



WALLTITE[®]

The airtight insulation solution

Huntingdonshire District Council Retrofit Homes

Best Practice Case Study



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Best Practice Case Study

Huntingdonshire District Council Retrofit Homes



Project data

Project: The Green House Project comprises the St Neots Green House at Manor Farm Road and St Ives Green House at St Audrey's Lane

Client: Huntingdonshire District Council & Building Research Establishment

Scope of Project: Retrofit

Spray Foam Contractor: Total Insulation

Main Contractor: Apollo Housing

Year Completed: November 2010

Products Used: WALLTITE spray foam insulation and WALLTITE cavity wall insulation

Project Description

The UK has the oldest existing housing stock in Europe. Government targets to reduce carbon emissions produced by this stock by 80% by 2050 gave Huntingdonshire District Council the incentive to reduce the district's carbon footprint and improve the energy and water efficiency of its 67,000 private homes. Working with the Building Research Establishment (BRE) on the Green House Project, part of the BRE's "Rethinking Refurbishment" initiative, Huntingdonshire District Council identified two properties in St Ives and St Neots which could benefit from the campaign. Both houses are typically representative of homes across the district in both their age and construction.

The Green House Project demonstrates how typical family homes can be refurbished affordably and easily, reduce carbon emissions, be more efficient to run and reduce energy bills. The project takes a 'whole house' approach to refurbishment, starting with the building fabric and insulation, windows, heating systems, ventilation, water efficiency measures and the installation of renewable energy technology including solar thermal for hot water and solar photovoltaics (PV) for energy.

The St Neots property, a 1970s three bedroom semi-detached house, demonstrates improvements that can be made to existing properties for a relatively modest financial outlay, with no major structural improvements, whilst still achieving a reasonable energy performance rating.

The St Ives property, a 1960s two bedroom detached house, has undergone sustainable refurbishment, along with a replacement single storey extension at the back and a two storey extension on the side, creating extra living space, an additional bedroom and an integral garage. This represents what can be achieved with more finance and includes a wider range of micro-generation renewable technology.

Challenges

Both houses needed to be completely refurbished and brought up to current day standards in terms of emissions, airtightness and insulation. The St Ives property had no current cavity wall or internal wall insulation and inadequate levels of loft insulation, with inefficient heating resulting in high heat loss and poor airtightness. Improvements were required to the existing dwelling due to its poor construction and to accommodate the new build extension.

Improvements were required in the existing structure due to its poor construction and as part of the new build structure.

The St Neots property had similarly inefficient cavity wall insulation and inadequate loft insulation. With full length windows, the potential for heat loss was high.





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Solution

WALLTITE cavity wall insulation and WALLTITE spray foam insulation from BASF plc have been used to form an airtight thermal efficient solution in both properties.

In the St Neots house, the existing cavity fill in the external walls was removed and replaced with 70mm WALLTITE cavity injection insulation. Durable and sustainable, WALLTITE cavity wall insulation provides permanent adhesion over the whole surface area of the walls and overcomes wall tie failure, weak mortar joints and other related structural problems. The foam seals the cavity, does not shrink or allow air to pass through it, therefore air leakage through the cavity is reduced to zero. The U-value achieved using cavity injection foam and internal insulation is 0.23W/m²K.

In addition, the existing loft insulation was replaced with 60mm WALLTITE spray foam insulation between the rafters to achieve a U-value of 0.16W/m²K when combined with 150mm mineral wool. The loft area has been weatherproofed under the tiles, with a non-breathable HR type membrane.

The fast applied seamless, airtight solution leaves a minimal amount of surface area without insulation resulting in some cases, a 30% decrease in thermal transmission. By virtually eliminating air leakage, WALLTITE with its closed cell structure helps control the movement of vapour and moisture throughout the building, reducing energy loss in line with Part L. Created to aid sustainable refurbishment solutions, WALLTITE PU spray foam does not deteriorate with age and its thermal properties are therefore maintained over the life of the building.

At the St Ives house, the cavity walls were injected with 65mm WALLTITE cavity insulation in the existing walls and 150mm cavity wall in the new extension, used to maximise the thickness of wall insulation, seal the house from draughts around window and door frames and reduce carbon emissions for the life of the property.

As part of the Code for Sustainable Homes (CSH), enabling sustainable refurbishment through first improving the fabric though insulation such as WALLTITE increases the benefits of thermal efficiency prior to implementing more expensive measures such as micro-renewables, ventilation systems and other costly materials. With the right approach and commitment, refurbishment is a far more cost effective approach to achieving a sustainable building lifecycle, as opposed to starting from scratch, as can be exemplified in both properties.

Customer Satisfaction

Huntingdon District Council commented that it is now widely recognised as a priority to look at a 'whole house' approach to sustainable refurbishment. This not only addresses improving the building fabric, it also looks at other ways of reducing the carbon emissions such as efficient heating systems, renewable energy technologies, ventilation systems and water efficiency measures. Sustainable refurbishment not only benefits the environment, it also has financial benefits and encourages well being and healthy living for householders.

The houses are now open for viewing which will allow visitors to receive practical ideas on how to make their own homes warmer, brighter and cheaper to run whilst reducing their impact on the environment. Both properties are now part of the Old Home Super Home programme by the Sustainable Energy Academy (SEA), which is a network of old houses which have undergone energy efficient improvements.

