

Reference Report

Ansprechpartner



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About SIGMA

Founded in 1990 SIGMA Chemnitz is appreciated by their customers as a competent, innovation-oriented partner who accompanies them from the initial problem analysis to the customers aim. The employees of SIGMA have well-founded project experience form the foundation for effective AutoID and RFID solutions for production, logistics and supply chain.

About our AutoID and RFID solutions

AutoID and RFID solutuibs for production, Logistics and Supply Chain.

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About GRAIDWARE®

GRAIDWARE® AutoID-Middleware is a general rubric covering various hardware components and business applications. Within AutoID-based processes, it is possible to identify, monitor, control and configure means of production, production steps and AutoID data.

Item Tracking With UHF Technology

Increases Efficiency at MAGNA Exteriors & Interiors Meerane



www.magna.com

About the company

Magna International Inc. is a leading global automotive supplier with 313 manufacturing operations and 88 product development, engineering and sales centres in 29 countries. About 118,000 employees contribute through innovative processes and world class manufacturing to higher added value for the companys customers. The capabilities of Magna International Inc. include the design, engineering, testing and manufacture of automotive interior systems; seating systems; closure systems; metal body & chassis systems; mirror systems; exterior systems; roof systems; electronic systems; powertrain systems as well as complete vehicle engineering and assembly.

Magna Exteriors and Interiors (MEI), a wholly-owned operating unit of Magna International, capabilities includes design and engineering, styling, tooling, manufacturing, assembly and sequencing, testing, continuous improvement, consumer and market research, benchmarking, and electrical/ electronic system integration, among others. The products include front and rear fascia systems; sealing systems; exterior trim & lighting; class A composite panels; modular systems; engineered glass; under hood & underbody components; and structural components for automotive, commercial truck, renewable energy, consumer, and industrial markets.

With its new location in Meerane, West Saxony, Germany, Magna International Inc. expands its network of manufacturing sites in Europe. Since August 2012 MEI Meerane produces front and rear bumpers for the VW Golf VII and delivers these „just-in-sequence“ to Volkswagen Saxony at the site in Mosel.

Decision for RFID and UHF Technology

The management of MEI Meerane decided during the planning and development phase of the new site the continuous use of RFID (Radio Frequency Identification) technology for automated manufacturing and logistics management. The use of barcodes, as it is practiced at other Magna production sites has been assessed and discarded since the RFID solution is more flexible. In addition, scan operations with RFID compared to Barcodes are much faster and less error prone.

Because of the complex requirements it was decided to use UHF technology in order to utilize the large reading range at the beginning of the project. Disadvantages of UHF technology resulting from picking up unwanted or implausible external signals in a confined space are eliminated through software filters. These filters are part of the GRAIDWARE® AutoID solution developed by SIGMA Chemnitz GmbH. This middleware represents the heart of the entire solution.

The Process

When the **raw bumper leaves the injection machine** it is immediately equipped with a RFID tag, registered and managed by the soft-ware. This allows tracking and tracing the bumpers during the entire production and logistical process.

Prior to **lacquering**, the position of the bumper inside the skid is detected by a reader, and captured by the middleware. This is used to track the production quality. After the lacque-ring process the entire paint shop data is automatically linked to the bumper.

Then the bumpers are placed into **unmixed storage containers** according to product type. Multiple RFID readers monitor the correct storage of the bumpers into containers. The AutoID middleware GRAIDWARE® not only captures the signals, but also checks the signals for plausibility using sophisticated algorithms. Interference signals from neighboring transportation routes or passing forklifts are recognized as false signals and filtered out. The inspected unmixed storage containers are stored tempo-



rarily until the next request is being recorded. The location of the container is automatically captured and managed.

After the final production call the painted bumpers are equipped with harnesses, distance sensors, fog lamps, etc. depending on the configuration. The RFID tag **controls the machine** via an OPC server**, displays the next production step, the configuration of the bumper and loads the appropriate machine program for the welding and punching operations. In case of incorrect placement of the bumper or the wrong machine the operator of the machine receives an alert. Only after explicit confirmation of the operator

the machine starts executing the program. Thus operating errors and scrap will be reduced. Upon completion of the production step, and after completion of quality inspection the bumpers are placed on the appropriate frame for the just-in-sequence delivery for the customer. Finally, the position of the bumper on the frame is checked, since the position on the frame is essential for the further production at the customer site.



Benefits of the Solution

The captured data during the production process is forwarded via the AutoID Middleware GRAIDWARE® to 3rd-Party-Applications such as ERP and WMS systems. This enables the customer **to monitor the production in real-time**. By applying the tags to the parts (bumpers) the customer will be enabled to **completely track and identify the parts** on the shop floor and the warehouse until the part leaves the site. In addition, **statistical data** can also be determined to improve the production quality, avoid complaints and thus optimize costs. Faulty manual barcode scans are prevented and training of new employees is less time consuming. This **leads to a significant reduction in process time and therefore process costs**.



Project History

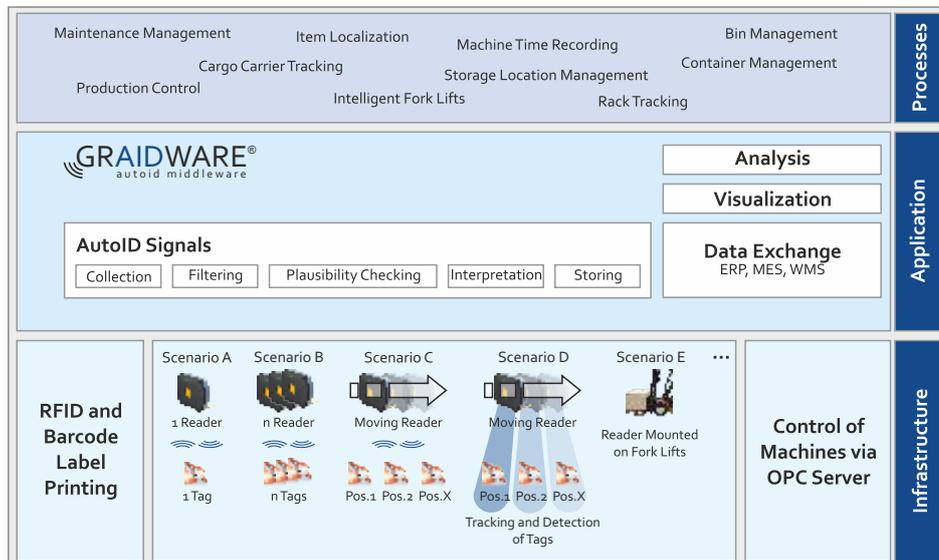
The nomination of SIGMA Chemnitz GmbH as partner for implementing the RFID UHF solution was due to a convincing overall concept. The Hans Turck GmbH & Co. KG was selected as the supplier of the RFID hardware because its hardware met the requirements for an industrial production environment the best. The request for quotation was in May 2011. In July 2011, the kick-off for the project was carried out with creating the requirement specification. Beginning of the project implementation was December 2011. A project team with all participating companies was formed which took over the management of the project and was responsible for the smooth implementation and keeping the project on-time and on-budget.

In August 2012, **after project period of only eight months, production on the shop floor could start on schedule.** „It's quite remarkable if such a complex project is on time and achieves a spot landing. We were able to start production at our facility ahead of schedule“ commented Jens Turschner, Project Manager at Magna Exteriors & Interiors Meerane. He added: „For those kind of projects it will only work if all parties cooperate closely. In SIGMA Chemnitz GmbH we have found a partner that not only has implemented what we wanted, but did suggest valuable improvements in many areas.“

Conclusion

„We are very satisfied with the solution. We could start production on time and our processes run without errors. By eliminating time consuming steps we have achieved a significant improvement in processing times“, summarizes Hendrik Rothe, managing director of Magna Exteriors & Interiors (Meerane) GmbH, the results of the introduction of the RFID UHF solution by SIGMA Chemnitz GmbH.

Overview of AutoID Middleware GRAIDWARE®



* UHF is the acronym for „Ultra-High-Frequency“.
 ** OPC is the acronym for „OLE for Process Control“