

Isla Primary School Solar Thermal

Introduction

Isla Primary School was built by Angus Council in 2009 to replace three existing primary schools in the area, plus provide much needed community facilities.

The new building was designed with insulation levels above current building standards, and energy efficient lighting with state of the art control, including microwave detectors to determine when the room is empty and to turn lights off. To heat the building a biomass boiler system which runs on wood chips sourced from Forfar was installed. To complement this heating and hot water system the Angus Council installed a solar heating system.

The building relies on a natural ventilation strategy with roof lights and vents opening automatically depending upon CO2 concentrations.

Equipment

50kW Binder wood chip boiler
2x Riomay EcoTube evacuated tube solar panels

The Binder wood chip boiler supplies the heating and the hot water (supplemented by the solar panels) to the school. The 5m² of solar panels consist of 2 Riomay Eco Tube evacuated tubes, with a 300 litre twin coil hot water tank providing the hot water throughout the school.



Angus Council undertook the following process:

- Consultations with all stakeholders including members of the local community, pupils, parents and teachers of the existing schools, both prior to and during the building design stage.
- A feasibility study to find out which renewable technology would be the most efficient and appropriate. A biomass boiler and solar thermal system were proposed as the most suitable renewable technologies for the building.
- Angus Council approached Community Energy Scotland for CARES funding towards the solar thermal system for supplementing hot water, and with assistance from Ruth Evans from Community Energy Scotland, they submitted a successful grant application.
- The solar panels were installed by a MCS accredited installer

Cost and Grant Funding

Total project cost	£5,600	The remaining funding was obtained through: Angus Council (for solar panels) Angus Council and the Low Carbon Buildings Programme Phase 2 (solar and biomass)
CARES grant	£2,800	
Grant percentage	50%	

Fuel Bill Savings

Angus Council will be monitoring the fuel costs of the school although with the new thermally efficient building and other energy efficiency measures in place they are expecting significant savings compared to the three old schools which were reaching the end of their life.

Emission Savings

Estimated kWh savings p.a.	2250
Annual Co2 savings (kg CO2)	1227
15 year Lifetime Co2 savings (kg CO2)	18,400

Project Monitoring

Weekly readings of solar thermal output are taken and recorded. Thermal output is recorded on the Building Energy Management system (BEMS). During the first year monitoring will occur on a weekly basis to ensure optimum efficiency and set up, and after that will continue but on a less frequent basis.

There will be a digital meter in a public place within the building which will be utilised for this purpose, and the information will be available to the school and community. The meter will be able to be read remotely from the BEMS which is currently managed in Arbroath by the Property Division of the Council.



Local Impact

The school sports facilities can be accessed by the whole community in the evening, so providing an affordable form of heating strengthens the financial position of the facility.

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

Lessons Learned

Working with the local community, school staff and pupils ensured that the installation of the solar thermal panels and the display unit went according to plan.

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