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AUGUST 2016

P20

CWG's Austin Okere, on diversifying African economies







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Editor's Note

This issue of African Review features the viewpoints of CWG founder Austin Okere and TAL GM Chaitan Manga on economic and enterprise performance, on pages 20 and 22. The interplay between corruption and development is analysed on pages 26 and 27. The AfDB's ongoing pursuit of strategic industrial partnerships is covered on page 28. Intermodal transport in South Africa is addressed on pages 30 and 31. The collaborative use of data to improve logistics operations is assessed on page 32. Practices and technologies in West African waste management are highlighted on page 34. Service and repair regimes for generators are advised on page 38, and the importance of generators to infrastructure projects is covered on pages 39 and 40 - most notably, with respect to SDMO's recent work in Cameroon. Following a report on turbine technology in Nigeria on page 42, there is an article on solar power in Kenya on page 43. Caterpillar's new excavator is appraised on page 46. Solutions for concrete applications are highlighted from page 48 to page 52, including news of Bobcat's grading attachments. Following the annual Construction and Mining Buyers Guide on pages 56 to 79, screening for aggregates is promoted on page 81.

Dr Andrew Croft, Managing Editor

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Business

Routes for public and private sector entities to tackle corruption and contribute to economic prosperity; and the African Development Bank's commitment to strategic partnerships for increased industrialisation

Transport

Sustainable and integrated urban planning; and collaboration on data for logistics

Environment

Waste management in West Africa

Power

Maintenance regimes for generators; standby power support for energy infrastructure projects; SDMO's commitment to Cameroon; and turbine technology for Nigeria; photovoltaic power in Kenya

Construction

Achieving optimal productivity with Caterpillar's new 320D2 GC excavator; uses for concrete admixtures; concrete options for roadbuilders in East and West Africa; grading solutions with Bobcat's compact loaders; best practices in asphalt production; sand and gravel washing to serve constructors; and a comprehensive listing of key industry players in the annual African Review Construction & Mining Buyers Guide

Mining

The significant part that screening plays in separating and sizing the wide range of particle sizes generated by crushing equipment

Orascom Construction highlights ongoing Egyptian power generation projects

"

Orascom Construction (OC) and its Italian joint venture partner, **Imagro**

Construction Srl, have hosted an event in Milan, Italy, welcoming over 200 guests from Italian and European suppliers and subcontractors involved in the ongoing construction of the Burullus, New Capital, Assiut and West Damietta power plants in Egypt. The Italian event organised by OC an Imagro Construction highlighted the cooperation among stakeholders and

Once complete, Egypt's Burullus and New Capital power plants will be the largest natural gas-fired combined cycle power plants in the world

featured guest speakers including representatives from **SACE**, **HSBC**, **BNP Paribas** and several key suppliers. The Burullus and New Capital power plants will be the largest natural gas-fired combined cycle power plants in the world once complete. In addition, the Assiut and West Damietta power plants are currently being converted into combined cycle power plants following construction of the initial simple cycle phase by an Orascom Construction consortium in record timing.

OC is a global engineering and construction contractor primarily focused on infrastructure, industrial and high-end commercial projects in the Middle East, North Africa, the United States, and the Pacific Rim. The group also develops and invests in infrastructure opportunities. It owns 50 per cent of **BESIX Group**, and holds a construction materials and property management portfolio. The event in Milan follows a ontract signing by OC and its 50-50 **Arab Contractors** joint venture with the Egypt's **National Authority for Tunnels** to execute Phase 4B of the Cairo Metro Line III. OC's share of the contract amounts to approximately EUR295mn. The joint venture will be responsible for the full scope of this new phase, which will stretch 6.1 km across a viaduct and five elevated stations.

Founded in 1997, Imagro first specialised in the appliance industry, and has gradually expanded its range to different industrial sectors to forge strategic partnerships with large corporations that operate globally. Imagro specialises in eliminating these barriers and finding suppliers that can offer a competitive advantage. From roll-formed metals to sophisticated automation equipment, Imagro can find, qualify and manage global supplier networks for clients. Imagro also manages inventory, currency exchange risks, and logistics. Working closely with its partners, Imagro supports new product introductions. Imagro team members assist in all stages of new product introduction.

DIGITAL MARKET WORTH US\$2,791MN BY 2020

The 'MENA Digital Transformation Market Outlook 2021' report published by **Research and Markets** assesses the application of technology to profoundly enhance performance of enterprises through the implementation of digital platforms including social media, analytics, mobility and smart devices.

The report indicates that the digital transformation market in the Middle East and North Africa (MENA) was valued at US\$1,121.4mn in 2015 and is forecasted to reach at US\$2,791mn by 2020, garnering a compound annual growth rate (CAGR) of 16.4 per cent.

Increasing e-government and smart city initiatives, growing internet penetration and social media usage, rapid adoption of digital services in BFSI sector and enterprise mobility are forecasted to be major growth drivers of MENA digital transformation marker over the forecast period from 2015 to 2021.

MARRAKECH ASSESSES TOURISM MARKETS

With the Mediterranean Basin attracting around 200mn visitors every year. The **World Bank** recently organised a regional conference on 'Regional Development and Tourism Transition in a Changing Climate in the Mediterranean' to discuss this issue in the lead-up to the 22nd Conference of the Parties on climate change (COP 22).

The conference on development and tourism, held in Marrakech in association with the Hassan II Academy of Science and Technology and a number of Moroccan universities and Mediterranean and international research centres, discussed recent research into climate change covering the Middle East and North Africa (MENA), specifically looking at how the region has been affected by climate change and how the climate threat may escalate. These studies warn that the price of inaction will be high with a 10 per centt reduction in the supply of running water by 2050 combined with increasing recurrent droughts and a surge in temperatures.

The Maghreb countries, with their particularly tourism-dependent economies and especially acute water shortages in the summer, have used this and other events to call for more sustainable, rational water resource management to guarantee a constant supply in tourism destinations.

At the event, tourism sector experts and climate change scientists met to consider how to make sector policy-making more climate smart.

As Taoufiq Bennouna, World Bank senior environment specialist, put it, there is a need "to raise stakeholder awareness to mainstream climate change into regional development policies" and make the tourism sector a driver for development to reduce the pressure on natural resources and form a real source of income for the populations and economies."

BRIEFS

Injoo's Egyptian market share



Egypt, InnJoo

Electronics company **Injoo** has opened an Egyptian office to meet demand for its range of smartphones, accessories and tablets. The company reports significant increases in sales volume and market share in Egypt, on the back of recent expansion of its distributor network in the country. Ahmed Kandil, InnJoo country manager for Egypt said, "The Egyptian market is one of the most pivotal in the Middle East and Africa and certainly very important for InnJoo."

NH grows Sudanese network



New sub-dealers join CTC Engineering's listributor network

New Holland Agriculture and CTC

Engineering, its distributor in Sudan, have launched a sub-dealer network project with an official ceremony in Hasahisa, comprising five new sub-dealerships located in Almanagil, Dongola, Kosty, Al Faw and Almazmoom.

The launch event, hosted by CTC, was attended by the Minister of Agriculture for Gazeira State Dr Ahmed Osman and the Mayor of East Gazeira Eng Muhammed Kamal. ALGERIA SMT Algeria + 213 560 041 411 ANGOLA

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Radisson Blu opens new hotel and convention centre in Kigali

Hotel brand **Radisson Blu** has opened a new hotel and convention centre in Kigali, Rwanda. Valued at more than US\$300mn (about Rwf223bn), the complex comprises the five-star Radisson Blu hotel with 292 rooms and conference facilities which can host more than 5,000 people.

"This new opening in Rwanda further strengthens our position in the East African Economic Community and on the African continent. Africa is our biggest growth market where, on average, we have signed a new hotel every 37 days and opened a new hotel every 60 days," said Andrew McLachlan, senior vice president business development at the **Carlson Rezidor Hotel Group**.

The project is owned by UCL, a joint venture co-owned by the **Government of Rwanda** through the **Rwanda Social Security Board (RSSB)** and **Prime Holdings Ltd**, as well as private investors including **Crystal Ventures Ltd** and **Rwanda Investment Group (RIG)**.

Carlson Rezidor area vice president Marc Descrozaille said, "This project is in line with our long-term strategy to establish Radisson Blu as the premier upper upscale brand in Africa with a strong network across selected economic hubs and capital cities across the continent."



Carlson Rezidor Hotel Group has the largest pipeline of hotels and rooms under development of any international hotel operator on the continent. The Radisson Blu Hotel & Convention Centre hosted over numerous African Heads of State at Rwanda's first African Union Summit in July 2016, in addition to hosting Africa's largest hotel investment conference (AHIF) in October 2016.

The Radisson Blu Hotel & Convention Center, Kigali, also features two on-site restaurants, serving Continental and Rwandan favorites as well as the Super Breakfast Buffet; six food and beverage outlets, including The Lobby Bar & Lounge which caters for lighter fare or a relaxing nightcap; 650 parking bays for guests; a fitness centre; an outdoor swimming pool; boutique retail shops; and a spa by Amani, which is open for a relaxing rain mist shower, steam bath, sauna or just for winding down in the relaxation lounge. The adjacent Convention Center will have a net floor area of 53,000 square meters, and is set to become an iconic landmark for Kigali and Republic of Rwanda.

ACI INVESTS IN RWANDAN HEALTH WITH OSHEN

Zandre Campos, CEO of **Angola Capital Investments (ACI)**, an international investment firm headquartered in Angola, has committed one of its major holding companies, **Oshen Healthcare**, to an agreement with the **Government of Rwanda** to create a multi-specialty healthcare facility. The company will invest 18.1bn Rwandan Francs (RWF) in the next five years to upgrade the current infrastructure and assume management of King Faisal Hospital, located in Kigali.

"The objective is to create a regional, multi-specialty referral healthcare facility in East Africa. The hospital will have the best physicians and the latest specialized technologies," said Teo Sarda, president & CEO of **Sphera Global Health Care**, which will collaborate with Oshen. "The hospital will meet and exceed international standards so that the over 200mn people in the neighboring countries have access to quality healthcare."

Sphera Global Health Care is a multinational corporation with hands-on experience in health programmes and a specialised team with wide experience in healthcare management. It develops and implements health care solutions for governments, corporations, organisations and institutions facing market-specific health care challenges. It utilises in-depth expertise in management and coordination, medical networking and technology.

"We want to bring the highest quality healthcare services to Africa. Our investments aim to democratize healthcare services so that the people in Africa, and all over the world, have access to quality healthcare," said Zandre Campos, chairman and CEO of ACI, which invests in companies in the healthcare, technology, energy, transportation, hospitality, and real estate sectors throughout Africa.

BRIEFS



Securexpo East Africa set to double in size in 2016

Securexpo set to double in size

Kenya's primary exhibition for the commercial and homeland security market, taking place at the Visa Oshwal Centre in Nairobi, 8-10 November, Securexpo East Africa is expected to attract 70 local and international exhibitors and 2,500 trade visitors - double its previous tally. Alexander Angus, regional director for East Africa at **Montgomery**, which organises Securexpo East Africa, said, "The growth that we have seen in the security market in Kenya has been truly amazing."

Bulyanhulu's Johnson chillers

Johnson Controls has installed two custom-built Frick ammonia water chillers at the Bulyanhulu gold mine just south of Lake Victoria in Tanzania. The chillers supply chilled water to a surface bulk air cooler (BAC) at a second ventilation shaft developed to service Bulyanhulu's extended mining operations. The installation, designed and constructed by BBE Projects, will assist the mine to ensure continued safe working conditions. Richard Gundersen, director at BBE Projects, "The chillers allow us to deliver cooled air to the working face 1,000m below ground where rock temperatures can reach 50° Celsius. The BAC uses water from the chillers on the surface to cool the air sent down the shaft to 8°C. By the time the air reaches the mine workings it has warmed to 20°C, which still provides sufficient cooling to allow operations to proceed."

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To find out more about what FG Wilson can do for you, visit us at www.fgwilson.com





Zimbabwe's FBCH invests over US\$1mn in compliance-related technology systems

In a recent trading update to shareholders, **FBC Holdings Limited (FBCH)** group CEO John Mushayavanhu confirmed that the company has invested over US\$1mn in compliance-related technology in order to maintain its correspondent banking relationships - and that it will continue to invest in this critical area.

FBCH is an investment holding company listed on the **Zimbabwe Stock Exchange (ZSE)**, whose principal activities are in Zimbabwe. The group offers diverse financial services through subsidiaries that span commercial banking, mortgage financing, short-term insurance, reinsurance, securities trading and micro-financing. In all, FBC Holdings Group comprises **FBC Bank Limited, FBC Building Society, FBC Reinsurance, FBC Securities** (**Private) Limited, Eagle Insurance Company Limited,** and MicroPlan Financial Services (**Private) Limited.**

According to Mushayavanhu, FBC Holdings has aggressively promoted the adoption of ecommerce business practices and invested in e-commerce driven distribution channels over

FBC Holdings has aggressively supported e-commerce business practices and distribution channels over the past five years

the past five years. He said, "To make it more convenient for our customers to transact without using cash, we have increased the number of FBC point of sale (POS) machines in the market, continued to encourage our customers to use our mobile app, Mobile Moola, and Internet banking to make payments."

He reported also that the company has reduced the cost of POS transactions and realtime gross settlement system (RTGS) payments. He added that, as a result, FBC holdings has witnessed a massive increase in the number of POS, RTGS, Internet and mobile money transactions by its customers significantly reducing the demand for cash.

Mr Mushayavanhu said, "All our subsidiaries continue to expand their presence in ecommerce distribution channels, and this will be a key revenue driver for the bank."

He added that FBC bank has also seen rapid transaction growth especially in the area of mobile and online transactions. He said also that all subsidiaries are of FBC holdings are now compliant with minimum capital requirements and FBC Bank is on course to achieve its 2020 recapitalisation targets as per the plan approved by **Reserve Bank of Zimbabwe (RBZ).**

Mr Mushayavanhu said, "We are exploring various initiatives to accelerate the bank's recapitalisation plan in order to defend FBC Bank's market positioning and we intend to leverage on the brand and creditworthiness of FBC Holdings in our effort to achieve this."

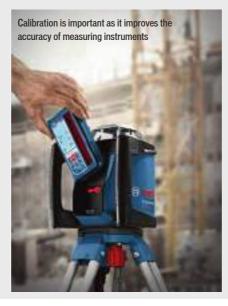
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BOSCH OPENS CALIBRATION CENTRE IN SOUTH AFRICA

Technology and services supplier **Bosch** has opened its first Calibration Centre in Johannesburg, South Africa. The new centre will not only service Bosch power tools, but also calibrate Bosch measuring instruments from now on. The importance of calibration is due to the fact that it improves the accuracy of measuring instruments.

"Accurate measuring instruments, in turn, improve both work and product quality," commented Bosch Power Tools brand manager Sebastian Johannes. "The hidden costs and risks associated with uncalibrated measuring instruments can be much higher than the cost of calibration itself."

It is recommended that all measuring instruments are calibrated by a reputable company in order to ensure that any measurement errors are within the acceptable



range. The following Bosch products can be calibrated at the Calibration Centre: all line and point lasers, optical levels, rotating lasers and receivers. Calibration entails a comparison between a known measurement (the standard) and the measurement derived from a particular instrument.

"This is done to determine if an instrument's accuracy is within the acceptable accuracy range specified in the user manual," Johannes explained. He adds that instruments need to be calibrated once a year, as the accuracy degrades over time due to normal wear-and-tear.

It is also advisable to have instruments recalibrated following any hard knock or fall, or if operated or stored outside the operating or storage temperature range, as specified in the technical data or user manual.

BRIEFS

JCSE surveys South Africa's IT skills gap

The Wits University Joburg Centre for Software Engineering (JCSE) has launched its seventh consecutive skills trends survey in the South African information and communications technology (ICT) sector. The survey is part of the JCSE's continuous effort to create a meaningful representation of South Africa's ICT skills landscape and provide an outline of the current skills priorities and gaps in the sector.

Adrian Schofield, the JCSE's manager of Applied Research and author of the report, says South Africa continues to fall behind its African peers while the state of the local economy sees the sector's clients cut back their own expenditures. He adds that the lack of improvement in South Africa's basic education remains a major concern. "Exposure to and familiarity with ICT for all learners is essential. Some laudable initiatives have appeared, such as the use of tablets in Gauteng schools, but they have yet to reach a sustained, critical mass for all grades of learners."

Trends in technology adoption place increasing emphasis on ICT sub-sectors such as cloud; big data/analytics; mobile; security and the Internet of Things.

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Endeavour marks new mine construction at Houndé in Burkina Faso

More than 10,000 people attended a ceremony recently to mark construction of Houndé Project site managed by **Endeavour Mining Corporation** in Burkina Faso. Construction began in April 2016 and is progressing on-time and on-budget, with the first gold pour expected during the fourth quarter of 2017.

The ceremony celebrated an important milestone for both Endeavour and the **Government of Burkina Faso**, as Houndé is expected to become the company's flagship lowcost mine and a prominent mine



Roch Marc Christian Kaboré, President of Burkina Faso, celebrates the new mine construction at Houndé

within the country. Those attending the ceremony included the President of Burkina Faso, the Prime Minister, the Minister of Energy, Mines and Carriers, numerous other Government ministers, officials and diplomats, senior community representatives and members, as well as Endeavour's executive management, its Chairman of the Board, and Houndé employees.

Roch Marc Christian Kaboré, President of Burkina Faso, said, "We welcome Endeavour's investment in Burkina Faso, and the company's decision to make a long-term commitment to our country. This reflects the favourable investment environment that Burkina Faso has created for the mining sector, and is a strong signal of the future health of the gold mining industry in our country. The Houndé development will create hundreds of jobs, both directly in mining and also ancillary services, and the associated prosperity will raise living standards throughout the surrounding district. With the Houndé Project and the Karma mine, Endeavour Mining is becoming a key partner for our country."

Alpha Oumar Dissa, Minister of Energy, Mines and Carriers, added, "We are extremely pleased with the advancement of the Houndé project, which demonstrates that the Houndé belt is amongst the world's most prosperous gold mining regions. We look forward to continue to work closely with Endeavour and the surrounding communities as they bring this flagship project to life. Congratulations to everyone involved, I know the Houndé Mine will benefit the Tuy region for generations to come."

ORANGE BUYS AIRTEL IN SIERRA LEONE

Telecoms group **Orange** and its Senegal-based partner **Sonatel** have completed the acquisition of 100 per cent of the mobile operator **Airtel** in Sierra Leone. Airtel has over 1.3mn customers (on the basis of active customers within a 30-day period) for a total population of 6.3mn people.

With a mobile penetration of around 50 per cent of the population, Sierra Leone offers considerable growth potential, particularly at a time when significant investments are underway to extend the operator's 3G network. This network, which already offers good coverage in Freetown and other major towns in Sierra Leone, is set to provide internet access to customers living outside major urban areas.

Investments planned in the coming years should enable customers in Sierra Leone to benefit from the support of the Sonatel group and take advantage of the Orange group's expertise in the digital ecosystem.

CONGO REGISTERS DEMAND FOR MONEY TRANSFERS

A recent workshop on the Future of Money Transfers conducted by TerraPay and ARTF in Brazzaville and Pointe-Noire established that there are significant new opportunities in digital payments services - and that, like most African economies, Congo is registering strong demand for digital payments products, and particularly international and cross-border money transfers.

Congo's payment landscape is dotted with multiple money transfer operators, catering to a wide base of banked and unbanked consumer segments. The services, however, operate in silos and the resultant market fragmentation constrains the pace of digitalisation. Industry influencers representing a cross-section of banks, mobile money service providers, regulators and money transfer operators - gathered to exchange ideas on interoperating payment services. In Congo, with a 13 per cent banked population, the opportunity includes capturing greater value from existing customers, as well as expanding the current addressable market to target previous financially marginalised customers.

Ambar Sur, founder and CEO of TerraPay, aid, "Ubiquity and trust are two important dimensions to make any payments system relevant and valuable for users. Payments are a volume-driven business requiring substantial scale to make a profit due to low margins. The share of electronic payments is less than three per cent of total payments market in Congo. Yet service providers compete for the three per cent share of the market rather than collaborate to capture the 97 per cent dominated by cash. Cash is successful as it is fully interoperable and customers can use it anywhere. For electronic payments, to effectively compete with cash, they must be simple, interoperable, and easy to use and made for the consumer."

BRIEFS

Privinvest to work on Angolan hydrokinetic power

The Ministry of Energy and Water of the Republic of Angola has signed a memorandum of understanding (MOU) with industrial group **Privinvest** to introduce hydrokinetic power generation over the next decade.

Angola's 2025 Energy Security Plan includes an an ambition to achieve 9,000 Megawatts of production by 2025, with particular priorities for hydrokinetic power generation. Privinvests affiliates, **CMN** and

Hydroquest, design and manufacture special turbines for use in both rivers and the sea. Under the terms of the MOU,

Empresa Publica de Producao de Electricidade (Prodel) and Privinvest have committed to the creation of a joint venture company in Angola. It will be initially charged with the manufacture and operation of hydrokinetic farms in Angola. The workload will be split between Angola and France.

Prodel has agreed to purchase all the electrical output of the venture in Angola. Operations are expected to commence with the commissioning of 3 test sites, which will have a combined anticipated production output of at least 12 Megawatts. The first site is expected to be online in 2017.

Palomar Capital Advisers, affiliated to Privinvest, is mandated by the Government of Angola to structure the project financing. This financing will be guaranteed by the Republic of Angola.

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UNCTAD REPORTS COUNTRIES LOSING EXPORTS EARNINGS

Some commodity dependent developing countries are losing as much as 67 per cent of their exports, worth billions of dollars, to trade misinvoicing, according to a study by UNCTAD, released during the Global Commodities Forum, which uses up to two decades' worth of data covering exports of commodities such as cocoa, copper, gold and oil from Chile, Côte d'Ivoire, Nigeria, South Africa and Zambia; "This research provides new detail on the magnitude of this issue, made even worse by the fact that some developing countries depend on just a handful of commodities for their health and education budgets," said UNCTAD Secretary-General Mukhisa Kituyi, adding that commodity exports may account for up to 90 per cent of a developing country's total export earnings.

GIM-UEMOA AND MASTERCARD IN WEST AFRICAN VENTURE

It was confirmed at the opening of the 5th Salon Monétique Régionale Conference in Senegal that **MasterCard** has entered into a strategic partnership with **GIM-UEMOA**, the Interbank Electronic Banking Group of the **Economic and Monetary Union of West Africa**, in support of the **Central Bank of West Africa's (BCEAO)** objective of becoming a cashless region; "Increasing financial inclusion has become more important than ever and is critical in achieving inclusive economic growth across West Africa and ultimately across Sub-Saharan Africa," said Daniel Monehin, division president, Sub-Saharan Africa, at MasterCard.

ORANGE DIGITAL VENTURES INVESTS IN PAYJOY

PayJoy, a digital platform that allows people with limited or no access to credit to pay for a smartphone in regular instalments, has completed a funding round attracting venture capital companies including Orange Digital Ventures, Union Square Ventures (USV), Draper Nexus Ventures, Fenway Summer Ventures, and Core Innovation Capital; Pierre Louette, Orange's CEO delegate-in-charge of Orange Digital Ventures, said, "This investment in PayJoy further demonstrates the Orange Group's ambition to support and accelerate the digital evolution of our customers globally, and in particular for our 110mn customers in Africa and the Middle East."

IPA SUCCESS ACKNOWLEDGED AT UNCTAD 14 IN KENYA

Investment promotion agencies (IPAs) - Invest India; InvestSA (the national IPA of South Africa) and **Wesgro** (the IPA of SA's Western Cape); and the **Lesotho National Development Corporation** - have received **UNCTAD** Investment Promotion Awards in recognition of their success in attracting investment, a critical ingredient for achievement of Sustainable Development Goals (SDGs); "The winning IPAs have used innovative and effective methods to persuade key domestic and international investors," James Zhan, director of the division on investment and enterprise at UNCTAD, said at the World Investment Forum in Nairobi, Kenya.

MAN TRUCK & BUS SA PARTNERS WITH T-SYSTEMS

T-Systems has completed a project to improve management of end-to-end processes relating to helpdesk and network support at MAN Truck & Bus SA, with a phased handover that entailed a number of MAN's



Michael Frans, head: automotive, T-Systems

technical staff being relocated to the communications enterprise; T-Systems head: automotive, Michael Frans said, "Users now receive the highest quality support, to ensure the business runs smoothly, efficiently and reliably."

TIGO CONNECTS TANZANIA'S EDUCATION SECTOR

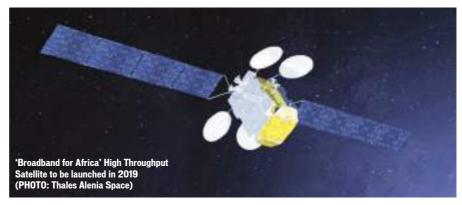
Digital communications company **Tigo Tanzania** has entered into a partnership with the country's Ministry of Communications, Works and Infrastructure to facilitate the roll-out of internet access points in the country's secondary schools; Tanzania's Permanent Secretary for Ministry of Communications, Works and Infrastructure, Prof Faustine Kamuzora said, "It is through such partnerships that we shall be able to impart modern ICT skills and knowledge to the youth, to enable them to face the challenges of the ever-changing information trends in the society and global economy."



Tanzania's Permanent Secretary in the Ministry of Communications, Works and Infrastructure, Prof Faustine Kamuzora (seated, left) and Tigo chief commercial officer, Shavkat Berdiev (seated, right) sign a Memorandum of Understanding in which Tigo will provide internet access to Tanzania's secondary schools

INFRAMED INVESTS IN BROADBAND WITH EUTELSAT

Eutelsat Communications and **InfraMed** have entered into an agreement whereby InfraMed becomes a c.21 per cent shareholder in 'Broadband for Africa', the venture set up by Eutelsat to provide satellite broadband services on the African continent; Laurent Grimaldi, CEO of 'Broadband for Africa', commented, "We welcome InfraMed as a shareholder and look forward to benefiting from its track record of successful infrastructure investments."



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MAN DIESEL & TURBO SUPPLIES ENGINES TO COMOROS PLANT

Large-bore engine and turbomachinery supplier MAN Diesel & Turbo has concluded a contract to deliver five engines, four 18V28/32S and one 7L27/38S, for a new power plant in Moroni, the capital city of Comoros - with the scope of supply including auxiliary equipment, spares, tools and services for the supervision of installation and commissioning; "MAN Diesel & Turbo India has adopted a successful strategy involving close cooperations with experienced Indian companies that are specialised in the engineering, procurement and construction of power plants (EPC) in Africa, MENA & the Asia Pacific region," said Sanjay Kandlikar, regional vice president at MAN Diesel & Turbo India.



The engine test bed at MAN Diesel & Turbo's manufacturing site in Aurangabad, India, where the Comoros engines were produced

INTL FCSTONE CO-HOSTS KENYAN COMMODITIES SEMINAR

Working with the support of the **Government of Kenya** and the **Nairobi Securities Exchange**, financial services firm **FCStone Inc** has engaged the East African financial sector, government institutions, and the region's private sector in a seminar on 'Commodity Trading and Risk Management'; with agricultural production the principal growth sector in Kenya's economy, the two-day seminar targeted key industry players including commodity buyers and sellers, commercial banks that manage clients' risk, operators of exchanges, stock brokers and traders, as well as policy formulators and policy regulators.

COMPONENT COMPANY WINS SMALL SATELLITE BUSINESS

South African small satellite component manufacturer **Newspace Systems Pty Ltd** signed up with US-firm **Oakman Aerospace, Inc** at the 4S Symposium for small Earth observations satellites held in Malta recently, in a deal which they believe will give them a competitive edge in the small satellite market; "This pact is not only about extending our business and increasing exports for our country but also recognition of



Newspace Systems exhibited at the 4S Symposium for small Earth observations satellites in Malta

African capability in the sophisticated high-tech small satellite market," said James Barrington-Brown, CEO of NewSpace Systems, which has already secured some 30 contracts from 11 different countries.

CARREFOUR AGREES TO INTEGRATE LIPA NA M-PESA

Retailer **Carrefour** has become the first retailer in Kenya to fully integrate the **Safaricom** payments service Lipa Na M-PESA, in order to fully adopt M-PESA as a payments channel; "The digitisation of payments at the till will remove the need for manual verification, fast-tracking payment time and enhancing convenience," said Bob Collymore, CEO, Safaricom.



AFRICAN REVIEW / ON THE WEB

A selection of product innovations and recent service developments for African business Full information can be found on www.africanreview.com

NIGERIA SIGNS MOU WITH IPP CONSORTIUM

The Nigerian government has signed an MoU with a consortium consisting of Nigeria-based Nigus Greenergy and South African Volt Renewables for the development of three solar power plants.

With a total capacity of 300MW, the three power plants are set to be commissioned in 2017 and are expected to add 100MW capacity each to the national grid in the northern states of Nigeria at Yola, Andamawa State, Kano, Kano State and Birnin, Kebbi State. Both companies noted that this new power generation will represent as much as 10 per cent for Nigeria's total power generation. Prince Malik Ado-Ibrahim of Nigus Greenergy said that he is

ALGERIA, INDONESIA SIGN MINING DEALS



The projects aim to create nearly 16,000 jobs-12,000 in construction phase and 4,000 in operating phase, the statement by the Ministry of Industry and Mines said. (Image source: unefunge/Flickr)

industrial group have signed three contracts to invest US\$4.5bn in phosphate mining, a statement by the Algerian Ministry of Industry and Mines said.

TANZANIA LAUNCHES INVESTMENT INITIATIVE

Tanzania's minister of energy Sospeter Muhongo is pursuing the Sustainable



Rusumo falls hydropower plant is expected to attract more sustainable investment

Energy for All (SE4All) Action Agenda and Investment Portfolio as Tanzania's

response to the UN's seventh Sustainable Development Goal.

SOUTH AFRICA'S ESKOM Secures AFDB Loan

Eskom has received a US\$1.4bn loan from the African Development Bank (AfDB) to fund its new expansion programme, including new build projects and the maintenance and refurbishment of infrastructure.



Eskom has launched a US\$17bn capital expenditure programme.

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head of customer channels in Africa, Standard Bank

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DR RUTENDO HWINDINGWI divisional director, Sage East and West Africa

Smart technologies are slowly expanding into modern urban environments, fuelled by the growth of high speed fibre and mobile networks.



KUDZAI DANHA managing director, SAP West Africa

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KEVIN MCKINLEY

acting secretary-general, International Organization for Standardization (ISO)

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Minister of Energy & Water, Government of Angola

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Encouraging Nigerian enterprises

Founder of Computer Warehouse Group and entrepreneur in residence at New York's Columbia Business School, Austin Okere looks beyond the oil price collapse towards post-recovery diversification and growth

ccording to Austin Okere, founder of Computer Warehouse Group (CWG) and entrepreneur in residence at Columbia Business School in New York, Nigerian administrations and enterprises could have made much capital from the nation's oil windfalls. Of the failure to capitalise on the nation's oil economy, he said, "Nigeria, by far the biggest producer in Africa with 2.5mn barrels per day (mbpd), has only managed foreign reserves of US\$28bn and a sovereign wealth fund of a paltry US\$2.9bn."

Mr Okere compares the performance of the most economically dynamic West African nation with North Africa's largest economic territory, Algeria - the second biggest African oil producer, producing 1.9mbpd, has accumulated foreign reserves of US\$156bn and manages a sovereign wealth fund worth US\$50bn.

Positive economic prospects

In these terms, it may seem that Nigeria has not managed its oil wealth effectively. However, there is cause for optimism. Mr Okere's analysis of his nation's economy indicates that there have been



Austin Okere, founder CWG Plc , and entrepreneur in residence, Columbia Business School

positive, progressive measures by previous administrations, which saved money, which can serve as examples for the current administration as it seeks to achieve stability and growth. He observed, "Nigeria was able to balance her budget, pay off her debts and save over US\$62bn in foreign reserves during the Obasanjo presidency

What should be important to all of us is whether Nigeria will finally learn from her past mistakes and institute a mechanism for saving when oil prices rebound, as I believe they eventually will.

AUSTIN OKERE, FOUNDER CWG PLC , AND ENTREPRENEUR IN RESIDENCE, COLUMBIA BUSINESS SCHOOL

from 1999 to 2007, even though the price of crude was mostly under US\$40 per barrel, except for the two years between 2005 and 2007 when it hovered between US\$50 and US\$75 per barrel."

At similar low oil prices, Nigeria today is struggling to balance the budget, and has resorted to borrowing to finance the deficit. This presents the unpalatable prospect of sovereign debt and the potentially debilitating impact of debt servicing. However, Mr Okere mainatains that Nigeria can save as much as US\$36.5bn in the coming year if oil prices recover towards the end of 2016 and reach US\$80 per barrel in 2017.

Industrial opportunities

In his viewpoint, the economic pain of the current crisis can afford his nation the leverage it needs to diversify the Nigerian economy away from an overdependence on oil, into greater investment in commodities and a greater degree of agricultural self-sufficiency and food security. He believes, also, that there remain significant revenue-generating opportunities in transportation and technological industries, and in construction. Such sectors are ripe for collaborative ventures, and there are many options on the table for linkage between enterprises.

Mr Okere said, "If we strive to produce what we eat, we will not only be saving a whopping US\$6bn from our import bill, but also provide the opportunity for inclusive growth, with the spill over effects down the value chain, from logistics and transportation to light manufacturing. But we need to make the right investments in infrastructure such as roads and rail transport linking farms with their food processors and markets."

CWG's founder echoed a recent presentation by Dr Doyin Salami, a lecturer at Lagos Business School, who reported that the ICT sector grew Nigeria's GDP by 8.7 per cent in 2015, "generating spill overs, with uptakes in financial transactions technology and payment systems, ecommerce facilitation and a proliferation of transport services".

Mr Okere stresses that a significant shift in thinking around business is overdue, and that what is required is for the Nigerian government and its entrepreneurs to refocus, to redefine its terms for success. He said, "There is a reason why the Chinese use the same word for challenge and opportunity; behind every challenge is an opportunity. We must seize this golden opportunity with both hands and make the structural changes that will lead us to true prosperity as a nation."





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Adapting to economic uncertainty

TAL general manager Chaitan Manga gives his perspective on how companies can outperform market indicators

myriad of South African companies are being placed under increasing financial constraints as a result of the poor performance and volatility of the rand. Manufacturers importing raw materials from abroad are particularly hard-hit by a doubleedged sword - rising production costs and a customer base with diminishing purchasing power. A specialist manufacturer of tile and construction adhesives with a track record of more than 40 years, TAL is no exception to this trend. The company's general manager, Chaitan Manga, recently offered his insights into the innovative practices and product development require to buck local market trends and achieve growth.

Despite ongoing economic challenges, Manga has managed to increase sales volumes and staff numbers at TAL during 2015. He attributes this success to a proactive approach, to being prepared adapt to change. By way of example, he spoke about managing prices through adverse currency fluctuations. He said, "We import from US dollar and Euro regions, and the poor exchange rate performance has meant price increases well above inflation.

"In order to prevent these increases being passed on to our customer base, we have streamlined internal efficiencies within our own organisation, thereby mitigating exponential costs in the market place, while not only preventing job losses, but in fact creating employment opportunities."

As interest rates increased by 50 basis points in the first quarter of 2016, and economists predicted further rate hikes during the course of the year, Manga spotted a noticeable trend of consumers



Chaitan Manga, general manager, TAL

moving away from new project developments, and instead opting to take the renovation and DIY routes in an attempt to offset rising costs. This worked to his - and TAL's competitive advantage.

He focused on loyalty through the delivery of quality products. Stressing that he achieved sales by promoting long-term value to the company's customers, he said, "In a challenging economic climate, we don't compromise on quality and integrity to achieve short-term cost savings."

Innovation is key

Manga revealed that he accentuated TAL's corporate culture and commitment to product innovation

In a challenging economic climate, we don't compromise on quality and integrity to achieve short-term cost savings.

CHAITAN MANGA, GENERAL MANAGER, TAL

to ensure that the company remained aligned to international tiling and flooring trends. He oversaw investment in a sophisticated laboratory that features a team of dedicated chemists to test local products and benchmark them to international standards, and also recruited a new product development team to attend industry conferences around the globe, in order to remain abreast of the latest international trends. He said, "There is always room for improvement and, by attending these conferences in more industrialised markets, we are able to ensure that the South African market is immediately exposed to new innovations."

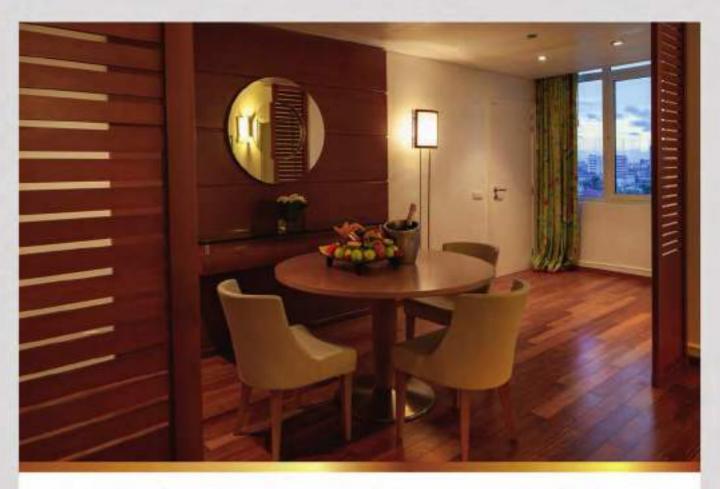
TAL is ISO 9001:2008 quality management system certified and its products are designed, manufactured and tested according to its high-quality standards. The company places a strong emphasis on environmental responsibility, and most of its products conform to the requirements stipulated by the Green Building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

Selling against heritage

Critically, Manga was able to play on TAL's South African legacy. Over more than 50 years, the company has grown from modest beginnings in the 1960s to becoming a major player in the tile adhesive market. In particular, TAL is noted for successfully converting the local tile market from mortar (sand and cement) fixing to tile adhesive fixing in the 1970s. TAL also pioneered rapid-set technology in tile adhesives and developed selflevelling screeds to meet the evolving needs of the South African contracts market.

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

Manga has also seen TAL achieve steady growth with its construction product division, which specialises in underlayments and concrete decorative overlayments, industrial resin flooring and waterproofing. He reported, "TAL continues to develop its reputation for being a one-stopshop for all tiling and flooring solutions, by offering a comprehensive range of high-quality products for all of these needs." Through the remainder of 2016. Manga expects to continue to deal with a challenging environment, but he also expects continuing commercial success through consistently-high product quality. He said, "To date, we have displayed our resilience and adaptability by achieving growth in difficult conditions", adding that he remains "optimistic of maintaining continued growth, not only in South Africa, but across the continent".





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IATA signs MoU with AU to improve air transportation in Africa

The International Air Transport Association (IATA) and the African Union Commission (AUC) signed a memorandum of understanding (MoU) to expand strategic cooperation to further the continent's economic and social development with the benefits of safe, efficient and sustainable air transport in Africa. The MoU was signed by Tony Tyler, IATA's director general and CEO, and the AUC's Commissioner for Infrastructure and Energy, Dr Elham Mahmoud Ahmed Ibrahim.

The MoU focuses on the exchange of information, expertise and capabilities in a number of areas including:

- Enhancing security through intelligencedriven, risk-based measures.
- Enhancing safety.
- Reducing accident rates in line with global levels of performance.
- Promoting connectivity.
- Facilitating collaborative decision making in air traffic management.

Improving the passenger experience through the deployment of IATA's Fast Travel programme, a suite of projects designed to give passengers more control over their journey through a range of self-service options. "Africa is set to be one of the fastest-growing aviation regions with five per cent annual growth forecast over the next 20 years. Achieving this potential will not happen by chance; strong partnerships are key. This MoU will help ensure that global standards and best practices form the backbone of Africa's growth as well as position the continent's 54 nations to promote economic and social development by unleashing the full power of aviation. I congratulate Dr Ibrahim for her leadership, vision and foresight in driving aviation development in Africa," said Tyler.

"IATA is a strategic partner in the growth of African aviation. This MoU will commit our two organisations to even closer cooperation on the priorities for African aviation. In particular, we count on IATA to partner with us by providing the requisite technical support in the establishment of the Single African Air Transport Market as part of our long-term vision in the context of the AU Agenda 2063. We are, indeed, dedicated to global best practice as a fundamental for sustained growth in aviation in Africa," said Dr Ibrahim.

The MoU paves the way for further development in African aviation. The industry already supports 6.8mn jobs and generates US\$72.5bn of economic activity on the continent.

ABSA LAUNCHES CHATBANKING FOR MESSENGER

Barclays Africa Group subsidiary **Absa Bank** has launched ChatBanking for **Facebook** Messenger, a world-first in banking technology which allows banking through the social media platform. The launch of a secure, private and fully integrated banking service on Facebook Messenger follows the recent introduction of Absa ChatBanking on **Twitter**.

"Our customers already use Facebook for their daily dose of global news, to share photos with friends and family and even solve their business issues. To deliver a cool banking experience, we are bringing banking to where our customers spend their time. The service, a world first from Absa, allows customers to do their 'liking' and banking in the same space," said Ashley Veasey, group chief information officer and chief digital officer at Barclays Africa. The recent Social Media Landscape 2016 study conducted by **World Wide Worx** and Fuseware has revealed that Facebook is now used by 13mn South Africans, a quarter of the population. This means that Facebook has seen an eight per cent year-on-year growth with the majority of users accessing the social media platform through their mobile devices, such as smart phones and tablets.

DRUPA REPORTS ON PRINTERS' CAPITAL NEEDS

The third **drupa** Global Trends report indicates that, in order for printers and suppliers to succeed in the current market conditions, they must outline more positive, pro-investment business strategies.

A total of 37 per cent of the global panel of printers in the report described their current condition in 2015 as 'good', while 12 per cent said their condition was 'poor' – measuring a positive net balance of 25 per cent. Printers in general predict a positive long-term outlook, with 50 per cent expecting their economic condition to improve in 2016 compared with only six per cent expecting it to get worse with a reported positive net balance of 44 per cent.



drupa 2016 took place in Dusseldorf, Germany. (IMAGE: Messe Düsseldorf/ctillman)

Turning to suppliers, overall the outlook was promising, with a positive net balance of 49 per cent. However, a breakdown of regions showed that current performance was marked down for the Middle East and across other regions. Prospects for 2016, on the other hand, were more positive. In terms of investment in print technology, digital cutsheet colour is the most popular choice for three of the markets - 45 per cent in the commercial sector, 38 per cent in publishing and 48 per cent functional. Supplier expenditure on marketing is also expected to grow next year with a recorded positive net balance of 33 per cent.

BRIEFS

BMW plans for growth

Automotive firm **BMW SA** will have ready-made export markets for its forthcoming X3 sports utility vehicle (SUV), which will be manufactured in South Africa, if it can develop a "structured" approach to selling vehicles in sub-Saharan Africa, according to CEO Tim Abbott - speaking after BMW Germany announced that the South African unit would take responsibility for distribution and marketing activities across SSA, initially concentrating on seven countries: Nigeria, Senegal, Ivory Coast, Togo, Ghana, Kenya, and Angola.

In 2015 BMW SA announced it would invest R6bn (US\$415.7mn) in its Rosslyn assembly plant in Pretoria to build the next-generation X3 SUV, which will replace the 3 series sedan, which has been built at Rosslyn since 1983. More than 80 per cent of the 3-series cars built in SA are exported but almost none go to other African countries.

Sacmi at FDT and ProPak



A provider of all-round plant engineering solutions to the industry - from fully automated ultra-clean filling lines to machines for the manufacture of ever-lighter caps and containers that use compression technology the **Sacmi Group** will attend Food & Drink Technology Africa (FDT) in Johannesburg and ProPak West Africa in Lagos this September. The company has three African offices - in Morocco and Kenya, as well as South Africa.





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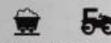
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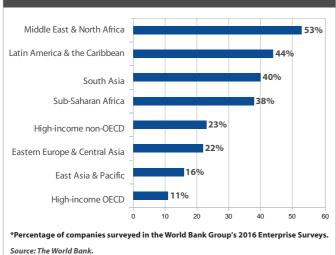
How and why public and private sector corruption inhibits sustainable economic development, and what can be done to deal with it

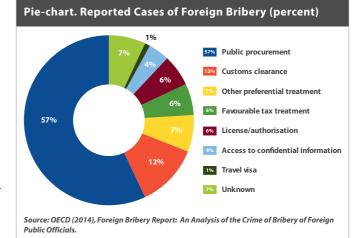
A n endemic culture of corruption and poor governance serves to undermine the socio-economic and political fabrics of a country, whilst increasing income/wealth inequality with devastating moral outrage. In today's environment where growth and employment prospects of many African countries (mainly commodity exporters) remain subdued, corruption forms a severe barrier to sustainable progress at all levels of development.

While difficult to measure accurately, global fiscal losses caused by high-profile corruption cases in both developed and developing economies are tentatively estimated by the International Monetary Fund (IMF) in a recent paper, 'Corruption: Costs and Mitigating Strategies' at about US\$1.5-2.0 trillion, representing two per cent of world's gross domestic product (GDP). Four key sectors account for two-thirds of reported foreign bribery cases: extractives, construction, transportation and storage, and information and communication technologies.

What constitutes the term corruption or graft (i.e. informal payments)? The World Bank definition calls it "the abuse of public office for private gain". The Danish International Development Agency (DANIDA) defines it as the "misuse of entrusted power for private gain". Corruption "is a multifaceted and highly complex phenomenon, involving cross-border illicit money flows, international bribery, misuse of public office, tax evasion, and accounting fraud", according to the Organisation for **Economic Cooperation and** Development (OECD). The sideeffects of systemic corruption or gifts to "get things done" at government departments are lost opportunity costs to the broader economy.

Businesses forego innovation and competitiveness for bribery, while senior state officials divert funds for their private benefits that could be used to promote the well-being of communities. Corruption also





increases exposure to global threats arising from smuggling and illicit trade by organised crime and terrorist groups. The 'Arab Spring' is a reminder of how decades of misrule and gross uneven distribution of wealth in favour of elites and special interests can lead to violence, civil strife and disintegration, notably in Syria, Yemen and Libya. Institutionalised corruption becomes embodied. hence affects virtually all state functions and distrust of government by both the citizens and foreign nationals.

Mountainous losses

Estimates suggest about 15-30 per cent of all official development assistance (ODA) is stolen annually through high-level corruption from national budgets in developing countries, whilst customs-related bribery cost World Customs Organisation members US\$2bn revenue each year. Four-fifths of foreign bribes go to officials in stateowned enterprises, 11 per cent to Heads of State and Minsters (OECD findings). Mega infrastructure projects are vulnerable to political capture and mismanagement. Research shows, for example that in the power sector, investors' decision to enter a market is significantly influenced by the perceived risk of corruption.

Corruption increases the cost of doing business as bribes and lengthy negotiations to bargain them add extra costs to a commercial transaction. The OECD Foreign Bribery Report (2014) showed that, on average, bribes are equal to over 10 per cent of the value of a transaction and more than one-third of profits. Research also indicates that the probability of new foreign direct investment (FDI) is 15 percentage points lower in countries with rampant corruption than in relatively free of corrupt countries.

According to the OECD, in over half of reported cases resulting in a conviction, bribes were paid in order to obtain public procurement (see chart). Bid rigging, which involves groups of powerful firms conspiring to raise prices or lower the quality of the goods or services offered in public tenders, is also a major issue in public procurement. This illegal anti-competitive practice costs state coffers and taxpayers billions of dollars every year.

Bar-chart. Corruption Considered as a Major Barrier to Doing Business by Regions*

	ators of Different Types o					
	Bribery incidence (% of firms experiencing at least one bribe payment request)	Bribery depth (% of public transactions where unofficial payment was requested)	% of firms expected to give gifts in meetings with tax officials	% of firms expected to give gifts to secure government contract	Value of gift expected to secure govt. contract (% of contract value)	% of firms expected to give gifts to get an operating license.
Angola (2010)	51.3	42.9	34.2	64.0	9.8	39.0
Botswana (2010) 8.4	5.0	8.4	4.6	0.0	2.9
Burundi (2014)	30.3	9.9	20.0	55.8	2.0	10.7
Central African						
Republic (2011)	21.0	14.6	16.8	40.8	4.3	5.8
Congo, DRC (20	13) 56.5	51.0	53.9	51.9	4.0	47.1
Djibouti (2013)	11.1	8.4	3.4	43.3	0.5	0.0
Ethiopia (2015)	26.8	19.8	17.4	19.7	0.5	2.3
Ghana (2013)	18.7	14.7	11.4	35.2	2.2	19.1
Kenya (2013)	26.4	16.7	17.4	33.4	2.3	15.6
Madagascar (20	13) 32.9	32.0	31.7	44.7	1.6	45.7
Malawi (2014)	24.2	20.2	18.3	33.0	1.8	16.6
Mali (2010)	27.3	23.4	20.2	33.4	2.5	42.4
Mauritania (201	14) 28.9	22.2	20.4	36.6	2.0	5.9
Namibia (2014)	9.1	6.3	5.3	11.6	0.1	3.5
Nigeria (2014)	28.9	26.0	25.9	28.6	1.6	24.2
Rwanda (2011)	6.9	4.1	4.5	11.3	0.3	0.0
Senegal (2014)	11.1	8.6	7.3	19.4	0.1	9.3
South Sudan (2	014) 48.0	33.8	30.6	34.4	4.7	35.9
Sudan (2014)	17.6	7.6	3.2	18.5	0.2	3.0
Tanzania (2013) 20.8	15.7	14.6	66.2	3.6	17.0
Uganda	22.0	14.6	14.3	20.2	0.8	17.6
Zambia (2013)	15.8	9.7	9.0	27.5	2.2	7.6
Zimbabwe (201	1) 16.2	9.4	12.5	6.5	0.1	5.3
Sub-Saharan	Africa 25.0	19.0	18.1	31.7	2.1	17.1
World average	ge 17.6	13.7	12.9	26.6	1.6	14.8

Source: Enterprise Surveys, The World Bank.

Inflated costs in public procurement process affect both the quantity and quality of public spending. In fact, 10-30 per cent of the investment in a publicly funded construction project is usually lost due to unofficial payments.

Restricting competition & productivity

Corruption endangers private-sector productivity by creating incentives to allocate resources to unproductive activities and by deterring innovation and the emergence of dynamic companies. Thus, it acts as a barrier to entry for new entrants; resources are allocated to rent-seeking, rather than productive activities. Corruption also hinders public sector productivity by biasing decisions in public spending, by weakening the skills and professionalism of the civil service. When companies prefer investing in unproductive 'rent-seeking' activities such as lobbying, fewer resources are available for productive investment into physical or knowledge-based capital. Moreover, when 'rule of law' is weak or worst non-existence, businesses are discouraged from developing innovations or assets that could be stolen, extorted or expropriated by the state.

Poor governance hinders public sector efficiency and effectiveness. Capital expenditures are not allocated to programmes representing the best value for money or where needs are greatest, but to those few sectors that generate personal enrichment of highly corrupt officials. Distortions in political decisions result in heavy red tape, trade barriers and subsidies, which are not in public's interest. The quality of civil service can be depleted by cronies, especially where state officials are appointed on the basis of nepotism or favouritism instead of merit and

ability, their decisions may reflect the interests of powerful lobbies. Thus corruption prevents attracting the best talent in public services.

It also creates continuous uncertainties as there are always competing firms willing to pay higher bribes to tilt official decisions in their favour. By lowering profitability and raising instability, corruption tends to discourage the entry of foreign companies - thus denying the benefits of competition, technological transfers and foreign managerial expertise. Similarly, corruption lowers the attractiveness of entrepreneurship, diverting talent to less productive activities. The end-results are higher prices and lower quality products, as well as poor consumer services. The OECD report on the consequences of corruption at the sector level revealed that bribery is associated with higher prices for medicines and health services, among others.

By weakening the culture of

compliance, corruption increases tax evasion.

In sum, all the best frameworks will come to nothing without a real leadership. The African leaders must set a personal example and ensure that decisive actions are taken to enhance the rule of law and good governance in their respective countries. "While the direct economic costs of corruption are well known, the indirect costs may be even more substantial and debilitating, leading to low growth and greater income inequality. Corruption also has a broader corrosive impact on society. It undermines trust in government and erodes the ethical standards of private citizens," said IMF Managing Director Christine Lagarde. The African region needs better governance to prosper and achieve the Social Development Goals (SDGs) in the coming decades.

Moin Siddiqi, economist

Integrated, prosperous and innovative

The search for strategic partnerships across several commercial sectors, as the African Development Bank seeks to industrialise the continent's emerging markets

his year, Zambia has been a 'nucleus' for high-level international meetings, which have raised the country's profile in international terms. These include the World Farmers' Organisation (WFO) general assembly in Livingstone, the Copperbelt Mining Trade Expo and Conference (CBM-TEC) in Kitwe, and Agritech in Chisamba. The capital Lusaka has played host to the International Parliamentary Union (IPU), the Zambia International Investment Forum (ZIIF), the Zambia International Energy Conference, and the African Development Bank (AfDB) Annual Meetings.

The most recent of these, the 51st AfDB Annual Meetings, brought together 4,000 delegates to consider routes to sustained prosperity. The objective of the AfDB Group is to spur sustainable economic development and social progress in its regional member countries (RMCs), thus contributing to poverty reduction. The Bank works in the following sectors: agriculture and agro-industries; climate change; economic and financial governance; education; energy and power; environment, gender, health, human capital development, information and communication technology, infrastructure, private sector, transport, and water supply and sanitation.

High-level participation

Zambia's President Lungu opened the forum. It was also attended by Presidents Idriss Deby of Chad, Paul Kagame of Rwanda, Uhuru Kenyatta of Kenya, and by the Nigerian vice president, Yemi Osinbajo. Also present were former President of Nigeria Olusegun Obasanjo, former UN Secretary-General Kofi Annan, and former Presidents John Kufuor



The AfDB Meetings were held at the Mulungushi International Conference Centre in Lusaka

of Ghana, Festus Mogae of Botswana), Horst Kohler of Germany), and Mary Robinson of Ireland. Finally, there were also three former AfDB presidents -Babacar Ndiaye of Senegal, Omar Kabbaj of Morocco, and Kwame Donkor Fordwor of Ghana.

"The participation and engagement of many former and current Heads of State, ministers, central bank governors, business and civic leaders as well as leading experts on these issues across Africa and the world, have provided an opportunity for the bank to garner very strong support for its transformative development agenda," said Dr Charles Lufumpa, the AfDB's acting chief economist and vice president.

The meetings represent the definitive forum for representatives of Government, business, civil society and media - from Africa and beyond - to debate the social and economic development of the continent. The theme of this year's meetings was 'Energy and Climate Change', with discussions revolving around the High 5 transformative development agenda for Africa: Light up and Power Africa; Feed Africa; Industrialise Africa; Integrate Africa; and Improve the Quality of Life for Africans.

Progressive programmes

Several key initiatives launched at the Meetings, including The New Deal on Energy and Jobs for Africa's Youth. The African Leaders for Nutrition programme aims to end malnutrition and is chaired by former president of Ghana, John Kufuor, leading a partnership with the African Union's New Partnership for Africa's Development (NEPAD), the Bill and Melinda Gates Foundation, the Kofi Annan Foundation, the Big Win Philanthropy, Dangote Foundation and the United Nations' World Food Programme. The AfDB also intends to launch a US\$3bn fund to empower women in their communities and in business.

The Meetings stressed that partnerships are the way to go if the agenda to promote social and economic development of the continent is to be achieved. Hence, the AfDB unveiled the Transformative Partnership on Energy for Africa, a bold codevelopment model which encompasses several partners including the AU, the Africa Progress Panel, NEPAD, Power Africa and the World Bank.

Nawa Mutumweno

THE HIGH 5

Light up and Power Africa

AfDB has developed the New Deal on Energy for Africa to accelerate universal access to electricity on the continent by 2025

Feed Africa

The continental development bank will accelerate support for massive agricultural transformation across Africa to fully unlock the sector's potential

Industrialise Africa

Supporting the private sector and financial market development for the rapid industrialisation of Africa, and help the continent move to the top of global value chains

Integrate Africa

AfDB will continue to invest heavily in high quality regional infrastructure, especially rail, transnational highways, power interconnections, information and communications, air and maritime transport

Improve the Quality of Life for Africans

The Bank will accelerate investments in urban infrastructure, public health and nutrition, water and sanitation, education, vocational training and skills development

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Public transport prioritised for integrated cities

Issues affecting investment and management in the delivery of sustainable mobility services in urban environments and for commercial operators

ith space increasingly at a premium in today's cities, high quality public transport combined with a broader mix of mobility services is the answer to cutting car dependency, according to the International Association of Public Transport (UITP).

The UITP is a passionate champion of sustainable urban mobility and is the only worldwide network to bring together all public transport stakeholders and all sustainable transport modes. It has 1,400 member companies, with collective access to 16,000 contacts from 96 countries. Its members include public transport authorities and operators, policy decisionmakers, research institutes and the public transport supply and service industry. In a UITP recent publication entitled 'Public transport at the heart of the integrated mobility solution', the association affirms that the key to cutting urban car dependency is an integrated combination of sustainable mobility services. Cities with strong public transport, complemented with services such as car- and bike-sharing, shared taxi services and ride-sharing, offer citizens convenient and flexible travel options.

Resource use in city spaces

Urban space is one of the most precious resources in a city: private cars are parked 95 per cent of their lifetime and during the five per cent of the time they are driven, are much less space-efficient compared to public transport, walking and cycling. With the increasing urbanisation of the planet, mobility demand will continue to rise: public transport, particularly on major corridors and in peak hours, will remain the only viable solution for cities.

Though new mobility services such as ride selling apps (Uber, Lyft), free-floating car-sharing (car2go) or ride-sharing apps (Blablacar) play a valuable role in helping to reduce car ownership, alone they do not have the capacity or capability to meet every journey need or solve congestion issues.

These services thus depend on efficient public transport in order to function well. In Paris, 65 per cent of Uber trips start or end within 200m of a metro station. In Berlin, free-floating car-sharing is welldeveloped but still represents just 0.1 per cent of total trips. Uber is building market-share in Africa - but its impact is currently limited to 15 locations: Abuja, Accra and Lagos in West Africa; Alexandria, Cairo and Casablanca in North Africa; Cape Town, Durban, Johannesburg, Pretoria and Port Elizabeth in Southern Africa: and Dar Es Salaam. Kampala, Mombasa and Nairobi in East Africa. Away from the car, or from car-sharing, South African app users can turn to GoMetro to connect with PRASA Metrorail, Gautrain, MyCiti, Rea Vaya and Golden Arrow.

This is precisely the point: car usage decreases because carsharing users walk, cycle and use public transport for the majority of

F Public transport...will ultimately offer more flexible and convenient travel options that will help our cities to become less car dependent."

ALAIN FLAUSCH, SECRETARY GENERAL, UITP

their trips and use a car only when necessary.

"Public transport accounts for 1.2bn trips across the globe each day," said Alain Flausch, UITP Secretary General. "It is this vital backbone role that it plays - in combination with new mobility services - that will ultimately offer more flexible and convenient travel options that will help our cities to become less car dependent."

Intermodal interventions

Aligned to UITP's research into mobility service is evidence indicating the strength of demand for significant development of intermodal networks across the continent, ideally framed within smart city or freight connector initiatives. The architects of South African transport policy and transport plans, for example, which has focused almost entirely on passenger transport, have been pressed in recent years to acknowledge a need to address deficiencies in the country's logistics system. Intermodal passenger transport in South Africa has been well-integrated in conurbations such as Johannesburg and Cape Town - served by the likes of Shosholoza Meyl, Baz Bus, the Passenger Rail Agency of South Africa (PRASA) and the Gautrain Management Agency - but work is needed to further integrate with commercial interests. Long-distance corridors such as the connections between the ports of Dar Es Salaam and Mombasa, represent a variety of operators and transport scenarios - and governance structures are in place to manage

operational and infrastructural issues, harmonise interests and attract investment to serve as broad a range of stakeholders as possible. In both Southern and Eastern Africa, governance is in need of further reach: as research undertaken by South Africa's North-West University shows, for example, regional road freight industry is over-traded and transport rates are highly competitive and aggressive, and so operators are compelled to overload in an endeavour to operate profitably.

Research published in 2015 by Université de Lyon in France and University of Kara in Togo reveals that intermodality and multimodality in Lomé is developing along ad hoc lines, but requires specific pro-poor transport policies that include modal and functional transport integration. Intermodality - the use of at least two transport modes in the course of a single trip - allows individuals to travel throughout a city, but it requires trade-offs between cost, duration and potentially physicallyexhausting conditions. Multimodality, or the use of a different mode or combination of modes for outbound and return trips, is observed among the continent's working population, usually in order to reduce the cost of transport. The consequences of individuals' 'de facto' intermodal and multimodal practices in terms of mobility and money and time budgets highlight the strategic importance of formal transport integration for the continent's citydwellers and its businesses.

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Collaboration is key to South Africa's supply chain

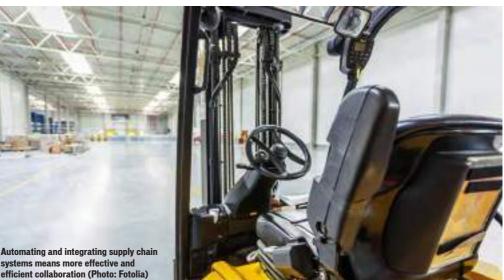
How and why sharing data can lead to more manageable logistics operations, in even the most challenging and remote regions

ven in the earliest history of the logistics industry, traders operating across diverse geographies, cultures, and economies knew they had to work together to expand reach. Today, that spirit of collaboration hasn't changed, but the technology that ties the supply chain together has.

When a company wants to increase its profit, two strategies have remained generally in use throughout time: squeeze the customer to pay more, or squeeze the supplier to reduce their prices. But for both, the result is the same: merely taking money out of their pockets and putting it into yours. Unfortunately, neither of these add any real value to anyone. In fact, value is lost when customers are forced to reduce the amount they can buy and suppliers must downgrade the quality of their product to cover costs. This isn't collaboration, it's just bad business.

True collaboration unlocks true value for everyone – your supplier, your customer, and your own business. Running a single platform solution that's integrated with all your partners' systems empowers you to manage logistics from a central database across multiple users, functions, offices, countries, and languages.

For the last 10 years, I've personally been involved in helping companies collaborate using technology in one of the most diverse regions of the globe. There are major institutional voids in Africa, ranging from electricity supply to internet connectivity, and collaboration is the key to overcoming such gaps. I have seen this work in many instances, and innovative uses of technology often play a major role in bridging these gaps.



The South African experience

With emerging consumer markets flooding goods into the continent, and unprecedented volumes of resources flowing out, Sub-Saharan Africa is the place to be. According to the World Bank, the region is on a GDP growth outlook that is approaching levels that are surpassing expectations in relatively more developed economies.

Logistics operations in South Africa are in a great position to take advantage of the massive growth opportunities this represents. There's a chance for everyone to benefit by sharing skills, goods, and knowledge. And today's technology makes this collaboration faster. more efficient, and more immune to the stresses of international logistics by sharing it all within a singledatabase system. Elements of South Africa's economy and society can be defined in numerous ways. On one side, we South Africans have embraced the technologies and practices of the West, while on the other we're also aware of the challenges, institutional gaps, and relevant cultures that surround us.

Armed with regional knowledge and cutting edge software, logistics operators and their clients can more easily overcome the undeniable challenges as they take part in Africa's economic renaissance.

Unlocking value, increasing productivity

Let's say an order is placed in South Africa. The raw materials are procured in Brazil and sent for production in China. All of it's transported by an international shipping line or two, with international and local African agents involved. All deadlines are met. All documents, messages, and milestones are delivered on time with no delays and no issues.

How does this whole supply chain example proceeded so smoothly. It's simple: we collaborate, and we share information at every step.

Until now, all the data required to get the freight where it needed to go had to be re-keyed at every point and communicated manually via phone calls, faxes, or emails. But technology allows us to unlock and retain value in the transaction. The key to this entire collaborative process is found in having to capture the information only once.

With automation and integration within each supply chain member's own operations and between the different organisations, the result can be reduced errors, saved time, and execution with minimal effort. Imagine a manufacturer's ERP system to manage stock notices that vital materials are running low. It can automatically send the supplier a message, which in turn triggers actions for the exporting and importing agents. This not only increases accuracy, it also reduces transactional costs between organisations.

By automating and integrating we can work to create a high-velocity, low-touch supply chain where every member collaborates more effectively and efficiently. When providers work together, their shared technology frees up staff across all borders to be more accurate, more productive, and ultimately more successful.

Nachi Mendelow, general manager of business development, Africa, WiseTech Global



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Smart action over urban waste

Ongoing problems with West African waste management systems, and the practices and technologies that can resolve current issues

Aste is the eternal burden of civilisation. The earliest known urban garbage dumps are found in Crete, made over 5,000 years ago. Not long after that experiments with recycling began: Chinese societies reused bronze and the Aztecs routinely rescued usable materials from their garbage piles. Even regulation is not new: Athenian Greeks decided over 2,500 years ago that a dump should be located more than a kilometer away from settlements.

Targeting disposal

Growing urban populations are placing heavy demands on modern waste disposal. There simply is no space to breathe, even in smaller municipal areas. This is made more acute by growing demand for responsible waste handling, driven by new environmental regulations. Even though such regulations are sound and broadly supported by nations, across Africa, implementation is very hard when it needs to be pinned on a running target: explosive population growth.

According to research conducted by United Nations Economics for Africa in 2012, effective and modern waste management practices are still lacking on the continent. An unrelated 2014 study published in the National Center for Biotechnology Information's journal found that nearly no households in Ghana's capital Accra recycled any waste and more than a third of the city's garbage was being disposed of through illegal and unregulated dumping. Services are also lacking, as over 60 per cent of people paying for proper waste removal by private contractors were not happy with what they got.

Yet users of those services are by no means ignorant of the need for

urban sanitation, firmly agreeing on the connection between disease and garbage. Instead the major paradigm shift needs to come from policies and systems at national and regional level. It's a picture that can be drawn for many of the continent's nations. Improvements in infrastructure are urgently needed to combat the high cost of health services and thereby alleviate poverty and reduce the pressures of rural-urban migration.

If only the solution was as easy to make as that statement. Waste collection has to operate like clockwork or risk cascading into a series of massive disruptions. For example, the breakdown of a single truck can delay collection by a day, not only leading to upset citizens but a ripple effect across the entire management ecosystem. At the same time waste management outfits are under pressure to cut operational costs, so there may simply not be another truck to deploy.

Yet even if there was an available vehicle, how can operations identify the problem in an actionable time frame, all while managing the disruption over other areas? In some scenarios, such as a worker strike, the delays can become catastrophic, requiring weeks - even months - to recover all the overflow waste and align schedules back to normal.

Scenarios and solutions

There are three core problems that affect waste management systems: no end-to-end control, processes and information trapped in silos, and an inability to respond and plan in real-time to scenarios. In recent years a lot of noise has been made around the concept of Smart Cities. Waste management groups cannot be blamed for rolling their eyes when hearing about yet another



Kudzai Dana, managing director, SAP West Africa

futuristic 'solution' to a complicated set of challenges. Yet in some cases hype and reality do meet up. By integrating tried-and-tested waste management solutions with an Enterprise Resource Planning (ERP) culture, the ambition of a real-time, end-to-end approach to reducing garbage is very attainable.

Enterprise application software specialist SAP has partnered with waste management expert PROLOGA to address many of the challenges around this industry: from route planning, real-time equipment oversight, staff management and citizen services to meeting regulatory benchmarks and forwardplanning through data collection and predictive analytics. The SAP Waste and Recycling application melds seamlessly with an SAP ERP (enterprise resource planning) system, implemented by experienced partners such as Yash Technologies. Through this solution managers can control equipment age, track disposal bins, align pickup schedules to refuse levels in bins, plan routes with on-the-ground feedback, comply with environmental laws, facilitate recycling economies and more.

SAP waste management

technology solutions have many possibilities that are developing from day to day. Amongst others, they are currently also playing a role in helping manage issues related to infectious disease outbreaks in Africa, such as cholera and Ebola, In another example, the central African nation of Gabon is growing its appeal as a tourism destination by tackling the waste problems of its capital Libreville. The city's inhabitants also quickly cottoned onto the benefits of a cleaner environment, resulting in less littering and proactive beautification of the area.

These are not concepts of tomorrow. Smart technologies are slowly expanding into modern urban environments, fueled by the growth of high speed fibre and mobile networks. Seoul in South Korea is one of several cities trialing smart garbage bins: these will send notifications when they need to be emptied, thus saving unnecessary trips and enabling a proactive approach to waste disposal. The project projects a 20 per cent reduction in waste removal trips.

Alternatively, waste can simply be shoved into walls, as the Romans did by breaking down pots that imported olive oil from Spain and insulating their homes with the shards. Whatever was left formed massive garbage piles that today are the happy playgrounds of archeologists. Sadly (or perhaps fortunately) the nature and scale of today's waste makes that idea impractical. Besides, who wants today's legacy for the future to be giant rubbish dumps that future Phds trawl in hope of a good grade?

Kudzai Dana, managing director, SAP West Africa





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Valorem chooses RNRG to support wind resource assessment

Renewable NRG Systems (RNRG), a designer and manufacturer of decision support tools for the global renewable energy industry, has supplied complete resource assessment packages to French developer Valorem to support renewable energy project development activities in Africa. Valorem is currently building a pipeline of five wind and solar farms at various development stages, totalling around 100MW spread across various North African countries. The French company is also positioned as a service provider in Sub-Saharan Africa.



Valorem has helped RNRG support wind resource assessment activities in Mauritania

"RNRG offers genuinely complete measurement systems, which are very valuable to us. The quality of these packages, combined with the outstanding support service provided, are the key factors that

contributed to our decision to collaborate with RNRG," said Valorem senior engineer, Romain Barbot. The complete systems selected include towers, data loggers complete with communications and

autonomous power modules, Class 1 sensors, booms, and cables, as well as winches and ginpoles. "RNRG is our one-stop shop, " explained Barbot. "They greatly simplify our logistics. For instance,

centralised shipping reduces customs issues. The packaging is compact, and anchoring RNRG's tilt-up TallTowers is quite easy. We do not use concrete, which facilitates both on-site installation and local acceptance. In addition, it is sometimes possible to change the distance between mast and anchors, and this flexibility has been crucial on a couple of occasions. RNRG's after-sales services are very effective and provide the help necessary for instrument configuration, custom clearance papers, and any other issues

"Working with such an experienced project developer is a pleasure for us. It ensures that our equipment will deliver its full potential, and that is a great reward in itself. We look forward to continuing our successful collaboration for a long time," concluded Dave Hurwitt, VP of global marketing and product management at RNRG.

JOHNSON CRANE HIRE LIFTS FOR AZARI WIND



Lifting specialist Johnson Crane Hire was recently was appointed by Azari Wind to provide crane services for the installation of 37 wind generators at Enel Green Power's 111MW Gibson Bay Wind Farm in the Eastern Cape, South Africa, overseen by Nordex Energy South Africa. This is one of the latest wind projects to be developed under the Government of South Africa's internationally acclaimed **Renewable Energy Independent Power Producer Procurement** (REIPPP) programme, for which Johnson Crane Hire has already provided crane services to install more than 100 wind turbines. The cranes deployed on this contract are a Liebherr LTM 1160-2 and LTM 1095-5.

MILL MOTORS REPAIRED FOR RÖSSING URANIUM

Actom subsidiary company Marthinusen & Coutts recently repaired two large mill motors for Rössing Uranium in Namibia. Its field service team was requested by Rössing to inspect two brush mill motors on site. The team found that the starting cage winding on one of the motors had moved and rubbed against the stator winding, while an insulation test conducted on the second motor indicated that the stator winding was down to earth. This necessitated having both motors repaired at Marthinusen & Coutts' facility in Cleveland, Johannesburg, South Africa.

In view of the fact that no spare motor would be available to the mine in the event of a further breakdown while the two spare motors were being attended to by Marthinusen & Coutts in Johannesburg, the first of the two 1,586kW, 3,300 V, 187.5 rpm, brush motors to be repaired was treated with urgency, to ensure that it was returned to the mine as quickly as possible.



Alpheus Mtshali, from Marthinusen & Coutts, is pictured with the 1,586kW, 187.5rpm, 3,300V, 278 A stator

"The repairs were completed within three months," Craig Megannon, Marthinusen & Coutts' general manager, said.

The repairs carried out on the two motors consisted of rewinding the stators incorporating use of a resin-rich winding system, overhaul of the rotors and complete replacement of the rotors' electronic diode and synchronising hub.

BRIEFS



Andrew Alli, president & CEO, AFC

AFC arranges New Age funding

Africa Finance Corporation (AFC) is acting as lead arranger for an up to US\$425mn senior mezzanine facility for New Age (African Global Energy) Limited, a privately-held oil and gas exploration, development, and production company with assets primarily across Africa. Andrew Alli, president & CEO of AFC, said, "The significance of this investment is in the linkages between the company's gas production and the power sector in Nigeria."

SA leads power construction

According to a report from Timetric's Construction Intelligence Center (CIC), the total value of the power generation construction projects pipeline in the Middle East and Africa stands at US\$876.6 billion, with South Africa amongst the largest shares, with project pipelines valued at US\$167.4bn. Based on the projects tracked by the CIC, the nuclear sector has the highest global value pipeline, at US\$367.5bn. Gas power generation is in second place with a value of US\$149.4bn. Renewables are beginning to make inroads in terms of being alternatives to fossil fuel investment, with solar power projects having a combined value of US\$126.5bn, ahead of hydroelectric with US\$46.1bn and wind with US\$20.1bn. Meanwhile, Nigeria surpasses other countries in solar power, with projects valued at US\$39.5bn.

Eastman succeeds with PSM's advanced systems

astman Chemical Company declared PSM's FlameSheet combustion system conversion project a "remarkable technical success" during the company's presentation at the recent 7F Users Group Conference, which was attended by over 220 industry professionals utilising 7F gas turbines (GTs).

Chuck Goodson, Eastman Chemical Company's utilities maintenance area manager, explained to the conference why the company selected FlameSheet, implemented in 2015 on the two 7F GT's at its cogeneration facility, and the collaboration between PSM and Eastman Chemical Company that enabled all project operational flexibility goals to be fully realised.

"Prior to installing FlameSheet, the plant could operate both GTs to maximise output, but was exposed to low demand and low market pricing. When operating just one GT, the plant could meet the host electrical demands, but was unable to ramp to capture high market pricing," said Jim Stark, Eastman Chemical Company's area manager of utilities-cogeneration operations. "FlameSheet's extended turndown capability allows us to increase market participation with the full capability of the plant available while minimising exposure to unfavourable market conditions."

Power Systems Mfg., LLC (PSM) is a subsidiary of the of the Ansaldo Energia Group, which provides aftermarket services for multiplatform OEM gas turbine power plants worldwide. Dr Alex Hoffs, PSM president, said, "Power generation market dynamics require GT power plants to operate in increasingly flexible operating windows. FlameSheet was developed with this in mind. With its extended turndown capability, as well as lower maintenance costs, reduced emissions, and significantly increased fuel flexibility, implementing FlameSheet technology, like Eastman Chemical Company did, can enable customers to implement strategic operational changes to increase profitability in their respective markets."

FlameSheet is an innovative retrofittable combustion system, with operational flexibility characteristics aligned to dynamic & challenging power generation market needs. The FlameSheet combustor employs a 2-in-1 canannular combustor concept. Leveraging patented fuel / air



mixing concepts, FlameSheetTM provides up to a 30 per cent GT operating load range increase while maintaining single digit NOX & CO emissions. Designed to operate up to 32,000 factored hours between inspections, FlameSheet is ideally suited for shale gas, Liquefied Natural Gas (LNG), or alternate fuel operation such as ethane, propane, and hydrogen to name a few - all with up to a 3x increase in Modified Wobbe Index (MWI) operational range compared to the current 7F combustion technology.



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Critical maintenance for critical power

Regular and efficient service and repair regimes are the answer, if companies and facilities are to function efficiently and profitably

owering a hospital has its clear connotations for keeping the sick alive, whether energy is needed for incubators on a maternity ward, or to run life-saving equipment in surgical or emergency units. If the lights go out and machines and technology stop functioning, lives will be at risk. Similarly, in the mining sector, hundreds of men deep underground will rely on generators above to keep fresh air pumping, machinery and underground transportation systems operating. Systems on which their lives depend all, in turn, depend on the generating plant and equipment at the surface to perform faultlessly.

Owning generator plant from a supplier such as Caterpillar, Cummins, FG Wilson or Langford Power is, however, a high capital cost move. For many, the option of a fully-managed hire service makes more sense. Not only does it eliminate the need for any high initial outlay but it also ensures that the supplier, whether the manufacturer or its accredited distributor, often remains responsible for servicing and maintenance.

One major supplier of generators is Aggreko, with more than 6,000 staff at over 200 locations supporting both sales and hire services across diverse industries. Systems they and other leading providers offer range from single 20kVA generators to multi-megawatt power plants. In addition to providing independent power resources, as might be used in remote, off-grid scenarios, systems can also provide a source of baseload power feeding into the national grid.

John Deere and Mitsubishi are currently looking to establish such an arrangement through New Way



ggreko servicing and maintenance technicians ensure

stable and reliable power supply in East Africa

One challenge for the end user is the sophistication of many larger diesel or gas power generation and co-generation systems, making it absolutely necessary to rely on the skills of the supplier for servicing and maintenance. It's only when users are based out in truly remote locations, where third-party maintenance staff can only reach the location after considerable travel time, that it makes sense to either train end-user personnel to keep the generators/plant working, or the supplier, such as Aggreko, can locate its own staff on-site to

provide a fully-managed round-theclock service.

Such is the case at the Bisha gold mine in an isolated region of Eritrea some 300km from the Red Sea and unable to access the Eritrean national grid due to its location. Operated by Bisha Mining Share Company (BMSC), the fully operational mine requires at least 20MW of power. This requirement was initially established through a feasibility study conducted by Aggreko before the mine was even given the go-ahead to open;

Aggreko was able to come up with a solution package that is now the mine's only source of operational power. Until a permanent power supply becomes established at the location, Aggreko servicing and maintenance technicians are manning the site 24 hours a day to ensure a stable and reliable power supply is delivered and the generators are fully serviced and maintained.

Bottom line in maintenance

So, whether an end user is dealing with generators or power plant from

the likes of Aggreko, Caterpillar or Cummins or FG Wilson, all manufacturers know how their equipment will operate and can reliably predict when various components will need changing, will fail, or require adjustment. This is where the adherence to a reliable maintenance schedule is key and will be available from manufacturers for use by local generator dealers, or other electrical contractors/engineers, or even trained end-user personnel. Keeping to the letter of such a service/maintenance schedule will ensure optimum service life for the generator and proper operation when needed. When it comes the bigger systems from the larger manufacturers, established maintenance plans will be firmly in place before an end user hires or buys a system but typically these manufacturers will not only take responsibility for servicing their own generators, but also many systems from other major brand names.

Tim Guest

Completing strategic standby power projects

How Zest WEG Group has been helping African governments execute key initiatives to address backlogs in development of energy infrastructure

frican policy makers have placed energy infrastructure firmly on their agendas, and an array of strategic projects are already being executed to attend to the growing electrical infrastructure backlog in sub-Saharan Africa. However, it is going to take time to address this challenge.

South Africa is a sound example of the extremely long lead times associated with the planning, execution and completion of these large base-load and peaking power generation plants, as well as attending to the shortfalls in existing transmission and distribution infrastructures. While the country may be experiencing a period of stability in terms of electrical supply, the reality is that suppressed economic growth has relieved the state-owned power utility of some of the supply constraints that have caused rolling black outs since 2006.

A dominant partner

South Africa remains the main power generator on the continent, as well as the dominant participant in the Southern African Power Pool. Countries north of its borders are



A 125kVA 400V diesel generator set housed in a sound and weather proof enclosure

experiencing larger constraints in terms of generation, transmission and distribution infrastructures. For this reason, alternative sources of electricity supply will remain an important facet for any business operating in the region.

Of the options available, the diesel generator remains the most reliable regular and standby power generation solution for businesses in sub-Saharan Africa. It is able to operate around-the-clock, and is not reliant on adequate wind speeds or solar radiation levels. As David Claassen, executive: integrated solutions at Zest WEG Group, said recently, "Other overriding factors that influence the choices available for alternative power supply are the availability and cost of the fuels, as well as the overall cost of every kilowatt generated per hour. Diesel is readily available in Sub-Saharan Africa and power produced by a generator is more cost effective than solar with storage systems and offshore wind farms."

The advantages offered by this alternative source of power supply can be enhanced by offsetting the fixed cost of the diesel with other available renewable fuel sources. For example, combining diesel generators with solar photovoltaic (PV) technologies provides electricity consumers with an available free fuel source, as well as the ability to generate electricity cost effectively in instances when the sun does not shine. The two technologies can even operate simultaneously to allow solar to carry some of the load of the generator, reducing costs.

Power projects

The demand for these systems has been growing in the Southern African region. According to Claassen, Zest WEG Group is involved in many related projects for various industries. The company has been approached to enhance the benefits of hybrid systems by combining them with a third source of electrical energy namely, utility power when it is available. These customers generate as much as 60 per cent of their energy requirements from PV solar technologies and the balance from the national grid. Utility electricity is more cost-effective than diesel generators.



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Upgraded stadium to feature three SDMO gensets

French genset manufacture to supply three X800 Power Products Generating sets to Yaoundé stadium in time for international tournament



he continent's leading international women's football competition, the Africa Women Cup of Nations, will take place in Cameroon this year and to help the preparations French genset manufacturer SDMO will supply three machines that will aid in the smooth running of the tournament.

The biennial international football championship is organised by the Confederation of African Football (CAF) and will feature eight teams that have qualified from across the continent, and several projects have been underway throughout the country ahead of the tournament, including the construction of new stadiums and restoration works.

The Nigerian women's team will be defending the title they won at the 2014 edition of the tournament, with the eight teams playing matches at stadiums in Yaoundé and Limbe. The installation of three X800 Power Products Generating sets in an ISO20 SSI container will provide secure power solution at Stade Ahmadou Ahidjo in Cameroon capital Yaoundé. The stadium is currently being renovated ahead of the championships and, with a capacity of more than 38,000, it will also host the final match of the tournament, which will run from 19 November to 3 December 2016.

ARNO, SDMO's local distributor, led and closed the deal on the gensets and on 28 June, Paul Bell, director of infrastructure and sport equipment at the Sport Ministry (MINSEP) in Cameroon, participated in the final tests at KII Brest's factory where he gave his acceptance to the manufacturing of the genset. Bell will also oversee the installation of the three X800 Power Products Generating sets on site in August.

"With these gensets, we are in accordance with our client's

requirements and we can only wish Cameroon a peaceful and great Africa Women Cup of Nations," said an SDMO spokesperson.

The requirement to have a secure installation compliant with the French standard NFE37.312 and the instability of the African electricity network has, said SDMO, justified the need to have emergency generators in place at the stadium in Yaoundé. These specific gensets will be used as a backup and safety source (GSS) at the stadium throughout the competition.

These generators will also lead to a reduction in the sound level

Teams qualified for the 2016 Women Africa Cup of Nations

- Cameroon (hosts)
- Egypt
- Equatorial Guinea
- Ghana

- Kenya
- NigeriaSouth Africa
- Zimbabwe

Paul Bell, director of infrastructure and sport equipment at the Sport Ministry

(MINSEP) in Cameroon, visited SDMO's

manufacturing facility in Brest, France

generated by around nine debacles.

The installation will be composed of

two boxes, one for air inlet and the

insulating coating will be added to

the interior walls. There will also be

two starts options that will provide

additional safety in case there are

any issues with the first one.

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Power station equipment supplier Powerphase describes how its Turbophase system can help address Nigeria's power shortage

igeria, , which has a population three times larger than South Africa's, generates just a tenth as much electricity.

Power from private generators costs US\$0.35 per kilowatt-hour or more, ten times more than electricity from the grid in most other countries. The World Bank reckons that power shortages trim more than two percentage points from annual growth in GDP on average in Africa; in Nigeria the loss has been almost four percentage points a year.

It was reported that Nigeria's power generation system hit zero megawatts six times in May this year, the highest level since 2009.

According to industry data acquired by a Citizen correspondent, power supply to households and businesses across the country dropped significantly in May as the national grid recorded six total collapses and one partial collapse within the period.

Nigeria has 11,600MW of installed gas turbine generation. What if Nigeria could add incremental power to the existing installations, specifically where natural gas supply is not a challenge?

The 'Turbophase' upgrade

Powerphase, a Company in Florida, USA makes an upgrade that could do just that, allowing Nigeria to get more from the power plants it already has as opposed to investing billions and many years to build new power plants. The upgrade, known as "Turbophase" is fast, flexible and cost-effective.

In late summer 2015, Powerphase installed a Turbophase upgrade on an operational GE 7FA gas turbine in the Middle East. The upgrade was installed in four months in order to meet the customer's summer peak load requirements.

In simple or combined cycle applications the skid-mounted Turbophase system consists of an air compressor driven by a reciprocating engine and a heat recovery system which captures the engine's exhaust heat and adds it to the compressor discharge, enabling the system to match the turbine's compressor discharge temperature.

The Turbophase system "takes advantage of the fact that all gas turbines lose power as ambient temperatures or elevations rise," explained Bob Kraft, Powerphase president and chief executive. The system "adds the air that is naturally missing back into the turbine". The air is injected into one or more of the existing ports, "typically about five per cent air, which results in 10 per cent more turbine power".

"We are the first commercial air injection system available on market," he said, "and for the next 18 to 20 years we expect to be the only one because of our patent portfolio."

Turbophase installations could add 1,200MW to the gas turbine capacity of Nigeria installed in a few months from order. The grid efficiency would increase and carbon emissions per MWh would decrease. Turbophase systems can be offered as capital purchase or under long term PPA.

Sizing up the competition

A Turbophase unit can run 24/7.

"The chiller is running harder at night to do the storage process and only gets auxiliary power during the day. The customer generates about six times the revenue stream with our system compared to a chiller system", said Kraft.

"New aero-derivative gas turbines are also competitive. These units suffer similar output reductions due to high ambient temperatures. Turbophase mitigates, and in some cases eliminates, the need to install new peaking gas turbines by providing an alternative at much better fuel efficiency."

Project specifications

The installation in the Middle East was designed to demonstrate the Turbophase system's performance at high ambient temperatures. The project was operational between mid-July and early October 2015.

"Our product works on every gas turbine on the planet. On B-class machines a system might make 8MW whereas on a J machine it will make 40MW," said Kraft. "On more advanced frames you will see some of the OEMs offering our equipment. This product works nicely with OEM offerings. It could be viewed as a competitive product because OEMs like to upgrade their GTs, however it's such a unique product and we see OEMs moving towards putting it on their engines, either in new or existing offerings, on both mature and advanced fleet GTs."

Hitting targets

The initial 7FA performance test was conducted on July 28, 2015. The Turbophase system achieved its output and heat rate targets of 31.5 MW and five per cent heat rate improvement for a full installation. At the customer's request, a second performance test was conducted in early September and confirmed the results of the first test. In both cases, the upgrade demonstrated that a full installation would produce a five per cent fuel efficiency improvement and 31.5MW power increase on the 7FA gas turbine.

Additionally, the system demonstrated as high as 99.3 per cent availability in ambient conditions up to 55°C. The fuel efficiency improvement was demonstrated at both baseload and part-load operating conditions.

"A turbine has to be down for six weeks or more if you're installing a new hot gas path or putting on an inlet cooling system," Kraft said. "We have one air pipe that hooks to the GT and outage has been less than one day. So when the plant is down for something else, we tie in and we're done. It's a really simple installation, which leads to unique opportunities in that we can do something like the aircraft business does: power by the hour or PPA."

A microgrid allowing energy access in Laikipia

A combination of Fronius inverters and inverter chargers supplies lodges in Kenya with photovoltaic power



n Kenya, a constant power supply is not something that can be taken for granted. The public grid is unstable and in a poor condition. The best way to ensure a constant supply of electricity is to rely on a source of power independent of the public grid. Fronius inverters with a special microgrid set up to allow for the stable operation of a microgrid system.

The residential complex at Laikipia Safari Lodges in central Kenya comprises eight lodges, whose power supply is covered entirely by photovoltaic (PV) energy. Four Fronius Symo 20.0-3-M inverters generate an 80kW ACcoupled PV output, with the resulting current either consumed directly or stored in a battery. In addition, the 20kW DC-coupled system with inverter chargers and charge controllers from Victron ensures a continuous power supply for the battery and stability within the system.

Nawir Ibrahim from the Center for Alternative Technologies in Nairobi reported, "The technical support from Fronius before and during the installation of the

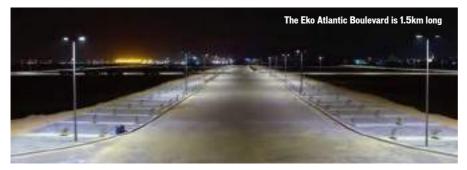


system was excellent. The inverters are easy to install and maintain, even in field applications."

A reliable power supply partner

For over 70 years, Fronius has stood for intensive research and innovative solutions to power supply scenarios. The efficiency of its products has repeatedly been acknowledged with both national and international awards. From its initial focus on the production of battery chargers and welding transformers in 1945, the company has developed welding technology such as the use of semiconductors welding rectifiers and the highperformance MAG welding process, and battery charging system solutions such as chargers for traction batteries and transistorswitched chargers for traction batteries. The company established its Energy & Environment Division in 1995, with business units for photovoltaics and battery charging systems - winning innovation prizes for its Sunrise solar inverter and its Solarix sine-wave solar inverter within five years of operation. In the 21st century, Fronius has developed its solar electronics business further, with introduction and development of the IG gridconnected inverter, an energy cell to transform surplus power into hydrogen, a hydrogen-powered fuel cell system, and the CL central inverter series for high system stability through a combination of high-vield power electronics and a unique modular system design. Most recently, Fronius has introduced the Agilo central inverter, the first in its performance class that can be completely installed and maintained by the installer, and the Galvo, which comprises an integrated energy management relay and is best-suited to households and particularly to selfconsumption systems.

Eko Atlantic City completes development of Eko Boulevard



An innovative development on the coast of Lagos, the **Eko Atlantic City** project has reached advanced stages in its first five million sq metres. The city not only boasts independent power and water supply and an advanced communications network, but also an extensive city-wide road network.

The city, which is divided into eight districts, is planned for mixed-use with commercial, residential, entertainment and leisure activities. City amenities and services will include an international school, hospital, and the largest shopping mall in sub-Saharan Africa.

The city's road design and construction comprises tree-lined, streetlit sidewalks.

One of the considerations when developing the Eko Atlantic City was to guarantee free-flowing traffic. This has now been achieved with an extensive road network over an area in excess of 200,000 sq metres. Most significantly, Eko Boulevard, an eight-lane road, 1,500mn long, the focal point of the business district, is fully completed from Ahmadu Bello Way in Victoria Island to the Ocean Front, where waterfront entertainment facility is planned.

"This futuristic city is not just for residential and commercial activities but a tourist attraction. We strongly believe the new boulevard will enhance business activities and be the ideal location for company headquarters, luxury and business hotels and also residential elements as well as attracting tourists from all over Africa," said Ronald Chagoury, Jr. In addition, the city's infrastructure network is the most technically-advanced in Nigeria. It comes with a fully-integrated autonomous and reliable infrastructure networks with all its underground service pipes installed under the paved sidewalks (including storm-water drains, sewer drains, water supply piping, power cables and the IT network).

BAND-IT SOLUTION AIDS STONEHOUSE SIGNAGE

Stonehouse Graphics has turned to Banding & Identification (ID) Solutions Africa for a cost-effective means to attach signage boards to poles for on-site erection in Gauteng, South Africa, for a monthly contract for API Property Group, one of its clients. The signage and branding company designs, manufactures and erects 70 to 100 advertising boards for client API Property Group a month. Stonehouse Graphics managing director Lee Dacey explained recently how the cmpany's ten-year-long relationship with Banding & ID Solutions Africa has allowed it to remain competitive. He said, "Not only does the company supply superior products, but it understands the business imperatives we operate under."

He added that a typical advertising board for API Property Group measures 8m by 4m, attached to a frame made from 25mm by 25mm steel tubing. The completed board then has to be attached to a wooden pole for on-site erection, which is where the Band-It solution has come into its own.

Banding & ID Solutions business manager Rosa Dos Remendos reported that the company supplies Stonehouse Graphics with about ten boxes of Band-It stainless steel strapping a month, with 30m in a box, together with sufficient buckles.

CAPE TOWN CBD WORK ON SCHEDULE

In South Africa, **Murray & Roberts Western Cape** has reached the halfway mark of a 22-storey hotel development in the Cape Town central business district (CBD). According to the company's executive and senior contracts manager, Collin Morilly, the concrete structure has become "typical and therefore easier" as it moves towards its scheduled peak in 2017. The main tower will feature 500 hotel suites to be operated by **Tsogo Sun** on behalf of property developer **Green Willows Property.** Morilly said, "Limited space meant that the lay-down area for the two tower cranes deployed on the project had to be strategically placed to facilitate materials handling with bulk building materials stored off site and delivered to the teams on a just-in-time basis.



BRIEFS

Lusaka water upgrade

SMEC has been appointed by the Millennium Challenge Account - Zambia Limited (MCA-Zambia) to undertake programme management services for citywide water supply, sanitation and drainage improvement works in Lusaka. The project scope includes: upgrading the primary water distribution system, expanding secondary and tertiary water distribution networks (including supply and installation of house connections and water meters. Sewerage systems will also be improved by extending existing sewers and facilities to non-serviced areas. "This project will increase access to a reliable water supply, and improve sanitation and drainage services in selected urban and peri-urban areas of Lusaka," said Pula Herath, general manager, water & environment, Africa division at SMEC.

Lafarge-Holcim's Zim project



Demag's eight ton electric overhead travel crane

Specialist crane and components manufacturer Demag has helped complete a US\$750 000 cement manufacturing project at Lafarge-Holcim Zimbabwe, supplying an eight-ton electric overhead travel crane, 200m of crane rails with Gantrex pads, and new down shop power supply leads, via its regional distributor O Conolly. "The customer required a dependable and efficient overhead crane for the loading of clinker," said O Conolly director Ian Conolly.

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Integrated into site excavation operations

Why the Caterpillar's 320D2 GC design delivers optimal life cycle value, fuel-efficiency, refinement and safety to operators around the continent



The new Cat 320D2 GC excavator, with a maximum operating weight of 20,800kg, features a design that ensures maximum life cycle value for the customer, bringing together longterm durability, field-proven reliability, productivity, and low operating costs. An electronicallycontrolled Cat C4.4 ACERT engine lowers fuel consumption as much as 20 per cent compared to the Cat C7.1 engine used in its predecessor model. Moreover, the new 320D2 GC maintains the digging, lifting, and production capabilities needed to take on several tasks, while retaining such premium features as a powerful hydraulic system, heavyduty main structures, and an operator's station designed for optimum comfort and convenience.

Rated at 85 (net) kW, the new Cat C4.4 ACERT engine's electronic fuelinjection system ensures optimum fuel efficiency and performance, and a new high-efficiency fuelfiltration system protects injectors from contaminants that can cause damage and deposits.

Hydraulics, tools, structures

Hydraulic refinement for the 320D2 GC includes powerful, efficient, variabledisplacement pumps designed and built by Caterpillar and delivering flows to 4281/min at relief pressures to 35,000 kPa. Oil-regeneration systems for the boom and digging-arm circuits transfer oil exhausting from cylinders to the opposite side of the cylinders, reducing flow required from the main pumps and resulting in faster response, precise control, and reduced fuel consumption.

The 320D2 GC's boom and digging arm, fabricated as large box-section structures with internal baffles to absorb twisting forces, are robotically welded for optimum strength, providing weld depths with three times the penetration of manual welds to ensure robust durability. The Xshaped, box-section carbody is designed to resist torsional bending and dissipate stress throughout the foundation of the machine, and the massive track-roller frames are press formed for superior strength. Track rollers are sealed to resist dirt intrusion, and the grease-lubricated track chains extend undercarriage life and significantly reduce sound levels when travelling.

Operator comfort and safety

Designed to comfortably accommodate a variety of operators, the 320D2 GC's operators station provides seat and joystick adjustments. Controls and switches are designed to be intuitive for the operator, and a powerful heating/ventilating system with 10 outlets ensures year-round comfort. An LCD display, programmable in 42 languages, keeps the operator informed about the machine's critical operating parameters and gives timely cautions and warnings about machine functions.

The 320D2 GC's cab provides excellent all-around visibility for the operator. The hydraulic lockout lever prevents all hydraulic and travel functions when moved backward to the locked position, and the operator cannot exit the cab unless the lever is so positioned.

Serviceability/Cat Technologies

The 320D2 GC features ground-level access to most routine service points, including pumps and filters, which are located behind a service door on the right side. The left rear service door allows easy access to the radiator, oil cooler, air-to-air after cooler, and AC condenser.

A reserve tank and drain valve attached to the radiator simplify service, and a central grease block on the boom allows easily lubricating hard-to-reach locations on the front linkage. S•O•S (Scheduled Oil Sampling) ports ensure quality samples from circulating fluid in the engine-oil, hydraulic and cooling systems. Convenient hydraulic test ports allow safe, accurate checks of system pressures.

Mantrac Your Caterpillar Authorized Dealer RELY ON CAT EQUIPMENT WITH OUR WORLD CLASS SUPPORT

For over 80 years Mantrac Group, Caterpillar authorized dealer in Kenya Tanzania, Uganda, Nigeria, Ghana & Sierra Leone, has been helping customers succeed in their business, Offering them customized Cat equipment solutions backed by technical expertise and in-depth understanding of local markets serving a diverse range of customers from the world's largest commodity producers to numerous local businesses in construction, oil & gas, power generation and forestry.

Through a multicultural team of Caterpillar certified service engineers and a network of 40 branches, with fully equipment service workshops, guaranteed parts availability and supported by nearly 500 well-equipped field service trucks we are able to support Cat equipment customers even in the most remote areas across our dealerships.

BUILT FOR IT.



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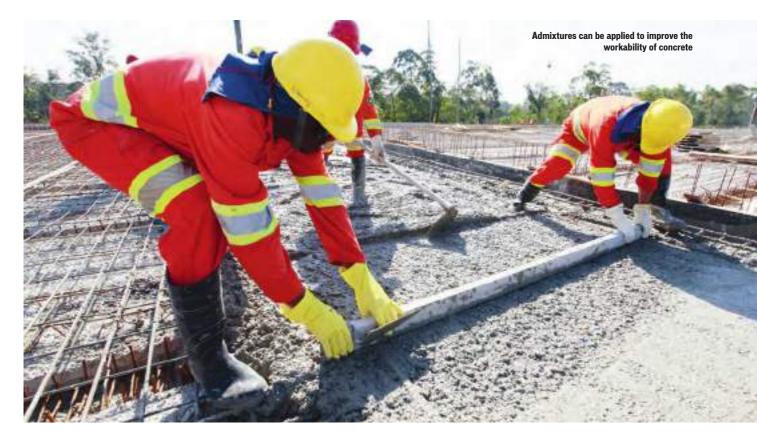


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Concrete admixtures to improve project control

Pouring fresh concrete is a time-sensitive operation, and delays can be problematic - but the use of admixtures enables more control over concrete



ontractors in the construction industry use additives primarily to reduce the cost of concrete construction, to modify the properties, to ensure quality and to overcome certain emergencies during concrete operations. Chemical companies such as Clariant, which specialises in surfactant technology, have developed tailor-made solutions for the admixture market.

Clariant covers African territories from facilities in Cairo in Egypt, Johannesburg in South Africa, and Casablanca in Morocco. The company offers air entraining products, for the creation of small air bubbles in concrete. The bubbles are introduced into the concrete by the addition of an air entraining agent to the mix. The air bubbles are created during mixing of the flowable concrete, and most of them survive to be part of the hardened concrete.

The primary purpose of air entrainment is to increase the durability of the hardened concrete, especially in climates subject to freeze-thaw. The secondary purpose is to increase workability of the concrete.

Wetting agents also perform a highly functional role. Wetting agents are used to improve the wetting of the fine particles of the dry plaster or mortar. Thus, they improve workability, penetration and binding power of the concrete to surfaces and lead to a higher performance and time savings. Their finishing as (fine) powder assures rapid and homogeneous uptake and distribution in water. Defoamers will be applied, too, to destabilise any foam which builds up during the mixing process and reduces air content.

Contractors will also consider the use of biocides. Since admixtures typically are provided as waterbased solutions, the preservation of formulations is critical, and is done with antimicrobial products.

Admixtures are used to obtain concrete with characteristics including high compressive strength, high workability, and high performance and durability parameters to meet the requirement of complexity of modern structures.

Admixtures can restore loads of concrete that might otherwise be rejected. Admixtures are additions to a concrete mix that can help control the set time and other aspects of fresh concrete. Common admixtures include accelerators, retarders, water-reducing agents, super plasticisers, and air entraining agents.

In fact, admixtures can be either chemical or mineral based.

Using chemical admixtures

Examples of chemical admixtures include Water-reducing admixtures (or plasticisers), which are used to: gain strength by decreasing the water/cement (w/c) ratio, decreas the cement content so as to reduce the heat of hydration in mass concrete; and ease placing in accessible locations.

The most commonly used waterreducing admixtures are lignosulphonates and hydrocarbolic acid salts. Typically, plasticisers will be based on lignosulphonate, which is a natural polymer, derived from wood processing in the paper industry.

There are also more effective type of water-reducing admixtures known as high range water reducers, or super plasticisers. These can bring increased fluidity and a reduced W/C ratio. The most commonly used super plasticiser are: sulphonated melamine formaldehyde condensate (SMF); sulphonated naphthalene formaldehyde condensate (SNF); and polycarboxylate ether superplasticiser (PCE). SMF gives little or no retardation, which makes it effective at low temperatures or where early strength is critical. SMF

offers a good finish and is colourless, so it is often used where appearance is an important factor.

Chemical admixtures include accelerators - which, when added to concrete, mortar, or grout, increases the rate of hydration of hydraulic cement, shortens the time for concrete to set, or increases the rate of hardening. Also, the set retarder is a form of chemical admixture, which delays or extends the setting time of cement paste in concrete. This is useful for concrete that has to be transported a long distance. Popular set retarders are calcium lignosulphonates and carbohydrate derivatives.

As described earlier, air entrained admixtures are surfactants, which cause air, usually in small



quantities, to be incorporated as minute bubbles in the concrete during mixing, typically to increase workability and frost resistance.

Mineral admixtures

There are two broad types of mineral admixtures: cementitious; and pozzolanic.

Cementitious admixtures, such as Ground granulated blast furnace slag (GGBFS), possess cementing properties of their own. Pozzolanic material combines with calcium hydroxide (lime) to gain cementitious properties.

Concrete made with GGBFS cement sets more slowly than concrete made with ordinary Portland cement.

Pozzolans are most often used as an addition (or cement extender) to

Portland cement concrete mixtures to increase the long-term strength and enhance other properties of Portland cement concrete. Pozzolanic admixtures include: fly ash; silica fume; rice husk ash; and

metakaolin. They act as filler, by nucleating, or by chemical reaction. Interestingly, fly ash - the residue

resulting from the combustion of ground or powdered coal - includes substantial amounts of silicon dioxide (SiO2) and calcium oxide (CaO). It offers several economic and ecological benefits, including: improved workability; reduced segregation, bleeding, heat evolution and permeability; inhibited alkaliaggregate reaction; and enhanced sulphate resistance. Equally interesting is Silica Fume. A highly-effective pozzolanic material, silica Fume is used to improve the properties fo concrete. It improves compressive strength, bond strength, and abrasion resistance. It reduces the permeability of concrete to chloride ions - and so it helps in protecting reinforced steel from corrosion.

As mentioned, Clariant is amongst the best suppliers of admixtures. Amongst providers, consider also BASF, offers perhaps the most comprehensive range of high-quality admixtures to improve the placing, pumping, finishing, appearance and consistency of concrete. Its technical support teams will also provide customised solutions, help select appropriate technologies, and offer guidance on optimising concrete mixture proportions for the best results on site.



Covering the way, from Calabar to Kenya

Durable and relatively inexpensive, concrete is increasingly the preferred option for roadbuilders



espite the downturn in commodity prices that has affected Africa's key markets demand for cement in the Sub-Saharan region is continuing to expand. Investment in new plant to cater for this demand is being led by Dangote Cement, a subsidiary of Dangote Industries Ltd (DIL), and its rival Lafarge Africa Plc. Dangote Cement is increasing its annual cement production across Sub-Saharan Africa by a whopping 22mn tonnes, from 40mn tonnes to a forecast 62mn tonnes. Factories include the US\$450mn 2.5mn tonnes per year (tpy) cement plant in Ethiopia, which can be doubled in the short term; a US\$452mn 3mn tpy cement plant in Tanzania; and a US\$300mn 1.5mn tpy plant in Kenya.

Lafarge, meanwhile, plans to double its 8.5mn tpy of installed Sub-Saharan African capacity to 17mn tpy by 2020. Speaking at the company's end-June Annual General Meeting (AGM) held in Lagos Mobolaji Balogun, chairman, board of directors, Lafarge Africa Plc declared, "The 2016 Federal Government budget indicates a significant increase in the spending on infrastructure and capital projects...With the on-going 2.5mn tpy expansion project in Calabar, which is expected to be commissioned before year end, and plans for Ashaka, our cement production capacity in Nigeria is on the increase."

Lafarge ReadyMix Nigeria reported a 29.3 per cent growth in its 2015 turnover, over 2014. Both companies are looking to cash in on the swathe of infrastructure projects announced in this year's Nigerian budget, including the construction of new rail and road links. Aliko Dangote, President/CEO, Dangote Group estimates that the country loses US\$bn annually to the poor condition of the asphalt roads. And his lobbying of both the federal and state governments - in whose jurisdictions well over 95 per cent of roads are built with asphalt - to turn towards concrete in their

The 2016 Federal Government budget indicates a significant increase in the spending on infrastructure and capital projects."

MOBOLAJI BALOGUN, CHAIRMAN, BOARD OF DIRECTORS, LAFARGE AFRICA PLC current road construction programmes has met with some success. The federal government has now awarded Dangote Cement a tax waiver as an incentive to build roads out of concrete. It is favouring the use of concrete because about 80 per cent of the materials used for asphalt road construction are imported.

Sub-Saharan Africa's concrete infrastructure clearly has far to go before it catches up with the rest of the world though, a fact reflected in the region's low per capita cement consumption. According to Ecobank Research, cement consumption averages just 187kg in Ghana, 126kg in Nigeria, 80kg in Kenya and 61kg in Ethiopia per capita compared with the world average of 513kg. However, the innovative use of concrete in road building - once governments are persuaded of its benefits - could provide the cement industry with a massive new opportunity to expand on the continent.

Hybrid excavator goes Antarctic. It's the best, and most likely, the only choice for avoiding environmental abuse.

Chosen for low CO2 emissions, our HB215LC hybrid excavator was delivered to the Princess Elisabeth station, the only zero emission research facility powered by solar and wind energies, in Antarctica in January 2014. This station also features the use of eco-friendly construction materials, ideal energy consumption and advanced waste management.

With the HB215LC fulfilling the vital duty of maintaining the site, including shoveling the snow in Antarctic conditions, we are proud to support, even indirectly, our partner's leading-edge polar research in climate change and other scientific challenges.



Our involvement in the South Pole dates back to 1956, when the first team of the Japanese Antarctic Research Expedition was dispatched with our snowmobile, capable of deployment in minus 60 Celsius and at an altitude of 4,000 meters. For over half a century, we have supported Japanese expeditions.



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An expanded range of grading solutions

Bobcat is now offering a wider range of grading solutions based around the company's compact loaders and grader attachments

he expanded range of grading equipment is designed for use by asphalt and concrete contractors for excavating and grading work for new roads, pavements, concrete flatwork, tennis courts, utilities and landscaping projects. The company has allowed for the loader-mounted grader attachments to be combined

with their sonic tracer kit, the first sonic tracer system of its kind for compact loaders, to provide automatic grade control in applications where lasers may not be suitable.

The sonic tracer kit has the advantage of being able to follow nearly every terrain, especially compared to laser grading which

The T770 Grader Sonic Tracer (Photo: Doosan)

The sonic tracer kit has the advantage of being able to follow nearly every terrain, especially compared to laser grading which requires the job site to be on a plane

requires the job site to be on a plane. Sonic tracers also provide an advantage when grading inside buildings with obstacles where the laser beam could be interrupted. The Bobcat sonic tracer system in particular also offers the advantage if the user already has a laser system mounted on the grader, they can also mount the sonic tracer on the blade, allowing them to switch between using the grader with the sonic tracer or the laser system.

The graders can be converted from standard units to laser ones easily. The operator only needs to mount the receiver poles, clamp the newly enhanced Bobcat laser receivers onto the poles and plug in the harnesses. Designed to operate using CAN-bus communication, the Bobcat laser receivers are easy to mount and dismount while offering several features and benefits.

Installed on the blades of the HD Grader 108 and HD Grader 96 heavy duty grader attachments, the sonic tracer emits ultrasonic signals to maintain a set distance or elevation from an object, surface or the ground, allowing the graders to be used to grade, level, and backfill on a multiple slope terrain when following a grade control.



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When you choose a Brokk, you choose much more than a machine. You choose to work with people who have spent 40 years designing, building and perfecting over 7 000 demolition robots.

But it's not just a remote-controlled demolition robot. What we offer is a compact and electric powered machine that can perform a variety of tasks, such as scaling, breaking, digging, drilling, secondary breaking etc. And with the operator on a safe distance, it maximizes effectiveness and safety.

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NEW CIBER iNOVA 2000





Higher production capacity in two mobilities · 200 T / h



Efficiency in fuel consumption



High performance in special mixtures



Easy to operate \cdot Easy Control $^{\ensuremath{\texttt{®}}}$ system



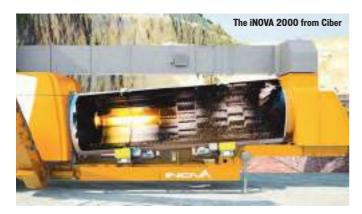
Optimized maintenance

Innovation is the best definition for the Ciber iNOVA 2000 mobile asphalt plant. The most modern technology for the production of different asphalt mixtures, carefully designed to meet any demand and market. Ciber, a Wirtgen Group standard quality.

Excellence in asphalt production

Ing the construction industry value chain, choosing the right equipment ensures productivity and overall quality of work. Technological innovations add even more efficiency and security, walking side by side with new techniques for civil engineering, which are continuously developed to maintain and build roads faster, at lower costs and higher quality.

With 58 years' experience in manufacturing paving equipment, Ciber Equipamentos Rodoviários



operates in Latin America, Africa, Oceania and Southeast Asia. The company represents a reference point in technology and equipment for the production of asphalt mixes, having already produced and delivered to job fields more than 1.800 plants in four continents.

Innovation for productivity

Ciber has developed a plant that adapts completely to the inputs and outputs. Before that, a particular plant productivity was achieved according to the characteristics of the inputs and the final product. With the new Ciber iNOVA 2000, maximum productivity has become a constant, regardless of the characteristics of inputs and requirements of the asphalt mix. The iNOVA 2000 innovates in the field of mobile asphalt plants for continuous production flow. It offers the largest production capacity in two mobilities, efficiency in fuel consumption, maximum performance in special mix, ease of operation and optimised maintenance.

iNOVA 2000 combines the concept of ultra mobile plant with high production capacity. The plant is transported and installed in two chassis and output ranges between 100 to 200 t/h. Thus, land and sea transport costs are significantly lower as well as installation costs compared to plants of the same production size. Also, the plant adapts to most construction sites and presents a less complex install procedure. ■



Sand and gravel washing: connecting, adapting, delivering

Why BDMs in Africa need to understand sand and gravel washing needs, and provide a knowledgeable and personal service to their clients



here is a new ay forward in materials washing. CDE reports that is wiitnessing a strategic shift by African quarry and mine operators who recognise that to gain an edge over their competitors, they need to offer the best quality sand to their customers in construction markets. To target a better and more profitable market segment and increase return on investment, operators are starting to invest in more efficient sand and gravel washing systems such as the popular CDE EvoWash, which comes with its own electric control panel and is pre-wired.

Whilst conventional bucket wheel washers and screw classifiers are cheap to buy, they also lose in excess of 20 per cent fine sand, which leads to a lack of finer fractions of sand between 1mm and 300 micron in the grade and quality of the final washed product. Another drawback is the loss of production when settling ponds need to be cleaned on a regular basis.

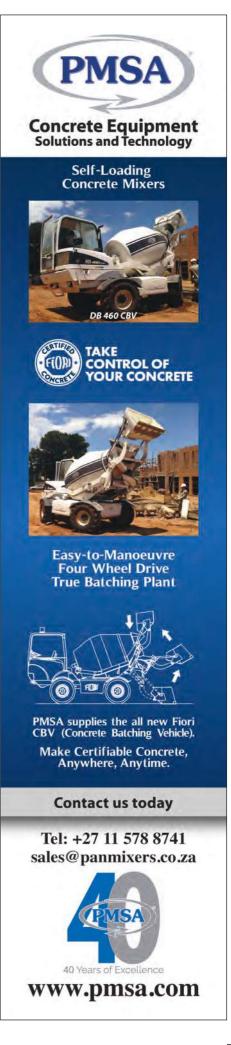
Water conservation remains a major concern in Africa. Savvy customers often combine their plant with a CDE AquaCycle, which recycles 90 perc ent of used water and runs for as little as R3 (US\$0.21)/tonne. Mobile and compact, CDE plants, with advanced no spill transfer points, high quality components and reduced maintenance, offer a simple, onetouch solution. Wayne Warren, CDE Business Manager for Sub-Saharan Africa said: "It is definitely worth looking beyond the initial cost of the equipment to see that in the long run, bucket wheel washers and screw classifiers are actually a money drain.

"With a modular and economical sand washing system that requires a minimal amount of civils and provides consistent high-quality sand in any quantities, the choice is clear.

"If you buy the right plant for your operations, reduced maintenance, reduced manpower, reduced slimes management and continuous operation with water control far outweigh any short term savings."

CDE understands that operators may not always feel confident to be left to their own devices once their plant has been installed. CDE offers a complete after care package to our customers, who benefit from the best after-sales service in the business.

Wayne Warren continued, "For operators located in very remote regions, we also advise stocking some spares on site to reduce risk in case of a breakdown or preventative maintenance actions. We have a wealth of experience in washing applications in various types of rock, so we are able to advise our customers on the best recommended spares package."



CONSTRUCTION & MINING Buyers' Guide

Section One: Listings by Category Section Two: Suppliers Section Three: Agents & Subsidiaries in Africa

Section One: Listings by Category

AIR COMPRESSORS

Coelmo SpA Doosan Portable Power (Doosan Benelux SA) Voith Turbo (Pty) Ltd.

Diesel Driven

Aggreko Atlas Copco Portable Energy Division Brokk AB Doosan Portable Power (Doosan Benelux SA) MAN Truck & Bus AG Yellogen Ltd.

Electric

Altaaqa Global CAT Rental Power Atlas Copco Portable Energy Division Brokk AB DHYBRID Power Systems GmbH HELUKABEL South Africa (Pty) Ltd. HIMOINSA Kohler Power Systems Lovato Electric S.p.A. Marelli Motori S.p.A. YorPower Ltd.

AIR CONDITIONING

KTI - Plersch Kaltetechnik GmbH

BUILDINGS

Cavatorta France SAS CONMIX Ltd. EEC Group (Engineering Enterprises for Civil & Steel Constructions S.A.E.) Kirloskar Brothers Ltd. KwikBuild (Pty) Ltd. MERLO S.p.A. Topcon Positioning Middle East and Africa FZE Weckenmann Anlagentechnik GmbH & Co. KG Weiler GmbH Zamil Steel Building Co. Egypt

CERAMIC AND HEAVY CLAY MACHINERY

ACIMAC-Association of Italian Manufacturers of Machinery and Equipment for Ceramics ANIVI Ingenieria SA

COMPONENTS AND SPARE PARTS

Babacan Rubber Industry C.C.JENSEN AS Cat Lift Trucks DEM Group ELB Equipment ERLAU AG Filtration Ltd. habermann materials GmbH IREM S.p.A. a socio unico Kirloskar Oil Engines Ltd. Kohler Power Systems Maitek S.r.1. MAN Truck & Bus AG Marelli Motori S.p.A. Rossi S.p.A. Shandong Shantui Construction Machinery Import & Export Co. Ltd. SMT Group Spare Power Trading (Pty) Ltd.

Spare Power Trading (Pty) Ltd Specialinsert S.r.l. Wear and Spare Parts YorPower Ltd.

CONCRETE EQUIPMENT

Amog S.r.l. ANIVI Ingenieria SA Bobcat (Doosan Benelux SA) Elkon Concrete Batching Plants HawkeyePedershaab HMD Africa (Offshore) Kraft Tool Co. KTI - Plersch Kaltetechnik GmbH Liebherr- Export AG Meka Crushing & Concrete Batching Technology MERLO S.p.A Parker Plant Ltd. Shandong Shantui Construction Machinery Import & Export Co. Ltd. Spiroll Precast Services Ltd. SRS Finlay Trelawny SPT Ltd. Vortex Hydra S.r.l Wacker Neuson (Pty) Ltd. Weiler GmbH

Batching Plant

Carmix - Metalgalante S.p.A. Elkon Concrete Batching Plants Ermont SAS / Marini-Ermont Fiori Group S.p.A. habermann materials GmbH HMD Africa (Offshore) Jessop & Associates (Pty) Ltd. LINTEC Germany GmbH Marini S.p.A. Meka Crushing & Concrete Batching Technology Voith Turbo (Pty) Ltd. Vortex Hydra S.r.l.

Weiler GmbH Block/Tile- Making Equipment

Jessop & Associates (Pty) Ltd. Ormonde Machinery Ltd. SRS Finlay Vortex Hydra S.r.l. **Breakers** Bobcat (Doosan Benelux SA) ELB Equipment Fritsch GmbH Milling and Sizing HMD Africa (Offshore) Indeco Ind S.p.A. Jubaili Bros Lovato Electric S.p.A. Soosan Heavy Industries Co. Ltd. Wacker Neuson (Pty) Ltd.

Concrete Equipment - Other

Amog S.r.l. Babacan Rubber Industry Brokk AB Carmix - Metalgalante S.p.A. Cavatorta France SAS Doosan Portable Power (Doosan Benelux SA) Fiori Group S.p.A. habermann materials GmbH HMD Africa (Offshore) Jessop & Associates (Pty) Ltd. KTI - Plersch Kaltetechnik GmbH LINTEC Germany GmbH RATEC GmbH Vortex Hydra S.r.l.

Concrete Pumps

Weiler GmbH

Elkon Concrete Batching Plants HMD Africa (Offshore) Kirloskar Brothers Ltd. RATEC GmbH Wonder Moldplast Pvt. Ltd.

Formwork

Agria Machinery Services & Co. Ltd. Doka Industries GmbH Form - Scaff HMD Africa (Offshore) RATEC GmbH Weckenmann Anlagentechnik GmbH & Co. KG Wonder Moldplast Pvt. Ltd.

Mobile Mixing Plant

ANIVI Ingenieria SA Bobcat (Doosan Benelux SA) Carmix - Metalgalante S.p.A. Elkon Concrete Batching Plants Ermont SAS / Marini-Ermont Fiori Group S.p.A. HMD Africa (Offshore) LINTEC Germany GmbH Marini S.p.A.

Pipe Making Equipment

Dowson & Dobson Industrial habermann materials GmbH HawkeyePedershaab

Recycling

CDE Global ELB Equipment Elkon Concrete Batching Plants HMD Africa (Offshore) Indeco Ind S.p.A. Keestrack n.v Marini S.p.A. MB Crusher Ormonde Machinery Ltd.

CONSTRUCTION VEHICLES

Aquamec Ltd. Bell Equipment Co. SA (Pty) Ltd Caterpillar SARL **DEM Group** EEC Group (Engineering Enterprises for Civil & Steel Constructions S.A.E.) Filtration Ltd. HMD Africa (Offshore) JCB KAMAG Transporttechnik GmbH & Co. KG MAN Truck & Bus AG **NICOLAS Industrie SAS Ritchie Bros. Auctioneers** SCHEUERLE Fahrzeugfabrik Gmbh Shandong Shantui Construction Machinery Import & Export Co. Ltd. SMT Group Terex Trucks

Van Vliet Trucks Holland Volvo Construction Equipment Construction Vehicles -

Other

Babacan Rubber Industry Caterpillar SARL HMD Africa (Offshore)

Dump Trucks and Haulers

BKT Tires Caterpillar SARL HMD Africa (Offshore) Iveco S.p.A. MAN Truck & Bus AG Mantrac Group Ormonde Machinery Ltd. Panafrican Group

Engines, Components and

Accessories C.C.JENSEN AS Caterpillar SARL Dresser-Rand (A Siemens Business) Filtration Ltd. HIMOINSA Jubaili Bros Kirloskar Oil Engines Ltd. Mahindra & Mahindra Ltd. MAN Truck & Bus AG Motorenfabrik Hatz GmbH & Co. KG

MTU South Africa (Pty) Ltd. Perkins Engines Co. Ltd. Volvo Penta

Site Dumpers

Carmix - Metalgalante S.p.A. Caterpillar SARL HMD Africa (Offshore) MAN Truck & Bus AG Wacker Neuson (Pty) Ltd.

Please mention African Review when contacting your supplier

Tractors

Action Construction Equipment Ltd. BKT Tires Caterpillar SARL Grupos Electrógenos Europa SA (GESAN) Iveco S.p.A. MAN Truck & Bus AG Mantrac Group MERLO S.p.A. NICOLAS Industrie SAS TVH

Trailers

BEDELCO SPRL BKT Tires Faymonville Distribution Goldhofer Aktiengesellschaft Iveco S.p.A. KAMAG Transporttechnik GmbH & Co. KG MAN Truck & Bus AG NICOLAS Industrie SAS SCHEUERLE Fahrzeugfabrik Gmbh Wacker Neuson (Pty) Ltd.

Truck Mounted Platforms

ANIVI Ingenieria SA Iveco S.p.A. MAN Truck & Bus AG

CONSULTANCY SERVICES

Allott (Nigeria) Ltd. Doka Industries GmbH NUBA Screenng Media Corp RATEC GmbH Spiroll Precast Services Ltd. SRK Consulting Africa The Development Initiative Ltd. Weckenmann Anlagentechnik GmbH & Co. KG

CONVEYOR SYSTEMS

Aury Africa (Pty) Ltd. ELB Equipment FLSmidth (Pty) Ltd. Keestrack n.v Magni Telescopic Handlers Ormonde Machinery Ltd. Parker Plant Ltd. Phoenix Conveyor Belt Systems GmbH QUARRY MINING LLC Terex Minerals Processing Systems

DEMOLITION EQUIPMENT

Bobcat (Doosan Benelux SA) Brokk AB Doosan Portable Power (Doosan Benelux SA) GEFCO Inc. Indeco Ind S.p.A. JCB MB Crusher Rockster Recycler Volvo Construction Equipment VISIT MAN at the IAAI From 22.09.2016 Until 29.09.2016

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Its innovative and practical technology enables MAN to offer maximum efficiency at an optimal price/performance ratio.

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DRILLING

Brokk AB ELB Equipment MAN Truck & Bus AG Soilmec S.p.A. Soosan Heavy Industries Co. Ltd.

Components and

Accessories ERLAU AG Filtration Ltd. HELUKABEL South Africa (Pty) Ltd. NUBA Screenng Media Corp Weckenmann Anlagentechnik GmbH & Co. KG

Drilling Machinery and Plant

Bauer Maschinen GmbH Doosan Portable Power (Doosan Benelux SA) Soilmec S.p.A.

Drilling - Other

Doosan Portable Power (Doosan Benelux SA

Piling

Amog S.r.l. Aquamec Ltd. Bauer Maschinen GmbH CONMIX Ltd.

Trenching and Pipe Laying ELB Equipment

Tunnelling

3D Laser Mapping Ltd. CDE Global Liebherr- Export AG Metallugurgica Abruzzese S.p.A. SCHEUERLE Fahrzeugfabrik Gmbh Soilmec S.p.A. Topcon Positioning Middle East and Africa FZE

EARTHMOVING EQUIPMENT Action Construction

Equipment Ltd. Bell Equipment Co. SA (Pty) Ltd Bobcat (Doosan Benelux SA) Caterpillar SARL DEM Group **ELB** Equipment GEFCO Inc. HMD Africa (Offshore) ICB Liebherr- Export AG MB Crusher Panafrican Group Ritchie Bros. Auctioneers Shandong Shantui **Construction Machinery** Import & Export Co. Ltd. SMT Group Spare Power Trading (Pty) Ltd. Terex Trucks Van Vliet Trucks Holland Volvo Construction Equipment

Attachments and

Accessories Bobcat (Doosan Benelux SA) C.C.JENSEN AS Caterpillar SARL Indeco Ind S.p.A. Magni Telescopic Handlers SENNEBOGEN Maschinenfabrik GmbH SRS Finlay

Backhoe Loaders

Action Construction Equipment Ltd. Amog S.r.l. BKT Tires Caterpillar SARL CNH Industrial Italia (Case Construction Equipment) ELB Equipment HMD Africa (Offshore) JCB Mantrac Group

New Holland Construction Machinery Swazi-Trac (Pty) Ltd.

Dozers

BKT Tires Caterpillar SARL CNH Industrial Italia (Case Construction Equipment) ELB Equipment HMD Africa (Offshore) Liebherr- Export AG Mantrac Group New Holland Construction Machinery

Dumpsters

Mantrac Group SRS Finlay Swazi-Trac (Pty) Ltd. Earthmoving Equipment -Other

BEDELCO SPRL BKT Tires Caterpillar SARL Liebherr- Export AG MB Crusher Ritchie Bros. Auctioneers

Excavators Aquamec Ltd. BKT Tires Caterpillar SARL ELB Equipment JCB Liebherr- Export AG

Mantrac Group New Holland Construction Machinery Spare Power Trading (Pty) Ltd. Swazi-Trac (Pty) Ltd. Wacker Neuson (Pty) Ltd.

Loaders - Other

BKT Tires Bobcat (Doosan Benelux SA) Caterpillar SARL CNH Industrial Italia (Case Construction Equipment) ELB Equipment Fiori Group S.p.A. HMD Africa (Offshore) Mantrac Group New Holland Construction Machinery Wacker Neuson (Pty) Ltd.

Mini-Excavators

Bobcat (Doosan Benelux SA) Caterpillar SARL CNH Industrial Italia (Case Construction Equipment) Fiori Group S.p.A. HMD Africa (Offshore) JCB Liebherr- Export AG Mantrac Group New Holland Construction Machinery Wacker Neuson (Pty) Ltd. Motor Graders Action Construction

Equipment Ltd. BKT Tires Caterpillar SARL CNH Industrial Italia (Case Construction Equipment) ELB Equipment HMD Africa (Offshore) Mantrac Group New Holland Construction Machinery Swazi-Trac (Pty) Ltd.

Scrapers

Caterpillar SARL HMD Africa (Offshore) Mantrac Group Trelawny SPT Ltd.

Skidsteer Loaders

BKT Tires Bobcat (Doosan Benelux SA) Caterpillar SARL CNH Industrial Italia (Case Construction Equipment) ELB Equipment HMD Africa (Offshore) JCB Mantrac Group New Holland Construction Machinery Swazi-Trac (Pty) Ltd.

FINISHING

Kraft Tool Co.

Equipment Action Construction Equipment Ltd. Altaaqa Global CAT Rental Power CDE Global HIMOINSA Kohler Power Systems Snorkel

Insulation Panels C.C.JENSEN AS KwikBuild (Pty) Ltd.

Materials

CONMIX Ltd. Interplast Ltd. Lafarge SENNEBOGEN Maschinenfabrik GmbH

Paints

CONMIX Ltd. Services

The Development Initiative Ltd.

FREIGHT/LOGISTICS

MAN Truck & Bus AG

GEOIMAGING

3D Laser Mapping Ltd. Topcon Positioning Middle East and Africa FZE

LIFTING EQUIPMENT

Action Construction Equipment Ltd. Bell Equipment Co. SA (Pty) Ltd ERLAU AG Grupos Electrógenos Europa SA (GESAN) HMD Africa (Offshore) JCB Kresta Laurel Ltd. Liebherr- Export AG Magni Telescopic Handlers Snorkel Terex Trucks Van Vliet Trucks Holland Volvo Penta

Access Snorkel

TVH

Components and Accessories ERLAU AG HELUKABEL South Africa (Pty) Ltd. Rossi S.p.A.

Cranes

Action Construction Equipment Ltd. HMD Africa (Offshore) Kresta Laurel Ltd. Liebherr- Export AG SENNEBOGEN Maschinenfabrik GmbH Soilmec S.p.A. Soosan Heavy Industries Co. Ltd.

Hoists

FLSmidth (Pty) Ltd. HMD Africa (Offshore) Kresta Laurel Ltd. Liebherr- Export AG Voith Turbo (Pty) Ltd.

Hydraulic

Voith Turbo (Pty) Ltd. Lift Trucks BKT Tires Cat Lift Trucks Mantrac Group TVH

Mechanical

Voith Turbo (Pty) Ltd.

Other Materials Handling Action Construction Equipment Ltd. ANIVI Ingenieria SA Aury Africa (Pty) Ltd. Cat Lift Trucks QUARRY MINING LLC SRS Finlay

Pneumatic

BEDELCO SPRL

Telescopic Handlers BKT Tires

Bobcat (Doosan Benelux SA) CNH Industrial Italia (Case Construction Equipment) ELB Equipment HMD Africa (Offshore) JCB Magni Telescopic Handlers MERLO S.p.A. New Holland Construction Machinery SENNEBOGEN Maschinenfabrik GmbH Snorkel TVH

Wacker Neuson (Pty) Ltd. MOBILE POWER SUPPLY

UNITS

Aksa Power Generation Coelmo SpA Doosan Portable Power (Doosan Benelux SA) FG Wilson Firefly Green Power Systems S.r.l. JMG Ltd. Kirloskar Oil Engines Ltd. Kohler Power Systems SDMO Industries Van Vliet Trucks Holland Visa S.p.A.

Generator Sets

Aggreko Aksa Power Generation Altaaqa Global CAT Rental Power Coelmo SpA Cummins Power Generation DHYBRID Power Systems GmbH

Business) FG Wilson Firefly Fronius International GmbH Green Power Systems S.r.l. HIMOINSA HMD Africa (Offshore) JCB JMG Ltd. Jubaili Bros Kirloskar Oil Engines Ltd. Kohler Power Systems Kresta Laurel Ltd. Lovato Electric S.p.A Mahindra & Mahindra Ltd. Morris Site Machinery Motorenfabrik Hatz GmbH & Co. KG MTU South Africa (Pty) Ltd. **SDMO Industries** Visa S.p.A. Weiler GmbH Yellogen Ltd. YorPower Ltd.

Dresser-Rand (A Siemens

MOTORS/DRIVERS/ CONTROLS

Adroit Technologies

PUMPING EQUIPMENT

Aquamec Ltd. HMD Africa (Offshore) Kirloskar Brothers Ltd. Morris Site Machinery Varisco S.p.A. Visa S.p.A. Wacker Neuson (Pty) Ltd. Weir Minerals Africa (Pty) Ltd.

Concrete

Agria Machinery Services & Co. Ltd. Bobcat (Doosan Benelux SA) CONMIX Ltd. Elkon Concrete Batching Plants Lafarge Meka Crushing & Concrete Batching Technology

Submersible

Atlas Copco Portable Energy Division Kirloskar Brothers Ltd. Varisco S.p.A. Wacker Neuson (Pty) Ltd. Weir Minerals Africa (Pty) Ltd.

Truck Mounted

Action Construction Equipment Ltd. BKT Tires HMD Africa (Offshore) MAN Truck & Bus AG

Pumping Equipment - Other

FLSmidth (Pty) Ltd. HMD Africa (Offshore) Interplast Ltd. Kirloskar Oil Engines Ltd. Maitek S.r.l. Motorenfabrik Hatz GmbH & Co. KG Varisco S.p.A.

RAW MATERIALS

Aury Africa (Pty) Ltd. DEM Group Lafarge SMT Group Wear and Spare Parts **Crushing, Screening and Washing**

ANIVI Ingenieria SA Aury Africa (Pty) Ltd. CDE Global

ELB Equipment FLSmidth (Pty) Ltd. Fritsch GmbH Milling and Sizing HMD Africa (Offshore) Keestrack n.v Maitek S.r.l. McCloskey International Ltd. Meka Crushing & Concrete Batching Technology Minyu Machinery Corp NUBA Screenng Media Corp Ormonde Machinery Ltd. Parker Plant Ltd. Powerscreen QUARRY MINING LLC Rockster Recycler Spare Power Trading (Pty) Ltd. Terex Minerals Processing Systems Volvo Penta Wear and Spare Parts Weir Minerals Africa (Pty) Ltd.

Grinding Equipment

ANIVI Ingenieria SA FLSmidth (Pty) Ltd. Fritsch GmbH Milling and

Sizing HMD Africa (Offshore) Trelawny SPT Ltd. Weir Minerals Africa (Pty) Ltd.

Mixing

Fritsch GmbH Milling and Sizing habermann materials GmbH HMD Africa (Offshore) MAN Truck & Bus AG

Quarrying

Aury Africa (Pty) Ltd. **CDE Global Doosan Portable Power** (Doosan Benelux SA) Filtration Ltd. HMD Africa (Offshore) Keestrack n.v Liebherr- Export AG Magni Telescopic Handlers Meka Crushing & Concrete Batching Technology Minyu Machinery Corp. **Ritchie Bros. Auctioneers** Soosan Heavy Industries Co. Ltd. **Terex Minerals Processing** Systems Wear and Spare Parts Yellogen Ltd.

Raw Materials - Other

ANIVI Ingenieria SA HMD Africa (Offshore) Lafarge

Testing

Aggreko
ROAD BUILDING

EQUIPMENT

Action Construction Equipment Ltd. BKT Tires BOMAG GmbH Caterpillar SARL Cavatorta France SAS Ciber Equipamentos Rodoviarios Ltda. **Doosan Portable Power** (Doosan Benelux SA) **ELB Equipment** Ermont SAS / Marini-Ermont HMD Africa (Offshore) ICB Kraft Tool Co. Liebherr- Export AG **MB** Crusher Panafrican Group Shandong Shantui Construction Machinery Import & Export Co. Ltd. Van Vliet Trucks Holland Volvo Construction Equipment Wacker Neuson (Pty) Ltd.

Asphalt Plant

Ciber Equipamentos Rodoviarios Ltda. Ermont SAS / Marini-Ermont LINTEC Germany GmbH Marini S.p.A. Parker Plant Ltd.

Compaction Equipment

Action Construction Equipment Ltd. Agria Machinery Services & Co. Ltd. BOMAG GmbH Caterpillar SARL CNH Industrial Italia (Case Construction Equipment) ELB Equipment JCB Mantrac Group Panafrican Group Wacker Neuson (Pty) Ltd.

Weckenmann Anlagentechnik GmbH & Co. KG

Pave

BOMAG GmbH Caterpillar SARL ELB Equipment Mantrac Group Panafrican Group

Recycling

Bobcat (Doosan Benelux SA) BOMAG GmbH Fritsch GmbH Milling and Sizing Liebherr- Export AG LINTEC Germany GmbH Maitek S.r.l. Rockster Recycler SENNEBOGEN Maschinenfabrik GmbH Soosan Heavy Industries Co. Ltd. Terex Minerals Processing Systems

Road Building Equipment - Other

Agria Machinery Services & Co. Ltd. Babacan Rubber Industry BEDELCO SPRL Bobcat (Doosan Benelux SA) Caterpillar SARL Cavatorta France SAS Doosan Portable Power (Doosan Benelux SA) HMD Africa (Offshore) Metallugurgica Abruzzese S.p.A.

Rollers

Action Construction Equipment Ltd. Agria Machinery Services & Co. Ltd. BOMAG GmbH Caterpillar SARL ELB Equipment HMD Africa (Offshore) Wacker Neuson (Pty) Ltd.

SAFETY EQUIPMENT

3D Laser Mapping Ltd. Doka Industries GmbH Metallugurgica Abruzzese S.p.A.

SOFTWARE

3D Laser Mapping Ltd. Adroit Technologies

Management Systems

Adroit Technologies DHYBRID Power Systems GmbH

Software - Other 3D Laser Mapping Ltd.

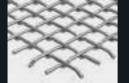
SD Laser Mapping Lu

STEEL

Dowson & Dobson Industrial KAMAG Transporttechnik GmbH & Co. KG Magni Telescopic Handlers SCHEUERLE Fahrzeugfabrik Gmbh Zamil Steel Building Co. Egypt



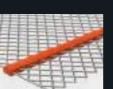
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Steel - Other ERLAU AG Metallugurgica Abruzzese S.p.A. Zamil Steel Building Co. Egypt

TESTING

Aggreko

TOOLS

DEM Group Doosan Portable Power (Doosan Benelux SA) Dowson & Dobson Industrial MERLO S.p.A.

SMT Group TVH

Hydraulic Babacan Rubber Industry Kirloskar Brothers Ltd.

Mechanical

Yellogen Ltd.

Pneumatic

BEDELCO SPRL **Doosan Portable Power** (Doosan Benelux SA)

Dowson & Dobson Industrial Trelawny SPT Ltd.

Doosan Portable Power

(Doosan Benelux SA) Grupos Electrógenos Europa SA (GESAN) Specialinsert S.r.I.

MINING MACHINERY

Aggreko Bell Equipment Co. SA (Pty) Ltd BKT Tires Iveco S.p.A. ICB Liebherr- Export AG Magni Telescopic Handlers MAN Truck & Bus AG Soilmec S.p.A. **Topcon Positioning Middle**

USED EQUIPMENT

Atlas Copco Portable **Energy Division** Bauer Maschinen GmbH Cat Lift Trucks Caterpillar SARL Doka Industries GmbH **ELB Equipment** Grupos Electrógenos Europa SA (GESAN) ICR Maitek S.r.l. MAN Truck & Bus AG

Section Two: Suppliers

3D Laser Mapping Ltd.

Unit 1 Moorbridge Court Moorbridge Road East, Bingham Nottingham, NG13 8GG, United Kingdom Tel: +44 1949 838004 Fax: +44 8701 214605 Web: www.3dlasermapping.com E-mail: info@3dlasermapping.com

3D Laser Mapping is a world-leading specialist in the development and application of 3D Measurement technologies. This dynamic company is focused on delivering Geospatial Business Intelligence for 3D modelling, Mapping and Mining industries.

Agents:

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ACIMAC is the association of Italian suppliers of plant, machinery, equipment, semi-finished products, raw materials and services for the ceramic, heavy clay and refractories industries.

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Witkoppen Road Fourways, South Africa

cranes, ACE also offers mobile/fixed tower

construction equipment.

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the industrial automation markets for over 25

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sub-Saharan Africa in 2012.

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acquired 14.9% shareholding in Adroit, resulting

in Adroit's appointment as Authorised Distributor

of Mitsubishi factory Automation products for

March 2011 Mitsubishi Electric Europe BV

Morris Site Machinery **Ritchie Bros. Auctioneers** Snorkel Spare Power Trading (Pty) Ltd. Visa S.p.A. Vortex Hydra S.r.l. Yellogen Ltd.

Rental Equipment

Altaaga Global CAT Rental Power Cat Lift Trucks Caterpillar SARL FG Wilson ICB Kohler Power Systems Visa S.p.A. Weir Minerals Africa (Pty) Ltd. Wonder Moldplast Pvt. Ltd.

Complete Solutions for Electrical Needs

Altaaga Global CAT Rental Power DHYBRID Power Systems GmbH Fronius International GmbH GEFCO Inc. **HELUKABEL South Africa** (Ptv) Ltd. Iubaili Bros Lovato Electric S.p.A.

WELDING EQUIPMENT

Coelmo SpA Green Power Systems S.r.l. Grupos Electrógenos Europa SA (GESAN) Interplast Ltd.

Kresta Laurel Ltd. Morris Site Machinery SDMO Industries

OTHER SITE EQUIPMENT AND MATERIALS

Altaaqa Global CAT Rental Power ANIVI Ingenieria SA Bobcat (Doosan Benelux SA)

Coelmo SpA DHYBRID Power Systems GmbH Doosan Portable Power (Doosan Benelux SA)

KTI - Plersch Kaltetechnik GmbH Fencing

Cavatorta France SAS Interplast Ltd. Metallugurgica Abruzzese S.p.A.

High Pressure Steam Cleaners

EEC Group (Engineering Enterprises for Civil & Steel Constructions S.A.E.)

Lighting Masts/Towers

Aksa Power Generation Atlas Copco Portable Energy Division

Doosan Portable Power (Doosan Benelux SA) Green Power Systems S.r.l. HIMOINSA

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Angola - Aggreko Kenya - Aggreko Nambia - Aggreko Nigeria - Aggreko North Africa - Aggreko South Africa - Aggreko Tanzania - Aggreko

Agria Machinery Services & Co. Ltd.

PO Box AN5280, No. 5 Royalt Castle Rd. Kokomlemle (Adjc. SSNIT Kokomlemle Branch), Accra North, Ghana Tel: +233 30 2222169 Fax: +233 30 2222621 Web: www.agriamachinerygh.com E-mail: sales@agriamachinerygh.com

Distributors of construction, agric, horticulture equipment with after sales service & space parts support.

Aksa Power Generation



Ruzgarlibahce Mahallesi Ozalp Ciknazi No 10 Beykoz Instanbul Turkey

Tel: +90 216 6810000 Fax: +90 216 6815784 Web: www.aksa.com.tr F-mail: aksa@aksa.com.tr

Aksa Generators manufactures gasoline, diesel, natural gas and marine generating sets range between 1kVA to 3000 kVA as well as lighting towers and generator hardware in the manufacturing facilities in Instanbul (Turkey 20.000 m2 of indoor space), Changzou (China

Jubaili Bros Morris Site Machinery **SDMO Industries** SOL Inc. (Solar Outdoor Lighting)

Wacker Neuson (Pty) Ltd. **Pipe and Cable Detecting**

Systems

Dowson & Dobson Industrial HELUKABEL South Africa (Pty) Itd.

Interplast Ltd.

Sand Blasting Equipment Doosan Portable Power (Doosan Benelux SA)

Scaffolding

Doka Industries GmbH Form - Scaff HMD Africa (Offshore) Wonder Moldplast Pvt. Ltd.

Silos

ANIVI Ingenieria SA EEC Group (Engineering Enterprises for Civil & Steel Constructions S.A.E.) QUARRY MINING LLC

Surveying Equipment

3D Laser Mapping Ltd. Topcon Positioning Middle East and Africa FZE

Temporary Housing and Offices

KwikBuild (Pty) Ltd.

100.000 m2 of indoor space) and Louisiana (USA, 10.000 m2 Indoor space); and has become a leader and poineer within the sector. Aksa Generator exports more than 50% of its product and is among the top ten global firms of the sector with 13 offices located in Asia, Europe and Africa.

Agents:

Algeria - EURL Aksa Generateurs Algerie Ghana - Aksa Generators Ghana South Africa - Aksa Power Generation SA(Pty) Ltd United Arab Emirates - Aksa Power Generation FZE

Allott (Nigeria) Ltd.

PO Box 515, Marina, Lagos, Nigeria Tel: +234 1 2951122 Fax: +234 1 2951122 Web: www.allottnigeria.com E-mail: info@allottnigeria.com

Allott (Nigeria) Ltd. established over 35 years ago has carried out over 350 projects in technical consulting on major infrastructure projects in Highway, Railways, Marine Terminals and Inland waterways in Nigeria

Altaaqa Global CAT Rental Power

VA 01, RA 08, Blue Shades Warehouses JAFZA North, Jeleb Ali, Dubai PO Box 262989, United Arab Emirates Tel: +971 4 8808006 Fax: +971 4 8808001

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Agents:

Kenya - Altaaqa Global CAT Rental Power, East Africa South Africa - Altaaqa Global CAT Rental Power, Southern Africa

Ammann (SA)

Private Bag 43, Suite 253 Benoni, 1500, South Africa Tel: +27 11 8493939/3333 Fax: +27 86 5033971 Web: www.ammann-group.com E-mail: info.aza@ammann-group.com

Ammann (Switzerland)

Eisenbahnstrasse 25 Langenthal, CH-4901 Switzerland Tel: +41 62 9166161 Fax: +41 62 9166402 Web: www.ammann-group.com E-mail: info.aag@ammann-group.com

Amog S.r.l.

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Atlas Copco Portable Energy Division

Ingberthoeveweg 7, Aartselaar 2630, Belgium Tel: +32 3 7508550 Web: www.atlascopco.com E-mail: paul.humphreys@ be.atlascopco.com

Atlas Copco is a world-leading provider of sustainable productivity solutions. We serve customers in more than 180 countries with products and services focused on productivity, energy efficiency, safety and ergonomics. The Portable Energy division develops, manufactures and markets portable compressors, high pressure boosters, generators, light towers and portable dewatering pumps.

Agents:

Algeria - Atlas Copco Algeria S.p.A Angola - Atlas Copco Angola, Lda. Benin - Atlas Copco Senegal SARL Botswana - Atlas Copco South Africa (Pty) Ltd. Construction Technique Burkina Faso - Atlas Copco Senegal SARL Burundi - Atlas Copco Tanzania Ltd. Cameroon - Atlas Copco Senegal SARL Central African Republic - Atlas Copco Senegal SARL Chad - Atlas Copco Senegal SARL Congo DR - Atlas Copco Zambia Ltd Cote Divoire - Atlas Copco Senegal SARL Diibouti - Atlas Copco Tanzania Ltd. Eritrea - Atlas Conco Tanzania Ltd. Ethiopia - Atlas Copco Tanzania Ltd. Gabon - Atlas Copco Senegal SARL Gambia - Atlas Copco Senegal SARL Ghana - Atlas Copco Ghana Ltd. Guinea - Atlas Copco Senegal SARL

Guinea Bissau - Atlas Copco Senegal SARL

Kenya - Atlas Copco Tanzania Ltd. Liberia - Atlas Copco Senegal SARL Madagascar - Atlas Copco Tanzania Ltd Malawi - Atlas Copco Zambia Ltd. Mali - Atlas Conco Senegal SARI Mauritania - Atlas Copco Senegal SARL Mauritius - Atlas Copco Tanzania Ltd. Morocco - Atlas Copco Maroc SA Mozambique - Atlas Copco South Africa (Pty) Ltd. Construction Technique Namibia - Atlas Copco South Africa (Pty) Ltd. **Construction Technique** Niger - Atlas Copco Senegal SARL Nigeria - Atlas Copco Nigeria Ltd. Rwanda - Atlas Copco Tanzania Ltd. Senegal - Atlas Conco Senegal SARL Seychelles - Atlas Copco Tanzania Ltd. Sierra Leone - Atlas Copco Senegal SARL Somalia - Atlas Copco Tanzania Ltd. South Africa - Atlas Copco South Africa (Pty) Ltd. **Construction Technique** Tanzania - Atlas Copco Tanzania Ltd. Togo - Atlas Copco Senegal SARL Uganda - Atlas Copco Tanzania Ltd Zambia - Atlas Conco Zambia Ltd. Zimbabwe - Atlas Copco Zimbabwe Pvt. Ltd.

Aury Africa (Pty) Ltd.

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Babacan Rubber Industry

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Barloworld Equipamentos Angola Lda.

Estrada do Golf S/N Sector Talatona Luanda, Republica de Angola, Angola Tel: +244 923 166940 Web: www.barloworld-equipment.com E-mail: info@barloworld-angola.com

Barloworld Equipment

Electron Ave, Isando Gauteng, 1600, South Africa Tel: +27 11 9290000 Fax: +27 11 9290044 Web: www.barloworld-equipment.com E-mail: marketing2@barloworldequipment.com

Bauer Maschinen GmbH

Bauer-Strasse 1 Schrobenhausen 86529, Germany Tel: +49 825 2971888 Fax: +49 825 2971896 Web: www.bauer.de E-mail: hermann.schrattenthaler@ bauer.de

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Agents: South Africa - BAUER Technologies South Africa

Baumaschinen Fink GmbH

Kirschenleite 25 Schnaittach, 91220 Germany Tel: +49 9153 970970 Web: www.bm-fink.de E-mail: info@bm-fink.de

BEDELCO SPRL

Rue de l'Environnement 22 Seraing, 4100 Belgium Tel: +32 4 3301860 Fax: +32 4 3301866 Web: www.bedelco.com E-mail: info@bedelco.com

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Bell Equipment Co. SA (Pty) Ltd

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OEM manufacturer and distributor of heavy duty equipment for the Mining, Construction and Forestry industries.

Agents:

South Africa - Bell Equipment Co. SA (Pty) Ltd

Benninghoven GmbH & Co. KG

Industriegelande, Muelheim an der Mosel, 54486, Germany Tel: +49 6534 1890 Web: www.benninghoven.com E-mail: info@benninghoven.com

BKT Tires

BKT House, C/15 Trade World Kamala Mills Compound Senapati Bapat Marg Lower Parel, Mumbai, 400013, India Tel: +91 22 66663800 Fax: +91 22 66663898/99 Web: www.bkt-tires.com E-mail: info@bkt-tires.com

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Contact for African Region: BOMAG GmbH Daniel Werner-Meier Area Sales Manager Africa Hellerwald 56154 Boppard Germany Email: daniel.werner-meier@bomag.com

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Perkins Engines Co. Ltd.

Frank Perkins Way Peterborough, Cambridgeshire **PF1 5F0** United Kingdom Tel: +44 1733 583000 Web: www.perkins.com E-mail: webmaster_perkins@ perkins.com

Phoenix Conveyor Belt Systems GmbH

Hannoversche Straße 100 Hamburg, 21079 Germany Tel: +49 40 766703 Fax: +49 40 76672413 Web: www.phoenix-conveyorbelts.com

E-mail: info@phoenix-cbs.com

Phoenix conveyor belts, headquarted in Germany Hamburg, is an international group company that is more than 150 years old. Phoenix Conveyor Belt Systems GmbH has produced significiant advancements in conveyor belt design, which include world records such as the Strongest Belts, the Steenest Overland and the World's Heaviest Belt, to name a few.

Powerscreen

200 Coalisland Road Dungannon, Co. Tyrone Northern Ireland, BT71 4DR United Kingdom Tel: +44 2887 718500 Fax: +44 2887 747231 Web: www.powerscreen.com E-mail: sales@powerscreen.com

Powerscreen is an expert in the design and manufacture of mobile crushing and screening equipment. With a rich heritage of design and manufacturing excellence, Powerscreen has grown to become a leading force in the original equipment manufacturing sector. Powerscreen machines cover the full range of material processing requirements for the mining, quarrying, demolition and recycling industries.

Putzmeister South Africa (Pty) Ltd.

PO Box 5146 Corner Braam + Citrus Street Honeydew, Ext. 21 ZA 2118, South Africa Tel: +27 11 7943790 Fax: +27 11 7944119 Web: www.putzmeister.co.za E-mail: geyserl@putzmeister.co.za

Putzmeister covers various concrete and mortar applications starting with our versatile mortar pumps, our trailer/truck mounted concrete pumps that offers best quality. We also supply and fit Putzmeister truck mixers imported directly from Germany. To give a complete solution we offer Putzmeister's range of batching plants. Putzmeister also works on projects involved in the area of industrial pumping technology.

Agents:

Algeria - Putzmeister Concrete Pumps GmbH

QUARRY MINING LLC

PO Box 9593, Ras Al Khaimah **United Arab Emirates** Tel: +971 7 2689799 Fax: +971 7 2689499 Web: www.quarrymining.net E-mail: info@quarrymining.net

QUARRY MINING LLC design and manufacture to European standards of design and construction and at the same time adopt the same safety standards and features as you would expect if you purchased the equipment from Europe. QUARRY MINING LLC received ISO Certificate 9001:2008 but also ISO Certificate 14001:2004 from Tuev Rheinland/Germany, while all updates are continuously integrated.

RATEC GmbH

Karlsruher Str. 32 Hockenheim, 68766, Germany Tel: +49 6205 940729 Fax: +49 6205 940730 Web: www.ratec.org E-mail: info@ratec.org

Meet the better ideas for your precast concrete housing and building projects. RATEC is a wellknown supplier of magnetic shuttering systems, magnet boxes, battery formwork systems and concrete pumps. Furthermore, with Reymann Technik as partner it offers plant design and consultancy for new and existing precast concrete plants.

Agents: South Africa - UkuZwana

Ritchie Bros. Auctioneers

Concordiastraat 20 Breda, 4811 NB Netherlands Tel: +31 76 5242600 Fax: +31 76 5242650 Web: www.rbauction.com

Rockster Recycler

Wirtschaftszeile, West 2 Ennsdorf, 4482, Austria Tel: +43 7223 81000 Fax: +43 7223 81000329 Web: www.rockster.at E-mail: office@rockster.at

Rockster Recycler is a specialist in the development and manufacture of mobile crushing and screening plants for profitable recycling of asphalt, concrete and other construction waste and the efficient processing of natural stone. With innovations such as the patented duplex systems or the unique hybrid crusher, the company repeatedly demonstrates its progressive approach.

Agents:

South Africa - Mfangano Solutions

Rollo Power Systems

Unit 18, Garanor Way Portbury, Bristol, BS20 7XE, UK Tel: +44 1275 377800 Fax: +44 1275 377877 Web: www.rollopowersolutions.co.uk E-mail: parts@rollopowersolutions.co.uk

Rossi S.p.A.

Via Emilia Ovest 915/A Modena, 41123, Italy Tel: + 39 059 330288 Fax: + 39 059 827774 Web: www.rossi-group.com E-mail: info@rossi-group.com

Rossi is a global leading provider of Power Transmission Drives (Gearboxes and Gearmotors) with a high value/price ratio. Rossi has been developing its business in the most demanding applications, becoming one of the world's leading gearbox specialist in strategic segments, such as Mining, Metal, Plastic and Rubber.

Agents:

South Africa - Rossi Southern Africa

RUD Ketten Rieger & Dietz GmbH u. Co. KG

Friedensinsel, Aalen, 73432, Germany Tel: +49 7361 5040 Fax: +49 7361 5041450 Web: www.rud.com E-mail: rudketten@rud.com

SCHEUERLE Fahrzeugfabrik Gmbh

Otto-Rettenmaier-Straße 15 Pfedelbach, 74629, Germany Tel: +49 7941691200 Fax: +49 7941691400 Web: www.scheuerle.com E-mail: info@scheuerle.com

SCHEUERLE is member of the TII Group, which is world market leader in the manufacture of heavyduty vehicles equipped with hydraulically suspended pendulum axles. SCHEUERLE develops and produces transporters as SPMT, modular platform trailers, semitrailers, diverse industrial lift and shipyard transporters as well as vehicles for special applications.

SDMO Industries



12 bis rue de la Villeneuve, Brest Cedex 2 CS92848, 29228, France Tel: +33 2 98414141 Web: www.sdmo.com E-mail: philippe.forest@sdmo.com

SDMO Industries is one of the world's leading generating set manufacturers. A wide range of standard products from 1 kVA to several Megawatts. Through an efficient engineering department, SDMO meets non-standard requirements. Present in over 150 countries through a dense network, SDMO Industries devotes its energy to supporting you in the successful completion of each of your projects world wide

Agents:

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Secmair Fayat Group

Rue des Frères Lumière Cossé-le-Vivien 53230, France Tel: +33 2 43982776 Fax: +33 2 43988649 Web: www.secmair.fayat.com E-mail: e.braischaux@secmair.fayat.com Secmair Fayat Group, complete range for road maintenance.

SENNEBOGEN Maschinenfabrik GmbH

Hebbelstraße 30 Straubing 94315, Germany Tel: +49 9421 5400 Fax: +49 9421 43882 Web: www.sennebogen.com E-mail: marketing@sennebogen.de

As a family-owned company- strengthened by more than 60 years of experience- SENNEGOBEN will remain an approachable company. SENNEBOGEN is in a leading position as a globally established innovation driver and manufacturer in the areas of material handling and crane engineering. The focus on the various product segments is consistently applied in development, product management, sales organization and our production plants in Germany. In product development, we focus on availability and reliability of our products.

SEVA Switchgear Pvt. Ltd.

97, Magadi Road Metro pillar # 219 Bangalore, 560023 India Tel: +91 80 23383047/23380233 Web: www.sevaspl.com

Web: www.sevaspl.com E-mail: info@sevaspl.com

Shandong Shantui Construction Machinery Import & Export Co. Ltd.

No. 58 Highway G327, Jining Shandong China Tel: +86 537 2909369 Fax: +86 537 2311219 Web: www.shantui.com E-mail: trade@shantui.com

Shantui is the world's largest producer of bulldozers and a leading diversified manufacturer of construction, road and cement handling machinery. A top Chinese brand, Shantui products are sold in more than 170 countries and regions worldwide. Contact us for information on how Valve That Works can work for you.

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Madagaścar - Equipment Provider Solution Co. Ltd. (EPSCO) Zambia - Delta Auto & Equipment Ltd.

Zimbabwe - Machinery Exchange

SMT Group

Avenue Fleming 4, Wavre 1300, Belgium Tel: +32 10 476120 Fax: +32 10 476148 Web: www.smt-group.com E-mail: info@smt-group.com

SMT Group is the exclusive distributor of Volvo Construction & Equipment, Volvo Trucks and Volvo Penta in a dozen countries in Central and West Africa. We operate an outstanding own sales and service network with operational agility and entrepreneurial spirit. By engaging in partnerships with our customers, we create value delivering state of the art services and products. Our ambition in both territory coverage and product portfolio is a strong commitment to support our customers growth.

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Snorkel

Vigo Centre, Birtley Road Washington Tyne & Wear NE38 9DA United Kingdom Tel: +44 845 1550057 Fax: +44 845 1557756 Web: www.snorkellifts.com E-mail: sales@snorkellifts.com

Snorkel is a leading global manufacturer of aerial work platforms. With a focus on simple and robust design. The Snorkel product line ranges from 3.0 meter push-around scissor lifts for low level access, to 40 meter telescopic boom lifts for the largest construction projects.

Soilmec S.p.A.

Via Dismano 47522 Cesena Forlì Cesena 5819, Italy Tel: +39 0547 319111 Fax: +39 0547 318548 Web: www.soilmec.it E-mail: info@soilmec.it

Soilmec is an international company leader in design, manufacture and distribution of equipment for ground engineering, established in 1969. Since its inception, Soilmec has developed safe, innovative, cutting-edge technologies and equipment solutions. Soilmec equipment is used everyday on jobsites all around the world for bridges, motorways, tunnels, underground lines, railways and buildings of all types. Thanks to a constantly upgraded and broadening range of products and a greatly increased production capability; we are an established landmark in the international ground engineering field.

Agents:

Algeria - Soilmec Algeria Nigeria - Mining & Construction Equipment Ltd.

SOL Inc. (Solar Outdoor Lighting)

819 S. Federal Highway Suite 103 Stuart, Florida 34994, USA Tel: +1 772 2869461 Fax: +1 772 2869616 Web: www.solarlighting.com E-mail: info@solarlighting.com

SOL is the leading manufacturer of solar lighting solutions since 1990 with 50,000+ systems installed worldwide. SOL develops innovative LED solar solutions that are well-engineered, easy to install and exceed standards for: Roadways, Parking Lots, Parks, Pathways, Trails, Perimeter Security, Signs, Billboards and Shelters. SOL is ISO 9001:2008 compliant.

Soosan Heavy Industries Co. Ltd.

260 Jeongmunsongsan-RO Yanggam-Myeon, Hwaseong-Si Gyeonggi-Do, Netherlands Tel: +31 35 27733 Fax: +31 35 25852 Web: www.soosan.co.kr E-mail: kimht@soosan.co.kr

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Via Monfalcone 144, Torino 10136, Italy Tel: +39 011 700301 Fax: +39 011 702947 Web: www.specialinsert.it E-mail: export@specialinsert.it

Specialinsert, since 1974 is Italian leader in the world of fasteners, produces and supplies fastening system for any industries from building & construction, furniture & design, automotive, aerospace, marine and many others. Our standard and customized products are made in Italy and we sell in more than 40 countries worldwide.

Spiroll Precast Services Ltd.

Unit 2 Kingsway Industrial Park Derby Derbyshire, DE22 3FP, UK Tel: +44 1332 365131 Fax: +44 1332 291736 Web: www.spiroll.co.uk E-mail: enquiries@spiroll.co.uk

Spiroll-the expert partner in delivering optimized precast concrete technology to support global building and infrastructure projects.

SRK Consulting Africa

PO Box 55291, Northlands 2116, South Africa Tel: +27 11 4411111 Fax: +27 11 8808086 Web: www.srk.co.za E-mail: jomar@srk.co.za

SRK Consulting Africa has 40 years of experience in the mining and natural resource industries, offering leading-edge advice and solutions in a comprehensive range of disciplines - allowing integrated and efficient project planning and implementation. Fields of expertise include exploration, mining, tailings, water, environmental & social impacts, geotechnics and engineering infrastructure.

SRS Finlay

140 Dungannon Road, Dungannon Northern Ireland, BT70 2JX, UK Tel: +44 2885 568888 Fax: +44 2885 567983 Web: www.srsfinlay.com E-mail: sales@srsfinlay.com

Finlay block making equipment is renowned for its reliability and longevity to meet the requirements of both the small and large scale producer. Located in the United Kingdom the company has been designing and manufacturing equipment to manufacture and handle concrete building bricks and blocks for 60 years.

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Sales and services of agricultural and construction equipment, sugarcane mechanization from field to furnace, offers solutions and services

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Terex Minerals Processing Systems

32 Farlough Road Dungannon Co. Tyrone Northern Ireland **BT71 4DR** United Kingdom Web: www.terexmps.com E-mail: mpsmarketing@terex.com

Terex Minerals Processing Systems provides a complete range of crushing & screening equipment to customers around the world. With over 100 years in the minerals processing industry. We understand your business and are dedicated to offering cost-effective solutions for the long term.

Terex Trucks

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Agents:

Nigeria - Hol-Taj South Africa - Eqstra Construction and Mining Equipment

The Development Initiative Ltd.

Mercury House, **101 Front Street** Hamilton, HM12, Bermuda Tel: +44 870 8901815 Fax: +44 870 9289855 Web: www.thedevelopmentinitiative.com E-mail: info@

thedevelopmentinitiative.com TDI provides commercial landmine and

unexploded ordnance clearance in post conflict environments across Africa and the Middle East. With over ten years of experience, TDI have worked extensively for governmental, nongovernmental and commercial organisations in multiple theatres.

TMS Technical Mechanical **Services**

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Topcon Positioning Middle East and Africa FZE

PO Box 371028, LIU I-11 Dubai Airport Free Zone Dubai

United Arab Emirates Tel: +971 4 2990203 Fax: +971 4 2990403 Web: www.topconpositioningmea.com E-mail: marketing@topcongulf.com

Topcon Positioning Middle East and Africa FZE (TPMA) is located in Dubai, United Arab Emirates. TPMA is a subsidiary of Topcon Corporation, a Japanese multinational company who is a world leader in the manufacture of optical and electronic instruments for surveying, construction, machine control, medical and ophthalmic applications. Topcon Corporation was established in 1932 specializing in the manufacture of optical instruments. TPMA was established in November 2010 and business activities started in January 2011 to coordinate the sales and marketing activities of Topcon group in Middle East and Africa for positioning business under Topcon, Sokkia and 2ls brands. Distribution, sales, technical service and support / development of the sales network are coordinated by TPMA as well as the vital feedback flow of information from the Middle Fast and Africa market to the factory.

Trelawny SPT Ltd.



Trelawny House 13 Highdown Road Leamington Spa CV31 1XT **United Kingdom** Tel: +44 1926 883781 Fax: +44 1926 450352 Web: www.trelawnyspt.co.uk E-mail: sales@trelawny.co.uk

Trelawny are the leading manufacturer of surface preparation equipment producing products such as concrete, grinders, floor planers and concrete scabblers. Established over 60 years and located in the UK. Trelawny operate through a network of distributors on a global basis. Trelawny want to expand business into the African region.

TVH

Brabantstraat 15 Waregem 8790, Belgium Tel: +32 5 6434211 Fax: +32 5 6434488 Web: www.tvh.com E-mail: info@tvh.com

TVH is your all-round supplier of quality parts and accessories for material handling and agricultural equipment. You get fast answers on any offer, order or technical question from our dedicated sales and technical departments. We continually expand our product range by following new trends and looking for new partnerships.

Agents:

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Vale

Av. Das Americas 700 2nd floor Barra da Tiiuca 22640-100 Brazil Tel: +55 21 38146204 /38144477 Web: www.vale.com.br E-mail: rio@vale.com

Van Vliet Trucks Holland

WAN VERT THE COS HOURND BY

Parallelweg Zuid, 215, Netherlands Tel: +31 180 312644 Fax: +31 180 319158 Web: www.vanvliet.com E-mail: mining@vanvliet.com info@vanvliet.com

Van Vliet Trucks is specialist in export to Africa of customized new, used and reconditioned trucks, trailers, 4WD's heavy equipment, spare parts and all related (project) services, since 1953.

Varisco S.p.A.

Terza Strada 9, Z.I. Nord 35129 Padova Italy Tel: +39 049 8294111 Fax: +39 049 8076762 Web: www.variscospa.com E-mail: export@variscospa.com

Varisco is known around the world for high quality pump design and manufacturing: selfpriming and high efficiency semi-open impeller centrifugal pumps suitable for liquids with solids in suspension. They are used in construction sector (drainage, ground water dewatering) and industry, agriculture and naval sectors.

Visa S.p.A.



Via I° Maggio, 55 Fontanelle (TV) 31043 Italy Tel: +39 0422 5091 Fax: +39 0422 509350 Web: www.visa.it E-mail: visa@visa.it

Visa S.p.A. is one of the world's leading gensets suppliers, based in Italy, designing, developing and manufacturing diesel gensets, from 9 to 3000 kVA, in standard or customized versions for a large variety of applications to meet customers precise requirements (telecommunications. construction, industry, etc..). Its is present in over 80 countries through a global network to support in the successful completion of projects through an efficient engineering department, guaranteeing a highly operational flexibility and qualitative standards for which it has become a leader in the market for more than 50 years.

Voith Turbo (Pty) Ltd.

16 Saligna Street Hughes Business Park Witfield Boksburg 1459 South Africa Tel: +27 11 4184000 Fax: +27 11 4184080 Web: www.rsa.voithturbo.com E-mail: info@rsa.voithturbo.com

Voith Turbo, the specialist for hydrodynamic drive, coupling and braking systems for road, rail, industrial applications and ship propulsion systems supplies Hydrodynamic Fluid Couplings; Safety Couplings and Overload Devices; Connecting Coupling Technology; Hydraulic Disk Brakes; Conveyor Belt Motion Monitors; Cardan Shafts; Internal High Pressure Gear Pumps; Keyless Locking Elements; Shaft Mounted Speed Reducing Gear Boxes and Industrial Thruster Operated Drum Brakes to the Mining Industry.

Volvo Construction Equipment



Eskilstuna, 63185, Sweden Tel: +46 16 544384 Fax: +46 16 152989 Web: www.volvoce.com E-mail: asa.alstrom@volvo.com

Agents: Algeria - SMT (Algeria) Angola - Auto-Maquinaria Lda. Auto Sueco (Angola) SARL Botswana - Rola Botswana Burkina Faso - SMT (Burkina Faso) Burundi - SMT (Burundi) Cameroon - SMT (Cameroon) Congo DR - SMT (Congo DR) Congo Republic - SMT (Congo) Cote Divoire - SMT (Côte D'ivoire) Egypt - Ghabbour Egypt Ethiopia - Equatorial Business Group Pvt. Ltd. Co. Gabon - SMT(Gabon) Ghana - SMT (Ghana) Liberia - SMT (Liberia) Madagascar - Leal Equipements Compagnie LTEE (Madagascar) Mauritius - Leal Equipements Compagnie LTEE (Mauritius) Morocco - Volvo Maroc SA Mozambique - Babcock International (Mozambique) Nigeria - SMT (Nigeria) Rwanda - SMT (Rwanda) Seychelles - Leal Equipements Compagnie LTEE (Seychelles) Sierra Leone - A. Yazbeck & Sons Ltd. South Africa - Babcock International (South Africa) Sudan - Al Barajoub Engineering Co. Ltd. Tanzania - Auto Sueco Tanzania Togo - SMT Benin (Togo) Tunisia - Nordic Machinery Uganda - Auto Sueco Ltd Kenya Zambia - Babcock International (Zambia) Zimbabwe - Conquip

Volvo Penta

Region Emerging markets & Asia Pacific, Gothenburg, 40508, Sweden Tel: +46 31 235460 Fax: +46 31 508187 Web: www.volvopenta.com E-mail: info.volvopenta@volvo.com

Volvo Penta, with more than 4,000 dealers in over 130 countries, is a world-leading and global manufacturer of engines and complete power systems for both marine and industrial applications. The engine program comprises diesel and gasoline engines with power outputs between 10 and 900 hp. The Volvo Penta Industrial engine range covers: diesel engines for electrical power generation, 50 and 60 Hz and industrial diesel engines for different stationary and off-road applications. These engines have now been developed to meet future stringent exhaust emission levels. Volvo penta is part of the Volvo Group, one of the world's leading manufacturers of trucks, buses, construction material & equipment, drive systems for marine and industrial applications, aerospace componenets and services.

Agents:

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BUYERS' GUIDE

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Vortex Hydra S.r.l.



Via Argine Volano, 355 Fossalta di Copparo(FE), Italy Tel: +39 0532 879411 Fax: +39 0532 866766 Web: www.vortexhydra.com E-mail: vh.sales@vortexhydra.com

Based in Italy, Vortex Hydra have obtained the enviable reputation of being world leaders in the specialist field of concrete roof tile manufacture. Renowed for their "state of the art" large scale, fully automatic production plants, the company has applied its expertise in developing the new Uno Evoluzione lower volume affordable plants.

Wacker Neuson (Pty) Ltd.

1031 Katrol Avenue Robertville Florida, Gauteng South Africa Tel: +27 11 6720847 Fax: +27 11 6720916 Web: www.wackerneuson.com E-mail: Reception.za@wackerneuson.com

Wear and Spare Parts

Appleton Thorn Trading Estate Warrington, Cheshire WA4 4SN **United Kingdom** Tel: +44 192 5505000 Web: www.wearandspareparts.com E-mail: sales@wearandspareparts.com

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Weckenmann Anlagentechnik GmbH & Co. KG

Birkenstrasse 1, 72358 Dormettingen Germany Tel: +49 74 2794930 Fax: +49 742 7949329 Web: www.weckenmann.com

E-mail: info@weckenmann.de Leading technology for precast concrete plants. Weckenmann is a leading manufacturer and developer of plant systems and machinery for the production of precast concrete parts for residential and industrial buildings. Whether customer or country - specific, with its modern, cost-effective solutions, the company has been setting manufacturing standards in the precast industry for decades.

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Rheinstr. 40, Gau-Algesheim D-55435, Germany Tel: +49 6725 9195490 Fax: +49 6725 9195491 Web: www.weiler.net E-mail: info@weiler.net

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31 Isando Road, Isando, Gauteng 1600, South Africa Tel: +27 11 9292600 Fax: +27 11 9292960/2950 Web: www.minerals.weir E-mail: sales-za@weirminerals.com

Weir Minerals Africa is a global supplier of excellent minerals solutions, including pumps, valves, hydrocyclones, wear-resistant linings, dewatering solutions, high pressure grinding rolls, centrifuges, screens, hoses and rubber products, crushers, feeders, screens, washers and material handling equipment. All products are backed by superior technical service.

WIRTGEN SOUTH AFRICA (Pty) Ltd.

52 Maple Street, Pamona Kempton Park 1619, South Africa Tel: +27 11 4521838 Fax: +27 11 4524886 Web: www.wirtgen-group.com/southafrica E-mail: heinrich.schulenburg@ wirtgen-group.com

Wonder Moldplast Pvt. Ltd.

A-7/21-23, SSGT Road Industrial Area Opp. Rathi Steel Udyog, Ghaziabad, Uttar Pradesh, India Tel: +91 9810695440 / 9310695440 Web: www.novaformwork.com E-mail: vm@plasticformwork.co.in info@starpac.in

Nova formwork system Is a plastic modular reusable formwork or shuttering system manufactured In India and is very easy to use, light weight, excellent finish, water resistant, economical, no need to plaster, safe and fast system which can be used for (retaining, boundary, shear) walls, slabs, columns, pile caps, rafts, low cost housing and even monolithic construction.

Yellogen Ltd.

24 Oroory Hill, Dromore County Down, Northern Ireland BT25 1LE, United Kingdom Tel: +44 1430 850001 Fax: +44 1430 850002 Web: www.yellogen.com E-mail: mail@yellogen.com

Yellogen Ltd. is a specialist supplier of power generation products and carry large stocks of used equipment from 10 to 2000 kVA. All our used machines are located in the UK Mainland, New York. We can also provide new Diesel Generators utilizing all major engines such as Perkins, Cummins, Volvo and JCB to complement our extensive stock we also provide a full range of spare parts for engines, alternators and Control Systems.We pride ourselves on supplying a prompt, reliable and helpful service at all times and are confident that the quality of our equipment and standard of service is second to none.

For more information, please contact us or visit our website at www.yellogen.com

YorPower Ltd.

Hurricane Close Sherburn Industrial Estate Sherburn in Elmet Yorkshire **United Kingdom** Tel: +44 197 7688155 Fax: +44 197 7688158 Web: www.yorpower.com E-mail: sales@yorpower.com

Diesel generators specialist, YorPower, is the leading independent UK manufacturer today, supplying generators from 1.0kVA to 3000kVA. Our generators have all been designed with the ability to handle large single step-load demands with short recovery times. Our Diesel generators deliver first class performance and reliability underpinned by the YorPower Warranty.

Agents: Kenya - YorkPower Kenya

Zamil Steel Building Co. Egypt

PO Box 11, Main Post Office 5th Industrial Zone 6th of October City, Egypt Tel: +20 2 38283333 Fax: +20 2 38283399 / 97 Web: www.zamilsteel.com E-mail: egyptmarketing@zamilsteel.com

Zamil Steel established in 1977 in Saudi Arabia. specializes in the design, manufacture and supply of pre-engineered steel buildings. Since its inception, Zamil Steel has supplied more than 50,000 buildings to over 90 countries worldwide, through a dedicated network of 65 direct sales offices in 36 countries.





21 Galaxy Avenue Linbro Business Park Johannesburg, South Africa Tel: +27 11 7236000 Fax: +27 11 7236001 Web: www.zestenergy.co.za E-mail: info@zestweg.com

Section Three: Agents & Subsidiaries in Africa

Algeria

ALGERIA-NEGOCE AUTO SERVICE SARL

Altractors SARL Lot n° 4, Route des Dunes Cheraga Tel: +213 21 821625 Fax: +213 661 545181 E-mail: abdenaf@gmail.com

ARC Trucks 1 (Alger - Case Construction)

Z.I Ouled, Yaich - Lot Benamor, Route d'Alger, BLIDA Tel: +213 25 439922/2299 Fax: +213 25 436060 E-mail: contact@ arc-trucks.com

ARC Trucks 2

(Alger - Case Construction) Route de Zeboudja,Oum Drou-Chlef Tel: +213 27 718894 Fax: +213 27 718893 E-mail: contact@arctrucks.com

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Engineering, consumable and PPE equipment at Electra Mining Africa

North Safety Products Africa is set to showcase its full range of products, which are designed to mitigate various hazards that mining workers are exposed to, at Electra Mining Africa 2016 - including its latest engineering and consumable products.

This will be the second time that North Safety has had a presence at Electra Mining. As North Safety head of marketing at Lizette Kasselman said, "Electra Mining is a platform that grants any personal protection or mining supplier in the industry the opportunity to meet operational personnel and decision-makers. It also allows us to showcase our broad product spectrum, which caters for every requirement."

This ranges from standard dust to hazardous particles, dangerous chemicals and flash fire protection, encompassing a head-to-toe protection offering.

"North Safety has been a supplier of protective apparel for the past 60 years, and therefore it has garnered considerable expertise in terms of the industry's overall safety requirements."

A particular focus at Electra Mining Africa 2016 will be North Safety's addition of critical engineering and

consumable products to its current range of safety protective apparel.

"This decision was based on our customers requesting a one-stop solution to their needs," Kasselman explained.

The new engineering products include Reinol hand cleaners and industrial chemicals, Spanjaard industrial lubricants and sprays, lifting machinery and repairs, lifting tackle and slings, Megaroller conveyor idlers and scrapers, allied screen and filter products, Petrozorb oil absorbents and oil-spill kits, industrial valves and slurry pumps, and specialised nuts and bolts. New consumable products on offer include waste rags, silicone, grinding discs and general mining supplies.

MAPPING GOOD PRACTICE IN MINING

Large-scale mining has the potential to play a critical role in helping to achieve Sustainable Development Goals (SDGs) in resource-rich countries, according to a report published at the recent **United Nations** High-Level Political Forum in New York, USA. The report, 'Mapping Mining to the Sustainable Development Goals: An Atlas', is a joint effort of the **United Nations Development Programme**, the **World Economic Forum**, the **Columbia Center on Sustainable Investment** and the **Sustainable Development Solutions Network**. The 2030 Agenda and the SDGs, endorsed by all UN member states in 2015, represent the world's plan of action for social inclusion, environmental sustainability and economic development. Meeting the SDGs by 2030 will require unprecedented cooperation and collaboration among governments, non-governmental organisations, development partners, the private sector and communities. It will require all sectors and stakeholders to incorporate the SDGs into their own practices and operations.



The North Safety portfolio includes lock-out and tag-out systems

I-CAT'S NEW DUST SUPPRESSION SOLUTION

Stockpile dust suppression has been simplified with the I-CAT retractable stockpile dust ring (R-SDR) system, which has been developed to address dust issues at conveyor discharge points.

The R-SDR system creates a virtual curtain around material flow for outstanding particle containment. As I-CAT technical manager Morne van Wyk said, "The R-SDR system surrounds the discharge flow on all sides, providing simple, focused dust management that is well suited to continuous duty applications, such as radial stackers."

The R-SDR system boasts a stainless steel misting ring designed for mounting at the end of conveyor belts to aid in dust suppression at the discharge point. What's more, a variable configuration allows nozzles to be added, removed or replaced with different types and sizes to suit specific applications.



The R-SDR system surrounds the discharge flow on all sides

The PLC-controlled system also consumes low amounts of water, and a booster pump can be added to increase water flow and pressure. Van Wyk says a hose can be supplied with the unit, which also comes with the option of being equipped with a two-way valve for manual control of water flow.

Van Wyk added, "The water hose connects directly to male pipe threads on the ring. Water flow can be controlled between 12.3 to 200.44 /pm at 6.89 bar of input. A water filter can be added for use with non-potable water, for droplet sizes ranging between 50 and 200 microns."

BRIEFS



SEW-Eurodrive will unveil a range of new products at Electra Mining Africa 2016

The future at Electra Mining

SEW-Eurodrive is set to unveil a range of new products at Electra Mining Africa 2016 this September in Johannesburg, South Africa - including: the new DRN series of asynchronous motors, which complies with all of the requirements for European energyefficiency class IE3; and the X-Series agitator, based on a modular concept that incorporates many parts from the standard product platform.

Product trials and samples in demand across African mines

Trialling a service or a product is the most important factor for African miners when choosing any new supplier, according to **Timetric** Mining Intelligence Center (MIC). Its latest survey of over 100 managers at operating African mines indicates how important it is for mine operators to have 'a sample of the product or service to trial' or 'an on-site demonstration of the product or service'. Timetric senior mining analyst Nez Guevara said, "Similar geological features can exist across many different mine sites and a particular commodity can be produced at multiple locations, but this does not mean a piece of equipment with a set configuration can be as effective in each scenario. The results here show having the ability to see and experience how certain products and equipment operate under specific conditions is an invaluable tool for miners."

Achieving maximum efficiency in screening

Mining and aggregate processing equipment is used for a number of different reasons, from separation and washing to dewatering. However, regardless of the aggregate product's final application, be it construction material or road surfacing, the property a customer is most interested in is the average particle size.

Separating and sizing the wide range of particle sizes generated by crushing equipment is one of the most important functions after the milling process, and screens play a large part in the operation. The role played by screens is central to the quarrying process and there has been a trend towards increasingly large units being installed at bigger quarries as operators look to increase their output. However, regardless of how big a screen may be, and what volume of material is passing through it, it is vital that it operates efficiently.

Defining efficiency

Efficiency is defined differently according to screen function. Screens fall into two main categories; separating screens those that split the mixture into grades according to particle size and dewatering screens - those that remove water from the final mixture so it can be easily stored and transported.

The objective for separation screens is for the maximum number of the particles that are small



Enduron screen being installed in a quarrying application

enough to pass through the apertures in the screen medium to do so. In contrast, the design of dewatering screens ensures that the majority of the fine particles that could pass through the apertures are retained so that the screen does not change the composition of mixture when the water is removed. The process that helps to ensure a separating screen operates efficiently is called stratification. This describes the ease with which smaller particles are able to fall between the gaps in larger particles in order to find their way towards the apertures in the medium at the base of the bed of material.

If the correct level of stratification (ease with which smaller particls are able to tell has been achieved, the depth of the bed will gradually decrease from the feed end to the discharge end, as finer particles are removed. Excessive bed depth at the discharge end of the screen is a sure sign of poor efficiency. The rule of thumb used by many quarries is that it should be no more than four times the aperture size.



The Zest WEG Group, a subsidiary of leading Brazilian motor and controls manufacturer WEG, started out as a South African company and maintains its strong commitment to contributing to the development of the African region.

The Zest WEG Group has been servicing the mining sector for more than 35 years and by leveraging best practice engineering and manufacturing capabilities, the group is able to offer a range of standard off-the-shelf products as well as endto-end energy solutions. An in-depth understanding of the harsh conditions found within the mining sector and years of experience on the African continent, have ensured that the Zest WEG Group service offering is fit-for purpose.

From single product installations to individually customised solutions, which are application specific, the latest technology is used to ensure optimum performance and reliability without compromising on energy efficiency. WEG products are engineered to facilitate a safe and reliable mine and plant with operational stability and the highest possible production levels as an objective. Reduced maintenance and ease of serviceability assist in lowering the total cost of ownership for the mine.

Supporting customers is key and the Zest WEG Group operates a strategically situated network of branches and distributors across the continent. This ensures the highest levels of technical support as well as easy access to product and parts.

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HIMOINSA EXTENDS EQUIPMENT DISTRIBUTION IN SOUTHERN AFRICA

A specialist in the design, manufacture and distribution electricity generation equipment, Himoinsa has recently committed to opening a subsidiary in Port Elizabeth, South Africa, in the fourth quarter of this year. The head office of the new subsidiary will be located in Port Elizabeth, supported by nationwide sales and service coverage across South Africa. The subsidiary will also support the wider SADC region, serving customers in the nearby countries of Zambia, Zimbabwe, Malawi, Botswana, Namibia, Lesotho and Swaziland.

South Africa is one of Africa's leading importers of generator sets. According to sources, South Africa imported US\$155mn of generator sets in 2015, thereby becoming the African country with the greatest demand in the electricity generation market, followed by Algeria, Egypt, Nigeria and Libya.

Himoinsa has a successful track record of almost 35 years and has been operating in Africa since the 1990s, with nearly twenty distributors



Guillermo Elum, sales & marketing director for Himoinsa in Europe, the Middle East and Africa (EMEA), announces Himoinsa's plans to open a new commercial office for Southern Africa

all over the continent. In Angola, the company has an existing subsidiary and 25MW power plant in Angola supporting the local utility, which has been operating successfully since 2013. A local management team has already

been identified for the Southern Africa subsidiary, providing the business with local employees and vast experience of the power generation business in the region. This management team are excited by the opportunity, believing that the quality and durability of Himoinsa equipment, combined with local engineering support and efficient service intervals is ideal for the African market.

"Our objective is to be close to the market and to bring the needs of the local market to our factory in Europe. That is how we guarantee our customers a made-to-measure product and rapid service," said Guillermo Elum, sales & marketing director for Himoinsa in Europe, the Middle East and Africa (EMEA). "All the projects we undertake in South Africa, as is the case throughout the world, include the commissioning of the units, whenever the client so requires, together with specialised on-site training for all the technicians in order to guarantee that the units are perfectly maintained."

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