This project has been funded by the Scottish Government's Community and Renewable Energy Scheme (CARES).

Slammanan Primary School
Solar Thermal

Introduction

Slammanan Primary School was built in 1875 with an extension and refurbishment by Falkirk Council in the 1970's. It is the only non denominational primary located in the village of Slammanan, located south of Falkirk, with a current school roll of 125 pupils. The village is in a rural area with no natural gas network in the village.

The heating and hot water systems were designed and installed in the 1970s, when the regulations for water storage were much higher than they are now, and so the school had a large 1,000 litre hot water cylinder heated by electrical immersion heaters, which were very expensive to run. When the Energy Manager at Falkirk Council investigated options for reducing the high cost of providing electricity to the school, he identified that the existing 1,000 litre hot water tank could be replaced by a 500 litre tank and still meet the school's hot water demands. In addition, he took advantage of the fact that the school had a well protected south facing roof, facing into the eco garden, which could be utilised for solar thermal panels. He obtained 50% match funding for the project under the LCBP2 funding scheme, and the solar panels and associated visual display unit were installed in March 2009.

Equipment

4 Worcester Bosch FKC-1S solar thermal panels and a new 500 litre hot water cylinder

The 10m^2 of flat solar panels are located on a south facing roof in an internal courtyard in the centre of the school, and supplies hot water provision for the school and kitchen.

The Energy Manager from Falkirk Council undertook the following process:

- Consultations were held with pupils, parents and teachers of the school.
- A feasibility study was carried out to look into which renewable technology would be the most efficient given the circumstances of the school and community demand. A biomass boiler and solar thermal system was proposed as the most suitable renewable technologies for the building.
- Ruth Evans of Community Energy Scotland worked with the P7 teacher on an educational presentation to the P7 pupils on renewable energy, focusing on their solar panel installation, and explained how they operate and how they could use the data generated from the display in their lessons.
- Falkirk Council has embarked on numerous new build projects, and there is extensive in-house knowledge on matters such as mechanical services, building services, energy and architectural services.

Cost and Grant Funding

Total project cost	£11,000	The solar panel installation was 50% funded by Falkirk Council and the remainder by Low Carbon Buildings Programme Phase 2.
LCBP2 grant	£6,500	
Grant percentage	50%	

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Fuel Bill Savings

Falkirk Council has been monitoring the electricity costs of the school. The solar panels have reduced the electricity bill by just over a £1,000 over the eighteen months since they were installed, which means that the capital cost of the installation will be recouped in under eight years.

Emission Savings

Estimated kWh savings p.a.	4,500
Annual Co2 savings (kgCO2)	2,453
15 year Lifetime Co2 savings (kgCO2)	36,795

Project Monitoring

Weekly electricity readings were taken and recorded during the first year following the solar thermal system being installed. This resulted in the projected generation of energy by the solar panels of 4,500kWh being exceeded by almost 50% to £7,000kWh. After eighteen months the installation has produced 10,000kWh, and the council are continuing to monitor the output on a monthly basis. The Energy Manager has used solar panels on four other primary schools following the success of the installation at Slammanan primary.

Local Impact

The large display unit in the IT room area allows pupils and staff to understand how the solar thermal panels work, and they can see the kWh savings that are being made. The pupils use the readings taken from the display in a variety of different curricular topic areas.

Lessons Learned

The school leant itself ideally to solar thermal panels as it had a perfectly south facing roof which is located centrally in the school and is visible to all pupils as they move around the school. The Energy Manager and the installers credited the smooth installation to working closely with a supportive school staff. The Energy Manager had been working extensively with the school to raise their awareness on energy consumption in the school for some time, and the installation of the solar panels was the result of a clear understanding by the school on the benefits for the school's energy use and educational benefits.

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