

DOUGLAS Community Ecoheat



What is Biomass?

Biomass is biological material derived from living, or recently living organisms. In the context of biomass for energy this is often used to mean plant based material, but biomass can equally apply to both animal and vegetable derived material.

Why Use Biomass?

Biomass is a renewable, low carbon fuel that is widely available throughout the UK. Its production and use also brings additional environmental and social benefits. Correctly managed, biomass is a sustainable fuel that can deliver a significant reduction in net carbon emissions when compared with fossil fuels.

Why did we choose a biomass fuel system?

- High energy content.
- Virtually carbon neutral.
- Cheaper - a lot cheaper! Significant savings on most fossil fuels.
- Sustainable. Local supplies are available.
- New boilers are up to 94% efficient.
- Biomass ash is good for the garden, don't waste it.
- Helps our rural economy, providing local business opportunities and rural jobs.
- Easily sourced locally across the UK, making environmental impact of transport low.
- Woodland, forestry and agriculture provide leisure and recreation opportunities.
- Huge reduction in the atmospheric pollutants which contribute to acid rain.
- Reduced landfill requirement and therefore reduced landfill gases, such as methane.



The Story

The St Bride's Centre has undergone a £1.2 million redevelopment and it seemed sensible not to replace our ancient oil boilers with a similar system. This was the time to look at alternatives and really create a sustainable building for the future. The idea then grew and plans were made to create a biomass community heating system that not only heats the centre but the bowling green and church as well. A trading subsidiary was formed and this group sells the heat to the 3 users for a not-for-profit basis therefore reducing our running costs and reducing our carbon footprint.

Funding was secured from Community Energy Scotland and South Lanarkshire Council. Archial and Aecom were bought on board for their expertise and Treco were our supplier and installers of the system

The System

Our system is pretty large due to the fact that it can heat 3 buildings. There are two fuel stores at either end that can hold 31 tonnes of wood pellets or 12 tonnes of chips in each. We are currently using pellets and these are delivered by a blown delivery system into the stores. The pellets are delivered to the boilers by an auger system.

There is a 5000 litre buffer tank that supplies the hot water to the heating systems ensuring that there is always a supply of heat.

There are two Guntamatic boilers, one 75kW and the other 100kW, the wood pellets are augered into a chamber where an electric probe ignites the material. A microprocessor then monitors the combustion via thermostats in the flue gases as a result adjustments are made automatically to the fuel supply and the fan speed. Hot flue gases are then passed through a heat exchanger, so that heat is transferred from the combustion chamber to the water.

There are two boilers so that peak demands can be met and the lead boiler changes over to prolong the life of the system.

Each of the 3 buildings have a heat exchanger that transfers heat from the buffer to the local central heating system.



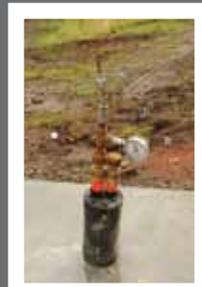
Concrete base and exposed piping



Delivery of 5000 ltr buffer tank



Attaching the blown delivery pipe for delivery of wood pellets



Pipework from underground trenching coming up through base of Biomass shed

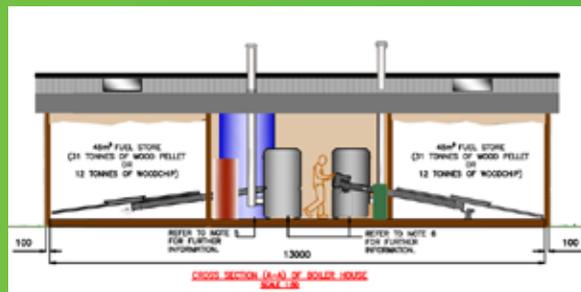
Carbon Neutral Cycle



A natural balance can be achieved when using biomass as a heat source. The amount of carbon released into the atmosphere when biomass is burned equals the amounts absorbed from the atmosphere when the biomass grows.

Measuring our Heat

As we are selling our heat to 3 different buildings, there are 3 separate flow meters and 3 digital meters that measure the heat produced for each building, so that they can all be billed accurately for the amount of heat they are using.



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