

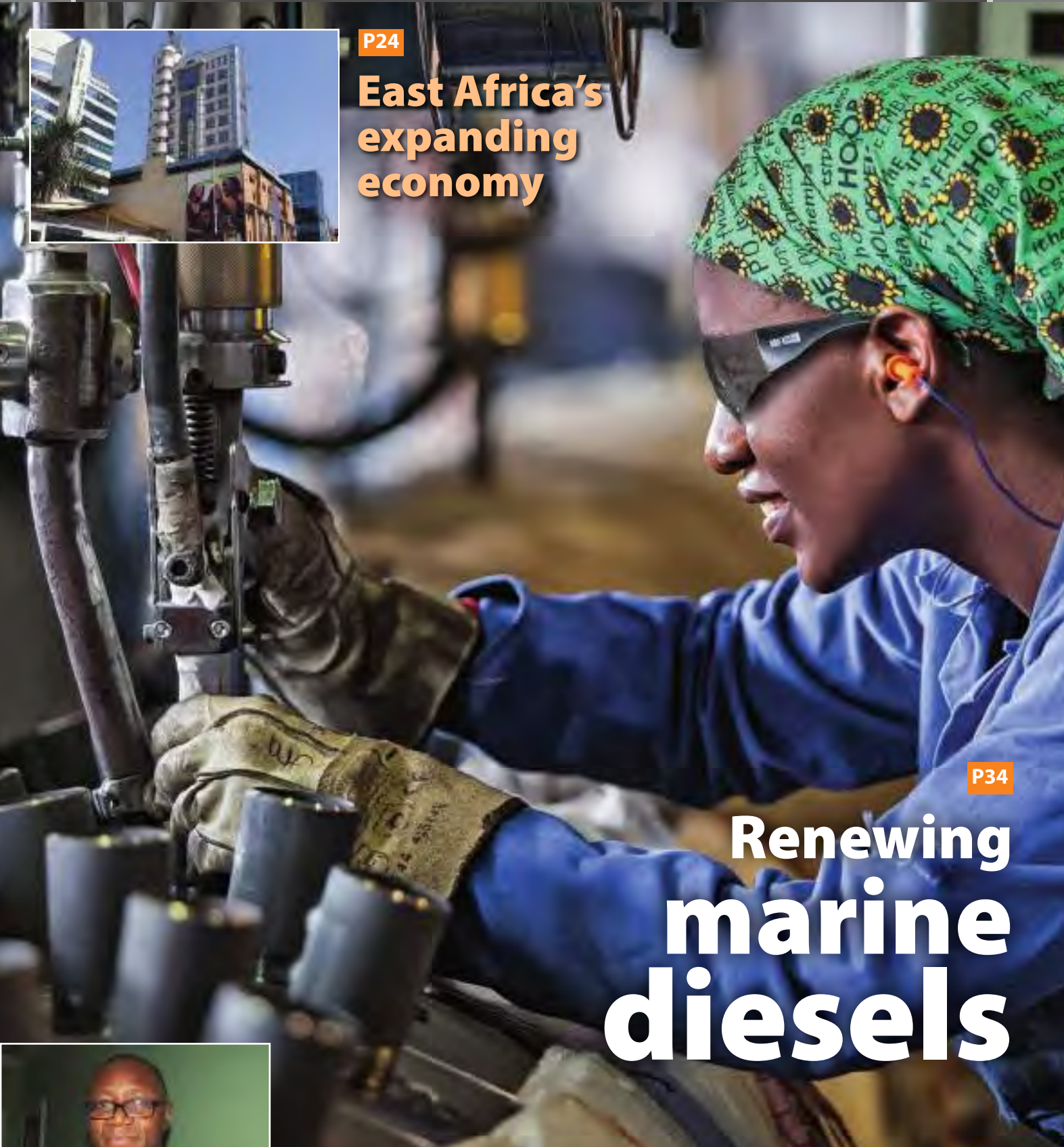
African Review

of BUSINESS and TECHNOLOGY



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East Africa's expanding economy



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Renewing marine diesels



Power:
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Editor's Note

This month, African Review of Business and Technology looks at economic growth in Angola, Kenya and Ethiopia, between pages 20 and 26. Finance, technology and transport are assessed between page 28 and page 32. An article accounting for developments in financial institutions' fight against cybercrime is followed by an appraisal of inkjet printer technology, a look ahead to the upcoming AfricaCom event on information and communications technologies, and a report from Algeria on the introduction of mobile communications network infrastructure to the Algiers Metro. Mobile communications is followed by a feature on remanufacturing diesel engines and then an appraisal of GPS solutions for logistics. Transport concludes with a report on a new kind of tyre, made from Taraxagum. Then, from page 42 to 60, this issue offers analysis of the power sector, including an interview with Cenpower's CEO, speaking on Ghanaian power, a preview of Power Nigeria, and a review of African market conditions for generator manufacturers and suppliers. The manufacturing section between pages 58 and 60 looks at bearing design and at consulting. Construction and mining is covered from page 61 to page 81 with in-depth analyses of technology and techniques for a variety of infrastructure applications, and a review of bauma Conexpo Africa.

Andrew Croft, Editor



Main cover picture: Bilfinger
Inset, bottom left: Cenpower
Inset, top right:
Tony/Nairobi123 (Wikimedia Commons, 2914)

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Agenda / North

Project to reduce emissions from Sudanese deforestation

Working with the **World Bank Group**, Sudan's **Forests National Corporation (FNC)** is operating a Reducing Emissions from Deforestation and Forest Degradation (REDD+) Preparedness Project, to prepare the country for efforts aimed at tackling the threat of climate change by addressing the impacts of deforestation and forest degradation. Valued at US\$3.8mn (approximately 22.8mn SDG), the project is funded by the World Bank's Forest Carbon Partnership Facility and will enhance the sustainable management of Sudan's forest resources as well as support sustainable land use management. It seeks to do so by developing effective strategies for reducing emissions from deforestation and simultaneously promoting activities that will improve livelihoods and conserve biodiversity.

"We look forward to working with the authorities to strengthen Sudan's capacity to

“ We look forward to working with the authorities to strengthen Sudan's capacity to address the impact of climate change now and in the future.” -

Xavier Furtado, World Bank country representative in Sudan.

address the impact of climate change now and in the future," said Xavier Furtado, the World Bank's country representative in Sudan.

Implementation of this project is consistent with Sudan's stated intention to combat deforestation. The Government of Sudan has already demonstrated its willingness to combat climate change by creating its National Adaptation Program of Action (NAPA) to address climate variability and climate change within the context of the country's economic development priorities. This new project paves the way for Sudan to implement a series of important activities, including institutional strengthening and capacity building, for a future performance-based emission reduction initiative. The REDD+ project works across a range of sectors, presenting an opportunity for comprehensive action.

As one of Sudan's leading partners in development, the REDD+ project is one of the ways the World Bank Group is supporting the Government of Sudan to join the global effort to combat climate change.

REDD creates a financial value for the carbon stored in forests, offering incentives for countries to reduce emissions from forested lands and invest in low-carbon paths to sustainable development. REDD+ also accounts for conservation and sustainable forestry and carbon management.

Masterplanning in the Middle East

Aurecon's masterplanning team in the Middle East consists of experienced transport and infrastructure engineers. Its engineering, management and specialist technical capabilities have played an integral role in a number of successful masterplanning projects in the region, including the recent North Yas, Al Merief and Al Reef 2 developments, as well as the Qatar Science and Technology Park. The size and complexity of the projects are unique, with the largest project covering an area of 270ha.

Aurecon associate Tanya Potgieter said recently that the key to a successful masterplan project in the region is ensuring close collaboration among all stakeholders as well as strong local and technical knowledge. Seh observed, "Whether the engineering masterplanning scope encompasses a complex, multidisciplinary masterplan or a more straightforward plan, all relevant stakeholders need to be involved. A masterplan will fail if this element is missing"



The Al Merief development

Each stakeholder in the masterplanning process has a role to play. Typical stakeholders in this process include developers, local government and relevant authorities, engineers, transport system planners, infrastructure developers, urban planners and built environment professionals.

According to Potgieter, developers must "consider a number of aspects before the project starts, such as market studies, possible sustainability accreditation" and so on, and "needs to be advised of the implications of maintenance and ownership after the project is completed".

MENA entrepreneurship trends

An **IFC**-supported report by **Wamda Research Lab** finds that, although support for entrepreneurs and start-ups has grown substantially across the Middle East and North Africa, many challenges remain, hindering job creation and economic growth. In *Exploring Conditions for Entrepreneurs in Egypt, Jordan, Lebanon, and UAE* Wamda surveyed nearly 500 entrepreneurs from the four countries. Published in partnership with **Endeavor Insight** and **Beirut Digital District**, the report looks at the main trends in entrepreneurship and the challenges entrepreneurs face in growing their businesses. Jamil Wyne, head of Wamda Research Lab said, "Our research suggests that more and more players are realising the economic and social returns that supporting entrepreneurship can have on cities, countries, and the region. Addressing the challenges entrepreneurs face is critical to achieving economic and social development."

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Building Tomorrow.



Agenda / East

Serena Hotel expansion deal

French development institution **Proparco** has signed a US\$20mn loan agreement with **TPS Eastern Africa** to expand its hospitality business in the East Africa. TPS Eastern Africa operates under the brand name Serena and runs a chain of luxury hotels, lodges and tented camps in the region.

In the eight-year tenure partnership, expansion of a portfolio of facilities will begin in 2016. Serena Hotel in Nairobi will undergo redevelopment and refurbishment that will include a new 500-seat conference hall, banqueting facilities and a car park.

"We expect better services and high quality hospitality standards that will attract more customers. We have been in

Kenya for 50 years and we understand the market," said Mahmud Manji, EPS Eastern Africa director.

The French institution has also financed the development of Kampala Serena Hotel in Uganda, which was previously known as Nile Hotel. The deal comes at a time when Kenyan tourism has been improving following the lifting of travel advisories by Britain- where half of the tourists come from.

Data from the **Kenya Tourism Board** indicates that there were 284,313 visitors to Kenya in the first quarter of 2015. Although this is comparatively lower than 381,278 over the same period in 2014, industry players note that bookings are on the rise.

Zim firm seals Japanese car deal

Zimbabwean vehicle assembler **Quest Motors** is working on Japanese models after signing a number of franchise agreements. According to the company's operations manager, Carl Fernandez, local assembly is being undertaken for **Mitsubishi, Toyota** and **Suzuki**.

Mr Fernandez said, "We will be introducing a wide variety of vehicle brands, namely Mitsubishi Triton, Pajero Sport, Toyota Revo, and Suzuki Carry. They will be introduced in the fourth quarter but it might be earlier as everything has been finalised."

Quest Motors, which is based in Mutare, had already held the franchise for several Chinese makes, including **Foton, JMC** and **Chery**. It also has a contractual arrangement with the German manufacturer BMW. Its stated commitment is to cater to the needs of the people and the development of the Zimbabwean economy by its commitment to the motor industry and the nation's consumer market.

Japanese engagement in Africa

The 2nd **Africa - Japan Business Investment Forum**, held recently in Addis Ababa, Ethiopia, brought together some of the key actors in the Japanese and African business and government circles.

The event was hosted by the Government of Ethiopia, with a conference agenda intended to help strengthen ties between African nations and Japanese business networks and to share best practice and opportunities between these two countries, with a core focus on key investment sectors including: infrastructure, finance, agri-business, commodities, energy, logistics and technology.

There was also a special dialogue entitled: 'Africa- Japan Partnership: Growth through collaboration'.

Japan has always been a strategic partner of Africa and has remained steadfast in its support, since the establishment of the first **Tokyo International Conference on African Development (TICAD)** in 1993. Trade between the two partners stands at US\$25bn. In 2014 Japanese investors accounted for US\$3.5bn of the US\$4.2bn of project funds that Asian nations poured into Africa - most notably, in infrastructure, hydrocarbon and water and sanitation-related projects.

Remco reaps reward from building market

With the addition of an order for four buildings in Ethiopia, with a total area of around 18,000 square metres for a pioneering multinational, Dutch construction company **Remco Building Systems** has broken through the milestone of 100,000m² of commercial premises on the African continent.



As a full-service prefab supplier, Remco Building Systems takes on the total realisation of the commercial premises it works at

Since 2010, Remco has completed around twenty projects for major multinational and local companies in Nigeria, the Democratic Republic of the Congo, Gabon, Senegal, Rwanda and Ethiopia. The company builds high quality steel industrial halls that are erected within short lead times, without any issues for the customer. The product and the efficient approach goes hand in hand with demand due to the rapid economic growth in African countries. In addition, it provides employment by hiring local installers who are trained on the job by the Dutch site managers. The company works to international safety standards.

Jan van Vulpen, managing director at Remco Building Systems, said, "Due to our broad internationally-minded approach, we are in an excellent position to achieve further growth over the next few years. With large projects in Cameroon and Morocco on our radar, we expect to have passed the barrier of 200,000 square metres in Africa well within the next five years."

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Agenda / South

Forestry Congress report reveals better managed forests

The world's forests continue to shrink as populations increase and forest land is converted to agriculture and other uses, but over the past 25 years the rate of net global deforestation has slowed down by more than 50 per cent, according to the **Food and Agriculture Organization of the United Nations (FAO)**.

FAO's most comprehensive forest review to date, The Global Forest Resources Assessment 2015, indicates that some 129mn hectares of forest - an area almost equivalent in size to South Africa - have been lost since 1990. It noted however, that an increasing amount of forest areas have come under protection while more countries are improving forest management. This is often done through legislation and includes the measuring and monitoring of forest resources and a greater involvement of local communities in planning and in developing policies.

The FAO study covers 234 countries and territories and was presented at the 2015 World Forestry Congress, held recently in Durban, South Africa.

"Forests play a fundamental role in combating rural poverty, ensuring food security and providing people with livelihoods. And they deliver vital environmental services such as clean air and water, the conservation of biodiversity and combating climate change," said FAO Director-General José Graziano da Silva, launching the

report in Durban, who also noted an "encouraging tendency towards a reduction in rates of deforestation and carbon emissions from forests" as well as improved information that can inform good policy, noting that presently national forest inventories cover 81 per cent of global forest area, a substantial increase over the past 10 years.

“The management of forests has improved dramatically over the last 25 years. This includes planning, knowledge sharing, legislation, policies - a whole range of important steps that countries have implemented or are implementing.” -

Kenneth MacDicken, leader of FAO's Global Forest Resources Assessment Team.

"The direction of change is positive, but we need to do better," the FAO Director-General cautioned. "We will not succeed in reducing the impact of climate change and promoting sustainable development if we do not preserve our forests and sustainably use the many resources they offer us."

Zambeef backs SADC and COMESA

Zambia's farmers have the capacity to become leading players in the regional marketplace and the agriculture sector is the envy of many countries in Africa, according to **Zambeef Products'** joint chief executive officer, Carl Irwin.

The **Southern African Development Community (SADC)** and **Common Market for Eastern and Southern Africa (COMESA)** regions represent vast opportunities for the agriculture industry, he told delegates during a panel discussion at the Euromoney Zambia Finance and Investment Conference in Lusaka.

"There are 460mn people in SADC and COMESA and we need to ensure our industry is competitive in this market. Zambia is the envy of many countries in Africa and around the world in that we are self-sufficient in many agricultural products, including beef, milk, chickens, eggs and soybean."

Konecranes' Uniton now in Southern Africa

The latest **Konecranes** built-up trolley crane, Uniton is a robust overhead crane, which has been developed in close cooperation between Konecranes customers and Konecranes industry experts and engineers. The outcome is a rugged construction concept, which is suitable for process duty applications in a variety of applications including steel, mining, automotive, and shipyards.



Uniton can lift from 6.3 to 160 tons © Konecranes

Available in a wide range of load options, hoisting speeds, lifting heights, trolley gauges, frame sizes, and capacities from 6.3 to 160 tons with a single trolley and up to 320 tons with two trolleys, Konecranes' Uniton can be built to meet project-specific requirements in almost any application and environment. Factors like temperature, humidity, and corrosive elements are all anticipated during manufacturing, which helps extend the lifetime of the crane.

Uniton is easy to use for crane operators, due to the availability of variable frequency drives on all motions (bridge, trolley, and hoist). This provides a smoother lifting experience and helps the operator to keep the lifted load steady, while a reduction in wear on mechanical components can be seen compared to contractor-controlled cranes.

Ease-of-use is further supported by a large variety of pendants and radio control devices as well as with a new patented hook safety latch, which holds the latch open to avoid pinching of fingers.



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Agenda / West

Restructuring Ghana's power sector

Faced with a crippling power generation failure, the Ghanaian government has concluded plans to split the state-owned power generator, **Volta River Authority (VRA)** into two separate entities to enhance efficiency. According to government sources, the existing VRA will concentrate on thermal generation in partnership with the independent power producers, IPPs, while the remaining entity will concentrate on hydro generation. When this comes into fruition by middle of 2016, the new arrangement will fundamentally alter the country's main power generation utility to respond quicker to the changing electricity landscape.

The country's total energy demand, including exports, far exceeds available power generation capacity. Current suppressed peak demand is about 2,400MW, however only 1,600MW of capacity is available at peak and 1,400 MW at off-

peak leaving a deficit of about 800MW at peak. The national interconnected transmission network is also being upgraded with the **Grid Company of Ghana Ltd (GridCo)** also investing in new 330, 225 and 161kv lines.

To implement this ambitious project, the power minister confirmed that inclusive in the plan is the privatization of the state-owned power distributor, **Electricity Company of Ghana (ECG)**, through a concession option rather than selling of equity.

Privatising ECG forms part of the conditions that Ghana must meet before accessing the US\$500m Millennium Challenge Compact Funds from the US government.

With an election due in December 2016 and international consultants intent on getting this over and done with before that day, the Ghanaian government is committed to selling shares in ECG to a private partner and retain

“ Ghana has to make a choice between partial privatisation, in which private sector players will bring in capital for equity and the second option of concession, where part of ECG could be concessioned out to the private sector.” -

Dr Kwabena Donkor, Minister of Power, Ghana

partial ownership of the company, with the private partner responsible for operating and managing the company, as well as investing in upgrades critical to improving services.

Kafui Gale-Zoyiku

Gabon gains AFC membership

After signing an Instrument of Accession and Acceptance of membership in Libreville recently, Gabon has become the 10th country to gain membership of the **Africa Finance Corporation (AFC)**. Other member states include: Cape Verde; Chad; Ghana; Guinea-Bissau; Guinea; Liberia; Nigeria; Sierra-Leone and The Gambia.

Gabon has an abundance of natural resources, with long-established oil, timber and manganese industries, and one of the world's largest deposits of iron ore. However limited infrastructure has been constraining the country's recent economic development.

Andrew Alli, AFC chief executive officer, said, "Gabon's significant natural resources, abundance of land and growing agricultural industry offers huge potential for sustainable growth and diversification, if the adequate supporting infrastructure is in place. We aim to make a significant contribution to this."



Andrew Alli,
CEO of AFC

MDX-i and Microsoft offer cloud services

The **MainOne** data centre subsidiary **MDX-i** has launched its new cloud-based service offering with Microsoft. The solution, which is built on

Microsoft Azure's enterprise grade infrastructure, provides flexible, highly available

and fully secure private computing environments to companies on a Pay-as-you-Go basis. By combining expertise in proven, yet familiar technologies and geographic specialisation, MDX-i Cloud Services deliver a solution tailored to meet the needs of enterprise customers in West Africa. Benefits of the infrastructure as a service (IAAS) solution include access to a wide range of computing resources, such as storage, CPU, memory, security firewalls and network bandwidth, provisioned on a subscription basis. Kabelo Makwane, Microsoft Nigeria's managing director noted, "The Cloud OS Network is a worldwide group of select service providers that partner closely with Microsoft to offer customers hybrid cloud and Azure-enabled solutions. Uniquely combining expertise in Microsoft technology, customer requirements, and geographic specialisation, Cloud OS network members deliver the Microsoft Cloud Platform customised to your specific needs."



L-R: Kabelo Makwane, MD, Microsoft Nigeria; Funke Opeke, CEO, MainOne; Rob Lever, business development executive, MDX-i; and Oluwawemimo Adeniyi, business partners' director, Microsoft Nigeria, at the Lagos launch of MDX-i Cloud Services

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Intermodal Africa

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Promoting opportunities in Nigerian mining at iPAD

Nigeria's mining sector presents incredible opportunities for both the private and public sectors, given the country's vast natural resources and the current drop in oil prices.

The 2015 **iPAD Nigeria Mining Forum** in Abuja in November is regarded as a long overdue strategic investment platform that will gather key role players in the Nigerian mining space to discuss the way forward.

"The reduction in global crude oil prices has once again highlighted the need for Nigeria to diversify the revenue base of the economy and we hold strongly that one key sector which offers great potential in achieving this is the solid minerals sector" – this is according to Cyril Azobu, mining sector leader and head consulting at PwC Nigeria, event partner of iPAD Nigeria Mining Forum.

The event director Nicole Smith agrees, saying, "the new government in place has a

strong desire to exploit Nigeria's vastly underexploited natural resources, which includes about 44 varieties of minerals in over 500 locations."

iPAD Nigeria Mining Forum conference topics include:

- The next frontier in Nigeria's extractive industries – recreating the solid minerals industry as a leading driver of Nigeria's economic and social growth.
- What's in the ground? A detailed overview of Nigeria's mineral deposits and the licensing process.
- What investors are looking for – overview of the legal framework and incentives.
- Available support for a growing industry.
- Solving the power infrastructure crisis: The solid minerals link.
- Infrastructure and transport requirements for mining in Nigeria.
- Perspectives from current investors in the sector.

IMF in Luanda

As Joseph Tucker of the **International Monetary Fund (IMF)** presented the "Luanda Declaration" at the 2015 **African Caucus**, he spoke of the ways in which Bretton Woods Institutions (BWIs) can support the challenges of financing for sustainable development, combating tax avoidance, eliminating the illicit flow of funds and strengthening Africa's voice and representation in relation to the BWIs. The document reveals that the illicit flow of funds associated with aggressive tax avoidance, the repatriation of profits and debt repayments are tragically depriving countries of hundreds of millions of dollars every year. The prospect of increasingly volatile financial markets means that it will be difficult to find resources to finance sustainable development goals (SDGs). The document also highlights concerns about the lack of well-conceived diversification strategies and that monitoring mechanisms are inadequate for Africa's economic diversification.



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Bulletin / Health

Health Connect South highlights West African issues

Non-profit organisation **Health Connect South** convened top healthcare innovators, decision makers and leaders to speak at its second annual health leadership event recently in the USA; the recent Ebola outbreak in West Africa was highlighted as an example of the types of collaborations needed to address complicated health issues, with many speakers having served directly on the front lines of the epidemic.

Zambian environmental project mixes business and health

A community waste recycling initiative supported by **Zambian Breweries** and **National Breweries** looks set to clean-up parts of Lusaka and create new business opportunities through an innovative public-private partnership, whilst also improving health education; the **Manja Pamodzi** project supports collectors, who are identified through environmental education and sensitisation drives with a particular attention on recycling, to gather together plastic bottles, Chibuku cartons and other recyclable materials from surrounding areas in their communities, and to deliver the waste to buying-centre collection points where aggregators buy them in bulk and process the discarded material into bales that are sold to recycling companies to be processed into other materials such as tissue, in order to improve livelihoods, to minimise the amount of littering in the communities through environmental health education as well as encourage recycling.

A-OSH to promote occupational health & safety equipment

Following a marked increase in the number of visitors at **A-OSH Expo 2015**, with 28 per cent more people attending the exhibition than in 2014, the stage is set for key African occupational health and safety exhibition **A-OSH Expo** to bring the latest products and

services to a discerning audience of industry professionals who will attend the 2016 event, scheduled to take place between 24 and 26 May 2016 at Gallagher Convention Centre in Midrand, Johannesburg, South Africa; "We introduced two new features this year: the Business Matchmaking Programme, an initiative that matched visitors up with the most relevant exhibitors and the 'Fire Hazard Identification Challenge' which was based on a simulated office environment with six to eight fire hazards that had to be identified by participants," said Joshua Low, event director at **Specialised Exhibitions Montgomery**.

Summit on healthcare business models and solutions

Taking place in London, UK, 17-18 February, the 2016 **Africa Healthcare Summit** is the largest African healthcare event to be held in Europe, and the only European based event of its kind to assess investment, developments and technology in African health; the 2016 summit will examine the latest healthcare developments across Africa, assessing current reforms; and examining the impact of the huge investment boom that is currently forecast in Africa's healthcare sector, with attendance by hundreds of senior level delegates from Ministries of Health, NGOs, hospitals, healthcare providers, distributors and solution providers.

HST rolls out LIMS services to laboratories in Tanzania

Having secured a contract with the **Tanzanian Ministry of Health** in August 2015, **Health Systems Technologies (HST)**, a subsidiary of **African Equity Empowerment Investments Limited (AEEI)**, has been committed to rolling out its to implement laboratory information management systems (LIMS) services to multiple laboratories in Tanzania with a view to taking on further deployments throughout Tanzania and elsewhere; Khalid Abdulla, chairman of HST

and CEO of AEEI, said, "Due to our successful implementation and management of large-scale laboratory information system projects in South Africa, we are delighted at the prospects of now being able to deliver similar laboratory systems to Tanzanians and further into Africa."

BlueCloud Healthcare looks after health at AFIF 2015

Working in conjunction with **Pfizer**, **BlueCloud Healthcare** is organising Africa's first healthcare investment session under the auspices of **emrc's 2015 Africa Finance and Investment Forum (AFIF)**, taking place in Cape Town, South Africa, 24-26 November; the healthcare session will feature high level speakers including **Excelsior** CEO Dr Felix Olale, **Eastern African Healthcare Federation** president Dr Amit Thakker, and **World Bank** lead African healthcare specialist Dr Patrick Osewe, and will also feature an entrepreneurial session of African healthcare entrepreneurs who will pitch their innovations before a panel of healthcare experts including **BlueCloud Healthcare** US partner Les Funtleyder and **Regency Healthcare** CEO and **BlueCloud** founding partner Dr Amish Kanabar.

Lagos State expands ambulance and hospital services

Governor of **Lagos State** in Nigeria, Akinwunmi Ambode recently handed over 46 new mobile intensive care unit (MICU) and transport ambulances to the **Lagos State Ambulance Service**, and 26 State-owned general hospitals as part of efforts aimed at widening the coverage of emergency medical services beyond the metropolis to the hinterlands within the State; Governor Ambode's administration has also restructured the State Emergency Ambulance Service to operate around the clock at the community level and to reduce the response time to distress calls.

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Bulletin / Computing

IBM launches Linux-only mainframe machine

Technology giant **IBM** has undertaken a significant expansion of its mainframe strategy of embracing open source-based technologies and open-source communities to provide clients with secure, high performance capabilities for an era where mainframes increasingly anchor corporate analytics and hybrid clouds; the company has introduced two **Linux** mainframe servers – called LinuxONE – and has enabled open source and industry tools and software including Apache Spark, Node.js, MongoDB, MariaDB, PostgreSQL, Chef and Docker on z Systems to provide clients with choice and flexibility for hybrid cloud deployments.



LinuxONE Emperor can scale up to 8,000 virtual machines or thousands of containers - the most of any single Linux system

Open systems enable advances in security management

According to Neil Cameron, GM at **Johnson Controls Building Efficiency, Systems & Service: Africa**, change is constant in the realm of security and security solutions - systems continue to advance, threats evolve and business security priorities are continuously revised to defend and protect against new challenges; open security management platforms are the smart choice when it comes to enabling greater control, flexibility and adaptability.

Any app, any device, anywhere on VMWare

Support for the latest version of **NVIDIA**'s GRID vGPU technology was among the host of new **VMware** technologies launched at VMWorld 2015 to make it easier for businesses to deliver visually-rich applications to phones, tablets and laptops; the company's new GRID 2.0 platform plays a key role, offering double the user density and double the application performance over the previous version, and support for blade servers and the Linux operating system.



NVIDIA GRID 2.0 pushing more pixels per second than there are people on the planet, at VMworld 2015

HP's new product portfolio for VMware environments

At VMworld 2015, **HP** announced new solutions to help businesses capitalise on VMware environments through faster time to implementation and greater return on investment, including software-defined compute services for VMware solutions, network virtualisation services for VMware NSX, and client virtualisation services and education services for VMware that will enable organisations to react better to changing business dynamics; "These products, services, solutions and reference architectures will provide customers with the building blocks to transform to a hybrid infrastructure foundation to efficiently power the apps and workloads that run the business," said Antonio Neri, executive vice president and general manager, HP Enterprise Group.

Super speed high-capacity storage on the go in SA

Portable storage just got better in South Africa, with the new **Verbatim Store n Go V3**

USB drive from distributor **Drive Control Corporation (DCC)**, offering storage capacity of 128GB and USB 3.0 compatibility; "igital content today is all about sharing, and the Verbatim Store n Go V3 USB drive is the ultimate sharing companion," said Ruben Naicker, Verbatim product specialist at DCC.



The new Verbatim Store n Go V3 USB drive from DCC

Cisco Capital revamps South African business support

Financial solutions firm **Cisco Capital** has launched an easylease low-rate financing programme in South Africa to help the

“SMBs in South Africa increasingly understand the critical impact that technology can have on their businesses but are often restrained from purchasing the solutions they need because of the challenging economy and budget issues.” -

Colleen Fynn, Cisco Capital financial solutions manager, South Africa

country's small and medium-sized businesses (SMBs) to invest in next-generation technology quickly and easily, with minimal initial investment and maximum convenience; Colleen Fynn, Cisco Capital financial solutions manager in South Africa, said, "Cisco Capital is enabling many more businesses to make the vital investment in technology they will need to thrive in the digital age."

Bulletin / Communications

Airtel, Liquid Telecom commit to fibre connections to towers

Bharti Airtel's mobile broadband subscribers in Africa will soon enjoy faster Internet access speeds on its 3G and 4G networks, following Airtel's recent commitment to using Liquid Telecom's terrestrial fibre network to connect its mobile base stations and enterprises.

Bharti Airtel has telecommunications operations in 20 countries across Asia and Africa. Liquid Telecom is an independent data, voice and IP provider in Eastern, Central and Southern Africa. The framework agreement enables Airtel operations to leverage Liquid Telecom's existing 20,000km-long fibre network across East, Central and Southern Africa, as well as enjoy new purpose-built fibre infrastructure, to connect Airtel's mobile base stations and enterprise customers with fibre.

According to Liquid Telecom, the agreement answers the need for mobile operators to increase the Internet speed delivered over their mobile broadband networks. Airtel Africa CEO Christian de Faria, said "The agreement is a milestone in providing fast broadband services to customers in a cost-effective way. Airtel has invested significantly in mobile broadband technology across its African footprint and this agreement will deliver end-to-end fibre connectivity to our 3G and 4G base stations. This collaboration reinforces our commitment to providing affordable and innovative mobile services to all."



Liquid Telecom's network provides connectivity onto the five main subsea cable systems landing in Africa; WACS, EASSY, SEACOM, SAT3 and TEAMS

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African Review/On the Web

A selection of product innovations and recent service developments for African business
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Nigeria project to facilitate travel to landlocked neighbours

Nigeria has planned to list three transport infrastructure projects in Enugu State in a bid to decongest seaports, promote exports and create smoother transit corridors between Nigeria and the surrounding landlocked nations of Niger and Chad.

The projects, Truck Transit Park (TTP), Inland Container Depot (ICD) and Transshipment Cargo Terminal, will eventually complement the Free Trade Zone in Ninth-Mile Corner, Enugu State.

www.africanreview.com/transport-a-logistics



The Truck Transit Park (TTP) will aid truck drivers with resting facilities and service stations (Photo: donvictorio)

AfDB approves finance for Ugandan electricity project

The African Development Bank (AfDB) has approved a US\$121mn loan and grant to assist the government in improving electricity access for businesses and in rural households.

According to AfDB, the move is expected to enhance economic growth in several parts of rural Uganda. The grant, which is worth US\$11.5mn, has been mobilised from the Sustainable Energy for All window of the EU-Africa Infrastructure Trust Fund.

www.africanreview.com/energy-a-power

Obuasi gold mine to be redeveloped

Mining firm Randgold Resources Limited and South Africa's AngloGold Ashanti Limited have announced they will form a joint venture to redevelop and operate AngloGold Ashanti's Obuasi gold mine in Ghana.

The two companies signed an investment agreement to forge a JV

that would operate the Ghanaian gold mine. According to the agreement, Randgold will lead and fund a development plan which will aim to rebuild Obuasi as a long-life mining business with an attractive cost structure and returns.

www.africanreview.com/construction-a-mining



The Obuasi gold mine will be enabled with ramp access for better transportation of materials and workers (Photo: Sarin Kunthong)

Necotrans wins Cameroon port contract

French logistics group Necotrans, along with the Kribi Port Multi Operators consortium (KPMO), has won a contract for the multipurpose terminal at the Kribi port.

Necotrans and KPMO, which is made up of nine local operators involved in forwarding, maintenance and maritime agencies, will jointly operate and maintain the terminal at the deep-water port.

"We are particularly proud to have joined our colleagues from Cameroon in a win-win partnership, and to have gained the trust of the authorities in the country. Kribi is the only deep-water port in Central Africa, and as such is destined to become the economic driving force of Cameroon and the sub-region, especially Chad and Central Africa," explained Grégory Quérel, chairman of Necotrans.

www.africanreview.com/transport-a-logistics

Schneider Electric and Steelcor Power to make MV switchgears in South Africa

Schneider Electric has signed a partnership agreement with Steelcor Power to produce medium voltage (MV) switchgears in Boksburg, South Africa.

According to a company statement, the equipment will be manufactured using a Shielded Solid Insulation System (2SIS). The Premset switchgears will allow MV

network operators to increase safety and efficiency while simultaneously minimising downtime and meeting the needs of the smart grid. The product protects all the switchgear's live parts with earth-screened solid insulation, reducing the risk of internal arcing and facilitating top performance in practically any environment.

www.africanreview.com/manufacturing



The Premset switchgears will allow medium voltage operators to enhance safety and network efficiency (Photo: hxdyl)

Bomag launches new recycler and soil stabiliser

Bomag has extended its range of products with the addition of a new recycler and soil stabiliser, the MPH 364.

MPH 364 is a compact and powerful machine which was launched at the Bell Equipment stand at bauma Conexpo Africa 2015. The new construction machine has an operating weight of 17 tonnes and a working width of 2,005 mm. The compact design and a powerful 360 HP engine make the MPH 364 a good choice for small projects such as car parks, minor roads and paths.

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Accelerating Angola's economic agenda

The Angolan economy has been severely affected by the recent downturn in oil prices, but it is set to recover by 2017

A comfortable level of international reserves has allowed Angola's economy to weather the consequences of the fall in oil prices than in 2008-09. However, with oil accounting for over 95 per cent of exports and about 75 per cent of fiscal revenue, recent developments underscore the importance of promoting the diversification of the economy by preserving macroeconomic stability and moving forward an ambitious structural reform agenda.

Economic activity in the country is projected to slow as Angolan industry, construction and services adjust to cuts in private consumption and public investment amid a reduced availability of foreign exchange. According to the IMF, output growth is projected to average three per cent through to 2016. The IMF also notes that inflation is accelerating, reflecting the depreciation of the kwanza and recent loose monetary conditions, but that it will decline from 2016. The external accounts are weakening as a result of the sharp decline in oil exports and the limited room for import substitution in the near term. The outlook is for a recovery starting in 2017 but there are downside risks, including a further decline in oil prices.

Budgeting for better economy

The government's timely reaction to the decline in oil prices by revising the 2015 budget will allow the central government deficit to fall to three per cent of GDP, compared to six per cent in 2014. Public debt, however, is projected to increase significantly in 2015 to around 57 per cent of GDP, of which 14 per cent of GDP corresponds to Sonangol. The 2016 budget is expected to be predicated on a conservative oil price assumption and be aimed at protecting expenditures on social assistance and critical infrastructure while preserving fiscal discipline given that a recovery in oil prices in the near term is unlikely. It will be critical to bring the public sector wage bill, as a share of

GDP, more in line with the new revenue reality of the budget.

Over the medium term, the IMF notes that fiscal policy should aim at restoring fiscal buffers by setting public debt on a declining path and achieving fiscal consolidation through structural fiscal reforms. Increasing the non-oil revenue base by rationalising tax incentives and strengthening the newly-created tax administration agency (AGT) is rightly regarded as a priority.

Money matters

In the IMF's view, monetary and exchange rate policies must be focused on containing inflation while preserving an adequate level of international reserves. The BNA has tightened liquidity conditions by increasing its policy rate and banks' mandatory reserve requirements. Moreover, interventions in the foreign exchange market have allowed for an orderly depreciation of the kwanza, the country's currency. However, the variable spread between the parallel and primary market exchange rates, and the backlog of foreign exchange buying orders in commercial banks, indicate that an imbalance still exists in the market. Financial advisors

stress that addressing this imbalance is essential to maintain the official exchange rate as the basis for price formation and inflation expectations, and to prevent a misallocation of economic resources.

The banking sector must be protected and preserved, in order for the economy to recover from its current malaise.

Appropriately, the BNA has concentrated on strengthening bank supervision. However, attention must also be paid to ensuring that all banks meet regulatory requirements, especially regarding capitalisation and liquidity.

Accelerating Angola's structural reform agenda is a critical factor in the nation's plans to boost potential growth and reduce poverty. The National Development Plan is intended to support such aims by facilitating the diversification of the economy by increasing investment, productivity, and competitiveness. In order to achieve these goals, however, special attention must be paid to improving the business environment, physical infrastructure, and human capital development. To that end, the introduction of new labour and private investment laws are welcome steps in the right direction. ■

Mozambican delegation assesses Angolan gas prospects

Mozambique's former President Joaquim Chissano has been leading a high-profile delegation representing the country's Matola Gas Company MGC recently in Luanda with the Angolan Oil Minister to discuss and analyse a collaborative proposal on the development of the company, APA has observed on Thursday. According to media reports monitored by APA, the delegation has been in Angola since Monday in search of a market for natural gas produced in Mozambique and to exchange knowledge of the oil and natural gas sector. According to reports, after the meeting with Minister Jose Botelho de Vasconcelos, Chissano stressed that the Matola Gas Company, which served only two industrial companies when it was established in 2004, currently has 38 clients. MGC currently has a power station and a centre for gas distribution in containers, which should get lower in number as the gas distribution network expands, said Chissano. The Matola Gas Company is a Mozambican company that is dedicated to transportation, distribution and sale of natural gas produced in Mozambique. Gas is used as a source of energy for several industrial units in Maputo province. MGC's share capital is divided into a stake held by the Mozambican state, through the state oil and gas company ENH and private Mozambican and foreign investors such as the South African company Gigajoule International.

Kenyan credit checking

TransUnion, a trusted provider of information solutions for assessing and managing risk, recently launched an innovative new product designed specifically for the needs of Kenyan consumers. TransUnion Nipashe is an SMS short code solution that enables consumers in Kenya to easily access their credit information. Through its use, consumers can become more credit conscious and savvy with the ability to receive accurate, up to date information about their credit rating.

"Nipashe means 'inform me' in Kiswahili, and that is exactly what our new product aims to do," said Steve Kamau, CEO of TransUnion Kenya. Access to credit from formalised financial institutions is a significant challenge for many consumers in Kenya, and lenders will typically refer consumers to the credit bureau if their loan application is declined for any reason. However, since our offices are in Nairobi, making a special trip to the bureau is not a viable option for many.

Access to credit and information

Utilising the TransUnion Nipashe solution, consumers can gain an instant view of their

credit standing, and can request a credit report for more information. If an institution has given them an adverse listing, they can work towards clearing it, or if there is a conflict, TransUnion will be able to assist them to resolve it. Consumers can address any issues on their credit profile before applying for credit, helping to ensure their application is processed quickly.

Consumers simply SMS their name to 21272 or 21CRB and register at a cost of KES.50. They can then request their credit status for a relatively small charge per SMS, and receive a message back with their credit status listed as either 'good' or 'default'. A listing of 'good' means that there are no current issues with their credit standing. A 'default' message means that there is a flag with one or more of the consumer's credit accounts. In order to obtain more detail, the consumer can then request a copy of their credit report, which is free once a year. The credit report will provide more detail, including the names of all credit institutions and facilities the consumer is active with, how payments are being made, whether any accounts are in arrears, and how long they have been in arrears for. ■



Steve Kamau, CEO of TransUnion Kenya

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East Africa's emerging economic drivers

Construction, electronics, communications and energy are some of the key sectors contributing to the Kenyan economy

Building and construction, ICT and energy are some of the key sectors driving the Kenyan economy, with the World Bank projecting a seven per cent growth rate by 2017. According to the Economic Growth Survey 2015 presented by Kenya's Devolution Cabinet Secretary, Ms Ann Waiguru, gross domestic product (GDP) grew by 5.3 per cent in 2014.

In the first quarter of 2015, the economy grew by 4.9 per cent compared to 4.7 per cent over the same period in 2014. Experts say that huge construction projects such as the Mombasa-Nairobi Standard Gauge Rail (SGR), Lamu Port, regional roads and rising real estate have been vital in driving the economy forwards.

"Kenya is emerging as one of Africa's key growth centres

with sound economic policies in place for future improvement. To sustain momentum, Kenya needs to continue investing in infrastructure and jobs, improve its business climate and boost its exports," said Diarietou Gaye, the World Bank's country director.

Overall, building and construction sectors grew by 13.1 per cent in 2014 compared to a revised growth of 5.8 per cent in 2013.

Credit for capacity

Increased funds allocation to roads and rails construction, coupled with the rehabilitation of existing road network boosted the sector growth.

Commercial bank credit extended to the sector grew by 13.6 per cent from US\$708mn in 2013 to US\$804mn in 2014 cement consumption. A key indicator in the construction industry grew by 21.8 per cent in 2014 to 5.2mn t.

On the other hand, the energy sector showed some substantial growth over the same period. The total quantity of petroleum products imported increased by 12.5 per cent to 4.5mn t in 2014 from four million tonnes in 2013. This led to an expansion of the import



Diarietou Gaye, World Bank country director for Kenya, Rwanda, Eritrea and Uganda

bill by 5.6 per cent to US\$3.3bn. Domestic petroleum demand also rose by 5.3 per cent to 3.9mn t in 2014.

In electricity, total installed capacity expanded by 4.7 per cent from 1,717.8MW in 2013 to 1,798.3MW in 2014, mainly due to increased geothermal capacity.

This had an effect of expanding total electricity generated by 8.2 per cent.

The number of customers connected under the Rural Electrification Programme grew by 16.5 per cent as at July 2014. With increased connections, the demand for electricity expanded by 3.8 per cent to 7,768.6GWh in 2014 from 6,928.1GWh in 2013.

"We are now able to start barber shops, welding workshops and other small businesses in our township. Definitely, this will transform our township increasing access to services which were previously unavailable," said Lucy Macharia, a trader in Gituiga Township in rural Nyeri County, which

was recently connected to the national grid.

With Kenya emerging as a tech hub in Africa, with notable innovations such as MPesa, the ICT sector has been expanding in the recent years.

In the 2014, the sector registered a 13.4 per cent growth rate compared to 12.3 per cent the previous year. Internet penetration stood 38.3 per cent with the total domestic short messaging services (SMS) growing by 38.5 per cent to send 27.7bn SMS in 2014. But it is the booming mobile money subscription and cash transfer that have left analysts puzzled. In 2014, total mobile money subscription reached 26mn, representing 60.6 per cent of the total Kenyan population. Cash deposits made via mobile money agents reached US\$12.7bn in 2014 compared to US\$10.3bn in 2013 with total transfers growing by 24.7 per cent to US\$23.7bn from US\$19.02bn in 2013.

"Consumers are using the mobile money platform because it is faster, more efficient,

➤ safer and more transparent than using cash. It reduces risk of carrying cash," observed Dr Leora Klapper, a lead economist at the World Bank and a co-author of the World Bank Global Findex 2014 report.

Meanwhile, the transport and storage sector also registered a growth of five per cent in 2014 compared to 1.22 per cent in 2013. The value of goods transported by road rose by 15.2 per cent to US\$6bn in 2014.

Containers and commodities

Goods hauled by rails expanded by 24.3 per cent from 1.2mn t in 2013 to 1.5mn t in 2014.

The Port of Mombasa the main gateway to Kenya and beyond recorded an 11.3 per cent growth in cargo handled from 22.3mn t in 2013 to 24.9mn t in 2014.

Container traffic handled at the port stood at 1,012.0 thousands twenty foot equivalent units (TEUs) in 2014 compared to 894.0 thousands TEUs in 2013.

The Kenya bourse also recorded albeit slower than the previous times. The Nairobi Securities Exchange 20 share index rose from 4,927 points in 2013 to 5,113 points in December 2014. Value of shares traded shot by 38 per cent from US\$1.56bn in 2013 to US\$2.16bn in 2014.

Manufacturing, agriculture and tourism reported mixed fortunes in the 2013/14 period.

While the economy has continued to make goods for the domestic and exports market, the contribution of manufacturing sector to the economy has stagnated at 10 per cent.

The sector grew by a modest 3.4 per cent in 2014 compared to 5.6 per cent in 2013. Modest inflation was blamed for this performance.

"Kenya needs to increase the competitiveness of the manufacturing sector so that it can grow, export, and create much-needed jobs," Maria Paulina Mogollon, a World Bank Group expert and a co-author of a recent WB report on Kenya's economic performance.

Formal jobs in manufacturing however grew by 2.9 per cent from 279,400 persons in 2013 to 287,500 persons in 2014.

Overall, the Kenyan economy created 799,700 jobs in 2014 with the informal sector accounting for 82.7 per cent of total employment.

Total credit approved to financial institutions towards manufacturing projects rose by 30.4 per cent to US\$2.37bn. in 2014 from US\$1.82bn in 2013.

Exports of apparel to the USA under the African Growth and Opportunity Act (AGOA) grew by 24.4 per cent to US\$300mn in 2014

from US\$242mn in 2013.

Erratic weather and depressed global commodity prices have been blamed for the low performance in the agricultural sector growing by 3.5 per cent in 2014 compared to 5.2 per cent in 2013.

The value of marketed agricultural production at current prices declined marginally from US\$3.34mn in 2013 to US\$3.33mn in 2014.

Even with the low performance in the sector, horticultural exports mainly to Europe, Middle East and Asia continued to blossom. Coffee and tea production declined over the same period. Recent lifting of travel bans by European nations such as Britain and France on Kenya has become the silver lining of the dark cloud that is Kenyan tourism.

Insecurity along the Kenyan border with Somalia as well as along the pristine coastal beaches has led to a massive slump of the tourism sector since 2011.

International visitor arrivals dropped by 11.1 per cent from 1.52mn in 2013 to 1.35mn in 2014. This has contracted tourism earnings by 7.3 per cent from US\$940mn to US\$870mn over the same period. ■

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Building business in East African infrastructure

Construction chemicals company Chryso shows why Kenya's economy is a regional commercial centre



With the capability to service roughly 80 per cent of the African continent, Chryso products are readily available and can be transported to customers using the most appropriate mode of transport, road, air or sea freight

Kenya is one of sub-Saharan Africa's fastest growing economies, with a huge focus on infrastructure development in roads, railways, seaports, airports, water and sanitation. Cement sales in the East African region are equal to South Africa's cement sales and are currently growing at double digit rates annually. In a concerted effort to remain close to its customer base, the Chryso Southern Africa Group has established a subsidiary operating out of Nairobi, Kenya. The facilities are used as a base to supply

products to Tanzania, Uganda, Rwanda, Burundi and Ethiopia.

Trevor Sawyer, country manager of the new company, said, "Servicing customer needs is our primary driver and the establishment of Chryso Eastern Africa further underlines our strategy to further expand our footprint in Africa."

Increasing access to specialists

As a construction chemicals specialist, the Chryso Southern Africa Group continues to

implement plans that will see customers in Eastern Africa having direct and immediate access to both the entire product range as well as a team of technical product specialists. Comprising Chryso Southern Africa and a.b.e. Construction Chemicals, the Chryso Southern Africa Group has established a distributor network and distribution outlets across the African continent and Indian Ocean Islands.

"Through its market share and product performance, Chryso has been a leader in Southern Africa for its concrete and cement



An in-house laboratory in Johannesburg, where specialised mix designs are tested to determine the most appropriate solution for each project, is complemented by alliances with a number of concrete laboratories in various African countries

additives, while a.b.e. has been a major supplier of high performance systems and products to the building, civil engineering, maintenance and manufacturing sectors as well as builders merchants and hardware stores. As a combined force, the two companies have an enormous advantage when entering the African market as a one-stop shop," said Sawyer.

Sawyer is a qualified concrete technologist who has over 20 years of experience in the cement and concrete industries and has worked within the Chryso Southern Group for over eight years. He observed, "Kenya has shown impressive sales growth for the Group over the past nine years, so it made good business sense to solidify our presence in the country."

With logistic networks, warehousing facilities and clearing agents already established, Chryso Eastern Africa will now focus on building a manufacturing plant in the next year. Sawyer said, "Entrepreneurship, empowerment and decentralisation are a part of the Chryso Group's core values. We therefore do not want to establish a French or South African business in Kenya. Our vision is for Chryso Eastern Africa to employ Kenyan people, and to develop them to the standards that we maintain in the Chryso Group.

"We aim to have a competent local staff complement with an intimate knowledge of local conditions that can assist customers with troubleshooting problems on site, optimising mix designs, improving processes and precast turnaround times. Chryso Eastern Africa will therefore provide a service that provides best practice in concrete technology and allows us to become an integral part of our customers' businesses." ■

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Why Addis hotel prices are the highest

Ethiopia's capital heads the list of expensive places to stay, as its economy grows faster than the hospitality sector can build

A survey of prices of international grade hotels in selected major African cities, produced by hospitality research firm STR Global, reveals that Addis Ababa in Ethiopia is the most expensive place for a good night's sleep.

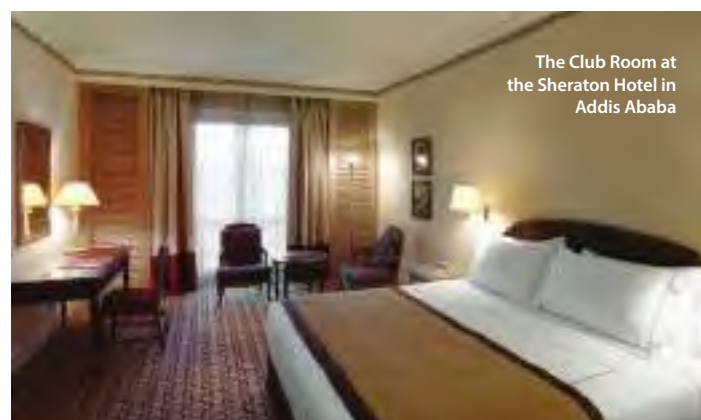
The average rate in US\$ (constant currency) for a hotel room in the first six months of this year in Addis Ababa was \$231.78/night. This compares with US\$215.75 for a room in Lagos, Nigeria, US\$144.76 in Nairobi, Kenya, US\$122.30 in Cape Town, South Africa, US\$105.73 in Casablanca, Morocco, US\$103.54 in Cairo, Egypt, US\$72.90 in Johannesburg, South Africa, and US\$70.70 in Sharm El Sheikh in Egypt.

When one notes that the price of a hotel room in Nairobi is almost double that in Jo'burg, and the room rate in Addis is 60 per cent more expensive than Nairobi, one is tempted to ask how prices can be so different. Thomas Emanuel, director of business development at STR Global, observed, "A great deal of the reason for the difference in rates across major African cities is simply supply and demand."

Addis Ababa has a shortage of top quality hotels. However, with the Ethiopian economy growing at a rapid rate of more than 10 per cent per annum for the whole of the last decade, with more conferences coming to the city by virtue of its status as the seat of the African Union and with Ethiopian Airways on a similar growth trajectory to the country, thanks to new routes and increased passenger numbers, there is a high demand for premium hotel rooms. By comparison, Johannesburg is a long-established, sophisticated international city, with a large number of 5* hotels and a competitive market for accommodation.

How hospitality has changed

Looking at how hotel prices have changed over the past year (year to date June '14-'15), there have been substantial rate rises in Sharm El Sheikh (up 42.5 per cent), Addis Ababa (up 14.9 per cent), Johannesburg (up 11.0 per cent), Cape Town (up 10.8 per cent), and Cairo (up 10.6 per cent). Whereas, there has been a recovery in Lagos (up 5.8 per cent),



The Club Room at the Sheraton Hotel in Addis Ababa



The Sheraton Hotel in Addis Ababa

whilst Nairobi is broadly the same and Casablanca has suffered a decline (down 4.0 per cent).

The increases in Sharm El Sheikh and Cairo can be explained as a recovery in tourism to Egypt, following several years of political unrest. Cape Town's improvement is due predominantly to increased demand and no recent increases in supply since the 2010 World Cup. In the face of the recent terrorism incidents in Kenya, Nairobi's hoteliers have chosen to maintain rates but they have suffered with lower occupancy. The rise in room rates in Lagos cannot be explained simply by supply and demand because there has been a combination of factors that would normally be expected to exert a downward pressure on price. First, there is a hotel development boom in Lagos with 3,611 new hotel rooms in the pipeline, according to W Hospitality Group, second, there has been a collapse in the oil price, which is damaging Nigeria's heavily oil-dependent economy and third, occupancy has fallen below 50%. The rate decline in Casablanca is due in part to economic weakness in France, its major source market and in part to currency fluctuations.

Discussing accommodation costs

At the 2015 Africa Hotel Investment Forum (AHIF), Thomas reported on year-on-year hotel performance in some of Africa's key markets and added further interpretation and analysis of the main trends. Matthew Weihs, managing director at Bench Events, which organises AHIF, which attracts major international hotel investors in Africa, noted, "The wide disparity in room rates with exceptional prices being achieved in places where there is a shortage of supply, make it clear that there are parts of Africa that offer very attractive prospects for hotel investors. The best way to gain a deeper understanding of this industry is to come to Addis and meet the people who are driving it forward." ■

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Adapting to risk, to benefit business

How financial services institutions are responding to financial crime, and what governments are doing to help

Financial crime is growing and not reducing. This is despite the well intentioned focus by regulators and financial institutions alike. Speaking in Johannesburg, South Africa, recently on global developments in financial crime, PwC global financial crime leader David Grace commented, "The burden on regulated institutions is growing and the need to improve the effectiveness and cost efficiency of prevention and detection systems within them continues to be a major effort."

Grace was speaking at a financial crime breakfast conference held with some of South Africa's leading financial services institutions, and how PwC is responding to them globally and regionally.

Skills and solutions

Financial crime can have a long-lasting effect on a company's brand and seriously damage its reputation. Grace points to examples where the UK and US regulators have sanctioned major banks and financial institutions that exceed billions of dollars for breaching policies and legislation.

A recent example is Paris-based BNP Paribas, which is facing five year probation for violating US sanctions resulting in a financial penalty of almost US\$9bn. This is not the first time a financial institution has been penalised for violating US economic sanctions, however, the penalty is the largest ever imposed in a settlement with regulators.

Globally, financial institutions are also facing a severe financial crime expertise talent shortage. There are not enough skilled people to detect financial crime.

Furthermore, organisations do not have sufficiently effective technological solutions and systems required to uncover improper and unlawful activity. The unintended consequences of financial crime are directly impacting the bottom line for many companies. The G20 is trying to address some of these issues and other challenges

“New rules and stringent enforcement of existing legislation and regulations are also assisting in protecting customers and reducing the impact of financial crime. However, good intentions can also have negative and unintended consequences.”

- Andrew Clark, EMEA regional financial crime leader for PwC.

facing financial services institutions.

"New rules and stringent enforcement of existing legislation and regulations are also assisting in protecting customers and reducing the impact of financial crime. However, good intentions can also have negative and unintended consequences," said Andrew Clark, EMEA regional financial crime leader for PwC.

The typical response to increased regulation by financial institutions has been to de-risk. "Rather than trying to manage risks more effectively, organisations are reducing their risk appetite. As a result, firms are moving out of some markets which are seen to be more riskier than others and are terminating some business relationships in an attempt to reduce their exposure to regulatory censure," Clark explained.

According to Clark, this has had an effect on certain groups such as charities and other non-government organisations struggling to receive funds that they require in order to provide aid to those less fortunate. The effect is also spilling over to firms that do business with banks, such as money service businesses, as banks impose bans on doing

business with them as a result of the increased risk. Furthermore, emerging markets are increasingly being cut off from the global correspondent banking network. He said that significant improvement is required in this area. Financial services organisations must reduce the risk of financial crime in an effective and proper manner. They must get to know their customers and manage the risks. In addition, systems need to be updated as money launderers continuously change their tactics to launder funds. Unless the anti-money laundering (AML) systems are regularly updated, banks and other financial services organisations run the risk of letting them stray into a state of unintentional non-compliance. Allowing this to happen can pose a big risk, as regulators impose hefty penalties and orders on banks. This is a concern for both banks and their auditors.

Different businesses, crossing lines

The banking system is not the only way in which money laundering and other illicit activities can take place across borders. Trade-based money laundering - the use of international trade to move value across borders in the form of goods or commodities to disguise the origins of the criminal proceeds - is commonly used by money launderers to move billions in illicit funds across borders. However, detecting trade-based money laundering can pose a significant challenge for law enforcement officials. But if big data analytics are used correctly they can be an effective tool to detect trade-based money laundering and other forms of illegal financial activity, said Vickas Agarwal, a PwC Leader in the advanced risk & compliance analytics practice. "Financial institutions can develop a single view of a customer's risk by using big data technology rather than having separate databases in different lines of businesses spread across different jurisdictions." ■

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Making a new mark in printer markets

Why the latest inkjet technology challenges the business prospects for laser printer manufacturers and distributors

When it comes to printing, particularly colour printing, laser has always offered a better quality and has traditionally been a more cost effective option. While inkjet printers themselves cost very little in terms of capital outlay, replacement ink has always been a significant expense, raising the cost per page of printing. In addition, inks have also been prone to running and fading, which has reduced the overall quality of inkjet prints. However, new inkjet technology is beginning to change this perception, offering lower cost per page, more affordable consumables and improved quality, making it once more a viable option, particularly in the Small to Medium Business (SMB) market.

Tailor technology to tasks

Choosing an inkjet printer can be a daunting task, as there are many different options on the market. The right printer for the job depends entirely on the requirements of the user or user group. Entry-level units, which are the ones that can be purchased for a few hundred Rands from many retailers, require the lowest capital outlay. However, they typically make use of a tri-cartridge system, which means essentially that all three ink colours (cyan, magenta and yellow) are contained in a single cartridge. While this is cheaper to purchase, it means that the entire cartridge must be replaced when one colour is depleted. This solution may be sufficient for a home user who does not require a large volume of colour printing, as black ink is housed in a separate cartridge and can be replaced more economically.

For business users or those who require higher volumes of colour printing, it is advisable to purchase a higher specification printer that offers single ink cartridges. This ensures that only the colour that has been depleted must be replaced, which enables users to leverage a lower cost per page. In addition, extra large cartridges are available which offer a higher page yield at a reduced cost per page, further

adding value. This higher ink capacity puts business inkjet printers on a par with lasers, for a reduced capital outlay, making them an attractive option.

In addition to high yield ink cartridges and single ink technology, other advances to inkjet printers have made them increasingly suitable for the business market. Printer manufacturers have taken heed of the needs of the SMB market and have designed printers specifically to cater to their requirements. These new devices offer superior quality, fast and reliable printing for higher volumes of pages per month and competitive pricing to meet the needs of this budget-conscious market.

Focus on business

Business-focused inkjets are available as single function printers or multi-function devices, offering monthly page volumes of up to 1,500 pages per month, time to first print in as little as seven seconds, and fast print speeds of up to 23 pages per minute in black and white, and 15 pages per minute in full colour. In addition to these specifications, new ink technology improves print quality, offering water, friction and marker resistant prints.

While ink has in the past been considered a printer technology solely suited to the consumer, and laser as the business tool of choice, these new technological developments are shaking up the printer market. Inkjet printers remain a more affordable capital expense, and with the cost per page becoming more affordable, the total cost of ownership of an inkjet has been subsequently reduced. In addition, business-focused inkjet printers can now offer comparable speeds and improved print quality, making them a viable alternative to the laser printer, particularly in the SMB market.

Heinrich Pretorius, Canon product specialist at DCC

Canon's Maxify MB5350 and MB5050 business inkjet all-in-ones.

Canon's Maxify MB5350 and MB5050 as part of the initial lineup of the Maxify series, a brand of business multifunction inkjet printers. Delivering high-speed output performance, the Maxify MB5350 and MB5050 each employ a printhead and an efficient paper-feed system that was newly developed specifically for the Maxify series, making possible exceptional productivity in response to the needs of business users. Furthermore, the two inkjet printers offer



Canon's Maxify MB5050

symmetric, simple body designs with an exterior colour that is well suited to a variety of office environments and feature compact body designs enabling installation even in small-scale offices with limited space.

Canon's Maxify-series inkjet printers have garnered high acclaim for their exceptional designs, earning a spot among the Good Design Award 2014: Best 100 (Japan), as well as being selected for a 2015 iF Design Award (Germany) and 2015 Red Dot awards.

Advancing applications to make more money

Technologists and communications professionals discover innovative ways to increase mobile network revenues at AfricaCom 2015

African mobile network operators (MNOs) is playing a significant role in mobile application development, and not only with applications aimed at improving the user's social media experience. Rather, Africa-centric applications (or 'apps') are aimed at making a positively tangible intervention in the daily lives of people on the continent.

Advanced and Afrocentric apps

Many areas in Africa are less advanced in terms of telecommunications infrastructure of the so-called 'established' world. This shortfall has inspired a rush to create and deploy mobile applications to fill some of the crucial societal needs that people living in developed countries take for granted. M-Pesa - the mobile money App - is a good example. In Africa many people do not have easy access to a bank, M-Pesa allows users to send and receive money via their cell phones. This means people do not have to travel for hours to get to a bank, and they do not have to risk carrying around cash. Another simple yet ingenious - and typically 'Afrocentric' - application that directly improves people's lives is called iCow. This app sends relevant, up-to-date information to subsistence dairy farmers who own only one or two cows. The information helps them to increase their milk yield, keep their livestock healthy and sell their excess supply.

Due to the significance of the app industry to the continent, 'Apps World Africa' will once again be an important focus at the 2015 AfricaCom conference. Senior producer at Apps World, Katie Bilton, said, "Apps World Africa is the place to be on 17-18 November for anyone with an interest in this pioneering industry. Our conference agenda is jammed packed with the latest content for developers, entrepreneurs and start-ups to learn and expand their knowledge, including a free Android coding lab and building an app in the quickest amount of time possible using

the smallest amounts of data, an important consideration across the continent."

Over two days, Apps World Africa 2015 reflects on the incredibly rich and diverse market that Africa has now become. The show develops year on year to show the impact that Cloud and IOT is now having on the developer community of South Africa. Run in partnership with Silicon Cape and with the longstanding support of Google it is the premier showcase of developers in sub-Saharan Africa. The event showcases case studies from leading African developers, telcos, OEMs, brands, app stores and social media platforms. Co-located with AfricaCom, which is focused on the future of Africa's digital economy, Apps World Africa is regarded as amongst the most influential meetings of its kind in the region and an opportunity to meet all the leading figures from the community.

Developing connectivity businesses

Issues around how to effectively monetise apps, increase the return on investment (ROI)

and strengthen business models, will be key discussion topics, said Bilton.

"Other topics will outline some of the mistakes made by developers when optimising their apps; how to provide security to prevent hacking sensitive data; and how to customise their approach for different platforms and how developers and MNOs can work together," she said.

Panelists for these sessions include experts in the industry such as: Su Kahumbu, Founder, iCow; Ethel Cofie, Founder, Women in Tech Africa; Andrew McHenry, Co-Chairperson, Mobile Monday Johannesburg; Alon Lits, Uber's General Manager in Sub-Saharan African; and Sebastien Crozier, Orange.

The sessions will take the form of round table and panel discussions.

New ways of networking

They say the proof is in the pudding and in 2015, AppsWorld Africa's own networking App will assist developers connect with like minds and make valuable contacts. ■

Africa's mobile money advantage

Mobile Money - or making payments via your cell phone - is becoming the great differentiator in African societies, to such an extent that it has evolved into a tool for wider economic inclusion and social enablement.

Sub Saharan Africa currently hosts 52% of all live mobile money deployments worldwide. This statistic clearly shows a significant need for quality mobile financial services within the African - and global - society. It's this need that has created the huge business opportunity for Mobile Money. A handful for African operators have led the way in addressing these societal needs by developing interoperable services. At the same time they've leveraged a broader reach to customers and built a robust business from their mobile money verticals.

At AfricaCom 2015, the continent's largest Telecoms, ICT and Tech event, delegates will have the opportunity to engage with expert speakers discussing the key issues embodying the direction and evolution of this pioneering industry.

Adam Thompson, Africa and Middle East, Com World Series head of content, said, "High level representatives from all the leading companies in the mobile money business will be speaking at AfricaCom in the Mobile Money stream. Along with all other tier one operators they will be focusing on many themes, including interoperability during the continent's most focused and relevant meeting for professionals in mobile financial services."

Next stop on a new North African network

Yacine Ghanes, network deployment director at Algerian operator Djezzy, talks about the arrival of 3G on the Algiers Metro

The three Algerian mobile phone services, Djezzy, Mobilis and Ooredoo, are now available on the Metro line in Algiers. The official launch of 3G on the underground was marked by a ceremony in late May at the General Post Office with the Minister for Transport, the Wali of Algiers, the CEO of EMA, the Director-General RATP el Djazair, representatives of the Ministry of Post and ICT as well as representatives of the operators. Thanks to this installation, users of the Metro will be able to easily communicate, send SMS messages and surf the Internet while travelling on the subway.

Building out from the core

A team managed by Yacine Ghanes, network deployment director in the Djezzy-Vimpelcom group, was responsible for the deployment of the 2G and 3G in the Metro. Ghanes collaborated with the access network, transmission team, core network and operations and maintenance team. "The project started in 2007 in order to prepare our technical solutions to install 2G coverage for 10 stations and the tunnels," says Ghanes. The goal was to launch the 2G service after the commercial launch of Algiers Metro; the underground system itself was finally inaugurated on 31 October 2011.

Public transport is under pressure in Algiers, with census figures showing that the population has swollen from 2.1mn in 1998 to around 3.6mn in the urban agglomeration in 2010. An extension to the tramway is ongoing, with the current system capable of shifting between 150,000 and 185,000 people each day (or 6,800 passengers per hour in each direction). Open from 5 am to 11 pm, the new Metro is holding up well. The line can move 41,000 passengers per hour, which is the equivalent of 150mn passengers per year.

Now a huge success, the complicated story of the Algiers Metro reflects the country's troubled recent past. Construction first began in 1982, but work came to an abrupt end after the economic crisis caused oil and gas prices to collapse (Algeria is the world's fourth-largest exporter of natural gas), with a decade-long civil war bringing further delays. Now, Algiers is only the second capital city in Africa - after Cairo - to have installed a metro system. The final cost stands at an estimated 90bn dinars (US\$1.2bn; £750mn); single tickets are priced at 50 dinars (US\$0.67; £0.47).

Stages and sections

There were several stages to the 3G project. From 2007, a number of meetings were held with the Metro directors to understand their requirements. Technical solutions were submitted for validation to the Metro Company. At the start of 2010, the Metro Company requested that the three mobile operators share the passive telecom infrastructure and, as Ghanes recalled, "install an RF leaky cable on the tunnels, which was a very interesting proposal allowing a significant

The opening of the new 3G communications network for the Algiers Metro



decrease on the CapEx and the visual impact". Ghanes' team connected RAN equipment in each station through an optical fibre provided by the Metro. With this, and hybrid aggregation equipment operating via time-division multiplexing (TDM) and IP, the capacity needs of the base transceiver station (BTS) and Node B equipment could be met. "At the last station of the Metro network, we connected the optical fibre edge to our own network Over-the-Air through microwave or MW links," explained Ghanes.

Equipping for operation

Huawei, ALU and RFS as suppliers and France's Eurl Haddad as a local subcontractor, were closely involved. More specifically, Huawei supplied and installed the single RAN equipment and the backhauling equipment; ALU supplied and installed the hybrid aggregation equipment (TDM and IP); and RFS supplied and installed a leaky cable covering the tunnels, via a local partner. Eurl Haddad managed carrier wave (CW) preparation for four stations out of the 10.

"The first major challenge of the rollout was to share and agree on a technical solution with the two other mobile operators, because we weren't used to sharing this kind of installation," says Ghanes. The company aligned its processes, to respect the Metro Company Security rules. Another issue was that the deployment had to be carried out during the night, well outside of working hours. It was necessary for the team to be highly flexible during this years-long project, adapting to changes and new requirements desired by the client as conditions altered along the way. ■

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Key remanufacturing firm offers specialist reman facilities for marine diesel engine components

Metric Automotive Engineering's modern, well equipped facilities were recently boosted with the commissioning of one of the largest crankshaft grinders put into service in Africa



Remanufacturing enormous marine diesel engines requires a specialist remanufacturing facility that is equipped with machinery to accommodate these extraordinarily large components. But this in itself is not sufficient, according to Andrew Yorke, operations director at Metric Automotive Engineering (MEA), who explained recently that using the latest technology is only one of the factors that will ensure a quality remanufactured component.

Yorke said, "Most importantly, a remanufacturing facility must have the technical competency to be able to use the

technology appropriately and this must be supported by best practice quality procedures that underpin the standard of the workmanship and offer the customer complete peace of mind."

A reputation for remanufacturing

Metric Automotive Engineering has over 45 years' experience in the large diesel engine component remanufacturing sector and has a solid reputation for meeting or exceeding OEM specification on remanufacturing dimensions. Yorke says that the quality of workmanship is critical as it can affect the

operational life of the component and the engine itself. Significantly much of the work undertaken by the company is repeat business which underpins its commitment to producing exactly what it claims to – a quality remanufactured component that will perform reliably.

The company's modern, well equipped facilities were recently boosted with the commissioning of one of the largest crankshaft grinders put into service in Africa and the commissioning of a new generation three axis CNC machining centre which is the only machine of its kind in Africa.

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The enormous crankshaft grinder can easily handle shafts of up to 4.7 metres long with weights of up to five tons. This machine is paired with a set of compensators which dramatically improves the grinding tolerances achieved by helping to eliminate ovality and taper. In addition to the crankshaft grinder which is now in service, a unique custom built crankshaft polisher, with a shaft capacity of 8 metres, will be commissioned during the third quarter of 2015. This will facilitate quicker turnaround times on crankshaft polishing as well as an improvement on journal surface finishes.

The new CNC machining centre, which has added capacity for Metric Automotive Engineering to handle the huge engine blocks found in the marine and railways sector, is capable of line boring, surfacing and blue-printing blocks over six metres in length.

Quality is assured at the Metric Automotive Engineering facility which is considered one of the most comprehensive ISO 9000:2000 accredited remanufacturing capabilities in Africa. While the company is able to refurbish large diesel engine components and offers services such as cylinder head remanufacture, cylinder block line boring, milling, honing and boring, camshaft grinding, crankshaft grinding, engine assembly and dynamometer testing, it is also able to salvage major components that would otherwise be rendered unserviceable.



The new CNC machining centre, which has added capacity for Metric Automotive Engineering to handle the huge engine blocks found in the marine sector

Investing in quality for customers

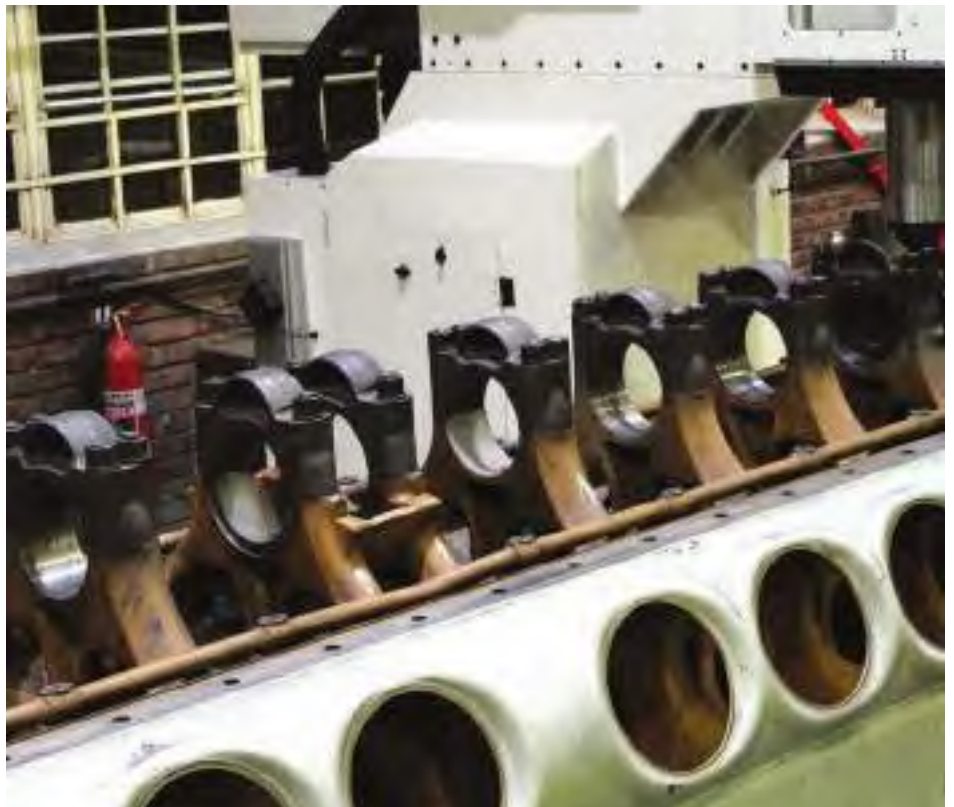
Continued investment in best practice technology has positioned Metric Automotive Engineering to service customers across Africa and in industries which need access to quality remanufacturing operation such as the marine sector.

“Some companies believe that diesel

engine component repair or remanufacture can only be done properly in Europe or America. This is not true. We have facilities and competencies that are comparable to anywhere in the world. In addition, it is far more cost effective to carry out such repairs or remanufacture locally due to the exchange rate,” he concludes. ■



The enormous crankshaft grinder at Metric Automotive Engineering can easily handle shafts of up to 4.7 metres long with weights of up to five tons



The new CNC machining centre is capable of line boring, surfacing and blue-printing blocks over six metres in length

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New ways of navigating road networks

How one company has streamlined fleet management with a new GSM and GPS interface

Fleet owners can ensure more efficient management and performance of their vehicles through a recently-launched fleet management interface solution developed by top asset management solutions provider QCIC, and satellite navigation technology developer and global positioning system (GPS) manufacturer Garmin. The fleet management interface involves the linking of a Garmin navigation device to QCIC's flagship QIC-FLEET solution, to enable fleet owners to effectively and affordably manage numerous variables related to the location and performance of individual vehicles and equipment by transmitting relevant data on the GSM network, via a preferred network partner.

According to QCIC director Brian McKenzie, the interface provides substantially improved communication and vehicle management in an interactive manner through a Garmin navigation device. He said, "Any newer model Garmin GPS unit can be effortlessly connected to the QIC-FLEET device via a fleet management interface (FMI) connection cable."

This interface provides measurable value to numerous industries, including; couriers, meter taxis, towing companies, emergency services and businesses that are heavily reliant on travelling sales representatives. McKenzie said, "The interface provides two-way communication to ensure that a central control room can clearly communicate with the driver of any specific vehicle in the fleet."

Improving communication

What's more, the QIC-FLEET/Garmin interface enables the user to track the exact location of any vehicle at any given time. Through this improved communication channel, the Garmin GPS unit informs dispatch on the estimated time of arrival (ETA) of the vehicle, and the parcel or load that it may be carrying for delivery to a site. It also gives employers the flexibility to employ people that may



The QIC FLEET fleet management system

show potential, but do not necessarily have a good knowledge of certain areas or regions, as the Garmin interface will guide the newly appointed representative to the exact sales area. "The ETA is updated in the software every two minutes in order to ensure accurate and near real time updates. As part of this two-way communication, the QIC-FLEET device 'replies' to the Garmin GPS unit and provides the driver with detailed travel information, and plots the entire day's journey according to the most efficient routes for each destination," he said.

Working with information

The QIC-FLEET/Garmin interface also boasts the ability to pre-plan a route for the following working day. McKenzie said, "While the vehicle is standing stationary overnight, the interface is able to load the next day's business or sales calls onto the Garmin GPS unit for the sales person to start their navigation the next day upon entry of the vehicle."

Should the driver wish to decline any of the predetermined stops, a message is sent via QIC-FLEET informing dispatch that the destination has been declined, thereby enabling accurate tracking of all deliveries and work that is being done. Upon accepting the destination point, the Garmin GPS unit guides the driver along the most suitable route to the sales area.

Another major benefit of the QIC-FLEET/Garmin interface is the fact that it alerts dispatch when the driver reaches a destination, in addition to recording the amount of time spent at the destination, and the time of departure.

McKenzie noted, "This value added feature ensures that management is able to determine whether the driver is utilising time to maximum efficiency and productivity. With rising fuel and toll costs, together with increased traffic volumes, the interface also assists companies in determining the most cost effective routes. It also provides a record of the driver's driving habits, and costly habits such as speeding, over-revving or harsh braking can be identified and rectified within a short timeframe."

Network coverage

Companies utilising the QIC-FLEET/Garmin interface are also covered during cross-border journeys by transmitting relevant data on the GSM network, via a preferred network partner. Sub-Saharan Africa is well-covered by the GSM network. McKenzie observed, "This ensures that the interface is able to supply clients with sophisticated GSM solutions through preferred network relationships and deliver near real-time data to the end user, even when a vehicle is thousands of kilometres away."

McKenzie is confident that the QIC-FLEET/Garmin interface will gain measurable market share moving forward. He believes there is potential for considerable future growth particularly within the insurance industry. He said, "As all information is captured and recorded, it eliminates the complexities related to hearsay from parties involved in an incident. Garmin has added camera technology to the interface and in the near future clients will be provided with a clear and more comprehensive visualisation of what is happening inside and outside the vehicle." ■



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Taking to the roads with Taraxagum

Pioneering research project indicates dandelion rubber is economic as well as ecological



International tire manufacturer Continental has reached an important milestone in its research project for the industrialisation of dandelion rubber in tire production. In the fall of last year, Continental presented the first test tires in a limited series made from the innovative material that the company is calling Taraxagum, derived from the botanical name for dandelion (*taraxacum*). Manufacture of the first WinterContact TS 850 P with tread made entirely of natural rubber from dandelion roots has taken Continental an important step closer to reaching its long-term goal of making tire production more sustainable and less dependent on traditional raw materials.

"After several years of intensive development work together with the Fraunhofer Institute, we are excited to be taking the first dandelion tires onto the road," said Nikolai Setzer, member of the executive board of Continental responsible for the company's tyre division. "To get the most meaningful test results from the crop yield produced by our research project to date, we decided to build car winter tires, as they contain a particularly high proportion of natural rubber. We are continuing to pursue the goal of developing tires based on dandelion rubber to readiness for series production within the next five to ten years."

The development process

Continental has the Contidrom proving grounds north of Hanover at its disposal for extensive tests under summer conditions. However, the first winter car tires with dandelion rubber tread will be tested at Continental's test site in Arvidsjaur, Sweden, where the company traditionally tests the performance of its future products under winter conditions from December to April.

"The development process of Taraxagum has been very promising so far and we are currently continuing the industrialisation process

together with our partners," remarked Dr Andreas Topp, head of material and process development and industrialisation for tyres at Continental. "We are very confident that the results achieved with the test tires to date will be confirmed, and that we will meet our performance targets."

As a result of extensive research conducted together with the Fraunhofer Institute for Molecular Biology and Applied Ecology (IME), the Julius Kühn Institute, and the plant breeding company Aeskulap, in the past few years good progress toward cultivating a very high-yield and robust kind of Russian dandelion has already been made.

The long-term goal of the research project is to find an ecologically, economically and socially viable response to the increasing demand for natural rubber. This would ease the pressure on the traditional rubber tree plantations in the tropics. Additionally, the aim is to reduce dependency on natural rubber which can be subject to severe price fluctuations on the commodities exchanges. Moreover, cultivating dandelions on previously unused land in temperate regions would sustainably reduce logistics costs and the transport-related burden on the environment.

Cultivation and industrialisation

The dandelion-based rubber called Taraxagum obtained from the root of the Russian dandelion is being developed by Continental and its partners as an alternative to the traditional cultivation of natural rubber. The project cluster being lead-managed by Continental also includes projects funded by the German Federal Ministry for Education and Research, Nutrition and Agriculture. In May 2014, the RUBIN industrialisation project being funded by Continental was honoured with the 2014 European GreenTec Award, an environmental and business prize, in the Automobility category. ■

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African energy comes of age

Cenpower Generation CEO Theo Sackey talks to African Review about the Kpone Independent Power Plant (KIPP), a landmark US\$900mn energy project at Tema in Ghana

The Kpone Independent Power Plant (KIPP), a landmark US\$900mn energy project being built at Tema in Ghana, is an indication that African energy has come of age. The Lagos-based Africa Finance Corporation (AFC) is the lead project developer, and largest equity investor in the project company, Cenpower Generation Company Limited (Cenpower), a Ghanaian special purpose vehicle. Cenpower is managing the construction of the plant.

An innovative IPP

The Kpone power station project represents a number of firsts for the African energy sector. It is the first independent power producer to be licensed in Ghana and is the largest IPP to be built in sub-Saharan Africa in the last decade.

In addition, it is a majority African private sector venture with key international partners, but unusually for a multi-million dollar African venture there is no involvement of the Bretton Woods institutions – the World Bank, International Finance Corporation or International Monetary Fund. Instead, it is principally an African funded initiative. The founding shareholders are Ghanaian; the construction company, Group Five, is African; and African companies hold 67 per cent of the equity involved – with 83 per cent of senior debt issued by African lenders. For these reasons, it is widely viewed as being a pioneering African initiative.

“The Kpone power station project represents a number of firsts for the African energy sector: it is the first independent power producer to be licensed in Ghana and is the largest IPP to be built in sub-Saharan Africa in the last decade”

The Kpone IPP is to be located roughly 600m from the coast, adjacent to where the West Africa Gas Pipeline comes ashore. Its proximity to the ocean will allow the use of seawater for cooling. As well as the 350MW Combined Cycle Gas Turbine (CCGT) generating plant itself, also under construction is a 161kV sub-station with a total evacuation capacity of over 1,000MVA. Like any major infrastructure project, it has not only taken much time in



Cenpower Generation CEO Theo Sackey

preparation, but is going to take multiple years to build and become operational. Theo Sackey, Cenpower's chief executive puts the target date for construction completion at September 2017, with commercial operations beginning, after testing, in the fourth quarter of that year.

“We're using equipment from key international Original Equipment Manufacturers (OEMs)” Sackey confirms. “the gas turbine and generators are from General Electric (GE), the steam turbine from Siemens, the heat recovery steam generators from NEM, etc. – they are all now being manufactured and will be ready soon to be shipped to site.”

The turbines are designed to use multi-fuel stocks, initially to operate on crude oil and distillate and then on natural gas, as supplies are secured.

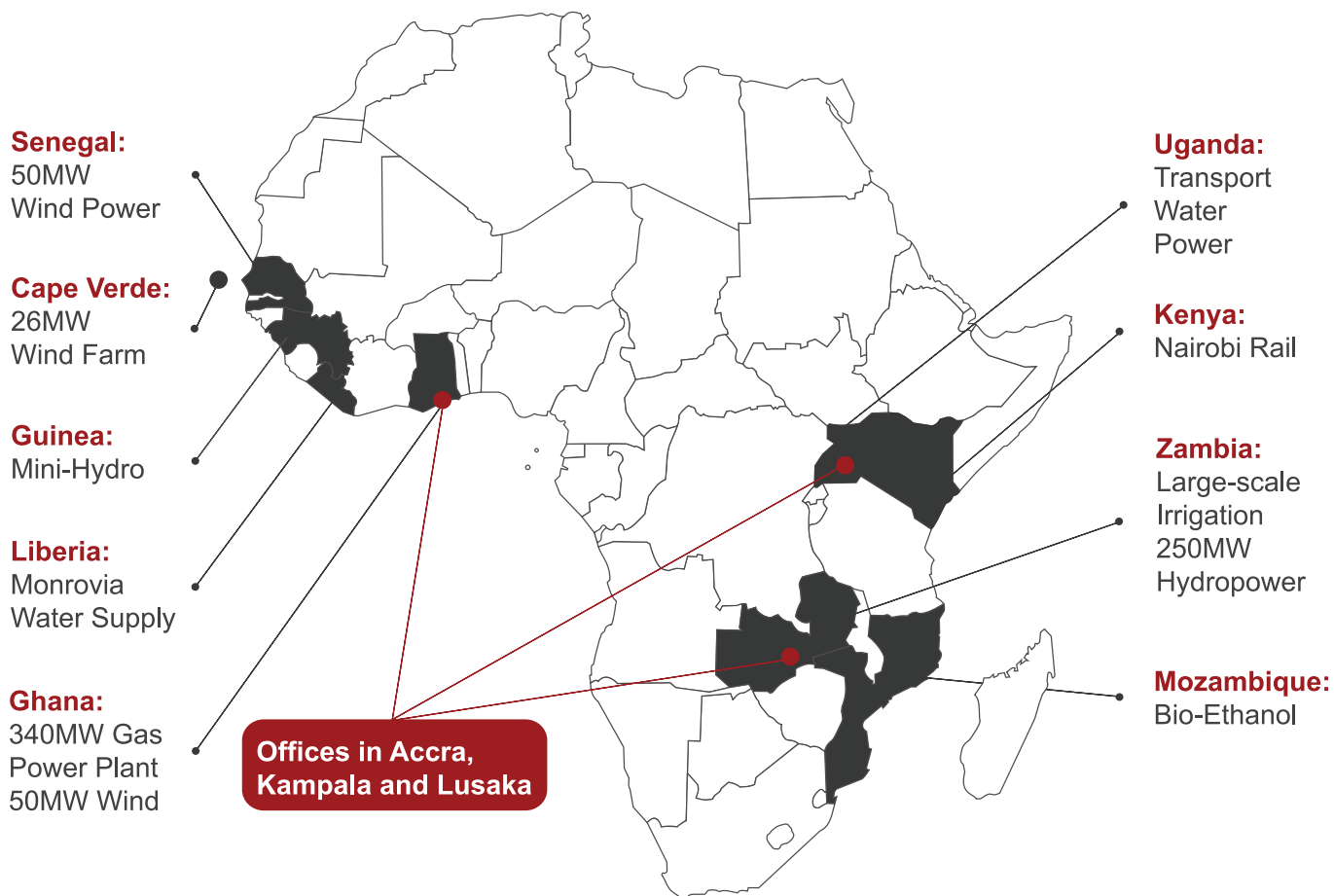
“We are in numerous discussions and conversations with different gas suppliers,” Sackey says, “just to make sure we will have gas – if not at the end of 2017 when the power plant is commissioned, then no more than a year after – we have met with



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➤ all the sub-regional suppliers, Ghanaian and Nigerian, and we are now in discussions with a number of people to provide LNG."

Interesting perspectives on infrastructure

Essentially, Cenpower will build the infrastructure that will allow the project interconnect to the West Africa Gas Pipeline facility, but that same infrastructure could be used to accept other sources of gas.

Sackey said, "Right now what is happening is that all the available gas that is being produced in Ghana by the Jubilee oil field is going to the Volta River Authority." The Volta River Authority is the national power generation monolith which owns and operates a number of power plants, including hydro, thermal and solar.

Sackey has some interesting perspectives of the country's future power demand and how Kpone has a key role in meeting Ghana's needs.

"Right now, Ghana is going through a painful and costly load-shedding period. The current total power demand for the country, taking into account all the suppressed demand etc., is I believe over 2,600MW. Total installed supply is about 2,800MW with over 50 per cent being hydro.

"We will add 350MW for the current demand of about 2600MW, so we would add about 13 per cent of the demand, when we start operations in 2017. We understand that the demand growth is at about 6 to 7 per cent. It has been growing at this rate for more three decades, dating back to when Ghana started its Economic Recovery Program in the eighties. The demand is largely driven by economic growth with people demanding more power. Currently it

is indicated that about 70% of the population has access to electricity. But there's another 30% of the population that has absolutely no connection with the grid. Ghana has been implementing a structured electrification plan since the nineties which is aimed at electrifying the entire country by the year 2020. Currently, the national transmission grid covers the entire length and breadth of the country with a few unconnected places close to the grid, but lacking the sub-transmission and distribution facilities for the last mile connection.

"And if you look at Ghana with a population of 25 million people having an installed capacity of 2,800 MW, it is a tragic situation, a paltry 0.1kW/person. Compare that with say South Africa with approximately 50,000MW for its population of about 50 million people; ie 1kW/person. And even that is not enough with the country suffering severe shortages. It gets worse when you compare our situation with countries in Europe and other developed countries. The metric for a country like Spain is over 2kW/person. The Ghanaian situation is reflective of the African situation. I understand the whole sub-Saharan Africa, ex South Africa, with a population of over 800 million, consumes approximately the same amount of electricity as Spain, with its population of about 47 million!"

So there is certainly the need for additional energy capacity in Ghana, as in the rest of Africa, but the sticking point is usually in securing the appropriate finance for new power plants

Money matters.

The chief executive of the AFC, Andrew Ali, under whose watch the Kpone IPP has taken shape, is on record as saying that in Africa, for



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eleQtra's special success

Under its contract as Principal Developer of InfraCo Africa and funded by the PIDG, eleQtra has spent US\$10mn and nearly ten years developing the Kpone power plant.

In addition to this ground-breaking project, eleQtra is active across multiple stages and sectors of the development and construction process to bring vital infrastructure to developing economies in Africa. eleQtra does this on its own, through its relationship with InfraCo Africa and the PIDG and with other partners.



eleQtra has delivered success in multiple sectors

eleQtra's staff includes over 25 professionals covering engineering, legal, financial and project management with fluency in multiple languages. All are dedicated to the services eleQtra provides and the values it embraces, and this diversity allows the company to offer local services in most regions of Africa, from French speaking West Africa to

Portuguese speaking Cape Verde and Mozambique. Most of eleQtra's specialists in the development teams each have in excess of fifteen year's experience in their chosen fields, mainly gained in sub-Saharan Africa.

Success in this industry requires tenacity and a broad set of skills including; the negotiation of satisfactory engineering, construction, fuel/feedstock supply and off-take contracts, securing required government permits, raising debt and equity financing and completing construction on schedule and within budget. These are the characteristics and skills that eleQtra's team has been built upon and that has allowed it to deliver success in sectors ranging from ferry service and irrigation to wind farms and large-scale combined cycle power plants like Kpone.

► an infrastructure project, five to 15 per cent of development costs can be attributed to raising finance.

In Kpone's case, finance was arranged last year with a consortium of South African commercial banks (RMB, Nedbank and Standard Bank); African and International development finance institutions (FMO, DEG, EAIF, OFID, DBSA and IDC) and institutional investors, including Africa Finance Corporation (the lead arranger; Sumitomo Corporation of Japan; African Infrastructure Investment Managers; FMO, the Dutch development finance institution; as well as the local founders of the project.

In the latter case, the chairman and founder of Cenpower, Samuel Brew-Butler said: "We are constructing a state-of-the-art power plant that will increase Ghana's energy supply and facilitate the country's economic growth.

"Our plan to become the country's leading private sector electricity company by working with world-class partners. It is our mission to develop a commercially viable thermal power plant to supply electricity to our off-taker, in a safe and environmentally sustainable manner"

That mission has a certain urgency, for as Sackey points out: "One of the reasons why there is so much poverty in Ghana and one of the reasons why the economy is in such difficulties is the fact that Ghana doesn't have adequate energy sources to fuel industrial activities, and everybody understands that.

"One of the key problems Africa has, that Ghana has, is that we don't have enough sources of adequate electricity. Of course, we do have the raw material. We have the sun, we have the oil, we have the waterways and hydro resources, we have the wind, we have everything – but these resources in themselves do not a

“ The fact that we have been able to demonstrate the commercial viability of the project... demonstrates that African energy has come of age.”

– Theo Sackey, CEO, Cenpower Generation

project make! You need to have technology to exploit the resources. You need to have the technology and know-how to maintain and to deliver reliable electricity supply with the resources available. Above all, you need to have the money to acquire the technology and the ability to structure, develop and manage the projects"

Getting the Kpone project off the ground presented serious structuring and development challenges. "We have one client, the Electricity Company of Ghana, but lenders would not advance the money project unless we could demonstrate, in fact guarantee, that we can sell the power and be commercially viable to repay their debt.

That was the single most critical challenge. The fact that we have been able to demonstrate the commercial viability of the project to lenders and have also been able to attract a blue-chip international company such as Sumitomo Corporation of Japan to invest alongside AFC and our Ghanaian and South African partners, truly demonstrates that African energy has come of age." ■

Stephen Williams

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Making projects work with power products

Energy equipment enterprise Zest WEG offers critical considerations with respect to genset utilisation

The current power constraints facing South Africa and Africa have resulted in companies being requested to cut their power consumption by at least 10 per cent in order to alleviate the pressure on the overburdened transmission and distribution infrastructure. This appeal will, of necessity, result in companies seeking alternative power sources to accommodate the energy requirements shortfall.

However, there is an apparent lack of understanding of the many issues surrounding standby power. As Craig Bouwer, sales engineer at Zest WEG Group's Generator Set Division, said recently, "Companies are generally unaware of how to assess the standby power requirements of a facility or building. By implication, this suggests that companies are also often unaware of what the optimal solution for a given application should be."

The Zest WEG Group supplies low, medium and high voltage electric motors, variable speed drives, softstarters, switchgear, transformers, MCC's, containerised substations, diesel generator sets and co-generation and energy solutions as well as electrical and instrumentation engineering and project management services in Africa.

The group is the South African-based subsidiary of global motor manufacturer, WEG. Group companies include Zest Electric Motors, Shaw Controls (local manufacturer of MCC's and containerised substations), Generator Set Division, EML (Electric Motors), Zest Energy (Integrated Power Generation, Co-Generation and Energy Solutions) and EnI (electrical and instrumentation contractors).

The Zest WEG Group operates a strategically situated network of branches and distributors offering pre- and post-sales support as well as parts supply throughout Africa.

Solutions and applications

A standby power solution is an important capital expenditure decision that needs to be considered carefully in terms of the



The containerised generator sets for Liqhobong Diamond Mine in Lesotho incorporate a collapsible snow roof which when deployed on site prevents the build-up of snow and subsequent blocking of louvres

company's overall requirements. Moreover, the supplier needs to have the necessary technical expertise and relevant experience to offer a customised solution. A key consideration for a standby power solution is to understand the environment in which the generator set has to function.

Original equipment manufacturer Zest WEG Group's Generator Set Division has a dedicated facility in Cape Town, South Africa, and offers generator sets ranging from 20kVA units up to 250kVA off-the-shelf products, 300kVA to 2,000kVA individual customised units as well as multiple sets to achieve turnkey solutions in excess of 12MVA for large-scale applications or projects. The company has supplied a large number of bespoke generator set solutions based on the specific application and environment in which they operate.

"A couple of recent examples include the containerised three-generator unit we designed and manufactured for DRA Minerals' Liqhobong Diamond Mine in Lesotho and a turnkey power station for AVI

Group's Indigo Brands. At Liqhobong, we designed a generator set container with a collapsible snow roof. When the roof is collapsed it facilitates easy transportation and once deployed on site prevents the build-up of snow on top of the container, and the subsequent blocking of the louvres," said Bradley van der Spreng, project engineer at Zest WEG Group's Generator Set Division. The scope of supply on the Indigo Brands project comprises three 1,000kVA generator sets and three 1,000kVA transformers.

"What makes this project unique is that Zest WEG Group's Generator Set Division is designing a custom-built distribution system and electrical panel for synchronisation. The company is also supplying a 23 000 litre bulk fuel storage system to support this installation" added van der Spreng.

Setting up systems

The successful implementation of these projects hinges on the company's ability to determine potential solutions for the customer. Amongst these are consideration



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for sound restructuring methods, fuel systems, electrical reticulation and interfacing, the load and the duration that this load is required to be powered.

"The type of load and the total power drawn should be measured by a qualified team from the generator supplier prior to recommending a particular diesel generator set. Following this, accurate load calculations can be carried out and a suitable system recommended. We look at the entire electrical infrastructure and not just the generator set itself. In this way we are able to recommend the power rating of the generator set," said Bouwer.

Another area where Zest WEG Group's Generator Set Division's experience comes to the fore is its knowledge of local regulations pertaining to different metropolitan areas. Regulations also differ with regard to the particulate levels of diesel fuel storage and sound decibel levels related to noise attenuation. In order to disseminate relevant



A view inside a containerised generator set from Zest WEG Group's Generator Set Division

and important information, we form close working relationships with consultants and, wherever possible, we become involved

during the design stage of a project," said van der Spreng.

Bouwer cautioned that, while maintenance is critical, companies should take ownership of their generator sets. He said, "We propose to mitigate risk and that a dedicated member of the customer's staff be trained through our manufacture, test, installation and commissioning process. This enables the customer to be more self sufficient and compliments all aspects of aftermarket support."

However, van der Spreng added, "There are numerous factors to consider when selecting an appropriate fit for purpose solution so it important for companies to align themselves with a supplier who is qualified to discuss all eventualities. Flexibility in approach to design and engineering will ensure that the installation is geared towards minimising the capital cost and running expenses, whilst concurrently optimising energy output for an uninterrupted and reliable power supply." ■



Zest WEG Group's Generator Set Division is able to offer from a single diesel driven generator (seen here) to total standby power solutions

Why African governments must have their own power generation equipment

Present in Africa since the 90s, and with extensive experience in the manufacture of generator sets, Himoina knows how to make profitable investments in power generation equipment and to convert temporary energy solutions into permanent solutions. While the power plants are initially conceived as a temporary power solution for a specific project, thanks to the 'plug and play' system, they can be disassembled as required by the customer and sent as individual units to a hospital, a small town or any other project that requires them.

Keith Webb, general manager of Himoina Middle East, recently disclosed the reasons why African governments in particular need to know about the advantages of opting to purchase equipment that allows them to supply power to various projects. Mr Webb 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."

He 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.

The fact that governments in Africa are changing from renting to owning this equipment allows them to have power generation plants that are designed to be adapted to different projects in succession.

The director of Sales and Marketing for Himoina in Europe, Africa and Latin America, Guillermo Elum, concurs and 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.

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Unreliable grid keeps genset market running

Desperate shortage of electricity is leading to the rise of power rental market across Africa, including gas and solar gensets

Despite tremendous resource potential, the power sector in Africa is characterised by insufficient generation capacities, inadequate transmission and distribution infrastructure, poor quality of power supply and high reliance on fossil fuel based power generation. The main obstacle to the increase in electricity generation capacity is the high cost of producing electricity. Reducing the cost of generating electricity could significantly improve the overall energy supply in Africa. Sub-Saharan Africa is desperately short of electricity. The region's grid has a power generation capacity of just 90 GW and half of it is located in one country, South Africa. Excluding South Africa, consumption averages around 162 kilowatt-hours (kWh) per capita per year. This compares to a global average of 7,000 kWh.

However, this is good news for genset manufacturers. Unreliable power supply has created a buoyant market in diesel-powered generators. Around 40 per cent of businesses in Tanzania and Ethiopia operate their own generators, rising to over 50 per cent in Kenya. In Nigeria, around four in every five SMEs install their own generators. On average, electricity provided through diesel-fuelled back-up generators costs four times as much as power from grid. Diesel fuel is a significant cost for enterprises across Africa, even in less energy-intensive sectors such as finance and banking. According to McKinsey, diesel fuel represents around 60 per cent of operator network costs for mobile-phone operators.

Unaffected by lowering oil prices, the global revenue from the installation of diesel generators is estimated to grow from US\$41.3bn in 2015 to US\$67.5bn in 2024, according to a new report released by Navigant Research.

The sales of products in the global generator market have been particularly strong in regions which have an unreliable electricity supply, such as countries in Africa. There have recently been a large number of power cuts across South Africa and Ghana, which have greatly affected both businesses and individuals operating in these countries.

South Africa has been particularly badly affected by power shortages in recent months, with its electric public utility Eskom announcing plans this year for rolling blackouts in order to undertake repair work on several of their damaged generators.

The global diesel gensets market has experienced continually strong growth in the past, with these generators costing little to install but requiring high amounts of fuel to run consistently. Due to the ever-growing need for businesses to use a reliable power supply, the global generator market is forecast to total US\$22bn by 2019 with growth expected to reach a CAGR of six per cent until 2019. The global generator market is seeing a rise in adverse weather conditions and new and improved generator technologies boost its growth prospects.

As the energy infrastructure in developing countries remains poor on the whole it is expected that generators will be required for the



Around 40 per cent of businesses in Tanzania and Ethiopia operate their own generators, rising to over 50 per cent in Kenya.

foreseeable future. Developing countries have become dependent on expensive diesel back-up generators to ensure that they receive sufficient power supply. The diesel genset market designates the use of internal combustion engines for distributed power production. Today, reciprocating engine-based gensets are among the fastest-selling, least expensive distributed generation (DG) technologies in the world. As a source of emergency standby, prime, or continuous power, diesel-fueled gensets are poised for continued growth in most regions and power classes, but face increasing competition from natural gas generators in certain markets.

The number of specialised segments within the genset market spanning power classes, applications, and end-use customers offers a rich ecosystem of opportunities for market participants. As a whole, the market has experienced steady growth. However, continued growth in the supply of unconventional gas resources and tightening regulations targeting stationary generator emissions may signal a shift toward cleaner-burning natural gas systems over their diesel counterparts. In the short term, though, countries with strong economic and/or population growth rates that are increasingly burdened by unreliable power grid infrastructure and blackouts will continue to drive diesel genset sales. According to Navigant Research, global diesel genset capacity additions are expected to increase from 62.5 GW in 2015 to 103.7 GW in 2024.

Growing need for diesel gensets in Africa

In sub-Saharan Africa, it is estimated that there is around 620mn people living without access to power. This is the result of ailing



Industry estimates suggest that the rental market for generators in Africa is growing at 13 per cent a year, from a 2013 base of US\$1.8bn.

infrastructure and the lack of funding to develop new grid infrastructure, states the report.

Dexter Gauntlett, senior research analyst with Navigant Research said, "Diesel gensets are expected to see moderate growth during the forecast period in key segments such as critical infrastructure, data centres, and extraction industries."

"The market is also evolving as natural gas gensets are gaining market share, and at the same time, leading genset providers have initiated strategic partnerships with renewable energy companies to provide integrated hybrid and microgrid solutions targeting large customers concerned with high diesel costs."

In 2014, Nigeria imported a total of 28,678 genset units totalling to US\$185.5mn, as per data provided by PowerGen Statistics.

According to industry sources, telecommunications and

infrastructure development, road constructions as well as expansion of industries have led to increase in the use of gensets in the West African country.

Nigeria is facing a major power crisis and this is a direct result of insufficient power generated by the Power Holding Company of Nigeria (PHCN), reports have suggested. The crisis, coupled with high economic growth in the country, is the main factor driving growth in the diesel genset market. High demand for gensets is coming from industries across the board. The Nigerian genset market is, therefore, entering a period of steady growth, according to reports.

"Growth in the Nigerian genset market will be driven by the expansion of the telecommunications sector. Telecommunications are among the fastest growing end user sectors of gensets in the country even as other end users such as manufacturing, commercial, construction and oil and gas sectors register strong growth," Research and Markets noted.

They are projected to remain as important sources of prime power during the medium and long-terms, despite the major power plant construction projects underway and research on alternative energy sources like renewables.

Epileptic power crisis, coupled with high economic growth in the country, is the main factor driving growth in the diesel genset market. High demand for gensets is coming from industries across the board. The Nigerian genset market is, therefore, entering a period of steady growth, the report added.

A key issue is the absence of quality control regulations in the region. This is proving to be the major challenge for original equipment manufacturers (OEMs).

The importation of generator sets in Nigeria is also forecast to see

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➤ growth rates of 8.7 per cent driving up market volume from US\$450mn in 2011 to reach US\$950.7mn by 2020, according to global research firm GBI Research.

Biggest users of diesel gensets

The report indicates that the global annual installations of diesel gensets in the 500kW to 3.5MW range are predicted to make up the majority of installed capacity during 'the forecast period'.

The USA, China, and India have been identified as the main countries to install the diesel gensets.

"Used as a source of emergency standby, prime, or continuous power, diesel gensets are poised for continued growth in most regions and power classes, yet the technology is expected to face increasing competition from natural gas generators", Navigant Research stated.

Due to the frequent power failures to which these countries are subjected, the gensets are utilised a large proportion of the year.

The rental power market in East Africa is not well developed. A majority of users are not aware of this type of service or the benefits associated with it.

Kenya, Uganda and Tanzania are currently experiencing high levels of GDP growth. It is expected that this will continue in the future, possibly accelerating if governmental initiatives to increase competitiveness are successful.

Consequently, the demand for power is anticipated to increase dramatically during the forecast period.

As the current demand for electricity in Kenya, Uganda and Tanzania far outstrips supply, a large market for diesel generators (gensets) exists in these countries. Continuing economic and population growth will only increase the demand for power. Thus, companies that can supply effective diesel gensets, which can ensure stable electricity supply, will gain market share.

New analysis from Frost & Sullivan, Analysis of the Diesel Generator (Genset) Market in Kenya, Uganda, and Tanzania finds that the Kenya, Uganda and Tanzania markets earned revenues of US\$134.7mn, US\$44.5mn and US\$145.1mn respectively in 2014.

By 2018, however, revenues generated by diesel gensets in these markets are estimated to reach US\$168.5mn, US\$65.4mn and US\$220.1mn respectively.

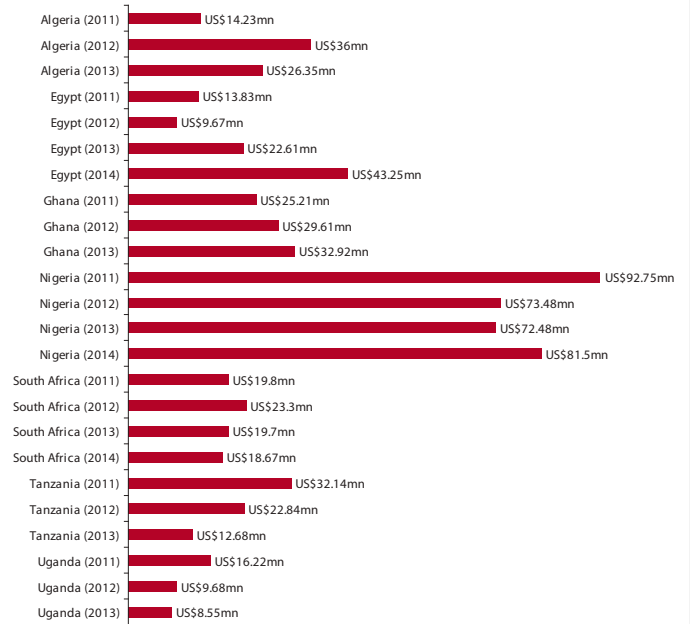
Kenya Power and Lighting Company (KPLC), the state-owned power utility, represents 97 per cent of the rented power market in the country. Since severe droughts have limited the capacity of hydro-powered plants, KPLC has been forced to rely on genset rentals. "In Uganda, widespread power shortages have led to an average of five hours of load shedding per week, forcing companies located here to adopt diesel gensets," said Frost & Sullivan energy and environmental industry analyst Muneera Salie. "Businesses want to maintain uninterrupted production, and this presents robust opportunities for diesel genset suppliers."

Growing gas power

Expanding natural gas exploration activities in Africa, especially East Africa, is expected to boost natural gas production that will be the principal factor behind the growth of gas equipment market including natural gas (NG) gensets.

Increasing usage of natural gas in oil and gas industry and for power generation has fueled its demand across the world. Due to this, countries with large natural reserves are expected to expand their natural gas production and the distribution and transportation capabilities. Moreover, with growing focus towards green sources of energy to curb the emission of harmful by products, the countries across the world are expected to look forward to natural gas as a potential alternative fuel to oil and coal. Therefore, natural gas industry is expected to see growth traction in the near future, which in

Import to top African countries



Generating sets, diesel, output < 75 kVA

turn is anticipated to contribute to the growth of gensets as well.

The NG genset market is expected to show healthy growth during the next decade. A source of emergency standby, prime, peaking, or continuous power, NG-fueled gensets are poised for rapid growth, particularly in markets where inexpensive NG is widely available.

Gas gensets easily comply with environmental regulations by producing greater amounts of electricity through highly efficient, decentralised natural gas combined heat and power (CHP) systems. Gas property as a clean burning fuel coupled with genset advantages such as lower noise, quicker permit obtention, and reduced capital costs make gas gensets the ideal choice for end users across segments.

“ Diesel gensets are projected to remain as important sources of prime power during the medium and long-terms, despite the major power plant construction projects underway and research on alternative energy sources like renewables.

"The surge in natural gas availability and improved infrastructure for delivery has lowered the price of gas, greatly assisting the sales of gas gensets in developed regions," Frost & Sullivan energy industry analyst Pritil Gunjan said. "Though technological improvements, such as the automatic control system, are making gas gen-sets 50 per cent more expensive than their diesel counterparts, their reliability and lower lifecycle costs will keep demand high."

Today, though, the line between NG and diesel gensets is becoming blurred with the increasing popularity of dual-fuel gensets, which offer the performance of diesel while taking advantage of the low price and low emissions of NG. In emerging economies, the key obstacle to the spread of NG gensets is a lack of adequate NG infrastructure. Once again, dual-fuel gensets provide an interesting

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middle ground, and they are seeing growth markets in developing countries where the NG infrastructure is expected to follow. Dual-fuel gensets are bridging the gap between diesel and gas gensets and have risen in popularity in markets with a lack of adequate gas supply or distribution infrastructure.

According to Navigant Research, annual NG genset installations are expected to reach 27.2 GW by 2024 and generate US\$146.8bn in cumulative revenue between 2015 and 2024.

The Navigant Research report noted that the global market for NG gensets from less than 15 kW to 20 MW is for residential, commercial, industrial, and utility applications.

“Epileptic power crisis, coupled with high economic growth in the continent, is the main factor driving growth in the diesel genset market

According to VPower Group, one of the independent power providers (IPP) who recently announced expansion plans into Ghana, following its first fast track power installation in Africa in Chad, “Gas-fuel power generation holds great potential for Ghana, offering impressive reduction in emissions and fuel-to-power efficiencies. We have one of the most compact gas generator sets on the market, which cuts cost and time in transportation and installation. The high potential for domestic gas now gives us the opportunity to meet the country’s power demand in ways that improve the stability of power supply,” said Joel Castiel, VPower’s regional director for Africa.

Ghana has an installed power capacity of over 2,400MW to date, with power demand predicted to exceed 5,000MW by 2016. Driven by the country’s Ministry of Energy’s objective to become a key exporter of electricity into the West Africa Power Pool, in addition to meeting fast increasing domestic power demand, the Ghanaian government seeks to meet its goal of an 80 per cent electrification rate by 2016.

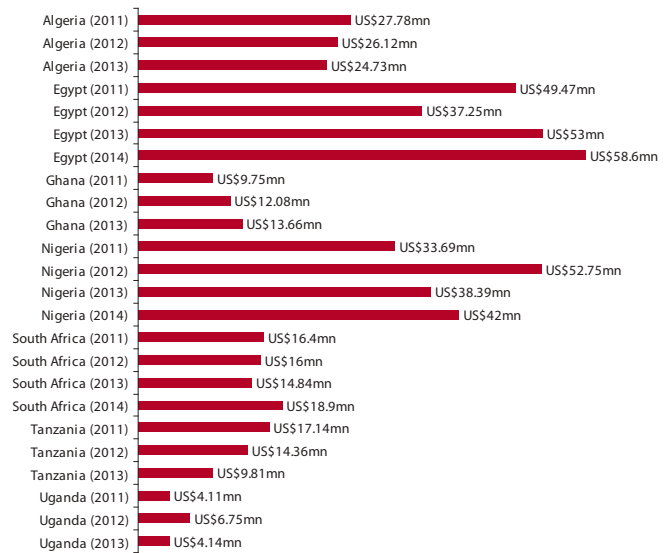
“Diesel gensets are projected to remain as important sources of prime power during the medium and long-terms, despite the major power plant construction projects underway and research on alternative energy sources like renewables.

Solar gensets shining

Rising diesel prices are motivating many companies to search for ways to minimise their operating costs and reducing fuel consumption is a logical way to do this. In many regions, one litre of diesel fuel already costs more than one US dollar. There are additional costs involved with transporting fuel to remote areas and storing it on-site. In contrast, the cost of solar power systems has dropped sharply over the past few years. This is why more and more industrial companies seek to benefit from power supply solutions implementing hybrid systems that allow for the integration of cheap solar power into existing diesel power systems. The combination of diesel generator sets and photovoltaics in a hybrid system can reduce operating costs, carbon dioxide emissions and dependence on fossil fuel.

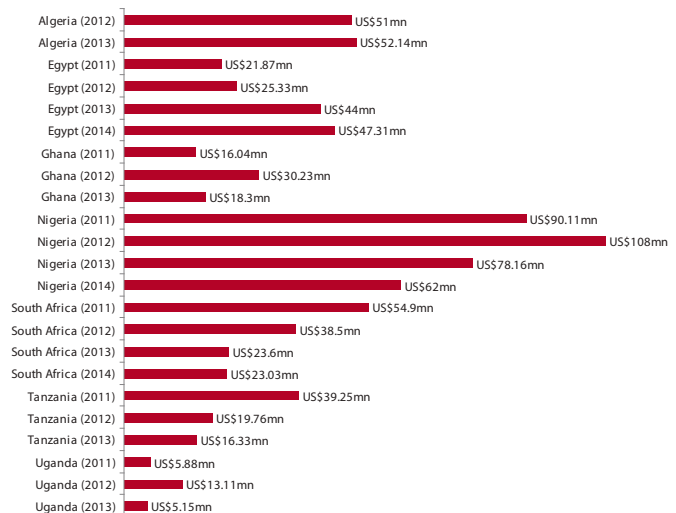
There is great potential for such photovoltaic (PV) hybrid systems, because most industries in remote areas have excellent solar

Import to top African countries



Generating sets, diesel, output 75-375 kVA

Import to top African countries



Generating sets, diesel, output > 375 kVA

irradiation. In regions with weak grid infrastructure, many industrial businesses are critically dependent on a reliable and cost-effective electricity supply to ensure competitiveness. Integrating high shares of photovoltaics into diesel-powered grids must ensure stable grid operation at all times. To meet increasing energy demand, it is also important that these system solutions are scalable and that they can be adjusted according to current energy demands at any time.

Residential usage

Technavio, tech-focused research firm, has published a new report on the global residential portable generator market, which is expected to grow at a CAGR of over seven per cent from 2015-2019.

“Many residential end-users are adopting portable generators, preferring them for their safety, mobility, and comfort features. Their efficient and reliable performance satisfies the need for backup power during power outage and saves users from the trouble of installing large standby generators”

The new market analysis report by Technavio states that with rapid globalisation, residential users have become more dependent on electronic and electrical products such as refrigerators, heating



equipment, air conditioners, communications equipment, and PCs. The need for electricity among residential users has increased considerably during the last 20 years.

"Many residential end-users are adopting portable generators, preferring them for their safety, mobility, and comfort features. Their efficient and reliable performance satisfies the need for backup power during power outage and saves users from the trouble of installing large standby generators," says Faisal Ghaus, vice-president of Technavio.

The new report by Technavio also highlights the emergence of next-generation generators, which is enabling many market vendors to concentrate on developing advanced generators with increased features and functionalities to remain competitive.

"Moreover, smart generators are incorporated with additional features, which enable them to be monitored remotely via the Internet. Therefore, we expect the emergence of next-generation generators to

have a positive influence on the market growth," elaborated Ghaus.

Africa a big market

Research by PriceWaterhouseCoopers indicated that worldwide spending in infrastructure will double between now and 2020. This expenditure should grow at between six and seven per cent per year over the next ten years, with faster growth in sub-Saharan Africa estimated at an excess of 10 per cent per year.

Industry estimates suggest that the rental market for generators in Africa is growing at 13 per cent a year, from a 2013 base of US\$1.8bn. The continent's demand for imported generators has created a fast-growing market for companies in China, France and the UK. ■

Graph source: UN ComTrade,
Powergen Statistics



Diesel better than its counterparts

Only backup generators powered by diesel fuel can provide the following features:

- Quick start-up time: 10 seconds or less. Other fuel sources may take up to two minutes, which may be too long in many emergency situations.
- Power density/fuel efficiency: Due to the chemical structure of diesel fuel, more energy is released per unit than any other source of commonly used power. For the same size engine, a diesel can produce twice the kilowatts of a gas engine generator. Greater power density means less fuel consumption than other sources of fuel.
- Continuous strength: Diesels provide a steady supply of power and can handle wide swings in power use. Turbine (jet) engines cannot easily handle these fluctuations. A diesel generator does not flicker or dip in power output when appliances such as a large air conditioner turn on, surge and drain power. Gas and turbine engines can slow down when strained, causing failure of the electrical equipment. To compensate for such straining, users may install unnecessarily oversized generators, causing significant inefficiencies and fuel consumption.
- Disaster utility: When a disaster such as an earthquake strikes, the first source of power turned off by utilities is natural gas due to its explosive nature and vulnerability of pipes to rupture - leaving an uncertain supply of fuel. Diesel generators have their own storage for clean diesel fuel, which is readily available.
- Portability: In addition to stationary units, diesel generators of various sizes and capabilities are highly mobile and available to be transported and positioned in virtually any setting to meet emergency power needs. Clean diesel fuel supplies are readily available in most locations.

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CREATING POWER SOLUTIONS.



The return of Nigeria's biggest power event

The event highlights concerted efforts of private players and the government to raise the power supply in the West African nation

Organised by Informa Exhibitions, the fourth edition Power Nigeria will be held from 3-5 November 2015 at Eko Hotel in Lagos. Nigeria has one of the lowest net electricity generation per capita rates in the world with an estimated 50 per cent of the population deprived of access to electricity.

Power Nigeria will provide an ideal platform for international companies to meet key decision makers in the Nigerian energy industry to discuss and debate the challenges that the West African nation's energy sector is currently facing.

In 2014 edition, more than 200 exhibitors participated at the show. And many international companies are upbeat about this year's participation.

Huge potentials

According to German smart grid solution provider EFEN, there is a huge potential in the Nigerian power market and they want to provide to the Nigerian power market reliable and good quality products.

German distribution devices company JEAN MÜLLER, said that their main intention to exhibit in Power Nigeria 2015 is to find some valuable partners, who would support them to supply their products into the domestic market as well as to gather more detailed information concerned with Nigerian specification and applications.

Indian diesel genset manufacturer Mahindra asserted that Nigeria is a good potential market for generating sets. They are looking to exhibit to create brand awareness.

TOPEC, from the Netherlands, is interested to make the market because the West African nation has a lot of potential for private companies like it who deliver reliable power solutions for uncertain grid network. TOPEC opined that the Nigerian power market is almost limitless.

AK-AY, electrical EPC contractor delivering turnkey electric power projects in Africa and Central Asia, will also be exhibiting at Power Nigeria in November. The company has had a vast experience in transmission and distribution substations since 2000 in Nigeria. AK-AY said that it viewed the show as an opportunity for new projects with the new government. According to reports, the Nigerian government is currently negotiating with 400 investors who are interested in investing in Nigeria's power sector, permanent secretary, Ministry of Power, Engineer God-knows Igali, said in Lagos recently.

He said that the willingness of the investors was accentuated by the prospects inherent in the nation's power sector and efforts of the current government to enable investors tap into the sector.

Igali added that Nigeria could generate 5,000 MW of electricity but currently generates between 4,600 and 4,700 MW, which also depends on distribution companies. According to him, government target for this country is to ensure 24-hour power supply. Power Nigeria will,



In 2014 edition, more than 200 exhibitors participated at the show

therefore, be a great opportunity for exhibitors and attendees to showcase and witness the change that Nigeria is bringing in the electricity sector.

Nigeria achieves new high

The Transmission Company of Nigeria (TCN) recently announced that the company has achieved a new peak of 4,748MW of generated power. Managing director, System/Market Operation of TCN, Dipak Sarma, said, "This has been made possible due to a coordinated effort of TCN with the generating companies and the distribution companies."

Managing Director of TCN, Paul Stefiszyn said, "The federal government has been supportive in coordinating the activities of the sector across the value chain."

Subsequently, the Nigerian Electricity Regulatory Commission (NERC) has increased its generation target to 6,000MW capacity by the end of December 2015.

According to NERC Chairman, Sam Amadi, the meeting was to assess the challenges of the generation companies and TCN, in addition to mapping out acceptable performance management mechanisms to sustain their capacities, he added. Amadi revealed, "This is a performance management meeting for largely generators. When people look at the power sector in terms of performance, they must look at how much we are generating now. We have moved from a vertically integrated government-owned monopoly to an unbundled and privatised electricity market. Apart from TCN and the NIPPs, all the utilities are private-sector owned; we have solved the modelling problem. We have set a benchmark of increasing capacity to 5,000MW." ■



Thinking out of the box

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From traditional failure to tough new design

Rapid and cost-effective changeout of bearings is a critical requirement in preventing downtime and loss of productivity

Split roller bearings are designed specifically for proactive maintenance requirements. The globally-recognised range of Cooper split roller bearings is distributed locally by Bearings International. Cooper Bearings product manager for Southern Africa Matthew Tyler states that there is an industry-wide trend whereby companies are reducing their maintenance budgets and staff to cut costs.

"The prevailing trend is simply to replace components as and when they break or malfunction. What's more, the skills shortage facing the South African industry also means there is a need for products that are easy to install, with minimum training requirements. This is where Cooper split roller bearings add measurable value," Tyler explained.

Using science to enhance products

Tom Black, director of sales for Europe and the Middle East, recently visited South Africa from principal supplier Cooper Kaydon. He said, "We continue to enhance our products through ongoing investment in new machine tools and modern manufacturing techniques. In addition, continuous advances in materials science allows us to produce bearings with higher capacities in accordance with the changing requirements of the market."

Black stresses that Cooper is a global leader in split roller bearings. He said, "Our estimate of our share of the global split roller bearing market is about 85%. Thus we are the world leader by a considerable margin, and certainly in Africa we have the largest installed base of split roller bearings of any other manufacturer."

The main advantage of Cooper split roller bearings is that they are split right to the shaft. "The reason for this is to allow the bearing to be changed out when the life of the bearing is achieved; this can be done much more easily than a solid bearing," Black asserts. "This means that the machinery in question is back up and running extremely quickly."

Another advantage over solid bearings is that Cooper split roller bearings can be removed without dismantling any ancillary equipment.

"The bearing can be opened up, taken out and replaced to ensure that machinery is up-and-running quickly," said Tyler.

“ Maintenance is an essential requirement in a range of industries where machine availability is key

Saving money with experience

The traditional solid-type bearing, on the other hand, typically requires that a gearbox be uncoupled and the coupling removed. Depending on the size of the bearing, such a change out could take

days, as opposed to a few hours for a Cooper split roller bearing.

From a maintenance point of view, downtime can prove critical to a manufacturing business. Major industries can stand to lose serious money due to machine shutdowns.

"Cooper Bearings is an ideal solutions provider for such total maintenance requirements," Tyler said.

Cooper split roller bearings can even be replaced onsite by any fitter with experience in an industrial environment.

"We give our customers the assurance that when their plant goes down, they will recoup a significant quantity of that lost production in

terms of reduced maintenance time. Industries ranging from cement to marine, food and beverage, mining, sugar, pulp and paper and materials handling can all benefit from the Cooper split roller bearings range," Tyler said.

Every Cooper split roller bearing is supplied with a handy step-by-step installation guide for ease of use. The bearings are made from carbon chrome steel for added robustness, with the outer housings and cartridges made from cast iron. Bearings International carries local stock of up to 300 mm to cater for the bulk of shaft applications, and can customise products for specific applications. Existing installations can be converted to Cooper split roller bearings by means of minimal modifications.

The products are manufactured in the UK according to strict quality and manufacturing standards. A feature that makes Cooper split roller bearings suited for the harsh operating conditions in Africa is the sealing arrangement.

"The seal is contained in the outer swivel cartridge. This means that, in the event of any shaft misalignment, the seal remains concentric to the shaft itself," said Tyler.

Extending lifespan

In a traditional solid bearing, the seal is contained in a static housing, which causes a gap in the event of any shaft misalignment. This gap allows the ingress of contaminants such as dust, dirt or water, which is a major cause of bearing failure. The sealing arrangement and split nature of the roller bearing is what gives Cooper its extended lifespan, even under the harshest operating conditions. ■



A Cooper exploded bearing

Split cylindrical roller bearings boost plants

Designed specifically to suit steel industry converters and continuous casting lines, optimised cylindrical roller bearings from NSK deliver benefits that include the use of up to 30 per cent wider cylindrical rollers for accommodating greater loads. The bearings also provide longer replacement intervals, helping end users reduce downtime.

A further advantage of the optimised bearings is a newly developed labyrinth gasket that provides a tight seal regardless of the bearing material expanding or contracting as a result of temperature changes on the rolling mill. This design innovation ensures that the sealing lip remains in constant contact with the exterior of the bearing's inner ring.

The higher loads that can be tolerated by NSK's optimised cylindrical roller bearings means that smaller guide rollers and more rollers per segment can be installed. As a result, both the load capacity



NSK's split cylindrical roller bearings are optimised for high loads

for heavy steel slabs and the number of cast thin slabs that can be accommodated, are increased significantly.

The extended replacement intervals surpass the service life of the rollers found typically on steel industry converters and continuous casting lines. The upshot is that bearings and rollers can be replaced simultaneously, saving maintenance time. What's more, the split bearings simplify maintenance services considerably, minimise downtime and subsequently save costs. Plants can also enjoy the option (not available on previous bearings) of employing oil-air lubrication, which is becoming more prevalent in the steel sector. Customers can select NSK's latest split

cylindrical roller bearings to suit shaft diameters ranging from 100 to 190 mm. The larger sizes, from 160 mm upwards, are intended typically for use on guide rollers. NSK is able to customise lubrication, cooling and enclosure mounting options. ■



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A maturing consulting engineering industry

A quarter of the income earned by SA's consulting engineering industry is derived from projects outside the country's borders

Engineering consultancy SMEC is involved with a range of projects on the continent. "We are extremely excited to be part of the 'Africa Rising' era, where project capital is in abundance and Afro-optimism is gaining momentum," commented Andre van der Walt, functional head, power and energy, SMEC South Africa.

"As democracy matures across our continent, the consulting engineering industry is also evolving," added van der Walt. Whereas in the past consulting engineers focused mainly on Greenfield projects, the focus now is far more diversified.

It ranges from programmes to create capacity for labour-intensive maintenance work to asset management services throughout the lifecycle of infrastructure projects. It also encompasses programme-level support to national, provincial and local government. The aim here is to facilitate service delivery.

Advising in infrastructure

Infrastructure feasibility studies and public private partnership (PPP) advisory services are also included in the scope. Another critical component is operational and maintenance advisory and project management.

SMEC's Africa division has secured a number of significant projects to date, affirmed Tom Marshall, chief operating officer, Africa. These include: sanitation master planning in Rwanda, the Muranga water supply project in Kenya and an urban infrastructure project in Tanzania, among others.

In North Africa, SMEC is involved with the 25-year Urban Development Master plan for the Rabat Metropolitan Area in Morocco, covering the cities of Rabat, Salé and Témara. The master plan is being developed in conjunction with the Ministry of Urban Planning.

This master plan will provide a framework for public and private investment in urban rehabilitation and sustainable development of Rabat's infrastructure, transportation system, public assets, urban services and housing.

"SMEC will focus on incorporating modern and flexible urban development concepts into the master plan in order to highlight the city's diverse heritage," pointed out Paulo Trindade, operations manager: North Africa region, Morocco.

In Malawi, SMEC provided consultancy services to the government to assist in developing an integrated water resources management programme. This project will ensure an adequate raw water supply to local town centres up to 2050 for all identified viable uses, including treatment plants and transmission mains.

SMEC's services included feasibility studies of various water sources, identification of the most cost-effective, sustainable and economically viable water source, preliminary cost estimates (including impacts on land and assets) and the preliminary design of structures on identified raw water sources.



In Sierra Leone, SMEC was involved with a project to ensure access to a safe and reliable water supply and public sanitation services in the towns of Bo, Kenema and Makeni. SMEC's technical assistance included design review and construction supervision and procurement and contract management, as well as capacity building of Sierra Leone Water Company employees.

In Tanzania, SMEC provided construction supervision services for urban infrastructure development for the Capital Development Authority in Dodoma Municipality. The project aimed to improve access to basic urban services through the rehabilitation and expansion of urban infrastructure.

SMEC's scope of work included upgrading Kisasa, Chang'ombe and Kikuyu community roads to bitumen standard, construction of storm water drains and the provision of bus bays and road furniture.

"In the public infrastructure space, the focus ultimately remains on service delivery to our people. Almost two thirds of our industry's income is derived from the public sector," van der Walt elaborated. "The industry is currently in a negative growth cycle and, as a result, the majority of firms are under immense pressure to remain profitable, while retaining the technical skills that ultimately define our industry."

Investment potential

Profit margins for firms with more than 100 employees is at an all-time low of 4.3 per cent, and is expected to decrease even further. It is for such reasons that Africa remains a crucial focus for SMEC.

"While we are gaining benefit in growing our business, we are also a part of shaping history in Africa. Yes, there are challenges, but there is no other market that offers a comparable potential for infrastructure investment over the next few decades," van der Walt concluded. ■

A showcase of select equipment

PMSA's developing product portfolio from on-site aggregates testing to the latest wet-press concrete filters

Pan Mixers South Africa (PMSA), which manufactures concrete, block, brick and paving machinery, has launched major new products at Bauma Conexpo Africa 2015, held recently in Johannesburg, South Africa.

The first product to be showcased is a range of wet-press concrete filters from Eco-Filters of the UK, the world's leading manufacturer of patented filters for the wet-press concrete industry. A normal production process to produce pressed kerbs, for example, utilises paper filters, which allows the water to flow through but keeps the fines intact, namely the sand and cement.

"It has more applications than just the actual filter, as it can also provide different product finishes of the concrete, such as a wood grain or simulated stone appearance," Quintin Booysen, sales and marketing manager at PMSA, explained recently, ahead of the company's showcase at Bauma Conexpo in Johannesburg, South Africa.

The wet mould process can now be used to produce a range of finishes and products in a

traditional pressing machine. As Booysen said, "If the concrete products industry catches on, it could be a good opportunity, particularly as it is aimed at the high-end market."

There is an additional health and safety benefit as the filters are attached to the actual moulds, which means that the process is independent of human intervention. This speeds up the production process, boosting productivity and increasing end-product quality.

Booyesen noted, "I really think that the Eco-Filters technology has a major opportunity in South Africa. It has been around for several years but it has never been used in this format locally, especially in terms of different surface textures."

The next major product to be launched at Bauma Conexpo Africa 2015 by PMSA is the FL-Mobimic Profi-Check from Ludwig Moisture Control of Germany. This handheld device is deployed for convenient testing of aggregates on-site.

"Ludwig moisture control equipment is traditionally integrated into the mixer and the aggregate dosing side of the plant, whereas this is a mobile measuring unit used to evaluate the temperature and moisture of bulk materials," Booysen said.

Thinking about concrete

Prospective clients and visitors to the PMSA stand were able to interact with more than ten leading European companies directly on the PMSA stand. Anyone interested in any aspect of concrete equipment could get answers directly from the leaders in their respective fields.

Explaining the theme of 'Thinking About Concrete? Think PMSA', Booysen said, "Companies need to move from an equipment supplier mind-set towards providing a total solution and fit-for-purpose technology. Companies should also invest in their customers by providing the best possible skills transfer and knowledge sharing in order to upskill customers' staff. This makes the supplier's job in terms of support, maintenance and upgrading that much easier, increasing customers' bottom line in the long term."

Looking at the broader impact of Bauma Conexpo Africa 2015, Booysen commented, "There is no single show in Africa where decision-makers can be exposed to a full range of mining, civil and building equipment on a world-class platform. This is a dedicated four-day event that allows companies to learn about the latest equipment and business processes on the continent. Customers in Africa need local support and technology best suited to the challenges and rigours of operating in Africa, such as remote locations and a lack of skills, particularly in terms of preventative maintenance." ■



PMSA has launched the FL-Mobimic Profi-Check from Ludwig for quick on-site aggregates testing

Machines that make the most of tough materials

Volvo's H-Series wheel loaders, and the new G-Series with Z-bar linkage, ensure high performance in varied heavy-duty applications, reinforcing the company's commitment to customer productivity

The new wheel loaders from Volvo Construction Equipment handle heavy-duty tasks with ease, delivering excellent performance, optimum profitability and outstanding fuel economy.

Work hard with the H-Series

Look first at the H-Series. The L150H, L180H, L180H HL (High-Lift), L220H and L250H wheel loaders from Volvo Construction Equipment are built to deliver the ultimate performance. These machines are equipped with Volvo's OptiShift technology, eliminating power losses in the torque converter and reducing fuel consumption by up to 18 per cent. Combined with Volvo CE's patented Reverse By Braking (RBB) technology, OptiShift boosts productivity and efficiency in all applications.

RBB is ideal for short cycle or truck loading applications – sensing the loader's direction and slowing the machine by applying the service brakes automatically. This increases fuel efficiency, improves operator comfort and increases machine lifetime.

Volvo's load-sensing hydraulics and a robust Tier 2/ Stage II Volvo engine supply power to the hydraulic functions according to demand, to boost efficiency and lower fuel consumption. The system ensures a fast response for shorter cycle times while delivering smooth operation through superior control of both the load and the attachment.

A smooth ride

These wheel loaders are equipped with ideally-matched, all-Volvo powertrains. The L150H, L180H and L220H feature Volvo's unique Torque Parallel (TP) linkage that delivers high breakout force and excellent parallel movement throughout the entire lifting range. The Volvo L250H features Volvo's proven Z-bar linkage, providing high breakout force for strong, powerful digging in



hard materials and facilitating quick load cycles for increased productivity.

The L150H, L180H, L220H and L250H can also be equipped with an optional Boom Suspension System (BSS) to further boost productivity by up to 20 per cent, absorbing shock and reducing the bouncing and bucket spillage that occur when operating on rough ground. The combination of right tires, BSS and additional counterweight means that these machines can fit a larger rehandling bucket, resulting in increased productivity in rehandling applications.

The BSS comes as standard on the L180H HL. This machine, designed to achieve unrivaled lift height and reach in log handling applications, also features a log pusher to increase stack height by up to 30 per cent. For comfort and safety, the log pusher is operated by two push buttons in front of the hydraulic control levers.

Work in comfort

A spacious ROPS/FOPS certified cab provides a comfortable operating environment with ergonomically placed controls, ample storage space and a comfortable seat with optional three-point seat belt. With low internal noise levels and vibration protection, operators will

experience a productive work shift. The L150-250H feature an industry-leading air filter system that allows 90 per cent of the cab air to be recirculated through the filter for effective continuous dust removal.

Volvo also offers a variety of options to improve safety and visibility when working in the dark, including reflectors which follow the contour of the machine, LED entrance lights and additional work lamps to increase visibility.

The L150H, L180H L220H and L250H boast viscous cab suspension that reduces vibration and noise, increasing operator comfort and performance. The spring added into the mounts also improves shock absorption to increase productivity. Wear is reduced on all machines thanks to a hydraulically-driven cooling fan that protects the machine's vital components from damage by overheating. To further increase safety, an optional fire suppression system, consisting of up to 16 nozzles, is automatically activated inside the engine compartment when necessary.

Simplified servicing

Daily service checks can be carried out quickly and simply, thanks to ground level grouped service points, helping to achieve maximum uptime from each machine. Each cab can be tilted through 30° or 70° via a hydraulic pump to provide easy access to the vital components, and the wide engine hood opens electronically to ensure servicing is quick and easy.

Both front and the rear axles feature an axle oil circulation feature, which allows oil to circulate and cool inside the axle. A hydraulically-driven cooling fan protects the machines' vital components from damage by overheating. The fan activates automatically only when needed to limit fuel consumption and noise, and can be reversed to allow self-cleaning of the cooling units. The machines'

➤ electronics support preventive maintenance and diagnostics for maximum uptime. Waterproof sealed connectors protect each machine's reliability and increase its longevity.

Get going with the G-Series with Z-bar linkage

Volvo CE's new G-Series machines with Z-bar linkage maintain the company's well-earned reputation for supporting customer productivity. The new L60Gz, L90Gz and L120Gz wheel loaders from Volvo Construction Equipment feature load-sensing hydraulics, a powerful and durable Z-bar linkage and a perfectly-matched powertrain – ready to increase productivity even in the most demanding conditions.

The L60Gz, L90Gz and L120Gz from Volvo CE come from a long line of productive, fuel efficient wheel loaders. Building on a legendary reputation dating back to 1954, these machines are equipped with proven, advanced technology designed to deliver superior lifting and breakout forces in even the toughest of conditions.

Each machine is built with an ideally-matched all-Volvo powertrain, designed to work together in perfect harmony for optimised performance. These new series wheel loaders feature a six-litre engine for the L60Gz and L90Gz, and a seven-litre engine for the L120Gz. The engines fulfill the exhaust emission requirement according to Tier 3/Stage 3A. The engine hood is designed for easy access to service and maintenance points inside the engine room.

Equipped with these powerful Volvo engines, these machines offer high torque at low rpm to ensure low fuel consumption. Volvo's unique eco pedal also helps to guarantee fuel consumption is kept to a minimum, applying mechanical push-back force when engine rpm is about to exceed the economic operating range.

The L60Gz, L90Gz and L120Gz are built for an efficient, smooth performance. Fully Automatic Power Shift ensures optimal operation by adjusting machine gears in line with parameters including engine and travel speed, for comfortable gear changes and fast cycle times. Oil-cooled, wet disc brakes on the front and rear axles deliver superior braking performance for smooth control and a long service life. 100 per cent differential locks on the front axle ensure outstanding traction in slippery conditions, and axle oil circulation allows the oil to flow and cool inside the axle – protecting components and increasing brake service life.

Powerfully efficient

These machines are built to last, and the durable Z-bar linkage provides high breakout



forces for strong, powerful digging and complete bucket fill in even the hardest materials. This is combined with load-sensing hydraulics that supply power only when needed, lowering fuel consumption. Bucket pins are double sealed to keep grease inside the bearing and dirt out, ensuring long pin and bearing life, and the automatic bucket leveler and boom kick-out functions accurately stop the bucket and linkage in adjustable, pre-selected positions.

Loaded with comfort

Alongside outstanding power and durability, the L60Gz, L90Gz and L120Gz offer superior operator comfort for an enjoyable and productive work shift. The industry-leading, spacious ROPS/FOPS Volvo cab includes ergonomically placed controls, a tiltable steering wheel and vibration damping, and the operator is granted easy access to the cab via a three-point access ladder with anti-slip steps and sturdy handrails. Slim cab pillars and large expanses of glass surrounding the cab create a productive and comfortable operating environment.

Air is filtered through an easy-to-replace pre-filter to separate coarser dust and particles before passing through the industry-leading main filter, allowing 90 per cent of cab air to be recirculated for continuous dust removal.

Operator comfort is enhanced with air conditioning, which is standard on L90Gz, L60Gz and L120Gz.

To ensure the operator has all the necessary information and diagnostics for optimal performance, the Volvo Contronics system continuously monitors and records machine operation in real-time. Information including fuel levels and warning messages is relayed via the display in the cab.

Servicing made easy

The L60Gz, L90Gz and L120Gz are built to ensure quick and easy service and maintenance checks. Excellent access to the

engine compartment and ground level access to the filters allow regular checks to be performed faster.

Maintenance-free rear axle cradles reduce overall service cost and increase uptime. This innovative Volvo design minimizes force on the axle, ensuring long component life.

The unique Volvo brake wear indicator enables brake disk wear to be easily monitored, and service life of the main components is further enhanced by replaceable breather filters that ventilate the transmission, hydraulic tank, front and rear axles and fuel tank.

The perfect match

The exceptional design and superior durability of the L60Gz, L90Gz and L120Gz is enhanced by the excellent range of Volvo attachments engineered to work in perfect harmony with Volvo wheel loaders. These purpose-built buckets have been developed as an integrated part of the machine, constructed from high quality materials including wear-resistant steel in the most exposed areas.

The L60Gz and L90Gz can be equipped with a general purpose, standard-duty bucket or a heavy-duty version optimized for loading shot rock, providing ultimate durability and wear resistance for unmatched lifespan and value for money. The L120Gz may be equipped with a standard- or heavy-duty bucket, as well as a re-handling bucket optimized for handling, stockpiling and loading processed material including aggregate and sand. The spade nose rock bucket has high penetration capabilities and is ideally suited for loading shot rock, and the light material bucket is a high capacity bucket for low density materials.

To support its durable, high performance buckets, Volvo offers a selection of cost-effective, replaceable wear parts. With a range including bolt-on edge, teeth, adapters and segments, customers can tailor their machines to meet specific job demands. ■

Building confidence in African construction

Having relocated to Expo Centre Johannesburg, bauma Conexpo Africa 2015 covered some 68,000 sqm of exhibition space



In amongst the deals and product launches, companies from across the continent at bauma Conexpo Africa 2015 were hoping to make the most of the opportunities available to them within the mining and construction sectors

Africa's leading construction equipment suppliers and manufacturers were on hand at the second edition of bauma Conexpo in Johannesburg this September, where they were promoting their latest machinery innovations and models to a captive and engaged audience.

Spread across 68,000 sqm of exhibition space, this year's event relocated to Expo Centre Johannesburg, providing exhibitors with more space on which they were able to exhibit cranes, forklifts, skid steer loaders and many other pieces of construction kit available to customers throughout sub-Saharan Africa. Many of the big names who were in town for the launch event in 2013 returned to the show, among who were some of southern Africa's largest construction machinery manufacturers, rental companies and equipment suppliers.

"At this year's bauma Conexpo Africa it was noticeable that we had a lot of bona fide trade visitors and no casual visitors," remarked Putzmeister South Africa (PMSA) CEO Ludwig Geysler. "Many mining professionals came to our booth with specific inquiries and the visitors we met came from the whole of southern Africa."

Geysler was not alone in his praise for the exhibition, with others noting that, in spite of the slowdown being experienced within South Africa's construction and mining sectors, optimism continues to prevail throughout the equipment industry with many exhibitors telling *African Review* that, while sales may have dropped off slightly in 2015 throughout South Africa, a host of infrastructure investment opportunities due to be announced in the run up to the 2016 election are helping to maintain spirits.

Many exhibitors shared their optimism of growing market interest in neighbour countries; in particularly Botswana, Namibia and Mozambique, which all appear to be experiencing growth in mining and infrastructure activities.

According to event organisers Messe München, the 2015 African leg of the international bauma platform attracted more than 600 exhibitors from more than 40 countries. Some 14,300 visitors passed through the four-day-long event, of which 13 per cent came from outside of South Africa with a significant increase in percentage from sub-Saharan Africa.

Messe München managing director Stefan Rummel said, "We have achieved our goal of welcoming more and higher-quality visitors from the sub-Saharan region. bauma Conexpo Africa has now, without doubt,

► established itself as a platform for the industry that brings together African and international companies.”

Echoing Rummel's positive tone, Megan Tanel, vice-president for exhibitions at the US-based Association of Equipment Manufacturers (AEM), stated, “Africa continues to be an important market for our North American equipment manufacturers. bauma Conexpo Africa is the event to not only enter into the market, but also to engage with existing customers.”

Visitors from Zambia, Zimbabwe, Namibia, Mozambique and Botswana made up the top five visiting African nation outside of the host nation at the 2015 event, with delegations from Ethiopia, Kenya, Mozambique, Nigeria and Zambia in attendance for the first time.

Bell Equipment marketing director Stephen Jones remarked that the quality of visitors to the event was “really good” with what he termed “proper buyers” visiting the show.

John Beukes, managing director at ITR South Africa, singled out the quality of this year's visitors, adding that the “seriousness” was “a lot more intense” when compared to other shows he had attended.

“It's a great mix of local visitors and neighbouring countries,” Beukes noted. “We had really serious people from the sub-Saharan region.”

The show's international flavour was highlighted by the attendance of companies and visitors hailing from China, Germany, the USA, Turkey, the UK and India, as the event reasserted its value for the continent's mining sector.

Pierre Roche, sales manager at AARD, said, “bauma Conexpo Africa is definitely the right platform for the mining sector in Africa. We have seen our major clients, but also new customers, with visitors hailing from countries such as DR Congo, Zambia, Zimbabwe and Botswana.”

Mega machines

Among the many mining and construction machines and pieces of equipment on display were varying applications designed specifically for the unique demands of African markets.

JCB's large outdoor stand hosted a number of the company's well-known models, including its distinctive yellow and black backhoe loaders, compact excavators and telescopic handlers.

Swedish manufacturer Scania highlighted its combined experience in truck manufacturing, power applications and mining equipment, including a special stemming truck, on which the company collaborated with specialised vehicle innovator Cobra to address the unique

“**bauma Conexpo Africa is the event to not only enter into the market, but also to engage with existing customers.**”

Megan Tanel, vice-president for exhibitions at Association of Equipment Manufacturers

demands of stemming – a key element in the “drill and blast” mining technique.

Palfinger's remote controlled forklift was among the specialist pieces of equipment that visitors were given the opportunity to view in action at the event's demo area. The versatile Crayler BM is operated by remote control and its compact size offers huge storage and transporting benefit, as well as easy mobilisation.

Networking was another a big theme of the event, with deals being set up throughout the exhibition.

MMS South Africa managing director Richard Terry and service director Ryan Boogaard said, “MMS, as newly appointed dealer for Terex Cranes in southern Africa, used bauma Conexpo Africa as an opportunity to connect with customers throughout the region.

“This proved to be very successful with a number of deals signed for equipment, parts and service,” he added.

Hydraform, a manufacturer of brick and block making machinery, exhibited its range of its products at the event. The South Africa-based company displayed its V4 block and brick machine, as well as its M7Mi Super machine for making interlocking blocks. Also on display were complementary accessories, and the exhibit was completed with Hydraform's interlocking building system.

Explaining the reason behind participating in the show, Steven Tucker, sales manager for Hydraform, remarked, “This is all about educating the market on the Hydraform interlocking building system, meeting existing and prospective clients, and also networking with key decision-makers and role players in the affordable housing market.”

Tucker added that the company brings to the market its knowledge of economically viable and durable construction methods that use locally available materials.

“Hydraform is in a unique position to provide a fresh and exciting look at housing, not only with its technical expertise on the workings of the machinery, but also with its knowledge of, and available training for, the use of an economically viable, durable construction method that uses locally available material. Modernising too quickly can cause complexities and often does not work successfully in the rural context. Hydraform has a firm grasp of this contextual conundrum and is able to answer to it with its highly adaptable machinery and systems,” Tucker said.

The company also wanted to increase awareness against the use of untested and unsafe products which are increasingly available in South Africa, its primary market.



The well-attended IFAT Conference attracted industry professionals from across Africa

➤ Elsewhere, DICSА, one of Europe's biggest hydraulic manufacturers and one of the largest stainless steel fittings manufacturers worldwide, presented products that aimed to take advantage of the market potential for infrastructure development in Africa, allying high-quality products to a flexible manufacturing operation serving different industrial applications, including agriculture, public works, maintenance and repair.

The company's particular interest is 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.

The company supplies goods to 92 countries around the world, 10 of which are in the African continent, and 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.

DICSА maintains three global manufacturing and distribution centres, enabling to reduce freight costs and to offer better service, with the ability to ship from one single fitting to a full container. The company runs large warehouses, a high-technology factory (with 15 CNC machines and high-production transfer machines), workshops (with flexibles, rigid pipes, welding, and hydraulics).



A number of machinery demonstrations took place throughout the exhibition grounds grabbing the attention of the event's visitors

JCB Industrial, part of Eqstra Industrial Equipment (EIE), launched the JCB Loadall, a telescopic handler (telehandler) during the Johannesburg fair.

The JCB Loadall allows for mining operations in addition to advanced technical specifications, said EIE. The unique boom system, available in boom lengths of less than 10 metres (suitable for mining) features a U-shaped boom design, enabling it to act as a loading shovel material handling machine, and which can also be configured with a man platform. The wide range of attachments available for JCB Loadalls is one of the reasons for their exceptional versatility.

The weight of the machine is built into the chassis, making the loadall extremely stable,

while manoeuvrability is enhanced by the narrow chassis and sound steering with three steer modes.

The JCB Dieselmox engine is installed in the new model, as it provides high power and torque at low engine speeds.

JCB is considered the pioneer of telehandlers and has a wide range of loadalls to offer to many industries. Specifically, in the southern African market, JCB offers the Teletruk, Rough Terrain Forklift and Loadalls, EIE added.

In line with its commitment to forging partnerships for life with its customers, EIE offers its customers flexible sale and rental options and fully supports its JCB users over the complete lifecycle of each product. This ranges from financing assistance, to maintenance contracts, operator and maintenance staff training and spares as well as aftermarket support.

Case Construction Equipment showcased its full range of equipment and complete solutions for construction businesses at bauma Conexpo Africa. Case displayed skid steer loaders and backhoe loaders – both of which are trademark product lines in the African markets. Along with distributor CSE, a range of construction solutions such as retail financing, service support and strong parts backup were presented at the show. The company has a strong dealership network, which covers leading African markets. In addition, the company's financing specialist CNH Industrial Capital has a reputation for working extensively with clients by providing them tailored packages and warranty programmes.

CNH Industrial Construction Equipment vice-president for Europe, Africa and Middle

JCB were among those that made the most of the show's dedicated demo area



East, Andy Blandford, said, "The African continent offers great opportunities of growth. The Maghreb region and sub-Saharan Africa – and in particular South Africa – are key markets for us.

"bauma Conexpo Africa provides us with the perfect platform to meet our customers and show them how we are able to help them to get the job done and run their business effectively.

"Case has strong dealers in most of the larger African markets and offers the type of equipment that our customers need – robust, reliable machines able to operate in the toughest conditions, and at the right cost of ownership."

Case was also hoping to raise its profile further during its participation in the event, creating awareness among consumers of its support facilities in South Africa and other major markets throughout southern Africa.

Energy concerns

On the educational side of the event a supporting programme was introduced to the show for the first time, with a host of sessions including country specials and industry specials intended to enlighten delegates on opportunities and trends throughout the continent.

Alongside the various seminars and panel sessions, Master Builders South Africa held its Annual Conference.

The conference brought together members of the Master Builders Association and related industrial sectors from southern Africa, in order to encourage greater dialog between members, decision makers and experts, and to discuss current developments in the construction industry.

Industry specials saw experts and associations from the industry look at current technologies and trends within the construction machinery and mining market. The main focus was on the visions and challenges in the African market, as well as possible opportunities and included topics such as "Mining Cities", which was 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 Intergest.

Elaine Crewe, CEO of bauma Conexpo Africa, remarked ahead of the conference programme that the event would host a debate on infrastructure finance and the growing need for public-private partnerships, describing the event as "when construction industry players from across the continent come together to meet, connect and expand their contribution to the African development story".



More than 600 exhibitors from more than 40 countries were in attendance at the second edition of bauma Conexpo Africa

"Countries and speakers who participated in the country specials, included Ethiopia, Kenya, Botswana, Nigeria, Zambia and South Africa. Although information was strategic in nature, planned projects were highlighted, while requirements, challenges and potential partnerships were among the topics of discussion," she added.

“ At this year’s bauma Conexpo Africa it was noticeable that we had a lot of bona fide trade visitors and no casual visitors.

Putzmeister South Africa (PMSA) CEO
Ludwig Geysler

Focus on mining

Held alongside bauma Conexpo 2015 was the IFAT Environmental Forum Africa, where the focus was on water, sewage, refuse and recycling solutions for the continent’s mining and construction industry.

One of the main focuses of the supporting programme was mining – in particular the impact of mining on the environment. While mining continues to play an important role in Africa, the event considered the consequences it could have and what options are available for properly assessing these effects and keeping their impact down to a minimum.

Sessions included an introductory discussion on 'The mining sector—impacts on and solutions for the environment', followed by South African and international partners presenting talks and panel discussions on 'Water, sewage, refuse and recycling—solutions for the mining and construction industry', 'Identifying best practice for water management in the mining industry—use, treatment and disposal' and 'Challenges and solutions for the mining and construction industry'.

The subject of water—a strong focus in all the IFAT brand events—also came under the spotlight in the supporting program. Two sessions were dedicated to water management in mining areas. Specific aspects under examination were 'Groundwater and surface water' and 'Tools and concepts for river catchment management in the mining industry'. Another presentation was dedicated to 'Water and energy efficiency: opportunities for municipalities and waste water treatment plants'.

One company keen to make a splash during the event was South African based Scaw Metals Group, whose large stand in the IFAT hall brought together the integrated steel manufacturers many different business arms.

Scaw Metals CEO Markus Hannemann told *African Review*, "Business confidence is quite low in South Africa at the moment, but everyone’s got their heads down and are refocusing on their core businesses.

"What we decided to do at this particular show is promote more than just our distribution business, by showcasing our entire business, rather than a piece of one of our divisions."

The show will return to Johannesburg in 2018, giving exhibitors plenty of time to plan ahead to one of the continent’s most engaging events. As Rocco Lehmann, general manager at Ammann, concluded, "bauma Conexpo Africa is the most important show in Africa. You have to be at the show – it’s a must." ■

Look out for further news from the show in the next issue of African Review, including a number of exclusive interviews with some of the show’s biggest exhibitors.

Using technology to fight distraction and fatigue

How new safety technologies and techniques help to keep heavy equipment operators focused and alert

Picture two heavy equipment operators at work on two very different job sites. One is maintaining miles of haul road way out in bush country. Working alone in his motor grader, he has nothing but an ancient cassette player to keep him company. Earlier this morning, he had to make a long walk from his village to the remote construction camp. The second operator is running a dozer on a busy site in the middle of Johannesburg. He has distractions coming from every direction: fellow workers in support vehicles and on foot, display screens for several machine functions, cell phone calls and text messages, all on top of a delicate fine grading job. And he's not looking forward to an hour or more of maddeningly slow traffic on the way home.

As different as these work environments may be, they pose two common threats to the operators: fatigue and distraction.

In the past, the only way to combat these dual safety concerns was through training and faith in the operators' abilities. But today, emerging construction technologies promise to mitigate those challenges by monitoring operator focus and alertness, and providing immediate feedback when either starts to waver.

Monitoring operator distraction

Equipment manufacturers offer a wide range of safety technologies these days, but most focus on monitoring machine systems or detecting other equipment that may be working nearby. Caterpillar recently introduced a new take on safety technology, one that monitors the operator as he or she works in the cab.

David Edwards is the safety technology manager for Caterpillar Safety Services. He says there's a need for operator safety technologies - such as the new Cat Driver Safety System (DSS) - because the human brain only has so much capability to attend to several things at one time.



Caterpillar encourages operators to talk about the risks posed by fatigue and distraction

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➤ “It’s easy to get cognitive tunnel vision,” Edwards explained, “where operators don’t see a person walking beside their machine because they’re focused on something else. That inability to focus attention where it’s needed most is a serious issue, especially when time deliverables are shorter and more pressure is being put on to get the job done quickly.”

Along with operator overload, Edwards says distraction may also result from the opposite problem. “Operators may be distracting themselves on purpose because their job is boring. If you do a job that’s really repetitive, you’ll tend to do other things. Especially on rural jobsites or late night shifts where a machine might be working somewhere off on its own, we’ve seen people reading books, looking down at music players, driving with their knees because they’re doing something else. In those cases, people are using distraction to create mental engagement where none exists.

“Either way, on a busy job site or a boring haul road, that’s when risk starts to creep in. When things change in the environment and the operator is incapable of detecting it because his eyes are not on the road, that’s where something like our Driver Safety System comes into play.”

Customised For machine and application

The Cat system uses cameras and sensors to monitor whether the operators eyes are opened or closed, and to detect the position of the operator’s head. That way, the system can tell when the operator’s focus is out front as the machine is moving, or if he or she is looking somewhere else.

At installation, the system is customised for the machine and application so it won’t generate unnecessary alerts. When the machine is moving at a specified forward speed and the system detects a pre-set period of improper focus, it alerts the operator. It may also send a safety alert to the front office if desired, and if cell phone or satellite connectivity is available.

Addressing fatigue as a cultural issue

As effective as this new system is in keeping operators aware and on track, Edwards is quick to admit that technologies by themselves can only go so far in addressing these kinds of safety issues. Especially when you’re talking about fatigue, the solution may be as much about cultural adaptation as it is about technology.

“The Cat system can tell when an operator has had his eyes closed for too long, but there’s a larger safety issue at play in the operator’s fitness for duty even before he even climbs into the cab,” Edwards said. “Our bodies are the same whether you’re in Asia or North America or Africa. Your body needs sleep. But in a place as large and diverse as Africa, you can run into cultural issues where folks believe that lack of sleep is a sign of strength. ‘I can multitask. I can work all day and work all night at home or play all night and still do my job.’ Or maybe they simply have to walk a long way every day just to get to work. When we look at the data from our system, we see a lot of people who operate heavy equipment that just seem to be exhausted almost all the time.”

Edwards says that’s why Caterpillar includes a training and change management

communications program within the DSS solution.

“Our programme includes direct time with the operators where we talk about the risks posed by fatigue and distraction. Why do they experience the fatigue events? Why do they experience the distraction events? We also educate management. We have to get management to understand the basic facts of nature and human behaviour. Everyone needs to understand that, ‘Hey, this is a real threat. We’re all human. We have this elemental need to sleep and to remain engaged.’”

Positive results depend on communication

How do operators react to having this potentially invasive technology in the cabs of their machines? According to Edwards, it all depends on how it’s presented to them.

“A positive outcome depends on communication, on winning the operators’ hearts and minds. Our fatigue experts are really good at making sure everyone understands that it’s about getting people home safely, not about invading their privacy,” he said. “We’ve had extremely good reactions to the programme. We get emails from operators saying, ‘We’ve never experienced anything like this. This is the best training we’ve ever received. It’s had a positive effect on my work life and even my home life.’ That’s very gratifying.”

Benefits for all kinds of companies

In the end, Edwards believes safety technology is a great equaliser. “The small company in the middle of nowhere can manage the safety of their people and projects just as well as a huge company working in a city like Johannesburg. The technology can help low-skill and high-skill operators protect themselves personally, while helping to protect the entire operation from an economics standpoint. And it doesn’t matter whether you have cell phone or satellite connectivity or not. The operator in that cab always gets the immediate, real-time feedback and protection.”

Edwards is seeing a wave of interest in the technology because it’s new and fairly unique right now. He expects that the interest will grow as more people realise the value of keeping operators safe from the hazards of distraction and fatigue.

Edwards observed, “To the extent that you can reduce injuries in your workforce, it will have a direct benefit in costs and velocities. It will also produce the indirect benefits of helping you attract and retain the best operators you can find. Those are no-brainers - in Africa, or anywhere else you might do business.” ■



There’s a clear need for safety technologies - such as Cat’s Driver Safety System (DSS)



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Aggregate in the air

An in-depth understanding of cross-border work, coupled with its access to a large crushing and screening fleet operated by high skilled teams, has positioned B&E International to become one of the leading aggregates crushing companies in Africa.

One of its latest contracts, secured on the back of these market differentiators, is for Razel Mozambique, a company within the Fayat Group, which is undertaking the contract to rehabilitate the Maputo airport in Mozambique. Razel-Bec is a major civil engineering firm that designs, funds, produces and operates major public structures at national and international level. The Fayat Group is the largest independent construction group in France with 138 independent subsidiary companies and a geographical presence in 120 countries worldwide.



B&E International is crushing aggregates for use in the reconstruction of the Maputo airport runway

B&E International's portion of the six month contract comprises the production of about 100,000 tons of minus 26 mm G1 base course and approximately 160,000 ton of asphalt aggregate. Aggregates for the reconstruction of the airport runway are being produced at the company's crushing operation, situated at Joacco Quarry in the Mohamba district, and

material is being hauled around the clock to Maputo by a sub-contractor.

Razel Mozambique has two large asphalt plants set up at the airport to service this contract. One of these plants is essentially only a back-up plant. Given the tight timeframe for work, this expediency was necessitated due to the fact that all asphalt work takes place at night and the contractor has to ensure continuity of operation.

"The fact that work can only be undertaken within a small window of opportunity means that there is a requirement for large volumes of asphalt aggregate to be readily available. Fortunately, B&E International is known for achieving very high efficiencies without compromising on the quality of the aggregate being produced, so we can ensure uncompromising continuity of supply from our side," said Chris Weideman, director of operations at B&E International. ■



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Private roads work

The Uganda National Roads Authority (UNRA) says many challenges still face Uganda's roads industry as the government struggles to improve the country's road network using both private contractors and 'force account' (its own staff and equipment) and the body charges that government's strong reliance on force account simply because of the amount of work that needs to be done as quickly as possible could undermine the development of a strong and competitive private sector.

The roads body which recently marked seven years since being set up to revamp the dilapidated road network in the country, adds that "there are also a variety of issues associated with the composition of the private sector that need to be addressed if Uganda's road network is to grow and be well maintained."

The Agency explores some of the key challenges facing Uganda's road sector in its latest review and cites the inefficiency of small contractors saying Uganda has an abundance of small companies providing road contracting services although these small-scale contractors tend to be unable to capture enough steady work to train and retain good quality staff or put in place a high standard of quality control and business management systems.

"One consequence of this is a vicious cycle in which a small-scale contractor win work, hires staff to complete that work, loses them once the job is done and then has to hire new, inexperienced personnel for the next job. This means that the staff used by these companies often never gain the skills necessary to operate equipment properly, which results in poor quality workmanship and slow contract delivery," UNRA states in its review of the road sector.

It is estimated that there are about 800 road contractors operating in Uganda currently and these fall into three groups namely many small-scale contractors working on lots of small-scale, low-value contracts with limited capital, few employees and little or no plant and equipment, a few medium-sized contractors able to undertake larger, higher value contracts and a very small number of large contractors.

The Uganda National Roads Authority says that to increase the quality and size of the country's road network, Uganda needs to create a pool of technically competent and professional medium-sized businesses able to steadily capture work, retain skilled staff and deliver on time the required standard. The roads body also dismisses the argument that using government labor and equipment is cheaper than contracting the private sector describing it as another myth that arises from the way that the government calculates the costs of force account.

"When private contractors bid for a job, their costing have to take into account issues like staff salaries, the buying and maintaining of vehicles and the depreciation of equipment and the same costs apply to government force account. However, when they price a job, these key costs are counted as government overheads and are not factored in. What this means is that there is little difference between the basic costs to tax payers of using private contractors and force account," UNRA explains adding that the costs of the private sector are more transparent. ■

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Structures complete as contracted

Work undertaken on the N4 toll road project in South Africa is on track

South Africa's N4 upgrade project involves increasing the carrying capacity of an 18km section of the toll road from east of the Rockdale interchange to just west of the Arnot interchange. The contract was awarded by Trans African Concessions (TRAC). Also under Murray & Roberts Infrastructure's scope of work are the construction of a new bridge, the extension of an existing bridge and the construction of six large in situ concrete culverts and associated drainage works.

Ready for concrete construction

The civils structures will be constructed using a high specification readymix concrete with a high cementitious content to ensure optimum durability. The readymix is being supplied from AfriSam's Middelburg readymix plant where the company installed a generator to ensure continuity of supply even under load shedding conditions.

Pierre van Vuuren, contracts manager at Murray & Roberts Infrastructure, who is responsible for civil works on the project, explained that consistency of supply was important and that the locality of the

AfriSam plant as well as the competitive concrete solution offered meant that AfriSam was selected.

The readymix being supplied by AfriSam will create a more durable concrete with less likelihood of concrete deterioration and also allow more efficient use of labour as a result of the workability and easier placing and finishing. It also offers guaranteed early strength performance

In addition to being cost effective, AfriSam's enhanced durability mix designs meet all the durability specifications. AfriSam is considered one of the leaders in Durability Index testing in South Africa and the mix design underwent special durability tests at AfriSam's Centre of Product Excellence in Roodepoort. These tests included water sorptivity, chloride conductivity and oxygen permeability, all of which are designed to assess the working life of the structures being built with this concrete solution.

A challenging programme

The AfriSam enhanced durability mixes are easier to place and generate less heat of hydration which prevents thermal cracking

while reducing the CO2 footprint. The contract is particularly challenging as one of the culverts is being constructed at the entrance to the Middelburg Dam and portion of the new bridge over the Klein Olifants River is being constructed in an area where there is a constant flow of water.

Although the construction programme required that this culvert be constructed at the end of February, which theoretically marks the end of the major rainfall in the region, the catchment area had experienced a great deal of unseasonal rainfall and the water level in the dam was thus higher than anticipated.

To facilitate the construction of the culvert it was necessary to first build a large rock fill berm with a bentonite clay core on the northern or dam side of the culvert and then to dewater the area wherein the culvert was to be constructed. "The construction of the berm was exceptionally challenging for a number of reasons, but mostly as a result of the water level in the dam," said Mike McDonald, manager at AfriSam's Centre of Product Excellence.

Excavating the trenches to facilitate the placement of the bentonite presented challenges, particularly with respect to dealing with the displaced water and this was done in a phased approach with trenches of three to four metres being excavated at a time.

The section of the bridge being constructed in the middle of the river is being done using a system of girders and beams in place of traditional staging.

"This is the most appropriate option as it is not possible to erect staging due to there not being a stable surface on the river bed," he explained. "With all these challenges facing us, it was critical to develop a relationship with a supplier like AfriSam who could readily and reliably supply the 12,500m³ of readymix concrete we require for use for the civil structures on the project," said van Vuuren. ■

Murray & Roberts Infrastructure's scope of work includes the construction of a new bridge and the extension of an existing bridge



Umgeni Road's interchange upgrade

Hatch Goba's involvement with the Umgeni Road Interchange upgrade project has been a showcase for construction and engineering in KwaZulu-Natal, South Africa.

The project has involved the entire bridge deck built from one end of the structure, as opposed to the traditional segmental construction method whereby a bridge is built one span at a time.

Challenges and application

"The application of this innovative technology had a substantial impact on the construction requirements, as well as minimising traffic disruption," said John McCall, Hatch Goba, manager: roads & transportation, KwaZulu-Natal.

The overall bridge works were 1,200 m long, with a surface area of 14,000 m². The roadworks alone comprised 56,000 m² of asphalt, while the bulk earthworks totalled 100,000 m³ of cut material and 200,000 m³ of fill material. Another major challenge was posed by the fact that a large quantity of existing services not only had to be relocated, but had to be searched for and identified. These ranged from electricity, Transnet and water reticulation to sewerage and telecommunications infrastructure.

"This was an exceptionally demanding and challenging process," McCall said.



Project partners

Hatch Goba supplies process and business consulting, information technology, engineering, procurement and project and construction management and operational services to the mining, metallurgical, energy and infrastructure industries. Hatch Goba and SANRAL have been collaborating successfully for a number of years on such flagship projects as the Gillooly's Interchange in Johannesburg, one

of the largest and busiest of its kind in the Southern Hemisphere.

"Our experience, combined with our in-depth expertise in terms of project management, led to this major project being completed within budget," McCall observed recently.

"It has not only brought world-class transportation infrastructure to the greater Durban area, but has set an international benchmark for similar projects in future." ■



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Measuring more than gas

Modern handheld multi-gas sensing technology can also measure relative humidity

Specifically developed to improve safety in confined spaces, the Sentient handheld gas detection device is an innovative multi-gas instrument, which also measures relative humidity as a standard offering.

The handheld device, which was developed for use in underground mining as well as on surface plants, is IP68 rated and is available with fire patrol capabilities. The Fire Patrol Sentient device has a bright red seal and is inserted into outstations located in specific areas underground or on surface. The device then records date, time, gas and humidity measurements.

Protecting maintenance budgets

Widely regarded as the most cost effective, sophisticated and low maintenance gas detection device on the market, this low maintenance unit has no buttons. It is operated using an innovative 'tap' sensor ensuring that the instrument remains watertight. Another unique feature is a 'drop protection' capability that automatically switches the device off if it is dropped, reducing possible maintenance time and costs.

It is equipped with a downloading network configuration which is capable of gathering information from up to 500 Sentient units in a matter of minutes. All the equipment can be connected via a network to a Sentient downloading server, where specialised software enables various reports to be generated, such as detailed information on gas detected in the underground environment, peak values, TWA values,



Distinguished by its bright red seal, the Fire Patrol Sentient records date, time, gas and humidity measurements



The Sentient handheld gas detection device is a multi-gas instrument, which measures relative humidity as a standard offering

pre-shift tested values, calibration reports and "no movement reports". Sentient software is web-based, making it possible to email these reports to relevant personnel automatically.

Engineered to operate

Booyco Electronics is a single source firm, which supplies quality specialised electronic safety equipment, including pedestrian detection systems. Its range of reliable, accurate warning, locating and monitoring systems is engineered to operate in the harsh African conditions. ■



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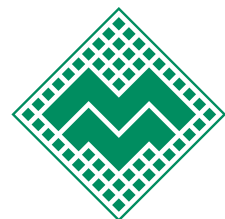


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Rietvlei's returns on a hybrid poly wire panel

How a modular solution solved maintenance, safety and production issues at a silica mine

Innovative thinking has resulted in the successful solution of silica screening operation issues. FLSmidth has designed and produced a hybrid poly wire modular panel for use in the screening process at Rietvlei Silica Mine in Pretoria, South Africa.

Double deck woven wire units were originally used as secondary screens in the production of silica sand at the mine. However, localised wear patterns created holes in multiple areas of the screen surface. These screens were replaced with modular polyurethane panels, which effectively increased both safety and maintenance issues but negatively affected the production output.

Specialists in screen media

FLSmidth is a global engineering company providing cement and mineral industries with factories, machinery, services and know-how. FLSmidth specializes in world-class products, facilities and systems, backed by tailored consultancy and support services. Our wealth of knowledge and resources means that we are able to provide one source solutions for even the most challenging requirements, worldwide.



FLSmidth has designed a hybrid poly wire modular panel for use in Rietvlei Silica Mine's screening process

FLSmidth invests heavily in developing new solutions to meet the important future energy and emissions challenges of its customers.

Through years of innovation and experience, FLSmidth has developed a vast global pool of specialist engineering resources that is unique within our market. We focus on cement, coal, copper, gold, iron ore and fertilizers, providing one source for the products, solutions and services they need. Today, the company offers a comprehensive, flexible and global service. With offices in more than 50 countries and service centres to help customers with every stage of their operational process.

"FLSmidth's screen media specialists were asked by the mine to find a solution that would ensure employee safety, decrease maintenance required and increase productivity. After analysing the process and vibrating equipment, we provided a number of recommendations with respect to the setup of the feed to the equipment as well as the use of a new material for the bottom deck panels," said FLSmidth's screen media



FLSmidth's hybrid poly wire modular panel is a standard 1'x1' panel comprising a flat top woven wire screen



FLSmidth's hybrid poly wire modular panel effectively increased productivity

technical support manager, Jannie Engelbrecht.

FLSmidth's hybrid poly wire modular panel is a standard 1'x1' panel comprising a flat top woven wire screen, using 20.0mm x 7.1mm aperture Vibro Optimax wire using polyurethane cast on to the steel edges to complete the 1'x1' modular panel using standard pin and sleeve or bolted pin system fixing devices to secure it to the sub-frame of the machine. Once installed, the effective open area percentage of the poly wire modular panel is 48 per cent, which compares favourably with the open area percentage of standard woven wire screens when installed.

Testing to determine attributes

A trial was undertaken at Rietvlei Silica Mine to determine the performance and suitability of the hybrid poly wire modular panel.

"With assistance of Jacques Labuschagne from Rietvlei Silica Mine, we



FLSmidth's hybrid poly wire modular panel

were able to ascertain that the new panel provided increased tonnes per shift while the raw product feed to the plant had an increased percentage of fines. During a normal shift it is possible to obtain an increase of up to 33 per cent when compared to the output achieved by the modular polyurethane panels previously installed. This effectively means the output can increase per month," said Engelbrecht. "We are extremely pleased with the outcome of the hybrid poly wire modular panel trials. We have managed to meet all of our stated goals without compromising on quality and we can additionally accommodate more fines." ■

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Operational modelling can slash costs

The lack of new capital projects in the mining industry globally has resulted in a general change in the business case of many mining houses. The current focus is all about sweating existing assets and reducing unit costs and increasing productivity.

Operational modelling or dynamic simulation is therefore essential to assist in the decision-making process in this new business milieu.

"Traditionally mining houses would have had a business improvement group to manage their own internal project pipeline, with some external consultants brought on-board for change management in terms of looking at any bottlenecks, for example," Rüdiger von Varendorff, Australia-Asia lead, operational performance analytics at Hatch, commented.

Using its unique operational modelling approach, Hatch is able to assist its clients in unlocking value in their existing operations by ensuring design capability, capital effectiveness and operational efficiency of the integrated production chain.

"The South African mining industry is looking to mechanise. However, you first have to adopt best practice in terms of the mining operation itself, as well as putting the necessary systems in place to sustain that," von Varendorff observed.

Mining capacity and costs

A major mining house called in the expertise of Hatch to determine how to up its output from 170mtpa to 190mtpa – without any additional capital cost, simply by unlocking the latent capacity in the supply chain.

Assisting another client in the gold-mining sector, Hatch was able to effect a 25 per cent increase in throughput, also without any additional capital.

"The key to these significant achievements is that they were realised in close co-operation with the client itself, tapping into the company's own knowledge base," von Varendorff commented. "At the end of the day, the main driver for operational modelling is to drive down costs, as part of a continuous business improvement approach. The key thing to remember is that it is not just about plugging in some costly software program that then produces immediate results. It is all about adjusting and optimising your existing operations by learning the value of doing things differently – where necessary."

The importance of companies engaging an expert like Hatch that can apply operational modelling or dynamic simulation to their supply chain or production process in a holistic fashion in order to generate maximum cost-effectiveness and efficiency.

A typical example is a coal operation using simulation to determine the ideal size of its coal stockpile.

"This is the wrong kind of question to ask. Why do you require a stockpile? What is its purpose and how does it fit into your overall business strategy? Are you going to utilise that stockpile to blend coal, or to mitigate against the impact of seasonal rainfall? These are the sorts of scenarios that operational modelling is best suited to assist with," von Varendorff said. "From underground operations to open-cast mines, if you want to improve productivity without spending large amounts of capital, you have got to do things differently. This inevitably means you have to change the way you make business and operating decisions. The mining industry is steeped in fairly traditional business practices. It cannot just keep on doing things the way it has always done." ■

Weba Chute Systems considers cost of ownership

Although it may be true that imitation is the sincerest form of flattery, lookalike chute systems are simply not making the grade in the mining industry and are, in fact, costing plants hundreds of thousands of Rands in unplanned downtime, reduced throughput



Weba Chute Systems has accumulated a depth of expertise over almost 4,000 successful installations

and unnecessary maintenance.

With increasing pressure on reducing operating costs, many mines are opting for the most inexpensive transfer point without factoring in that this sort of decision will result in a higher total cost of ownership. "Although Weba Chute Systems may appear relatively simple and straightforward to produce, these custom designed transfer solutions takes a number of hours to engineer. There is an erroneous perception that a Weba Chute System is expensive, but ultimately it is all about the total cost of ownership, not about the initial purchase price," says Mark Baller, managing director of Weba Chute Systems.

Skill and expertise are the major differentiators that allow Weba Chute Systems to produce transfer point systems engineered specifically for a given application requirement. "Anyone can do the basics when it come to the technical side of designing a transfer chute, however this is not an exact science and transfer points are definitely not standard off the shelf products," Baller observed.

Increasing throughput

Weir Minerals Africa is able to offer a fit-for-purpose complete custom crushing solution which is engineered to customers' specific application requirements. Significantly, Weir Minerals Africa is able to not only address the crushing plant requirements, but can also provide product solutions for wet plant needs including slurry pumps, hydrocyclones, rubber hoses, dewatering screens and slurry valves.

The Weir Group PLC acquired Trio Engineered Products, an OEM of crushing and separation equipment for the mining and aggregates markets, in 2014. "Coupled with Weir Minerals Africa's local experience and understanding of local operating conditions, Trio Engineered Products has years of global application and service experience in the crushing equipment sector," said JD Singleton, general manager – Trio products at Weir Minerals Africa.

The extensive range of Trio equipment

allows Weir Minerals Africa to offer either a standard or custom crushing solution directly from the Trio manufacturing facilities. The Trio product range includes grizzly feeders, apron feeders, belt feeders, gyratory crushers, jaw crushers, cone crushers, horizontal impact and vertical shaft impact crushers, circular motion screens, horizontal incline screens and complete material handling solutions.

"We analyse a number of factors when assessing an operation. These include the source or raw material, specific gravity of the material, the bulk density of the feed, the hardness of the material, the throughput requirement, the top size of the feed and the final product size requirement," Singleton pointed out. "In addition, site specific requirements including the footprint available to accommodate the plant and the infrastructure would dictate what options are possible in terms of the plant itself. Thereafter, Weir Minerals Africa will produce an



Weir Minerals Africa now offers a wide range of Trio products

engineered solution tailored specifically to the required outcome, for optimised throughput, as well as maximised uptime."

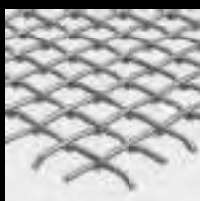
Once the plant has been installed, the dedicated Trio field service team will undertake the commissioning and optimisation of the plant and customers are provided with immediate access to a dedicated support facility. ■



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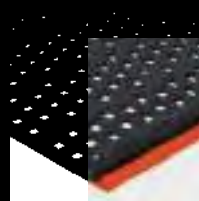
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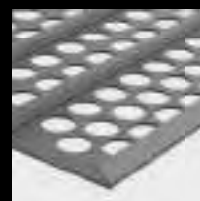
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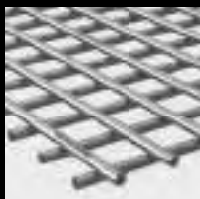
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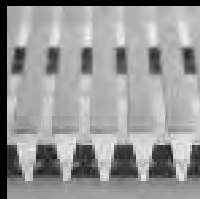
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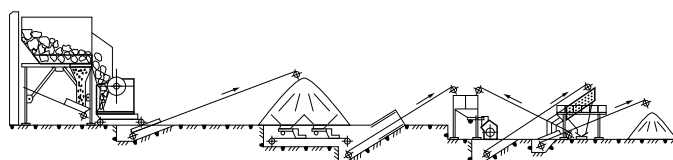
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TWS BucketWheel remains a key solution

2015 marks the 15th anniversary for the **Terex Washing Systems (TWS)** Finesmaster (FM) BucketWheel range which was first introduced to the aggregates industry in 2000. In particular, its renowned FM BucketWheel is still proving a popular



solution with sand producers who require a reliable, efficient, durable sand plant, which can offer longevity, reliability and ease of maintenance.

Hatch Goba's higher standards

Process and business consulting firm **Hatch Goba** offers mining capabilities ranging from dewatering to infrastructure, and including shaft sinking, ground handling systems, hoisting headgear design and dynamic simulation.

The consultancy acts as a Centre of Excellence in shafts and hoists, winding practices and deep-level mining has stood it in good stead in securing project work in a range of commodities across Africa. Kevin Seyfried, director mining AEM, associate at Hatch Goba, "We have implemented very successful projects in Africa, from Zambia to the Democratic Republic of Congo and Tanzania."

A recent example of its multi-disciplinary approach was its work for a client on the **Zambian Copperbelt**.

Hatch Goba helps mining-houses balance capital investment and operational improvement



"We made some smart standardisation decisions between the two new shafts on the project. It was a different approach that allowed the client to get the project up and running much quicker than having to design the two shafts separately," Seyfried said.

"We have found that with the right-sizing many of our clients are going through right now due to the myriad challenges they are facing."

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Sorting with Steinert film

Plastic foils are among the most important raw materials for recycling and are already reused to a substantial extent. However, thanks to new technologies, much higher recycling rates will be achieved in future.

Heavy demands are imposed on today's sorting systems deployed in the recycling industry. As plant capacities are ever-increasing as per their throughput rates, specifications are becoming more and more stringent as applied to sorting performance expectations. These aspects have an impact on sensor technology as well as on machine sorting functions. In addition, users of processing and sorting plants are constantly required to respond to improved recycling rates whilst being called on to reduce the overall volume of waste following processing. Sensor technology potential in the recycling sector - or to be more precise, detection of the wide variety of different plastic materials emanating from different material-flow sources - have remained largely untapped to date. The application of new technologies provides far better results than have been seen in the past.

The innovative UniSort Film from Steinert Group has been designed specifically for improving the product potential for this sector.

The UniSort Film has succeeded in developing the Active Object Control-System (AOC), originally developed for fine-product sorting on the UniSort Flake range for larger particle sizes. As in the case of small objects, the sorting of buoyant flat objects is governed by the motion behavior of the material being sorted in terms of material detection and ejection - having a substantial impact on purity and efficiency. AOC is a stabilisation system catering for defined motion paths controlling the material sorted, hence delivering a distinct improvement in quality of the final product. Stable motion of the objects even at double conveying speed results in higher throughput rates while enhancing efficiency of the system.

As on all NIR systems produced by UniSort, the UniSort Film system is equipped with ultra-modern hyper spectral imaging (HSI) camera technology, ensuring an exceptionally high degree of flexibility and future sustainability.



UniSort Film is suitable for all functions involving sorting of air worthy objects

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Pumps

Cost-effective dewatering pontoons from Weir Minerals

Dewatering solutions for open pits and slimes dams generally comprise a choice between undertaking civil construction for pump stations and selecting a mobile pontoon or skid mounted pumping solution. Experience indicates that the land based pump station does not always have the same flexibility that pontoon or skid mounted pump sets would offer.

Pontoons are installed at the source, making pumping more efficient as the pumps face consistent suction conditions. In addition,

pontoon or skid mounted pumping solutions can be readily migrated to wherever they are required. This eliminates the costly and time consuming alternative of developing a new pump station for each location.

Howard Jones, **Weir Minerals Africa's** product manager – dewatering, Africa and Middle East, said, "It is important to select the most appropriate solution based on accurate information gathered during an on-site inspection. Factors such as topography, volume of water, quality of water, the total distance to be pumped, the difference in elevation from the start of pumping to the discharge point, the preferred piping material, the availability of electricity, and the specific mining methodology are critical to the resolution of the dewatering issues."

Weir Minerals Africa focuses on pontoon and structural design specifically, with modifications implemented for local conditions. The



The Leo XST Series Standard Centrifugal Pump



One of two Warman DWU 125 dewatering pumps mounted to a pontoon and walkway during assembly phase

selection of the pumping unit could include any of the well-established Weir Minerals brands such as Warman and Multiflo and could vary from pure dewatering or dirty water pumps to submersible dirty water pumps, as well as heavy duty slurry submersible and other end suction products.

Multiflo pontoons are constructed with integral access walkways which could either be fixed to the bank or floating. The walkway holds the cable and piping from the docking station to the shore and provides ready access to the pumps for inspection or regular maintenance. Light masts, as well as LED strip lighting, form part of the offering and are supplied according to client's requirements. The pipes comprise Linatex rubber hoses which are also locally manufactured by Weir Minerals Africa and offer the customer extended wear life because of the specialised rubber compounds used in their manufacture.

RAP supplies Leo centrifugal pumps to SA

South African water pump supplier **RAP Technologies** has a long-standing partnership with the **LEO Group** in supplying LEO's products. A well-supported staple in this product range is the LEO XST Series Standard Centrifugal Pump.

As its name suggests, the XST Series Standard Centrifugal Pump is an axial suction and radial discharge centrifugal pump designed in accordance with ISO 2858 and EN 733 standards. These standards respectively specify the designation, nominal duty point and dimensions on both 16 and 10 bar pressure

end-suction centrifugal pumps. The pump can be used for the circulation and transfer of clean, chemically non-aggressive water and other liquids with physical and chemical properties similar to water.

Carl Mulock Houwer, RAP Technologies' marketing manager,



The Leo XST Series Standard Centrifugal Pump

commented, "Centrifugal pumps play a significant role in water supply – be it with pressure boosting systems or irrigation systems – in the industrial, mining, construction and agricultural sectors,"

adding, "The XST Series Standard Centrifugal

Pump – made of the highest quality materials – boasts very low maintenance, excellent efficiency and power absorption properties. The lifecycle cost on the pump is very competitive and the spare parts are cost effective and easily interchangeable."

The pump is used in a range of applications including water supply, water circulation in air-conditioning systems, irrigation, landscaping, fire pumps, as well as cooling

for heavy industrial equipment. The pump boasts a flow of up to 220 m³ per hour with a head of up to 95 m and a power range of between 0.75 and 55 kW. Standard temperatures sustained are from -10°C to 85°C with an optional range between -20°C and 120°C.

Pumps

Axial piston pump sets industry standards

The **Hansa-TMP Mechatronics Research Centre (MRC)**, based in Modena, Italy, has developed an innovative variable displacement closed loop axial piston for trucked and wheeled vehicles supplied worldwide in the agricultural, construction and urban material handling markets.

The high power density pump TPV 1500 series, with displacement 17-21cm³/n, is among the top performers of its category reaching a peak pressure of 400 bar. This essential feature is ensured by a software based structural study and digital simulations study during the designing phase that avoid any performance loss even under the most difficult working conditions. Furthermore, the pump is noiseless while working the highest performance becoming suitable for applications operating in residential and urban areas.



The tandem pump TPV 1500 with electronic sensors on-board, from Hansa-TMP

Moreover, the latest TPV 1500 series of Hansa-TMP's line of pumps is endowed with integrated feed-back control and full range of on-board electronic sensors such as pressure sensor, speed/RPM sensor, swash plate angle sensors, which are customers needs-customised in order to offer them a high-safety warranty.

By utilising a "back-to-back" structure with central distribution line, the pump TPV 1500 series achieve compact dimensions which had been firstly introduced by Hansa-TMP in the TPV 1200 series as a novelty in the world on closed loop pumps. In fact, the single pump is 170.5mm long and the tandem pump is 285mm long, the latter is circa 60 mm shorter than the competition standards.

Hansa-TMP is certified for the quality of products and process through ISO 9001 certification and for the sustainability of the operations through ISO 14001.

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Open-access database supports water resource management

A new open-access data portal to be developed by the **Food and Agriculture Organization of the United Nations (FAO)** will use satellite imagery to help water-scarce countries in the Near East and North Africa better manage this precious resource.

Currently all countries in North Africa and the Near East suffer from severe water scarcity, with significant consequences for irrigated agriculture, the region's largest water user. This situation is expected to further intensify as climate change leads to more frequent and longer droughts, with severe impacts on food production.

The aim of the new data portal is to collect and analyze satellite information that can be used to improve land and water productivity and boost the sustainability of agricultural systems. All information will be openly available for countries and users who need it.

"Reporting on water productivity is lacking at country level in water scarce regions and this data will be key to creating sustainable agricultural systems in areas with scarce resources," said Jippe Hoogeveen, project coordinator and technical officer in FAO's Land and Water Division. "Remote sensing satellite images offer governments near real-time information regarding the use of natural resources for food growth and production, making assessments and improvements to existing agricultural practices more efficient and cost effective."

Remote sensing technologies have revolutionised the possibilities for assessing land and water productivity through greater coverage and data capture, however many countries lack the capacity and resources to analyse and work with this data. The database will be developed at three spatial scales: the

continental level over the whole of Africa and Near East, country and river basin level and, irrigation scheme level. This will allow experts to cross check results at the various levels ensuring appropriate recommendations for improvements in different settings.

FAO technical support will include assisting countries in monitoring land and water productivity, identifying productivity gaps, proposing solutions to reduce these gaps and contributing to a sustainable increase in agricultural production. Hoogeveen said, "Advanced information and communication technology will play a crucial role in all of this work. This information will empower those who need it, from SMS messaging for farmers working in water scarce areas to country experts using more sophisticated applications to assess information on water basin levels."

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