



SUCCESS STORY AUTOMOTIVE

Six-axis robots providing quality assurance

Task

Automated seat testing with robots

The quality testing of automobile seats in series production vehicles follows an extensive procedure that is too complex to be performed manually. Quality assurance by hand and eye would be excessively time-consuming and lack precision with problems regarding documentation, process reliability, and the like. These are a few of the reasons that robots now predominate in this area.

Automobile manufacturers leave nothing to chance when it comes to vehicle seats because they know this particular part determines not only the comfort of the passengers but also their safety. The seat is also the connection between driver and vehicle and must satisfy a number of criteria.

Automotive manufacturers around the world have now developed their own sequence of tests to ensure the quality of vehicle seats. Meanwhile, robot solutions have proven their worth in various applications.

Solution

A precise six-axis robot for precise measurements

The measurement experts at Battenberg Robotic GmbH in Marburg, have been specializing in sophisticated quality assurance tasks on behalf of the automotive industry for many years now. In the field of seat testing, Battenberg has the right solution for every conceivable requirement. Typical tasks include headrest height adjustment, manual seat height adjustment, easy-entry tests for backrest, forward/backward

Customer benefits:

- Precise, reproducible measurement procedures
- High level of process reliability thanks to internal cabling
- Controller with outstanding real-time behavior
- Implementation of the most advanced QA strategies

movement, determining the amount of give in the upholstery, checking the distance from head to restraint, entry and exit simulations, and lastly, determining the so-called H-point, with which the Volkswagen Group checks the correct seating position of the driver within the vehicle.

Battenberg favors the high-precision robots from Stäubli for the relevant automated

procedures. More and more applications call for the use of six-axis robots of the TX series equipped with a three-axis force and torque sensor, to which special tools or dummies can be adapted, depending on the nature of the test. The precision and motion control of the robot plays a key role in such sensitive testing environments. Ultimately, the industrial robot needs to translate intricate commands into accurate mechanical micro-motions. This is where Stäubli's proprietary drive technology, in which the motor and gears form an ultra-compact unit, has proven to be extremely precise and fast.

In addition to the functional integration of Reduction - Bearing - Motors , other decisive advantages are the excellent linearity of the gears, zero backlashes, and the service life. In these aspects, Stäubli is head and shoulders above the competition. In contrast to standard gearboxes that have to make do with grease-based lubrication, the motor gear units supplied by Stäubli are totally immersed in an oil bath. The advantages of this are superior cooling, longer life and lower noise emissions.

Customer usage

Optimal process reliability

Stäubli industrial robots are ideal for mobile measuring, not only because of their outstanding performance, but also thanks to their compact design, their low weight, and their extensive reach. Another positive accommodation is the enclosed design of the six-axis models. The avoidance of external wiring significantly increases the process reliability of the systems in which they are used.

In addition, the industrial robots have proven their stability within a wide temperature range, performing well under all conditions. These machines are not prone to failure.

Another plus point is the performance of the controller with its excellent real-time behavior. Taken together, these positive attributes make Stäubli robots the first choice in measuring scenarios, because the results can be consistently relied on.



Stäubli robots check the seats at Battenberg.