

Case Study

A single layer R7.0 Ceiling batt providing simple and cost-effective compliance for H1 regulations



Project Name

Tauranga Single-Storey Brick Veneer Home

Products Used

Knauf Insulation R7.0 single layer ceiling batt
Knauf Insulation R3.4 perimeter batt (around eaves)
Knauf Insulation R2.6 wall batt (high density)

Building Type

Residential House

Application

Ceiling and Walls

Contractor

Classic Builders

Build on us.



Overview

In New Zealand, compliance with the updated H1 Energy Efficiency regulations for building approvals from 1st May 2023 is a necessity for new houses and major renovation projects.

The updated H1 regulations have introduced the most significant changes ever to energy efficiency in New Zealand housing, and are intended to ensure homes are more comfortable, healthier and use less energy. Insulation is proving to be one of the easiest and most important considerations for cost-effective compliance for builders.

With most builders wanting to introduce higher levels of energy efficiency in new homes, but also retain existing construction methods, the specification of higher performance insulation is a cost-effective way to offset expensive windows and doors.

Classic Builders in Tauranga have used Knauf Insulation's single layer R7.0 ceiling solution in a traditional new bungalow in Tauranga that enabled both faster installation and lower cost compared to other options for H1 compliance.

What was the challenge?

Classic Builders was contracted to build a new, single-storey brick veneer home in Tauranga, New Zealand and considered various combinations of new whole-house specifications for H1 compliance. With an additional objective to retain current construction methods for easier trade sequencing, the use of higher performance insulation in the ceilings and walls seemed to offer theoretical benefits. A key area of concern for the builder was treatment of the eaves, thermal bridging and installation around pipes and electrical services. All these goals needed to be achieved in a quick and cost-effective system.



What was the solution?

With a design that provided a high-performance home with H1 compliance Classic Builders used Knauf Insulation's new R7.0 single layer ceiling insulation batts, supported by Install Solutions, an established professional installation contractor in Tauranga, with additional technical advice from Knauf Insulation.

Classic Builders decided to specify the R7.0 single layer ceiling insulation for and compare the outcome against a thinner double-layer insulation system.



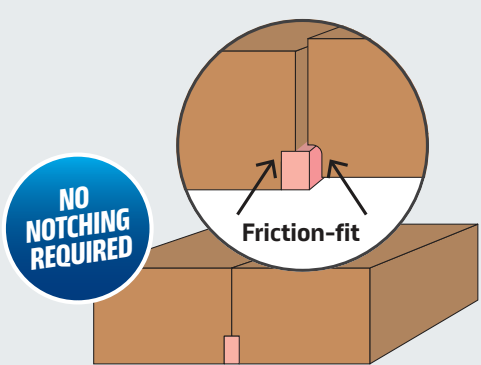
Double Layer Installation

The double layer installation used a 110mm first layer, overlaid with a 180mm layer of insulation cross-hatched to close off thermal bridging. In total, the installation of the double layer insulation took **2 hours and 20 minutes** to complete.



Single Layer Installation

Comparatively, the installation of the single-layer R7.0 solution was completed in just **1 hour and 24 minutes**, equaling a time saving of 40 per cent. The single layer solution provides a continuous layer of insulation with no thermal bridging, and is designed to knit around timber, pipes, and cables, with no need for further notching.

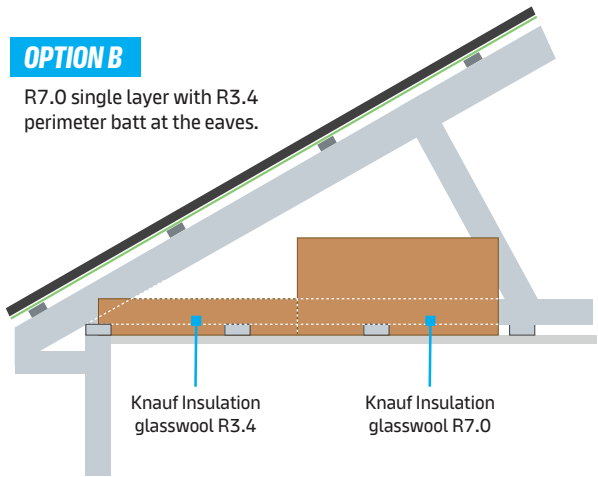
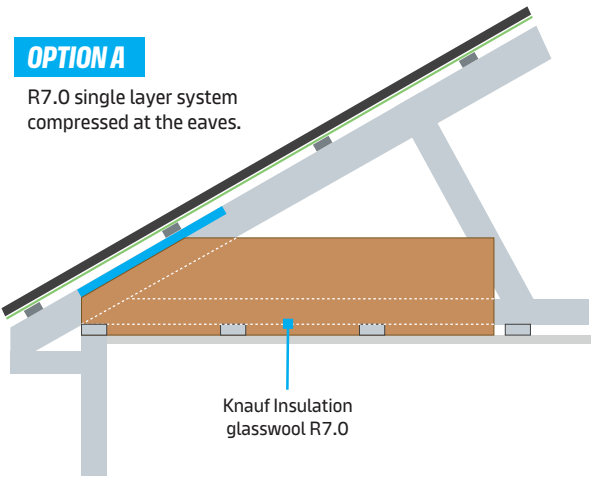


NO NOTCHING REQUIRED

Single layer is 40% quicker to install than double layer

What was the solution? (cont.)

The eaves were treated using two solutions, one using a 105mm R3.4 perimeter batt (without the need for a separation barrier from the roof) and an alternative method that used an R7.0 ceiling batt compressed into the eave using a barrier to maintain the ventilation requirements. Both methods achieved H1 compliance and remove the need for a change in the truss design.



Why Knauf Insulation?

Knauf Insulation's R7.0 single layer ceiling insulation batt was selected for multiple reasons, including its ability to deliver significant savings in labour, which reduced the overall project cost; the easy placement of cables, pipes, and other services; less material wastage; and increased thermal performance above and around the timber beams. It also eliminated the need for multiple products to be installed.

In this project we also use R2.6 insulation in the walls. The combination of these products has the potential to eliminate the need for expensive concrete slab insulation. The Knauf Insulation solution was singled out as the preferred product by installers for its ease of install, its compressibility at the eaves and how well it accommodated the timbers and all the services in the ceiling.

Overall, it was less complex to install and easier to demonstrate compliance compared to other insulation solutions. It also delivered faster, easier and more cost-effective H1 compliance. Knauf Insulation developed its R7.0 single layer ceiling insulation batt to meet the changing needs and demands of New Zealanders, and to ensure H1 compliance from beginning to end in new builds and renovation projects.

At 460mm wide and 330mm thick, the R7.0 insulation solution creates a continuous layer above truss chords to minimise thermal bridging. It is designed to reduce heat transfer through the ceiling, improve comfort and energy efficiency. Double layer systems can be complex and costly to install; comparatively, the advanced, single-layer solution is tailored to fit the majority of ceiling joist spacings for easy installation, without notching between the truss chord to seal the thermal bridge.

Additionally, the single layer R7.0 ceiling insulation solution is manufactured using DriTherm® Technology, which provides moisture resistance and is suitable for use in residential buildings.



"Achieving H1 compliance with ceiling insulation has traditionally been a labour-intensive process that required installers to use a double-layer system. This can be difficult to install, as the second layer is often challenging to get into place correctly while guaranteeing a tight fit between joints."

"The single layer solution from Knauf Insulation is much faster and easier to install, covers everything, and provides better in-situ performance than a double-layer system. Plus, there's no notching required, and it can be easily compressed to fit into the eaves. It's definitely a better choice."

Professional insulation installer,
Mark Fairclough, Install Solutions



About Knauf Insulation R7.0 single layer ceiling batt

Knauf Insulation glasswool R7.0 single layer ceiling batt is designed to expand around the timber frame and knit to the adjacent batt, creating a continuous layer of insulation in the ceiling.

The best part is there is **no notching or cutting of the batt required!**

- › Significant savings in labour (no notching)
- › Increased thermal performance above and around the timbers
- › Less complexity to demonstrate compliance
- › Less material wastage
- › More coverage per pack resulting in less on-site handling
- › Reduced overall project cost.



ECOSE® Technology

A unique plant-based binder which contains no added formaldehyde or phenol. It is made from natural raw materials that are rapidly renewable and result in lower upfront carbon emissions compared to traditional formaldehyde-based binders. This makes our insulation soft to touch and easy to handle.



TwinTech® Technology

An advancement in insulation manufacture – the dual forming technique enables thicker products for evolving building code requirements and ensures there is a smooth finish on both sides of the insulation for optimal product handling and appearance.



DriTherm® Technology

A silicone treatment that is added during manufacture to upgrade the moisture resistance of the glasswool insulation.



For more information about Knauf Insulation's H1 range of insulation products, visit:
www.knauf.com

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