

MANUFACTURING BOM MANAGER

OBJECTIVE

Manufacturing BOM Manager provides companies with a comprehensive manufacturing and as-built bill-of-material management solution enabling improved transfer of design intent to distributed manufacturing sites. When implemented with **Product Engineer**, a seamless flow of global product development and manufacturing processes is enabled.

OVERVIEW

Increasing business, product and process complexities affect operating margins and are driving companies to find business solutions which foster innovation and improve efficiencies. In most industries today, the complexity and rate at which new products need to be developed has already out-paced the rate at which many companies can produce them. One of the significant challenges within the global product development process is maintaining alignment between a single, consolidated, global engineering bill of material to multiple, site specific manufacturing bills of material. As new products are introduced, which often times have market specific functions and options, the engineering to manufacturing alignment complexity is compounded.

When **Manufacturing BOM Manager** is used with **Product Engineer**, companies can innovate and improve efficiencies for global product development by incorporating the following best business practices:

- Reduce design and BOM errors and enable innovation through the automatic generation and update of data driven, fully connected, multi-disciplined design and engineering product views.
- Accelerate multi-geo product launch, by enabling parallel Engineering, Manufacturing, Supply Chain, Compliance, Quality and Service business processes directly from the context of the product engineering bill of material.
- Enable global product teams to efficiently collaborate, approve and implement product changes through a common, automated change process.

Manufacturing BOM Manager addresses a number of specific global manufacturing business challenges including:

- Reduce costs and improve product quality by enabling part re-use across multiple manufacturing sites.
- Reduce costs and improve product quality by enabling centralized supply chain planning for purchased components including the authorization and propagation of available alternate or substitute parts across multiple manufacturing sites.

- Reduce cycle time, effort and translation errors related to the analysis and implementation of engineering changes across multiple manufacturing sites through an automated, intelligent engineering to manufacturing change process.
- Reduce inconsistencies and manual reconciliation of serialized parts by providing the ability to plan, create, update and link unit specific as-built BOM structures for industries which require unit based manufacturing and traceability.

HIGHLIGHTS

Main features and capabilities of **Manufacturing BOM Manager**:

Site Specific MBOM Management

Manufacturing BOM Manager provides the ability for companies to plan and authorize the use of alternate or substitute parts on a plant-specific basis. This includes setting plant preferences from a manufacturing view of the EBOM known as a "common view." These plant preferences and authorizations are evaluated when generating a plant-specific MBOM. Plant specific MBOM generation can be triggered from the initial release or update of an EBOM. The result is an optimized, controlled, and centralized authorization of parts for use in manufacturing plants while enabling local manufacturing changes and decisions as required.

Manufacturing BOM Manager makes it easy to create and maintain MBOMs. An initial MBOM is created automatically when it is released from the engineering common view. The manufacturing engineer has the flexibility to perform the following MBOM tasks:

- Assign the effectivity of manufacturing change orders and associated parts on a plant-by-plant basis.
- Select from pre-defined and authorized manufacturing options such as alternate or substitute parts.
- Create or insert plant-specific manufacturing parts as required or allowed.
- Set a "make or buy" flag on any part in the MBOM to indicate to an Enterprise Resource Planning (ERP) system whether an item is procured from a supplier or an internal plant.

MBOM Navigation

Users can browse all or selected levels of the MBOM structure. A number of filters are provided to allow the manufacturing engineer to see the information of interest. These filters include:

- The “Plant Filter” presents a plant specific MBOM view.
- The “Effectivity Filter” allows users to select combinations of current or pending BOM changes or select a specific “effective” date to filter the view.

MBOM Reporting

Where Used Report: The “Where Used Report” provides component usage information to determine the impact of a proposed change at any level in the product structure.

BOM Comparison Report: The “BOM Comparison Report” displays detailed comparison information regarding part or quantity differences of any two EBOMS or MBOMs. Comparing an EBOM to an MBOM for the same part shows differences in the BOM structure as a result of reorganizing the EBOM items for manufacturing use (grouping parts as phantom parts or adding manufacturing specific parts such as raw materials or tooling). The basis for the comparison is part numbers, finding numbers, or reference designators.

Manufacturing Change Processes

Manufacturing BOM Manager provides users with tools to formalize, document, and control the manufacturing change process for newly released and existing products in production.

Releasing a new or changing an existing Engineering part or BOM structure via an Engineering Change Order (Change Order, Change Action) results in one or more Manufacturing Change Orders (MCOs) to be generated automatically to implement the engineering change for each assigned / affected manufacturing site. Each site can implement the MCO at different times depending on inventory levels and other local manufacturing site constraints / preferences.

Manufacturing engineers can also create MCOs independently from Engineering to make changes to plant specific MBOMs. Plant specific changes can be implemented in parallel to Engineering changes. These types of changes include adding or removing plant specific Raw Material parts, switching from a primary to an authorized alternate or substitute part and vice versa, changing plant specific make / buy part settings.

Manufacturing BOM Manager supports the request, approval, and implementation of manufacturing deviations. A manufacturing deviation process temporarily authorizes and tracks an unapproved engineering change at one or more manufacturing plants. An example of a deviation use case is a local plant running out of an engineering authorized part and temporarily using an available unauthorized part instead.

Unit BOM and Tracking Management

Manufacturing BOM Manager includes a Unit BOM and Tracking management module, which captures the structure and installation history of a serialized as-built and as-maintained BOM structure for all its product deliveries from concept to manufacturing and from delivery to retirement. Tracking and managing specific build instances of product configurations enables a business to quickly review instance specific product information to resolve issues with production, warranties, and product recalls.

Key Benefits:

- Centrally manage internal and supplier equivalent parts and their manufacturing usage (alternates, substitutes) and preferences, without sacrificing the flexibility of plants to make a local changes or make/buy and alternate part usage decisions.
- Enable product and manufacturing engineers to work concurrently to detect and correct problems before release.
- Reduce the communication gap between engineering and manufacturing relative to production builds and their allocated designs.
- Run reports with detailed engineering and manufacturing part assignment, supplier preferences, EBOM and MBOM differences between assemblies, and summarized changes over time.
- Capture and plan physical end-item units early in the product lifecycle process.
- Eliminate BOM errors using a highly automated MBOM generation process with available ERP integrations
- Maintain a historical record of both installed and uninstalled serial sub-components in a physical end-unit as-built structure.
- Maintain a record of shipped products.
- Track customer’s deliveries relative to committed units in the plan.
- Reduce cost and improve productivity through part re-use and automated EBOM to MBOM change propagation capabilities.

While all companies would prefer to catch product deficiencies early in the design process, having visibility to all end product BOMs either in manufacturing or already in-service is essential to ensure quality throughout the product lifecycle. Specific Unit tracking functions include:

Unit Part Marking

- Engineers can identify and label parts that are tracked by serial number or lot number. Serialized parts may be related to multiple manufactured serialized units. Each serialized unit is installed and tracked on a physical end-item.

Manage the As-Built BOM

- The as-built BOM contains physical end-item units defined as a multi-level structure made up of traceable sub-components. Each unit can be tracked by serial number and can be modified as repairs and maintenance occurs throughout the life of the supported product.
- During manufacturing or service maintenance of a physical end-item, manufacturing planners and product planners can install and uninstall serialized and non-serialized sub-systems into the as-built structure, reserve serialized and non-serialized sub-systems to a specific system as-built structure, and replace any installed unit with another unit.

Lot Support

- Lots represent non-serialized components that are tracked in the as-built BOM structure (e.g., fasteners, bolts, etc.). Users can use lots to group non-serialized component parts under a unit marking. Lots can be installed, allocated and replaced on an end-item unit in the as-built BOM.

Unit Tracking and Allocation

- Maintaining and keeping a record of customer ordered end-item units early in the product development process allows planners to communicate the intended production builds to downstream engineering processes.
- As units get allocated to specific product revisions, a unique unit number is assigned and referenced throughout its development process. As a unit enters the manufacturing process a serial number is assigned to shippable end-items. The product line is then responsible for identifying all the serialized or non-serialized components, installed or uninstalled, during the manufacturing of the end-item.

ERP Integrations

Customers can choose to extend **Manufacturing BOM Manager** capabilities with integrations to leading ERP systems such as Oracle Manufacturing and SAP. When **Product Engineer** is used with the above ERP integrations, each manufacturing site can be defined with ERP integration parameters, which control the specific ERP data exchange format and behavior as a result of releasing site-specific MBOM changes via MCO release process.

This enables companies to manage the implementation of manufacturing changes for multiple ERP environments from a single global manufacturing BOM definition managed in **Manufacturing BOM Manager**. This automatic synchronization process eliminates redundant, error-prone manual data entry.

Collaboration & Approvals

Users can benefit from a wide range of capabilities for global enterprise collaboration. Those capabilities include the ability to manage and organize shared documents and structured product data; they also enable the creation of digital workspaces for virtual teams to work together. Users can easily raise issues, organize meetings and track decisions. Any object lifecycle modifications can be formally approved using routes defined by end-users or from standard route templates.

Microsoft Integration

Users can create and access **3DEXPERIENCE®** data from the most popular Microsoft applications: Word®, Excel®, PowerPoint®, Outlook®, Windows Explorer, and Windows Desktop Search. This capability enables enterprise-level collaboration while not disrupting the established productivity of end-users. With product content being managed in **3DEXPERIENCE®** rather than on users' PCs, organizations are able to create, manage and review product content more securely.

Our 3DEXPERIENCE® platform powers our brand applications, serving 12 industries, and provides a rich portfolio of industry solution experiences.

Dassault Systèmes, the **3DEXPERIENCE®** Company, provides business and people with virtual universes to imagine sustainable innovations. Its world-leading solutions transform the way products are designed, produced, and supported. Dassault Systèmes' collaborative solutions foster social innovation, expanding possibilities for the virtual world to improve the real world. The group brings value to over 190,000 customers of all sizes in all industries in more than 140 countries. For more information, visit www.3ds.com.

