



West Country Estate

130kw Woodchip District Heating Scheme

Scheme	District Heating Scheme supplying hot water and heating to Grade II mansion, farmhouse, cottage and outdoor swimming pool
Boiler and plant	130Kw ETA Hack woodchip boiler installed in a converted farm building with 3,000 litre accumulator tank and 290 metres of district heating main. Back up oil boiler.
Fuel	The boiler uses approximately 75 tonnes of G30/50 woodchip per annum, producing around 200,000Kwh of heat. Seasoned woodchip fuel is sourced from the estates own forestry operations and from local suppliers.
Chip storage	A 75m ³ fuel store was created in the converted farm building where chip is transferred to a fuel feed auger by rotary arm agitator. Fuel can be tipped in through a sliding roof at the rear of the building via tipping trailer or tractor front loader. Refilling the chip store occurs every 4 to 8 weeks and is able to receive bulk deliveries of up to 45m ³ .
Grant / Funding	The system received a grant of £22k under the Bio energy Capital Grants Scheme. It is expected to transfer to the upcoming RHI scheme and receive an annual income of approximately £14k per annum.
Savings / Investment	The installation is expected to reduce the total fuel bill from over £18,000 to under £5,000 per annum (prior to any RHI payments). The payback of the investment was expected to be 3.9 years with a ROI of 24%.
CO ² saving	Estimated at 90 tonnes per annum
Commissioned	October 2010





Project overview

The owner decided to install a woodchip system on the estate to reduce cost and to replace a wide variety of different heating systems including oil, LPG and electricity saving on annual fuel and maintenance costs. In addition the owner was keen to make use of low value wood from the estate in order to improve woodland management.

Fuel supply and chip handling

Dunster designed and implemented the conversion of an existing and underutilised traditional farm building to cater for the chip store and boiler room. The chip store took account of the need to receive deliveries from different suppliers as well as from in house. The store was designed to take deliveries of up to 45m³ via tipping trailer minimising the need for any on-site handling of chip. Estate wood is seasoned, chipped and loaded directly into the fuel store or stored nearby and transferred by front loader.



System design and installation

The system was designed for 100% of heat and hot water to be provided by biomass. A 3,000 litre accumulator tank was installed to assist with peak heating loads and to avoid inefficient short cycling of the boiler. A back up oil boiler was installed (unused as yet!)

Estate staff installed the district heating mains to Dunster's specifications. Dunster designed and installed all the main plant as well as local heat interfaces together with heat meters, pumps, wiring and controls.



Benefits

As part of a major renovation of the mansion house requiring planning and listed building consent, the installation of the biomass system has enabled the owner to meet building regulations without the installation of double glazing.

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