

# Welding of automotive front ends

## Starting point / Task definition

Automotive supplier Läßple produces front ends for the DaimlerChrysler Mercedes CLK, among other things. Läßple's fast-paced environment – with three-shift operation and "just in time" contracts – demands precise welding processes and permanent availability.

## Implementation / Solution



For the CLK front end, Läßple had a production island with 18 KUKA robots constructed, originally designed for a production capacity of 170 complete front ends per day in two-shift operation. When demand rose to 280 units a day, Läßple compensated for the increased workload by retrofitting to include a total of 21 robots and by going to three-shift operation. With production volume rising in the meantime to 430, the company was compelled to invest in a second production island.

This island has 20 KUKA robots, of which five are employed in each of the subassembly areas for the right and left wheel housings of the front end. The individual components are then welded together in the main line to form the complete front end. The 20 robots are made up of fourteen KR 125s and three KR 150s, all of which use pneumatic weld guns for resistance spot welding, plus one KR 15 for MAG arc welding and one KR 125 for stud welding. In addition, there is one more KR 125 which works at the same time for both the new island and the one previously installed. This robot, which is located between the two systems, welds various subassemblies of the front end. The robots employed in the new system join 110 sheet metal parts per front end. They make about 1,200 spot welds and 39 stud welds, and in addition weld seams with a combined length of 1100 mm.

## System components / Scope of supply

- :: About 80 KUKA robots
- :: PC-based KUKA robot controllers, including control panel with Windows interface
- :: Robot programming
- :: Commissioning

## Results / Success

- :: High repeatability and availability

In selecting the robots, high repeatability and availability were the top priorities. Läßple wants to avoid rejects, especially because the company's reserve capacity is already completely taken up, working in three-shift operation. The new production island has a manufacturing capacity of 280 parts per day. The robots operate with an availability of nearly 100%. With reference to the entire island, the figure is about 90%, including electrode changes.

- :: Smaller spare parts stocks

By concentrating on robots from a single manufacturer, spare parts stocks have been minimized. Standardization also makes training and working with the machines easier.

- :: Advantages of Windows interface

Robot programming was carried out by the user's employees, and it was here that the Windows interface of the KUKA Control Panel proved its worth. Läßple had thought for a long time about whether to use the new PC-based controller from KUKA, which meant having two different systems, or to stay with the old one for the sake of consistency. Today in this production island the company benefits from significant time



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R 006

Industry:  
Automotive suppliers

Application:  
Welding  
Spot welding

Product:  
Robots  
High payloads (100-240 kg)  
Controller  
KR C (Robot Controller)

Implementation:  
19.07.1999

Customer:  
Läßple Blechverarbeitung  
GmbH & Co., Teublitz,  
Deutschland

savings whenever it has to carry out troubleshooting or modify programs because of technical changes to the vehicle being produced.

:: Greater cost-effectiveness through automation

In comparison with robots, manual welding would be less effective, since three human operators would have to be used in place of each robot. Moreover, the heavy weld guns are ergonomically inconvenient to handle. This disadvantage could necessitate additional rest breaks or even an exchange of operators during a shift. Furthermore, the robots maintain consistently higher quality, which further enhances the profitability of the production island. The payback period is thus very short; with regard to the robots, Läßle puts the figure at six months.



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