



Project Description and Aims

Oakley house is a fine 3 floor 300 year old brick and stone house, which had been neglected for many years. The new owners planned a major refurbishment to restore the fabric and make the house comfortable and energy efficient. They wanted to do this in an environmentally sympathetic way, and undertook all the repairs and new works with “breathable” systems and materials as far as possible.

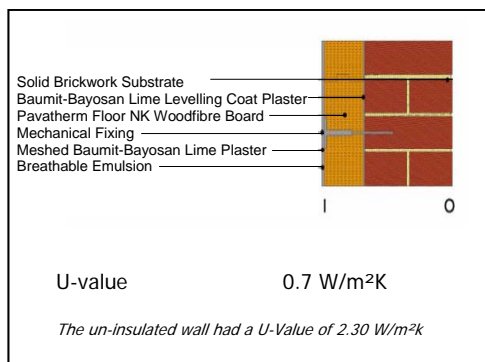
NBT role in project

NBT provided the internal wall insulation system along with technical support and calculations. Site visits prior to application to advise on detailing and damp walls, and site support during application were also provided.



Performance

The walls prior to insulation had a U value of 2.30W/m²K, and after the application of the 40mm Pavatex board had a U value of around 0.7W/m²K. While this is not a high level it was considered reasonable in the light of the open fire places, single glazed stone mullioned windows and internal wall cold bridging. In addition the breathing wall construction, and in particular the highly hygroscopic nature of the Woodfibre boards ensure no trapped damp or condensation in the walls, and a healthy living environment. (See Breathability article on www.natural-building.co.uk)



Internal Wall Insulation

Oakley House, Bucks.

Client: Private Client

Architect: Derek Rogers Associates

Contractor: Grange Ltd

Buildability

This system requires the walls to be flat prior to the application of the Pavatex boards, so that cavities where condensation could form are eliminated. The walls were therefore first levelled out with Baunit - Bayosan lime plaster. The boards used were Pavatherm Floor NK 40mm thick and are fully interlocking. This makes them easy to install and ensures there are no gaps between boards which would act as cold bridges and increase heat loss and surface condensation risk. Finally a meshed Baunit-Bayosan lime bonding coat was used onto the boards. The mesh gives good impact resistance and ensures no cracking in the plaster. Electrical cables needed to be chased into the wall prior to the levelling coat, and heavy fittings such as cast iron lights required timber blocks through the boards.



Services chased into existing wall

Environmental

The lime plasters are all part of the ecologically audited Naturline range of Baunit-Bayosan. They use only natural or mineral ingredients, with guaranteed high vapour permeability performance. The Pavatex Woodfibre boards are made from 99.5% waste wood, with 0.5% paraffin added to give site protection from rain. They lock up 1200kg of CO2 for every tonne used, including the CO2 from the production process. They have excellent hygroscopic qualities, which help to balance humidity inside the building and prevent dampness in the walls, thus assisting good indoor air quality and good building fabric health and performance.



Pavatex Woodfibre boards applied over Baunit-Bayosan lime levelling coat of plaster.

Design Issues

Architect: NBT provided good design support, including thermal and moisture calculations, site visits, and application support.

Build Issues

Contractor: There was some confusion about the fixings, and the wrong kind of washers were used in the first place which led to cold spots appearing on the walls. However this problem was overcome and most of the application was very simple. The chasing of electrics and fixing of fittings was undertaken by the client and has been very successful.

Cost

This was an economical method of installing a breathable dry lining which did not require a vented cavity. The alternative of non-vented non-breathing dry lining would have caused serious building problems at joist ends and wall junctions, as well as affecting indoor air quality.



Baunit-Bayosan lime finish plaster onto the boards.

Performance Results

Clients: Very happy with the results. The building provides comfortable and healthy living conditions. It is dry and warm.

“The Science of Nature—The future of Construction”

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