Greiner Packaging Standardizes Connectivity to Improve Quality and OEE

Industrial connectivity for packaging manufacturers

In the age of Industry 4.0, companies have to reposition themselves digitally. New networking options of production, machines, logistics and sales bring numerous advantages, but also challenges. The process must be planned, initiated and implemented consistently, which often calls for large investments and new partners. There are countless providers of the new connectivity and its implementation, each offering the best software and service. In order to successfully go through the change as a company, good project management with the right goals and a productive partnership are required.

A packaging manufacturer is preparing for the future

Greiner Packaging, a company specializing in innovative plastic packaging from Austria, has successfully tackled digital change. The global company is part of Greiner AG, which consists of four divisions and employs around 10,800 people at 130 locations worldwide. Greiner AG was founded in 1868, over 150 years ago and has been 100 percent family-owned ever since. The more than 30 locations of the Grainer Packaging division generate sales of over 670 million Euro annually and are largely located in Europe. However, plastic packaging and plastic parts for the food and non-food sector are also produced in the USA, Mexico and India. The major international customers such as Nestlé, Danone or manufacturers in the automotive industry benefit from a high level of expertise in development, design, production and decoration, true to the motto "from idea to finished product". The diversification of products and markets, with a network in 19 countries worldwide, forms the basis for continuous growth.

Andreas Kurzmann is an international IT manager at Greiner Packaging and has been part of the company for around 15 years. Responsible for the Operational Technics (OT) area, he defines standards for information processing as well as technical services and functions that are rolled out in all plants. Working with inray and Kepware under his leadership, the aim was to improve the quality requirements in factories worldwide through standardization in order to increase productivity later.

Greiner Packaging's goal was to connect as many machines as possible and to link them together. This enables data to be read out, new quality parameters to be developed and efficiency and ultimately productivity to be increased. The packaging manufacturer thereby faced major challenges because the machines in the factories are purchased from different manufacturers. This means that the machines are also used by other companies and products worldwide and not individually for the production process by Greiner Packaging. There are some differences between machine manufacturers and their customers when it comes to evaluating the data of a machine or in what form and for what purpose. "We can understand the manufacturers well. Some of them have concerns that we want to copy and manufacture the machines ourselves, and we want to improve our own process," explains Kurzmann. The company wants to optimize the machines for its own process with the help of new software in order to increase production capacities and quality. The aim is not to reduce jobs, but to optimize the production process and make it less prone to errors through more automation in order to secure the location and jobs in Europe in the long term. Against this background, the cooperation with machine manufacturers can be challenging, continues Kurzmann. However, good and cooperative partnership is always important.

From the trial version to the biggest fan

The specialists for industrial software inray and Kepware offer a solution for linking different machines and reading out a variety of protocols and data.

The cooperation started around four years ago when Kurzmann was invited to Germany for an introductory date for modern software solutions from inray. The first impression was convincing. Installation of a trial version of the software OPC Router from inray worked without problems. The cooperation went smoothly right from the start, and the IT manager was particularly impressed by the fast response rate and good advice. For Andreas Kurzmann, it was the best partnership and customer service structure he has ever experienced in the IT area. "We were able to contact the service at any time and to always continue working right away, continue testing and had great support, even though we were "only" a demo customer at the start." The Industry 4.0 software OPC Router from inray has been installed in Greiner Packagings headquarters and is used as a central communication platform for distributing the data and connecting different systems.

Kurzmann chose the leading industrial connectivity platform KEPServerEX to connect the individual machines to the various plants. The software development company Kepware from PTC Inc., based in Portland, USA, first made it possible to use a demo version and already sent a programmer and a project manager directly to Greiner Packaging in Austria during the test phase to program a driver in two plants. The machines were tested and the packaging manufacturer was given exclusive insight into the latest software version that was not yet available on the market. The unique service was completely free of charge for the packaging manufacturer.

Seamless connectivity with around 500 machines

With the goal to link as many machines from different manufacturers as possible, the final decision was made to use the Manufacturing Suite of the KEPServerEX, which enables connections to a variety of manufacturing devices, including read and write transactions. After a successful test of the demo version, Greiner Packaging bought the Manufacturing Suite for a year and rolled it out to a total of three plants. As the roll-out was very successful, Kurzmann decided to introduce the Kepware software in other countries as well.

Kurzmann had of course compared inray and Kepware with other OPC servers in advance and decided on the two specialists due to the low training effort, the very simple installation and the intuitive connection of the machines. While the OPC Router was installed centrally by inray, the Kepware servers are in use at each plant and are linked to the individual machines. The partnership between Kepware, inray and Greiner Packaging works excellently, Kurzmann praises. The IT manager explains exactly how the interaction works: "Kepware is connected to around 500 machines in 11 plants, fetches the data and brings it, via an SQL protocol, to the OPC Router into the headquarters, which receive the data and makes it readable for our MES, which runs on its own SAP database."

Where previously an old PDA system in Austria collected the data and evaluated it overnight, the transmission now runs in real time and around the clock. Fetching the data until it is made available by the OPC Router takes around one to two seconds and a total of around 1.2 GB of data is transferred per day. A big advantage: You no longer have to wait for the results until the next day. The information from the machines is queried every second and ends up

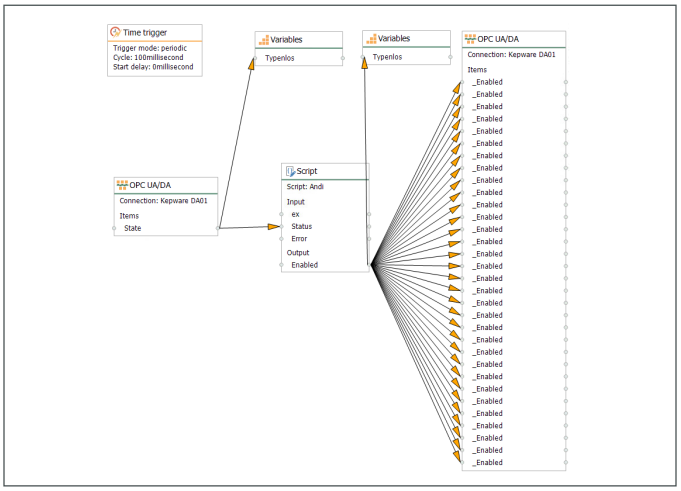
in the SAP MES. Errors do not only become apparent afterwards and the sources of errors can be localized very precisely. Around the clock, you can monitor how many machine cycles and which orders are currently running in real time. With slight adjustments to the cycle time, you can react flexibly to capacity fluctuations, machine failures and maintenance. Monitoring can also identify which machines are currently connected and whether there is an unplanned downtime that can be remedied promptly.

First standardization - then optimization

Industry 4.0 and digitization of the industry are often easy to say, but a complicated process. The globally operating company works in its plants with various production technologies, such as injection molding and deep drawing, as well as various decoration technologies, such as printing, labeling, sleeving or in-mold labeling. In cooperation with Greiner Packaging, Kepware has developed a communication standard for injection molding machines that is now also available as a EUROMAP 63 driver for other users. The EUROMAP 63 driver connects directly to EUROMAP devices using today's OPC communication technology and provides a secure channel for information from automatic lines and independent devices. The EUROMAP 63 driver thus brings the machines into the OPC UA architecture and into the Industry 4.0 environment. Through the other plug-ins of the KEPServerEX, the data of the injection molding machine can be used in different ways and the OPC server function allows any number of client applications to query and use the data.

A challenge: The production employee must work with both the software and the IT specialist. The production employees often perceive failures and malfunctions subjectively and monitoring is not very precise. Above all, the reason why a machine has failed is difficult to find in shift operation. The focus, however, is not on cutting jobs, but on securing locations with the latest technology. Kurzmann explains: "There will still have to be employees who operate the machines, supervise the monitoring and are important know-how carriers of the machines, their functionality and characteristics. Software cannot do this." It is important to standardize the data first and thus improve quality requirements everywhere. Uniform parameters are to be created in order to advance digitization as a whole. Data evaluation via the software helps to improve the machines and processes in the long term.

Another added value that Greiner Packaging is aiming for by digitizing its production is the calculation of new KPIs. With the use of the new software, they can read out and thus improve the OEE, the overall system effectiveness. In the future, the packaging manufacturer would like to implement the same quality standards worldwide as part of the optimization process. That means being able to produce the same product in Austria, but also in Mexico. The know-how of the employees and the latest evaluations of the KPIs flow into the software and are rolled out as standard and knowledge carriers in all countries and plants that use the software.



Good reputation even with competition

The international IT manager himself made the decision to work with inray and Kepware and was able to easily substantiate this in the company. The joint development of the EUROMAP 63 driver in particular has brought great advantages for the company. The driver offers a reliable possibility to establish a connection to a large number of injection molding machines - which are important for Greiner Packaging - with OPC client applications, as well as numerous user-defined applications.

Greiner Packaging's high-quality software solutions and good service have already been confirmed in advance by other users on information about industrialization. Kurzmann was confirmed in his decision because competitors and other large players had good experiences with inray and Kepware.

The various forms of licensing at inray and Kepware also offer Greiner Packaging added value. "The fact that the software can first be leased and tested and be purchased later with a maintenance contract creates good value for the money," explains Kurzmann. The IT manager therefore has advice for other companies that are still facing digitization: You should always have the opportunity to test the new software. The support was very helpful, the installation is intuitive and it does not require a lot of training. Kurzmann is still in regular contact with both providers, was able to establish a good and very partnership-based business relationship and is planning new projects for the future.

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Further information at: https://www.opc-router.de/

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