

CASE STUDY: BIOMASS BOILER INSTALLATION



ETA 205kW Chip Boiler Installed at Gloucestershire Estate

The installation of a 205kW biomass-fuelled boiler system and wood chip hopper for a large country estate in Gloucestershire.

Faced with ever-increasing bills for heating the house and estate properties with traditional oil boilers, the owner of the estate needed to find a way of lowering their energy costs, whilst ensuring that the environment could also benefit by a reduction in the site’s carbon emissions.

Recognising the benefits that biomass heating offers, coupled with the availability of the Government’s Renewable Heat Incentive (RHI) - which pays a site’s owner for the heat produced by eligible renewable technologies (such as biomass wood-chip fuel) over a 20-year period – the owner decided to replace the oil heating system with a fully-automated biomass boiler.

Having engaged Edge Renewables of Shropshire to design, install and commission the biomass boiler-complete

with fuel-handling and control systems, the installation was completed and commissioned in January 2016

The wood chip is transferred into the biomass boiler via a chip shifter, enabling fuel to be aguered into the store without the need of a delivery hatch.



Above: The wood chip hopper and chip shifter before landscaping

Headline Figures:

- Total capacity of 205kW
- 20 year estimated savings of £500,000.
- Payback within 6 - 7 years.
- Annual RHI Income of £17,000.
- Annual wood-fuel costs of £14,500.

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System Information

The system's total installed capacity of 205kW is achieved with one ETA Hack high-efficiency biomass boiler with low emission levels. The boiler provides heat for the site's five domestic dwellings and greenhouse and having automatic ignition, self-activated cleaning and large ash containers, it has been integrated into the automated control system to provide the client with an easy-to-use heat source.

In order to level out the peaks in the site's heat demands, Edge Renewables has incorporated two insulated heat accumulator tanks within the biomass room. This allows for the automated sequence controls to store and release heat in the most economical way – quickly responding to the site's demands.

There are two 2,500 litre storage tanks used on the site.

The heat produced is piped to each of the locations on the site by a highly-efficient buried pre-insulated pipe network.



The boiler and burner which connects the fuel store - pre commissioning.

Fuel

The new system utilises wood chip, that conforms to the EN 14961-4 specification with a moisture content of between 25-30% when delivered to site.

Edge Renewables has its own biomass fuel production facility which processes timber sourced from sustainably-managed forests within the local area to help minimise transportation.



Above and right: District pipe installed within a trench and a fan heater fitted within the greenhouse.

The Renewable Heat Incentive (RHI)

Following the commissioning of the project in January 2016, the installation was approved for the UK Government's non-domestic Renewable Heat Incentive (RHI) scheme.

This scheme was designed to encourage the uptake of renewable heat technologies such as biomass boilers and pays the owner of a qualifying installation to generate renewable heat for a period of 20 years.

A Heat meter was installed at the site to record the usage of the system and provide accurate readings to enable the RHI payments to be successfully claimed.

This will pay back the cost of the biomass boiler installation, in around seven years – thereby making a sound financial investment which will provide a comfortable return on the client's capital expenditure over the 20-year period.

Carbon Savings

As the system uses a sustainable wood fuel, which has absorbed carbon dioxide whilst it was growing, using it in a highly-efficient biomass boiler results in large savings in carbon emissions – when comparing it to the traditional alternatives using fossil fuels such as oil, LPG and natural gas.



About Edge Renewables (Shropshire)

Formed in 2011 in Much Wenlock, Shropshire, the company specialises in the design and installation of renewable energy technologies for homes, farms and businesses - such as biomass boilers and solar PV systems. In addition to this, the company also produces wood chip biomass fuel - a 'green', renewable fuel that is helping reduce the UK's dependence on fossil fuels.

Find out more

To find out more, please call 0845 603 3833, email sales@edgerenewables.com or visit the website www.edgerenewables.com

