

Wood-fuelled heating – Elvendon Priory , Oxfordshire

Status of Project:	EXISTING – Commissioned April 1999
Location:	The Old Stable, Elvendon Rd, Goring-on-Thames, Oxon, RG8 0LS (Grid ref. SU624813)
Owner / Developer:	Elvendon Priory
Description:	300kW woodchip-fired mini-district heating network



Image: www.woodfuwales.org

Background:

Elvendon Priory, part of the now diversified Elvendon Estate, is situated near Goring-on-Thames, within the Chiltern Hills of rural south Oxfordshire. The privately-owned commercial estate comprises 304 hectares of managed woodland, farming and residential properties. Elvendon Priory, around which the rest of the estate is centred, is a historic 11th century listed building. It was acquired by the current owners in 1997 and is now a family home.

Under its new ownership the estate implemented a two-year multi-million-pound programme to modernise and refurbish all principle buildings and infrastructures. This included extensive structural alterations, building extensions and renovation of the Priory as a modern domestic residence.

The programme also saw the replacement of the existing gas and oil-fired boilers, which were expensive and inefficient. They were replaced with a state-of-the-art biomass-fuelled boiler and district heating system, designed to serve the whole complex. The boiler was designed, engineered and installed by Talbott's Ltd, one of the leading British biomass thermal systems companies.

Technology / Scope of Project:

The biomass combustion boiler system is based on a standard Talbott's C4 unit, with a rated output of 300kW, using advanced combustion technology.

The Elvendon Priory distributed heating system is fuelled entirely by renewable biomass in the form of woodchips. The chips are principally made from chipped forestry residue and farm maintenance residue from the estate's own sustainable resources. The fuel is stored in a top-fed silo with a capacity of 7m³ and a diameter of 2m, which provides a continuous supply for between 3-5 days, with a consumption rate of about 100 tonnes per year. The system operates at an average thermal power of 58kW, supplying an annual heat output of 510 MWh.

The system also boasts an advanced external control feature that allows the boiler to be control form either within the Elvendon Priory by untrained staff operating a simple push button mounted control unit or from the Talbotts head office in Staffordshire. The system was custom built to the specifications required for the building as no external alterations were permitted during the installation.

The capital cost of the boiler system was £30,000 and replaces more expensive fuel sources including gas, oil and grid electricity. As a result the owners now benefit from savings of around £5,700 a year.

Importance to the South East:

This installation highlights how biomass heat generation can be used to replace unsustainable and ageing fossil-fuel heating systems through exploiting existing on-site natural resources. As well as realising the obvious medium to long-term financial benefits, one of the main drivers behind the project was the resulting security of fuel supply.

These factors, and the scheme's undeniable success, call out as an example for other landowners and farmers in the region who have a. woodland, b. a large heat load (preferably but by no means necessarily self-owned) c. a need to diversify.

One of the environmental and social side-benefits has been the inevitable improvement in the management of the estate forest. This has had a positive impact in sustaining jobs connected with forestry management. A well-managed wood also provides an increase in biodiversity.

In terms of environmental benefits, it has been calculated that the biomass boiler at Elvendon offsets the equivalent of around 150 tonnes of the greenhouse gas carbon dioxide per year.

Acknowledgements: Thanks to Elvendon Priory, www.woodfuelwales.org.uk and www.countrylovers.co.uk for material used in this case study.



Photo: TV Energy

External view of the boiler house



Photo: www.countrylovers.org.uk

Elvendon Priory's wood-fuelled boiler