Plant Simulation

Simulate, visualize, analyze and optimize production systems and logistics processes

Benefits

- Improve productivity of existing facilities
- Reduce investment in planning of new facilities
- Reduce inventory and throughput time
- Optimize system dimensions, including buffer sizes
- Lower investment risks through early proof of concept
- Maximize use of manufacturing resources

Summary

Plant Simulation in the Tecnomatix® portfolio is part of the Siemens Xcelerator portfolio, the comprehensive and integrated portfolio of software, hardware and services. Plant Simulation is software to enable the simulation, visualization, analysis and optimization of production systems and logistics processes. Using Plant Simulation helps optimize material flow, resource utilization, and logistics for all levels of your plant planning, from global facilities and local plants to specific production lines.

In times of increasing cost and time pressures in production along with ongoing globalization, logistics has become a key factor in the success of a company. The need to deliver on time and in sequence, introduce lean manufacturing principles, plan and build new, sustainable production facilities, and manage global production networks requires objective decision criteria to help stakeholders evaluate and compare alternative approaches.

Plant Simulation helps to create digital models of logistics systems so you can explore system characteristics and optimize their performance. The digital model not only enables you to run experiments and what-if scenarios without disturbing an existing production system, but it can be used in the planning process long before

SIEMENS

siemens.com/tecnomatix

Features

- Object-oriented, hierarchical modeling based on dedicated object libraries for fast and efficient modeling of discrete and continuous processes
- Graphical outputs for analysis of throughput, resource utilization, automatic bottleneck detection, Sankey diagrams and Gantt charts
- Energy analysis tools for calculating and optimizing energy usage
- 3D online visualization and animation based on the ISO-standard JT format
- Integrated neural networks for experiment handling and automated system optimization via genetic algorithms
- Open system architecture supporting multiple interfaces and integration capacities (ActiveX, C, CAD, COM, JSON, MQTT, ODBC, OPCClassic, OPCUA, Oracle SQL, Socket, XML, etc.)

the real system is installed. Extensive analysis tools, statistics and charts help you evaluate different manufacturing scenarios and make fast, reliable decisions in the early stages of production planning. Plant Simulation helps:

- Detect and eliminate problems that otherwise would require cost- and time-consuming corrective measures during production ramp-up
- Minimize the investment cost of production lines without jeopardizing required output
- Optimize the performance and energy usage of existing production systems by taking measures that have been verified in a simulation environment prior to implementation

Modeling manufacturing processes

With Plant Simulation software you can create well-structured, hierarchical models of production facilities, lines and processes. This is achieved through powerful object-oriented architecture and modeling capabilities for creating and maintaining highly complex systems, including advanced control mechanisms.

The intuitive, context-sensitive ribbon menu user interface of Plant Simulation follows Microsoft Windows standards, making it easy to get familiar and productive quickly. Simulation models can be created quickly by using components from application object libraries dedicated to specific business processes, such as general assembly or automotive and electronics manufacturing processes. You can choose from predefined resources, order lists, operation plans and control rules. By extending the library with your own objects you can capture best-practice engineering experiences for further simulation studies.

Complex and detailed simulations can be handled, understood and maintained much better than in conventional simulation tools by using Plant Simulation architectural advantages such as encapsulation, inheritance and hierarchy.

Simulating and analyzing system performance

Plant Simulation models are used to optimize throughput, relieve bottlenecks and minimize work-in-process. The simulation models take into consideration internal and external supply chains, production resources and business processes, allowing you to analyze the impact of different production variations. Statistical analysis, graphs and charts display the utilization of buffers, machines and personnel. You can generate extensive statistics and charts to support dynamic analysis of performance parameters, including line workload, breakdowns, idle and repair time and proprietary key performance factors.

Model visualization

In addition to the highly efficient 2D model view of Plant Simulation, models are created and visualized in 3D using included libraries or your own computer-aided design (CAD) data. The result is impressive 3D virtual models that are synchronized at all times with their 2D counterparts, allowing you the flexibility to choose the appropriate method of visualization without compromising simulation and analysis needs. Plant Simulation supports the JT™ data format for 3D modeling, an International Standards Organization (ISO) standard, and Siemens Digital Industries Software advanced graphics technology to enable efficient loading and realistic visualization of large 3D simulation models.
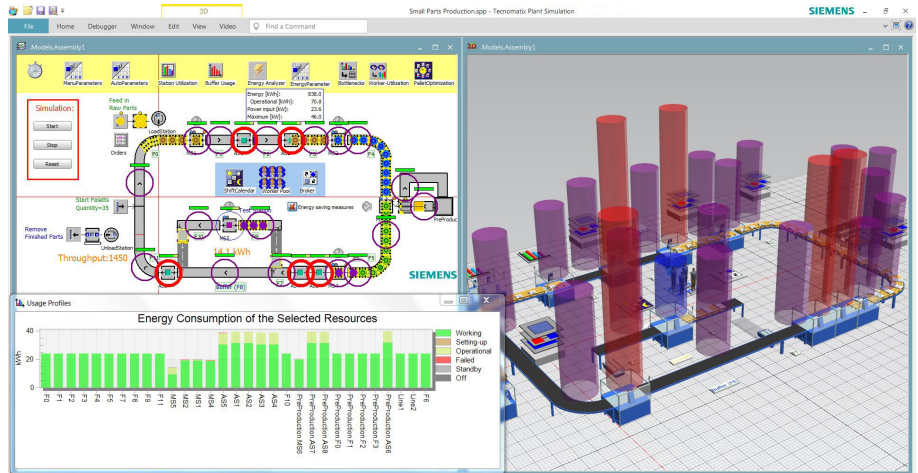
Context-sensitive ribbon menus and analysis tools make it easy to visualize system energy usage.