Using Tecnomatix® digital manufacturing solutions from Siemens PLM Software, you can verify the methods and resources being defined and selected during manufacturing planning, resulting in proven “right-first-time” manufacturing plans.

Production interruptions that result from introducing new or updated automation programming and late-stage changes are extremely costly. Such events present risks often difficult to overcome during implementation and launch as the start of volume production approaches. A significant number of such changes can be discovered and resolved early in the process when they are easier and less costly to fix. Through the use of simulation, you can try variations of the manufacturing process with a high degree of accuracy, to determine which variation will provide the best results. You can carry out these engineering studies and what-if analyses quickly, easily and at low cost during preproduction planning and process development phases. This process simulation reduces the need for subsequent physical tryouts and ensures that any required physical tryouts can be executed faster.

As part of the Tecnomatix 11 release, the Manufacturing Simulation and Validation solutions enable smart, fast, lean manufacturing through the validation of production processes, equipment and systems during manufacturing planning. This validation can occur long before implementation on
What’s new for Tecnomatix 11

Features
Human factors and ergonomics
- All new task simulation builder interface
- Braced and seated posturing, step footfall prediction and cumulative lower back analysis
- Advanced anthropometry scaling for Jack human models
- Integrated Kinect for Windows module and partial body motion tracking support
- 64-bit support for large geometry environment performance improvement
- European Assembly Worksheet (EAWS) integration
Robotics and automation
- Advanced robotics and commissioning available on Teamcenter
- Enhanced mirror functionality
- Enhanced swept volume and interference zone calculation
- Re-project and merge functionality for continuous feature operations

Posturing and analysis improvements
In this release, braced posturing enables you to predict postures in situations in which bracing surfaces are available and to predict the most likely bracing strategy, including the exertion force direction and magnitude changes due to bracing (based on University of Michigan Humosim program research). Step footfall prediction enables you to predict footfalls for turns, shuffle steps and transitions; to simulate walking along defined paths; and to visualize work cell congestion and improved ergonomic analysis through more refined foot position prediction. Cumulative lower back analysis functionality enables you to analyze low back injury risk due to cumulative exposure over a task sequence (based on model of Norman et al. 1998 Clinical Biomechanics, 13, 561-573).

Advanced anthropometry scaling
This enhancement enables you to gain control over a wide range of anthropometric dimensions beyond what was previously possible and to take advantage of University of Michigan 3D Bodyscan data models (PCA).

Motion capture enhancements
This release supports partial tracking so you can track only critical body areas while predicting others, including support for optical marker cluster plates to potentially reduce motion tracking complexity using simpler setups. The motion capture feature is integrated with Microsoft Kinect for Windows, providing a natural interface to control posture and behavior of the virtual human through the use of your own movements and voice commands.

Performance improvements
In this release, 64-bit support dramatically improves performance within large geometry environments.

Process Simulate Human software in the Tecnomatix portfolio is an add-on application to Process Simulate on Teamcenter® software configuration from Siemens PLM Software that enables you to realistically simulate human tasks, assess human performance (e.g., to avoid injury) and create effective ergonomic studies. You can use Process Simulate Human to optimize the layout of your operator work areas and validate the feasibility of manual assembly by virtually developing and verifying process plans for your manufacturing systems in a 3D collaborative environment.
**Posturing and analysis improvements**
In this release, Process Simulate Human provides step footfall prediction and cumulative lower back analysis functionality as described above.

**Seated posture prediction**
This enhancement, as previously released with Jack software, enables you to predict human postures for seated reaches while realistically modeling pelvic roll behavior (based on University of Michigan Humosim program research).

**Textured human support**
This enhancement provides the infrastructure you need to display textured, smooth skin human figures for added visual realism during human simulation and ergonomic studies. This functionality also allows for textures to be displayed on previously textured, meshed figures.

**Motion capture enhancements**
In this release, Process Simulate Human enables you to take advantage of the integration to Microsoft Kinect for Windows, as described above.

**European Assembly Worksheet (EAWS) integration**
EAWS is a comprehensive physical ergonomics risk evaluation tool supported by this enhancement that enables you to automatically fill many of the inputs from the existing scene within the simulation environment, incorporating OWAS, RULA, NIOSH, SNOOK, OCRA, Strain Index and HAL-TLV (hand) analysis data.

**Robotics and automation (machines)**
Process Simulate Robotics is an add-on application to Process Simulate that enables you to emulate realistic behavior of robotic and automated processes and optimization of cycle times and process sequence. Process Simulate Robotics facilitates simulation of assembly and welding, as well as continuous processes, such as gluing and sealing, and mechanical procedures of tools, devices and robots.

**Advanced robotics and commissioning on Teamcenter**
Tecnomatix 11 offers full support of advanced robotics and commissioning functionality in Process Simulate on Teamcenter enabling you to execute a complete robotic workflow on the Siemens PLM Software best-in-class data backbone.

**Enhanced mirroring function**
This enhancement enables you to mirror a complete station, including tooling. Robotic operations within a station with all required elements can be mirrored, including resources and operations, external axis values, I/O signals and logic block connections, and machine data files.
**Interference/swept volume enhancements**

This enhancement delivers improved stability and performance of swept volume generation through execution of the calculations by a separate process.

**Energy (power) consumption evaluation**

Machines and conveyors now have several energy states, such as operational, stand-by and off, with specific energy consumption values that are tracked and summed during a simulation run. This simulation makes it possible to predict energy consumption for single machines up to full production lines and evaluate out-of-the-box test scenarios for various energy saving strategies.

**Feed-in-gap converter object parameter**

This enhancement extends the converter object to include feed-in-gap capability where a new part is introduced into a conveyor system only if there is a gap or window of sufficient size and enables you to move parts into a running conveyor system in your simulation model without having to stop the main line.

**Merge function for continuous operations**

This release includes the ability to re-project continuous feature and arc welding operations along with the robotic merge function to copy required parameters from the original operation locations to the newly projected operation, preserving any previously defined location information.

**Logistics and throughput (systems)**

The Plant Simulation solution enables simulation and optimization of production systems and processes. Using Plant Simulation, you can optimize material flow, resource utilization and logistics for all levels of plant planning from global production facilities, through local plants, to specific lines and operations.

**Full Unicode language support**

Object naming, notes and comments can now be written in any language, with full multi-byte character support (e.g., Chinese, Russian, etc.), including native language naming/labeling and descriptions in a mixed mode.

**Teamcenter load/save**

Plant Simulation interface improvements support the use of Teamcenter as a direct simulation model repository. The new functionality allows management, sharing and versioning of simulation models directly in the Teamcenter data repository.