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AUTOMOTIVE

Hirschmann Automotive relies on
Industrial Dataplatform from
Paze Industries

CASE STUDY



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More transparency in production, more efficient processes, higher quality: The automotive supplier Hirschmann Automotive is taking the digitization of its value chain to the next level with the Industrial Dataplatform from Paze.

Company

Hirschmann Automotive GmbH is an internationally active automotive supplier based in Rankweil (Vorarlberg, Austria) and develops connectors, contacting and sensor systems, special cable solutions, as well as plastic overmolding of various automotive components. The Hirschmann Group today operates nine plants in seven countries. In addition to the headquarters in Rankweil, the group of companies includes two plants in Vsetín (Czech Republic), two plants in Târgu Mureş (Romania) and one plant each in Germany, Morocco, China and Mexico.

In order to continue to inspire its customers around the world in the future, Hirschmann Automotive is focusing on disruptive technologies and smart manufacturing processes. The company addressed the possibilities of Industry 4.0 and began to digitalize its entire value creation system. This includes, for example product and process development, supply chain management, and quality management.

At the same time, the development of the Hirschmann Automotive Smart Factory is progressing intensively. The automotive supplier is automating processes across the board and increasingly using virtual simulation methods, transport robots, and additive manufacturing processes. This makes it possible to manufacture products more efficiently and more agilely - and to reduce production costs and the consumption of raw materials in the long term. Hirschmann Automotive is thus not only making a contribution to the future sustainability of the industry but also to the protection of the environment.



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Challenge

Hirschmann Automotive's customers from the automotive industry are placing ever higher demands on the traceability of all production steps. "We have to prove that we have produced components and products under very specific conditions and that relevant limits have not been exceeded," says Felix Salcher, IIoT Developer at Hirschmann Automotive.

In the production of injection molded parts, the automotive supplier monitors, for example, the cycle time, pressure and the temperature at which the components are produced. Hirschmann Automotive stores this data for up to 15 years, so that it can be made available to the customer at any time in the event of a fault.



"Classic SQL databases are not the right place to store such data," says Felix Salcher. "We have therefore looked around for suitable solutions to cope with the rapidly growing volumes of data. Our aim was not only to store the data securely - but also visualizing and evaluating it and thus achieving further added value."

"We already had a lot of ideas in our heads about what we could do with these data," emphasizes Sebastian Schuler, Global Head of Digitalization at Hirschmann Automotive.

"Real-time analytics allow us to provide employees on the shop floor with better information, so they can work more efficiently, optimize processes, and proactively respond to potential problems."

Solution

Numerous technology providers and cloud providers today have solutions for the storage and visualization of large amounts of data. Hirschmann Automotive held discussions with most of these providers and eventually looked at various cloud solutions, including Paze in more detail. The products were evaluated in proof-of-concept installations and compared with each other.

"Among other things, it is also important that the cloud solution fits well into our existing SAP environment," says Sebastian Schuler. "Among other things, we use the SAP Manufacturing Execution System for the Control of our production. In the end we opted for the Industrial Data-platform from Paze."

Hirschmann Automotive was initially convinced by the ease of use of the Paze solution. With intuitive functions such as the Dashboard Builder or the Dataset Builder, users can create their own widgets or monitoring dashboards with drag-and-drop. "We have a lot of key users in the production environment who have a keen interest in individual data evaluations," Mr. Salcher explains. "With Paze, we provide low-code tools that they can use to create their own data apps for their machines without any programming effort. The data apps can be used not only on the PC, but also immediately on a tablet or cell phone - perfect for specialists who are on the road or spend all day in production.



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Solution

For more complex data analysis, Paze comes with an integrated script editor. The engine covers R and Python, the two most important languages for statistics and data analysis.

"This was also an important criterion for us, as it allows us to also integrate machine learning algorithms that are currently being developed in a joint research project with the University of Vorarlberg," says Sebastian Schuler. "In the future, we want to use the database from Paze for process capability analyses."

Another important reason was that Paze offers a high-performance and easily scalable time series database based on PostgreSQL. "With other solutions, the cost of storing IIoT data would have gotten out of hand very quickly," said Felix Salcher.

Last but not least, the spirit of the company also played an important role in the decision in favor of Paze.

"We really appreciate the fact that we have found a partner who wants to develop further together with us. The cooperation and the direct exchange was a lot of fun right from the start," reports Felix Salcher. Together, the two project partners quickly started setting up the new IIoT infrastructure. In the first step, the focus was on 30 injection molding machines in Rankweil. The connection turned out to be very simple since Paze also works with the existing Manufacturing Execution System (MES) and the data can be directly transferred from SAP Plant Connectivity (PCo) - the edge solution of the MES. All machine data is first transferred to the PCo system via OPC UA interfaces, where it is bundled and normalized and finally sent to the cloud broker of Paze.



Solution

"Connecting a new machine to Paze is therefore really a piece of cake," says Felix Salcher. "We only have to specify during configuration in the MES that the data is also sent to Paze. So we can then use the data immediately for evaluations."

How does the interaction between MES and Paze work?

The two systems complement each other perfectly in practice. As a production control system, the MES transfers the orders with target variables to the machines, controls the program selection on the machines and sends feedback to the ERP for business evaluation - for example, on the distribution of good and bad parts, material consumption and production times.

Whenever, on the other hand, data needs to be viewed and evaluated over a longer period of time, the Paze platform takes over: "Are our production processes running stably? Are there signs of wear and tear? Or are there signs of a deterioration in quality? These are all questions that Paze answers for us through real-time data evaluation of the machine sensors," explains Sebastian Schuler.

This knowledge and detailed insights into the performance of the machines are enormously valuable for Hirschmann Automotive. The company has, therefore, already started to connect further injection molding machines in other plants. At the same time, the key users at these locations are being trained in the use of Paze. "However, not too much training is required," says Felix Salcher.

"The users usually want to try things out for themselves very quickly - and this is the best way to discover the possibilities of Paze".

In the next step, high-speed assembly machines in Rankweil will also be connected to the Industrial Dataplatform. Compared to injection molding machines, their data is processed at much shorter intervals and produce a new data record every second. For Felix Salcher, however, this is no reason to worry: "We can also meet this challenge with the high-performance Paze architecture."

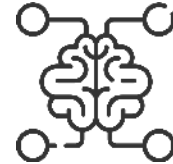


Results



Real-time monitoring of machine performance

The Paze platform delivers real-time granular insights into the various performance parameters of a machine and also illuminates dependencies between these parameters. "This enables much in-depth analyses than would have been possible with our previous tools," says Sebastian Schuler.



Comprehensive transparency through fast data evaluations

In the past, evaluations of time series data only took place sporadically and were mostly carried out manually with the help of Excel tables. This procedure was time-consuming and error-prone and the results became outdated very quickly. With Paze, Hirschmann Automotive can call up current evaluations of all relevant trends in production at any time.



Direct access to productivity and quality key figures

Several production areas already have monitoring dashboards that already have installed key production metrics from the Paze platform. This allows production workers to see data on the status of their machines at a glance, including the current piece counts, and the reject rate.



Simplified Exception Management

Paze also provides Hirschmann Automotive all the important information needed for for rapid troubleshooting. Per drill-down, the responsible persons can very quickly isolate the causes of faults and, with just a few clicks, identify the machines, tools, or articles for which problems occur frequently.



Higher efficiency through Process optimization

With the information from the INDUSTRIAL DATA PLATFORM, many processes can be simplified and efforts minimized. Today, production employees know exactly when they need to retool a machine because the remaining time for order processing is displayed in the app. This eliminates the need for regular checkups at the machine, and the processes on the shop floor are further optimized.



Outlook/Prospects

Hirschmann Automotive is currently working on a joint research project with the Josef Ressel Center for Robust Decisions, which is located at the Voralberg University of Applied Sciences in Dornbirn. The aim of the project is to use the data provided by Paze for process data capability analyses. With the help of machine learning technology, specially developed algorithms automatically detect deviations in the database that may have a direct impact on the performance of the machines or the product quality. "This information enables us to react proactively in the future if potential technical problems become apparent," Felix Salcher explains. "Conversely, these can also confirm that all processes are running as desired. If all parameters are in the green area, we need fewer quality samples and thus avoid unnecessary costs."

Quotes

"Our employees in the production environment often have a very good intuition because they work with their machines every day. We can now back up their assumptions with data and, with the Paze platform, we are feeding a lot of robust knowledge back into the production."

Felix Salcher, IIoT Developer, Hirschmann Automotive GmbH

"Our experience with Paze shows that the appetite comes with the Eating. We had the shop floor monitors with the real-time data for just one hour - and our employees were already gathered there and new ideas were bubbling up."

Felix Salcher, IIoT Developer, Hirschmann Automotive GmbH

"If I have a use case in my head, Paze can be used to build a prototype within a very short time."

Sebastian Schuler, Global Head of Digitalization, Hirschmann Automotive GmbH

"By using Paze, we no longer have any respect for dealing with huge amounts of data anymore."

Sebastian Schuler, Global Head of Digitalization, Hirschmann Automotive GmbH

"Paze supports the implementation of our Smart Factory philosophy and helps us to further optimize our processes. In conjunction with smart algorithms, we will be able to optimize our machine park in a data-driven way."

Sebastian Schuler, Global Head of Digitalization, Hirschmann Automotive GmbH



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