

A white Volkswagen van is shown in a factory setting, elevated on an orange hydraulic lift. The van's hood is open, revealing the engine compartment. The interior seats are covered with black plastic. The background shows industrial equipment and overhead lighting.

HOW ADHESIVE TAPES CAN INCREASE PRODUCTIVITY IN COMMERCIAL VEHICLE BUILDING

This white paper explains how adhesive tapes make commercial vehicle converting operations faster and safer



Every converter strives for continual productivity improvement, but for commercial vehicle bodybuilders, the challenge is particularly acute. Commercial vehicles and trailers are physically large, frequently customised and constructed using labour-intensive manual processes. Those characteristics make it difficult to remove excess materials from production operations by conventional means.

The productivity challenge is further compounded by the nature of the product. Commercial vehicle applications frequently require accurate, large-span connections between dissimilar materials. Such bonds are required where plywood or GRP panels are fixed to the frames, for example, or for the installation of flooring, interior load securing rails and exterior rub strips.

Production challenges

To create these bonds, bodybuilders have a limited number of options available to them. The materials involved preclude the use of welding, leaving a choice between the use of mechanical fasteners, such as screws, bolts or rivets, or the use of adhesives.

Both these approaches come with significant labour requirements. Mechanical fasteners must be installed individually, often in a multi-stage process requiring holes to be drilled prior to fastener installation. Providing sufficient load-bearing capabilities on large parts may require fasteners to be installed every few centimetres along the length of a panel and may require hundreds of fasteners in a complete vehicle. And while mechanical fasteners create a full-strength bond immediately, they may require additional operations for weatherproofing or aesthetic reasons.

Bonding using liquid adhesives overcomes several of the disadvantages of mechanical fasteners. Bonded parts reduce the need for holes, for example, they can provide superior stress distribution, important where panels are used. And they can create a strong, weatherproof seal in a single operation.

Adhesive bonding has significant downsides, however, as liquid adhesives require time to cure, which can slow down production operations and increase the requirement for temporary fixtures to keep parts in place until the bond has formed. Ensuring the performance of an adhesive bond may involve significant surface preparation work, and excess adhesive may need to be removed by hand if they are visible to the end customer.



How tapes can help

One solution to bodybuilding productivity challenges is the use of modern adhesive tapes. Bonding with tape offers several advantages in comparison to both mechanical fasteners and liquid adhesives. Tapes are quick and clean to apply, with minimal waste, simple surface preparation and no post-assembly clean up. Unlike liquid adhesives, tapes provide almost immediate handling strength, reducing cycle times and simplifying manufacturing sequences. Unlike mechanical fasteners, tapes don't require the drilling of hundreds of time-consuming holes. Tapes can bond and seal in a single process, and they are invisible once applied, providing aesthetic benefits and smooth interior and exterior surfaces that are easy to clean.

Modern industrial adhesive tapes provide high-performance, precision-engineered solutions to even the most demanding bonding challenges. At tesa's Application Solution Centres around the world, specialist engineers spend their time working with customers to identify the optimum combination of adhesives and tape materials to suit their products and converting processes.

tesa has developed and validated solutions for tough commercial vehicle applications, like securing large roof or body panels. Properly engineered tape bonds can meet stringent industry requirements for strength, resistance to chemicals extreme temperature and vibration, and waterproofing.

The productivity improvement offered by adhesive tapes can be highly significant. One major bodybuilder was able to reduce the time taken to install trailer roof assemblies from



three hours to less than one by replacing a liquid adhesive process with tesa ACX^{plus} adhesive tape. The ease of using the ACX^{plus} tape has reduced the total amount of time required in production, allowing the bodybuilder to double the size of its business.

Ergonomic advantages

Tapes don't just save time, they also help to create a safer, more pleasant working environment. Tape bonding can significantly reduce the requirement for operators to work with hand held power tools, for example, cutting down a major source of noise, injury risk and hand-arm vibration exposure. Unlike liquid adhesives, tapes don't expose staff to the risk of spills or exposure to potentially toxic chemicals.

Performance on the road

The benefits of adhesive tapes do not end when a vehicle leaves the factory. For example:

- Tape bonds also perform well in service. The even distribution of stress reduces the risk of cracking around fastener holes.
- Tapes bond without requiring the high compressive forces that can damage hollow or honeycomb materials.
- Tapes with flexible foam or polymer cores can accommodate differential thermal expansion between components, promoting durability in difficult environments such as low temperature operations.

Adhesive tape applications within commercial vehicle bodybuilding

Leading OEMs, suppliers and vehicle conversion specialists are already using high-performance adhesive tapes to boost productivity in a range of applications. They include:

- Mounting of stiffening bars to sidewalls
- Roof system installation
- Securing floors
- Mounting rub strips and other exterior components

The use of adhesive tapes can help vehicle OEMs and body builders reduce both labour inputs and cycle times. That increases competitiveness by enabling quick, cost-effective and high quality manufacturing operations.



Our management system is certified according to the standards ISO 9001, IATF 16949, and ISO 14001. All our products delivered to automotive customers are listed in the International Material Data System (IMDS).