

Virtual commissioning in practice



BASF SE

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BASF SE is the largest chemical company in the world and is headquartered in Ludwigshafen, Germany. BASF originally stood for Badische Anilin- und Soda-Fabrik. The BASF Group comprises subsidiaries and joint ventures in more than 80 countries and operates six integrated production sites and 390 other production sites in Europe, Asia, Australia, Americas and Africa.[3] Its headquarters is located in Ludwigshafen am Rhein (Rhineland-Palatinate, Germany). BASF has customers in over 200 countries and supplies products to a wide variety of industries.

BASF is currently conducting a pilot project together with Siemens to make the vision of virtual commissioning of a process plant a reality. In the virtual commissioning pilot project, BASF is now testing an automation application in a virtual plant, which maps plant behaviour with the help of a simplified process model simulation environment. By doing so, the process could be tested intensively, both during normal operation and also, to some extent, in exceptional situations. It will help to detect errors early in the implementation of automation logic with consequent increase productivity and return on investment.

Simulation and Forecasting Technology role

Virtual commissioning, plant behaviour modelling, scenario analysis

Sector
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Virtual commissioning lies at the heart of the vision of a fully integrated engineering process. Together with Siemens and M+W Process Automation GmbH, BASF is taking the first steps toward this goal and is employing Simit as the tool for virtual commissioning for a process automation migration project.

BASF SE, Germany - Cost-effectiveness and time to market are driving factors behind the continuous optimization of engineering workflows in the process industry. Integrated engineering can make an important contribution, as it assists in the closer integration of the individual steps of plant engineering, automation, and commissioning, and in making them more efficient. In particular, the simulation of the simplified behavior of process plants in virtual commissioning can significantly increase engineering efficiency.



Virtual commissioning in practice: the project team discusses the next steps with Simit (All Photos: Siemens AG / A. Kradtsch)

A pilot project at BASF

BASF is currently conducting a pilot project together with Siemens and M+W to make the vision of virtual commissioning of a process plant a reality. BASF and Siemens have already cooperated successfully in the past on innovative issues in process control technology, such as priority-based alarm concepts.

In the virtual commissioning pilot project, BASF is now testing an automation application in a virtual plant, which maps plant behavior with the help of a simplified process model in a simulation environment. "With virtual commissioning, we can test the automation software intensively, both during normal operation and also, to some extent, in exceptional situations," explains Dr. Michael Krauß, senior automation manager at BASF SE. As a first step, BASF focused on cold commissioning in a virtual plant. "In practice, plants are often cold commissioned in order to perform the final tests before the start of production. During the piloting, we carry out the engineering and the factory acceptance test conventionally as well as within the framework of virtual commissioning. Thus, we can directly compare the results and evaluate the benefits. Simit allows us to check the automation software without modifications in a simulated system." One of BASF's central objectives is to significantly shorten the commissioning time for the real plant with the use of virtual commissioning. Krauß explains, "With virtual commissioning, we expect an early start-up of the plant to increase productivity and the return on investment. To do this we must achieve high quality in automation already during the engineering phase."



"The sooner an error or misconception in the software is discovered, the lower the costs are to correct it."

Dr. Michael Krauß,
Senior Automation Manager, BASF SE