CASE STUDY
PUNGWE - Zimbabwe, Africa

KEY STATISTICS

Customer: Nyangani Renewable Energy (PVT) Ltd
Net Head: 312 metres
Flow: 1000 litres/sec
Turbine type: Gilkes P327 TJ Pelton
Number of Turbines: 1
Number of Jets: 2
Power (kW): 2726
Dia: 950mm
Date of Order: 2011
Date of Commissioning: Jan 2013
Speed: 750rpm

Scope of Supply: 950P343 Horizontal Twin Jet GILKES Pelton turbine, fitted with hydraulic actuators on the spear valves and deflectors. 3200kVA – 6000v – 750rpm Synchronous Generator; Set of Inlet Pipework – up to the inlet flange of the Bifurcation (Including dismantling joints); Main Inlet Valve – DN400-PN50 HYDROBALL VALVE; Hydraulic Control Module;Turbine Control Panel; 630A rated 6kV two section standalone switching panel; 3500Kva rated 6600/33000v step up transformer.

Gilkes won the contract to supply the mechanical and electrical equipment for the Pungwe project after a recommendation from their clients sister company that is based in Malawi. The client Nyangani Renewable Energy who have a Francis machine from a competitor were unhappy with the control system and so acted upon Gilkes' reputation and recommendation to award the contract for a 2.8MW Pelton Turbine.

The Pungwe project is located in the Honde valley close to the Mozambique border. It is located in a very remote area, with difficult access. The Gilkes installation team worked with the client to ensure the equipment was offloaded and transported up and over the mountain in a controlled and safe manner. Installation of the equipment proved difficult with no lifting facilities available. The Gilkes installation team used intuitive and innovative methods to move the relevant equipment into position.

Design of the equipment was conducted by skilled and experienced project engineers who worked closely with the

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GILKES

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client to ensure the client's expectations were achieved. It was expected that the system was to have black start, island and parallel capability. This determined that the generator was to be designed with a large fly wheel, and a UPS battery pack that could run the machine with no grid.

Due to the size of the machine the generation voltage was agreed to be HV, this meant that HV switchgear and protection was to be incorporated into the control system. Gilkes' electrical team ensured the system was Zimbabwean grid code compatible and during commissioning worked with ZETDC (Zimbabwean Electricity Transmission and Distribution Company) to finalise all protection settings. The Pungwe project was deemed a success bringing jobs to the local community and power to the local tea estate.

Shortly after ordering the Pungwe project, Nyangani Renewable Energy put further confidence in Gilkes' equipment by placing an order for the Duru project also in the Honde valley.

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