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Answers for industry.

What's new for Tecnomatix 11 – Manufacturing Process Management

Smart, fast, lean manufacturing with Tecnomatix 11

Benefits

- Increase planning efficiency
- Validate manufacturing feasibility earlier
- Improve search and usability
- Reduce delays and improve operator safety
- Reduce tooling design effort
- Communicate processes more effectively
- Improve factory object creation
- Improve operator walk path reporting
- Improve dimensional quality

Summary

You can implement Tecnomatix® digital manufacturing solutions from Siemens PLM Software and leverage a single source of product and process information across your enterprise, resulting in effective collaborative product and process development.

Manufacturing process management is an essential part of any PLM strategy. It enables you to connect your product design activities to your manufacturing planning activities, ensuring that products are designed for manufacturability. Key drivers that cause leading manufacturers to look for a comprehensive process management solution include the complexity and challenges of bringing products to market faster while ensuring that manufacturing processes are aligned with aggressive product launch goals.

As part of the Tecnomatix 11 release, these manufacturing process management solutions enable smart, fast, lean manufacturing through capabilities for process planning and work instruction development. In addition, key enhancements in layout planning and dimensional variation analysis allow you to boost your manufacturing process efficiency.

Process planning

Manufacturing Process Planner (MPP) enables you to initiate manufacturing feasibility while creating production plans from the earliest phase of design through manufacturing handoff to production facilities by delivering work instructions directly to the shop floor.

What's new for Tecnomatix 11 – Manufacturing Process Management

Features
Manufacturing process planner

- Store, re-use and share structure queries
- New out-of-the-box perspectives
- Greater spatial search control
- Usability enhancements
- Multi-CAD weld data management
- Process context for NX tool builders

Work instructions

- Standard text and 2D PDF view improvements
- Rich text editing highlights safety concerns
- PLM to MES integration

Advanced assembly planner

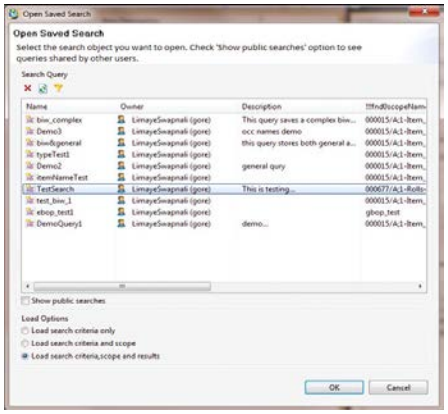
- Greater efficiency in planning mixed-model, mixed-plant operations
- Perform early manufacturing feasibility
- Compare plant-to-plant processes
- Mixed-model line balancing
- Weighted average and min/max overlay

Factory products

- Improved XML object dialog builder
- Enhanced object library management
- Operator walk path time and distance export
- Improved attribute support and logistics data exchange

Store structure search criteria and results

Process planners can store and share search queries for re-use with or without results sets. This helps improve usability and maintain a consistent knowledge context for re-use and collaboration with other planning engineers.

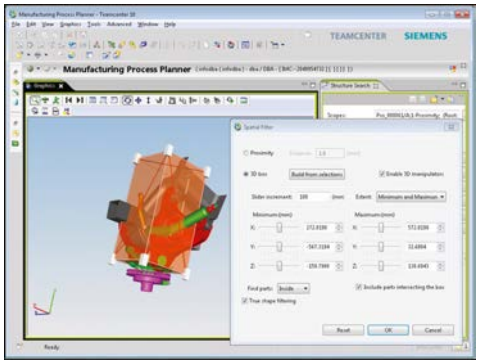


Switch perspectives

New out-of-the-box perspectives help direct specific work tasks such as BOM reconciliation, process constraints, consumption and line balancing.

Spatial search usability

A new dialog box for spatial searches includes editing with sliders that provide finer control of the bounding box. This includes search configurations that provide-fully contained or cross-box intersection results for richer search capabilities and improved usability.



New, event-based data objects

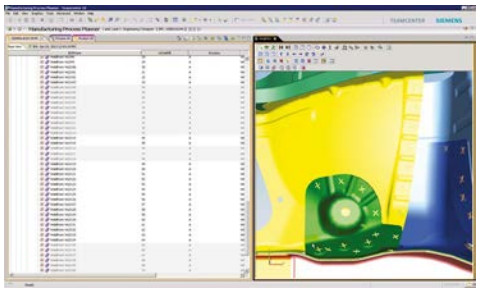
Further expansion of the Manufacturing Process Planner solution for the body-in-white workflow allows you to manage event-based objects within the bill-of-process. These data objects store the logic necessary for simulation and virtual commissioning of manufacturing components such as robots, sensors, clamps and switches, within Process Simulate.

Copy object from graphics context

This enhancement enables you to select objects in the 3D graphics window through a new context menu for copy/paste assignment of parts to assemblies.

Weld import enhancements

Multi-CAD weld point import enables you to define different weld representations according to weld type and targeted weld container, which does not affect other manufacturing feature groups within the scope. An automated process helps create a revision of the weld container in case the manufacturing feature group was created or deleted.

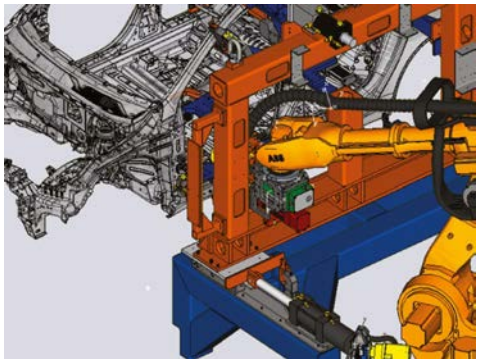


Tool designs in NX

You can now receive a scoped context of process information that enables you to see requirements in the context of the intended manufacturing process for performing tool design in NX™ software.

Variation analysis

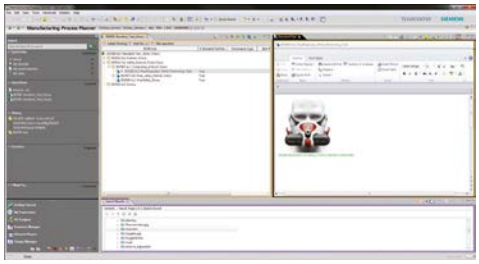
- Expanded Sigma tolerance range
- Enhanced float operations for assembly analysis
- Hold tolerance to nominal on selected parts
- Enhanced linear and angular plus/minus support
- Click measurement points to generate model features
- Supports MIMIC (JT) file structure



Work instructions
Electronic Work Instruction (EWI) enables web-based communication of all manufacturing process information from planning and simulation to the shop floor.

Improved text and visual elements

You can embed standard text elements in your PDF work instructions, formalizing the propagation of standard text libraries. Improvements to 2D visual representations help you enrich the interactive capabilities with zoom to part, smooth transition and linkage from parts in graphics to the parts/tools table.



PLM to MES integration for work plans

The connection from Manufacturing Process Planner to Simatic MES assures complex assembly operations are performed with the most up-to-date information. This integration enables work instruction details to be pulled from or sent to the shop floor. A new command button enables you to send details of the work package directly to the execution system. The software tracks success or failure and allows you to input build event parameters for compliance and traceability. You now have an automated process for delivering the work package to the execution system, which translates and integrates all necessary components to automatically create the work plan.

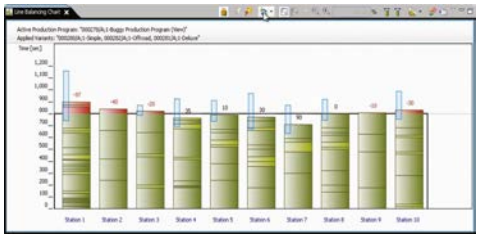
Advanced assembly planning
The Advanced Assembly Planner is an add-on solution to the Manufacturing Process Planner, which provides additional infrastructure and capabilities that support the generation of global mixed-model, mixed-plant processes. It includes line balancing capability that helps the process engineer understand and optimize global production strategies for mixed-model assembly lines.

Enterprise bill of process

The latest enhancements to enterprise bill of process help simplify the complexity of global production so you can achieve the efficiencies of mixed-model manufacturing from platform-based architectures. You can perform feasibility studies well before committing investments and resources to specific plants, automatically propagate assembly items to plant-specific process structures and perform plant-to-plant comparisons to maximize the spread of best practices.

Line balancing

The line balancing function helps you optimize mixed-model production lines by viewing each instance as a production program. These enhancements streamline the introduction of a new model or variant to a plant and provide visibility into the impact on the existing workload. This is accomplished through a weighted average of operations and minimum/maximum overlay, which gives the planner insight into potential problem areas.



Layout planning and management
In this release, FactoryCAD™, FactoryFLOW™ and In Context Editor (ICE) all support Autocad 2014 and Teamcenter® 10.x software versions.

FactoryCAD sofware enables you to create detailed, intelligent factory models. Instead of having to draw lines, arcs and circles, FactoryCAD enables you to work with "smart objects" that represent virtually all of the resources used in a factory – from floor and overhead conveyors, mezzanines and cranes to material handling containers and operators.

XML object/dialog toolkit enhancements
These enhancements improve usability of the FactoryCAD core dialog toolkits and enable you to more easily create dialogs for your custom objects through drag and drop positioning of parameter input fields, multiple tab support, slider input for variables, integer increment/decrement input and 2D/3D view control on the preview window.

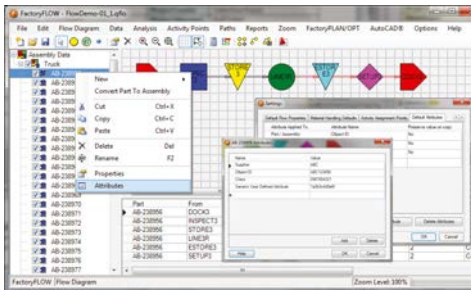
Library manager enhancements
These enhancements enable you to more easily store, manage and access custom FactoryCAD XML objects. You can add multiple libraries at once, perform library sequencing, preview all library content in the factory explorer and export all files associated with a library.

FactoryFLOW™ software enables industrial engineers to optimize a factory layout based on material flow distances, frequency and cost. You can do this by evaluating and analyzing part routing, material storage, material handling specifications and part packaging against the factory layout.

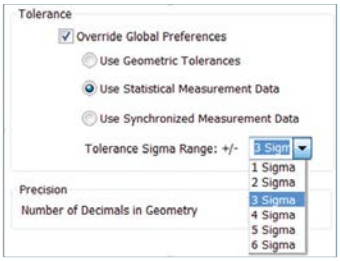
Operator walk path time and distance export
You can export FactoryFLOW calculated operator walk times and distances, with appropriate units, to a Microsoft Excel report. You can separate and show multiple walking operations for each operator.

Generic attributes and logistics data exchange
You are now able to define default object attributes from the settings dialog for each object type. These user-defined attributes can be stored, maintained and readily synchronized with other applications, such as logistics databases that are used to exchange data to and from FactoryFLOW.

Dimensional quality
Variation Analysis is a Teamcenter visualization add-on that enables you to analyze the impact of manufacturing processes on design features and tolerances highlighting the sources and amount of dimensional variation. It helps improve design quality and eliminate costly prototypes while reducing labor, tooling and metrology costs on the shop floor.



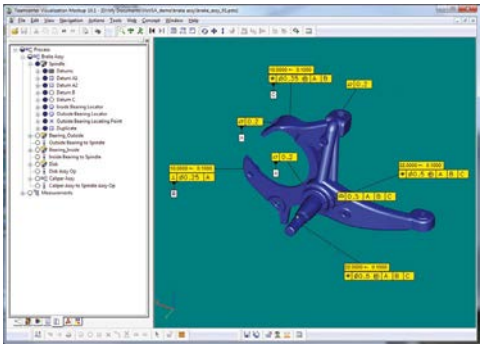
Enhanced Sigma tolerance range
You can now set Sigma tolerance range to include a 2 Sigma distribution (about 95 percent) for simulation results. This enables a better understanding of less capable processes which may be valuable for simulating and analyzing different supplier capabilities for smarter cost/benefit decisions when outsourcing components.



Float distribution enhancements for assembly operations
The extreme float operation provides a more conservative analysis by allowing the model to simulate random contact points against measurement operations versus simply applying tolerance variation values. You can apply this information globally to the entire model or allow the override of global parameters to specific assembly operations.

Inactivate tolerances to improve trade-off analysis
You can essentially turn off the tolerance values for a part in an assembly during the simulation run. This improves your ability to validate trade-off decisions when

analyzing various designs or supplier components and aids in debugging a complex model. For example if a particular part is giving you erratic results, you can see how much variation goes away if the part is held to nominal values.

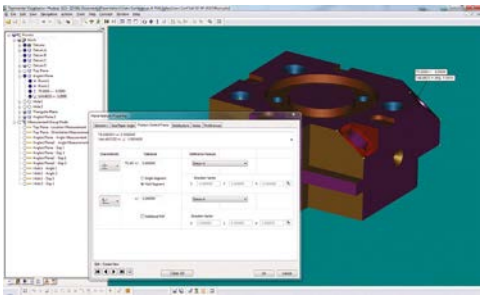


Enhanced linear plus/minus support

In addition to location tolerances, orientation and form tolerance attributes have been added to linear plus/minus attributes. This also enables GD&T orientation and form refinements of linear plus/minus tolerances.

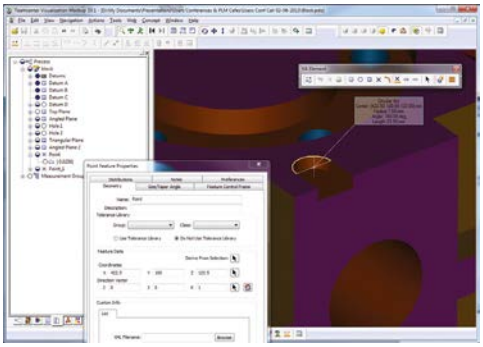
Angular plus/minus

Adding additional support for plus/minus schemas allows you to apply angular plus/minus tolerance to a plane or hole/pin feature.



Point creation enhancements

The 3D measurement module in Teamcenter visualization gives you an easy way to generate measurements from CAD geometry. Now, with a simple click on a measurement point, you can use variation analysis to create a feature point for analysis in the simulation model.



Enhanced feature properties dialog

The addition of navigation buttons to the feature properties dialog box improves navigation for faster feature creation and modification of existing features within a part.

Improved structure alignment

The CAD structure import process now supports the MIMIC (JT™) file structure.

Dimensional Planning and Validation (DPV) enables you to plan and synchronize inspection routines and production equipment for synchronizing measurement operations and automating data collection, organization and reporting.

Simplified bill of resource (bill of equipment) and bill of process development

This enables you to use the Teamcenter client user interface to manage plant, device and routine planning and setup for production operations. It includes the ability to adjust shift times automatically based on a facility's time zone.

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