



## Case study Natsley Farm Exmoor

RENEWABLE ENERGY 4  
**DEVON**



### Introduction

Natsley Farm is a home, cattle farm and holiday accommodation near Brayford in North Devon. The owner, Richard Gedge, wanted to reduce the site's energy consumption to reduce their energy bills but also to reduce their environmental footprint by using suitable renewable energy technologies.

### Project development

- Richard could see that tourists were becoming more and more concerned about the environment and decided to create a sustainable business that could be an exemplar site and attract visitors for this reason.
- After undertaking much research himself he had quite a clear idea of which technologies he would like to go for. So, Richard contacted RE4D to gain more expert advice on the most suitable renewable heating system and on site electrical generation.
- An initial site visit confirmed that a biomass boiler would be the best option to provide heat and hot water for the holiday accommodation and the main farm house using locally sourced wood fuel. A wood chip boiler was installed in October 2007.
- As the farm has a good exposed field within a reasonable distance of the main buildings Richard was also keen to proceed with the installation of a small wind turbine to provide electricity to use on site. After discussions with local installers it was decided that an Iskra 5kW machine would be most suitable, and it was installed in November 2007.

### How the system works

The 50kW biomass boiler is connected by a heat main to both the main farm house and the holiday accommodation and meets all the space and water heating requirements. The wood fuel is sourced and chipped on Richard's own land, which keeps costs and CO<sub>2</sub> emissions as low as possible. The chip which has a moisture content of 30%, is then stored in a hopper adjacent to the boiler and fed into the burner by an automatic auger.

The wind turbine is in a very good location on an open hill and the NOABL database estimates an average mean windspeed of 6.1m/s at 10m above ground level for the site. So it is expected that the turbine should perform very well. It is connected into the mains via the three phase supply to the main buildings. Any excess electricity, not used on site will spill back into the grid and Richard would be able to set up a buy-back agreement with his electricity supply company.

### Costs and benefits

- The boiler cost £22,619 to install, and the wind turbine £17,500. Natsley Farm received grants from the Low Carbon Buildings Programme and RE4D totalling £10,455.
- The boiler will use around 15 tonnes of chip to provide 52,500kWh of heat pa. There will be some CO<sub>2</sub> emissions associated with using the chip, but compared to using oil this biomass system saves 13.6 tonnes CO<sub>2</sub> pa.
- The wind turbine is expected to generate 13MWh of electricity and save 6.7 tonnes of CO<sub>2</sub> each year.
- Both systems are likely to payback the installation costs to Natsley Farm through fuel bill savings in less than 10 years.

# Technical details

<b>Boiler</b>	<b>50kW Binder wood chip boiler</b>
<b>Wind turbine</b>	<b>Iskra 5kW</b>
<b>Installers</b>	<b>Wood Energy Ltd (boiler) and Segen (turbine)</b>

## Wider benefits

The need to supply wood fuel to the boiler has led to better management of the woodland around Natsley Farm, and Richard has been able to protect his business against rising fossil fuel costs and ensured a security of supply.

By making the farm more environmentally sustainable Richard has set an example to other similar businesses.

## Further information

Wood Energy: [www.woodenergyltd.co.uk](http://www.woodenergyltd.co.uk)  
sales@woodenergyltd.co.uk 0845 070 7338  
[www.segen.co.uk](http://www.segen.co.uk)

## Contact RE4D

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For independent advice and support

## Image gallery

Iskra wind turbine



Woodchips



Inverter

