

Vacuum Insulation Panels in Construction

Scheme: Retrofit for the future
Architect: Penoyre & Prasad
Completed: April 2011
Location: Beckton, London



The UK government's "Retrofit for The Future" program has thrown up many challenges to architects and designers when trying to increase the insulation and reduce the carbon footprint of existing housing stock.

Many of the issues revolve around adding extra insulation, where decreasing the existing habitable space is not always a cost effective or viable option.

In a recent project David Cole, of architects Penoyre & Prasad LLP, utilised a number of technologies to upgrade an existing terraced house in Beckton, London E6.

The internal face of the front wall and the external face of the rear have been clad in conventional insulation, the partly walls were inject foamed, windows replaced with new frames and low U-value glass, and outer doors replaced with new well sealed frames and energy efficient doors.

One of the challenges faced by the architects was what to do with the existing solid concrete floor slab, whose removal and excavation to a greater depth to include conventional insulation would have been expensive and very disruptive in an occupied dwelling.

David Cole found a solution to this problem by removing the existing wood flooring to reveal the base concrete slab, and installing 20mm Kevothermal Vacuum Insulation panels.

The Vacuum Insulation Panels were overlaid with thin steel sheeting and finally a new floating floor was laid. This approach allowed the existing U-value of 0.78 W/m²/K to be improved to a U-value of 0.15 W/m²/K with a minimal increase in floor thickness due to the very low thermal conductivity of VIPs. A similar approach with conventional insulation would have required an additional 150mm. In addition the existing screed, over concrete slab and a ventilated void, was left undisturbed, this being a great advantage where the occupants remained living in the

house while the work progressed, as there was no need to remove the screed to accommodate the insulation, saving considerable disturbance as well as time.



Whilst Vacuum Insulation Panels are more expensive per square metre than conventional insulation, the key benefit to utilising them on this project was the speed at which they could be laid and thus reducing the disruption to the tenants who were still occupying the property.

The prime contractors Lakehouse, in conjunction with their subcontractor Wights Property Solutions Limited, arranged through GME Surveyors for a site visit by Kevothermal Limited to survey the ground floor rooms. A matrix of VIPs was produced to enable simple installation of the factory

premade panel sizes (Vacuum Insulation Panels cannot be cut on site). A 3mm foam sheet was first laid on the cleaned screed, followed by the VIPs, and a subsequent top layer of 3mm foam. Galvanised 1mm steel sheets were then laid on top as a protection layer specified by the architects, before final fitting of the timber flooring.

The very able staff from Wights Property Solutions Limited, who were new to VIP installation, found this method simple and easy once they had understood the principles involved as discussed and demonstrated at a site meeting with Kevothermal staff.

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