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CASE STUDY

Dickenson Road, Manchester



"The refurbishment has been so successful in terms of being a quick and simple process – with minimal disruption to our daily lives, as well as helping to significantly reduce the heat that was previously escaping through the solid walls, the cold air coming up from the cellar and high energy bills."

Rebecca Williams,
homeowner

CHALLENGE

As key sponsors of the Great British Refurb campaign, Knauf Insulation was presented with an opportunity to be involved in a partial whole house low-carbon refurbishment of a Victorian house in Manchester along with Dyson Insulations and Parity Projects.

The completion of the refurbishment was timed to coincide with the Conservative Party Conference, which was held in Manchester in October 2009. A short film of the installation process at Dickenson Road was introduced by Kevin McCloud to showcase to party members how significantly the carbon emissions from the UK's existing housing stock can be reduced if homeowners received financial support from the government to install energy efficient measures.

In order to achieve a reduction in carbon emissions from the house by 1.07 tonnes per annum and financial savings through reduced energy bills of around £235 per annum, Knauf Insulation supplied a number of insulation solutions which included its new Internal Wall Insulation (IWI) System, Loft Roll and Space Blanket.

To complete the package the external doors, cellar door and insulated loft hatch were draught proofed, all lighting was changed to low energy bulbs, boiler controls were added and a future refurbishment plan was provided to the homeowner highlighting the next steps towards a low energy house. The overall costs were circa £2,300.

It was important that the occupants experienced minimum disruption whilst the work was carried out in what was generally considered a hard to treat property.

SOLUTIONS

Knauf Insulation Internal Wall Insulation (IWI) System

1. EcoStud has an overall size of 50mm wide x 75mm deep x 2400mm long to replace a typical size of timber stud. This comprises Polyfoam XPS laminated to marine grade OSB. EcoStuds were mechanically fixed to the wall with the OSB facing into the room using 130mm screws and plugs (Fig 1). A minimum 40mm fixing penetration into the wall is required.
2. 75mm thick EcoBatt water repellent glass mineral wool slab with a thermal conductivity of 0.033 W/mK was friction fitted between the EcoStuds to ensure there was intimate contact between the inside of the wall and the back of the plasterboard thereby preventing unwanted air movement and draughts through the system (Fig 2). EcoBatt is manufactured 555mm wide to friction fit between 600mm centres.
3. 27mm Polyfoam Linerboard, a laminate of Polyfoam XPS and 9.5mm Knauf plasterboard was fitted around the window reveals to limit cold bridging and surface condensation. This was also fitted at party wall junctions to prevent heat loss and the potential for condensation and mould growth in internal corners.
4. 12.5mm Knauf vapour check plasterboard was attached to the OSB of the EcoStuds using normal drywall screws with all edges sealed with Knauf Multi Purpose Sealant to prevent air movement behind the wall lining reducing the thermal performance of the installed system (Fig 3). The Knauf Insulation IWI System using the above components resulted in an improvement of the wall U - value from approximately 2.00 W/m²K to 0.035 W/m²K, an improvement in thermal performance of almost 80%. The plasterboard was finished using normal dry lining techniques and did not require an extra skim finish.



Loft Insulation

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The existing 100mm thickness of insulation between the ceiling joints was topped up with a second layer of 200mm Loft Roll.

Intermediate Floor

Insulation was also fitted between the timber floor joists and the external wall to ensure continuity of insulation.

Suspended Timber Ground Floor

The front of the property had a cellar above which was the timber floor of the front lounge and hallway. 200mm encapsulated glasswool roll (Space Blanket) was friction fitted between the timber floor joists and supported with plastic netting.

The Internal Wall Insulation System was installed on the kitchen side wall and front wall of the main bedroom.



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