

This solution is now also utilized by other robot manufacturers as the method for specific applications in the aviation or automotive industry. This method of joining metals is utilized, among others, on production lines of components for such models as Mazda MX-5 Miata, Audi R8 Spider and Volvo V70.

7.3. Examples of robotic welding stations

Similarly to arc welding, spot welding is identified with the automotive industry and has the same characteristics influencing the purposefulness of its robotization, including required high repeatability of movements (approx. 0.03 mm). In the case of car body it is necessary to make even as many as several thousand of welds (often in hard-to-reach places), which makes a robot the most effective solution (Fig. 7.21).



Fig. 7.21. FANUC robot during car body welding
(source: www.robotco.com)

The stations launched at Henschel Engineering Automotive in Kostrzyn (Fig. 7.22) are the example of the use of industrial robots in the automotive industry. Based on the Versaflex original solution the robotised welding application of transport trailers was launched at the factory.

The design and implementation were fully implemented by COMAU Poland. In the solution, a robot is suspended in a reverse position on the support frame, which increases the access to welded points and reduces the overall dimensions of the production station.



Fig. 7.22. Spot welding of transport trailers in Kostrzyn
(source: COMAU Robotics)

VW plants near Poznań are another example from this industry. VW plants implemented several new spot welding technologies with servo-electric and servo-pneumatic claws, with the servo-pneumatic claws (SERVO-P) with control modules by SMC and Festo being chosen. The main features of the SERVO-P system are:

- control of force, speed and position of SERVO-P with the possibility of operating as the robot's 7th axis;

- the high speed of positioning and the function of the slow approach of electrodes to the material, which increases the lifespan of both the electrodes and the welding machine;
- the possibility of complete control at the level of the robot controller (it does not require additional software for parametrisation) and the use of integrated diagnostic and security functions;
- automatic detection of an electrode tip wear;
- the possibility to check the welding machine geometry;
- the SERVO-P stop in the event of a power failure.

The robotic station is also utilized in the Piaggio company for welding the elements of the latest Vespa Primavera scooter. The application implemented by the COMAU company adopts, among others, Hollow Wrist technology (the robots with integrated cabling) and Medium Frequency (the technology ensuring excellent quality of welds and enabling the use of very light COMAU welding claws with a built-in medium frequency transformer). The activated welding station is equipped with a positioner facilitating the access to welding points (Fig. 7.23) and a tool change system (Fig. 7.24).



Fig. 7.23. Welding of the components of the Vespa Primavera scooter at Piaggio (source: COMAU Robotics)