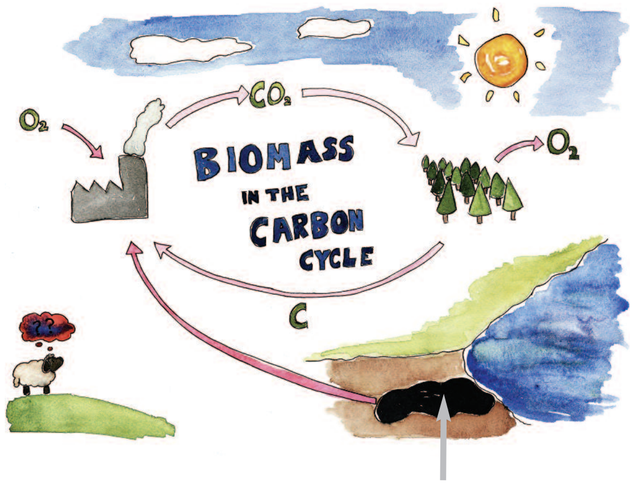
River Dart Country Park

Wood Fuel Powered District Heating Scheme

Why a Wood Fuel Biomass Boiler?

Burning the energy in fossil fuels releases carbon dioxide into the atmosphere that has been buried underground for millions of years. This carbon dioxide has been out of the carbon cycle so increases the concentration of CO_2 in the atmosphere. Renewable energy technologies are now being encouraged because they reduce our carbon footprint and slow down global warming.

Efficiently using the energy in wood fuel is a sustainable alternative to fossil fuels for heat and hot water because it is abundant and almost carbon neutral. This means that the carbon dioxide released when burned is the same amount as it absorbed during its life when growing through photosynthesis.



Carbon from fossil fuels like oil and gas has been buried underground for millions of years so is not part of the current carbon cycle and adds a lot more carbon dioxide to the atmosphere than can be absorbed through photosynthesis. Burning too much fossil fuel has been a cause of man made global warming.

How the System Works

The wood chip boiler works by automatically feeding fuel into the boiler furnace from a fuel store. This is done by an auger screw feed.

The wood chip fuel burns in the furnace at around 1000°C where sensors and valves control the flow of oxygen to ensure a clean and efficient combustion. The hot gases heat water circulating in a heat exchanger which then goes to a large hot water buffer tank, which acts as an energy store, before passing through insulated pipes known as heat mains to the hot water tanks and radiators in the various buildings.

Previously the Park had 11 oil and gas boilers in 7 buildings, but now just one wood chip boiler is providing all the heat and hot water through 500 metres of underground pipes. So the shower you had this morning was heated from the wood chip boiler!

River Dart Country Park District Heating Scheme

Legend
1 – Plant Room
2 – Meadow Shower Block
3 – Woodland Shower Block
4 – Coach House
5 – Bungalow 1
6 – Bungalow 2
7 – Bar
8 – Holne Park House

Heat Main

Environmental and Financial Benefits

- By using an almost carbon neutral fuel source we are saving over 200 tonnes of CO_2 every year
- The local supply of wood fuel is good for local economies
- Actively coppicing and managing woodlands is good for biodiversity and ensures that we never run out of wood fuel as a valuable natural resource
- The price of wood fuel is stable compared with increasing prices of dwindling fossil fuels
- Capital cost – £175,000 with estimated savings of over £20,000 each year compared with oil and gas
- No risk of environmental pollution from leaking oil tanks

Points of Interest

- The heat mains lose only 0.1°C per 100m
- Around 300 tonnes of wood fuel are used each year, which creates only 4 wheelbarrows of ash per year!
- This building is made from timber grown on the estate

System designed and installed by Fair Energy CIC

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