

CASE STUDY

Building Boxes



PRODUCTS USED

Earthwool® glasswool: Ceiling, R5.2
Earthwool® glasswool: Wall, R3.2
DriTherm® Masonry slab, R1.5
ClimaFoam® XPS Board, R1.8

PROJECT

Building Boxes

MAIN CONTRACTOR

Glyn Bilkey

CONTRACTOR

Xsite Construction
Mike Kennedy

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"Knauf Insulation's range of products provided us with insulation options that were suitable for use in the lower level where water resistance and compressive strength was needed but also in the upper level where thicker than average wall insulation was required," said Michele Powles, owner of Building Boxes.



CHALLENGE

Building Boxes is a New Zealand family home that was designed to achieve a vibrant, stylish, comfortable and sustainable home.

Building Boxes was constructed on a south facing block with a mix of timber frame and concrete block walls and required insulation products that were durable and had a high thermal rating.

"We like green and sustainable thinking, we believe passive technology works and with the world's resources clearly finite, it made sense to use sustainable products where we could," said Michele Powles, owner of Building Boxes.

SOLUTION

The back wall of Building Boxes was built into a slope and so it is effectively underground. Therefore, the thermal insulation needed to be able to perform well in this application in terms of moisture resistance and thermal performance.

The external masonry wall was covered with ClimaFoam® XPS Board, R1.8. ClimaFoam XPS Board has high compressive strength, 300kPa, and a closed-cell structure which makes it highly water resistant.

Knauf Insulation

Building 1, Unit 2, 15 Accent Drive
East Tamaki 2013, Auckland
New Zealand

For further information contact:
Tel: 0800 562 834
Email: info.nz@knaufinsulation.com

www.knaufinsulation.co.nz

Furthermore, the 50mm boards had a high thermal rating of R1.8, which was ideal for this application as it had constrictions on space and a high load bearing from the back fill.

Earthwool® glasswool: DriTherm® Masonry slab, R1.5, was installed against the lower level block walls to increase the thermal rating. Cement block walls were used in the lower level of the home. Insulation was needed to reduce thermal bridging, as well as being resilient and resistant to moisture transfer. Earthwool glasswool: DriTherm Masonry slab is silicone treated which allows the product to be installed directly against masonry walls and it will not transmit moisture to the inner walls, making it the ideal product for this application. Furthermore, Earthwool glasswool: DriTherm Masonry slab has a 50 year moisture resistant warranty.

It was important that the external walls on the upper and lower level of Building Boxes would sit flush together like a neat box. As ClimaFoam XPS Board had already been installed to the perimeter of the lower level, the timber used for the top level needed to be 140mm thick so it would be strong enough to overhang the concrete slab, creating an even frame for the external skin to be applied. By creating a thicker external wall frame, 140mm thick Earthwool glasswool: Wall batts were used, providing the owners with a highly rated thermal wall.

Earthwool glasswool: Ceiling batts, R5.2 were used in the ceiling. The high R-Values exceed minimum standards for insulation in New Zealand. Ceiling insulation is an essential component of the building fabric to help reduce energy use. The insulation will also contribute to the sustainable credentials of the home, helping to reduce carbon emissions.

RESULT

"We believe glasswool is the most sustainable and cost-effective insulation available and so it was our preferred choice over other types of insulation. Knauf Insulation's range of products provided us with insulation options that were suitable for use in the lower level where water resistance and compressive strength was needed but also in the upper level where thicker than average wall insulation was required," said Michele.

Earthwool glasswool is made using recycled glass and with ECOSE® Technology. ECOSE Technology is a revolutionary binder based on rapidly renewable materials instead of petro-based chemicals. Furthermore, Earthwool glasswool insulation is backed by a 50 year warranty providing Michele and her family with confidence that the insulation will provide high thermal performance for the lifetime of the home.



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