



Heating with logs and woodchips on an upland estate

Drummuir Estate

Set high in the whisky country of Speyside, Drummuir Estate features a fine blend of landscapes, encompassing parklands, policy woods, upland forests and windswept moors.

With around a quarter of their land covered in trees, switching to woodfuel was a natural choice for the Gordon-Duffs, who own and manage the 4,000 hectare estate.

Their large, traditional, stone home has been converted from oil-fired heating to a central heating system fuelled by a log boiler.

In addition, a powerful woodchip system has been installed in Drummuir's farm steadings, which heats the estate office and three rented cottages, with capacity for more buildings to be added.

"Woodfuel is something I've developed a deep interest in over the years," explained Priscilla Gordon-Duff. "I have worked quite a lot with Forestry Commission Scotland, so had great opportunities to learn about using wood for heating.

"This, combined with personal concerns about both the usage and supply of oil prompted the decision to switch - and of course the fact that we have a great deal of wood here means it makes sense economically.

"Using wood as fuel contributes to the management of the estate. We use woodland thinnings and fallen trees and branches to make chips and firewood; this way we can be self-sufficient in fuel.

"We went ahead and began converting to woodfuel because we believe in it and wanted to do it."

Home heating with logs

In October 2009 the Gordon-Duffs had a 50 kilowatt Fröling log boiler installed to heat their seven-bedroomed house.

The boiler and two 1500 litre accumulator tanks were supplied and installed by Fort William-based firm Highland Wood Energy Limited.

Logs are hand fed in batches into the boiler. Each time the heating needs boosted, hot water is pumped from the accumulator tanks, and when the water temperature drops to a certain level, the boiler's firebox is filled right up, then the system fires into life. The number of times it requires to be fed is determined by the demand for hot water and the outside temperature.

The large volume of water in the accumulator tanks circulates around the 28 radiators in the house and provides all the domestic hot water. The tanks are highly insulated to ensure heat generated from the boiler is stored as long as possible. Hot water is pumped to the house through a heavily insulated pipe one metre underground.

"In summer we only need to fire the boiler up two or three times per week, whereas in winter it could need stoked two or three times per day," explained Priscilla. "We've

Find out more

This series of factsheets explores how households, businesses and communities are pioneering the use of woodfuel. They have been produced as part of the Cairngorms Woodfuel Action Plan and a partnership project run by the Cairngorms National Park Authority and the Clim-ATIC EU programme.

The Facts

Boiler	Fröling FHG Turbo 3000
Total cost	£25,000, including boiler, accumulator tank, insulated pipes, pumps, computerised controller
Heat capacity	Up to 50 kilowatts
Fuel	Logs
Hot water	2 x 1500 litre accumulator tanks
Number of radiators	27
Annual saving on fuel bills	£2,500

only really tested out in a very cold, hard winter so far and were filling it more than we thought we would be. Between October 2009 and June 2010 we used 15.5 tonnes of logs, but that was when the boiler wasn't being used properly due to our lack of understanding about the cleaning procedure.

"I'm not totally sure as yet how much fuel we will really need," she added. "However savings on energy bills are predicted to be substantial."

Priscilla stresses the importance of planning and preparation when installing a wood fired boiler, and paying close attention to all instructions and advice.

"It's vital to be clear about what needs to be done before the suppliers come to install the system," she said. "We already had a shed to house the log boiler in; what we didn't realise in time was that the concrete floor has to be totally flat. Adapting your shed or outbuilding to suit is obviously a lot easier to do before the work begins."

Logs for the boiler, and for two woodburning stoves inside the house, are stored and seasoned in buildings on the estate and in the shed alongside the boiler and tanks.

Performance so far...

The Gordon-Duffs had some teething troubles with their log-fired boiler, however now that these have been resolved they are pleased with its performance.

"One thing I think is really important is that people are properly trained in using their systems once they are installed - and that ongoing support is available," Priscilla said.

"It's very easy to watch a demonstration and to say: 'Oh yes, OK, that's fine,' then when the installer goes away you can't really remember what they said. Paying close attention at that stage and making sure you understand clearly how the system works is crucial.

"When we first started using it, the boiler was behaving like a baby - it seemed to be needing fed every 6 or 8 hours!

"We finally found out that the fact that it was a very cold winter was being compounded by the fact that we weren't using the system as efficiently as we should have been. When the engineer came to service the boiler I stood and watched what he was doing and we realised we hadn't been cleaning it out properly.

"When you have a baby a health visitor will come out and check how you're getting on and give you advice. I think the situation is very similar when you get an unfamiliar heating system like this. The owner needs to learn how to look after it and the boiler needs to be nurtured rather than battled with!

Contacts

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Forestry Commission Scotland
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www.usewoodfuel.co.uk

Energy Saving Trust
www.energysavingtrust.org.uk/scotland

Biomass Energy Centre
www.biomassenergycentre.org.uk

"Most importantly of all, the wood fuel must have a moisture content of less than 30%".

Funding

The £25,000 system was part-funded by a £4,000 home renewables grant from the Energy Savings Trust. This scheme has since been discontinued, but domestic log boilers are expected to qualify for payments under the new Renewable Heat Incentive scheme, due for introduction in 2011.

Woodchip heating at Drummuir

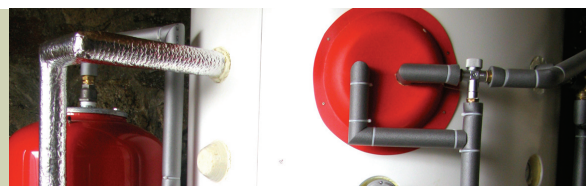
A wood-fired district heating system has been installed at the estate farm. A steading building houses two Fröling turbomatic boilers and two 1800 litre tanks. Wood chip is sourced from the 1,000 hectares of woodland on the estate and stored in a partitioned-off section of the building.

"This is a phased development - we're starting by heating the estate offices and a couple of cottages,

but have built in the capacity to expand the system to heat more properties as we renovate them and connect them up," explained Priscilla Gordon-Duff.

Funding

The £130,000 woodchip system was installed by Highland Wood Energy. It was partly paid for by a 47% grant from the Scottish Biomass Heat Scheme, which is funded by Forestry Commission Scotland, the European Regional Development Fund and the Scottish Government.



The Facts

Boilers	2 x 85 kilowatt Fröling TMC Turbomatic woodchip boilers
Total cost	£130,000
Heat capacity	Up to 170 kilowatts
Fuel	Woodchips
Hot water	2 x 1,800 litre accumulator tanks



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