

Extended 1960s Bungalow

Hertford Road, Bishops Cleeve



NUMBER OF BEDROOMS: 3

OCCUPANTS: 2 

CONSTRUCTION:

Filled cavity walls with modern cavity wall extension

KEY FEATURES:

A well insulated 1960s bungalow with air source heat pump, passive ventilation and solar technologies.

Measures installed

Solid floor, loft and cavity wall insulation
Solar photovoltaics (3.78kWp system)
Solar thermal water heating
Air source heat pump
Passive ventilation system

Carbon savings and potential benefits

Improved thermal comfort and heat retention
Lifestyle changes to benefit from free electricity and Feed in Tariff payments
Free hot water and Renewable Heat Incentive payments
Low carbon heat source and Renewable Heat Incentive payments
Controlled air flow

The home & occupants

This 2 bed bungalow in Bishops Cleeve was built in the 1960s and when the current owners obtained the house in 2010 they began a process of extending and improving the property. With an eye on their retirement from work and wanting to express their interest in green issues they took this ideal opportunity of future proofing their home before they moved in.

This involved adding an extension that included a living room, bedroom and a wetroom, making it all wheelchair accessible and ensuring that their new home was as energy efficient as possible.

“Although we only have electricity and no gas, our annual energy costs are typically half the national average for this size of home.”

What is a passive ventilation system?

Passive ventilation provides a ‘no energy’ alternative to mechanical ventilation systems. Driven by the natural effect of warm air rising, moisture laden air is removed directly from ‘wet rooms’ such as kitchens and bathrooms with air inlets in other rooms providing a controlled flow of replacement air to the building.



Passive ventilation system - ceiling and window vents

What they did

Insulation improvements

Making sure that the original 1960s bungalow could live up to its modern extension in regard to energy performance was key to having a warm and comfortable home. The original cavity walls were insulated, and over 300mm of loft insulation was added. The owners also took the opportunity to add insulation to the solid concrete floor. This can be quite a disruptive job as typically either the floor has to be dug out to allow for the additional depth of insulation, or the insulation is added on top of the existing floor. This method, which was employed in the bungalow, involves raising skirting boards and door frames. As the owners were not living in the house at the time, the work was relatively straightforward and has shown a notable improvement.

"If you get the insulation right, your bills will go down."

Draught-proofing and glazing

The owners commented that they felt that the biggest difference in warmth and comfort in the home came from replacing the old doors and windows with modern efficient versions. This eliminated the draughts in the house entirely, something that had been a problem. They also decided to fit a ventilation system which would help to optimise the insulation and heating improvements they were making to the home, reducing instances of windows being opened unnecessarily and the possibility of damp and condensation. Extract ventilation was considered, but they were not keen on having fans that required electricity to run. Being 'all electric' they were keen to reduce their electric demand as much as possible. A passive ventilation system was therefore added with ceiling or window vents in all rooms.

A new heating system

The decision of what type of heating system to install was partly influenced by the construction of the new extension in which underfloor heating distribution could be fitted. The lower temperatures required for underfloor heating suited the air source heat pump that they decided to install. This also provides space heating to the original part of the house using newly installed low temperature radiators and acts as a back-up for the solar thermal system, topping up the hot water when required.

The owners commented that the heat pump suited their lifestyle as this type of heating system is typically most efficient when it is run for long periods of time maintaining a steady temperature in the home. Being retired, they are at home a lot of the time so this is beneficial. It did take them a while to get used to this arrangement as they were previously used to boilers that are programmed to come on for set periods when required during the day.



Air source heat pump

Solar technologies

A solar thermal system was added to the bungalow at the same time as work was being completed on the new extension and heating system. This provides the majority of their hot water over the summer and contributes to the water heating throughout the year. The owners also benefit from the Renewable Heat Incentive which provides them with a small income based on the assumed water heating the system provides.

In 2011, a 3.78kWp solar photovoltaic system was added to the roof. The owners were motivated to do this because as well as being a 'green thing to do' it also made good financial sense! The system typically generates around 3300kWh's of electricity a year, providing them with an income from the 'Feed in Tariff' scheme which should see a return on the investment in 8-9 years. They were also keen to comment that they felt that the generation and income figures that installers have to provide using set criteria were conservative and that, in their case, the electricity and income were higher than predicted. A bonus if you are looking at the feasibility of investing in a solar PV system.

What are the next steps?

The owners now feel that they have done all that they practically can to improve the energy efficiency of their home, so are now enjoying the benefits. The one other improvement they made was to install a rainwater harvesting system which, although useful in theory, has not seen enough rain to make it work well!

If I could offer one piece of advice it would be...

"Get rid of the draughts, and look at the insulation, these are the key things. So if it is possible fit modern doors and windows."