

Extended period property Purton

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Case study 39



£253

Saving
on fuel bills

20%

Reduction
in carbon
emissions

Measures installed	Total cost	Annual CO ₂ saving (tonnes)	Annual fuel bill saving
Cavity wall insulation	£150	0.14	£41
Solar PV 2.45 kWp	£11,618	1.18	£212
Total package	£11,768	1.32	£253
Plus income from PV Feed-In Tariff (FIT)			£943

The home

This home was built in 1901 with solid brick walls which have since been rendered. It has had two extensions, in the 1920s and 1960s, the first extension having solid brick walls and the second, cavity walls. The property is within a conservation area but is not a listed building.

high priority as some of the rooms were difficult to keep warm, in particular a north-facing bedroom in the 1920s extension. Initially, investigations were made to externally insulate all the walls, though due to planning restrictions, currently only the cavity wall has been insulated. Approval was granted though for the installation of a solar PV system on the rear south facing roof.

“The cavity wall insulation and solar PV system have assisted in us achieving a long standing aspiration and delivers ecological, economic and comfort benefits.”

What they did

The current owners have lived in the home for ten years and recently began to plan another extension, at which time they also wanted to incorporate various energy saving measures. Improving the insulation was a

£943

Income
from Feed-In
Tariff (FIT)



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Insulation options

As the house was already rendered they initially considered the possibility of externally insulating the house with a render finish. Planning permission would be required to carry out this measure because the home is in a conservation area so the householders approached the Conservation Officer at Wiltshire Council for pre-application advice. Unfortunately the advice was that the work would not be likely to receive planning permission as this would adversely impact the appearance of the building and the conservation area. The specific area of concern was how the insulation would be finished at the eaves and verges where there is little overhang, and around windows and doors where the reveals would become deeper.

External insulation was the preferred method as it causes less disruption to the living space than internal wall insulation, however internal wall insulation is now being considered for the first floor rooms. The planned single storey extension will wrap around two sides of the house and remove the need for the ground floor walls to be insulated. The small area of cavity wall in the 1960s extension was insulated at a cost of £150.

Solar electricity

The roof at the back of the house faces almost due south, so the householders were keen to make good use of this to install a solar PV system. Planning permission was sought and received for a 2.45 kWp system which maximises the available roof area.

The installation process took just one day and the household will now benefit from the Feed-In Tariff for renewable electricity, a preferential rate of payment for electricity generated from solar PV and other technologies which should see the panels pay for themselves in around 12 years.



Completed PV installation on south facing roof

Next steps

The family are planning to add a ground floor extension to the house within the next year or so which they will specify to be very well insulated. At this time, they are also considering replacing their old gas boiler with a new efficient condensing boiler and perhaps exchanging the radiators for under floor heating that will reach out into the new extension. Under floor heating runs at a lower temperature and distributes heat more evenly through the home, using less energy to provide an equivalent comfort level.

Energy consumption	Total (kWh)	Per m ² floor area
Before improvement (2010)	30,044	306
After improvement (2011)	26,728	272
With all possible measures	13,920	142
UK average (2011)	19,800 ¹	217 ⁴

Running costs	Total	Per m ² floor area
Before improvement (2010)	£1,463	£14.90
After improvement (2011) - excl FIT income	£1,210	£12.32
With all possible measures	£844	£8.59
UK average (2011)	£1,032 ³	£11.34 ⁴

¹Ofgem 2011

²English Housing Condition Survey 2011

CO ₂ emissions	Total (tonnes)	Kg per m ² floor area
Before improvement (2010)	6.67	68
After improvement (2011)	5.35	54
With all possible measures	2.97	30
UK average (2011)	6.00 ²	66 ⁴

Possible next steps	Annual CO ₂ saving (tonnes)	Annual fuel bill saving
Replacement boiler	0.50	£84

³Ofgem 2011

⁴Based on 91m² from English Housing Condition Survey 2011