



## Woodfuel Factsheet 2

# Keeping warm with wood chips Alvie and Dalraddy Estates, Kincaig

**J**amie and Cathryn Williamson from the popular Alvie and Dalraddy Estates in Badenoch have been at the forefront of the woodfuel business in the Cairngorms National Park.

From weddings and parties to conferences, camping and self-catering to traditional sporting breaks, the estates cater for a broad range of visitors seeking to enjoy the spectacular landscape and a host of activities.

The Williamsons are involved in both supply and use of wood chips for heating. Timber sourced from Alvie and other local woods is processed into wood chips which are dried to be used as fuel on the estate and in local schools and businesses.

Alvie House is an Edwardian-style shooting lodge dating back to the mid nineteenth century. In 2006 it became one of the first homes of its kind to feature a modern, renewable heating and hot water system when it was converted to wood chip. The crippling costs of heating the listed building with oil, and development of its own wood chip supply business made it a natural step for the estate to take.

Using wood instead of oil to heat this traditionally built lodge, which sleeps 44 people, has proved simple and effective as well as saving tens of thousands of pounds a year.

“Even when oil was much cheaper than it is now, it was costing us £20,000 a year to heat the place.

We were using 60,000 litres a year, which is a lot of oil!” said Cathryn. “We’re now using wood chips produced here on the estate.

“However I have to admit I was a little bit unsure about whether the wood chip system would actually work in an old house like ours. For some reason I had it in my head that it was going to be hugely labour intensive, with someone having to constantly be feeding these great big roaring flames!

“In reality it’s much less dramatic. There’s this thing called an auger that feeds in the chips automatically, so all that you need to do is get the hopper filled up - how often you have to do that depends on the time of year.”

In 2009 the estate installed a 70 kilowatt ETA woodchip system to heat the toilet block and showers at Dalraddy Holiday Park. A further woodchip heating system is being planned for Alvie Manse.

### Producing the chips

An increasing number of landowners in the Cairngorms National Park are managing woodlands to produce firewood.

## 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 (CNPA) and the Clim-ATIC EU programme.

## The Facts

<b>Boiler</b>	Veto 250 woodchip boiler
<b>Total cost</b>	£80,000 including building works
<b>Heat capacity</b>	Up to 250 kilowatts
<b>Fuel</b>	Wood chips dried to around 25% moisture content
<b>Storage</b>	30 cubic metres
<b>Hot water</b>	2 x 1,800 litres
<b>Number of radiators</b>	87
<b>Annual carbon saving</b>	200 tonnes
<b>Estimated annual saving</b>	£10,000 - £15,000

At Alvie, trees harvested during thinning of the estate woodlands are stacked and seasoned in the forest until they are dry enough to chip. Wood from the estate is mainly Scots pine plus a small proportion of Norway spruce, both of which make good quality wood chip fuel.

"Freshly cut wood contains as much as 60% water," Jamie explained. "We try to leave logs for around 18 months in the wood after cutting, then chip them in summer. For wood chip heating systems the moisture content generally needs to be down to below 30% - we aim for around 25%."

Once the cut trees are dry enough they are brought down from the forest, processed by a tractor driven wood chipper and blown into a large shed which can hold up to 2,000 cubic metres of chips.

"We aim to build up a buffer stock of this size so we can cope and keep supplies flowing locally in even the hardest of winters," Jamie added.

"The chipper produces 10 cubic metres of wood chips an hour and works in the summer months to build up stocks. We keep our deliveries very local, generally within a 15-mile radius, supplying local schools, a nursing home and offices."

### Heating and hot water at Alvie House

A Veto 250 kilowatt boiler is fed wood chips from an unobtrusive underground silo beside the house.

"Having the silo underground makes it easy to tip the chips in," Jamie said. "Once they are tipped from a tractor trailer into the silo, spring loaded scrapers on the floor move them to the auger, which feeds them into the boiler."

A simple airlock prevents fire spreading back from the boiler into the stored fuel, with further security provided by a heat sensitive valve which douses chips with water in case of problems.

The boiler burns the wood chips extremely efficiently, heating water which is then circulated through the heating systems in the house. After completing its circuit, the water is returned to the boiler and the process begins again.

### Performance

In summer the house uses a trailer load of around 13 cubic metres of wood chip a week, while in winter around two loads - 26 cubic metres - a week are needed for hot water and heating.

"Alvie House is a listed building and is single glazed. The options are really restricted when it comes to improving the insulation," Cathryn said.

"We spend between £10,000 and £12,000 a year on heating with the wood chip system. If we had continued to heat with oil, when prices were at their highest, it would have cost us around £30,000 so it's made a tremendous saving in terms of the running costs of the business.

The team running the household have been amazed at the efficiency of the system and the amount of hot water the system produces. "Even when we have a houseful of guests having baths and showers, the hot water keeps flowing," Cathryn said.

"We have these great, big old baths in the house, and there's nothing nicer for our visitors than a hot deep bath, particularly after a long day on the hill. Since we got the wood chip system in, the water has always been piping hot.

"I was also really surprised at how little ash is produced - an auger takes the ash out of the system and it falls into a traditional sized metal

## Contacts

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[www.usewoodfuel.co.uk](http://www.usewoodfuel.co.uk)

Highlands and Islands Enterprise  
01463 234171  
[www.hie.co.uk](http://www.hie.co.uk)

Scotland Rural Development Programme  
[www.scotland.gov.uk/Topics/farmingrural/SRDP](http://www.scotland.gov.uk/Topics/farmingrural/SRDP)

dustbin which only needs emptied once every couple of weeks."

"There's hot water on demand and always seems to be residual heat in the house, which is great. All in all we're very happy with it. The system is surprisingly easy to run and I can't think of any disadvantages at all!"

### Funding

The woodchip processing operation cost in the region of £250,000 to set up, with funding help from Forestry Commission Scotland's Farm Woodland Energy Grant Scheme. This scheme no longer exists but Forestry Commission Scotland can support businesses in applying for funding under the Scotland Rural Development Programme.

Grant support for the woodchip boiler system in Alvie House came from Forestry Commission Scotland, Highlands and Islands Enterprise and the European Union's Regional Development Fund (ERDF).



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