

**SIEMENS**



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# Increase responsiveness of manufacturing operations

Answers for industry.

# Adapting manufacturing operations to volatile markets

Dynamic markets with increasing demand variation, raising prices of energy and raw materials, quality and environmental regulations, as well as emerging markets, place significant challenges upon manufacturers. They are forced to achieve the highest level of resilience in global operations, while at the same time maintaining cost efficiency, quality and speed if they want to compete in local markets. The application of integrated manufacturing strategies will help them realize the manufacturing responsiveness this requires. This is possible at the single plant level – or at the enterprise level, where companies are organizing networks of plants with varying capabilities depending on the market they have to serve. This in turn calls for an innovative vision on implementing and managing manufacturing IT in general, and Manufacturing Execution Systems in particular.



# MES and Beyond

Siemens shows a strong commitment to Industry Software business through its innovative stance and its long term vision of a fully integrated software portfolio that will ultimately offer its customers previously unachievable levels of productivity.

SIMATIC IT is the Manufacturing Execution System of Siemens and includes Manufacturing Intelligence – as well as formulation and recipe management and recipe transformation for process industries.

The combination of these capabilities allows you to combine production

efficiency with quality and visibility, as well as decreased time to production, ultimately resulting in higher manufacturing responsiveness.

Manufacturing is a key part of the value chain, which is why SIMATIC IT integrates with the control and automation and with the business level, but also with the Siemens PLM software portfolio.

Siemens does not believe in One Size fits All. SIMATIC IT offers flexibility through its technological nature while its architecture allows it to adapt to the specific requirements of different industrial processes.

SIMATIC IT supports manufacturers by enhancing productivity and flexibility through technological leadership in Manufacturing Execution Systems with industry specific features

SIMATIC IT gives manufacturers true visibility from the machine/line up to the enterprise, by integrating Manufacturing Execution with Manufacturing Intelligence



*“We wanted a system that was configurable, not a customized solution. The new system improves our degree of automation in operation. All settings are established through the MES, eliminating manual processes – and that means we make fewer mistakes than before. Another important aspect is traceability – that is greatly improved compared to what we had before.”*

*“The MES is the key element to guarantee the integration of all our components, ensuring optimal production efficiency. SIMATIC IT helps us by doing exactly that. It consists of a collection of highly integrated components, designed to integrate with our third-party systems, standardize our production, and keep our manufacturing processes aligned with our supply chain activities. The product provides a high-level framework concept that enables the description of our manufacturing processes and operation procedures.”*

*Danny Van Looveren, Process Control Systems Team Lead - Monsanto*

# Global manufacturing networks

SIMATIC IT is a Manufacturing Operations Management system completed with Manufacturing Intelligence capabilities

In process industries, SIMATIC IT offers specification, formulation and recipe management. In discrete industries, SIMATIC IT connects to the engineering world

Soon, merely focusing on cost and efficiency of individual production operations will no longer be enough to compete in the global market place.

Markets are becoming more complex and varied, forcing manufacturers to rethink the entire 'source, make and 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.

The SIMATIC IT portfolio, with its three suites is optimally conceived to meet these challenging requirements of marrying product development with production, business with production operations and data architecture with metrics and performance management. It allows for global roll-outs thanks to repeatability and re-use of data and models, without compromising, however, flexibility and plant specific situations.



Just like business needs to align with manufacturing, so innovation needs to align with production. Distributed manufacturing requires the implementation of global processes – while at the same time being able to maintain local standards.

*“The justification for MES must not be driven by payback alone. As the business faces challenges in complexity, cost and regulation we need to invest in technology to be able to respond and manage change quicker and continue to improve our factories to become world class.”*

*Phil Harris,  
then Global Manufacturing MES  
Project Manager,  
British American Tobacco (BAT)*



## Production operations

Similar to global companies, smaller organizations, operating a single plant, or a small number of plants, are confronted with a large set of requirements and regulations, besides being part of local or sometimes global supply networks. Smaller organizations, too, have a need to operate with agility, improve productivity and reduce cost, while at the same time offering quality. So they too need common information platforms and processes.

Processes have to be documented and intellectual property protected, but the total cost of ownership of home grown applications or even paper-based processes will not remain sustainable in the long run. Systems and technology moreover have to be adapted to the new generation

workforces – also sometimes referred to as the Millennials - if a sufficient number of skilled workers have to be attracted. Asset utilization, line monitoring, materials management, quality management, are all common needs for any manufacturer and covered in Manufacturing Execution Systems (MES).

Information captured in Manufacturing Execution Systems, will in time drive improvements in performance and reduce cost. 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 Overall Equipment Effectiveness, and to monitor energy consumption,

SIMATIC IT can be implemented on a single production line, in a plant, or in several plants.

SIMATIC IT is a scalable MES and has specific functionality for every industry. It offers a broad range of functionality on a single platform, or comes in dedicated packages according to the specific needs of your plant.

Thanks to the openness of the system, it integrates with the automation and control level – but also into existing systems already in place. Whether the focus is on cost, quality, or performance – the right answer for your need is available. Or we help you to find the best solution depending on your specific situation.

SIMATIC IT for Discrete Manufacturers is an out of the box package that includes libraries to fit the production needs in Complex Manufacturing, in Automotive and in Mechatronics / Electronics Manufacturing.

SIMATIC IT for Process Industries is an out of the box package for manufacturers in Food & Beverage, Tobacco, Home and Personal Care and (fine) chemicals that includes libraries which are particularly tailored to fit the needs in primary and secondary manufacturing, as well as the needs to connect to the R&D Area.

SIMATIC IT for Life Sciences includes the typical features that are needed in pharmaceutical manufacturing (W&D; eBR), but also the necessary validation services.



# One size does not fit all

Since MES systems manage material, processes and workflows, they have to adapt to specific needs. These are generally met through customizations of the system.

Customized solutions however tend to be rigid in nature, inhibiting adaptation to updates or changes in the manufacturing equipment or infrastructure and generate higher maintenance costs. Standard software solutions backed up with maintenance programs solve this IT issue – but then these might not be able to meet all the requirements.

SIMATIC IT is a standard software platform with a workflow modeler that manages the behavior of the generic MES functions installed.

By completing this platform with industry specific libraries, it is possible to create a system that combines the best of two worlds: standard software for the cost and the maintenance, with industry specific solutions allowing the best fit to the production process, according to the industry.

SIMATIC IT Libraries include pre-configured rules and workflows, industry specific and relevant user interfaces, as well as reporting.

Libraries can decrease the Total Cost of Ownership (TCO) of the system, as they can be easily repeated for further plants operating in similar circumstances.

# Innovative maintenance program

MES is mission critical; therefore SIMATIC IT software comes with an extensive maintenance program, including reactive, predictive and preventive support. With this offering of support and services, Siemens has the goal to maximize the customers' Return on Investment (ROI), contain the Total Cost of Ownership (TCO), and leverage software investments as they evolve into tomorrow's technologies. Our predictive and preventive maintenance services are based on the newest Microsoft technologies and include among others remote monitoring of systems in place, automatic distribution of software according to the current working status of the plants. The Technical Support Service is there for our customers with advice and interventions when needed.

# Partner community

SIMATIC IT partners globally work together with Siemens to offer a global service and maintenance network with a unique level of skills, expertise and know how. We can follow our local as well as our global customers throughout the world with services and support, wherever they want to go.



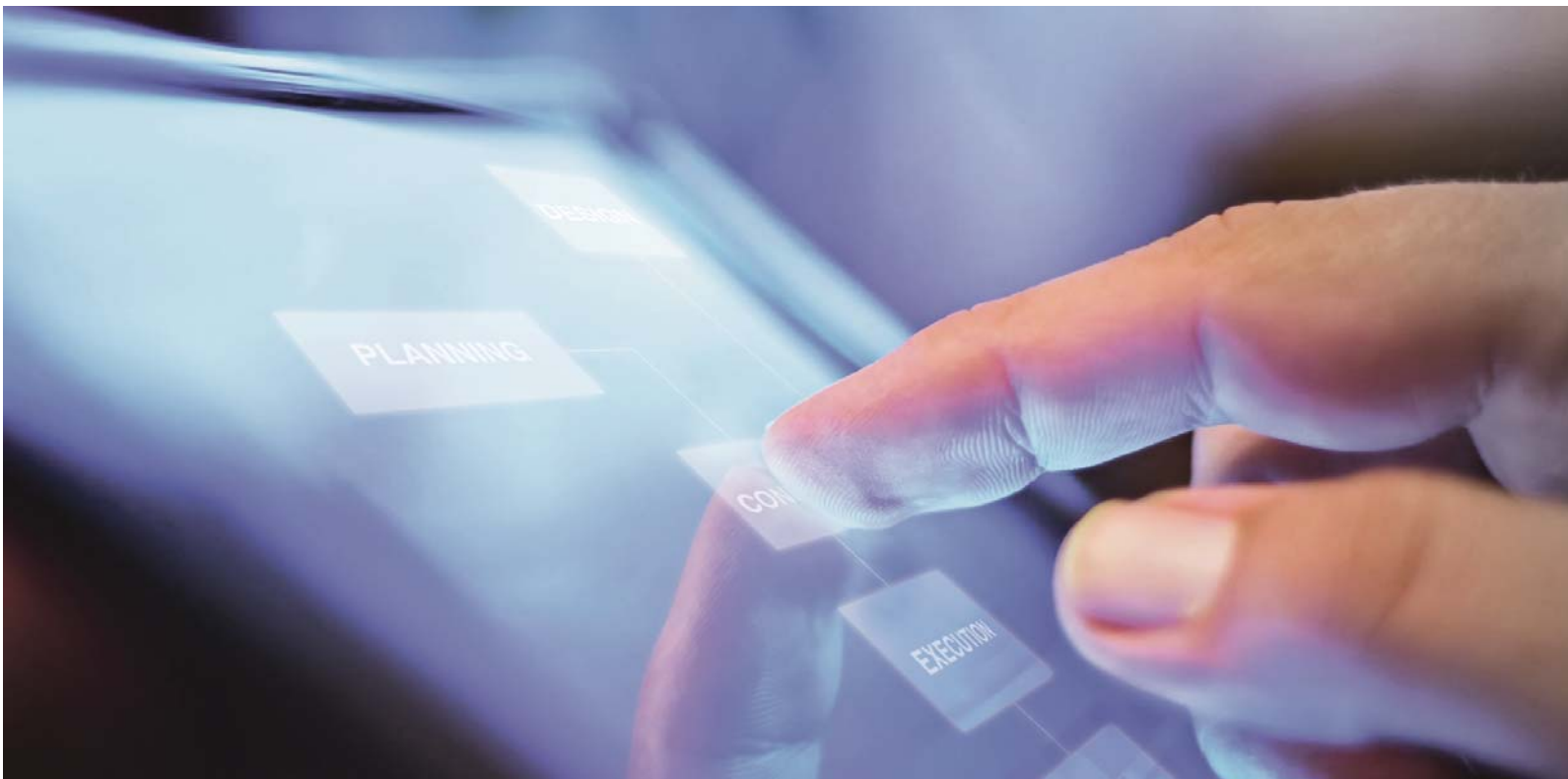



# Connectivity

Connecting people, processes and technologies in order to achieve a truly collaborative organization is a growing concern in manufacturing organizations, as performance requirements continue to grow and emerging markets have to be served.

Ultimately, Manufacturing IT that can handle product, production and plant data, and share these among the various parts of a manufacturing organization, will turn out to be a key enabler to capitalize on speed, efficiency and cost gains realized through collaboration. Product and production data have to be available from the lowest field level on the factory floor, up to the business level, at any given time, and in any necessary reporting format.

SIMATIC IT connects the automation level with the areas of product planning, product design, and production design and planning, executing 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. SIMATIC IT also integrates with and delivers feedback to the financial and administrative systems, typically ERP, supporting smoother supply chain integration and collaboration with suppliers, or service to customers.





SIMATIC IT integrates the production operations into the business and into R&D/Engineering operations with advanced interoperability features that enable true collaboration between organizations and systems

# Our Customers

Our customers are our most valued asset. SIMATIC IT has been evolving over the years based on a close collaboration with our customers whose input and feedback we highly estimate. Our clients help us to develop optimum solutions based on their needs. Customers around the globe trust on SIMATIC IT for production performance, visibility, and increased time to production. They use our material management, order management, quality management, KPI and performance management or line monitoring, to satisfy their needs in terms of quality, traceability, performance, regulatory compliance, JIT-JIS, production cost control, connection to ERP or to automation, ...

**Some of our valued customers are** Kraft Foods, Nestlé, Unilever, Team, RJ Reynolds, Pernod Ricard, Cargill, Land O' Lakes, SABMiller, Schweppes, Keystone Foods, ABInbev, Mahou San Miguel, Deutsche See, JTI, BAT, Baxter, Sanofi Pasteur, Schering-Plough Labo, Roche, Fresenius, Monsanto, Teijin Aramid, BASF, Bayer, Solvay, Evonik, DSM, Siemens, Magna Powertrain, Daimler, 3A Composites, Bekaert, Whirlpool, voestalpine Polynorm, Federal Mogul, Diageo, Henkel, Bird's Eye Iglo, VW, Dow Kokam, ...

SIMATIC IT Production Suite enables manufacturers to optimize productivity/ performance

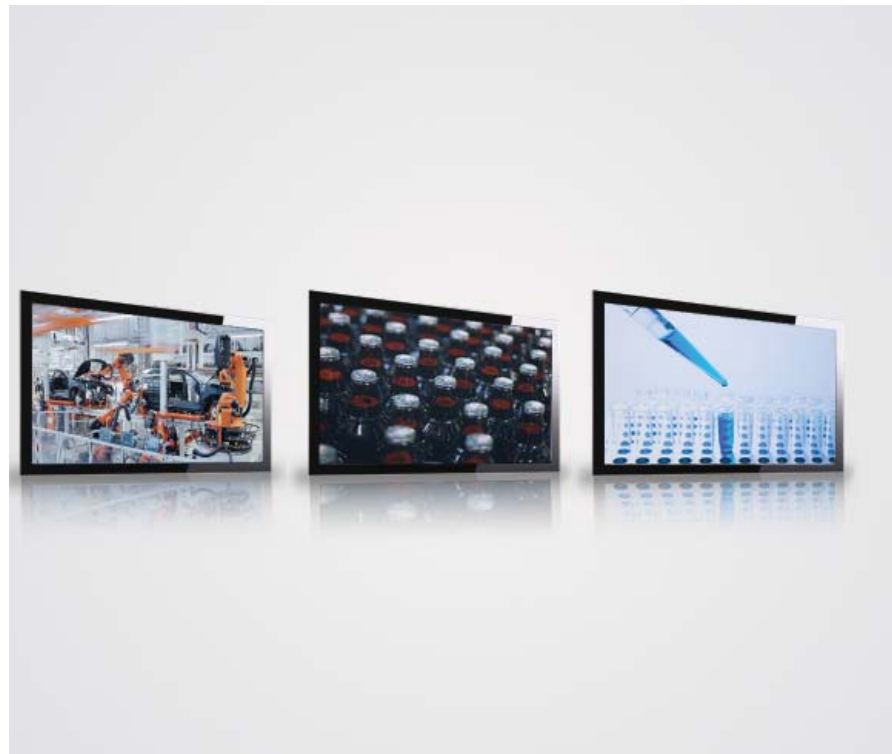
SIMATIC IT Intelligence Suite enables optimized visibility into plant operations

SIMATIC IT R&D Suite ensures brand value and speeds up time to production and time to market

*“South Korea is one of our highest performing factories, underpinned by having sound and solid standardized processes.*

*The automation of these processes with MES will enable them to embed a sustainable culture of continuous performance improvement. This pilot is a key learning process for the Group which will enable us to roll out MES faster and at a lower cost in the future. This will improve ROI and embed standard shop floor manufacturing processes as a key enabler for driving continuous improvement and higher quality and efficiency.”*

*Andrew Hopkins , then Global Head of Manufacturing, British American Tobacco (BAT)*



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