

# EFFICIENT MANUFACTURING OPERATIONS IN CHEMICAL COMPANIES

## HIGHLY EFFICIENT OPERATIONS TO LEAD THE COMPETITION

With highly efficient operations, you can meet customer requirements consistently, reduce manufacturing costs, and ensure compliance with quality and safety standards – all key to leading the competition. How can you gain such efficiency? With software and services from SAP and our partners.



Global competition, more demanding customers, and the need to overcome shortfalls in performance and output rates – these forces are driving chemical companies to deliver higher-quality products at ever-lower costs. Executives worldwide must find new ways to meet customer requirements consistently, reduce manufacturing costs, and ensure compliance with quality and safety standards.

Increasing the efficiency of manufacturing operations can help meet these goals, yet for many chemical companies, a key impediment to efficient operations remains the disconnect between enterprise and plant systems. This results in unsynchronized business processes and inadequate use of resources, which in turn leads to operational inefficiencies that increase the risk of missing delivery targets and running operations at excessive costs.

Simply connecting systems will not fully overcome these challenges. World-class chemical manufacturers are going further, integrating and aligning core processes to achieve transparency between the top floor and the shop floor across even the most widely distributed manufacturing operations. This approach facilitates comprehensive insight and management of your manufacturing operations and increases efficiency across the operational continuum. This, in turn, drives down bottom-line costs and cycle times while increasing overall equipment effectiveness.

Yet even with these gains, there remains more work to do to run manufacturing operations efficiently in a competitive –

and increasingly regulated – marketplace. Indeed, complying with the myriad environmental, health, and safety regulations adds yet another level of complexity. Chemical companies need to find ways to reduce both the costs of compliance and the risk of noncompliance while continuing to increase operational efficiency.

How can you achieve these goals? With integrated software and world-class services from SAP and our partners.

### Meet Customer Requirements

For many chemical manufacturers there still exists a huge gap between the enterprise and the plants. That disconnect prevents visibility into operations and creates inefficiencies that make it all but impossible to adjust plans quickly in response to changes in customer orders and production mix. Additionally, information latency can cause poorly coordinated manufacturing activities, supplier and delivery delays, unnecessary setups, and inferior quality of products and services, all of which can contribute to a decrease in customer satisfaction.

Integrated software from SAP can help you bridge this gap by connecting your enterprise and plants – whether in one location or around the world. Information can flow between enterprise and plant systems in real time, using ISA95 standards to enable business process interoperability.

Such connections create the visibility required to run efficient manufacturing operations. You are better positioned to

coordinate globally while executing locally, plan effectively, and execute efficiently on the plan. With these capabilities, you can plan production in alignment with your business objectives and better manage manufacturing, demand, and supply constraints. Moreover, with software from SAP you can monitor and analyze the factors affecting lead times and respond more quickly to changes in customer orders so as to meet customer delivery commitments consistently.

### Reduce Manufacturing Costs

At the plant level, on a day-to-day basis, it is critical to manage production and materials optimally, according to plan. Inefficiencies on the top floor, though, can lead to operational inefficiencies on the shop floor. A poor-quality plan, for example, can lead to infeasible production schedules, wasteful activities, and excessive inventories – all of which contribute to higher operating and inventory costs.

SAP provides integrated software and services that can help you optimize production planning and scheduling across your globally distributed manufacturing operations. You can use this software to integrate and standardize production operations as well as manage plant-floor activities in real time and at levels that support your Six Sigma strategy. With support for lean and Six Sigma initiatives and other continuous-improvement efforts, you can optimize day-to-day operations, eliminate waste, increase capacity utilization and yields, reduce operating costs, and lower inventories to ensure sustained high operational performance.

Consider this: Using decision-support tools that enable you to simulate and compare alternative manufacturing scenarios, you can more easily match production rates to optimal production targets. You can map production activities to customer orders more effectively, taking asset, capacity, labor, and material constraints into consideration when prioritizing your activities. SAP® software can also help connect the top floor to the shop floor, which, for example, enables you to monitor operating costs in real time.

Manufacturing software applications from SAP partners extend this integrated solution still further. You can lower your operating costs, for example, with integrated production software that supports your energy management activities. Or you can mitigate risk using integrated software that monitors environmental regulation compliance processes all along the supply chain.

### Ensure Compliance with Quality and Safety Standards

Can you attain operational excellence without complying with quality and safety standards? No. Whether at the product level or the process level, regulatory noncompliance can affect your company through fines, penalties, negative publicity, loss of customers, shutdown or restriction of production, or the prohibition against selling your products in the market. Simply put, compliance is critical to the manufacturing and distribution of products and thus has a significant impact on responsible, sustainable corporate profitability.



World-class manufacturers are integrating and aligning core processes to achieve transparency between the top floor and the shop floor across even the most widely distributed manufacturing operations.

Manufacturing controls play an essential role in supporting your compliance with quality and safety standards. Integrating such controls within your operations can help you reduce safety risks even as they help you improve product quality. Software from SAP can help you place and manage these crucial manufacturing controls.

For example, workflow tools within SAP applications can help you drive inspection processes and enable corrective action, including quarantining specific components, if necessary, and issuing quality alerts through supplier Web portals. The software can even provide tracing and reporting functionality to help you analyze root causes for compliance failures. Software from SAP partners can also help. By connecting third-party applications with your SAP software, for example, you can track hazardous substances, exposures, packaging, dangerous goods

classifications, and waste codes. You are then optimally positioned to reduce the number of defective or non-compliant products as well as reduce the costs associated with such noncompliance.

### Software and Services for Efficient Manufacturing Operations

Integrated software and services from SAP and our partners can provide you with the functionality you need to manage the entire manufacturing scenario. Several applications comprise this integrated solution.

The **SAP ERP** application helps you streamline your company-wide chemical manufacturing processes – from planning and scheduling through execution to monitoring, analysis, and costing – and improve efficiency along your entire value chain. This includes master data management of materials, resources, and recipes; material requirements planning; handling of production campaigns; management of process instruction sheets; batch management; and electronic batch recording.

The **SAP Supply Chain Management (SAP SCM)** application enables collaboration, planning, execution, and coordination of the entire supply chain network, including distributed and outsourced manufacturing processes. It provides an advanced planning and scheduling methodology for supply network planning, production planning, and detailed scheduling. This enables you to create optimal production schedules while considering asset, capacity, supply, demand, and material constraints.

The **SAP Manufacturing Integration and Intelligence (SAP MII)** application provides the direct connection between business operations and shop-floor systems. It ensures that all data that affects manufacturing is visible in real time – including information about orders, materials, equipment status, costs, and product quality. The application also delivers a rich set of manufacturing visualization and analytics tools.

The **SAP Environmental Compliance** application provides an enterprise-wide platform to assure compliance with environmental laws and policies, helping you reduce costs, efforts, and risks, on both enterprise and plant levels. It also enables you to more effectively measure, report, and consume energy.

Working together, these integrated applications can help you align manufacturing operations and resources between the core enterprise and plants and achieve high efficiency from end to end with:

- Complete visibility across the operational continuum
- Streamlined operations from the top floor to the shop floor
- Integrated quality and safety controls

Underlying these integrated applications is the SAP NetWeaver® technology platform. SAP NetWeaver unifies technology components into a single platform, providing the best way to integrate all systems running SAP or non-SAP software. SAP NetWeaver also helps organizations align IT with their business. As the foundation for service-oriented architecture, SAP NetWeaver allows organizations to

compose and enhance business applications rapidly to drive business change.

In addition, the SAP Services organization can help assess your manufacturing processes and present a clear road map toward excellence in manufacturing operations. Using best business practices developed during more than 105,000 business engagements in 120 countries, SAP Services can help you keep your manufacturing operations running at peak levels in support of your business goals.

### An End-to-End Solution for Operational Excellence

With integrated software from SAP, you can realize the following benefits:

- Consistently meet customer requirements
- Reduce total and unit manufacturing costs
- Ensure compliance with quality and safety standards

### For More Information

To learn more about how integrated software from SAP can help your organization realize more efficient chemical manufacturing operations, call your SAP representative today or visit us on the Web at [www.sap.com/solutions/executiveview/operations/run-efficient-manufacturing](http://www.sap.com/solutions/executiveview/operations/run-efficient-manufacturing) or [www.sap.com/industries/chemicals/large/solutions.epx](http://www.sap.com/industries/chemicals/large/solutions.epx).

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## Summary

With highly efficient manufacturing operations, chemical companies can become poised to meet customer requirements more quickly and consistently, reduce total and unit manufacturing costs, and ensure compliance with quality and safety standards. Software and services from SAP and our partners can help you bridge the gap between your core enterprise and plant systems and gain the efficiencies that can help you succeed.

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## Business Challenges

- Disconnected manufacturing processes and systems
- Lack of visibility across manufacturing operations
- Operational inefficiencies from the top floor to the shop floor
- Insufficient controls to comply with quality and safety standards

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## Supported Business Processes and Software Functions

- **Enterprise planning and control** – Establish an achievable master plan aligned with customer requirements and with business objectives and constraints; and control manufacturing activities across all plants
- **Plant-level operations** – Plan and manage manufacturing lines, schedules, and resources at the plant level
- **Manufacturing execution** – Execute production according to schedule, while considering exceptions and deviations in real time
- **Manufacturing visibility** – Gain insight into manufacturing activities and performance across your system landscape
- **Product quality, safety, and environmental compliance** – Ensure that your products and processes comply with regulatory guidelines and standards
- **Lean and Six Sigma** – Manage manufacturing activities at Six Sigma levels, and benefit from complete support for lean initiatives

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## Business Benefits

- **Meet customer requirements consistently**
- **Reduce total and unit manufacturing costs**
- **Ensure compliance with quality and safety standards**

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## For More Information

Call your SAP representative or visit us online at [www.sap.com/solutions/executiveview/operations/run-efficient-manufacturing](http://www.sap.com/solutions/executiveview/operations/run-efficient-manufacturing) or [www.sap.com/industries/chemicals/large/solutions.epx](http://www.sap.com/industries/chemicals/large/solutions.epx).

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