



Case study

Woodlands Enterprise Centre

North Devon

RENEWABLE ENERGY 4
DEVON



Introduction

North Devon Council were interested in exploring the options for using renewable energy for the Business Support Unit forming part of a new Managed Workspace at the Pathfields Industrial Estate near South Molton. The Support Unit is a two storey office/conference building with a floor area of 180m² serving seven workspace units.

Although the site benefits from reasonable wind speeds, there is a lot of local turbulence that would detract from turbine efficiency and dramatically reduce its cost effectiveness. This limited options to those that could be incorporated into the building itself, and as a consequence the RE4D mentor suggested some form of heat pump for space heating. If the heat pump was run by renewable electricity in the form of photovoltaic solar cells or by purchasing electricity from a green tariff it would further improve the environmental performance of the system.

Project development

The RE4D Mentor was engaged by North Devon Council early in the design process. This was a key factor in enabling the heat pump to be incorporated into the requirement for the building design. Capital finance was an important issue which weighed against the initial cost of the alternative Ground Source Heat Pumps. The recommendation was therefore for an Air Source Heat Pump.

How the system works

The Air Source Heat Pump uses a heat exchanger to draw heat from the outside air and transfer it to circulating water in an under-floor heating system. 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

- The cost of the heat pump was £3159 and the client did not receive a grant.
- It has been calculated that the heat pump will produce 12,135 kWh of heat each year, and that this will require 4045 kWh of electricity.
- At 12 pence per kWh, this electricity would cost £485, and the amount of oil needed to provide this amount of heat would be 1037 litres. At a cost of 51 pence per litre, the oil would cost £528 each year, so that the heat pump is saving £43 p.a. on running costs.
- Using a similar calculation, the electricity will generate 1739 kgs of CO₂ as against 3155 from an oil-fired boiler. A saving against oil of 1426 kgs of CO₂ p.a.
- Over the lifetime of the building oil costs are likely to rise which adds to the financial benefit of installing this system.

Technical details

Installer company

BFEC Ltd

Heat pump

Heat King 8000 air source heat pump

Output

8k Wt

Wider benefits

Because of their energy gains, heat pumps can provide cost effective solutions to heating requirements at a relatively low capital cost. By using a renewable energy supply to run them they can be truly sustainable/renewable. In most instances they will not require planning permission.

Chris Smith - Manager - BFEC Ltd

We found RE4D very useful in answering our queries in positive layman terms. The information was practicable and constructive, which assisted us in the way in which we approached renewable energy technology for a particular site.



Contact RE4D

www.re4d.org

energy@re4d.org

0800 512 012

For independent advice and support

Image gallery

