

Eskdalemuir Community Hub ASHP & PV Project

Introduction

The Upper Eskdale Development Group are a community organisation and company limited by guarantee. The group had a vision to create a dynamic hub of activity where community support, social enterprise and cultural activities could flourish in a place that would inspire residents and visitors alike.

Eskdalemuir community is very pro-active and is extremely keen to move away from traditional fuels towards renewable technologies wherever possible.

Since 2005, the Upper Eskdale Development Group has been working to create their Community Hub at the Old Eskdalemuir Primary School with a focus on social and economic regeneration of the village.

When the Group originally took over the primary school building from the local Council, the underfloor heating was highly inefficient and expensive. In summer 2010, a wood pellet stove was installed and the Hub underwent an extensive refurbishment when the entire building was insulated to a very high standard.

Air source heat pumps were also installed, which will mean that the two main areas of the Hub will be heated by renewable sources. The installation of a PV array offsets a large proportion of electricity consumed by the heat pumps, and will be used as a demonstration of solar energy working in southern Scotland.



Equipment

9.89 kW solar PV array to part-offset electricity consumption from 2 x 9kW air source heat pumps

The following selection process for the air source heat pump and PV installation was carried out:

- Firstly, a technical specification was designed by an Electrical, Renewable Energy and Broadcast Systems Engineer as an in-kind contribution to the project
- Based on this specification, the tender was sent to three contractors for the PV array and three for the air source heat pumps
- The installers who won the contracts to install the heat pumps and PV respectively were selected based on price, experience and location

The heat pumps were installed in the main room, which was previously heated by infrared electric heaters – which the group found expensive to run. Installing the heat pumps allowed the room to be used more regularly and the nature of their operation means they can be programmed to come on shortly before the room is to be used.

The 9.89kW PV array is ground mounted; primarily to avoid the creation of additional work during the refurbishment of the centre during the summer of 2010, at which point there was an option of moving the PV array onto the roof.

Cost and Grant Funding

Total project cost	£42,137	The remaining funding was obtained through: Upper Eskdale Development Group's own funds £6700
CARES grant	£35,437	
CARES grant percentage	84.1%	

Fuel Bill Savings

While the heat pumps are cheaper to run than the previous electric heaters, it is not expected that the running costs of the Hub will reduce significantly (this is partly due to the expected increase in use of the Hub as a result of the improved heating.)

Because of the PV array, the group will benefit from the Feed-in Tariff at a rate of 36.1p per kWh. This is expected to earn the group around £2,500 per year, which will be invested in ongoing improvements and maintenance of the Hub, ensuring the local community has a well maintained centre, and encouraging other community groups to use the facility.

Emission savings

Estimated kWh savings p.a.	17200
Annual Co2 savings (kg)	7396
Lifetime Co2 savings (kg) @15yrs	110,940

Project Monitoring

Monitoring equipment has been installed for the PV array. There is a 3-phase system, with three 3-phase meters installed. Through the Feed-in Tariff, the project is attracting significant financial support. There is some offset from the 3-phase meter installed in the kitchen. Further alterations to the metering system will be made following the refurbishment of the building.

Local Impact

The local project spin-off has been very interesting: Eskdalemuir is a small community of around 250 residents (approx 60 households). So far, two local households have installed domestic PV as a result of seeing the technology in action at the Community Hub. In addition to the financial savings and the associated benefits to service provision, the impact of raising awareness of renewable energy technology within the community has been valuable and - following the success of the PV installation - the Development Group is now considering the development of a further PV community project.

Lessons Learned

1. ASHP has proved efficient to run except when operating at very low temperatures. The cold weather during December 2010/January 2011 proved problematic; inhibiting the efficiency of the system.
2. Once people see a technology installed and operating for themselves, they are more able to understand and accept it. The development of community renewables projects will therefore have a cumulative impact as more people are exposed to technologies and are therefore more inclined to install them in a domestic setting.

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