

# Factory layout simulation solution



## Integrated workflow between FactoryCAD and Plant Simulation (formerly eM-Plant)

Traditionally, layout design and throughput simulation departments have been completely separate “islands”. Simulation experts spend a considerable amount of time replicating layout information in the simulation environment before actually modeling logic, etc. Likewise, layout designers have never had an easy, automated method to validate their design direction. The factory layout and simulation solution from UGS provides an integrated workflow between factory layout planning and throughput simulation. The communication between FactoryCAD and Plant Simulation is based on the SDX (Simulation Data Exchange) standard. The solution enables you to generate a simulation model from the 3D FactoryCAD layout data automatically, then visualize, evaluate and optimize the production system. Subsequently, the user may save changes of the system back into the layout to re-use them for additional simulation runs. Furthermore, when the layout changes, existing simulation models can be automatically updated.

### FactoryCAD

FactoryCAD, part of the UGS Tecnomatix™ manufacturing solutions, is a 3D factory layout software tool that allows you to create detailed, intelligent 3D factory models. FactoryCAD provides equipment symbols, block management, optimized layer management tools and “smart factory” objects – everything you need to create an entire 3D factory model. Smart objects represent floor and overhead conveyors, mezzanines, cranes, operators, material handling containers, etc. These objects allow you to snap together a 3D layout model without wasting time drawing the equipment. FactoryCAD allows you to bring product data, tooling data and plant data into one cohesive, associative environment.

### Plant Simulation

Plant Simulation enables modeling, simulating, visualizing and optimizing production systems and logistic processes. Using Plant Simulation, you can optimize the flow of material, throughput, resource utilization and logistics for all levels of plant planning from global production facilities to specific lines. Extensive analysis tools, statistics and charts enable you to evaluate different manufacturing scenarios and to make fast and reliable decisions in the early stages of production planning.

### SDX (Simulation Data Exchange)

The purpose of the SDX standard, supported by UGS, is to enable exchange of CAD layout data together with simulation-relevant data in a common XML format between different applications and the PLM data backbone.

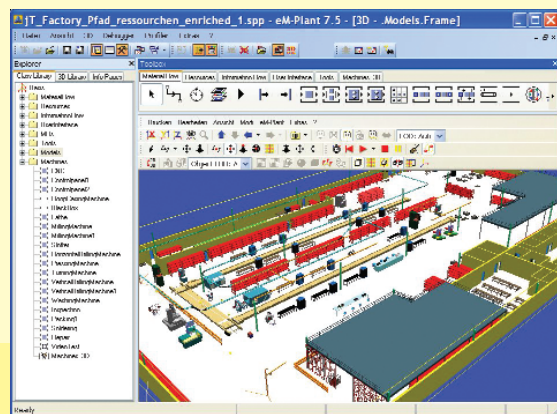
### Integrated workflow

The integrated workflow enables fast and easy usage:

- Start Plant Simulation from within FactoryCAD
- Create a simulation model automatically
- Visualize the flow of parts dynamically on the layout background
- View results reports and optimize the production system
- Write back changes to the FactoryCAD layout
- Update existing simulation model with changes from the layout automatically

### Benefits

- Cut down planning time and redesign cost by verifying system feasibility and target throughput earlier in the design process
- Maximize productivity of production facilities by optimizing the material routing
- Reduce investment of planning new production facilities by optimizing equipment and systems capacities
- Cut inventory and throughput time by evaluating and comparing different control strategies and scenarios
- Verify production system stability and flexibility by comparing throughput results for different product mixes



## Run simulation experiments

In order to have an integrated simulation environment, first start to develop a layout in FactoryCAD and add simulation-relevant information (availability, cycle times etc.) to the equipment objects in the layout. The simulation-relevant information can either be manually input or imported into the equipment in the layout via default data files. At the next step define the part routing. Then initiate Plant Simulation from within FactoryCAD in a **single click**. This process packages all the layout and simulation-relevant information along with the routing data into the SDX format and feeds it to the Plant Simulation tool.

Then you can:

- Generate or update a simulation model automatically, visualizing the production system on the layout background
- Add additional information, transport systems/logistics, control logic etc.
- Run simulations, compare different scenarios and optimize the system
- View the results and recommendations in an HTML report

## Target users

- All FactoryCAD users planning discreet manufacturing facilities, material handling equipment, warehouses, distribution centers, etc.
- All facility planning experts/layout designers:
  - *Without simulation knowledge* who want to prove production feasibility, capability and throughput as a first-pass analysis
  - *With simulation knowledge* who want to evaluate and optimize their production systems while working with Plant Simulation
- Simulation experts who get a simulation order with an SDX file from a planning expert to evaluate and optimize the production system and to add, for example, transport systems/logistics, operators, control logic etc. This enables simulation experts to spend their time “modeling” as opposed to “creating the model”

## Operating systems

- Microsoft Windows 2000
- Microsoft Windows XP

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