

Botswana's electricity utility approves \$400m private-power plan

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Botswana-based company Karoo Sustainable Energy (KSE) has been appointed as the independent power producer (IPP) to develop a peaking-to-midmerit power plant with a minimum capacity of 250 MW.

This project is an initiative by the Botswana Power Corporation (BPC), the national power utility, to enhance the security of supply in the country. Power demand in Southern Africa is outstripping supply, posing a huge challenge to regional power utilities to secure power supply to their countries.

This \$400-million project includes the production of coal-bed methane (CBM) and the construction of the power plant, located near the village of Mma-shoro, in central Botswana. Construction of the power plant will start in the first quarter of 2009. The commercial operation of the plant is expected by June 2010, and will occur in three phases, each of which will be made up of about 90 MW of electricity.

South African engineering and construction company Group Five's power division and local engineering firm Single Destination Engineers have been awarded the engineering, procurement and construction management contract. KSE will be awarding contracts for the 200 km of gas pipeline, compressor stations and all the delivery systems before year-end.

Of the 250 MW, 90 MW will be supplied to the 220-kV Orapa substation, in Botswana, of which 45 MW will be supplied to the mining industry. The remaining 200 MW to 225 MW to be generated will be supplied to the rest of the country.

The project is expected to create 200 to 250 jobs during the different phases of construction. For the first two years, highly skilled technicians from diversified technology, media and financial services giant General Electric, which is supplying the gas turbines for the project, will be employed on operations and maintenance until the necessary skills have been developed and passed down to KSE's Botswana engineers, who will then be responsible for all operations.

Commenting on the use of CBM, KSE CEO Steve Martin says, "This fuel source was chosen because there was no other fuel source to meet the generation demand created by Southern Africa's shortfall of energy. The BPC tender was not fuel specific but did require as early generation as physically possible. And as a result of supply logistics, CBM, which has been tested and developed in Botswana since 1995, was a viable option," explains Martin.

Currently, KSE has two dedicated lease areas to its IPP and there now are five wells producing gas, with extensive work being carried out to map the geology and identify the amount of gas that is available. The two lease areas currently have about seven-trillion cubic feet of gas, and the 250-MW plant requires about 0,3-trillion cubic feet of gas over the 15-year power purchase agreement (PPA).

The CBM technology used will be horizontal well completion, which will bring the gas to surface more quickly and at higher volumes. This is required early in the project, to reduce the operational risk, says Martin.

He adds that the company is in advanced stage negotiations with several global IPP companies to become 51% shareholders in KSE. "We recognise our expertise and shortcomings and will partner with a major IPP that can manage and add value to the company as we grow," he says. The details of this partnership will be finalised by the end of the first phase of the project, which is February 2010.

Martin tells Engineering News that the fact that the company was awarded the 15-year PPA by BPC out of 33 potential candidates is significant. "We are providing a sustainable energy facility not only for Botswana but also for the export of power to the Southern Africa region. This will commercialise the CBM and IPP sector in Botswana," says Martin.

The company also aims to produce 1 000 MW of power, five years after commercial operation of the 250-MW power plant, and to also supply power to South Africa. "But first we aim to complete the task at hand and not place the current project at risk, as there are many local stakeholders and sceptics involved in this project, and this is the first project that will actually have a market for CBM in the country," says Martin.

KSE aims to finalise the PPA with BPC by the end of this year.

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