



SUCCESS STORY AUTOMOTIVE

Safety first

Task

Error-free assembly of ABS systems

Automotive manufacturers are demanding ever greater precision from the anti-lock braking systems they install. A multi-national ABS manufacturer with manual assembly lines in its factories in China, Germany and the USA could no longer meet these stringent requirements. Robot-based automation solutions were seen as the way to open up new dimensions in terms of quality and cost-effectiveness.

Advanced Automation Inc. of Greenville, South Carolina, was entrusted with this challenging task. The experienced system integrator opted for Stäubli as its robot supplier. One of the main reasons for this decision given by the project leader was

that the level of precision achieved by Stäubli robots far exceeded the market standard. Indeed, these industrial robots are considered the first choice for assembly processes demanding accuracy in the micrometer range. And, of course, Advanced Automation did not want to take any risks in the assembly of the highly sensitive ABS systems.

Solution

Full automation of all steps in the process

The solution implemented by Advanced Automation is characterized by the full automation of every single step throughout the entire assembly process. The production of anti-lock braking systems runs on three different assembly lines. Stäubli six-axis robots of the RX160 and TX90L series

Customer benefits:

- Error-free assembly of sensitive safety systems
- Future-oriented, easy-to-adapt plant concept
- Integrated quality assurance
- Traceability and documentation
- Enhanced productivity and profitability

take on handling tasks of all kinds during the measuring up, screwing and assembly stages of the process.

The system integrator has put a great deal of know-how and experience into operational design. Even complex processes have been refined to the extent that the robot does not have to release a component in order to adjust its grip on it. The reasoning behind this is clear: any reorientation involving temporary

release would eat up valuable fractions of a second and frustrate the quest for the shortest cycle times. Thanks to an ingenious gripping technique and to the space-saving motion profile of the articulated Stäubli robots, it was possible to avoid any such shuffling process. A further challenge was securing the component during the press-fit stage. Together with Stäubli Robotics, Advanced Automation found the perfect solution to this tricky problem.

The vision systems used at some stations fulfill a double function. Firstly, the cameras inform the robot of the exact position of the components to be picked up. And secondly, of course, image processing is perfectly suited to simultaneously scanning component codes an important step in quality assurance, traceability and documentation.

Advanced Automation decided to mount the vision system on the robot arm itself rather than in a stationary position above the conveyor belt. The camera thus always has an optimal view of the component and can reliably scan its identifying features at any time. In addition, the positioning on the robot means that it can cope with different lighting conditions.

Customer usage

Error-free assembly of sensitive safety systems

Quite apart from the precision factor, the decision went in favor of Stäubli because its industrial robots have excellent range and adaptability. Advanced Automation therefore had unlimited scope in the design

of the assembly processes. For the end user, this means maximum flexibility and thus straightforward adaptation of the new production lines to all conceivable specifications.

A further plus point of the Stäubli machines is their impressive dynamics, which has a positive effect on the cycle times. Above all, however, this automation solution enables reliable, error-free assembly of the sensitive anti-lock braking systems in reproducible quality. As a result, the assembly lines installed by Advanced Automation fully meet the manufacturer's expectations.