

WHY ARE THERMAL BREAKS SO IMPORTANT?

Modern buildings are designed to be energy-efficient, sustainable, and comfortable. But even the best insulation system can lose a significant amount of performance when thermal bridges are ignored.

That is why thermal breaks have become an essential component in modern ventilated façade construction.

The Challenge of Ventiladed Façades

A ventilated façade system must be securely attached to the building structure.

However, there is one important problem:

You cannot fix a façade system directly onto thermal insulation such as mineral wool or rock wool insulation. Insulation materials are simply not structurally strong enough to carry façade loads safely over time.

Therefore, the façade substructure must be mechanically connected to the structural wall behind the insulation layer.

And this is where the thermal challenge begins.

The Problem: Thermal Bridges

If the façade support system passes directly through the insulation and connects cold exterior components to the warm interior structure, a thermal bridge is created.

A thermal bridge allows heat to escape continuously through the façade attachment system during the entire lifetime of the building.

The consequences can be:

- Heat loss
- Reduced energy efficiency
- Higher energy consumption
- Lower insulation performance
- Increased condensation risk
- Potential moisture-related problems

Even small thermal bridges can significantly affect the long-term energy performance of a building envelope.

The Solution: Thermal Breaks



A thermal break creates an insulating separation between the cold exterior façade structure and the warm structural wall behind it.

By placing a thermal break between both sides of the connection:

- The façade remains structurally secure
- Heat transfer is drastically reduced
- Thermal bridging is minimized
- Energy efficiency improves significantly

In other words: **Thermal breaks allow strong façade connections without sacrificing thermal performance.**

This is exactly why thermal break technology has become standard practice in high-performance ventilated façade systems.

Energy Efficiency and Building Performance

Modern building regulations place increasing focus on:

- Energy efficiency
- Sustainability
- Reduced CO₂ emissions
- Long-term thermal performance

Thermal breaks contribute directly to achieving these goals by helping maintain the integrity of the insulation layer.

The result:

- Lower heating and cooling costs
- Better indoor comfort
- Improved building performance
- Increased sustainability value

An Important Detail: Fasteners and Thermal Bridges

Did you know that bolts and fasteners passing through thermal break pads can still create small thermal bridges?

In ventilated façade systems, mechanical fixings that penetrate the thermal break slightly reduce the overall insulation performance of the wall.

However, in practice, this effect is extremely small.

The influence on the total R-value of wall construction is typically only around:

- **0.002% to 0.01%**

From a thermal calculation perspective, this is often considered negligible.

But Condensation Still Matters

Although the thermal loss itself is minimal, these localized thermal bridges can still increase the risk of condensation.

Condensation may occur when warm interior air meets colder surfaces around metal fixings or façade attachments.

That is why professional façade engineering must always consider:

- Thermal performance
- Moisture control
- Ventilation
- Condensation risks
- Long-term durability

Smart Façade Engineering Starts with Details

High-performance façades are not defined by a single product, but by the intelligent combination of:

- Insulation
- Substructure systems
- Thermal breaks
- Ventilation
- Adhesive technologies
- Structural engineering

At TWEHA®, we understand that durable and energy-efficient façade systems depend on mastering every detail.

Because the smallest thermal bridge can become a long-term performance issue if not properly engineered.

And that is exactly why thermal breaks are no longer optional — they are essential in modern façade construction.

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