

CASE STUDY

Ideal House



PRODUCTS USED

Earthwool® glasswool R-2.8
90mm Wall Segments
Earthwool glasswool R-1.4
50mm Wall Segments
Earthwool glasswool R-2.2
90mm Wall Segments
Earthwool glasswool R-4.1
195mm Ceiling Segments
Earthwool glasswool R-5.2
210mm Ceiling Segments

PROJECT

The Ideal House

CLIENT

S3 Architects

COMPLETION DATE

September 2014

"Knowing that Knauf Insulation has been awarded the Eurofins Gold Award for Indoor Air Quality and is Greenguard Gold certified provided assurance that Earthwool glasswool insulation would contribute to good indoor air quality in our home. We have a young family and the air quality in our home was important to the health of our children," said home owner Murray Durbin.



CHALLENGE

The Ideal House is a high performance family home completed in September 2014 in Beachlands, Auckland. It has been designed and built to be Passivehaus certified, and has a Homestar design rating of 8. It has tested at 0.45 air changes per hour at 50 pascals (below 0.6 requirement), has a German heat recovery system, and produces a surplus of electricity.

It is 218m² excluding the garage, which is outside the air-tight envelope and has four bedrooms, two bathrooms, open plan kitchen, dining and lounge plus two small living areas. The home is a showcase for energy efficient design and systems and will be open regularly for viewing for two years.

The home is currently stable between 21-23 degrees both day and night, and has been engineered not to fall below 20 degrees in any season with no additional heating sources. High levels of insulation were selected to achieve this level of performance, as well as an additional layer in the wall to reduce thermal bridging.

SOLUTION

The northern, eastern and western walls were insulated with Earthwool[®] glasswool R-2.8, 90mm, wall segments. Earthwool glasswool R-1.4, 50mm, was installed in the service cavity, constructed with horizontal battens over an airtightness membrane. The southern wall was insulated with R-2.8 and R-1.4 in the 140mm framing.

Earthwool glasswool, R-4.1, 195mm thick insulation was installed in the midfloor, and R-2.2, 90mm thick in all internal walls for acoustic benefits.

The ceiling was insulated with Earthwool glasswool R-5.2, 210mm in I-Beams placed at 900mm centres.

The floor was insulated over the concrete slab with a floating batten and cradle flooring system which provided ergonomic, acoustic, and thermal properties. Earthwool glasswool R-2.8, 90mm wall insulation was installed in the 90mm cavity.

Earthwool glasswool was chosen due to its high thermal performance, being low in dust, as well as having no added formaldehyde.

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"Using Earthwool glasswool in the ground level flooring allowed us to build a standard rib-raft slab, and insulate above not below to create a thermal break."

The home has a range of other energy efficient features such as triple glazed uPVC windows, an 8kW Photovoltaic panel system, hot water heat pump, LED lighting and movement and daylight sensors throughout, and eco features such as bamboo flooring, eco-certified concrete and permeable pavers for driveways and paths.

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