

CASE STUDY

DURU - Zimbabwe, Africa



KEY STATISTICS

Customer: Duru Renewable Energy (PVT) Ltd

Net Head: 332 metres

Flow: 750 litres/sec

Turbine type: Gilkes P415 TJ Pelton

Number of Turbines: 1

Number of Jets: 2

Power (kW): 2200

Dia: 1000mm

Date of Commissioning: Jan 2013

Speed: 750rpm

Scope of Supply:

1000 P415 Horizontal Twin Jet GILKES Pelton turbine

Hydraulic Actuators on the spear valves and deflectors.

Synchronous Generator – with flywheel and Lube oil unit

Set of Inlet Pipework – up to the inlet flange of the Bifurcation (Including dismantling joints).

Main Inlet Valve

Hydraulic Control Module.

Full Electrical package inc - CPS Turbine Control Panel 630A rated 6Kv
three section standalone switching panel 3000Kva rated 6600/33000v
step up transformer. 110v DC battery panel.

Gilkes were selected as the preferred supplier for the mini-hydro equipment for the Duru project due to the recent success of the Pungwe project. Strong links exist between the client (Nyangani Renewable Energy) and Gilkes due to previous projects in Malawi. The Project was understood from the very beginning, to be challenging due to the time constraints involved. The Gilkes scope of supply included the design and manufacture of the mechanical and electrical equipment, operating and maintenance documentation, installation and commissioning, including commissioning of HV switchgear.

During the design stage the technical requirements of the project were managed directly with the Customer by a dedicated project engineer. Due to lack of hydro experience from the client the control philosophy was proposed by Gilkes and accepted by the client prior to any purchasing of equipment.

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The poor electrical grid constraints determined the Gilkes equipment to have the ability to run in parallel and island modes. Gilkes offered support in aspects of powerhouse layout and switchyard design to aid civil works. Cable and termination schedules were issued to the client to enable cabling to be conducted immediately after install of the equipment. The turbine offers much needed stability to the electrical grid system to ensure local businesses and homes can always be supplied with electricity.

The turbine was designed, built and pressure tested at our factory in the UK before being seafreighted to Biera (Mozambique). The equipment was then carried via road through Mozambique to the Honde valley in Zimbabwe. The mammoth task of transporting the equipment over the mountain to the powerhouse was conducted by the client but supervised by the Gilkes technicians who then conducted the safe and successful installation of the Gilkes equipment.

To ensure all contracted components e.g. generator, main inlet valve, transformer etc. integrated well and performed as required, all of the factory inspections and testing were witnessed by a Gilkes engineer before being authorised for delivery. The equipment was installed by the installation team once authority had been given from the client. Once installed the project was handed over to the commissioning engineers who had been involved in communication and design of the project from the beginning. Lessons learnt from the Pungwe project ensured the commissioning and integration into the Zimbabwean national grid went seamlessly perfect.

Gilkes' dedication during design, engineering, installation and commissioning ensured the client's expectations were achieved.



Runner Installation



Powerhouse Location

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