



SIEMENS

Ingenuity for life

Siemens PLM Software

Manufacturing operations management

Software portfolio that helps you
realize innovation in the Digital
Enterprise

www.siemens.com/mom

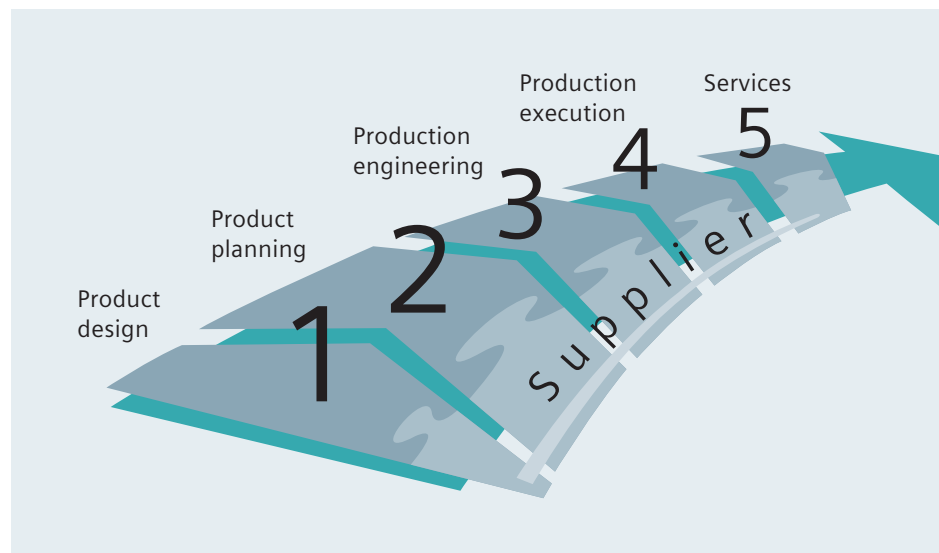
A holistic approach to optimize the entire value chain

The growing complexity and variation of markets is forcing manufacturers to rethink their source-make-deliver processes, depending on target market locations, requirements and conditions.

In a scenario where business is more and more impacted by the Internet and end customers are increasingly able to tell manufacturers directly exactly what they want and when, manufacturers must respond quickly, with improved flexibility to enable individualized mass production, and with efficiency to reduce energy and resource consumption.

Merely focusing on the automation of manufacturing processes or on the cost and efficiency of individual production operations is no longer enough to compete in the global marketplace and to meet these requirements. A holistic approach, spanning the entire value chain and including suppliers, is necessary.

The growing complexity and variation of markets is forcing manufacturers to rethink their source-make-deliver processes, depending on target market locations, requirements and conditions. This requires a closer integration of manufacturing operations in the company's overall value chain – which will in turn call for harmonization of technologies, the capability to handle massive data flows, the use of appropriate metrics and last but not least, the correct interpretation of this information.



Realizing innovation in the Digital Enterprise

Siemens PLM Software now offers a holistic automation solution covering all major Industry 4.0 requirements: the Digital Enterprise Software Suite.

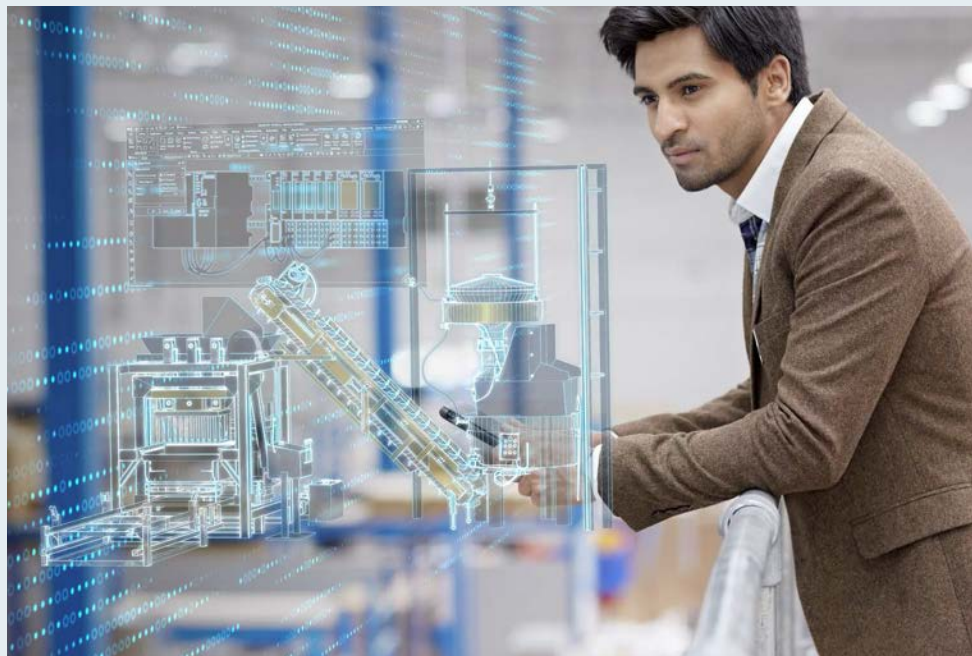
Manufacturers are better equipped to initiate or respond to disruptive innovation trends when their processes are fully digitalized. Digitalization transforms the innovation process into a proactive agent in driving new business opportunities, enabling manufacturers to weave a “digital thread” through three distinct phases:

Ideation, the traditional area of product concept and design

Realization, including production planning, production engineering, factory automation and production execution systems

Utilization, the service and support of products in the field and the feedback loop from these products to the other domains

Siemens PLM Software solutions smoothly connect major parts of the product and production lifecycle. Powerful product lifecycle management (PLM) software enables the development and optimization of new products on an entirely virtual basis. In the real manufacturing world, the concept of Totally Integrated Automation (TIA) ensures the efficient interoperability of all automation components.



To digitally transform the realization phase, Siemens PLM Software provides a complete portfolio of solutions for manufacturing operations management (MOM), bridging PLM and automation domains and enabling customers to implement strategies for the complete digitalization and integration of their product and production lifecycles.

Optimizing production to improve efficiency, flexibility and time-to-market

Using Siemens PLM Software's MOM solutions, our customers are able to model, visualize, update, and harmonize production processes globally.

The Siemens PLM Software portfolio for manufacturing operations management enable the digitalization of a broad spectrum of production-related functions, including advanced planning and scheduling, manufacturing execution, quality management, supervisory control and data acquisition (SCADA) and manufacturing intelligence. Working together, these solutions optimize production processes and drive operational excellence, with a focus on steadily improving production efficiency, flexibility and time-to-market.

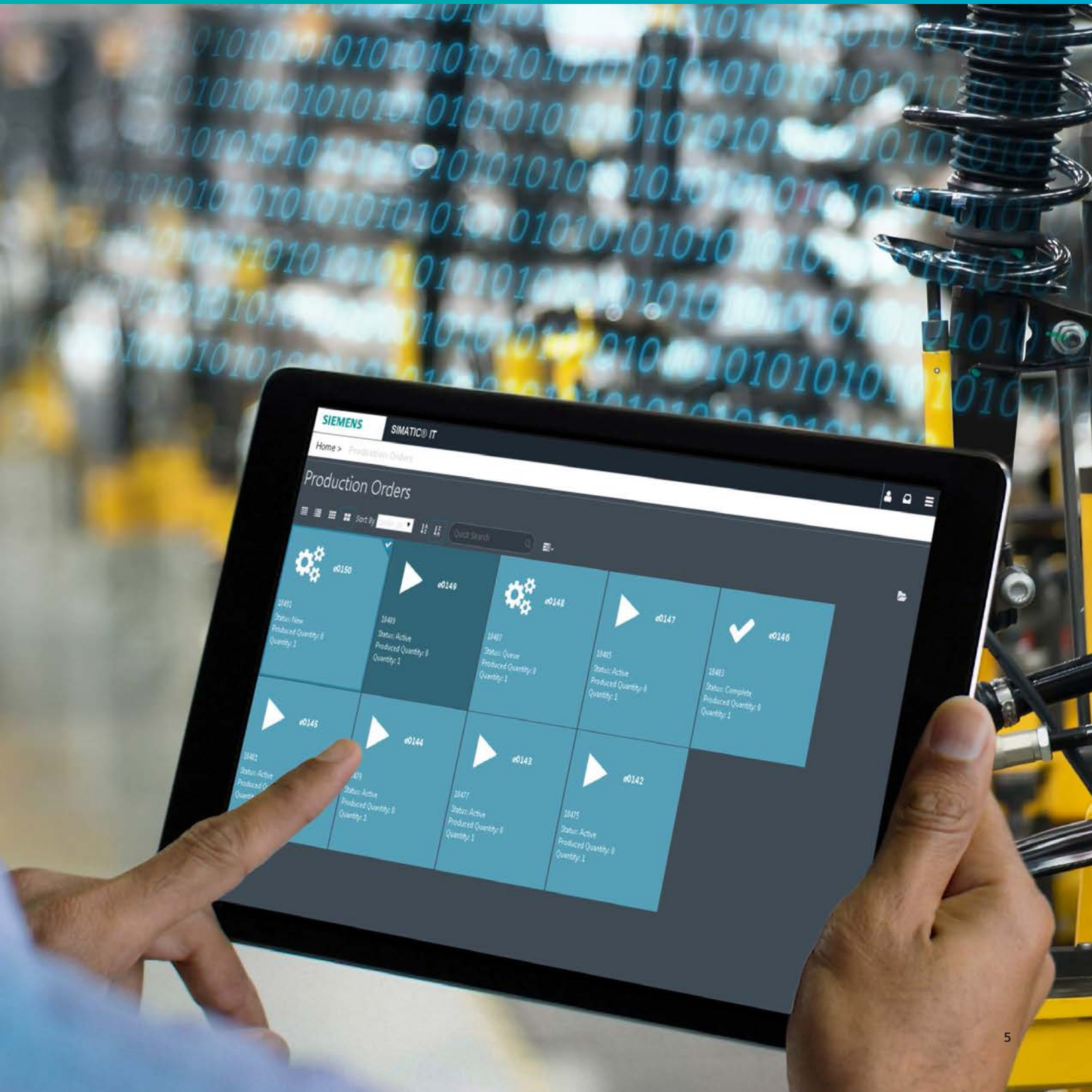
Improved efficiency

The Siemens PLM Software MOM portfolio provides end-to-end visibility into production operations and quality management, connecting the automated operations equipment and systems on the shop floor to the decision makers in product development, manufacturing engineering, production and enterprise management. With full visibility into production, decision makers can readily identify areas to be improved within both the product design and associated manufacturing processes, and make the necessary operational adjustments for smoother and more efficient production.

Improved flexibility and time-to-market

Using the Siemens PLM Software MOM portfolio, our customers are able to model, visualize, optimize, update, and harmonize production processes globally, and have the ability to collect, plan and schedule, aggregate, analyze and respond to real-time manufacturing events. The integration with PLM, enterprise resource planning (ERP) and automation provides the flexibility and scalability of production processes required to maximize responsiveness.

With a fully optimized "Digital Enterprise," manufacturers are better equipped to rapidly respond to market changes and realize the innovation that customers demand today.





Because manufacturing is a key part of the value chain, the Siemens PLM Software MOM portfolio integrates with the control and automation and with the business level, as well as with the PLM software portfolio. Siemens PLM Software is uniquely positioned to offer a complete and connected portfolio for the Digital Enterprise.

One size does not fit all. The technologies and architecture of the Siemens PLM Software MOM portfolio adapt to the specific requirements of different industrial processes. It provides comprehensive MOM applications with a rich ecosystem of industry-specific functionalities developed from deep expertise in manufacturing. The highly scalable platform delivers multiple capabilities and enables customers to combine production efficiency with quality and visibility to reduce time to production.

A full-featured platform with a model-based architecture enables manufacturers to handle production management and execution, coordinate systems within factories and standardize production across the entire enterprise.

Process visualization and monitoring, asset utilization, line monitoring, materials management, quality management, integrated diagnostics and flexible analysis capabilities are all common needs for all manufacturers. The information captured will in time drive improvements in performance and reduce costs, while achieving operational excellence by increasing process stability. It will help to empower the shop floor through better decision support, resulting in leaner operations and more flexibility.

For better visibility into and reporting about manufacturing effectiveness, the Siemens PLM Software MOM portfolio can be implemented on a single production line, in a plant or in several plants. It is scalable and has specific functionality for every industry. It offers a broad range of functionality on a single platform, and is available in dedicated packages according to the specific needs of your plant.

To translate raw real-time manufacturing data into business performance indicators, vast amounts of plant data from different systems (tag-based, relational databases, enterprise applications) can be collected into a unique data warehouse, stored with a configurable unified data structure and handled in real time or event-driven dashboards, with role-based data accessibility, navigation, filtering, calculations, aggregation or drill-down.

Accurate production planning and scheduling is key to quickly analyzing and calculating achievable production schedules, considering multiple constraints and business rules. With the Siemens PLM Software MOM portfolio, planners can generate and evaluate what-if scenarios to achieve optimum results.

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The Siemens PLM Software MOM portfolio

The Siemens PLM Software MOM portfolio enables customers to implement the strategy and first steps towards complete digitalization of manufacturing operations, via these solutions:

SIMATIC IT – Manufacturing Execution System (MES)

SIMATIC IT Production Suite is a highly scalable, modular set of applications 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

SIMATIC IT R&D Suite is a solution for process industries. It is a modular, scalable software platform for R&D and quality. This includes software for lab automation (LIMS), specification and product data management, electronic lab notebook, formula and recipe management, digital supplier data exchange and management, and regulatory management.

SIMATIC IT – Manufacturing Intelligence

SIMATIC IT Intelligence Suite gives manufacturing operators, management, and executives increased visibility into plant information. The main goals are to provide data integration and contextualization, to help in analyzing information to make real-time decisions.

SIMATIC IT – Advanced planning and scheduling

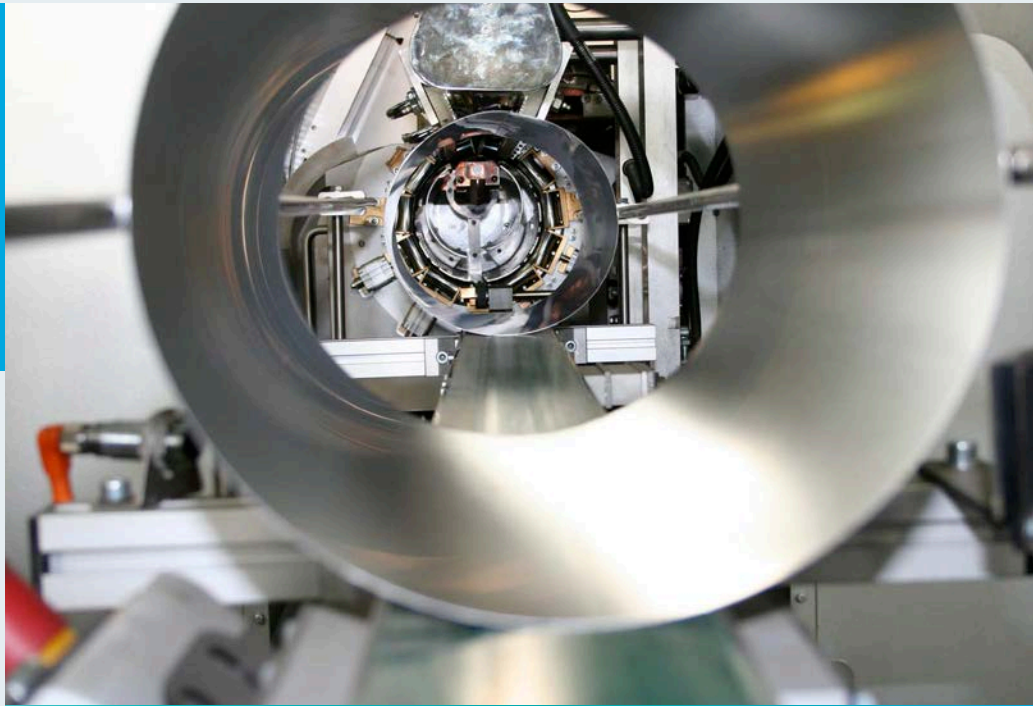
SIMATIC IT Preactor is a family of world-leading advanced planning and scheduling (APS) solutions designed to work alongside, rather than replace, existing systems. SIMATIC IT Preactor solutions can be used for both long-term planning and detailed scheduling, and customers can select the capabilities that satisfy both their needs and budgets.

SIMATIC WinCC – Process visualization and monitoring

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

Camstar – MES for semiconductor and medical devices industries

The Camstar Enterprise Platform extends Siemens PLM Software's integrated product development and production automation solutions to the medical devices and semiconductor industries. The Camstar MES portfolio



of industry-specific suites supports highly complex process workflows, high-volume automated data collection, mass customization, discrete assembly, batch process and more.

QMS – Quality Management System

The Siemens PLM Software IBS QMS 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 nonconforming material.

CompliantPro™ software is a comprehensive, dynamic compliance management software solution that provides a robust, flexible compliance environment, and can be adapted to most all information technology (IT) infrastructures. With CompliantPro you can manage processes for communicating, monitoring and documenting your diverse compliance activities for a full spectrum of regulations and standards throughout your enterprise. By using the solution's unique capabilities, you can target a variety of compliance-related initiatives with flexible portal access, custom dashboards, change control, reporting and archiving.

The Siemens PLM Software MOM portfolio enables customers to implement the strategy towards complete digitalization of manufacturing operations.

With the Siemens MOM software portfolio, any of the solutions can be combined and integrated through the SIMATIC IT Unified Architecture Foundation, a manufacturing operations backbone that supplies a common platform to embed new and legacy applications and move towards an innovative system with a completely scalable approach.

Realizing the Digital Enterprise

With the Siemens PLM Software MOM portfolio, manufacturing operations become an integral part of the plant digitalization strategy.

Connecting people, processes and technologies to achieve a truly Digital Enterprise is a growing concern in manufacturing organizations, as performance requirements continue to grow and emerging markets must be served.

Ultimately, manufacturing information technology that can handle product, production and plant data, and share these among the various parts of a manufacturing organization, will be a key enabler to capitalize on speed, efficiency and cost gains realized through collaboration.

Product and production data must be available from the lowest field level on the factory floor, up to the business level, at any time, and in any required reporting format.

The Siemens PLM Software MOM portfolio connects the automation level with product planning and design and production planning and design, enabling companies to execute according to plan. Its central position in the value creation process allows optimization and real-time response to production events, feeding back production data for immediate cause-specific interventions.

The MOM software portfolio also integrates with and delivers feedback to financial and administrative systems, typically ERP, supporting smoother supply chain integration and collaboration or service to customers.

In summary, with the Siemens PLM Software MOM portfolio, manufacturing operations become an integral part of the plant digitalization strategy. Manufacturers can gain significantly more productivity and flexibility during production planning, engineering and execution to increase the speed, quality and accuracy of how they respond to customer demands.



About Siemens PLM Software

Siemens PLM Software, a business unit of the Siemens Digital Factory Division, is a leading global provider of product lifecycle management (PLM) and manufacturing operations management (MOM) software, systems and services with over 15 million licensed seats and more than 140,000 customers worldwide. Headquartered in Plano, Texas, Siemens PLM Software works collaboratively with its customers to provide industry software solutions that help companies everywhere achieve a sustainable competitive advantage by making real the innovations that matter. For more information on Siemens PLM Software products and services, visit www.siemens.com/plm.

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