Industry Software – Driving the Digital Enterprise
Business is becoming more and more impacted by digitalization. Customers are increasingly able to tell manufacturers directly – via the Internet – exactly what they want and when. If manufacturers don’t respond, alternatives can often be found easily, and potential business can be lost quickly.

Manufacturers need to respond

To address this challenge, manufacturers need to significantly reduce their time-to-market, while massively increasing flexibility to enable individualized mass production – and do so with reduced energy and resource consumption.

Solutions to address this challenge are developed by initiatives such as the Internet of Things and Industrie 4.0.

Holistic approach to optimize the entire value chain

By simply focusing on the automation of manufacturing processes, it is not possible to meet the aforementioned requirements. A holistic approach, stretching over the complete value chain and encompassing an often global ecosystem of suppliers, is necessary.

The manufacturing industry is now at the stage where the automation of complete workflows is the only way to ensure a long-term, defendable, competitive position.
Continuous digitalization of the value chain

Over the past 15 years, Siemens has developed an extensive suite of software products and is now in a position to offer its customers a holistic automation solution covering all major Industrie 4.0 requirements – the Digital Enterprise Software Suite.

The Siemens product portfolio already smoothly connects major parts of the product and production lifecycle today. Powerful Product Lifecycle Management (PLM) software, for example, allows the development and optimization of new products on an entirely virtual basis.

In the real manufacturing world the Totally Integrated Automation (TIA) solution, which has proven its worth for nearly 20 years now, ensures the efficient interoperability of all automation components. The Totally Integrated Automation Portal (TIA Portal), for example, already enables significant time and cost savings in engineering.

Siemens Collaboration Platform: Teamcenter

As the Siemens Collaboration Platform and single data backbone for the Digital Enterprise, Teamcenter enables globally dispersed enterprises to engage every facet of their business in new product introductions. Integrated idea capture and management, project and portfolio management tools are combined with industry-leading product design and development solutions in a single, shared source of product and process knowledge.

Teamcenter helps companies take control of their multi-computer-aided-design (CAD) and multi-domain design processes, including mechanical, electronics, software and simulation, and manage that data in a single secure source.

Users can access, assemble and re-use valuable intellectual property and validate the quality and completeness of all product data.
Industry Software

Industry Software from Siemens helps manufacturers become Digital Enterprises by enabling them to digitalize and integrate their entire industrial value chain through PLM solutions, Manufacturing Execution System (MES)/Manufacturing Operations Management (MOM) solutions and TIA equipment—all supported by Teamcenter, the industry-leading Siemens Collaboration Platform and single data backbone. The integration of PLM, MES/MOM and Automation is made possible with the comprehensive suite of Siemens Industry Software.

Product Lifecycle Management

PLM software from Siemens provides a common digital thread through all phases of development and manufacturing, from concept to end-of-life, enabling tight design, engineering and manufacturing integration. These solutions help companies create a single master source of all data and 3D images that can be used to define today’s most complex platforms and synchronize a global virtual network of designers, developers, manufacturing engineers, production specialists and services/support teams. PLM software from Siemens helps thousands of companies realize innovation by optimizing their processes, from planning and development through manufacturing, production and support.

Manufacturing Execution System/Manufacturing Operations Management

MES/MOM is the core element linking PLM to Automation and providing manufacturers with a real-time Industry Software layer. Siemens’ MES, QMS, APS and HMI solutions are part of its MOM system, which represents a holistic approach to improving manufacturing operations performance and consolidating the management of production execution, sequencing, nonconformance handling and end-to-end quality within one system. Siemens MOM solutions standardize and optimize manufacturing processes to minimize lead times, optimize asset utilization, reduce global time-to-market and increase production visibility and responsiveness.

Automation

TIA, industrial automation from Siemens, makes engineering efficient. The open system architecture covers the entire production process and offers efficient interoperability across all automation components. This is made possible by consistent data management, global standards and uniform interfaces for hardware and software. These shared characteristics minimize engineering time. The result: lower costs, reduced time-to-market and greater flexibility.
PLM Software

PLM software from Siemens provides a common digital thread through all phases of development and manufacturing, from concept to end-of-life, enabling tight design, engineering and manufacturing integration. These solutions help companies create a single master source of all data and 3D images that can be used to define today’s most complex platforms and synchronize a global virtual network of designers, developers, manufacturing engineers, production specialists and service/support teams – ultimately helping them realize innovation.

Teamcenter – Siemens Collaboration Platform

Teamcenter enables globally dispersed enterprises to engage every facet of their business in new product introductions. Integrated idea capture and management, project and portfolio management tools are combined with industry-leading product design and development solutions in a single, shared source of product and process knowledge. Teamcenter helps manufacturers take control of their multi-CAD and multi-domain design processes.

NX – Digital product development

NX software from Siemens is an integrated product design, engineering and manufacturing solution that helps companies deliver better products faster and more efficiently. By integrating CAD, computer-aided manufacturing (CAM) and computer-aided engineering (CAE), NX enables the Digital Enterprise to create up-front conceptual designs, 3D modeling and documentation as well as create multi-discipline simulation for structural, motion, thermal, flow and multi-physics applications.

Tecnomatix – Digital manufacturing

Tecnomatix software from Siemens delivers process innovation by linking all manufacturing disciplines with product engineering, including process engineering and simulation, and production management. The Tecnomatix portfolio of digital manufacturing solutions utilizes Teamcenter software, delivering an unmatched product and production integration.

LMS – Simulation and testing

LMS test and simulation software solutions help manufacturers incorporate model-based mechatronic simulation and advanced testing solutions in the product development process. LMS tunes into mission-critical engineering attributes ranging from system dynamics, structural integrity and sound quality to durability, safety and power consumption.

Fibersim – Composites design and manufacturing

The Fibersim software for composites engineering is used by numerous leading manufacturers in the aerospace, automotive, marine and wind energy industries. Fibersim supports all of the unique and complex design and manufacturing methodologies necessary to engineer innovative, durable and lightweight composite products and parts.
MES Software/MOM System

The Siemens MOM system includes the SIMATIC IT, SIMATIC WinCC, IBS and CAMSTAR software suites, provides a real-time Industry Software layer and links PLM to Automation. Representing a holistic solution to improve manufacturing operations performance, Siemens MOM is built to consolidate the management of production execution, sequencing, nonconformance management and end-to-end quality.

SIMATIC IT – Manufacturing Execution System

The Siemens MES is a highly scalable, modular platform that allows companies to drive production efficiency, provide operational transparency and optimize manufacturing responsiveness. SIMATIC IT embeds industry functionality, enabling manufacturers to model, visualize and harmonize business processes globally.

SIMATIC IT – R&D Suite

The SIMATIC IT R&D Suite is a scalable platform that streamlines the R&D process for formulated products and facilitates a consistent transfer of final designs to manufacturing plants around the globe.

SIMATIC IT – Advanced planning and scheduling

The SIMATIC IT Preactor APS suite of production planning and scheduling products for small, medium and large companies uses advanced math to quickly analyze and calculate achievable production schedules, considering multiple constraints and business rules. Planners can generate and evaluate what-if scenarios to achieve optimum results.

SIMATIC WinCC – Process visualization and monitoring

The efficient engineering, integrated diagnostics and flexible analysis capabilities of the Siemens SCADA manage the vast data volumes produced in modern industrial plants, put operators in control of the manufacturing process and offer a scalable platform for decision-making and operations optimization.

IBS – Quality management system

The Siemens IBS CAQ=QSYS quality management system enables organizations to safeguard compliance, optimize quality, reduce defect and rework costs and achieve operational excellence by increasing process stability. The integrated process interlocking capabilities (quality gates) can detect production errors to avoid further processing and shipment of non-conforming material.

CAMSTAR – MES for semiconductor and medical devices industries

CAMSTAR extends Siemens’ integrated product development and production automation solutions to the medical devices and semiconductor industries. The CAMSTAR enterprise MES portfolio of industry-specific suites supports highly complex process workflows, high volume automated data collection, mass customization, discrete assembly, batch process and more.
Automation Software

TIA, industrial automation from Siemens, makes engineering efficient. The open system architecture covers the entire production process and offers efficient interoperability across all automation components. This is made possible by consistent data management, global standards and uniform interfaces for hardware and software. These shared characteristics minimize engineering time. The result: lower costs, reduced time-to-market and greater flexibility.

**TIA Portal – One integrated engineering framework**

TIA Portal is the key to unlocking the full potential of TIA. The pioneering engineering framework optimizes all planning, machine and process procedures and offers a standardized and integrated operating concept. It seamlessly integrates controllers, distributed I/O, HMI, drives, motion control and motor management into a single engineering framework. Thanks to its common data management and the smart library concept, comprehensive software and hardware functions efficiently solve all automation tasks. TIA Portal, when used in interaction with the current automation hardware from Siemens, prepares companies for increasingly rapid market changes, shorter product lifecycles and increasing competition and cost pressure.

**SINUMERIK – CNC control**

SINUMERIK offers innovative functionality for the operation of multi-tasking machines and milling-turning machines. SINUMERIK supports deployment with multi-technology machines and complex tools, such as multi-tools, that avoid the need for a tool change and allow for increased manufacturing productivity. SINUMERIK programGUIDE, ShopMill and ShopTurn provide innovative functions for the programming of complex work pieces and thus offer maximum productivity and flexibility.
If you want to know more about how Siemens Industry Software is driving the Digital Enterprise, please visit us online.

Discover more:
siemens.com/industry-software