



# Air source heat pump

Abernethys, Connel, Argyll

## Why use green heat?

Before installing an air source heat pump, Abernethys, a 5 bedroom house in the village of Connel, was heated using an electric central heating system. This system involved an electrical element providing hot water for heating an under floor heating system as well as providing hot water for domestic use. Although the home is well insulated, this was a very expensive way of heating the property, and the owner of the new home was left with an electricity bill of £8,500 in just one year. This led to the decision to invest in an air source heat pump.

*"Our original heating system was designed as a temporary measure, and we were shocked at our electricity bill for the first year. We chose to install an air source heat pump, which is a very low cost way of heating our home."*

An air source heat pump was installed to provide space heating and hot water for showers and domestic usage. The heat pump uses ambient heat from air outside the property, and concentrates the heat for use inside the home. The system operates all year round, and is up to 4 times more efficient at providing space and hot water heating than electric air heaters or water immersion units.

## Main benefits of this installation include:

- Reduced electricity costs for space and hot water heating
- No boiler system or oil storage needed for the property
- Constant heating of the entire home during winter months
- Heating and hot water supplied through an outdoor air source heat pump unit
- System integrates with solar hot water panels on the roof which supply hot water in the summer months
- Silent operation of the heat pump unit

## Lessons learned:

- Select an electricity tariff that is best suited for the most cost effective operation of the heat pump unit, which operates constantly during winter months
- Air source heat pumps can work very effectively in well insulated buildings such as Abernethys which benefits from solar gain for space heating and solar panels for hot water heating
- Direct electric heating can be a very expensive option even as a short term heating option



## KEY FACTS

- Heat pumps use electricity to provide space heating and supply hot water
- Air source heat pumps should be designed to cope with high moisture freezing conditions in a Scottish winter climate, such as featuring a self-defrost mode and insulation of the unit
- Heat pumps are best suited to supplying heat to well insulated properties

For more information contact Use Green Heat

Tel:

**08000 285 858**

email:

**info@usegreenheat.co.uk**

website:

**www.usegreenheat.co.uk**

Images supplied by  
photographer  
Michael Dawson

## System Specifications

- An air-to-water heat pump distributes heat via a wet central heating system, such as under floor heating or a radiator system. Heat pumps work much more effectively at a lower temperature than a standard boiler system would. So they are more suitable for under floor heating systems or large radiators, which give out heat at lower temperatures over longer periods of time.
- Air source heat pumps operate even at outdoor temperatures of down to -15°C
- Heat from the air is absorbed into a fluid which is pumped through a heat exchanger in the heat pump. Low grade heat is extracted by the refrigeration system and, after passing through the heat pump compressor, is concentrated into a higher temperature useful, heat capable of heating your home.
- Other types of heat pumps include air-to-air systems, which produce warm air for space heating. Alternatively, ground source heat pumps can provide hot water for a central heating system using heat from underground pipes.



## Facts and Figures

### AIR SOURCE HEAT PUMP

Output: 12 kW

Manufacturer: Danfoss AX

Installation: May 2010

Installer: Renewables Now

System setup: Air source heat pump with input from solar hot water panels and electric water heater backup

Area heated: 400m<sup>2</sup>

### INSTALLATION COSTS

Heat pump system: £6,500

Funding source: Householder Renewable Energy Grant

Funding support: £1,950 grant

Operating costs: Approx. £2,000 per year

Payback period: Less than 4 years compared new oil boiler (2011 prices)

