

CONTROLLING THERMAL STRESS ON FAÇADES THROUGH SMART BONDING TECHNIQUES

Modern façades are exposed to constant environmental stress every single day.

Temperature fluctuations caused by:

- day and night cycles,
- direct sunlight,
- seasonal weather changes,
- and local solar exposure

create continuous expansion and contraction movements within façade panels.

These movements generate: **thermal stress**.

If this stress is not properly controlled, serious problems can occur, including:

- panel cracking,
- material deformation,
- bond failure,
- and long-term façade damage.

That is why smart bonding technology plays a critical role in modern ventilated façade systems.

Why Thermal Stress Matters

Every façade material reacts differently to temperature changes.

When exposed to heat:

- cladding panels expand.

When temperatures drop:

- the materials contract again.

Because façades are continuously subjected to these cycles, the bonding system must be capable of safely absorbing and distributing these movements over time.

Without sufficient flexibility and movement absorption, stress concentrations can build up inside the façade system — eventually leading to visible or structural damage.

The Smart Role of Double-Sided Tape

An essential component in professional bonded façade systems is the use of 3 mm double-sided spacer tape. This tape performs multiple important functions.

- **Temporary Initial Support**

During installation, the tape temporarily holds the façade panel in position while the adhesive cures. This allows:

- secure positioning,
- faster installation,
- and stable panel alignment.

- **Creating the Correct Adhesive Thickness**

Equally important, the tape acts as a spacer that guarantees **consistent 3 mm adhesive layer thickness**.

This controlled adhesive thickness is crucial for proper stress absorption and long-term façade performance.

Why Adhesive Thickness Is Critical

The adhesive layer must have sufficient thickness to remain flexible and absorb movement effectively. If the adhesive layer becomes too thin:

- flexibility decreases,
- stress concentrations increase,
- and the bond becomes more vulnerable to failure.

A uniform 3 mm adhesive thickness ensures the bonding system can:

- compensate for thermal expansion,
- absorb façade movement,
- and distribute stress evenly.

The Power of Flexible Adhesives

Modern TWEHA® adhesive systems are specifically engineered with:

- high elasticity,
- excellent movement capability,
- and durable stress absorption properties.

These advanced adhesives can accommodate **up to 300% deformation**.

This extreme flexibility allows the adhesive to:

- absorb thermal movement,
- reduce internal stress,
- and protect the façade system from cracking or structural damage.

Instead of resisting movement rigidly, the adhesive system moves together with the façade construction.

Long-Term Protection for the Façade

By combining:

- controlled adhesive thickness,
- flexible bonding technology,
- and intelligent spacer systems,

thermal stress can be effectively managed throughout the entire lifespan of the façade.

The result is:

- a durable façade system,
- improved long-term reliability,
- reduced maintenance,
- and protection against visible damage and structural failures.

Smart Bonding for Modern Architecture

Modern architecture increasingly demands:

- large-format panels,
- lightweight constructions,
- hidden fixing systems,
- and durable performance under extreme climate conditions.

Advanced bonding systems such as TWEHA® technologies provide the flexibility and engineering reliability required to meet these demands safely and efficiently. Because successful façade design is not only about appearance — it is about intelligently managing the forces acting behind the façade every single day.

TWEHA®, 2026