

This project has been funded by the Scottish Government's

Community and Renewable Energy Scheme (CARES).



Abernethy Trust Hydro and Electrification Scheme

Introduction

The Abernethy Trust is a not-for-profit organisation which provides high quality outdoor instruction and excellent residential facilities. They have four centres in Scotland and have been in existence for over 37yrs. Although they are a Christian organisation their centres are open to all regardless of denomination. In addition to this, use of their Ardgour centre and new sports hall is open to the local community.

The project involved the installation of a 89kW run-of-river hydro electrification scheme. This is principally for on-site use at their School of Adventure Leadership at Ardgour. The Trust's finances (for investment) are scarce and energy savings made plus sales from spare electricity spill-over are directly re-invested into and for the good of the Ardgour centre. Initially, this will be specifically directed at improving the energy efficiency status of their buildings and upgrading/replacing their aged, existing oil-fired heating system with a direct heating system powered by their own hydro scheme. Over time, the aim is to provide electricity to all the Abernethy Trust buildings on the site.



Equipment: 89kW Gilkes compact Turgo turbine

The scheme includes an 850m x 280mm penstock with water supply supply screened through a self-cleaning coanda screen at the intake weir with 126m of head. The turbine is accommodated in a bespoke concrete block building which also houses hydraulic and electrical controls etc. Originally scaled at 49 kW, the scheme was deliberately upsized to 89kW take advantage of the <100kW FiT regime. In addition to this the hydro also provides electricity to the staff houses at the centre when there is sufficient generation. This is fed through a private grid and is metered at each house to monitor consumption. When there is insufficient generation then imported electricity is used.

Cost and Grant Funding

The increase in installed capacity to 89kW to take advantage of the FiT resulted in a knock-on increase in capital costs and given that the project had already attracted significant public grant then led to a financial partnership through a long-term equipment lease with Gilkes (the turbine installer), this allowed the project to be increased in size quickly, thereby enabling the scheme to be resized, and re engineered at the optimum size.

Total Project cost	£320,000	Other funding contributions included: HIE £37,000 LEADER £25,000 Abernethy Trust £50,000 Local community gifts in-kind £7,000
CARES grant ¹	£100,000	
CARES grant Percentage	33.6%	

¹ N.B. The project was approved during the period of the Scottish and Community and Householder Renewables Initiative – however, due to the scale and timeline of the project, it was completed during the period of the CARES programme.

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Emission Savings

Estimated kWh savings p.a.	344,000
Annual CO ₂ savings (kg)	147,000
Lifetime CO ₂ savings (kg)	7,396,000

Project Monitoring

An OFGEM accredited 3 phase ROC meter was installed on the output cable from the control system. In addition to this, half hourly import/export meters were installed on the main incoming cable. As a condition of funding, the Abernethy Trust was obligated to supply monthly output production figures/graphs on an annual basis for a period of no less than 5 years. In addition to this power import/export, data is reported on an annual basis for 2 years.



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In addition to this Gilkes have also produced a technical case study of the project available at : <http://www.gilkes.com/page/121/Abernethy-UK-Case-Study.htm>.