

Industry: Car industry suppliers / hot-melt adhesive systems

Products: Industrial robots, compact controllers, control terminals

Everything Under Control: Robot-assisted Hot-Melt Gluing Station

Economical mass production of door handle systems for the motor industry is only possible with automated manufacturing facilities. MW-TEC is a specialised manufacturer of custom-built machines in Velbert, Germany. In their door handle assembly gluing station, the company uses an agile industrial robot supported by the intelligence of a compact controller, both from Mitsubishi Electric. Integrated in a network, these components help to ensure high product quality and more efficiency on the production line.



Faster, better, more productive – the specifications for the new gluing station were clear: A fast-setting hot-melt adhesive would be used to reduce waiting times and make it possible to proceed to the next assembly step sooner. In turn, this would increase throughput and boost the productivity of the entire production line. The requirements for the gluing process were exacting: The quick-setting hot adhesive needed to be applied evenly across the entire contoured surface of the handle components, in exactly the right quantity and within a very narrow time window. This was a perfect task for a six-axis articulated-arm robot from Mitsubishi Electric.

At the centre of the production line a rotary table transports the handle components and glued assemblies to the individual processing stations. The small MELFA RV-3SB robot, which is fully integrated in the production cell, positions the part correctly beneath

the nozzle of the adhesive metering system and then moves it continuously so that adhesive is applied evenly across the curved contours of the surface. After the adhesive has been applied, the robot then places the outer shell on the metal core of the door handle. The entire operation is completed in just 30 seconds, after which the glued components are pressed together briefly by an automatic mechanism. The special adhesive sets almost completely in just two minutes, after which the finished handles leave manufacturing cell via the removal station for further processing.

In addition to improved performance, the MW-TEC engineers also wanted to keep the costs for engineering, installation, commissioning and maintenance as low as possible. They thus chose a standard field bus system to keep the overheads for the assembly station down and to ensure trouble-free communication between the components. Looking for an equally cost-effective and powerful solution for the visualisation and control system, the engineers chose the MELSEC FX3U compact controller and the MAC E300 control terminal, a well-matched duo from Mitsubishi's wide range of automation components.

The MELSEC FX3U compact controller is the only PLC in this segment that has a master module for Profibus DP, making it possible to configure a very economical solution for all the communications within the production facility via the standard network. The robot, control terminal and remote inputs and outputs are all connected to the controller via the Profibus master module, which supports up to 64 remote field devices.

The components and engineering support were supplied by Otto Kuhmann GmbH & Co. KG, Düsseldorf, which is a partner in Mitsubishi Electric's Automation Network and a member of the Sonepar Deutschland Group.

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We had no trouble at all configuring this 6-axis MELFA RV-3SB for the task, even though this was our very first project with a Mitsubishi robot.

CEO, MW-TEC GmbH & Co. KG, Velbert, Germany

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