

Case Study

Roofing Solution that Transformed Our Johor Bahru Plant Expansion

August 2025



Project name

Knauf Insulation Johor Warehouse Expansion

Products used

Earthwool® Metal Roofing Roll 50mm x 24kg/m³

Building type

Plant Expansion

Application

Roof

Building / Installer

AME Contractor

Build on us.





In tropical climates like Malaysia, roofs are one of the most critical points of thermal gain in a building – often responsible for over 40% of heat transfer. Without proper insulation, internal temperatures rise rapidly, leading to increased reliance on cooling systems, higher energy consumption, and reduced indoor comfort. They can also amplify the sound of rain and machinery, creating uncomfortable noise levels in industrial spaces.

For the expansion of Knauf Insulation warehouse, it required a roofing insulation solution that could deliver high thermal performance, provide effective acoustic control, and maintain durability in humid conditions – all while aligning with sustainability objectives. The chosen system needed to reduce cooling loads, improve indoor comfort, and demonstrate long-term reliability in one of the most demanding climates for building materials.



What was the challenge?

Knauf Insulation's Johor Bahru warehouse expansion was driven by the need to increase storage and operational capacity to meet growing demand across the Asia-Pacific region. However, undertaking construction within an active manufacturing facility presented multiple challenges, the project had to be completed without interrupting daily operations.

The existing building design also meant that any additional roofing load had to be minimised, making lightweight materials essential. At the same time, the tropical climate of Johor Bahru, Malaysia, posed its own demands – intense solar heat needed to be controlled to keep internal temperatures manageable, while high humidity and the risk of condensation threatened the long-term durability of conventional insulation.

On top of that, the pronounced noise generated by heavy rainfall on a metal roof, combined with general industrial operational noise, meant that acoustic control was essential for maintaining a comfortable working environment. The insulation also needed to be lightweight to reduce structural loading on the roof, while still being robust enough to withstand handling, installation at height, and long-term exposure in a demanding industrial setting.

What was the solution?

To meet the project's performance and operational requirements, Knauf Insulation has supplied and installed Earthwool® Metal Roofing roll (Unfaced) in a 50mm thickness, delivering an R-value of up to 1.50 m²K/W. This specification was carefully chosen to provide a substantial reduction in heat transfer through the metal roof, directly lowering internal heat gain and easing the cooling load on the facility's air-conditioning systems. The improved thermal stability not only enhances workplace comfort but also supports long-term energy efficiency – a critical consideration in a facility that operates year-round in a hot, humid climate.



The nature of metal roofs means that heavy tropical rain can generate significant noise, which can disrupt workflow and increase fatigue for those working inside. With that, the fibrous structure of Earthwool® absorbs sound energy, reducing rain impact noise and reverberation within the space. This has resulted in a noticeably quieter environment during storms, as well as reduced transmission of operational noise within the warehouse.

Earthwool's Metal Roofing roll composition offers thermal and acoustic performance equivalent to other common insulation materials but with additional advantages that were vital for this project. Its lightweight nature minimised structural load on the steel roof framing, while its compression packaging allowed more material to be moved and positioned quickly on-site, streamlining the installation process. The flexibility of the rolls made fitting them into tight spaces easier, and TwinTech® Technology provided a smoother, softer finish, improving comfort and safety for the installers.

Knauf Insulation Earthwool Metal Roofing roll also incorporates DriTherm® Technology, which prevents moisture absorption and helps the insulation maintain its shape and performance over time. This feature safeguards against sagging or deterioration, ensuring that both the thermal and acoustic benefits are preserved throughout the product's lifespan.



Sustainability was built into the solution from the start. Manufactured with up to 80% recycled glass and with ECOSE®, a no-added formaldehyde plant-based binder, the insulation contributes to healthier indoor air quality through low VOC emissions. The product's Environmental Product Declaration (EPD) provides verified data on its low embodied carbon footprint, aligning the project with Knauf Insulation's commitment to delivering solutions that combine high performance with environmental responsibility.

Why Knauf Insulation?

By selecting Earthwool Metal Roofing roll, we have demonstrated complete confidence in our product's ability to meet the demands of Malaysia's climate and industrial conditions. The expansion not only increased our operational capacity but also enhanced the comfort, efficiency, and sustainability of our working environment. This project stands a living example of how Knauf Insulation solutions perform in real-world conditions – combining high thermal and acoustic performance, lightweight design, moisture resistance, and proven environmental credentials. The project reflects our brand values in action: delivering comfort, efficiency, and environmental responsibility without compromise.

“Knowing the benefits of Earthwool Metal Roofing roll from our work with customers, it's been incredibly rewarding to experience those same advantages in our own facility. The expansion has given us a space that stays cooler, is noticeable quieter during heavy rain, and maintains a comfortable environment for our team all year round. Installing it here reinforce our confidence in recommending this solution – we've seen first-hand and how it delivers on performance, durability and sustainability.”

– Sat Bir, Head of Supply Chain at Knauf Insulation Asia-Pacific

About Earthwool® Metal Roofing roll

Earthwool Metal Roofing Rolls are designed for quick and efficient installation in both single-skin and twin-skin profiled metal roof systems, including standing seam and bracketed rail constructions.

The insulation is typically laid over or between purlins, and supported by roof sheeting, metal mesh, or spacer systems depending on the roof design. Once installed, Earthwool insulation contributes to excellent thermal and acoustic performance, while its non-combustible and moisture-repellent properties support long-term durability, safety, and energy efficiency under metal cladding systems.

Benefits of Earthwool Metal Roofing roll:

- > Superior sound absorption
- > Low water absorption advantage
- > Light weight
- > Lower carbon footprint choice
- > Installer-friendly
- > Healthy indoor air quality



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, is 70% less energy intensive to manufacture than traditional binders, and 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 insulation products, visit:
www.knauf.com

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