Case Study

SCARA robots manufacture and test car seat force sensors

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Epson robots offer fast cycle times and excellent precision

Tech3d Control plans, develops and produces specially purposed machines in the field of automated measurement engineering for a wide range of industrial customers. Each project represents an individual solution to a customer-specific problem. The production of seat force sensors for cars is one of those tasks.

The production line for these sensors combines assembly, quality control and palletising. It must deliver over 10,000 parts within 24 hours, faultlessly. While so doing, speed and precision are essential.

Within the production line, two E2S451S SCARA robots execute equipment and assembly tasks. They are controlled by two RC170 controllers with Profibus connection.

The individual parts to be joined are provided in different pallets. The first robot takes two sleeves in a row and places them on pick-up arbours. The sleeves are transported on a workpiece carrier for the connection process.

In the next step, the robot picks the bending element from the pallet and puts it in the first rotary-cycle unit. The Smart Camera detects the flat milling on the bending element. The exact orientation of the magnet holder occurs via the fourth axis of the Epson SCARA robot.
The second Epson SCARA robot grabs the magnet holder (hall sensor) and inserts it into the bending element. In this respect, high levels of path accuracy - without cycle time losses - are invaluable. The hall sensor is then welded to the bending element using a laser.

The unit consisting of bending element and magnet holder is lubricated at an oil station prior to being wed to the sleeve. This part is the final stage of the joining process, which is then followed by various quality controls, such as vibration and tearing tests. Once all tests have been successfully completed, the sensor is printed with a data matrix code, the printed information is checked once again, and then palletised.

Tech3D Control

Tech3D needed a solution that could handle 10,000 parts every 24 hours, reliably and efficiently, and Epson robots were able to provide that solution.

Volker Spanier

Head of Robotics - Epson

Key Facts

Tech3D Control installed Epson robots to handle assembly, quality control and palletising on a single line.

The robots were able to offer high levels of path accuracy with short cycle times.

Reliable quality assurance was performed by Epson's Smart Vision camera system.

Outstanding reliability means the production lines are able to run round the clock.

For more information, visit www.epson.eu

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