



The digital twin is the key to the Factory of the Future – Part II

The modular assembly line of Dassault Systèmes and Bosch Rexroth presented at the Hannover Messe is the result of a change in perspective. Planning production processes coming from the product, instead of the machines – that is what the digital twin can put into effect. Marketplaces for digital twins, IoT Gateway software and open standards will mark the route into the factory of the future.

The production line from Bosch Rexroth shows how digital twins completely reverse the logic of production, if you think of the Factory of the Future. It is no longer the machines that determine the processes, but the products. A customer's order automatically leads to the creation of a digital twin. This is connected, for example via an RFID chip as a reference to the blank to inform the machines later about the respective processing steps. As a crucial precondition for this evolution, Bosch Rexroth has already created behavioral models for many automation components, which are available on request for systems engineering. As part of the online configuration, customers already receive the CAD models of the components in the appropriate data format automatically.

Next evolutionary step: Marketplaces for digital twins

In a future scenario that is interesting for mechanical engineers, digital twins could be made available from automation components but also via a marketplace in order to bring them into the simulation environment with a single click. As a result, the OEMs could parameterize the automation immediately, test it and put the entire model into virtual operation quickly and safely. In addition, the marketplace could become a PLM platform, where all digital twins for current and past solutions are available. To prepare for this scenario, Bosch Rexroth is currently seeking a dialog with its customers in order to jointly define the exact requirements for the simulation models.

Pioneering: IoT Gateway software and open standards

In order to achieve continuous improvements in production using the digital twin, the real operating data from the assembly line can be compared with its simulation. This allows the quality of the manufacturing process to be monitored in real time and the maintenance to be modeled and optimized based on the current condition. The assembly line shown at the Hannover Messe also depicts the current state of the art in this respect. The IoT Gateway software from Bosch Rexroth, which is installed on a pocket-sized box PC, collects data from the controller via the Industry 4.0 standard OPC UA and transfers it to a higher-level IT system for visualization and analysis using 5G technology. With regard to the investment security of IoT solutions, Bosch Rexroth consistently relies on open standards such as OPC UA.



In future, it is no longer the machines that determine the processes, but the products.

Important stage on the way to the Factory of the Future

Dassault Systèmes' and Bosch Rexroth's partnership is a powerful testament to the competitive advantages that machine builders and end users derive from a seamless workflow, from virtual engineering to intelligent automation. The digital twin of the production line not only forms the basis for the fastest possible start-up, but also for the quickest possible production changeover and easy continuous process optimization with the help of IoT services. The close partnership of both companies is another stage win along the way to the Factory of the Future.

For more information about the collaboration with Dassault Systèmes and the road to the factory of the future, please

read our [blog post “With the digital Twin to the Factory of the Future”.](#)