Department of Energy & Climate Change

Non-Domestic RHI
Case study – Fast facts

Technology type:	Firewood boiler
Equipment manufacturer:	Fröling
Equipment model:	S4 Turbo
Capacity:	15 kW
Installer:	Eco Engineering Ltd

Estate puts its trust in renewable heat

Firewood boiler helps National Trust keep Buscot and Coleshill Estate warm throughout the year

Scenario

The Buscot and Coleshill Estate in West Oxfordshire dates back to the Doomsday Book, a survey of the English countryside that was completed in 1086. Thankfully, its heating system is a bit more modern. The National Trust took over the 7500 acre countryside estate in 1956 and it is now home to 10 let farms, 800 acres of woodland, a working water mill and a 19th century model farm and village. During World War II, Coleshill House and Estate served as the headquarters and training ground of Churchill's secret "underground" army, the Auxiliers, or British Resistance, that was put in place should the Nazi's invade the UK.

The properties on the Estate, including the National Trust Estate Offices, a holiday flat, a village shop and a large let workshop, were all heated with aging gas boilers. Then in 2011, as part of its commitment to reducing carbon emissions and using renewable energy, the Trust decided to look into installing a renewable heating system. It researched its options and then chose to purchase and install a firewood boiler system, fuelled by wood from the estate's substantial woodlands.

Firewood boilers use logs as fuel and must be fed regularly. The heat generated from burning the wood is used to heat a large tank of hot water. The heat from the tank is then distributed throughout a property's radiators or under floor heating. When the temperature of the hot water in the tank drops below a certain temperature, the boiler fires itself up again.

"The National Trust's goal is to reduce its in-hand energy use by 20 per cent before 2020," says Robert Sharman, Head Ranger at the National Trust. "Taking out the gas boilers that were heating a large building and several outbuildings was a no brainer and an easy way to help reach our renewable energy targets. Installing a biomass boiler was the most sensible and cost effective option. We have an excess of wood on the Estate that is regularly harvested through our long term sustainable management of the woodlands. Instead of selling it, we can now use it right here at source."

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Setting up the new boiler

Installation of the new log boiler, manufactured by Fröling, started at the end of 2011 and took around five weeks to complete. Installer Eco Engineering Ltd was able to hook up the boiler to the properties' existing radiator system, saving the Trust the effort of putting in a new indoor heat delivery system. The boiler also provides the properties with hot water. Solar panels also feed into the system along with a modern back up gas boiler that can be set to go on during unstaffed periods when no one is around to top up the biomass boiler.

Robert and his colleagues feed the boiler with one to three wheelbarrows of logs a day in the winter. The boiler system is located in the Estate's original Engine House that used to power the Model Farm using a static steam engine. Even with the biomass boiler burning wood from the Estate, there is still a surplus of wood available.

"Our new heating system has really exceeded all our expectations," says Robert. "The building is just as comfortable as it was on the old gas boilers and we all feel good that we are able to do something to help the environment. That we are able to use wood from the estate and don't need to bring in logs from elsewhere is a big bonus."

Cost savings

Aside from being the most sustainable solution for the Trust, the firewood boiler was also the most cost effective. It cost around £90,000 to install the entire heating system, including the boiler, with an additional £25,000 spent on the engine shed structure and refurbishment. With the wood source being locally and free, running costs are minimal; savings of up to 80 per cent of previous heating costs have been made.

Thanks to the Government's non domestic Renewable Heat Incentive (RHI) scheme, the Trust is receiving index-linked payments of up to £6,000 per year which offset the cost of installation. Launched in 2011, the RHI is part of the Government's commitment to increasing the UK's renewable energy use. It provides long-term financial support for installing renewable heating instead of a fossil fuel system, with payments being made over 20 years to reflect the amount of energy used. The Trust is on track to receive more money by 2031 than it paid to install the new system.

"Installing the new boiler was never really an issue of money, rather of doing the right thing," says Robert. "The National Trust is using our system as a shop window of sorts. Many other estates and property owners in the area have come to look at our log boiler and have then gone on to install their own renewable heating system. We are extremely happy with the system and would recommend that others in a similar situation to ours consider a biomass boiler."

For more details on the non-domestic scheme and free information on how to apply visit: **www.ofgem.gov.uk**

- Or call **0845 200 2122** (RHI enquiry line open Monday to Thursday 9am-5pm and to 4.30pm on Fridays).

If you are interested in receiving RHI updates or providing DECC with RHI feedback, please email: **rhi@decc.gsi.gov.uk**