

HIGH-QUALITY GLUING OF BATTERY COVERS

Flexibly controllable adhesive application quantities and even surfaces thanks to perfect swirl application increase product quality and efficiency at Teijin Automotive Technologies Czech s.r.o.

Teijin Automotive Technologies Czech s.r.o. is part of a leading global group that produces innovative technologies and lightweight composite materials for the automotive industry. At its plant in Milovice, Czech Republic, the company manufactures high-quality battery covers for electric cars made of aluminum, SMC (sheet molding compound), and mica. Gluing the complex-shaped parts is part of the core process, as the precision and uniformity of the adhesive application are decisive factors in the quality of the battery cover.

Inadequate quality

"The adhesive application solution on our existing production line did not meet our quality requirements", explains Lukáš Mildorf, CTO of Teijin Automotive Technologies Czech s.r.o. "Service availability was also unsatisfactory." When the company planned

two additional production lines in 2022, it commissioned Czech machine manufacturer JHV SOLUTIONS s.r.o. to develop and implement them. Petr Jakube, Project Manager at JHV, identified Kaletex, Robatech's official representative in the Czech Republic, as a potential supplier: "We focused on suppliers with high-quality and flexible adhesive application technology for the new production lines."

High-quality spray application

Complex-shaped parts can be optimally glued with a spray application in a swirl pattern. Two factors are important here: First, the adhesive swirls in a row should be applied evenly. This requires precise positioning and repeat accuracy. Second, the rows of swirls should be as close together as possible without overlapping. This requires precise edge accuracy of

TEIJIN

THE CUSTOMER

Teijin Automotive Technologies Czech s.r.o. manufactures high-quality battery covers for electric cars in Milovice, Czech Republic. On two production lines they use 360° gluing with robots for flexible and high-quality adhesive application.



Lukáš Mildorf, CTO of Teijin Automotive Technologies Czech s.r.o.



Precision, repeatability, and edge accuracy are hallmarks of quality in swirl application



"The ability to control individual spray elements in real time enabled us to achieve a very high level of precision in adhesive application on complex, three-dimensional surfaces. Our previous supplier was unable to offer this level of flexibility."

Petr Jakube

Project Manager, JHV SOLUTIONS s.r.o.

the swirl application. If both factors are met, there will occur no unevenness on the surface of the material to be glued and the bond will be reliable.

Tests on adhesive application quality with prototypes

Teijin tested the precision, stability, and edge accuracy of the swirl application at Robatech's headquarters in Muri back in December 2022. Miloš Hrabák, Production Manager at Teijin Automotive Technologies Czech s.r.o., emphasizes how valuable these tests were: "We had the opportunity to produce prototypes of our parts before the production line was installed. This allowed us to adjust all the parameters for the adhesive applica-

tion to the materials so that production could then start smoothly. The support and service quality provided by Kaletex is and has always been excellent."

Flexible control of spray elements

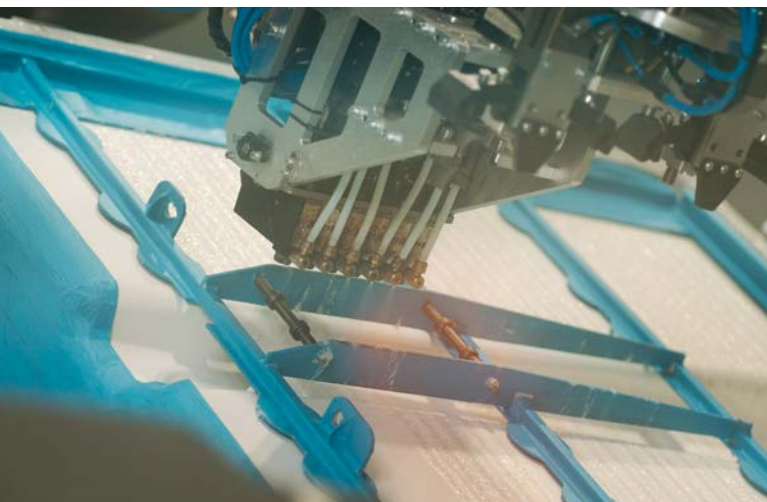
In August 2023 and January 2024, JHV installed the second and third production lines, each with identical workstations, in Milovice nad Labem, Czech Republic. At the first station, two KUKA robots and two Aero spray heads apply PUR hot melt adhesive in a swirl pattern to the inside of a deep-drawn aluminum sheet and glue it to an SMC laminate. Previously, an application head with five spray elements was used for this

application. Robatech uses six elements to reduce the time required for adhesive application.

Every spray element can be controlled individually. A single spray element is sufficient for applying adhesive to the edge of the sheet. For the flat part, elements are switched on or off as required during the movement of the robot. Although adhesive is omitted in certain areas, the application quality remains stable during spray element switching. "The ability to control individual spray elements in real time has enabled us to achieve very high precision in adhesive application on complex, three-dimensional surfaces," says Petr Jakube, Project Manager at JHV. "The previous supplier could not offer this flexibility."

Varying application quantities simplify warehousing

At the second station, a mica plate is glued to the battery cover to increase burn-through safety. A KUKA robot and an Aero application head are also used here. This setup really pays off on the third production line. Here, mica plates in two different sizes are glued, which means that different quantities of adhesive are required. "Normally, two application nozzles would be required. However, every nozzle change costs time," explains Tomáš Langer, Project Manager at Kaletech. "The Aero application head offers the advantage that the adhesive application quantity can be varied via the air pressure. This means we can manage with just one type of application nozzle. This naturally



Aero application head with six individually controllable spray elements



Mica plates of different sizes can be glued using Aero without changing the nozzle, despite varying amounts of adhesive being required.

simplifies storage for the customer.”

For melting and conveying the hot melt adhesive, Robatech uses one RobaDrum 200 melter and two MultiMelt melters per production line.

Gluing battery covers – a successful project

Switching to an adhesive application system from Robatech has brought numerous advantages to Teijin Automotive Technologies Czech s.r.o.

- Guaranteed adhesive application quality thanks to high edge accuracy and precision of the swirl application.
- Efficiency and flexibility thanks to variable adhesive application quantities and simplified spare parts management.
- Reliability of the adhesive application systems without unplanned downtime.
- Reliable and fast service from Kaletch.

Lukáš Mildorf, CTO of Teijin Automotive Technologies Czech s.r.o., gets to the heart of the matter: “By working with JHV and Kaletch, we have been able to significantly increase our quality and efficiency. We are very satisfied with the technology, but also with the support and customer service. Both are of great value in our industry.”



The Areo application head delivers precise, repeatable swirl application of high edge accuracy

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Robatech optimizes the industrial hot melt and cold glue application with sustainable and innovative adhesive application systems. Since 1975, Robatech has been developing and producing high-quality control systems, application heads, melters, and dosing systems that make gluing processes more environmentally friendly, safe, and straightforward. The Robatech Group, headquartered in Muri/AG, Switzerland, is represented in more than 80 countries. More than 670 dedicated employees worldwide provide personal and fast customer support in a wide range of industries.

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