

Upper Nisbet Climate Change Focus Farm meeting



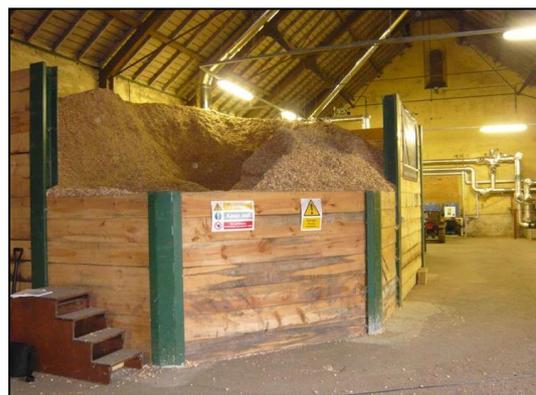
Discussion group meeting held at Floors Castle then at the Teviot Smokery and Watergardens on Thursday 16th February 2012 from 13.30 until 16.00

Meeting Theme – Opportunities for renewables; woodchip boilers

The theme for this meeting was to discuss the opportunities for renewable energy generation on the farm with a focus on woodchip boilers and support available under the Renewable Heat Incentive (RHI). The meeting was chaired by SAC's Moira Gallagher and held at Floors Castle by kind permission of Roxburghe Estate.

Woodchip boiler at Floors Castle.

Peter Darling, Forestry Manager with the Roxburghe Estate gave the group some background on the wood fuel heating system installed at Floors Castle. The Estate has its own woodland and an existing local sawmill business. The grounds incorporate Floors Castle, a plant nursery with garden centre and café, tenanted properties, a horse stud and the Home Farm buildings. The woodchip boiler, an Austrian Köb Pyrtec 720kW, replaces an oil fuelled system and is sited along with the fuel store in one of the farm buildings at Floors Castle. The site offers easy access for chip deliveries and is sited relatively close to the castle and nursery, reducing the cost in terms of piping required and distance the heated water has to travel. The boiler is not yet working to full capacity meaning there is scope to link output to another 20 cottages on the estate to provide additional heating and further lower the carbon footprint.



The Köb boiler uses an automated self feed auger and has a walking floor system to remove ash directly into a metal wheeled skip, so the process needs little supervision. The wheeled skip can take anywhere from a week to three months to fill, depending on level of heat demand. Ash from the boiler goes directly back onto forestry within the Estate. The system does need to be checked on a regular basis to make sure the hopper has enough chips in at any one time but it is reasonably low maintenance,

requiring only a brief daily check once up and running. Peter noted that if the system does need attention, it's usually the computer or electrical systems.

Without going into the workings of the boiler in detail, burning the chips heats water in pipes. Heated water is held in two 3000 litre insulated accumulator tanks, which act like heat batteries and then the heated water can be piped on demand 850m underground to the Castle or plant nursery as needed. This system has surprisingly little heat loss; the two thermometers on the exit and return hot water pipes in the building demonstrated this.

The woodchip system was installed in 2008, so doesn't qualify for payments under the Renewable Heat Incentive (RHI) (as equipment was installed before the July 2009 scheme qualifying date), however the scheme did receive a 40% biomass support scheme grant.

The two conventional oil fired boilers that were in constant use before the woodchip boiler was installed have been left in situ in case of an emergency, but haven't been needed since woodchip system was installed.

Fuelling the boiler

Low value, soft wood timber harvested from the Estate woodlands as thinnings or clear fell is the main source of fuel for the boiler. Peter noted that the Estate decided to purchase its own thinning machine at a cost around £30k second hand. This meant that the Estate could control when the work was carried out rather than relying on a contractor. If carrying out on a farm scale, farmers would be able to do a lot of the thinning and timber preparation themselves with smaller scale equipment.

Peter advised that larch and birch need a period of about a year to dry out. Siting the timber for drying is crucial; a windy site with the prevailing wind blowing through the woodpile is best, taking wood down to around 40% moisture content or below, which the Köb boiler can deal with. For smaller boilers, a lower moisture content of around 28-30% would be desirable.



The Estate spent £28k on a chipper specifically for producing the right size of chips for the boiler. Again on the farm scale, farmers would be able to hire in these machines and do most of chipping over a day; key here would be making sure wood has been dried sufficiently and that there was enough space for storage for the chipped wood. At a suitable site, a chipper could blow chips straight into a storage area.



When considering a woodchip system, Peter noted that it was key to consider delivery and storage of the chip once on site; how will the system will work for your farm? At Floors, the chip is tipped into storage bays and then the hopper loaded using a telehandler. The Castle and Garden Centre use around 450 tonnes of chip per year; this is in contrast to around 40/50 tonnes that would be needed to heat a decent sized farmhouse. Chip sells at about £100/tonne.

Peter listed some of the advantages of the system at Floors; most of which could also apply to a smaller farm system:

- Reduced fuel cost in terms of oil and reduced carbon footprint for the business
- Not subject to oil price fluctuations
- Home supply of own fuel plus fuel to sell
- Better woodland management as now more reason for thinning etc.
- Increased returns on timber
- Long term work for contractors

Introduction of the RHI has made these systems more feasible at the farm scale, especially for farms with established woodlands. However, the Castle is now warmer than it has ever been as the boiler is viewed as a 'cheap' source of heating. Due to this, the boiler is using more woodchip than anticipated.

Renewables discussion

Following the visit to Floors Castle and the Estate sawmill, the group moved to the Teviot Smokery and Water Gardens where SACs Jim Campbell went through the other various options for renewables on the farm and financial support available.

Over coffee, Jim discussed various options with the group including wind, micro hydro, solar PV and renewable heat.

Robert Neill updated the group on the position of Upper Nisbet regarding renewables options and noted that two anemometers to measure wind speed were going to be put up to assess the potential for wind turbines on site. With the proposed change to the feed in tariffs it's likely that payback time for the turbines at Upper Nisbet will increase by a year or so, but they still remain a feasible option if wind speeds are favourable.

Moira closed the meeting and thanked Jim, Robert and the group for their participation along with Peter Darling and Roxburghe Estate for kindly hosting the visit.



Do you farm and would you like to attend to future meetings?

The meetings provide sensible ideas for the farm business, from invited speakers and other farmers, to improve efficiency whilst reducing the loss of greenhouse gases. It's free to come along and you will be able to influence the topics, speakers and location of future meetings.

Contact SACs Moira Gallagher for details of the next Upper Nisbet event at moira.gallagher@sac.co.uk or telephone the SAC St Boswells office on 01835 823322.

If you want to keep up to speed with what's happening at Upper Nisbet but don't want to attend all the meetings, ask to be added to the Upper Nisbet email list; you will receive notification of future events and meeting notes.

Visit the website at www.farmingforabetterclimate.org or email climatechange@sac.co.uk