Tecnomatix Plant Simulation for shipyards

Simulation, visualization and optimization of shipbuilding processes

fact sheet

Siemens PLM Software

www.siemens.com/plm

Summary

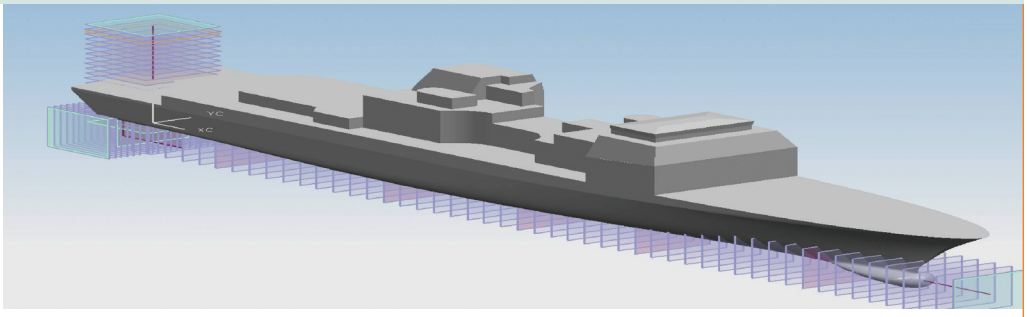
Tecnomatix® Plant Simulation software from Siemens PLM Software enables the simulation and optimization of complex shipyard production systems and processes. Using Plant Simulation, you can optimize material flow, resource and space utilization as well as the logistics for all levels of the shipyard from scheduling individual welding activities up to the complete ship assembly.

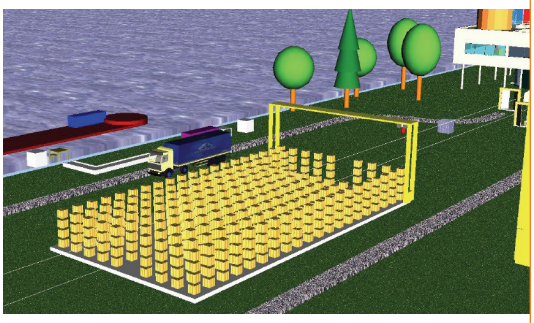
Benefits

- Optimized space and crane utilization
- Advanced assembly sequence scheduling
- Increased planning safety and accuracy
- Higher service reliability
- Improved logistics and material management with clarity of complex processes
- Safer investment decisions
- Find out whether to make or buy
- Predict your delivery times more accurately
- Minimize your risk of failure or delay

User case

- Decreased throughput time from 60 to 52 days (-14 percent)
- Decreased direct labor on the panel line from 8,280 to 6,600 hours (-20 percent)





Challenges and needs in the shipyard industry are working in a highly competitive environment with increasingly complex products shipyards face the need to build more ships in a shorter time and to offer services at competitive prices and with short delivery times. Plant Simulation is an event driven simulation tool helping shipyards to handle these needs easier, and to give computer-supported answers to the major questions: when and where to produce what and with which resources depending on the availability and restrictions of resources and materials.

Plant Simulation is a simulation-based and modular toolset with proven benefits for the optimization of production and logistics in the shipbuilding industry, allowing the graphical representation of parts and resources and interfacing to data base systems. This enables you to model the employment of available shift calendars with customer-specific user-interfaces and interactive model manipulation. Today Plant Simulation is used to optimize the building of: cruise liners, car- and passenger ferries, container vessels and gas tankers, aircraft carriers, submarines and naval ships.

Plant Simulation is used to support strategic corporate projects to find the best shipyard at which to build new ships, or to manage internal production and outsourcing strategies as well as the operational work in which sequence and based on which schedule to distribute the daily work load.

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Features

Simulation of complex production systems and control strategies

Object-oriented, hierarchical models of shipyards, encompassing business, logistic and production processes

Graphs and charts for analysis of throughput, resources and bottlenecks

Comprehensive analysis tools, including automatic bottleneck

Analyzer, Sankey diagrams and Gantt charts

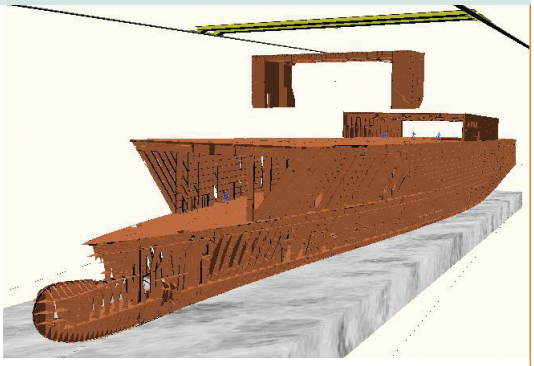
3D online visualization and animation

Integrated neural networks and experiment handling

Automated optimization of system parameters

Open system architecture supporting multiple interfaces and integration capacities (ActiveX, C, CAD, MS Excel, Oracle SQL, ODBC, XML, Socket, etc.)

All processes are following easy-to-understand interactive and iterative functions. You will start the scheduling, look at results and, if needed, make changes (for example excluding a special sub-block). Then you will restart the scheduling to verify that the changes you made were correct. Plant Simulation is able to predict the utilization in each area depending on the number and on the kind of blocks being assembled every day, week and month.



Why traditional planning tools do not work

Static planning tools such as spreadsheets or flow charting software are unable to generate results to account for variability and changing conditions over time. Relevant interdependencies between system components and technological constraints can not be taken into consideration. Complex rules that control the flow of information and material can hardly be accounted for. In addition the visualization does not offer 3D animation capabilities.

Result

Plant Simulation allows the simulation of the highly complex shipyard environment. It offers a good base for deciding the outsourcing and production strategies, facilitates cross-project resource planning and increases planning safety and improved utilization of the major resources such as employees, cranes and space requirements.

Plant Simulation helps in:

- Predicting schedule problems
- Predicting workplace-efficiency
- Finding concept changes for SY's expanding
- Sequence-controlling of assembly lines
- Optimizing warehouse and transport capacities
- Steel planning
- Optimizing availability of needed man power

Some references:

- Aker Yards, Germany
- Center Of Maritime Technologies, Germany
- Flensburger Schiffbau-Gesellschaft, Germany
- Meyer Werft Papenburg, Germany
- ThyssenKrupp Marine Systems:
  Blohm + Voss, Germany
  Nordseewerke Emden, Germany
  Kockums, Sweden
- Volkswerft Stralsund, Germany

Contact
Siemens PLM Software
Americas 800 498 5351
Europe 44 (0) 1276 702000
Asia-Pacific 852 2230 3333
www.siemens.com/plm

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