BLAKE ECOTEC
The Renewable Heat *Experts*
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Case Study:
Hornhill, Devon.

18th Century home brought up to date with *Multi-Solution Renewable Heating* from Blake Ecotec

Background

Situated just outside of Tiverton, Devon with glorious panoramic views of the gentle, rolling hills of the Exe valley, this 18th century, 6 bedroom property is 354m^2 and a former Coaching Inn. Travellers passing along the road to Tiverton have stayed at the site since the 1700s and it had continued as a Bed & Breakfast until very recently.

Heating at the house was provided by an expensive electric room heater system, coupled with log burners to create a very costly and time consuming heating solution.

The Requirement & Challenges

Mr. Douglas Morrison approached Blake Ecotec on the recommendation of a friend to replace the current system with a sophisticated, renewable alternative, which would be the house's first full heating installation in it's history.

Following a site survey to asses the requirements of the project we recommended that, with a building of this size and age, a biomass solution would be best suited and would reduce the carbon footprint, substantially improve the property's EPC rating and produce an annual government funded income by qualifying for the Domestic Renewable Heat Incentive (RHI) scheme.

Alongside the biomass heating we were also tasked to fit a solar thermal solution.

Key Objectives

- Provide heating and hot water to the 18th century property by integrating Renewable Heat technologies.
- Replace existing expensive and inefficient electic heating system with radiators.
- Design, integrate and install a fully automatic pellet fuel delivery system.

The Solution

- Froling P4 38kW Pellet Boiler, 1,000 litre Galu Tank.
- 7.2 tonne Pellet store, including Pellet Mole.
- Navitron Solar Thermal Tube System.
- Complete Radiator installation.
- Full Project Management including; design, installation, maintenance and RHI application.

Total Installation Cost

- £43,500.

Domestic RHI Payments

- £41,620 in government funded payments over the 7 year period.

Pay back period

- 4 years.

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Project Summary

A 38kW Froling P4 boiler with a 7.2 tonne pellet store, alongside a 30 tube Navitron solar thermal system was an accurately sized solution for the property's combined annual heating and hot water demand of 46,381 kWh.

The Froling boiler would take on the majority of this heat load (44,525 kWh) while the Navitron Solar Thermal system, simply used to heat hot water, would take on the remainder (1,856 kWh).

Fully Automatic, Multi-Solution Heating System

Our team designed the multi-solution system, including full hydraulic diagrams, before beginning work on the 3 week installation, including full plumbing work for 19 radiators and 3 heated towel rails, in November 2014.

The boiler solution, accompanying 200mm Nova twin walled chimney flue and 1,000 litre Galu tank were housed inside a stone stable, while the 30 evacuated solar tubes were fixed to the main house roof and fed into a 300 litre solar cylinder. The Solar Thermal element allows Mr. Morrison to turn off his boiler from May to September and let the system produce free hot water for him, creating a self sustaining solution.

The Froling P4 is fed pellets by a 2.5 metre high pellet store, capable of holding 7.2 tonnes of pellets, including a Pellet Mole suction system. The Pellet Mole automatically draws pellets from above and moves into the corner of the store to empty it as efficiently as possible.

The boiler is 94% efficient, fully weather compensated and internet connected, allowing for full remote diagnostics and system adjustments when required from the ease of a laptop of mobile device.

Weather compensation controls the ground and first floor as two separate heating zones. The temperature of the outside environment is measured and the temperature of the water pumped into the heating system is varied accordingly. The system reduces the amount of energy consumed as the boiler will fire less often as the water temperature will be lower level, creating an extremely efficient solution.

The installation was fully commissioned on December 12th 2014 and has been running excellently.

"Our Renewable Heat Solution has transformed our old house. A fantastic product, a great install and we are delighted with the end result."

Douglas Morrison

The Renewable Heat Incentive & Fuel Savings

- The completed project will recieve payments over a 7 year period through the Domestic RHI scheme.
- Payments of 12.2p per kWh on Biomass and 19.2p per kWh on Solar Thermal, a total of £41,620 in RHI payments (RPI adjusted 3%).
- The Froling boiler will burn approximately 12.5 tonnes of wood pellets per year, creating 46,381 kWh of heat for the property.
- The system delivers substantial fuel cost savings of approximately £43,150 across the 7 year scheme when comparing the fuel price of the existing electic system (15p per kWh) to wood pellets (5p per kWh).
- The 7.2 tonne capacity pellet store will also save on the cost of fuel due to the large volume being purchased.
- The RHI payments and saving on fuel will see the initial outlay paid off in 5-6 years and effectively double Mr. Morrison's investment in profit.

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