SIGMA
EVOLVE DIGITALIZATION

AutoID / RFID

Reference report

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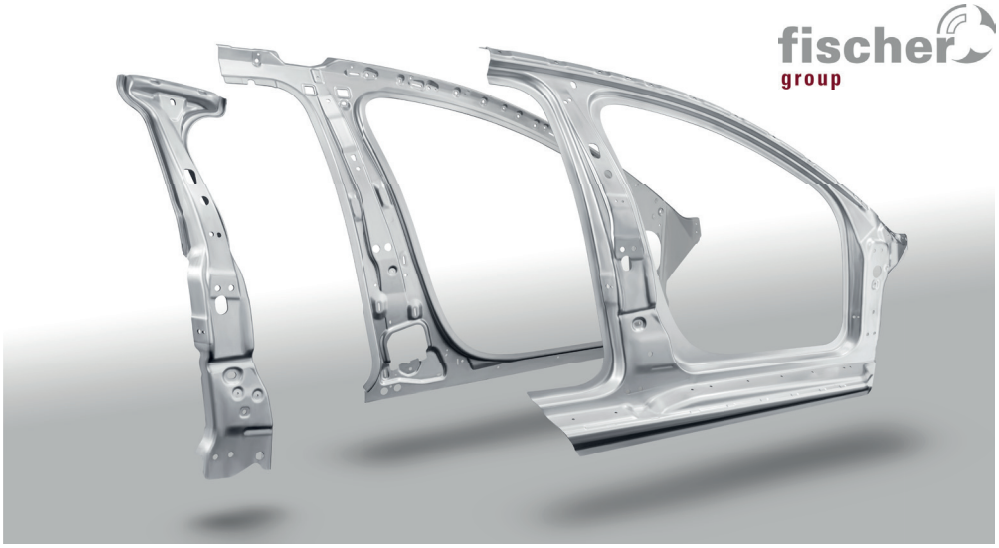
About SIGMA

As a renowned system house group, the SIGMA Group acts as a system integrator and partner of renowned providers in the IT sector. The more than 80 employees of the group form a competent team at the locations Chemnitz and Dresden. With know-how, competence and more than 30 years of experience we offer our customers reliable and powerful IT solutions.

About the customer

The fischer group is the world's leading supplier of longitudinally welded stainless steel stainless steel tubes and the components and assemblies made from them. Its most important customers include the international automotive industry. To achieve the highest quality, fischer traditionally develops key production components such as machines and tools itself.
In order to expand its own product portfolio, fischer has been working intensively in recent years on new processes for the production of hot-formed aluminum conversion parts and, together with partners, has developed the so-called HFQ process to industrial series production readiness. In 2021, the first large-scale production plant was put into operation at the home site in Achern in central Baden. Over 300,000 components have now been produced using this process. Due to the use of such components in safety-relevant areas of a vehicle body, fischer has decided to introduce a system for complete and seamless parts tracking for the first time.

RFID-supported track and trace system for safety-critical body parts



www.fischer-group.com

Initial situation and goal

The use of HFQ (Hot Form Quench) technology for the production of safety-relevant body parts enables the fischer group to form aluminum alloys into complex geometries in just one production step. The combination of heat treatment and forming generates a high number of quality-relevant system parameters.

The introduction of a fully automated system for parts identification and tracking, which is specially tailored to the new production process, is intended to ensure complete transparency in the production and quality assurance process.

The transparent process: optimized production with Graidware® Track and Trace

When leaving the plant for annealing and forming, each component is given a serial number and labeled. All parameters generated in the system (pressure, temperature, etc.) are transferred to Graidware® Track and Trace via the OPC UA interface, verified and stored in the database. The data of the batch-based base material used is linked to the component, ensuring complete traceability.

All components are stored on RFID-tagged racks, with the component-transport rack assignment being automated via RFID antennas at the loading station. The positioning of the correct transport racks is monitored on the basis of a check of the rack-product assignment with the active production order. The integration of the ERP system was implemented in this project as a necessary prerequisite for the end-to-end digitalization of planning-production-quality assurance.

As intermediate storage until the next production step (ageing furnace) is time-critical, the Graidware® Track and Trace system automatically monitors the duration of intermediate storage.

Pictures: fischer group

About GRAIDWARE®

The AutoID middleware GRAIDWARE® is an intelligent abstraction layer for different hardware components and business applications. Work tools, production steps and AutoID data can be identified, monitored, controlled and configured.

The Graidware® Track and Trace system uses RFID to identify the components on the rack and checks their storage time. If the storage time of the components is exceeded, Graidware® avoids further processing in the current production step. All relevant data from the subsequent production steps (ageing, lasering) is also stored, evaluated and made available in tabular and graphical form using the methods and technologies described above.

Conclusion

Thanks to the RFID-supported Graidware® Track and Trace system from SIGMA, the fischer group and its customers have complete transparency of the production process for safety-relevant components. Individual part traceability back to the supplier batch is guaranteed and all relevant process parameters are recorded. This enables the fischer group to increase process and product quality and to use all process data for process and product development. The stored data still offers a great deal of potential for optimizing all processes and developing new products.

This is what the customer says...

„By implementing the Graidware® Track and Trace system, we have complete control and transparency over our production process. The system enables us to track every step in the manufacturing process of safety-relevant body parts and also to continuously optimize quality and efficiency. The stored data opens up enormous potential for us, not only in terms of quality improvement, but also for future developments and innovations in our production.“

Marc Schweizer, Business Development Manager, fischer group