Manufacturing and Production Operations Solution

PLANNING, SIMULATING, AND STREAMLINING PRODUCTION PROCESSES

This solution enables:

- Reducing the time to market by ensuring a highly collaborative "Design for Manufacturing" environment
- Streamlined production operations and maximized utilization of factory resources
- Faster production ramp-ups as a result of shorter worker learning-curves
- Rapid incorporation and validation of engineering design changes within manufacturing production operations
- Improved worker safety and ergonomics in manual and semiautomatic work places
- Use of automation such as Robotics within an end-end PLM business process
- Reduced cost of logistic equipment, capital tooling, and labor
- Elimination of expensive physical product/tooling prototypes
- Increased quality and reduced costs regarding shop-floor execution







COST OVERRUNS AND SCHEDULE DELAYS

In an industry where many projects experience cost overruns and schedule delays, good production planning is key to staying in business. Production planning involves innumerable elements that must be stringently coordinated and executed in order to launch a project successfully on time and on budget. Interconnected activities throughout manufacturing facilities and the supply chain must be carefully planned to reach the safest, fastest, and optimal sequence of production operations.

Manufacturing and Production Operations Solution Overview

Dassault Systèmes's Manufacturing and Production Operations solution enables High-Tech manufacturers and their suppliers to implement a "Design for Manufacturing" approach. Within the highly collaborative product development environment, design and manufacturing processes are defined concurrently and optimized in ways that would best utilize available resources so that costs and time to market can be reduced.

Evaluate multiple production systems

DELMIA Digital manufacturing processes involving planning, scheduling, sequencing, program, Q/A (Quality Analysis) and production simulations can be defined using this solution. By simulating resources such as robots and humans as well as the entire production processes in a digital or virtual mode, organizations can evaluate multiple production systems and process design before investing in a single prototype. Moreover, the Manufacturing and Production Operations solution enables the implementation of a "Design Anywhere Build Anywhere" strategy, in which a production plan can be revised easily to address changing market conditions or shifted among several plants to optimize capacity.

Reduce the occurrence of manufacturing delays

Analyzing manufacturing processes in the virtual or digital mode earlier in the product development cycle provides many opportunities for manufacturing engineers or production planners to optimize the processes and reduce the occurrence of manufacturing delays that typically arise when the products are ready to be produced. Upon the completion of manufacturing planning, detailed 3D-based work instructions can be given to manufacturing or maintenance personnel to shorten worker learning curves. In the case of robotic processes, the workcell layout and associated programs can be defined and validated in the virtual environment, and then downloaded to the physical robotic systems. Such "Offline Robot Programming" can dramatically shorten time to market since new robot programs can be defined and debugged while production continues on the existing product variants, and then quickly updated when production demand requires to do so.

The Manufacturing and Production Operations solution includes:

- Manufacturing BOMs
- Manufacturing Change Management
- Production Planning and Scheduling
- Auto-generated 3D Manufacturing Work Instructions, Documents and Simulations
- Manufacturing Simulation
- In Process Product Modeling
- Production Machinery Design and Layout Optimization
- Tool Asset Management
- Virtual Prototype Validation of Equipment and Control Systems including Robotics
- Integration to Manufacturing Execution and ERP

Tight integration between design and manufacturing domains

Dassault Systèmes' PLM technology provides a tight integration between design and manufacturing domains, which enables change impact to be analyzed thoroughly and changes to be rapidly incorporated. Late-cycle changes due to manufacturing constraints are minimized as manufacturing rules are embedded in the design templates made available to the designers early on. High-Tech OEMs and the Electronic Manufacturing Services (EMS) suppliers can track late changes, identify parts that may be impacted by design changes and study the impact of changes on production processes. This gives product development stakeholders the information they need to predict the cost of changes in dollars and time.

Automatic propagation of MCOs

Users find The Manufacturing and Production Operations solution's web-based user interface for managing Manufacturing Bill of Materials (MBOMs) and Manufacturing Change Orders (MCOs) easy to use. With each Engineering Change Order (ECO), the system automatically propagates the MCOs for each affected plant and thereby reducing errors associated with hand-offs. Functionalities to assess different alternatives to production process and "built-around" are provided also so that the revised plans can be conducted smoothly.

