

CASE STUDY

BLAIR CASTLE, Atholl Estate, Pitlochry, Scotland



KEY STATISTICS

Customer: Blair Atholl Estate

Turbine type: Gilkes Single Jet Compact Pelton

Number of Turbines: 1

Power (kW): 89kW

Net Head: 112m

Flow: 92

Dia: 450mm

Speed: 1000rpm

Date of Commissioning: 2014

SCOPE OF SUPPLY

Gilkes 450mm single jet compact Pelton Turbine.

Electric actuation of spear valve & deflector

Main inlet valve (gate valve)

1000rpm induction generator.

PLC control & switchgear panel.

Head level sensor.

Installation and commissioning.

Service & maintenance contract.

Powered by water until the mid 1940's when due to the arrival national grid the three original 25kW turbines were sold for scrap, the Atholl Estate was keen to re-introduce hydro power to the 13th century Castle. A drive for efficiency and the fact that much of the original scheme including holding lochs and pipework still existed, made the re-instatement of hydro power at the castle a sensible long term and environmentally friendly investment.

Generating a modest 89kW at peak times the single jet Pelton machine is able to more than cover the requirements of the castle, with any surplus being transferred as renewable energy to the grid. The turbine for this project was a small Pelton from the Gilkes 'Compact' range – the type Gilkes uses on sub-100kW turbines. The generator was of the induction type (like an electric motor), which reduces the complication associated with the larger 'full blown' generator types.

Normally the Compact range turbines have a simplified Control Panel with limited functionality. However, for Blair Castle we retained the use of a PLC (logic controller) as is our practice on larger turbines. This was in order to have some flexibility to add additional functions. For example, we wanted to be able to control export power within certain limits while locally used power varied.

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To be in keeping with the design of the powerhouse, the control panel and turbine control systems have been designed to supplement the powerhouses yellow floor and gloss black walls.

The enduring appeal of the hydro powered Castle attracts many thousands of visitors a year, and all are encouraged to view the fascinatingly decorated and easily accessible powerhouse.

With the three original turbines being supplied by Gilkes in 1908, Gilkes were again pleased to provide a complete M&E solution for the estate.



The magnificent Blair Castle



Blair Hydro Opening

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