



Woodchip heating



Park End is a country estate near Hexham in Northumberland. The owner, Nick Ridley, also owns woodland and decided to install wood heating in order to keep fuel costs down, to make use of low-grade wood from the estate and to demonstrate the successful use of local woodfuel for heating. His wood fired heating plant supplies his house, apartments and three cottages with clean green heating. In parallel he has taken on a franchise with wood boiler suppliers, Econergy, and is now actively marketing Austrian Fröling boilers, producing his own fuel and providing a woodchip fuel supply service to others in the locality.

How does it work?

The fully automatic boiler is a state-of-the-art boiler designed to efficiently convert seasoned woodchip to heating, without visible smoke. It is lit automatically by a hot air gun ignition system, and uses a moving grate combustor with fuel being transferred from the fuel store into the combustion chamber by a series of screw augers. The boiler takes fuel up to 35% moisture content. The heat exchanger is a vertical smoke tube type and its design includes a cyclone dust separator to avoid particulate emissions. The whole boiler is controlled with lambda combustion control to give 91-95% efficiency across the output range.

The boiler burns about 60 tonnes (300m³) of seasoned woodchip fuel per year. The 20m³ fuel bin stores enough fuel for 10 days in winter or two months in summer. The boiler not only heats the buildings but provides hot water for washing purposes as well.

Installation and costs

The wood heating system was designed and specified by Econergy engineers and the 110kW Fröling Turbomatic boiler and heat distribution pipes were installed by Park End estate staff under guidance from Econergy. One oil boiler was re-sited in the boiler house to act as stand-by and two oil boilers remain in the main house to act as further back-up if needed. The galvanised steel wood fuel bin with top opening lid was manufactured to Econergy's design by Park End staff and similar ones can be made for other local projects. Heat meters were installed to the apartments and cottage so that tenants could be charged for the amount of heat used.

A barn, about 400m away, stores woodchip, which is transferred to the fuel bin using a telescopic handler. The barn holds a year's supply of fuel.

The entire cost of the project in 2006 was approximately £51,000, which breaks down as £18,000 for boiler and associated equipment, £18,000 for the pipe network and meters, £8,000 for the fuel bin and

£6,000 for installation. An existing stone building was renovated to act as a boilerhouse and this cost £1,000. Funding of 20% was obtained from Bio-energy Capital Grant Scheme and a £36,000 interest free loan from the Carbon Trust. At 2007 prices, compared to oil, the boiler will save approximately £10,000 per year.

Environmental impact

The woodchip boiler reduces the estate's CO₂ emissions by 52 tonnes per year, compared to heating with oil.

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.econergy.ltd.uk or 0870 054 5554
Park End Estate Office 01434 230202

Please note that this site is not usually open to the public, and does not have an information board. However, occasional viewings may be possible if arranged in advance.

