



At Audi in Neckarsulm, the CAQ software QS-Torque takes over tool and product inspections

Process reliability in bolting

The CAQ software of CSP GmbH & Co. KG from Großköllnbach supports continuous quality inspections in the manufacturing industry and records the relevant measured values in the various process stages. For tool and product inspection, the QS-Torque solution is also used at Audi's Neckarsulm site, as it is at other plants.

The software is used at the Neckarsulm site in both the maintenance and quality assurance departments in order to comply with the requirements of the Product Liability Act and various standards and guidelines, including VDI/VDE 2862, VDI/VDE 2645 and ISO 6789. It also supports production in the zero-defect strategy and process reliability.

Safety for A and B bolted connections

Testing processes were optimized throughout the site. This has enabled costs to be reduced. Different vehicle types are produced in Neckarsulm in four different assembly areas: A4, A6, A8 and the R8, among others. Tool

inspection with QS-Torque supports a wide variety of screwdriving techniques. These include cordless screwdriving technology as well as EC and impulse screwdriving technology. In addition, bend wrenches as well as electric torque wrenches are checked. In particular, the line focuses on risk class A and B fasteners, for which special safety requirements apply according to the definition of a VDI guideline.

The CAQ solution primarily supports the quality assurance team: The system displays all currently pending inspections in the form of a list. Every day, the planning team defines a number of sample inspections for the torques. These take place in variable cycles on the line. In addition, the tools are also examined on the test bench at regular intervals. In addition to the outstanding tests, the test results, the tools to be tested and the corresponding measuring points can be managed and viewed at any time in QS-Torque.

Automated documentation as proof of safe process

In accordance with legal requirements, all measured values from the testing process are documented, archived and evaluated. "The automated and complete documentation of the numerous tests is particularly important," explains Chris Mayerhöffer, site planning employee at Audi Neckarsulm. For example, as part of the mandatory machine capability inspection (MFU), which is required, among other things, when new machines are purchased, the site can record corresponding work simplifications for quality assurance. During this examination, the machine is tested to see how it performs with regard to the realization of specified characteristics and quality requirements. The corresponding capability certificates can be automatically evaluated by the system. Corresponding limit values were defined beforehand and are stored in the software.

In addition, QS-Torque allows, among other things, attributive tests to be carried out and different measured variables to be considered. A highlight for quality assurance are, among others, the possibilities for curve evaluations. Here, the measurement data from the bolted joint can be visualized in bolting curves and even superimposed for comparative displays.

Quality analyses and evaluations

The solution can also be used to create numerous quality evaluations. This makes it possible to obtain a good overview of the most important quality information for a component or assembly. Various filter options and analyses make it possible to statistically represent the various tool inspections and to visualize the results. In addition, the data can also be exported and individually evaluated.

If NOK inspections occur during random sampling on a line, appropriate measures can be

taken at an early stage: For example, the tool settings can be changed or other process improvements implemented.

As a manufacturer-neutral solution, Audi also uses QS-Torque for tool and production inspection tasks. The software is installed on the test benches and can be used there for any tools. This means that the choice of tools and test keys remains flexible - even with regard to future changes in the technologies used.

Individual settings and access authorizations

Up to 50 people work with the software every day as part of the tool and product inspections. While the specifications and guidelines for the inspection processes are provided by the planning department, the maintenance team is responsible for carrying out the inspections. QS-Torque has a simple and clearly arranged user interface. It can be set up individually for each employee, so that everyone sees exactly the information that is important for their area. Detailed rights assignment for read and write access is another plus. This means that different authorizations can be set for employees: For example, for users who can create master data and set up processes, for those who carry out inspections, and also for colleagues from quality assurance who only have read access.

In addition, the manufacturer CSP offers support through fixed contact persons, fast feedback and high flexibility in case of necessary adjustments. What Chris Mayerhöffer particularly appreciates, he says, is that CSP operates worldwide. "This is also important for us because we support the India site from the Neckarsulm plant."

Since the introduction of QS-Torque in India in June 2013, CSP support has been in very close and regular contact with the Indian employees to familiarize them with the new technology.

Success Story Audi Neckarsulm

Among other things, this has made the introduction process easier for everyone involved.

As soon as documentation obligations or legal requirements change, the manufacturer can be sure in any case: QS-Torque will contribute to a great extent to reliably establish the required process safety.

User profile Audi, Neckarsulm:

Audi brand vehicles are manufactured in Germany at the two plants in Ingolstadt (approx. 34,000 employees) and Neckarsulm (approx. 16,000 employees). In addition, there are further locations worldwide in Hungary, Belgium, the People's Republic of China and India.

Audi brand vehicles have been manufactured for a century. Among the cars produced in Neckarsulm are the A4, A6, A8 and R8 series. However, the town in Baden-Württemberg, which is dominated by wine-growing, is not only a production site for Audi, but much more: the spirit of the Audi brand lives on in the Audi Forum Neckarsulm. Here, visitors can experience the car manufacturer up close. More than 1.7 million visitors have been attracted so far by the wide range of programs on offer. Highlights include guided tours through modern automobile production and a vehicle exhibition. In addition, there is a varied cultural program.

Any further questions?

Please do not hesitate to contact us!

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