

Parkend Estate, Hexham, 110kW



Park End is a country estate, with woodland, near Hexham in Northumberland. The owner decided to install a woodchip boiler in order to keep fuel costs down and to make use of low-grade wood from his estate.

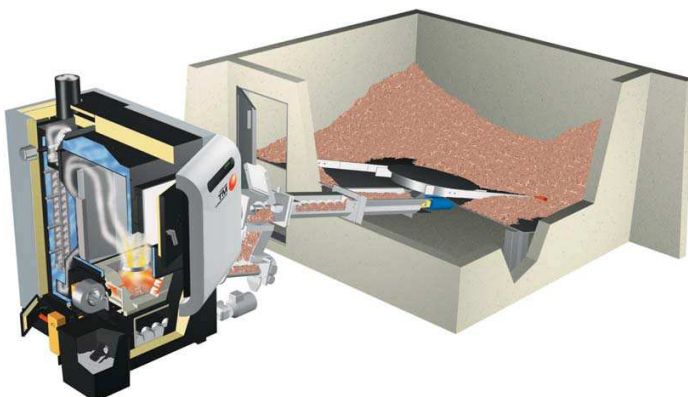
In February 2006 a Froling Turbomatic 110kW woodchip boiler was installed to provide heating and hot water for the main house, apartments and three separate cottages via underground pipe work.

One of the existing oil boiler was relocated to the wood boiler room to act as stand-by. The existing main house oil boilers were also left in situ to act as automatic stand-by boilers.

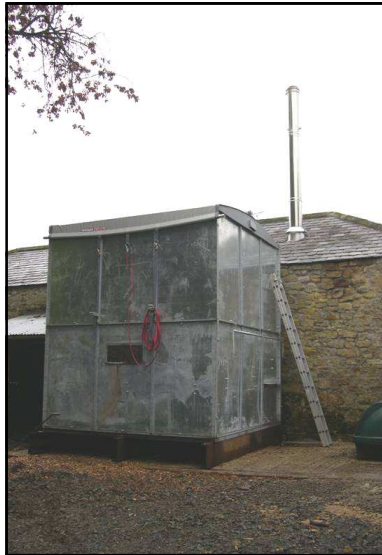
The Turbomatic wood burning boiler is a premium product produced by Froling, a leading high volume Austrian manufacturer. For more than thirty years Froling has developed the idea of heating with wood, with series of ground breaking innovations leading to number of awards.

Technical Summary

- The state of the art boiler is lit automatically by a hot air gun ignition system.
- The combustion chamber comes complete with solid fire bricks for high temperature combustion.
- The fuel is transferred from the fuel store into the combustion chamber by a series of screw augers.
- The heat exchanger design includes a cyclone dust separator to avoid particulate emissions.
- The whole boiler is controlled with the lambda combustion control to give 92% efficiency.



Left; Turbomatic boiler, fuel feed transfer system and hopper.



Left; inside the wood fuel storage barn.
Right; Specially designed galvanised steel wood fuel hopper made on the estate.

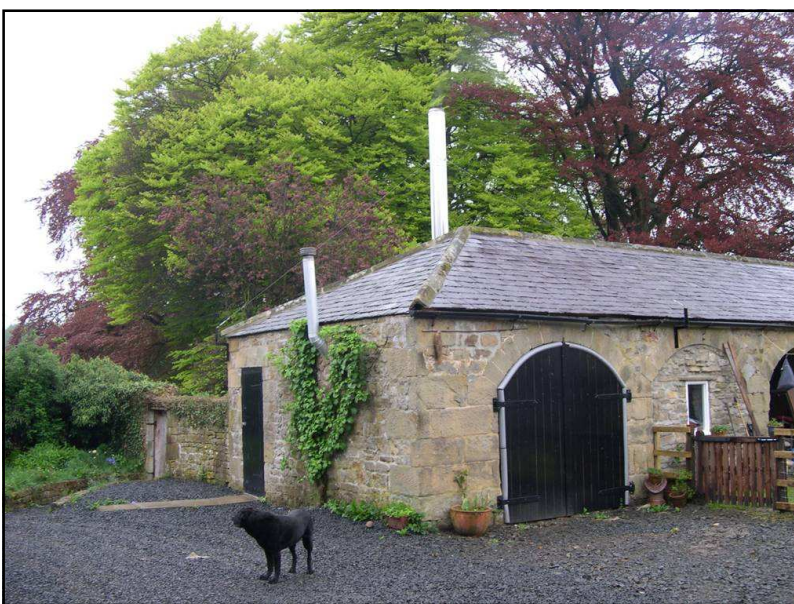
Installation

The woodchip heating system was designed and specified by Econergy engineers.

The Turbomatic 110kW woodchip boiler and heat distribution pipe work were installed by Park end staff under guidance from Econergy.

The 20m³ galvanised steel wood fuel hopper storage, with top opening lid, was manufactured by staff on the estate following designs by Econergy.

Heat meters were installed to the apartments and cottage so that tenants could be charged for the amount of heat used.



Above; Existing building converted to the boiler house

Operation

The boiler uses wood fuel from the estate woodlands. The wood is chipped into a existing stone barn, where it seasons to the correct moisture content.

This barn holds a years supply of woodchip and is approximately 400 metres away from the galvanised steel hopper.

The woodchip is loaded into the wood fuel hopper using a telescopic handler owned by the estate.

The woodchip feeds via the fuel feed transfer system into the boiler which is in the barn next to the hopper.

The 20m³ fuel bin stores enough fuel for ten days in winter and two months in the summer.

It is estimated that the boiler will use approximately sixty tonnes per annum of seasoned wood chip.

As well as supplying its own fuel for the Turbomatic Froling Woodchip boiler, the estate also produces a woodchip fuel supply service to others in the locality.

Carbon Saving

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

Costs

The entire cost of the project in 2006 was approximately £51,000. This breaks down as £18,000 for the 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 boiler house at a cost of £1,000. At 2007 prices, compared to oil, the boiler will save approximately £10,000 per year.

Grants

Funding of 20% was obtained from the Bio-energy Capital Grant Scheme and a £36,000 interest free loan from the Carbon Trust.