

**Press Release**

* **BBG: Commissioning of a scientific test line** **for AI-based production automation**
* **Research project of Helmut Schmidt University/University of the Federal Armed Forces in cooperation with BBG and Weidmüller**

*Mindelheim/Germany, 19 March 2025.* BBG recently commissioned a scientific test line for industrial applications based on artificial intelligence (AI). In this project, the company demonstrates how AI is used in a production line for finishing automotive glass with polyurethane.

The Helmut Schmidt University/University of the Federal Armed Forces in Hamburg (HSU) is involved in the “EKI - Engineering für die KI-basierte Automation in Produktionsumgebungen” (Engineering for AI-based Automation in Production Environments) project. The research work is funded by dtec.bw – Zentrum für Digitalisierungs- und Technologieforschung der Bundeswehr (Center for Digitization and Technology Research of the German Armed Forces), which in turn is financed by the European Union - NextGenerationEU.

A fully automated production line for encapsulating glass panes with polyurethane (PUR) is used for the research project at BBG's headquarters in Mindelheim/Germany. The fully automated line includes three robots, several cameras for checking individual process steps, and more than 200 sensors for recording process data.

The process is divided into individual work steps and stations, each of which comes with its own decentralized control system, which in turn is connected to a central control system. Only the mold needs to be exchanged for a product changeover. Since this is detected via RFID, all settings and specifications are automatically adjusted for the production of the new product. This means that the line can be reliably converted at any time and within the shortest possible timeframe.

**Fully automated processes offer a high level of quality and a wide range of variants**

A system partner for the plastics processing industry and a specialist in the processing of PUR and composites, BBG is the general contractor responsible for the development, installation, commissioning and operational readiness of the test line. Originally designed for processing glass panes, the concept developed can also be used for other manufacturing processes, such as the production of composite components, thanks to its adapted modules.

**AI algorithms are tested for suitability in production**

HSU scientists plan to use the production line in 2025 and 2026 to collect sufficient data for testing the various AI algorithms in production for their suitability in practice. AI models are trained for individual use cases. These are designed, for example, to check the quality of individual production steps and automatically correct deviations.

A key component is the comprehensive recording of process parameters during production and their central storage. With the help of optical images and AI-supported evaluation processes, production errors are detected and reworked in real time. Another objective is to increase production efficiency on the basis of data-driven optimization. In addition, AI is designed to use the data in order to detect the need for preventive maintenance as required and display this accordingly. This ensures that necessary maintenance work is performed before any malfunctions occur, thus preventing production downtime.

**BBG customers benefit from AI-supported automation**

BBG has relied on the support of other partner companies for the implementation of the production line. These include experts from the fields of PUR processing, air technology, robotics, optics and sensor technology.

BBG will use the comprehensive findings gained during the cooperation with the research partners for the construction of their own machines and production lines, thus allowing customers to benefit from this project.

**Fully automated process**

Various vehicle glazing types are currently encapsulated on the test production line. They are provided with customized RFID smart labels that are encoded with a unique number. Since the RFID chip is encapsulated in the component, the stored process data can be used to trace the conditions under which it was produced even after the installation of the component.

The glass panes are supplied in a rotating glass rack, which can be loaded outside the enclosed production line. A robot in the interior removes a pane and positions it in a centering unit.

After centering, the primer is applied at the next station. The robot guides the glass pane along the application unit, measuring the primer quantity applied, checking its even distribution optically, and correcting it automatically if necessary. The robot then places the glass pane in a flash-off unit, where the bonding agent reacts.

Meanwhile, a compact robot prepares the mold in a BFT-P V9 mold carrier for the encapsulation of the component. A camera attached to the robot arm checks whether or not the cleaning process has been performed correctly, and the images taken are saved as process data for the respective glass pane. The quality of the release agent application is monitored in addition to the correct position of inserts. This information is also saved as process data.

A robot picks up the glass pane from the flash-off unit once it has completely flashed off and inserts it in the open mold. After the mold carrier has been closed, the pane is encapsulated with PUR. As soon as the reaction time is over, the robot removes the component and takes it to the trimming station, where flashes and PUR residues are removed.

Finally, a laser checks the component contours. If corrections are required, the component is trimmed again until no more flashes are visible. The robot places in-spec parts in a glass rack for further use.

**BBG’s customers are active the world over**

BBG GmbH & Co. KG is an international system partner for the plastics processing industry with its own mold, machine and production line construction. In addition to end-to-end production lines, BBG designs, develops and manufactures molds for processing polyurethane (PUR), PVC, TPE and other elastomers, as well as a wide range of fiber composite materials. The company also focuses on solutions for lightweight construction, the processing of composites and the production of fiber composite components in a large number of industries.

BBG, the family-owned business, which is run by Hans Brandner and is located in Mindelheim/Allgäu, supply their products to their customers all over the world, with the Asian market playing an important role in addition to the markets in Europe and North America. BBG is represented by their own subsidiaries in China, the USA and Mexico. With a headcount of around 170, BBG generated worldwide sales to the tune of 27 million Euros in 2024.

**Photos:**

Link to a 360 navigation tour through the production line: <https://lnkd.in/dhgthD37>

Ein Bild, das Maschine, Bautechnik, Autoteile, Industrie enthält.

KI-generierte Inhalte können fehlerhaft sein.

Photo 1:

These stations are involved in the production process:  
1. Glass rack for blanks, 2. Centering unit, 3. Primer station, 4. Flash-off unit 5, Mold carrier BFT-P V9 with mold, 6. Trimming and flash removal, 7. Laser scanning, 8. Glass rack for in-spec parts (Photo: BBG).

Ein Bild, das Im Haus, Maschine, Waschbecken, Werkzeugmaschine enthält.

Automatisch generierte Beschreibung

Photo 2:

A cobot prepares the mold. In the picture, the cobot applies release agent (Photo: BBG).

Ein Bild, das Maschine, Im Haus, Bautechnik, Fabrik enthält.

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Photo 3:

The glass pane is removed from the mold carrier system after encapsulation (Photo: BBG).

Ein Bild, das Maschine, Bautechnik, Im Haus, Workshop enthält.

Automatisch generierte Beschreibung

Photo 4:

The PUR-encapsulated glass pane is trimmed (Photo: BBG).

Ein Bild, das Maschine, Im Haus, Elektrische Leitungen, Bautechnik enthält.

Automatisch generierte Beschreibung

Photo 5:

The mold is cleaned after encapsulation (Photo: BBG).

**Please visit for a download of the press release (Word documents) and print-quality photos.**

[**https://www.auchkomm.com/aktuellepressetexte#PI\_602**](https://www.auchkomm.com/aktuellepressetexte#PI_602)

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