

Reference report

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About SIGMA

As a reputable system house in Saxony SIGMA Chemnitz GmbH operates as system integrator and partner of well-known Providers in the IT sector. Our over 70 employees form a competent team at the location Chemnitz. With expertise, competence and almost 30 years of experience we offer our customers reliable and powerful solutions.

About our AutoID and RFID solutions

AutoID and RFID solutions for production, logistics and supply chain. Our customers appreciate us as competent, innovative partner, to accompany them from the initial problem analysis until the goal with commitment. Many years of project experience of our employees form the foundation for effective AutoID and RFID solutions for production, logistics and supply chain.

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.

Implementation of an industry 4.0 solution by means of RFID and real-time location



www.ortrander.de

By implementing an Industry 4.0 solution using RFID and real-time tracking, the foundry for machine-moulded iron castings was able to minimise search times, thereby improving efficiency in production and storage processes. Furthermore, the company's processes could be digitalized and transparency about the status of individual work steps could be improved.

The challenge

Until the implementation of the modern RFID and tracking solution, cargo containers were manually loaded with container tracking cards on which the produced model and other key figures were noted. As there was no digitalization, it was not possible to get a quick overview of the production status. Another major challenge was to identify load containers in the large block warehouse. For this purpose, the accompanying sheets had to be searched and identified manually. This procedure was prone to errors and led to considerable search times.

The aim was therefore to reduce search times and improve transparency. To this end, the first own investigations were carried out at an early stage. It quickly became clear that only the use of UHF (ultra-high frequency) RFID in combination with an RTLS (real time locating system) could be a solution.

Decision for SIGMA as service provider

SIGMA Chemnitz GmbH was chosen as the service provider for the implementation because of the company's in-house competence in RFID solutions and its comprehensive references in the manufacturing industry. In the offer phase, SIGMA Chemnitz GmbH developed a project outline, which was followed by a pre-qualification.

Here it was particularly important to find a solution for the extremely harsh environmental conditions (metal, heat, magnetism, iron dust, etc.) that was nevertheless able to deliver reliable results. After intensive preparatory work together with the customer, suitable RFID transponders (tags) were tested and selected. Since up to 3,000 containers were to be identified automatically, only passive RFID transponders were considered due to the economic considerations. Since all the commercially available RFID transponders tested were unable

to provide 100% reliable reading results due to the many disturbing influences of the existing metallic environment, a solution was developed in the RFID laboratory of SIGMA Chemnitz GmbH that enabled reliable identification on the load carrier.

Middleware GRAIDWARE® as central data hub

All data is collected, processed, stored and evaluated by the central middleware GRAIDWARE®. The data is checked for plausibility upon acquisition to exclude faulty signals in harsh environments. From the middleware, the data can be made available to third-party applications. Thus, interfaces to the scales, the location system, the ERP system GUSSInfo, the DISA moulding plant and the pallet acquisition and pallet feedback system were created.

Description of the industry 4.0 process

After the products have been poured, they are stored in transport containers. In this step, the load carrier is given an RFID transponder, which is previously described with the produced model and other relevant data. The management and consolidation of the data is done in the intelligent RFID middleware GRAIDWARE®. Afterwards the products are taken over from production for further processing at a transfer point. Here the weight is recorded and transmitted to the middleware GRAIDWARE®.

When the products are placed into the bulk storage, the position of the forklift truck is recorded and the storage position in the bulk storage is recognized. If products are removed from bulk storage for further processing and transferred to a processing location, the item is also entered here. In this way, the respective processing step is transparent and can be evaluated via a graphic display.

If containers are checked as part of quality assurance, they can be displayed in the system with a mobile handheld can be locked for further processing. Each container is logged off via RFID after completion of processing.

Continuous process as a model example of an industry 4.0 solution

With the use of the combined RFID and tracking solution at Ortrander Eisenhütte GmbH, a prime example of an Industry 4.0 solution was created and this explicitly not in a clean environment, but under harsh environmental and production conditions. A continuous data flow was guaranteed, in which products (or here transport containers) carry all relevant information.

Ortrander Eisenhütte GmbH

The Ortrander Eisenhütte is one of the most modern foundries for machine-moulded iron castings in Europe. In the meantime, the site can look back on almost 130 years of tradition in iron casting. In 2001 the plant was extensively modernised. Today, the 32-metre-high sand tower is a testimony to the importance of the industrial company in the region.

With four induction melting furnaces, each with a capacity of six tonnes in energy-efficient tandem operation and three moulding machines, the company produces iron castings - from small filigree jewellery to products weighing up to 35 kg each. Further processing is carried out in-house by four CNC centres. Colouring and the possibility of assembly are also carried out in Ortrand. The company places great emphasis on quality and innovation and can thus successfully stand out from the competition.

Industry 4.0 at Ortrander Eisenhütte GmbH

With the implementation of the combined RFID and tracking solution at Ortrander Eisenhütte GmbH, a prime example of an Industry 4.0 solution was created.

Our customer says so...

„Thanks to the RFID and tracking solution that has now been put into operation, we have significantly improved our processes within the company. We have a transparent overview of the status of production and can thus better meet customer requirements.“

Mathias Krüger, responsible for IT and project manager at Ortrander Eisenhütte GmbH