

Fact Sheet 6: Biomass Boilers



Small scale biomass stove that runs on wood pellets

What are they?

Biomass boilers are high tech wood burning stoves that can replace your conventional boiler to supply heating and hot water.

What do they do?

'Biomass' means matter produced by a biological process and in boilers usually refers to wood. Biomass boilers heat water by burning wood or wood products. A traditional wood-burning stove is a simple form of biomass boiler.

More sophisticated models now used for hot water heating systems have sensors that allow them to control the combustion, so they only provide heat when it's needed.

Some models are almost fully automated and require no day to day operation: they will light themselves when the heat is required, supply and burn wood to heat water, and turn themselves off again. Others require minimal manual refuelling.

How do they work?

Domestic or small commercial biomass boilers typically burn log wood, woodchip or wood 'pellets'. Pellets are smaller than woodchip, and are made of compressed sawdust. In automated models, the fuel is stored close to the boiler, and the boiler transports it to the combustion chamber mechanically, as it's needed.

The boiler controls the amount of air in the combustion chamber to burn the wood as efficiently as possible, leaving very little ash. In non-automated models the supply of pellets or logs is topped up manually (usually around once or twice a day depending on heating demand). The boilers are so efficient that only very small quantities of ash are produced, which does not usually require daily removal. Many installations will be eligible for the Renewable Heat Incentive (RHI).

Where do they go?

Biomass boilers are installed indoors – either in the home as a wood burning stove or kitchen stove, but usually in a shed, garage or outhouse near where the fuel is stored. A typical domestic biomass boiler itself can be quite small, the size of a domestic washing machine. However, the fuel store can be bigger depending on how much fuel is needed and how often supplies are purchased.

What issues need to be considered?

Conventional fossil fuel boilers can turn on and off very quickly, and can work efficiently at less than maximum power. A biomass boiler takes a couple of minutes to start up, and works most efficiently when it's at full power. For this reason they should not be connected directly to the hot water taps. They should be connected to an insulated water tank. This tank acts like a battery for heat. Heat can be taken from this tank as and when needed and when the tank gets cool the biomass boiler automatically turns on to top it up with heat.

Like other devices that burn wood, a biomass boiler requires a flue or chimney. Existing chimneys can sometimes be used, depending on their quality. Typically, a new chimney or flue is added. Because the biomass boiler burns the wood efficiently, there is almost no smoke.

The quality of the fuel is critical to the efficient running of the boiler. Fresh wood is too wet; wood and wood chip should be well seasoned and only contain about 30% water. The quality of logs and woodchip can vary. Be sure to find a high quality supplier. Wood pellets tend to have a higher quality, but cost more.

A biomass boiler can either burn woodchip or pellets. Domestic size biomass boilers tend to burn logs or pellets, larger sizes will burn logs, pellets or woodchip.

What are the planning requirements?

Most householders can carry out small extensions or additions to their homes without the need for planning permission. This is known as '**permitted development**'.

Planning permission would not be required for any internal components of the system, and fitting an external flue onto a house or block of flats will normally be permitted development, providing the conditions outlined below are met:

- Flues are less than 1m above the highest part of the roof (excluding any existing chimneys).

- In a conservation area or World Heritage Site the flue should not be fitted on a wall or roof slope that fronts a highway.

If the building is listed or in a conservation area, it is always advisable to check with your local planning authority before a flue is fitted as other consents may be required.

Fuel storage also needs to be considered and additional space may be required to store the biomass fuel. Whilst buildings such as garden sheds are often covered by permitted development rights, it is also advisable to check if planning permission is required before constructing a new external fuel store.

Please note: if you wish to install a new heating appliance or flue, Building Regulations will also apply.

More info

A 'one stop shop' to provide information to anyone in the UK with an interest in biomass derived solid, liquid and gaseous fuels and associated conversion technologies:

www.biomassenergycentre.org.uk

The companion guide to planning policy statement 22 provides more information on the planning and development of renewable energy schemes across England:

<http://www.communities.gov.uk/publications/planningandbuilding/planningrenewable>

Please Note: National planning guidance is currently under review and the companion guide to planning policy statement 22 is referred to for information only.