

## BIOMASS BOILERS

Biomass boilers are a renewable energy technology that use organic materials such as wood pellets, chips, or logs to generate heat or hot water. They can be used for residential, commercial, or industrial applications

Whilst biomass boilers are classed as a renewable source of energy, timber is not an unlimited fuel source, and they are not free from carbon emissions contrary to popular belief. The source of fuel plays a crucial role in how sustainable a biomass boiler can be.



### KEY BENEFITS FOR BIOMASS BOILER:

- 1. Renewable Energy Source:** Biomass is a renewable energy source derived from organic materials such as wood pellets, agricultural waste. They can help reduce reliance on fossil fuels and contribute to a sustainable energy mix.
- 2. Cost Savings:** Biomass fuel is often more cost-effective compared to traditional fossil fuels like oil or gas. Switching to biomass can result in significant cost savings in fuel expenses, especially in areas with abundant local biomass resources.
- 3. Fuel Diversity:** Biomass boilers offer fuel diversity, allowing the use of various biomass feedstocks (A feedstock in a biomass boiler is the material that is burned to create heat). This flexibility reduces dependency on a single fuel source and provides opportunities for utilizing locally available biomass materials.

4. **Energy Independence:** By using local biomass as a fuel source, businesses can achieve greater energy independence. They are less reliant on fluctuating fossil fuel prices and geopolitical factors that impact fuel supply.
5. **Waste Reduction:** Biomass boilers can utilize waste materials such as forestry residues, sawdust, or agricultural by products. By converting these waste streams into valuable energy, biomass boilers contribute to waste reduction and sustainable resource management.
6. **Renewable Heat Incentives:** In many countries, including the UK, there are government incentives and schemes that offer financial support for installing and using biomass boilers. These incentives can help offset the initial investment costs and incentivize the adoption of renewable heating systems.
7. **Improved Energy Efficiency:** Biomass boilers are designed to be highly efficient, converting a larger proportion of the fuel's energy content into heat. This can lead to improved energy efficiency and reduced energy waste compared to older or less efficient heating systems.

## EXAMPLE CALCULATION USING ESTIMATES:

Installing a biomass boiler provides notable advantages in terms of carbon savings and cost reduction. With an estimated annual energy consumption of 40,000 kWh and an 80% efficiency rate for the biomass boiler, the system can save approximately 34,000 kWh of energy per year. This translates to a carbon emissions reduction of approximately 6.88 tonnes. Furthermore, the cost savings are significant, amounting to around £1,700 per year. Considering the initial investment of £20,000, the payback period for the biomass boiler is approximately 11.76 years

	Cost Savings (£/year)	kWh Savings	CO2e savings (tCO2e/year)	Capital Cost (£) (Including labour and installation)	Payback Period (years)
<b>Biomass Boiler</b>	£1,700	34,000	6.88	£20,000	11.76

## KEY CONSIDERATIONS FOR BIOMASS BOILER INSTALLATION:

1. **Fuel Supply:** Ensure a reliable and sustainable local supply of biomass fuel.
2. **Boiler Sizing:** Properly size the biomass boiler based on heat demand for optimal performance.
3. **Fuel Storage:** Determine the required space for biomass fuel storage.
4. **Emissions and Compliance:** Businesses will need to comply with emission standards and install appropriate controls.

- 5. Maintenance and Operation:** They need to have regular maintenance and cleaning of the boiler.
- 6. Integration with Existing Systems:** They might not always be suitable for buildings and a site will need to assess the integration with current heating systems.
- 7. Efficiency and Performance:** Consider efficiency ratings and performance indicators.
- 8. Financial Analysis:** Economic viability, savings, and payback period will need to be assessed.
- 9. Permits and Regulations:** A business will need to comply with local building codes and permits.

It is important to consult with a qualified installer to discuss your specific needs and to get an estimate for the cost of installation.