

Case Study Coxhead - Gloucestershire



The risk of rising gas prices makes the Daikin Altherma Heat Pump an ideal replacement solution for an old gas boiler system.



Overview

The owners of a large four bedroom executive house were having several issues with a 25 year gas boiler system.

Their old system was typical of the first generation of gas central heating; the system was gravity fed with a header tank and water cylinder located in the loft and first floor airing cupboard respectively. The old boiler was floor mounted in the kitchen connected to a micro bore central heating system which had poor flow. The single panel radiators had no thermostatic controls and were in poor condition. Overall the system was on its last legs and its performance was poor and getting expensive to maintain.

The time had come to replace the system and the owners Mr. and Mrs. Coxhead realised that some radical decisions needed to be made when considering which new heating and hot water system to install.

One of their major considerations was the cost of gas as a primary energy source. Not only have prices of gas increased over the past two years; the forecast of much higher prices in the future was a concern. The owners were also looking for a more sustainable and environmentally responsible system as part of their buying goals.

They asked three plumbing and heating specialist to carry out a survey and to provide proposals for a new heating and hot water system.

Shackleton and Wintle, one of the largest local heating companies in the Cheltenham area was chosen as a potential supplier. Robin Heffter, MD of Shackleton and Wintle duly carried out a comprehensive survey.

Solution

Robin Heffter discussed the requirements with the homeowners, who wanted to use a heat pump solution as this was recognised as a very efficient and much more environmentally acceptable solution compared to traditional fossil fuel systems. With gas prices likely to escalate, the running cost savings of a heat pump would increase considerably over its life time. The survey showed that areas in the house required higher heating load, particularly in the main reception lounge which had three outside walls. An incorrect design of heating emitters could mean insufficient heat in winter.

The main features in the solution provided by Shackleton and Wintle were as follows:

- The use of a Daikin Altherma air source heat pump system was recommended rather than a ground source heat pump, main reason down to the difference in installation cost. The ground source system would be slightly more efficient than the air source heat pump; however calculated savings from higher efficiency only amounted to a few pounds per year. On the other hand, the comparative installation costs difference was very significant. The ground source system would cost around



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£7000 more, because it required significant ground works and a bore hole.

- The installation would consist of a Daikin Altherma Split system of 14 kW. Due to the system's layout, the whole installation would actually free up space in the kitchen.
- The unvented system would provide much better water flow for showers.
- New radiators were sized accordingly for all areas of the house. Obviously the main reception area needed careful evaluation to ensure that during winter this room would remain comfortably warm.
- A part of the survey report and following discussions Shackleton and Wintle offered advice regarding the use of Economy 10 electrical tariffs which would be very suitable to optimise electrical usage during cheaper tariff time and therefore minimise running costs.
- The system would be fitted to the highest quality standard by the qualified heating team from Shackleton and Wintle.

On reviewing all the quotations and proposals the homeowners were very confident to accept the solution provided by Shackleton and Wintle.

Installation

The installation was carried out in January 2009. All the work was completed in 5 days! This included removing the old system and system pipe work, taking up the carpets and flooring as required, installing the new Daikin Altherma Split heat pump system and the new radiators.

The outdoor unit was installed on the outside back wall of the house and linked to the indoor Hydrobox unit, which was located conveniently in a small floor to ceiling cupboard in the garage. The unvented Daikin Altherma hot water cylinder was fitted in the airing cupboard where the old hot water tank used to be.

All the rooms in the house were re-piped and new radiators fitted with Thermostatic Radiator Valve to give independent control. As part of the installation, Mr Coxhead installed a smart electric meter so that he could monitor all the electricity consumption in the house, and also enable him to utilise Economy 10 tariff.

Benefits

The solution provided by Daikin Altherma and Shackleton and Wintle had several major benefits:

- By comparing kWh consumption over the first 6 months of installation with the same period in 2008, the Daikin Altherma is proving to be 3.1 times more efficient than the old gas system.
- The energy cost savings have been carefully compared to the cost over the same period in 2008 (January – June). In 2008, the cost of electricity (1893kWh) and gas (12,749 kWh) was £760.69. For the same period in 2009 the cost of Electricity (4986kWh) was £523.98. The saving in this time was £236.71 and it estimated that the annual saving will equate to over £450. The winter in 2009 was very much more severe than that of 2008. The use of economy 10 and the smart meter have all contributed to a much more efficient performance.
- All the radiators now had independent controls to optimise heating in the whole house.
- The performance of heating in the main reception room has been consistently good and improved compared to the old system.
- The system runs quietly even on high load and noise has not been an issue.
- The new unvented hot water cylinder delivers better pressure of water, improving the performance particularly in the bathroom showers.
- The kitchen floor space was now free from a floor standing boiler which allowed better use of the kitchen area.

"It's great to think we are achieving a much more efficient performance and saving money with the new system. We are adopting a much greener approach to energy consumption and we no longer have to depend on the supplies of gas for the future. The project has achieved all that we set out to do." Mr Coxhead.

To find out more about Daikin Altherma contact Daikin UK today on 0845 641 9000 or visit www.altherma.co.uk