

Case Study

BUILDING A 7.5 STAR 'LOW ENERGY' HOME WITH EARTHWOOL® INSULATION

October 2023



Project Name

The Good Day House

Products Used

R2.5^{HD} Earthwool® Wall Soundshield
R6.0 Earthwool® Ceiling

Building Type

Residential: Home

Application

External Wall
Internal Wall
Ceiling

Build on us.



Declare.



On a journey to build their dream house, husband and wife do-it-yourself (DIY) duo, Alexander Roberts and Imogen Gilchrist, better known as Al and Imo, were looking to design a 7.5-star energy efficient house in Torquay, Victoria.

The project came at a crucial time as Victoria has taken a significant step towards a greener future by raising the minimum energy efficiency standards for new homes from 6 to 7 stars, aligning with the National Construction Code of Australia 2022. Energy efficient homes are more comfortable to live in, cost less to heat and cool, and help reduce greenhouse gas emissions. That's why Al and Imo decided to go beyond the new minimum required 7-star energy efficiency standard and to build to a higher star rating. They dubbed their home The Good Day House.

What was the challenge?

As part of the home's modern design, large windows featured prominently. While this was designed to maximise natural light, it would also make the interior more susceptible to the change in seasonal temperatures. Given the diverse climate in Victoria, characterized by cold winters and hot summers, high performing insulation is a crucial component for an energy-efficient home.

The couple was therefore eager to ensure the house had an excellent thermal performance while being as sustainable and energy efficient as possible. Another significant requirement for the family of four was to ensure good acoustics in their spacious house. The DIY enthusiasts, Al and Imo, were in search of a durable, sustainable high-performance solution that is easy to install.

What was the solution?

Building energy efficiency into the home's foundations, Al and Imo selected Knauf Insulation's Earthwool® product range for the entire home. High Density R2.5 Earthwool® SoundShield batts were installed in the interior walls to enhance the acoustic performance in the house, to stop the spread of noise between rooms and to create more peaceful indoor environment.

An extremely high thermal performing Earthwool® R6.0 Ceiling batts was placed in the ceiling cavity. This solution offers superior energy-saving properties and acts as

an effective barrier against extreme temperatures.

Earthwool® is made using up to 80 per cent recycled glass and with ECOSE® Technology, a sustainable, plant-based binder that contains no added formaldehyde or other harmful chemicals. Moreover, Earthwool® represents no known threat to the environment it comes with "Red List Free" DECLARE Label and GreenTag™ Level A certification. These certifications aim to provide transparency around sustainability and health and safety.

"One of the most noticeable benefits we've experienced is how comfortable our home is. The design of the house, zoning for heating and cooling, and insulation have kept us cozy since moving in. If you're renovating or building your home, take the opportunity while your walls and ceilings are open to upgrade your insulation to the highest performing insulation you possibly can."

In comparison to other renovation costs, insulation is an inexpensive way to make your house more liveable. If you're going to spend money on heating, cooling, solar, and other appliances, you want to give them the best environment to optimise their performance. You could have the most beautiful home but absolutely nothing compares to getting up in the middle of the night to go to the bathroom and the house is comfortable and warm."

Al and Imo



Prior to ordering their insulation, Al and Imo researched the latest products available and found that Knauf Insulation ranked best for sustainability and performance, commenting, "We knew that investing in a quality product meant that, long term, we'd save money and energy, whilst living in harmony with our values. For maximum efficiency, it's important to order batts to the correct width of the studs and cut them to size so they fit nice and snugly."

By selecting Earthwool® product range, DIY enthusiasts were able to install most of the insulation in a single day. "We wore long sleeves, long pants, gloves and safety glasses expecting it to be really itchy and tough to work with, however we found that the insulation was really soft and wasn't as itchy as we expected".

What Knauf Insulation?

Following completion, The Good Day House achieved a rating of 7.5 stars (74.8 MJ/m²), exceeding the new minimum NCC standards (due to come into force 1st May 2024 in Victoria). It stands as a testament to what can be achieved in sustainable home construction, setting a new standard for energy-efficient homes in Australia. The home's design reflects sustainability and future living, with an orientation around a courtyard and an open-plan, light-filled, and well-ventilated layout. The strategic use of Knauf Insulation products gives Al and Imo peace of mind that their home has been constructed with sustainability and energy efficiency in mind from beginning to end.

Al and Imo said, "Living in our 7.5-star energy-efficient home feels amazing. We have put so much thought and effort into creating a space that reflects our passion for good design and aligns with our commitment to sustainability."

"Adding quality insulation into The Good Day House ensures that all the sustainable features that we've incorporated into the build are working to their full potential, meaning that, long-term, we get more bang for our buck. Additionally, the acoustic insulation batts which are denser than thermal insulation batts, means they are really effective at reducing sound travel between spaces."

Al and Imo expect to save hundreds of dollars a year on their energy bills, thanks to the benefits of the Knauf Insulation products, which have been an integral element in delivering the energy efficiency outcomes of The Good Day House. The project serves as a living example of future Australian architecture and sets a precedent for energy-efficient homes.



About Earthwool® Insulation

Energy efficiency and sustainability is becoming more valued in Australian new build housing but we are still far behind the standards of other countries.

There are specification and product upgrades that can be made to achieve a higher performing energy efficient home to ensure your home exceeds minimum standards and is future-proof.

Insulation is well regarded as an effective building material that can contribute to the thermal and acoustic performance of a home but even more so, it can also help improve the energy efficiency and reduce energy consumption.

- > Sound absorbing
- > Non-combustible
- > Saves energy - lower energy bills
- > No added formaldehyde
- > Soft to handle and install
- > TwinTech® – smooth finish on both sides
- > Compression packed - more product per pack
- > Odourless



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.



Declare & Red List Free

Knauf Insulation's glasswool, free from Red List materials and certified for excellent air quality, features up to 80% recycled content and ECOSE® Technology, offering safer, eco-friendly building solutions.



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

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