

Integrated solutions key to growing Africa's power generation

An integrated 12.5 MW continuous diesel power generation plant in Mozambique designed for the harsh operating conditions associated with graphite mining.

As African countries work to develop their power generation capacity in the most cost effective ways, the key will be to find integrated solutions that attract investment throughout the value chain, argues Alastair Gerrard, Integrated Solutions executive at Zest WEG Group.

According to Alastair Gerrard of Integrated Solutions at Zest WEG Group, the energy sector on the continent is seeing a growing number of power-related projects funded by recognised lenders and financiers. The African Development Bank, for example, has committed a US\$12-billion fund for energy development in Africa over the next five years.

"Energy investment needs to target the whole value chain, including local content and supplier development; local skills development; and the building of manufacturing capabilities," says Gerrard. "This focus will lead to improved skill levels and more self-sustainable economies, which can contribute towards the projected return-on-investment of the projects themselves; and the approach will also promote further investment on the continent."

He emphasised that project developers in the public and private sectors therefore need to partner with companies that understand these requirements and have the capability to provide cost effective and reliable power generation solutions.

"At Zest WEG Group, we are acutely aware of the needs, challenges and dynamics of the African continent," he says. "We are continuously looking at new and innovative ways to contribute towards the stimulation of investment in all markets, including the power generation sector."

Such innovation is particularly important in an environment where electrical infrastructure is not always available or well maintained.

These factors often preclude the development of large-scale power generation projects. The energy opportunities that are presented therefore require extensive analysis, in which the needs must be clearly understood, and all constraints and challenges unpacked before the most appropriate technologies are selected.

"In this context, solutions must be carefully customised to suit the need, and may require a combination of different resources to fuel a power plant, making up a hybrid power generation solution such as diesel combined with solar," he says. "These hybrid systems then need to be supported by the right electrical infrastructure."

As a specialist in integrated energy solutions, the Zest WEG Group can meet these requirements through the products it supplies, the equipment it manufactures and the services it provides.

A recent project was to provide 12.5 MW of continuous power from a diesel generation facility – to be potentially expanded to 20 MW – for a graphite mine in Mozambique. The complete integrated solution included containerised power generators, an 'electrical house' (E-house) with a medium voltage board and control room; generator synchronisation; and a plant control system. Also provided were all the supporting ancillary systems including the fuel and oil systems, the cooling system, and the air filtration and pressurisation system.

"Most of the main power plant equipment was sourced within the Zest WEG Group,"



A containerised gas generator set with controls and a heat recovery system for producing energy from treated biogas in the wastewater treatment industry.

says Gerrard, "while the plant installation was conducted by the construction company within our group."

Reflecting its diverse expertise in engaging with various energy resources, the Zest WEG Group designed and commissioned several 380kW containerised biogas generators, complete with radiator cooling systems, synchronisation switchgear and heat recovery systems, at two different sites for a public sector customer in South Africa. This integrated solution included step-up transformers, medium voltage integration switchgear, a containerised control room and plant auxiliary distribution board as well as the electrical installation of all equipment supplied.

It also developed, installed and commissioned a steam turbo generator set solution for a large KwaZulu-Natal customer, using a 48 MW multi-extraction, condensing steam turbine, complete with a 57 MVA, 11 kV two pole generator. Ancillary equipment included

the condensing system, lubrication oil system, turbine control panel, generator protection and synchronisation panel, and battery systems and chargers.

As part of the project, the Zest WEG Group provided a long-term service contract for a five-year period, and was required to guarantee 98% availability of the system throughout the warranty period.

Gerrard highlighted the group's cutting-edge technology and strong portfolio of skills and experience as a basis from which to provide custom-engineered and fit-for-purpose solutions.

"With 38 years of experience in Africa, we have a team of qualified experts dedicated to the development of the business on the continent," he says. "Our footprint is a testament to our commitment. Apart from our head office and manufacturing facilities in South Africa, we have a fully-fledged branch in Ghana, registered entities in several African countries and a wide network of distributors and agents across Africa."

The group has invested significantly in acquiring and upgrading four manufactur-



Packaging and assembly of custom-engineered generator set solutions underway at the Zest WEG manufacturing facility in Cape Town.



A 48 MW multi-extraction condensing steam turbo generator set, with associated auxiliary systems, used for cogeneration in the pulp and paper market.



Increasing local content and promoting skills development is vital to the growth of the economy. Zest WEG Group has made significant investments in its South African based manufacturing facilities.

ing facilities in South Africa, raising the local content of its respective products.

"Our knowledge of the African environ-

ment ensures that the products we manufacture are well suited to handle the conditions we commonly encounter," Gerrard notes. □