



Case study  
**Bridge Farm**  
 South Hams

RENEWABLE ENERGY 4  
**DEVON**



## Introduction

Jim Hoddinott is an ex farmer who leases his farm Buildings to small businesses. These are used by mechanics, the wood joinery trade and for storage. Mr Hoddinott has renovated a traditional Devon barn in order to offer business space in a rural office.

## Project development

Jim was going down the traditional route of a conventional oil or LPG heating and hot water system. When Envision visited to look at what environmental measures he could incorporate into his building, he mentioned he had an existing borehole with extraction license. This was previously used to water his bovine stock. Jim was passed onto RE4D for support, and a open-looped ground source heat pump (sourced from the bore hole) was investigated. Two quotes were found; one from Thormec in Devon, and one from Geothermal in Cornwall.

The building had been built to a high energy efficiency standard and had underfloor heating installed. There were no planning issues as the borehole already existed and the system sits inside the building. A RE4D grant was successfully applied for towards the cost of the installation and the system was installed on 5th December 2007.

## How the system works

The Ground Source Heat Pump uses a heat exchanger to draw heat from the water in the open loop borehole and transfer it to circulating water in an under-floor heating system. For this type of open loop system a water source is needed, for example from a river, borehole, well or even the sea. The open loop system is promoted as being more efficient than the standard ground source heat pump systems, requiring less electricity to give the heat output.

Heat pumps are not complete renewable systems in themselves, and require an external supply of electricity to run them. Where they excel is in providing more units of heat (typically three) than they use in units of electricity. They can be made truly renewable if the electricity used to operate them comes from a renewable source.

## Costs and benefits

- Annual power generation (related to commonly understood use of power) – 16,800 kWh of heat energy.

### Carbon Savings

- Total CO2 cost (oil):  $16,800 \times 0.258 = 4334$  kg per year
- Total CO2 cost (gas):  $16,800 \times 0.206 = 3460$  kg per year
- Total CO2 cost (GSHP):  $16,800 \times 0.51 \times 0.25 = 2142$  kg per year
- Therefore the system saves approx 50% of carbon v's oil for heating and 38% against gas.
- Total cost of the system was £4,600. Mr Hoddinott received a £1300 grant towards the cost of his system from RE4D.

Oil costs (site is off the gas grid)  
 £1,365 per year

GSHP costs    £378 per year  
 Savings        £988 per year

With a £1000 saving per year the cost of installing a GSHP would pay for itself in just over four years (assuming an equivalent boiler would cost £1200).

# Technical details

Specification

Thormec 12kW

Output

12kW of heat power

Installers

Thormec

“I will be able to market my offices as environmentally friendly, and there will be low running costs which is good for the clients as well”

## Further information

[www.energysavingtrust.co.uk](http://www.energysavingtrust.co.uk)  
for more information on heat pumps

## Contact RE4D

[www.re4d.org](http://www.re4d.org)

[energy@re4d.org](mailto:energy@re4d.org)

0800 512 012

For independent advice and support

## Image gallery

