

## Woodfuel

Woodfuel has been around as long as humans have known about fire. It is also the fuel of the 21st Century.

There are a number of excellent reasons why wood is making a come-back as a fuel. The efficiency of modern woodfired boilers and heating plant is high - modern boilers can be 95% efficient! The net carbon emissions from burning wood are very low if trees are planted to replace those felled to provide fuel. The carbon released during burning is balanced by the carbon absorbed by the growing trees.

Woodfuel can be sourced from woodland and timber resources of all kinds:

- Ancient and semi-natural woodlands
- Coniferous plantation woodlands
- Neglected or active coppice woodlands
- Short rotation coppice planting
- Farm woodlands and hedgerow cuttings
- Waste wood from timber processing

Woodfuel can be bought as logs or pellets; specific types of boilers and stoves are produced to burn pellets. More information is available at the website of the [National Energy Foundation](#)



*Pellet burning stove and pellets*



*Log burning stove*

## Heat generation

**Opportunities are increasing for households to produce all or some of their own heat. This leaflet provides an introduction to some of the options.**



*Solar panel on the roof of the granary at Howsham*

**Solar water heating systems** use solar panels, called collectors, fitted to your roof. These collect heat from the sun and use it to warm water which is stored in a hot water cylinder.

There are two types of solar water heating panels, they are evacuated tubes and flat plate collectors. Flat plate collectors can be fixed on the roof tiles or integrated into the roof.

A boiler or immersion heater can be used as a back up, to heat the water further to reach the temperature set by the cylinder's thermostat, when the solar water heating system does not reach that temperature. (The cylinder thermostat should be set at 60° C.)

Solar systems work all year round, though you'll need to heat the water further with a boiler or immersion heater during the winter months.

## Groundsource heat

Groundsource heatpumps make use of renewable energy stored in the ground; they are one of the most energy efficient ways of heating buildings. They are suited to a wide variety of building types and are particularly appropriate for low environmental impact projects.

In the Howardian Hills AONB they have been installed by Castle Howard and Gilling East Village Hall.

They do not require hot rocks and can be installed in most of the UK using a borehole or shallow trenches or, less commonly but as in the case of Castle Howard, by extracting heat from a pond or lake. The number of heat collecting coils is determined by the size of the property to be served by the pump.

The website of the Groundsource Heatpump Association ([www.gshp.org.uk](http://www.gshp.org.uk)) provides introductory and more detailed information about these systems.



***Ground source heat being installed at Castle Howard***

Image supplied by: Castle Howard

## Airsource heat

An airsource heat pump extracts heat from the outside air in the same way that a fridge extracts heat from its inside. It can extract heat from the air even when the outside temperature is as low as minus 15° C. There are two main types of system: air-to-air systems and air-to-water systems.

Airsource heat pumps are more efficient at powering underfloor or warm air systems than radiator-based systems. They produce less heat than traditional boilers so the building needs to be well insulated and draught-proof.

Welburn Village Hall have installed an air source heating system.



***Heat collecting unit at Welburn Village Hall***



***Welburn Village Hall***