

Industry: Automotive

Products Used: Robots /// Compact PLCs /// HMIs

Plasma deburring in the automotive supply industry

When a car buyer makes the decision to buy a car made by a premium manufacturer, it is not only the performance and design of the vehicle that have to be right but also the feel. That is particularly true for components that are subject to regular handling such as door handles, for example. However with plastic handles manufactured in pairs by means of injection moulding, when they are subsequently separated from the mould a burr is left behind on the separating edge that is considered annoying by the user. A perfect burrless surface with a clean finish is also required for galvanising and subsequent colour treatment.



In the case of one automotive supplier, the burrs were first of all removed manually using grinding machines. This process turned out to be inefficient and extremely time-consuming. It was also very cost-intensive due to the high number of personnel deployed and the high volume of scrap produced. During the search for alternatives, it was the technically sophisticated method of plasma deburring that was found to deliver the best results. That process needed to be automated. Special machine manufacturers MW-TEC

and the programming company GISA Automation developed a solution to meet these precise requirements by using Mitsubishi Electric components. The result: a fully automated process where two plasma torches operating in parallel are controlled with a high level of precision by means of the very latest robotic technology.

First of all, small-scale trials were carried out with assistance from Mitsubishi Electric in order to determine the appropriate robotic technology to use. After the test runs produced positive results the decision was made to build the installation. In order to guarantee uninterrupted production during construction, the partners set up a temporary replacement system with help from Mitsubishi Electric.

In the finished system, the MELFA RV 6 SD 6-axis overhead articulated arm robot takes care of surface finishing by guiding the two plasma torches. An additional SCARA RH 12 SDH robot renders the manual reloading of the carrier systems superfluous. A GOT HMI makes the system particularly easy to operate by means of a touch panel and the MELSEC FX3G 60M PLC looks after the whole process of machine control. The system identifies, by means of a light sensor, whether a particular tray contains right or left-hand door handles and passes that information on to the robot controllers which adapt the programs accordingly.

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Unless the customer specifies a particular type of PLC to be used, I prefer to use a Mitsubishi Electric product. The price-performance ratio is unbeatable. Their PLCs not only perform well but are also extremely compact. The same applies to the robot controllers which can be integrated in an installation quite easily without the need for an additional switching cabinet.

Uwe Weyers, Managing Director of
MW-TEC GmbH & Co. KG

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The system can process a tray containing 28 handles in six minutes. Besides significantly reducing the volume of scrap produced, it has also improved performance in terms of time, personnel and cost. The fact that the machine can also operate based on three-shift operation means that it is also highly productive.

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