day of productive usage.

The BlackBerry Keyboard – type faster and more accurately on a touchscreen keyboard that learns how the user writes. With superior error correction, multi-language support, customised adaption and flow, BlackBerry's touchscreen keyboard helps to reduce mistakes and missteps.

BlackBerry 10 OS 10.3.1 – BlackBerry Leap comes preloaded with the new BlackBerry 10.3.1 operating system, offering a fresh look that incorporates updated icons and an instant action bar so that users' most commonly accessed functions are in the centre of their screen.



The BlackBerry Leap

## Intradex equips Aurelis hand microphone with USB interface

Having already equipped its table microphones and headsets series BusinessLine, Business Line 3000 and AirTalk with USB interfaces, **Intradex** now also provides the handheld speaker-microphone - Aurelis - with USB port.

The Aurelis series was the first accessory that has been specifically designed for the radios of digital radio standards. The especially for emergency centres, police and fire departments as well as for operational control centers of companies with large production facilities, designed Aurelis handheld microphones, can be connected to the computer systems of control centers in no time now with the established USB standard, regardless of the respectively used operating system like Windows or Linux.

"This way our Aurelis handheld speaker microphones are now finally compatible with the existing hardware of our customers. With Aurelis we have already developed a very flexible product for digital radios; we can adapt the Aurelis to the needs of each client. The USB connector is now the logical development," said Ralf Kudernak, CEO of Intradex.

The innovative, only 180g lightweight, hand-held speaker microphone are equipped with a PTT button, microphone and high quality speakers, and depending on the model, other options as an emergency button, a three-level volume control and a two-color LED. In addition, the Aurelis hand microphones feature a connection for external audio accessories and can easily be used with a headset of choice.

Depending on the model of the Aurelis, different data applications can also be integrated. For example, information is shown in a display, or the different keys can be programmed with different applications. To save space on the workplace, the Aurelis hand microphones can also be hung on the side of the desk.

"In order to be able to coordinate emergency rescue operations of any kind, quick and reliable communication technology plays a key role in monitoring stations. This constantly improving and trying to provide the emergency centers and control centers so with new opportunities, is one of our main concerns," Kudernak said.



Intradex communication accessories for control centres are now compatible with existing hardware



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# Information Technology

## Periscope innovates assortment planning

A **McKinsey** solution, focusing on price, promotion, and assortment optimisation, Periscope has been acknowledged by **IDC Retail Insights** as one of the most innovative vendors in the market for assortment planning. The recent IDC Retail Insights report, authored by Greg Girard and entitled 'Business Strategy: The Dawn of a Golden Era - Recent Developments in Assortment Planning' (July 2015), presents the findings of a survey conducted with the 12 leading assortment planning application vendors with particular attention to innovations released in 2013, 2014, and Q1 2015. The report highlights Periscope as delivering the second-highest number of innovations in its assortment planning solution.

According to the report, "Assortment planning is the hub of merchandising strategies and tactics with buying, pricing, space planning and omni-channel decisions flowing from localized assortment ranges and breadths. Satisfying omni-channel shoppers, financial objectives and operating constraints requires assortment planning capabilities that first- and second-generation applications simply do not offer."

Commenting on this conclusion, Greg Girard, programme director, World-Wide Omni-Channel Retail Analytics Strategies, IDC Retail Insights, said, "With its critical role in managing omni-channel complexities, retailers therefore need more sophisticated assortment planning systems.

"Of the self-reported innovations submitted by Periscope to IDC Retail Insights for the purpose of the study, IDC Retail Insights credited the company's approach to innovation focused on advanced forecasting, analytics, rules, methods, KPIs and metrics."

## Oracle merges mobile security into identity management

IT innovator **Oracle** has introduced major updates to its Identity Management platforms to enable organisations to manage access to mobile, cloud and on-premise applications securely through a single, easy to use interface.

As the enterprise IT landscape becomes more complex and security risks increase, organizations are under ever increasing pressure to provide seamless and secure access to a wide variety of applications from a growing number of devices.

The latest version of Oracle Identity Management 11gR2 Patchset 3 helps simplify and streamline this process by integrating Enterprise Mobility Management into the Oracle Identity Management stack. The integration unifies mobile security, identity management and compliance into one consolidated platform.

"Digital technologies such as cloud, social and mobile are becoming the norm in the enterprise and are creating a new set of increasingly complex security challenges," said Jim Taylor, senior director, product

management, at Oracle. "To help organization efficiently address these challenges, the latest release of Oracle Identity Management integrates our mobile security and identity management offerings into one consolidated code base, user interface, policy engine and workflow. The integration will help organisations cost effectively meet strict regulatory, compliance and security demands."

With the integration of mobility management into Oracle Identity Management, organizations can now secure and enable their mobile workforce with capabilities such as mobile device management, mobile app management, mobile content management, and mobile identity. Oracle's solution excels with advanced SSO and context-aware authentication. Additionally, the updated Oracle Identity Management includes an enhanced user interface that simplifies end-users interaction with the system, improving the sign-on experience for employees and reducing helpdesk calls.

## IBM enables Watson to "see"

Technology enterprise **IBM** has confirmed that Watson will gain the ability to "see" by bringing together its advanced image analytics and cognitive capabilities with data and images obtained from Merge Healthcare Incorporated's medical imaging management platform. The enhanced capability follows IBM's acquisition of Merge, which provides medical image handling and processing, interoperability

and clinical systems designed to advance healthcare quality and efficiency.

"Giving Watson 'eyes' on medical images unlocks entirely new possibilities for the industry," said John Kelly, senior vice president, IBM Research and Solutions Portfolio.



Watson will gain the ability to "see" by bringing together its advanced image analytics and cognitive capabilities with data and images obtained from Merge Healthcare Incorporated's medical imaging management platform

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# Security

## Nipson super-fast security tech at FESPA

The latest **Nipson Technology** developments, including details on world's fastest powder-based security toner-based system, were unveiled at the 2015 edition of FESPA Africa, held in July.

Pieter Le Grange, managing director of Nipson and Inkjet Technology Solutions, attended the show at the Gallagher Convention Centre in Johannesburg, South Africa, which attracted around 6,000 visitors over the three days.

Nipson Technology presented updates in areas such as magnetography, which is printing technology based on the principle of the hard-drive writing mode. Laboratory testing has already achieved speeds of up to 150m/min and 300m/min.

**“Nipson Technology has introduced new technology into Africa including magnetography, a printing technology based on the principle of the hard-drive writing mode, which offers laboratory testing has already achieved speeds of up to 150m/min and 300m/min**

Mr Le Grange, who is responsible for sales, service and maintenance of Nipson Technology products and solutions in South Africa, observed “I’m anticipating a lot of visitor interest on the stand where I am looking forward to discussing how printers can open up important new revenue lines through Nipson and other technology.

“One of the key talking points will be its latest machine under development. This is focused for implementation into any tight web press wanting one-stop printing using colour with variable data, with the machine not slowing down.”

## Enhancing security with the P2000 management system from Johnson Controls



The P2000 security management system from Johnson Controls

It is imperative for organisations to keep employees safe and productive, while reducing costs and complying with mandates and regulations. Businesses invest in multiple technology solutions that work in isolation, and more than often, there is no intelligent platform that allows these companies to maximise their security investment. Furthermore, it is necessary to integrate disparate security solutions in order to achieve enhanced functionality. Purchasing more card readers or access control technology won't necessarily bolster security. In fact, without the right integration platform, your existing, disparate devices and systems could actually be restricting movement, wasting money and limiting your growth potential and productivity.

**Johnson Controls** continually evolves its P2000 security management system, an innovative integration platform that's adaptable to small and large organisations. Installed in thousands of facilities around the globe, it's helping to lower operational costs and create more comfortable, safer and sustainable business environments. The versatility of P2000 supports a company's business growth, providing more intelligence and enhanced functionality to the overall security of a business. For example, it offers:

- Integrating badging systems with your HR database streamlines operations and reduces human error while creating an audit trail.

- Combining live video, intercom and open door functionality on one workstation saves staff time.
- Wireless lock integration reduces installation costs and creates a more secure facility.
- Intrusion panel integration protects your investment in existing technology and minimises capital investment

The P2000 offers the control of an integrated, future-ready technology platform. It will work with virtually any security and building system technology or equipment currently installed, as well as with new technologies to come, including:

- Digital Video Recorder (DVR) Integration with approved DVR Systems - enabling operators to manage recording and camera functions from a single P2000 workstation.
- Intelligent IP Door Lock Integration - streamlining the installation process, reducing costs and enabling real-time communication in locations where it would be difficult to install a wired lock.
- IP Intercom Integration - combining live video, intercom request and open door functionality on one P2000 workstation.
- Intrusion Panel Integration - enabling extended control and auditing of more doors throughout a facility.
- Elevator High Level Interface - enabling access control integration with elevator system.

# Why DICSA is a responsive and reliable partner for quality equipment manufacture and supply

**DICSA** is one of Europe's biggest hydraulic manufacturers and one of the largest stainless steel fittings manufacturers worldwide. The company supplies goods to 92 countries around the world, 10 of which are in the African continent.

DICSA maintains a stock of 65,000 products at any one time. The stability and reliability of its stock management and supply operations across the whole range of its products mean that the company is considered a preferential supplier for most of its customers around the world - whether the demand is for hydraulic hoses, adaptors, hose fittings, pipe fittings, hydraulic components or pneumatic fittings and components.

DICSA maintains three global manufacturing and distribution centres, enabling to reduce freight costs and to offer a better service, with the ability to ship from one single fitting to a full container. The company runs large warehouses (with 16,500m<sup>2</sup> for the 65,000 products in stock), a high-technology factory (with 15 CNC machines and high-production transfer machines), workshops (with flexibles, rigid pipes, welding, and hydraulics).

DICSA's comprehensive quality system ensures quality, reliability and



responsiveness throughout the supply chain, from raw material to final shipment. In particular, its digital platform (at [www.dicsaes.com](http://www.dicsaes.com)) enables clients to check real-time availability of all products, and to choose the transportation and track the shipment.

DICSA supplies standard items and it can also produce special pieces based on clients' drawings. As an example of its proficiency in serving customers, DICSA has received the DNV type approval for maritime and offshore applications, valid for its Triagle hoses and stainless steel fittings. It has also received the new MED for Marine Equipment Certificate .

At Bauma Conexpo Africa, DICSA presents products to take advantage of the market potential for infrastructure development, allying products of highest quality to a flexible manufacturing operation that serves several different industrial applications, including: agriculture, public works, and maintenance and repair. The company has a particular interest in sectors where its connectors in stainless steel are utilised fully, including offshore, shipyard, and maritime sectors for which it has obtained international type approval certificates (DNV-GL & BV) that guarantee its manufacturing capabilities and products.


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### Benefits

- World leading manufacturer of Glass-Fused-to-Steel and Fusion Bonded Epoxy tanks and silos
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- Rapid installation reducing erection times, labour & cost
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# Tyres

## The value in Veriga's tyre protection chains



**V**eriga Lesce has a long-established reputation as one of the world-leading manufacturer of chains. Since its establishment in 1922, this reputation has been built on consistently producing a high quality wide spectrum of chains with an ongoing commitment to value engineering, product development and quality control. Veriga Lesce has been certified with different certificates as a producer of high quality chains for normal, as well as for extreme conditions.

The company's product range includes all kinds of chains for different purposes; chains for agricultural and forestry applications and especially all kinds of snow chains for all types of vehicles and working machines. The company also produces tyre protection chains intended for quarries, mines and landfills.

Such a production program, combined with the quality of products, placed Veriga among the largest manufacturers in the European and global markets. This is why the factory has also manufactured chains for other renowned brands of chains in the past. For the past decade and a half, manager Mitja Peterlin and his team of employees guarantee customer satisfaction and high-quality products.

The products are sold both in the domestic and global markets. With every passing year, Veriga is increasingly successful

in competing with the largest global manufacturers of chains, while the company's own brand Veriga is also getting more and more recognition at the same time. Every year Veriga makes improvements of their products, according to customer demand and feedback.

### Tyre protection chains

The company Veriga understands the needs of the modern-day consumer and strives to meet their demands. This also goes for the fields of mining, quarrying, landfill operation and construction. For the purposes of these industries, Veriga has been producing their Tyre Protection Chains and has always met the needs and demands of the consumers.

By investing in protection chains for their tyres, our customers can be rest assured that their high value Earthmover tyres are well protected and have a prolonged usage period.

Veriga produces their protection chains by using 6 different types and makes of protection elements. This way the customers are guaranteed the best construction of chains, adjusted to their needs. Not only do the protection chains act as safeguards for the tyres, their different profiles offer a variety of different levels of grip.

The quality of the used material and special case-hardening ensures high wear-resistance and a long service life. The most

important feature of the chains themselves is the fact that it prolongs the usage of the tires and ensures machine stability with minimum maintenance and downtime.

The mesh of the chain comes in four different shape variations: square, hexa, quad cross and compact cross. Their different types of element density combined with the choice and variety of the protection elements themselves ensure several stages of stability, grip and protection of the tyre. The forged protection elements are connected to a mesh with welded rings.

Earth, mud and different types of rock are no obstacles for the tyre protection chains. By catering to each customer's individual needs Veriga assures maximum product satisfaction.

The life span of the chains depends on the factors in which the chains are used in and spans from 3.000 to 15.000 working hours. With the right maintenance and tensioning of the chain, Veriga can guarantee optimum usage and durability of the chains. A team of Veriga's experts can arrive on-site at the first mounting and adjusts, tensions and inspects the chain prior to first use. Chain experts and our affiliates perform any subsequent technical assistance and repair and customers can be given instructions and training in chain handling.

Veriga tyre protection chains are here to ensure your business and machines run smoothly no matter the conditions.

# Generators

## Pramac launches its new generators rental line

In order to attend market needs, **Pramac** has engineered and designed a new rental generator range. Those generators can work in a wide variety of applications where temporary power supply it is needed.

Versatility, high efficiency, high structural resistance, and high degree of protection and low noise emissions together with easy-to-use and easy access for maintenance make these generators sets the ideal solution for Rental companies.

Offering a large power range that goes from 20 to 650 kVA, the GRW models incorporate latest-generation components and have a wide supplement list to meet the most demanding customers and applications.

A super silent canopy made up of modular panels manufactured from galvanized sheet metal with high quality powder coating

(1,000+h tested salt spray resistance). Provided with high quality gaskets and handles, this range of generators is designed to operate in the most challenging locations.

Daily maintenance can be easily made, thanks to large access doors situated on the sides, also on the rear where the exhaust system is located.

Cutting edge washable soundproofing material and dedicated air flow design allow these generators to meet low noise emissions, around 75dB(A)@1m.

The design includes a single lifting point to facilitate the movement and transportation.

A heavy duty base guarantees the highest standards of durability and resistance, painted with an high quality powder coating process (1,000+h tested salt spray resistance).

Fully bundled, able to retain 110 per cent of

all the sets fluids, the base frame is provided with integrated fork pockets and pull bar for easy manoeuvrability and site positioning.

The large metal fuel tank, provided with access plate is sized to ensure the generator has a 24hr runtime at 75 per cent load and thanks to the 6-way fuel valves allows easy connection to external fuel tanks when necessary. Premium quality fuel filters allow work in areas with low quality fuel availability.

The control panel is user-friendly and easy to customize according to customer needs giving full functionality, monitoring and protection of the generator set. Modular design made up of three main sections: control/ power/ socket.

[www.pramac.com](http://www.pramac.com)

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# Compressors

## Investing in energy-efficient Aerzen equipment

**Aerzen Airgas** is the sub-Saharan subsidiary of German-based **Aerzener Maschinenfabrik (Aerzen)**, specialists in the design and manufacture of roots blowers, turbo blowers, screw compressors, rotary lobe compressors and gas meters. The company offers a range of highly-efficient equipment that can save operations considerably with energy bills - although buyers should be aware that the initial purchasing cost is a dominant factor in the decision-making process. Aerzen Airgas marketing co-ordinator Andreas Stubel said, "This makes the introduction of more expensive but highly-efficient equipment challenging. Understandably, buying equipment at the lowest price makes financial sense, but the misconception lies in the fact that cost saving decisions are based primarily on short-term financial goals."

Stubel explained that purchasing standard or cheaper equipment does not save money, and may in fact cost more in energy consumption and maintenance in the long-run. He remarked, "Bearing this in mind, Aerzen Airgas offers the local market the Aerzen Delta Hybrid rotary lobe compressor, an oil-free air conveying alternative to standard roots blowers."

The Delta Hybrid is designed to be a highly-efficient combination between a blower and screw compressor, and makes use of a patented twisted rotor profile. It is designed for a variety of applications where air and neutral gases must be conveyed oil-free. These include; wastewater treatment plants, the chemical industry, power plant technology and for the pneumatic transport



A blower being overhauled in an Aerzen Airgas servicing area



One of Airgas' field service vehicles ready for action

of powder and granulate goods. It is available in four models: L, S, H and E. The L model has been designed for pressure ranges up to 800mBar. The S model for 1000 mBar and the H model for pressures up to 1,500mBar at sea level. The E model is a vacuum machine with a maximum negative pressure of -700mBar. The Delta Hybrid is effectively an in-between solution, as it crosses the pressure range between roots blowers and low pressure screw compressors. Stubel explained, "The Delta Hybrid is a compressor

designed from the bottom up with energy-efficiency in mind. As a result, it is up to 15 per cent more energy-efficient when compared to standard positive displacement blowers. It has an optimised fluidic design of inlet and discharge ports to provide for ideal flow conditions and reduced slippage."

The inlet air is sucked in on the cold side of the unit and a specially-designed discharge silencer increases the compression efficiency. What's more, the belt-driven Delta Hybrid offers the significant advantage of exact sizing for customer requirements.

An Aerzen Delta Hybrid D 24 S was, in fact, compared recently with a standard positive displacement blower, both fitted with 37kW IE2 motors. For demonstration purposes, both machines are configured to produce a system pressure of 900mBar and an intake volume flow of 1,000m<sup>3</sup>/h at sea level. The Delta Hybrid consumes 27.5kW to produce these figures, while the blower consumes 32.3kW to achieve the same performance. On average, the Aerzen Delta Hybrid is 14 per cent more efficient than the blower. This represents a tremendous increase in energy savings.

Looking at long-term cost savings, the comparison equates to a return-on-investment of 1.5 years and an average annual energy cost saving of US\$2,000, when based on a 24-hour running schedule. As Stubel said, accounting for a minimal price difference between the D 24 S and an equivalent standard blower, "the figures start to speak for themselves".



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The generator will be supplied with genuine Perkins engines coupled together with Leroy Somer alternators, and controlled via a DSE 7420 controller with full international warranty.

The generators will all be supplied with a soundproof canopy, which is electro galvanized with 2.0mm thickness carbon steel base frame and brackets, all painted with a zinc and iron oxide intermediate primer offering a total paint thickness of 160um.

In addition to this, we also supply genuine spare parts for all our machines sourced from the United Kingdom manufacturer.



ATS as an optional extra along with all our generator as seen above can be provided with all our units.

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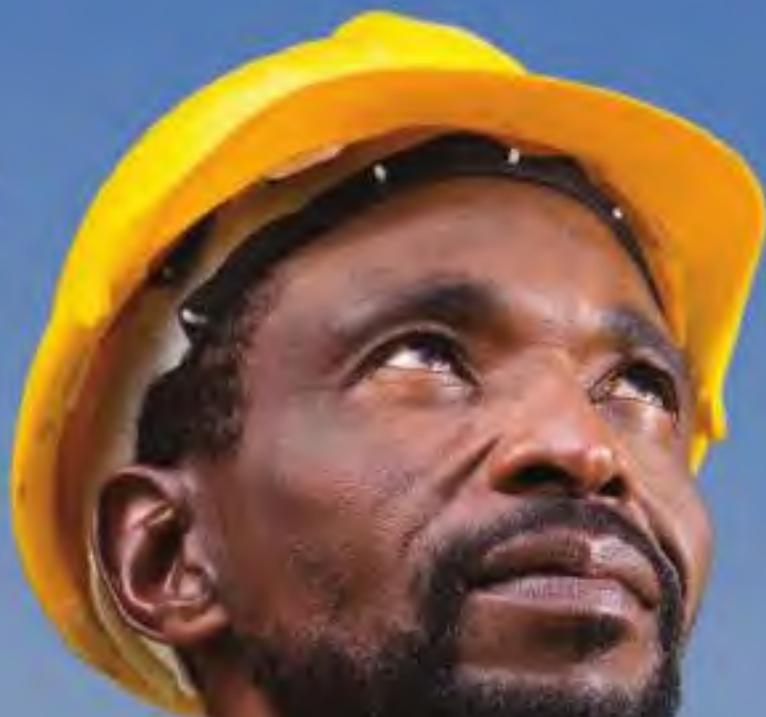
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