

Energy from sun and wood



The Tearooms in Falstone are located in the Victorian village school-room, with a tourist information area housed in a small extension. The Northumberland National Park Authority (NNPA) refurbished it in 2004 and incorporated a number of sustainability features including photovoltaic (electricity producing) panels and two Italian wood pellet burning heaters. A photovoltaic roof was chosen to demonstrate that a historically important building could be developed by using 21st Century design and technology alongside 19th Century build. The building also has a rain water collection system, taking rainwater from the roof, storing it, and using it to flush the toilets. Using rainwater instead of tap water saves energy as the water purification process is energy intensive. The design of the building and its development won the national architectural award as best designed building 2005 and 2006 from the Civic Trust.

How does it work?

The glass roof and front window of the extension are formed from Powerglaz units - photovoltaic cells encapsulated between two layers of glass. This gives an effect of a honeycomb network within the glass and provides an element of shading. The PV is a 1.55kW installation which generates around 1150kWh of electricity per year. Daylight stimulates a reaction within the PV panels to produce electricity, and although they generate more in summer, they do not need bright sunlight to function.

The 5kW Palazzetti Margarhita room heater and the Palazzetti Freddy Idro stove / boiler (which can produce 4.5kW of heat to the room and 8kW to water) are modern versions

of ancient technology, burning pellets made from compressed sawdust. Above the fire box is a hopper, filled with 6 or 8mm pellets, which are fed automatically into the fire as required. The pellets are supplied in small sacks, and are clean and easy to handle. Depending on the weather, the hopper is usually refilled every few days. These stoves incorporate a timer and a thermostat to ensure convenience and efficiency. Only 1% of the wood appears as ash, so the ashpan is emptied infrequently. The stoves are 90% efficient and very clean burning with no visible smoke.

Installation and costs

The renewable technologies were installed during the main building contract. The PV cells were supplied by Romag of Consett and the roof / screen-wall designed and installed by PV Facades. Complete restoration of the roof and installation of solar panels cost £37,114. The pellet stoves were supplied and installed by 3G Energi of Kelso. The whole restoration project successfully obtained £96,600 from the European Regional Development Fund, £80,000 from Northumberland Strategic Partnership,

£38,000 from the Sustainable Development Fund, £8,600 from the Energy Saving Trust and £3,200 from the Clear Skies Initiative. At 2007 prices, the PV saves £85 in electricity costs, while the pellet stoves cost about the same to run as oil but are greener!

Environmental impact

The PV saves 500kg of CO₂ annually, when compared to standard grid electricity. A further 3,200kg is saved by heating with wood rather than oil. Wood is a carbon neutral fuel as long as new trees are planted to replace the ones felled for fuel.

Further information

Visit the other renewable energy sites shown on the map overleaf.

Kielder Castle renewable energy exhibition is open from Easter to October.

www.tynedalerenewableenergy.org.uk
www.rhatourism.co.uk/ventures/falstoneoldschool
 or 01434 240459
www.pvfacades.co.uk or 01794 830154
www.3genergi.co.uk or 01573 229198
www.northumberlandnationalpark.org.uk

