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Why OEM approved polyurethane adhesives matter

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Image: Sika

Windshield replacement and vehicle recalibration processes are rapidly evolving. In this complex environment, technological standards are driving significant changes in both windshield

installation and the recalibration of Advanced Driver-Assistance Systems.

Modern passenger cars and commercial vehicles require a safer, more robust, and efficient windshield replacement process. This article offers solutions for auto glass companies, fleet operators, and insurers, focusing on controllable elements such as windshield replacement adhesives.

We examine the current market landscape and explore the unique challenges facing the auto glass industry, including in-house and mobile installations, varying climates, and the vast array of car models and ADAS systems, all of which contribute to complex installations.

The windshield ensures an undistorted view and is a critical component of a car's safety system. It must remain attached to the vehicle to protect occupants in an accident. Beyond serving as the backboard for inflating passenger airbags, bonded windshields also contribute to the structural integrity of modern vehicles. Proper installation is vital; an incorrectly installed windshield can detach in a collision, causing serious injuries and death.

We discuss solutions that ensure safe, precise, and robust windshield installation, meeting automotive OEM standards for peak performance, thereby boosting the competitive edge of auto glass companies, fleet operators, and insurers.

Image: Sika

Failure to optimise is no option

For maximum safety and hassle-free windshield replacement for drivers and liability holders, replacements should use both glass and adhesive that meet specific automotive OEM standards. The auto glass replacement adhesive must be fully cured before the car is returned to the driver, achieving the same strength as the factory-installed adhesive to provide the required structural integrity. This approach ensures precise, safe, robust, and reliable windshield replacement, helping to:

- Reduce come-back costs and improve operational efficiency for auto glass operators.
- Reduce vehicle downtime for fleet operators.
- Secure high customer satisfaction for insurers.

ADAS: Transforming the auto-glass business

The auto glass business, despite its specialised nature, is vulnerable due to low barriers to entry and occasional incomplete information. The consequences include traditional risks such as catastrophic failures and delayed discovery of installation errors (e.g., leakages or adhesive failure), which pose significant safety risks. Improper tools, pinch weld damage, unqualified windshields, non-automotive OEM approved adhesives, and poor process handling can lead to corrosion, come-backs, safety risks, and customer dissatisfaction. Furthermore, ADAS has transformed windshield replacement from a simple task to a complex one.

Today's passenger cars and commercial vehicles use lightweight materials and cutting-edge ADAS technology, including automotive imaging, LIDAR, radar, and in-car networking. These systems can prevent accidents or mitigate their consequences. A correctly installed windshield supports the function of several safety systems, including cameras and radar units. Cameras and radar are highly sensitive to optical and geometric tolerances, glass thickness, and windshield mass. The software is fine-tuned for each windshield variant and requires extremely stringent optical tolerances. Windshield replacement can affect these ADAS systems, necessitating mechanical alignment adjustments.

Therefore, after windshield replacement and before vehicle handover, ADAS recalibration is essential for road safety, regardless of climate or location. Installation and calibration must be precise and follow a defined process.

ADAS recalibration, which can be static, dynamic, or both, depends on the car model and automotive OEM's specifications. Static calibration occurs in a specialised workshop environment without driving the car and requires equipment like Camera and Sensor Calibration (CSC) tools. Dynamic calibration involves driving the vehicle under specific conditions to complete the ADAS calibration process, using a hand-held unit connected to the vehicle

A competitive edge

ADAS and new car designs with increased structural complexity have created a dynamic in the auto glass replacement industry. This dynamic emphasises optimising material selection, operational excellence, and efficiency. Reducing come-back costs and minimising vehicle downtime are crucial for efficiency and customer satisfaction. While auto glass companies and fleet operators understand the significant impact of operational optimisation on their bottom line and long-term sustainability, many have yet to act on this knowledge.

Gaining an edge through TCO

By adopting a Total Cost of Ownership (TCO) approach, auto glass companies and fleet operators can significantly reduce operating costs. Evaluating the complete cost picture for equipment and operations, including auto glass replacement adhesives, allows for decisions based on cost-efficient output rather than short-sighted, up-front costs. Auto glass installers who embrace a comprehensive approach to glass replacement will be well-positioned to gain a competitive edge, improving their bottom line and ensuring they are prepared for current and future safety and performance standards. Fleet operators can minimise downtime with immediate windshield replacement.

Fully cured windshield adhesives

Sika's analysis shows that windshield installation and ADAS calibration using effective auto glass replacement adhesives can generate savings and significantly impact the bottom line.

However, a gap exists between intention and action. Operators and technicians still encounter installation and ADAS calibration problems, leading to come-backs due to incorrect adhesive selection.

This issue stems from a lack of understanding about the benefits of OEM-approved adhesives. Instead, some opt for non-OEM approved options like MS Polymers and cost-effective polyurethanes, compromising vehicle safety, structural integrity, long-term durability.

Premium adhesives like SikaTack® return the vehicle to its original condition. This is achieved through rapid, full curing, ensuring the windshield is bonded with the same strength as the factory-installed one.

The power of partnerships

Collaboration is essential for success in the auto glass industry. Sika and its local sales and technical support organisations can help you find the right products and training solutions for auto glass specialists and fleet operators. Through partnerships with automotive OEMs, auto glass experts, and industry bodies, Sika leverages industry-leading tools, research, and expertise to maintain and advance its leadership in auto glass replacement adhesive technology.

The auto glass replacement industry has tremendous opportunity. Auto glass companies, insurers, and fleet operators are adapting to new car designs (e.g., lightweight vehicles), ADAS, and pressures on operational efficiency and liability. However, these changing fundamentals also bring increased competition and risk.

Selecting the right windshield and replacement adhesive is crucial for safety, liability management, and operational efficiency. Fully cured, automotive OEM-approved adhesives like SikaTack® Elite (based on PowerCure technology), SikaTack® PRO and SikaTack® Drive, provide an efficient and safe solution for ADAS-related auto glass replacement, delivering peak performance and eliminating limitations.

This column by Steven Theron is brought to you by Sika.

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