

Listed thatched cottage Wiltshire

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Case study 38



£606

Saving
on fuel bills

62%

Reduction
in carbon
emissions

| Measures installed | Total cost | Annual CO ₂ saving (tonnes) | Annual fuel bill saving |
|---------------------------------------|------------|--|-------------------------|
| Loft insulation top-up | £1,106 | 0.07 | £19 |
| Secondary glazing | £3,638 | 0.34 | £81 |
| Replace oil boiler with pellet boiler | £10,000 | 5.90 | £458 |
| Block existing chimney | £72 | 0.19 | £48 |
| Total package | £14,816 | 6.50 | £606 |

The home

This home is a Grade II listed, thatched cottage situated within a village which is wholly designated as a conservation area. It was built around 400 years ago and was originally two cottages that have since been combined into one home. Ground floor extensions were added in the 1980s and 1990s. The current owners have lived at the property for around fifteen years, during which time they have made a few minor improvements. The house was proving a challenge to keep warm, the running costs for the oil boiler were high and so the heating was supplemented with two open fires.

What they did

The first consideration was to improve the thermal insulation of the home. Advice was sought from the Conservation Officer at Wiltshire Council, which confirmed that it was unlikely that listed building consent would be granted for the insulation of the walls or sloping ceilings of the original building as it could adversely affect the historic construction. Insulation could however be considered in the extension cavity walls and in topping up the insulation in the loft area.

An innovative solution was also found that allowed the draughty open chimney to be shut off when not in use, significantly reducing heat loss in this room. This, alongside newly installed secondary glazing, has meant that the previously cold house is now a comfortable place to be in winter.

“The house has always been difficult to keep warm in winter. Following installation of the loft insulation, secondary glazing and chimney damper we have noticed a significant improvement in room temperatures.”



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Loft and cavity insulation

Although solid wall insulation was not permitted, the thick stone walls of the house do provide a certain “thermal mass” which helps to absorb and re-radiate heat back into the house. The modern extension areas do have cavity walls and were therefore cavity insulated, partially funded through the Wiltshire Warm and Well Scheme.

Thatched roofs can be highly effective at reducing heat loss when they are well constructed and maintained, but as the loft space was not in use it was worth increasing the insulation at joist level to the recommended depth of 270mm. The householder chose to do this himself using rolls of sheep’s wool insulation. To enable the family to continue using the loft for storage, the depth of the joists was increased to allow for the increased depth of insulation, and the area was re-boarded.

A chimney damper

A measure which has produced a substantial improvement in comfort was the fitting of a damper into the open chimney in the main living area. The family use the fireplace regularly in the winter, so were not keen on closing it permanently. As an engineer, the householder took it upon himself to design a solution and he fabricated and installed a hinged steel plate which shuts off the chimney when the fireplace is not in use with one pull of a connecting chain. This effectively seals off the cold air that previously came in and keeps the house warmer.

Secondary glazing

The property has a large number of single glazed windows, but as these are mainly 400 year old leaded windows it would not be permissible or desirable to replace them with double glazing. If done to a high standard, secondary glazing can be just as effective as double glazing at preventing heat loss.



Unobtrusive secondary glazing installed behind single glazed window

Several installers were able to provide a quote for the work and the household opted to employ a local company. Listed building consent was required for this work, and the approval process took several months while the actual installation of the glazing took just one day.

A wood pellet boiler

The householder has recently replaced the existing oil boiler with 22kW wood pellet boiler. This provides all the space and water heating and as the boiler unit blows warm air from its source in the kitchen, they have been able to switch off the radiator in this room. The owners received a ‘Renewable Heat Incentive Premium Payment’ of £950 for its installation, and are expecting to receive ongoing payments from the Renewable Heat Incentive when it begins in autumn 2012.

| Energy consumption | Total (kWh) | Per m ² floor area |
|----------------------------|---------------------|-------------------------------|
| Before improvement (2010) | 40,245 | 221 |
| After improvement (2011) | 35,546 | 195 |
| With all possible measures | 18,621 | 102 |
| UK average (2011) | 19,800 ¹ | 217 ⁴ |

| Running costs | Total | Per m ² floor area |
|----------------------------|---------------------|-------------------------------|
| Before improvement (2010) | £2,725 | £14.93 |
| After improvement (2011) | £2,119 | £11.61 |
| With all possible measures | £1,508 | £8.26 |
| 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) | 10.42 | 57 |
| After improvement (2011) | 3.92 | 21 |
| With all possible measures (oil heating) | 5.50 | 30 |
| UK average (2011) | 6.00 ² | 66 ⁴ |

| Possible next steps | Annual CO ₂ saving (tonnes) | Annual fuel bill saving |
|---------------------|--|-------------------------|
| Solar PV 1kWp | 0.53 | £94 |

³Ofgem 2011

⁴Based on 91m² from English Housing Condition Survey 2011