

ROBOTICS

DaimlerChrysler

IIRB 6620



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01 Anton Hirzle, Senior
Manager at Daimler-
Chrysler: "We wanted
a dedicated robot
for spot welding".

The lean robot idea

Many of the robots used on production lines are designed to perform several different jobs. The advantages of deploying such multi-talented robots include standardization and re-usability. In practice, however, many such robots spend all their life performing the same task.

For every generalist doing the work of a specialist, many features remain unused. The extra weight and complexity make the robot cumbersome, inefficient and costly. In cooperation with DaimlerChrysler, ABB created a lean and specialized spot-welding robot.

When DaimlerChrysler contacted ABB four years ago they were searching for a new dedicated spot welding robot.

DaimlerChrysler is a leading supplier of up-market passenger cars, SUV's, sports and touring cars, minivans and pickups, as is also the world's largest manufacturer of commercial vehicles. The corporation is a robot-intensive company with around 9,000 robots in the Mercedes plants and about 5,000 at the Chrysler plant in the US.

The market specification that DaimlerChrysler handed over was based on a holistic approach to smart automation, aiming for a common development of a lean standard robot. The robot should perform a payload of 150 kilos to cover the majority of their main spot welding applications. The 6-axis robot should also be designed to accomplish spot welding utilizing a single servo-controlled weld gun.

"We needed a workhorse for our main spot welding applications", says Anton Hirzle, Senior Manager at DaimlerChrysler, and continues:

"Today we use a standard robot which is able to do the most of our applications. The same robot could weld, glue, handle parts, do what ever you wanted it to, but we had to pay for a lot of features that we never used in spot-welding applications. We wanted a dedicated robot for spot welding; cost-saving was the most important driver for the project."

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01 IRB 6620 - a lean
robot dedicated for spot
welding applications.



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DaimlerChrysler talked to several robot suppliers and explained their ideas on how to reach the goal. Ola Svanström, Product Manager at ABB, listened to the ideas from DaimlerChrysler and a common R&D project started up in 2004. “Instead of adding features, we removed features that were not needed for spot welding. The less complicated the better was the basic idea.”

Almost three years later we have constructed a lightweight robot with a wide working range, the IRB 6620. No less than 800 kg of weight has been removed from the original robot! The result is less investment in steelwork and a machine that is much easier to handle.

The faceplate has a payload of 150 kg and a robust wrist design that is capable of handling typical integrated transformer spot weld guns. The tool mounting flange conforms to ISO standards for 200 kg and the robot comes with a dress package especially designed for spot welding.

The new lightweight IRB 6620 is easier to install, has a lower investment cost and a wide working range. The working range for the robot below its base is an interesting approach for a re-design of spot welding working cells (semi-shelf). This means you can have a second level of robots on the line, where 50 % of the robot line can weld upside down. This saves space and gives more efficient integration of the robots in the working cell. More robots in the same area increases the productivity.

“IRB 6620 will show us new ways of working in the long run. Our vision is to replace most of the multi-purpose robots that are used for spot welding today and replace them with the lean and dedicated spot welder IRB 6620”, concludes Anton Hirzle.