



Case study Woolsery Sports and Community Hall

RENEWABLE ENERGY 4
DEVON



Introduction

The Sports and Community Hall is a new build community centre for the residents of Woolsery near Clovelly in north Devon. There are so many clubs and activities going on in the village that an outstanding village hall was required. Brian Butler is the main driver behind the project and as well as providing excellent facilities for the community he wanted to ensure that the environmental impact was as low as possible.

Project development

- Woolsery was in need of a village hall, and community consultations revealed that there was support for a sustainable building that would represent a sound financial and social investment. The innovative design for the hall was driven with sustainability in mind and considerably exceeded building regulations.
- To ensure the hall is as energy efficient as possible large south facing windows maximise solar gain, underfloor heating distributes heat very effectively, and super-insulation retains the heat. Having achieved all the realisable energy efficiency measures, Brian turned his attention to renewable energy. "It was just the next logical step," he said.
- Rising fuel and energy prices were a concern, and overcoming these challenges coincided well with their green ethos. A wind turbine, ground source heat pump and photovoltaic systems were installed to provide heating and electricity all year round.
- Brian sought grants from the National Lottery, the Low Carbon Buildings Programme and RE4D, as well as funding from EDF, and the RE4D community mentor helped with the application forms. The installation of all three systems took place December 07 – February 08.

How the system works

The solar photovoltaic array covers half of the hall's South facing roof, and the wind turbine is mounted on a 15m mast in front of the main entrance in the car park. The heat pump is more discreet with the pipes laid underneath the sports field and connected to the heat pump itself inside the building. The 8kW heat pump is sufficient to supply background heat through an underfloor heating system over 1700m² in the building.

The wind turbine and PV panels generate electricity for use in the hall, and some is also sold back to their fuel supplier. Brian has also registered to claim Renewable Obligations Certificates which are (at time of writing) worth around £9/MWh of electricity the system generates.

Costs and benefits

- The wind turbine and PV system are expected to generate 11.1MWh and 9.3MWh of electricity respectively, and the GSHP should provide 112MWh of heat per year. The combined system will save 12.2 tonnes of CO₂ p.a.
- The whole system cost £82,000 to install; £44,000 on Solar PV, £23,000 on wind turbine; and £12,000 on the ground source heat pump.
- Woolsery earns ROC's at 9p/kWh for every unit of electricity they generate. Some electricity is used on site, offsetting the cost to purchase electricity at 12p/kWh, and some is sold back to a supplier at 5p/kWh. The payback for the whole system is only 11.6 years, taking the LCBP grant into account.
- The heat pump has increased the annual electricity consumption by around 4270kWh, but reduced annual oil consumption by 2445 litres; equivalent to 26,650kWh. Leading to a carbon dioxide saving of around 5.8 tonnes pa. The wind and PV generate a combined 20.4MWh, saving an additional 10.4 tonnes of CO₂.

Technical details

Wind	6kW Proven 6000 turbine
PV	56 x 162W Sharp polycrystalline modules (9 kW total)
Heat pump / inverters / control	8kW Duo 8 heat pump / 2 x Fronius IG40
Installers	1 x Sunny Boy control system monitor

Wider benefits

Climate change will be even more of a reality for the next generation and the community wanted to build a high quality village hall that was equipped to take on the energy challenges of the next few decades and have low running costs for future users. The hall sets an example in Woolsery that local residents and visitors can be proud of and the installations are a great educational resource that the local community is already making use of through holding public events.

Brian Butler, project co-ordinator, said: "We wanted the centre to be a gift to the next generation rather than borrowing from their future. Whenever there were problems Jim took care of them. RE4D was exactly the kind of backup we needed."

Further information

Installers
Woolsery CC
www.re4d.org

Contact RE4D

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For independent advice and support

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