

## Hever Castle



- 🏠 995kW HERZ BioFire boiler
- 🏠 Two 20,000 litre buffer tanks
- 🏠 Wood chip biomass
- 🏠 Fuel stored in purpose-built bulk storage building, containing an auger delivery system to the adjacent plant room

### Douch Biomass Ltd

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Twin 20,000litre buffer tanks



Storage building housing the wood chip, sourced locally



995kW HERZ BioFire boiler

## Project background

A 650kW Binder boiler biomass system was initially installed at Hever Castle in 2009. In 2013, Hever Castle commissioned an update of the system by extending the heat main to further properties on the Estate, and installing an RHI eligible 995kW Herz BioFire boiler to meet the increased heat load.

Hever Castle is one of Kent's foremost visitor attractions with multiple buildings, both residential and commercial, on site. The Estate includes a Golf Club and Pavilion restaurant in addition to the Castle, which Douch Biomass also subsequently installed separate biomass systems for. With rising fossil fuel prices, the cost of heating large, historic buildings such as Hever Castle is a considerable challenge and a financial burden.

## Douch Biomass installation

The Castle was previously being heated using oil, at great expense. Douch Biomass was employed to design, supply and install a turnkey biomass heating package. Following a feasibility study and consultation with the client, a full project design was drawn up. A 995kW Herz BioFire boiler was installed, suitable to meet the Estate's peak heat requirement of over 1000kW. Twin 20,000 litre buffer tanks enable the peak demand to be met fully while also preventing excessive boiler cycling during periods of low demand.

The BioFire boiler automatically cleans the combustion chamber and pipe heat exchanger, meaning less maintenance is required. It also has a water cooled combustion chamber, rather than fireclay. This creates a low thermal mass, making heat more rapidly available to the buffer vessels. Heat exchangers were fitted in each property and connected up to the new, more efficient heating system via the heat main. The previous oil-fired boiler was retained and used as a back-up boiler, to cover periods of scheduled maintenance, any gaps in fuel supply and to ensure the heat supply is not interrupted in the event of a problem with the biomass boiler whilst repairs take place.

A large, three-sided fuel storage barn was also constructed, complete with chip agitator and an auger wood chip delivery system, leading to the boiler in the neighbouring plant room. The barn is filled with wood chip, and moved by digger across to the auger pit at one end of the building as required. The open side of the storage building allows managed wood from the Estate and neighbouring suppliers to be chipped adjacent to, and directly into the building, maximising the efficiency of the fuel handling process.

## Result

Now with a fully operational, RHI compliant, biomass system Hever Castle is independent of seasonal heating oil price hikes, peak oil uncertainties and a substantial drain on their finances.

The system requires around 496 tonnes of chip annually. All of the wood used to fire the boiler is sourced from trees grown on, or close to the estate, ensuring Hever Castle has the lowest possible carbon footprint.

The Herz BioFire system will provide a payback of over £1,350,000 and a saving of 2159 tonnes of Co<sub>2</sub> over the lifetime of the RHI.

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