



# Wood chip boiler

## Drimsynie House Hotel, Lochgoilhead, Argyll

### Why use green heat?

The estate management team at the Drimsynie House Hotel in Lochgoilhead, identified energy usage as one of the potential cost savings for the business. Switching from oil fired boilers to renewable heat also reduces fossil fuel consumption, which is part of an overall environmental strategy for Drimsynie Estates. The existing heating system included several oil-fired boilers which were replaced with a centralised wood chip boiler. The rising cost of oil means that there is a financial benefit of switching to using wood fuel as the main source of heat for the Drimsynie House Hotel and the adjacent leisure complex and swimming pool. There is also a similar wood fuel boiler system installed at the Drimsynie Estates' Dolphin Leisure Centre in Hunter's Quay, near Dunoon.



### Key benefits of this wood fuel installation:

- Lower energy costs
- Reduction in carbon emissions
- Increased demand for wood chip in Argyll
- Underground fuel storage hopper

### System features

The wood chip boiler at Drimsynie House Hotel is an example of a larger scale boiler system which uses a fully underground fuel storage container. This enables any supplier of wood chip in the area to supply the fuel for the boiler, and is an example of best practice in the design of a larger scale wood fuel boiler. The cover over the top of the fuel storage hopper can be opened by the fuel supplier and a tipper vehicle is used to transfer wood chips into the underground storage unit. This is a quick and easy way of delivering wood fuel. The fuel is moved from the hopper into the boiler through a series of rotating augers. The heat from the boiler is stored in highly insulated accumulator tanks, and the hot water is supplied to different parts of the hotel through pipe work connections. Depending on the heat demand, the boiler can automatically modulate combustion using oxygen sensor based controls. This means the boiler can operate without the flame going out, keeping the combustion process going at a relatively low heat output, and then increasing heat output when needed. The boiler requires very little maintenance, as there are automated systems to re-ignite the boiler and also to clean the heat exchanger.

### KEY FACTS

- Wood chip boilers are an economical source of heat for larger heat users
- Systems are designed for automated operation
- A single wood chip boiler can heat many buildings

For more information  
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Images supplied by  
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## Lessons learned:

- In constructing the underground hoppers, the civil engineering costs were more than originally predicted due to factors such as local geology and the need for renewing road surfaces.
- The expertise of the biomass boiler installer is important in the design and project management of the installation.
- Wood chip is best transported in bulk using tipper vehicles for larger biomass boilers



## Facts and Figures

### BOILER

Max output: 320kW  
Manufacturer: Froling  
Fuel type: Wood chip  
Fuel specification: M30 (below 30% moisture content)  
P16 particle size (80% of particles 16mm or less)  
Installation date: June 2011  
System setup:  
Energy consumption: 810,500 kW-h (excludes pool)  
Wood fuel storage capacity: 100m<sup>3</sup>  
Fuel delivery interval: Once a week  
Supply contract: Separate contracts for fuel and maintenance  
Fuel supplier: The Chip Shop  
Source radius: 40 miles  
Annual wood chip use: 255 tonnes

### BUILDING INSTALLATION COSTS

Boiler system: £203,000  
Funding source: Scottish Biomass Heat Scheme with carbon trust interest free loan  
Funding support rate: 50% of eligible costs

### COST SAVINGS

CO<sub>2</sub> savings: 240 tonnes per year  
Wood fuel cost: 2.0p per kWh fuel cost (2010 prices)  
Annual savings: £33,000 (2010 prices)  
Payback period: 6 to 7 years

