



ID cards reduce manual errors in manufacturing

The automotive industry is pushing full steam ahead with digitalization of its production facilities. In the Volkswagen factory in Bratislava, Slovakia, too, use of innovative automation systems, information technologies, and digital tools is the order of the day. "That's the only reliable way to manage the increasing complexity of our manufacturing processes," said Jozef Schmidt, Manager of Automation/Digitalization Planning at Volkswagen Slovakia. In the paint shop, a centrally controlled RFID access system based on the SIMATIC RF1070R reader ensures that production continues like clockwork after repair or maintenance work.

Advantages of the solution

- Quick error identification allows timely introduction of counter-measures
- Heightened sense of responsibility of maintenance personnel
- Use of existing employee ID cards increases user acceptance and reduces costs
- Centralized authorization management makes administration easier

Audi, Porsche, Skoda, Volkswagen: the Volkswagen factory in Bratislava is the only automotive factory in the world to manufacture four makes of automobiles under one roof. More than 300,000 automobiles roll off the production line here every year, from the high-horsepower Porsche Cayenne to the energy-efficient Volkswagen e-up! Electric and hybrid vehicles now represent more than a quarter of these. The individual vehicles are produced according to customer specifications. Accordingly, flexible manufacturing processes are the order of the day in Bratislava.

Excellent manufacturing

That is one reason why the Volkswagen factory in Bratislava won the renowned "Factory of the Year" benchmark competition in Europe in 2020. The jury was impressed by how the factory has tied together profitability, quality, and digitalization in all its processes and is pursuing a forward-looking strategy.

A contributing factor to this is the new employee identification system in the paint shop. It enables the factory to retrace interventions in the manufacturing processes at any time. This is especially important in the Volkswagen factory in Bratislava since it manufactures many different bodies. "For example, if the system expects to paint an Audi Q8 but the skid conveyor system contains a compact car instead, the result can be costly surface defects or even massive damage to the body and manufacturing robots," explained Jozef Kopunec, Manager of Paint Shop Maintenance at Volkswagen Slovakia.

Maximum concentration

The risk of this is particularly high after maintenance or repair work. That is because while all paint processes during normal operation are fully automated from start to finish, maintenance and repair work requires manual interventions.

Employees must remove bodies and skids from the system in order to perform maintenance or repair on it, and once work is complete, they must feed these back into the production line, specifying the respective vehicle identification data. This demands a high level of concentration and entails numerous opportunities for errors. "Transposed digits, redundant vehicle identification numbers, and specification of a wrong start position are all human errors that can happen when the skids are fed in again," said Kopunec.

Up to now it was very difficult to retrace the causes of these problems. Jozef Schmidt summarizes the issue this way: "We knew what went wrong but not why." When the time came to modernize the paint shop's aging process control system in 2018, the factory took direct steps to tackle the issue by including a new digital solution for employee identification. Siemens supplied the required components for this. The SIMATIC RF1070R reader combined with PM-LOGON software is the basis for fine-grained access control concepts that allow effortless retracing of user-specific information and instructions.



Uncomplicated access: the employee identifies himself by holding his ID card against a SIMATIC RF1070R reader.

"Some fine tuning was needed to adapt the system to our specific requirements," said Schmidt. The reason for this was that the standard solution presented initially envisaged employees identifying themselves using a separate transponder. Volkswagen Slovakia wanted to use existing employee ID cards for this instead. The problem: even though 16 different reader protocols were already available for SIMATIC RF1070R, none were right for Volkswagen Slovakia. "But Siemens was not held back by that. The solution was quickly adapted to our needs," said the Volkswagen Slovakia Area Manager for Automation/Digitalization Planning in praise of the manufacturer's flexibility.

Transparent access management

Today, the RFID-based SIMATIC RF1070R solution in the paint shop of the Slovakian Volkswagen factory is the basis for efficient electronic access management and a reliable tool for eliminating potential causes of errors. Existing employee ID cards are being used for identification purposes. "This increases user friendliness and reduces costs," said Jozef Schmidt, naming two important advantages of the solution. In addition, the centralized user management enables easy replacement of lost ID cards.

Paint shop workers in the Volkswagen Slovakia factory wanting to intervene in the production process via one of the approximately 140 reading points of the process control system are required to log in with their employee ID card. The ID card contains an RFID chip on which the employee's master data and authorizations are stored. "We are thus always able to trace who changed which parameters and when," said Paint Shop Maintenance Manager Jozef Kopunec.



For reliable vehicle identification, the RFID system SIMATIC RF300 is used.

This is key for detecting problems and introducing appropriate countermeasures as quickly as possible.

"In combination with other components for reliable vehicle identification, we were able to stamp out virtually all human errors in the production process," Kopunec said. Since the solution was commissioned, there have not been any redundant data inputs or unplanned stop-pages of the painting process due to input errors.

Heightened sense of responsibility

Josef Schmidt points to clear evidence of the success of the solution: "Employees are simply now more aware of their individual responsibility, allowing us to focus our required refresher training sessions on specific points." With the RFID solution, interventions by external personnel can also be retraced without difficulty. Suppliers and subcontractors wanting access to the Volkswagen manufacturing systems for maintenance or other work are given a temporary card with the required authorizations for this. These are optimal conditions for ensuring smooth running of the manufacturing process in the paint shop in the future.

Security information

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Award-winning automobile production

Slovakia is a textbook manufacturing nation: more automobiles per capita are produced in this Central European republic than in any other country. Around one million automobiles roll off the production line here every year. A majority of these come from the Volkswagen factories in Bratislava. Besides producing compact cars and high-priced vehicles, like the Porsche Cayenne, Volkswagen Touareg, and Audi Q7 and Q8, Slovakian factories located in Bratislava, Martin, and Stupava also produce transmissions, transmission components, chassis, and production equipment. Volkswagen Slovakia is both the cornerstone of the export sector and a major private employer in the Slovak Republic. More than 11,500 employees ensure that production runs smoothly in the three factories. In 2020, the Bratislava factory was distinguished as "Factory of the Year" and (for the second year in a row) "Transformer of the Year" due to its top-quality, efficient, and forward-looking processes.

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