

Hanover, April 24, 2017

Hannover Messe 2017, Hall 9, Booth D35

The digital twin becomes tangible

The “Digital Enterprise” showcase in the Siemens booth at Hannover Messe 2017



The digitalization of the manufacturing and process industry is continuing to advance. Consumers are demanding increasingly customized products, innovation cycles are becoming shorter, and competitive pressure is growing. There are, however, numerous opportunities for companies to respond to the changed market conditions. Digitalization is helping to reduce time to market, increase flexibility and efficiency, and ensure or even improve product quality. To facilitate this, Siemens offers a portfolio of hardware and software as well as specific services, all of which are already available, enabling companies of all sizes to benefit from digitalization: the Digital Enterprise. At the Hannover Messe 2017 from April 24 to 28, Siemens will be demonstrating the benefits of its comprehensive approach. Digitalization will become tangible in the truest sense of the word at a multimedia table in the center of the booth – in line with this year’s motto “Discover the value of the Digital Enterprise.”

The seamless integration of automation hardware and software not only allows companies to collect and process the data from machines and plants. They can also use that data to gain a true competitive edge and map the actual production world as a digital twin. This also applies to machine builders and plant engineers, who can exploit these advantages and pass them on to their customers. Furthermore, this

approach does not require huge investment at the outset because digitalization can be introduced to any systems and equipment and then gradually expanded as required. That's why Siemens solutions are specifically tailored to the differing needs of the manufacturing and the process industry.

The Digital Enterprise Suite offers the manufacturing industry integrated software and hardware solutions that can be used to seamlessly integrate and digitalize the entire value-added chain, including suppliers. The result is a digital twin that uses a data model to depict the product, process, and manufacturing. The digital twin includes three aspects: product development, the production process, and production planning. At the Siemens booth, visitors will be able to experience how a digital twin can be used to perform simulations, testing, and optimization processes in a completely virtual environment. During product development, the digital twin helps with the development of the mechanical design, heat and airflow simulations, and the validation of software and electronics. In terms of production, the digital twin includes the installation process along with workplace ergonomics, the planning of production lines, and resource planning. For production planning, the third aspect, the digital twin is used to implement an extensive simulation of functionality during configuration and engineering. At the booth, visitors can experience the digital twin at the Digital Enterprise Suite table, which combines digital motion graphics and actual models of a factory site.

Data exchange takes place using the cost-effective, scalable platform MindSphere. Designed as a cloud-based open IoT operating system, this platform enables plant performance to be improved by capturing and analysing large volumes of production data. MindSphere thus forms the foundation for applications and data-based services from Siemens and third-party providers in areas such as predictive maintenance, energy data management and resource optimization. MindSphere offers customers a development environment in which they can integrate their own applications and services.

From integrated engineering to integrated operations, the process industry benefits from an integrated data model that covers the entire lifecycle of a plant. This helps to boost flexibility and efficiency, especially for brownfield plants. Siemens demonstrates this with an illustrative master display using the Comos software solution, including MRO service and maintenance management as well as the 3D

visualization tool Comos Walkinside, Simatic PCS 7, and Simit simulation software. In addition, infographic animations illustrate the consistent data exchange between the tools, based on a uniform data platform. In Hanover, Siemens will be using a pump as an example to show how plants can benefit from an integrated digital twin during the operating phase: Via a live link to Process Automation World, the Siemens demo center for the process industry in Karlsruhe, trade visitors will see how process data connects to MindSphere, the cloud-based open IoT operating system. MindApp Fleet Manager subsequently makes the data available for further analyses and digital services. With the help of 3D imaging software from Bentley Systems, a 3D map of the facility can be created for brownfield plants – making it possible to generate a digital twin of an entire plant.

For the manufacturing and the process industry, industrial communication forms the foundation for digitalization and is indispensable for every functioning automation system. The design, planning, and implementation of communications networks in the industrial environment as well as the connection to a company's IT system require a great deal of expert knowledge in the corresponding industries as well as extensive application expertise. With "Expertise in Industrial Networks" as part of the Digital Enterprise portfolio, customers receive industry-specific solutions for future-oriented reliable communication in industrial networks. This paves the way for the optimized connectivity of machines and plants for digitalization purposes.

As digitalization becomes ever more widespread, the importance of comprehensive security in automation also becomes increasingly important. This is why industrial security is a key aspect of the Digital Enterprise. With Defense in Depth, Siemens offers a multifaceted concept that provides a plant with all-round as well as in-depth protection. The concept is based on plant security, network security, and system integrity in accordance with ISA 99/IEC 62443 recommendations.

With digital services, industrial companies receive solutions that are precisely tailored to customer requirements and thus meaningfully supplement their own capabilities or strategically build upon them. Based on a thorough analysis of all relevant operating and process data, visitors can fully exploit the potential of their plant across its entire lifecycle. In combination with networked products and processes, digital services not only enable greater efficiency and flexibility in production but also make it possible to optimize complex value-added chains. This

results in tremendous potential for boosting the productivity and competitiveness of manufacturing processes and plants.

Companies in the manufacturing and process industry can already intelligently invest in the future by making specific adjustments. Intelligent financing solutions make this investment possible. With budget-friendly offerings such as “pay-for-performance” or software financing, Siemens Financial Services helps companies implement the digital transition.

This background information and further material are available at www.siemens.com/press/pool/de/events/2017/digitalfactory/2017-04-hannovermesse/background-digitalization-e.pdf

For further information on Siemens at the Hannover Messe 2017, please see www.siemens.com/press/hm17 and www.siemens.com/hannovermesse

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