

BIOMASS BOILERS



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WHY?

Biomass is the burning of natural materials. In the context of sustainability, this means biomass boilers which burn wood pellets or chips to power central heating or hot water boilers.

Biomass is a low carbon fuel source. Whilst not zero carbon, it has a much lower carbon footprint than fossil fuels, provided the wood used is either replaced, is a waste product from other industries (such as the tops of trees which are not suitable for furniture production) or is readily available locally from the routine management of woodlands. However, as wood is burned, the carbon captured whilst the tree was growing is released back into the atmosphere, so it is not zero carbon generation like solar, wind or hydro power.

HOW?

There are a number of issues to consider before seeking further advice about biomass boilers; space, capital requirement, regulatory environment and source of fuel.

SPACE

Significant space is required for both the boiler and a fuel store:

- A biomass boiler is larger than a conventional gas boiler; an old boiler house may be suitable.
- The fuel (wood pellets or chips) needs to be stored in a location accessible for regular bulky delivery, whilst also allowing a continuous flow to the boiler, usually via an auger.
- Take care to store wood pellets safely as they can emit carbon monoxide in the store.

CAPITAL REQUIREMENT

The capital investment in a biomass boiler will be more than the equivalent cost of a replacement gas boiler. Grants can sometimes be found to assist with this.



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MAINTENANCE

Although they are extremely efficient, biomass boilers usually need regular maintenance to ensure the pipes and auger function efficiently and don't get clogged up.

REGULATIONS

- You will be subject to normal building regulations. You may need planning permission if there is a change to the outside of your building (for example, due to a new flue, or storage facility); if you are a Church of England, you will need a faculty.
- Most biomass boilers are not suitable for smokeless zones.
- Do talk to your insurers too, as having a large store of wood on site may affect the premium.

SOURCE OF FUEL

You will need to ensure that there will be reliable access to good quality wood chips or wood pellets. This is harder in urban areas than rural areas.

The message from churches who have successfully installed biomass boilers is that this is about rethinking the heating system rather than simply replacing a boiler. The significant challenges make biomass boilers unrealistic for many churches: one of our silver Eco Churches installed a biomass boiler to support a new underfloor heating system but have since taken it out, due to the challenges of maintenance for an elderly congregation (see case study).

For some with access to a local sustainable source of wood, space for both a large boiler and storage of the fuel, and in a setting which needs continuous warmth (such as residential buildings or historic churches which benefit from a low level of background heating), generating energy from biomass can be a really helpful asset.

For a little more explanation about biomass, see these websites: <https://www.london.anglican.org/kb/biomass-heating/>
<https://historicengland.org.uk/advice/planning/infrastructure/renewable-energy/biomass-energy/>



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LONGER READS & OTHER RESOURCES

Biomass is not considered a green energy source by all. Read the discussion here: <https://physicsworld.com/a/biomass-energy-green-or-dirty/>

<https://energysavingtrust.org.uk/what-role-does-biomass-have-play-our-energy-supply/>

If you do decide to use biomass, be sure to use certified products and suppliers: <https://mcscertified.com/>

Some more information about how biomass boilers work: <https://www.renewableenergyhub.co.uk/main/biomass-boiler-information/>

CASE STUDIES

Hilfield Friary in Dorset are delighted with their biomass boiler: <https://www.bioheat.co.uk/wp-content/uploads/2016/12/Hilfield-Friary-v4.pdf>

St Leonard's, Yarpole was an early pioneer in biomass but found it didn't work for them and have since changed their heating source: <https://www.hhct.co.uk/the-most-vibrant-rural-church-in-herefordshire/>

STRATEGIC DEVELOPMENT GOALS

Taking action on this topic will contribute to these UN Strategic Development Goals:

