DARTMOOR HOLIDAYS

Old Sowtontown, Peter Tavy, PL19 9JR

SOLAR THERMAL & PV, WOOD BOILER, INSULATION, METHANE COLLECTION

Chris Boswell and his wife had ecological and economical concerns over the use of fossil fuel oil for heating and cooking. The imminence of 'peak oil' and the onset of global warming motivated them to adopt a low carbon alternative to fossil fuels. In order to reduce their oil consumption and their running costs, in November 2009 they decided to investigate the options for a biomass heating solution. RE4D visited the site to assess the options for renewable technologies. The woodchip system was too costly and instead they explored the option of a log boiler, although this involves more manual handling than a wood chip system.

Energy reduction and conservation

Insulation: To insulate the latest barn conversion Chris has used a 100mm thick hemp/lime mixture for the old stone walls. The roof has Tri-iso reflective blanket under the slates and 100mm Pavatex wood fibre batts between the rafters.

Heating and Hot water: The heating and hot water systems are managed through thermostats and other controls. A Timer switch has been installed, so the electric immersion heater in the hot water tank only comes on during daylight hours.

Energy saving behaviors:

- Domestic appliances are used when the sun shines!
- The Boswell family believe in dressing for the season and switching off.
- LED lighting has been installed throughout the new barn conversion.

Energy generation

Biomass:

Chris installed a Vigas 25kw log-fired boiler purchased from Dunster Woodfuels. He carried out the installation himself, but Dunster Wood Fuels were very helpful in answering technical questions as the installation progressed. They also provided a useful manual with good instructions, diagrams and plumbing arrangements. **Advice from**: Renewable energy for Devon (RE4D).

In winter the family cook on a Stanley range – it's a woodburning cooker/water heater. It circulates the flue gases right round the oven box - a much better design than the old Rayburn, which only heated the oven on one side.

Solar:

Solar thermal installation has been in place for 12 years

Solar PV was installed in December 2010 by New Generation Energy

Methane:

Chris is experimenting with methane generation from a septic tank and from food waste. The gas is used for cooking on a single burner

Costs and benefits

The entire installation- including preparing a suitable building, the boiler package, insulated flue pipe, underground insulated heatpipe, electrics, some inhouse plumbing alterations – cost around £11000, not including Chris' hours of labour.

Dartmoor Holidays needs around 6 tons of logs a year to heat Chris' home and a holiday let.

Chris estimates he requires £960 worth of logs to get through a calendar year.

The boiler is also saving the electricity formerly required to heat the hot water in two domestic hot water cylinders.

Estimated savings: £300 to £400 a year buying logs instead of kerosene.

Dartmoor Holidays received a grant of £1000 from the DNPA towards the capital cost.

Problems and solutions

- The installation, together with the boiler and the insulated underground pipe to the houses, involved some changes and upgrading to existing domestic plumbing systems, and some building works to make the boiler house.
- Chris soon realized that there was a skill to lighting the boiler so that it burnt efficiently as quickly as possible. He had some initial problems that caused complaints from neighbours about smoke as well as suffering himself from smoke in the boiler room when lighting up and refueling. The smoke problems drove him to purchase a flue fan to help the boiler draw in certain weather conditions.

Lessons learnt:

- Heating the home has become a very hands on procedure which looms quite large in Chris' daily affairs. He also has to think one or two years in advance about his supply of adequately seasoned fuel.
- It's always a good idea to keep the boiler fed with more fuel than it requires for a single 'burn' – it will heat the buffer tank up to a preset temperature and then shut down. This is because it's easier, and virtually smoke free, to relight the charcoal from the previous burn, than to start again each time with fresh logs.

Technical Details:

- 25 kw Vigas log boiler
- 1400 litre accumulator
- laddomat
- 3 way motorised control valve
- 35mm pipe fittings

Burner Supplier: Dunster Wood Fuels Ltd
www.dunsterwoodfuels.co.uk

Plans for the future: **Plant more trees!**

Additional information: See DARE case study on Dartmoor holidays

Contact details

Chris Boswell:
Old Sowtontown, Nr. Peter Tavy, TAVISTOCK.
PL19 9JR
01822 810687
chrisboswe@aol.com

Fuel supply: Fuel is supplied by local log merchant Roy Turner of Mary Tavy
Insulation: . Hemp shiv and hemp/lime plaster straight from the farm at Hull Valley Hemp.
sales@voase.yibb.co.uk
Pavatex and hydraulic lime supplied Mike Wye.
www.mikewye.co.uk