Leveraging utilities

The utilities industry is very much on the move, with new innovations and development the order of the day

Accenture, a global leader in smart grids and a platinum sponsor at the upcoming African Utility Week & Clean Power Africa, says it is very excited with the momentum that is beginning to take shape in the utilities industry.

According to Lungile Mginqi, managing director: Utilities Practice at Accenture, utilities are transitioning from pilots to full implementation. “What makes Accenture competitive is the availability of relevant local skills to contextualise the global experience.”

He continues: “The utilities’ challenges will remain their ability to convert good strategy or strategic intents to real, tangible outcomes. Lack of excellent execution is going to cause major project delays. The industry needs to narrow down focus areas to a few strategic areas namely: generation capacity backlog, distribution maintenance backlog, and debt collection backlog.”

The premium utility event
The Accenture Utilities Practice MD sees putting into context “the smart grid agenda and making it relevant to realising South Africa-specific business benefits” as among the key opportunities faced in the industry.

 Asked why Accenture decided to partner with African Utility Week, he says, “African Utility Week is the premium utility event in South Africa and Accenture is the market leader in smart grid implementation: African Utility Week presents an opportunity to showcase this capability that has made Accenture the market leader. We are looking forward to the interaction with industry players at the event.”

By and for the industry
The award-winning 14th African Utility Week and Clean Power Africa conference and expo will take place at the CTICC in Cape Town from 13 to 14 May 2014. It is attended by more than 5 000 power and water professionals from more than 30 African countries and 70 worldwide, at what is the largest utility gathering of its kind on the continent.

Discussions, workshops, exhibits and site visits will focus on the industry disciplines of metering, clean power, water, large power users, investment and finance, transmission & distribution, smart grids and generation.
"We pride ourselves in hosting a utility event by and for the industry", says Russell Hughes, event director of African Utility Week, "and having a global giant such as Accenture on board, along with our long-standing partners Eskom and the City of Cape Town, proves it. We look forward to Accenture sharing its smart grids expertise and experience."

Synchronised!
In 1984 South Africa took the lead in synchronising Africa's first nuclear power plant to the grid. Nothing has changed since then ... until now.

South Africa is due to officially announce the nuclear new build roadmap and countries such as Kenya, Egypt, Ghana and Nigeria are actively pursuing nuclear options.

The ever-growing demand for electricity generation across Africa and the necessity of developing and using safe, reliable and economical sources of energy are encouraging African countries to consider renewable energy options in solar, wind and hydro as well as adding nuclear to their long-term baseload generation roadmaps.

Globally, there are 436 civil nuclear power reactors that are currently under operation and 68 nuclear reactors were in construction stages in 14 different countries as of July 2013. Nuclear energy is used to generate around 11% of the world’s electricity, with almost zero greenhouse emissions.

South Africa’s nuclear future
With an over-reliance on coal-fired power stations (96% of power in SA generated by coal) and the fact that many of these stations are to retire in 2022, a viable baseload alternative is required to prevent power outages and achieve the economic growth forecast.

When the former Minister of Energy, Dipuo Peters announced the appointment of Dr Bismark Tyobeka to the position of chief executive officer of the National Nuclear Regulator of South Africa, she stated that “Dr Tyobeka brings a wealth of nuclear expertise to the NNR and is suitably poised to guide the NNR at a challenging and exciting time.”

Marvellous meters
The idea of a smart meter is becoming more attractive to all sectors - whether to measure output, control demand or issue correct billing and revenue control. However, there are pertinent issues beyond the functionality of metering which must be taken into consideration.

Along with most industries, the meter manufacturing sector has over the past year felt a slight slump in growth. This could potentially be the result of rising costs of manufacturing in China, due to the country’s low-cost labour changing to one of higher cost workers and an increase in labour activism.

One of the main energy challenges for mines is their remote locations, where the national connected grid is far away and transmission costs are high

Manufacturing costs of any component such as metering technologies will follow economies that can offer the least costs route. In the United States, there is a conscious drive to take back manufacturing from China.

Vibrant cultures
However, in this movement there are potential opportunities for lower cost economies such as India, Vietnam and even African countries such as Ethiopia and South Africa, which have existing vibrant manufacturing cultures.

Metering in emerging markets has the largest short- to medium-term potential and specifically in countries such as Ghana, Nigeria, Zambia, South Africa and the Central East African region.

Bringing the manufacturing of products to these countries and regions would reduce the carbon footprint of the product and provide employment and skills development.

The need to drive locally manufactured goods, thus contributing to economic development and ultimately the increased need for the product itself, is a consideration that meter manufacturers could drive in their long-term business strategies.

Positive but realistic
Paul Johnson, executive secretary of the African Electrotechnical Standardisation Commission in South Africa, feels positive but realistic about the continent’s uptake of smart metering technologies.

“Africa, due to the largely rural populations with no access to modern energy sources, whether grid or off-grid electricity, faces the sort of challenges that maybe the US had in the 1930s and that much of Europe faced after the Second World War. Infrastructure needs to be built from scratch, or rebuilt,” says Johnson.

He adds: “It is not surprising that large-scale generation projects with the accompanying transmission networks (bankable projects) are often seen by local populations as of no benefit to them because the necessary but uneconomic ‘social development’ distribution and electrification projects are yet to materialise.”

Because of the hand-to-mouth existence of many people, with many living in informal settlements, billing for electricity is out of the question and so prepayment for electricity has become widespread and the norm for many African and other developing countries.

This stresses the importance of standards having the flexibility to be applied using any or all means of telecommunication, as well as being designed to cater for both credit and prepayment modes.

Grid energy
Johnson explains that smart metering can only really take hold when the business case is integrated into a smart grid vision, “which will most likely be different for different countries, depending on the population mix (rural/urban), the
principles defining this versatile practice would have such potential in the mining sector of today?
The history of WCM in itself is vastly interesting and has its roots in total productive maintenance (TPM), which evolved through a desire to reduce waste and action preventive maintenance.

Although Toyota had pioneered the concept of lean manufacturing in the 1970s, the research group, Japanese Institute of Plant Management, took this further by focusing its efforts on productive maintenance, recognising the importance of reliability, maintenance and economic efficiency in plant design.

The end result focused on a comprehensive system based on respect for individuals and total employee participation, which has the potential to be taken up by any industry outside the manufacturing sphere.

This process was an evolutionary one that took time not because it was technically difficult to produce the results, but because of the efforts to change the organisational culture so that it valued the TPM concept.

Unchanged ethos
Theunis Mundell, WCM instructor for the past five years at ArcelorMittal South Africa: Saldanha Works, explains that WCM originated with Richard J. Schonberger, who studied the then-peculiar approach of some Japanese manufacturers.

Schonberger based his book, Japanese Manufacturing Techniques, published in 1982, on his studies of the Kawasaki Motorcycle Plant in Lincoln, Nebraska. This book was a major contribution to the literature of the time, and in 1986 Schonberger wrote World Class Manufacturing to extend and universalise the concepts.

The basis of these ideas is still the Toyota Production System ethos, and is today receiving intensifying international focus.

Mundell believes the mining sector can include WCM in its daily operations. "I am part of a TPM club where we share ideas (between non-competing companies from different sectors), and the principles definitely apply to any industry," he says. "The TPM club does not have someone in the mining sector at this stage, but the global group Rio Tinto has accepted the lessons learnt from lean manufacturing into their mining operations."

Good and clean and fresh
As the demand in Africa grows for clean, reliable and affordable energy, hydro-power is emerging as the world’s largest provider of renewable power.

And with water as one of Africa’s main resources – with more than 200 000MW of unexploited potential – what opportunities does hydropower hold for mining?

Mining is a prime mover in Africa’s economic growth, but faces challenges connected to reliable sources of energy. Mine operations relying on diesel-generated energy face a risky supply chain to transport diesel to remote areas in Africa. Even where diesel is practical, the risk of rising costs and environmental issues is raised.

Director of French hydro-turbine manufacturer, Hydro Power Plant, Pierre Pisterman explains that mines have a huge need for energy. "However, one of the main challenges is their remote locations, where the national connected grid is far away and the cost of transmission is high."

Already investing
Hydropower, which generates 45% of Africa’s energy, is being considered as an efficient turnkey solution for mining operations.

Gold mining company Randgold Resources is one example of a business looking to hydropower solutions, such as the 50MW hydro scheme at the Kibali Gold Mine in the Democratic Republic of Congo, which will be presented by Pisterman as a case study at the forthcoming 14th annual African Utility Week in Cape Town, South Africa.

The Kibali Gold Mine case study will present a clear path for mining houses such as AngloGold Ashanti Ltd, Kilo Goldmines Ltd and Shanta Gold, which have expressed interest and are starting to evaluate their business cases.

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