

ADHESIVE APPLICATIONS IN THE AUTOMOTIVE AND AVIATION INDUSTRIES COMPARED TO BONDED FAÇADE CLADDING

When people think about structural safety in aviation or automotive engineering, adhesive bonding is often overlooked. Yet modern aircraft and vehicles rely heavily on advanced adhesive technologies to achieve the strength, flexibility, durability, and safety required in the most demanding environments.

The same proven bonding principles are now successfully applied in modern ventilated façade systems.

Adhesive Bonding in the Aviation Industry

Did you know that many structural aircraft components are bonded instead of mechanically fixed?

Critical elements such as:

- fuselages,
- wings,
- tail sections,
- and composite panels

are bonded using high-performance adhesive systems.

Why? Because adhesive bonding offers major advantages:

- reduced weight,
- improved aerodynamic efficiency,
- even stress distribution,
- vibration absorption,
- and enhanced structural stiffness.

In aviation, every kilogram matters. Adhesive bonding allows engineers to create lighter yet stronger structures while maintaining exceptional long-term durability under extreme operating conditions.

These bonded structures must continuously withstand:

- tensile and compressive forces,
- shear and torsional stresses,
- extreme temperature fluctuations,
- UV exposure,
- humidity,
- and long-term fatigue loads.

For decades, adhesive bonding has proven itself as a reliable and indispensable technology within the aerospace industry.

Adhesive Bonding in the Automotive Industry

The automotive sector adopted structural adhesive bonding on a large scale as early as the 1950s.

A well-known example is the bonded windshield, which today plays a crucial role in:

- the structural rigidity of the vehicle,
- passenger safety,
- airbag performance,
- and crash resistance.

Modern vehicles also use adhesives extensively for:

- body panels,
- roof systems,
- battery assemblies,
- lightweight composite components,
- and crumple zone engineering.

Adhesive bonding improves:

- structural strength,
- energy absorption during impact,
- vibration reduction,
- corrosion resistance,
- and overall vehicle performance.

Without advanced bonding systems, many of today's lightweight and energy-efficient vehicle designs would simply not be possible.

What Does This Mean for Façade Cladding?

The same engineering principles used in aviation and automotive manufacturing are also applied in bonded ventilated façade systems.

Since the 1980s, high-quality TWEHA® bonding systems have been successfully used worldwide for the installation of façade panels in ventilated façade constructions.

Like aircraft and vehicles, façade systems are continuously exposed to:

- wind loads,
- thermal expansion and contraction,
- UV radiation,
- moisture,
- vibrations,
- and long-term mechanical stresses.

A properly engineered adhesive system must therefore provide:

- permanent elasticity,
- controlled load transfer,
- long-term weather resistance,
- and durable structural performance.

Decades of Proven Performance

With decades of experience in façade bonding technology, TWEHA® combines:

- Engineering expertise,
- extensive testing,
- certified quality,
- and proven long-term reliability.

The result:

millions of square meters of façade panels worldwide have already been bonded successfully using TWEHA® systems — and continue to perform safely and sustainably year after year.

Bonding Technology: Proven Across Industries

From aircraft and automobiles to modern architectural façades, adhesive bonding has evolved into a highly advanced and trusted engineering solution.

The advantages are clear:

- lighter constructions,
- improved aesthetics,
- better stress distribution,
- increased durability,
- and reliable long-term structural performance.

TWEHA® brings this proven technology to the façade industry — combining innovation, safety, and sustainability in every bonded connection.

TWEHA®, 2026