

CASE STUDY

Kaptega, Mount Elgon, Kenya



KEY STATISTICS

Customer: Mount Elgon Orchards Ltd

Turbine Type: HCTI Twin Jet Turgo

Number of Turbines: 1

Power: 237 kW

Net Head: 82 m

Flow: 370 l/s

Runner Dia: 13.5"

Speed: 1000 rpm

SCOPE OF SUPPLY

Gilkes HCTI Twin Jet Turgo Impulse Turbine

260 kVA Synchronous Generator with Flywheel

Inlet Pipework & Bifurcation

Main Inlet valve

Hydraulic Control Module & Actuators

Control Panel & Switchgear

24V DC Battery Pack

Installation & Commissioning

Gilkes engineers have recently completed commissioning of a 13.5" Twin Jet Turgo for the Kaptega scheme at Mount Elgon Orchards in Kenya. Mount Elgon Orchards Ltd is a remote farm based on the Kenya Uganda border, exporting 80 million Top quality roses around the world under the brand "The Elgon Collection" (www.mtelgon.com). It also grows 80 hectares of avocados currently. It is a family run farm and the largest employer in Trans Nzoia (Western Kenya) employing 1,400 permanent employees. Its CSR is impressive, with 3 schools (2,000 children), a hospital and VCT treating 40,000 patients annually, a children's home, a special needs home, a physiotherapy Centre and an orthopaedic workshop. The recently commissioned hydro plant produces 249kW and is saving the farm over 1,100 litres of diesel per day, previously in its diesel generators.

The electrical characteristics of the site were unusual and demanding, requiring black start ability, islanded running, and regular load changes of up to 50 kW. With the potential of a future grid connection, this scheme had to be engineered for changing needs.

Gilkes carried out an initial site survey and, with the key requirements identified, were able to offer a comprehensive hydro package. By including a flywheel on the generator, and coupling this to a Turgo Impulse Turbine, the load characteristics were accommodated and efficiency retained. The custom made control panel with battery backup enables true black start ability and islanded running now, whilst allowing parallel connection to a grid in the future. As with many Gilkes turbines, the powerhouse will be unmanned and require only routine inspection and maintenance.

CASE STUDY

Kaptega, Mount Elgon, Kenya

Over 1000 Turgo turbines have been delivered to world markets since invented, by Gilkes, in 1919. With the inherent resilience to the abrasion of silt laden water, and the high efficiency maintained over a broader flow range, the Turgo turbine yields a competitive edge over the traditional Pelton in challenging environments. The simplicity of its impulse operation translates to minimal service and maintenance requirements, making it particularly suited to remote, rural, electrification schemes such as Kaptega.

Gilkes have been supplying hydroelectric turbines to Africa for over 100 years and continue to be fully committed to working in Africa, providing rural electrification through mini grid systems.



Powerhouse During Assembly



Turbine During Installation



Transport to Site



Turgo Turbine & Control Panel