



AUDI: High level of automation for assembling the body of the A3

Strong connections with Rexroth tightening and welding systems

About 850 models of the A3 model leave Audi's plant in Ingolstadt each day. A robot-based production system provides a superior level of quality, high system availability and general reliability. This is why Audi has called on Rexroth for the end tooling. The welding controller PS6000 guarantees reliable connections, and the tightening system 350 allows nutrunners to be exchanged completely automatically.

Audi manufactures the A3 in three shifts using a free mix of models. The body assembly line's extremely high level of automation calls for a special combination of the latest technological developments and sophisticated, controllable systems.

Process reliability at 4,500 spot welds

Depending on the model of the body, 429 welding robots produce up to 4,500 spot welds on a wide range of metal sheet combinations. The Rexroth welding system PS6000 with adaptive control and integrated process monitoring forms the basis for this operation. The system ensures high-quality spot welds, resulting in enhanced test cycles. This approach cuts operating costs and makes the production system more flexible.

Fully automatic nutrunner changes

Around 250 tightening connections of the A3 fall into the category of "safety-relevant". Here, the high level of automation, short cycle times and space limitations are mastered by the Rexroth tightening system 350. This system allows for quick changes, eliminating the need for additional robots. During production, various nutrunner combinations can be docked onto and off of the robots within seconds. The modular tightening spindles can be adapted to suit the respective tightening application. Doors can be bolted on completely automatically – an absolute technical highlight. Robots approaching from both sides detect the exact position of the body and the tightening positions. Tightening results and the tightening positions of the vehicle are stored in Audi's documentation database.

Tough application

A high level of automation and short cycle times demand automated nutrunner changes and reliable welded joints.

Ingenious solution

The welding system cuts operating costs, and the tightening system reduces the number of robots.

Exactly

"Bosch Rexroth is a reliable partner offering top-quality, highly available connection technology."
Lorenz Mittel, Audi AG



Solved with

- ▶ Welding system PS6000 with adaptive current/voltage regulator
- ▶ Tightening system 350 meeting VDI2862 guidelines for safety-critical applications