

DIGITAL INDUSTRIES SOFTWARE

How you can succeed: Siemens' closed-loop manufacturing solution for aerospace and defense manufacturers

Get an overview on how the Siemens Xcelerator portfolio
can support your manufacturing business



Introduction

To increase competitiveness, manufacturers must:

- Reduce time-to-market
- Cope with shorter product lifecycles
- Increase visibility
- Comply with regulatory demands
- Optimize forecasting and scheduling
- Reduce scrap, stock levels and downtimes

They must do this all while ensuring optimal quality and production efficiency across global facilities. In an enterprise IT architecture, this means enabling communication and integration between the key teams that are contributing to bringing products to market. To rationalize and speed up processes, product design/ ideation data needs to be transferred seamlessly to the engineering environment, where the manufacturing process and test/inspection points are defined.

The engineering process is the critical link between product ideation and manufacturing. It is where ideas become industrialized reality. It can be done more rapidly when this data is transferred seamlessly to the manufacturing floor for execution. Interoperability with the financial/administration software can enhance real-time capabilities and supply chain efficiency, enabling the user to manage orders and transfer them to the manufacturing level. In parallel, the production floor also needs to be equipped and organized to produce efficiently, avoiding unforeseen problems with equipment capacity, energy use, etc. Therefore, the digital factory/plant lifecycle management part of the Siemens Xcelerator portfolio enables virtual testing and commissioning of plants and their equipment, delivering upfront required configurations for the automation layer, which in turn communicates with the manufacturing execution level.

A closed-loop manufacturing solution

Opcenter™ software and Teamcenter® software are part of the Siemens Xcelerator business platform of software, hardware and services. Their combination enables integration of the product and production lifecycle, resulting in faster time-to-market. Opcenter Execution Foundation is a manufacturing execution system (MES) that supports manufacturers by enhancing productivity and flexibility with leading-edge technology combined with industry-specific features. Opcenter Execution Discrete is specialized for addressing the needs of the discrete industry market, focusing on job-shop part manufacturing and complex manual assembly.

The Siemens closed-loop manufacturing (CLM) solution provides a way to bring together product engineering and process planning with production execution and automation: Both engineering and runtime data is exchanged circularly (that is, in a closed loop), accelerating the adoption of any changes or corrective measures necessary for improving quality and lead time. The Siemens CLM solution is based on the integration between Teamcenter Manufacturing software and Opcenter Execution Discrete.



Business benefits from the Siemens CLM solution

Using Opcenter Execution Foundation fills the gap between business-level systems (typically product lifecycle management, enterprise resource planning, supply chain management, etc.) and control systems, providing the conditions for increasing overall supply chain efficiency. Opcenter Execution Foundation provides manufacturing systems with native flexibility that enables users to easily adapt and modify the business process for new requirements and business drivers.

- Using Opcenter Execution Foundation enables manufacturers to model their businesses to be much more customer-oriented and ready to satisfy any on-the-fly requirements from the market.
- Using Opcenter Execution Foundation supports a flexible scalability concept by design, allowing customers to scale and distribute their system as required in a cost-effective way.
- Opcenter Execution Discrete comes off the shelf with industry-specific features to cover discrete manufacturing processes.
- Opcenter Execution Discrete allows users to comply with existing regulations.





Optimizing production processes

Opcenter Execution Discrete offers a set of modules able to cover the manufacturing operations management (MOM) core requirements in the context of job-shop part manufacturing and complex manual assembly. By modeling and defining production procedures, Opcenter Execution Discrete effectively increases visibility into the entire production process:



Close alignment and synchronization between product design and production environments



The ability to introduce product design changes while production has already started



Operator guidance to ensure timely and correct execution



Traceability, genealogy and visibility of work-in process (WIP), which are essential to understand current production status and support decision-making



Deviations and nonconformances can be managed effectively, tying into customizable sentencing and rework processes



Support for mobility as a wide range of devices may be used as clients

An integrated and streamlined IT experience

The Opcenter Execution Foundation product family combines the benefits of a platform for developing and orchestrating custom use cases with predefined industry-specific, off-the-shelf functionality, as is the case with Opcenter Execution Discrete:

- Standard industry-specific functionality immediately available
- Ability to modify existing features and develop new functionality
- Built-in scalability allows for tailoring investment and maintenance according to case-by-case requirements
- Ability to connect and interact with external and legacy IT systems

The Siemens closed-loop manufacturing solution can help you achieve greater process flexibility and efficiency while completely integrating regulatory requirements and synchronizing production processes to optimize supply chain management. Realize Industry 4.0 with the help of the Siemens Xcelerator portfolio.



Siemens Digital Industries Software helps organizations of all sizes digitally transform using software, hardware and services from the Siemens Xcelerator business platform. Siemens' software and the comprehensive digital twin enable companies to optimize their design, engineering and manufacturing processes to turn today's ideas into the sustainable products of the future. From chips to entire systems, from product to process, across all industries, [Siemens Digital Industries Software](#) – Accelerating transformation.

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