



Audi AG

Automation of test/release processes

Our collaboration with Audi AG

The **demands on the production units** of AUDI AG are continuously increasing with the expansion of the product range and product cycles.

In order to be able to continue to meet these requirements effectively and efficiently, **IT supported optimisations** are being driven forward as part of the „Digital Factory/ViTech“ project.

Within the car body construction department, attention is paid to the **further development** in the department „Technology Development Joining“.

One component of this project is the **development of a database on joining techniques** to create **a common database basis** with **standardised and consistent workflows** with the task of enabling **central storage** with worldwide accessibility. With increasing data volume the process support develops into **a knowledge database** for **all test results and their parameters**, thereby enabling **automated release processes for car body construction**.

Industry Sector:

Automotive

Service:

Software Design and Implementation

Services:

Business Process Automation

Technologies:

APEX, Javascript API von APEX, Oracle, JQuery. SVG, Katalon and Selenium for test automation

Methodology:

surface prototyping, data mining, process analysis, workflow design

The challenges

- Development of a **knowledge database** with audit-proof information that serves as a **basis for deciding** which joining technologies and technology-specific parameters are suitable for which car body parts, taking core premises into account.
- **Central administration** of rapidly growing amounts of data on test results, expert knowledge on joining technologies, documentation, approved materials, etc.
- **Importing, processing** and **evaluating data** of varying quality from different systems.
- Development of an **accepted, labour-saving and standardised workflow**. Step-by-step **automation of approval processes** as part of continuous further development using artificial intelligence (algorithms).
- **Integration and connection** of the application into the existing IT landscape of the group (Audi, VW).

- **simple**
- **intuitive**
- **consistent**

Our contribution at a glance:

- Conception of the application architecture and the workflows
- Technical implementation of the solution
- Development of the interfaces to the existing IT landscape of the Group
- Continuous further development
- Progressive process automation
- Aggregation of the data and data migration
- Maintenance, operation and application support

The implementation

The implementation took place in four phases. Some phases will be continued to make the application more performant, to extend it with further joining technologies and to further automate processes.

Phase 1: Process analysis

Comprehensive requirements engineering by means of interviews with all stakeholders (technology managers, test implementers, users) as well as on-site visits with close observation and documentation of the existing processes in the test labs in Ingolstadt and Neckarsulm.

Phase 2: Process reengineering

Analysis of all existing data and data collected during requirements engineering on technologies and tests as a basis for the conception and definition of the new target processes and workflows including authorisation concept and prototyping. The workflows included: testing and approval of material thickness combinations, the material release process and the VTA release process (regarding joining technologies and body joints). In addition, a detailed adjustment is necessary for each joining technology.

Customer benefits:

Cost optimisation:

Accelerated release processes for materials and bonding techniques for new models by reducing real tests by 70 % (324 projects in total until May 2023)

Quality assurance:

Avoidance of human error, safeguarding of processes and knowledge retention, even in the event of staff changes

Time for innovation:

Technology managers can focus on their tasks in the new and further development of their technologies.

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With think tank, we have not only made the joining data bank a central and popular application within Audi AG, but have also increased our efficiency enormously.

Dominik Hußmann

Technologieentwicklung Fügen

- fast
- precise
- solution-oriented

Phase 3: Implementation

After prioritising the joining technologies, the implementation of the new application was started iteratively in the defined sequence. The result of the development were standardised processes that enabled a step-by-step automation of the release processes in car body construction. This is being further advanced with the use of algorithms (AI).

Phase 4: Rollout and Operation

Implementation of the solution in the group (VW, Audi) taking into account the various material standards. Development of interfaces to the areas of joining techniques, the material release process, the body simulation programme, the material database, tool management and production.

A rollout for further joining technologies is part of the development process.



Would you like to learn more about our solutions and services?

We are looking forward to meeting you!

Florian Schnappinger

Head of Sales