

Renewable installations at Aberthaw Eco Centre

Back in early 2011, npower Business Solutions (nBS) opened its state of the art education centre at Aberthaw Power Station. The Aberthaw Centre for Energy and Environment provides an important facility for schools, colleges and community groups delivering interactive educational programmes linked to the national curriculum. Tours demonstrating electricity generation and nBS's solutions to minimise the social and environmental impact of power production are provided to those that visit the centre.

Summary of initiatives

- 11.5kWp solar photovoltaic (PV)
- 18.9kW air source heat pumps (ASHPs)
- Rainwater harvesting
- Natural cooling
- Recycled materials to construct building

The building was designed by architects Loyn & Co, with the focus to create a building that was as eco-friendly as possible. Sustainable and recycled materials, such as ash from the power station, were used in construction and the centre is heated and powered using on-site renewable sources. The centre features a 15 metre high fin that is central to the design concept.

nBS wanted to both expand the educational services offered by the facilities at Aberthaw and make a big reduction in carbon emissions. In order to achieve this, solar panels and heat pumps were used to generate power and heat for the centre.

Solar PV

Given the location and orientation of the visitor centre, a solar PV installation was the most cost effective solution to meet the sustainable electricity demand requirements. The 11.5kWp system from Ecofirst was designed, installed and commissioned to specification.

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Heat pumps

Daikin ASHPs were selected to provide heat to the centre. Three 6.3kW units were installed, which offer approximately 3:1 thermal output.

The building is cooled by natural circulation using roof-mounted wind catchers and rainwater from the roof is harvested, stored in tanks and used to flush the toilets. Furthermore, the building is insulated by recycled paper mache material, whilst the car park was constructed with furnace bottom ash from the power station.

An observation deck on the roof of the centre makes it easy for those visiting to see the solar PV system and adds to the learning experience offered by the centre.

The solar PV and heat pumps alone are estimated to save the visitor centre 23,000kWh of electricity consumption per annum, whilst reducing carbon dioxide emissions by over 19,000kg per annum.

