

RENEWABLES FACT SHEET BIOMASS – WOOD CHIP

What is Biomass?

Biomass may include any fuel derived from organic matter, such as wood, oil crops, and agricultural & animal residues. Biomass can also be termed as biofuel, biodiesel, and biogas, and can be used for heat production, electricity generation and fuelling vehicles using a wide variety of conversion technologies. Biomass is renewable only when dedicated crops or forests are used or where replanting occurs. The carbon absorbed during growth is considered to be equal to the emissions during combustion.

What are Biomass Woodchips?

Biomass chips are produced from chipping wood. The wood may include short rotation coppice, thinings from managed woodland or other forestry material. The quality of the chip will vary significantly depending on the quality of the original wood/crop etc. and drying techniques.



Pellet or Chip?

Manufacturing wood chips requires comparatively little specialist equipment and is therefore perfect for 'on site' production and consumption. For example joinery companies are saving on their heating bills and avoiding the landfill tax by making wood chips of their off-cuts on-site and burning them in wood chip boilers to provide heating for their factories. Wood chips are cheaper than pellets per unit of energy delivered, however they are not always suitable for domestic or intensive heating uses since they require considerably more storage space and their energy content is less predictable. Chips are well suited to larger scale installations and also district heating systems.

How does it work?

Wood chip replaces oil or gas as a fuel and the boiler is linked to a chip store that automatically feeds the required volume of chip into the boiler as is necessary. The ash created should be small provided the chip is of high enough quality. **Stoker burner** boilers require dry chips of a uniform size. The size of the fire is small and an increase in fuel delivery results in an rapid increase in heat output. Stoker burners can respond more quickly to fluctuations in heat demands. In **underfeed stoker** boilers, the fuel is augured in to the base of the boiler and spreads out. These boilers are not so good at drying the fuel and so are suited more to burning dry wood chip e.g. from joinery factories.



Where will it work?

Chip boilers have universal applications. The boilers tend to be larger than pellet boilers and are best suited to external siting along with the necessary store. Chip boilers currently provide heat in a wide range of situations including schools, hospitals, commercial buildings and also district heating systems.

Heat Generation

There is a vast array of domestic and commercial chip boilers available with outputs ranging from just a few kW to 1000kW.

Regulations

The installation of Chip Boilers will have to comply with Building Regulations, and be installed by an approved installer. Planning permission is not normally required for domestic installations, although Listed Building Consent and or Conservation Area Consent will be required if applicable. The location and height of the flue may mean that planning consent has to be obtained from your local authority. If you live in a smokeless fuel zone then wood can only be burnt in certain exempted appliances.

Income/Savings

There are significant savings to be obtained in terms of CO² emissions - up to 7.4 tonnes per year when a wood boiler replaces an oil fired system (*Energy Savings Trust*). Fuel cost savings may not so substantial relative to gas on a kW for kW basis, but significant savings can be achieved if electricity or oil are the only meaningful alternatives.



Wood costs often depend on the distance from your home to a wood supplier and whether you can buy and store wood in large quantities. If you have your own supply of wood fuel then this can significantly reduce your costs. There are chip suppliers in Lincolnshire and Nottinghamshire which provide nationwide supplies.

Renewable Heat Incentive

The scheme, hoped to be introduced on 1st April 2011 provides for payments not dissimilar to FITs (Feed-in Tariffs) for electricity. The scheme will create a significant shift in the cost/benefit of smaller scale schemes with additional income now being generated from green power generation. Examples of proposed tariffs are shown below but since the change in government and budget pressures, these must be expected to change. For the smaller and medium installations (up to 500kW) it is proposed that the tariff will be paid on the deemed amount of heat that is used rather than using metering. For more information see the RHI Fact Sheet.

Table of RHI tariff Technology	Scale	Proposed tariff (p/kWh)	Years
Solid Biomass	≤45kW	9	15
Solid Biomass	45- 500kW	6.5	15
Solid Biomass	>500kW	1.6-2.5	15

Capital Costs

Boiler installation costs vary according to scale. A 25kW boiler including installation, buffer tanks etc. may cost around £19,000. However with the lower fuel cost compared to oil it is possible to achieve a 7 year pay back depending on grant streams etc. A 150kW district heating installation may cost in the order of £150,000 – £200,000.

Grants

Larger units in rural locations may be eligible for grant under the RDPE.



Scoping **Feasibility** **Project Management** **Planning**
Environmental Compliance **Design** **Funding** **Delivery**

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