

Perth College Residences Solar Thermal

Introduction



Perth College (part of the University of the Highlands and Islands) had been planning a project to build new student accommodation for several years. They were committed to increasing the sustainability of their operations, with aims to cut their carbon footprint by 20% by 2013. In addition to this, they also wanted to reduce the running costs of their student residencies, and to make the buildings as environmentally friendly and affordable to run as possible. After examining a number of renewable options for the site, and considering the patterns and demand for hot water required, flat plate solar thermal arrays were selected as the technology most appropriate for delivering savings, and increasing sustainability in-line with Perth College's aspirations.

Equipment

60m² of flat-plate AES solar thermal panels

The whole build project was competitively tendered by Perth College. From that, the main contractor appointed AES Solar to carry out the installation of three 20m² arrays of their own flat plate solar panels on each of the three college residences. As the roofs of the college residency buildings are flat, the solar panels had to be mounted on mild-steel A-frames in order to achieve the optimum 35° pitch. Each array feeds into two 600l solar cylinders supplementing the primary heat source which is natural gas.

Cost and Grant Funding

Total project cost	£ 111,433.36	The remaining funding was obtained through the UHI's own contributions.
CARES grant	£ 55,716.68	
CARES grant percentage	50%	

Fuel Bill Savings

The scheme is estimated to produce around 37,000kWh of heat a year, displacing an equivalent amount of gas usage. This will save around £1,000 per year at current prices, although the cost savings are likely to increase significantly when fossil fuel prices rise in the future.

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

Emission Savings

Estimated kWh savings p.a.	37,000kWh
Annual CO ₂ savings (kg)	7,622kg
25yr lifetime CO ₂ savings (kg)	190,550kg

Project Monitoring

The system is monitored through the sophisticated Building Management System (BMS), which is installed in each of the three residency buildings. This also allows for control and regulation of heating and hot water to maximise efficiency, comfort and control within the accommodation units.

Local Impact

The systems will benefit not just the students who live in the buildings during term, but also visitors who stay in the summer months when the buildings are let out as Youth Hostel accommodation through a partnership with the Scottish Youth Hostels Association. The Student Union is also fully behind the efforts of the Perth College to become carbon-neutral, and strongly supported the installation of the solar panels on the new residences. As well as the direct energy benefits, the solar panels will also be used for demonstration and maintenance classes for students on the construction courses that are run as part of the college curriculum.



Lessons Learned

Ensure you leave plenty of space in the plant room during the design phase, otherwise you may struggle to fit all the equipment in. Try running an inter-building energy competition that rewards whichever flat uses least energy, as an incentive to be energy efficient.

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