Digital Twin Software

for Simulation

SIM3D

Process simulation from production to logistics

Sim3D, as a dynamic process simulation tool, is generally used during the planning and design phase of machines and systems to validate the concept. The software allows the systems to be viewed in a chain and, if required, also with stochastic elements such as availability. The informative value of the results therefore goes far beyond static analytical methods such as Excel calculations.

Concrete findings from simulations can be:

- Systemperformance(output)
- Total availability of the system
- Associated capacity utilization of the system components:
  → Machines
  → Robots
  → Automated guided vehicles
  → Vehicle systems
  → Storage and retrieval machines
- Necessary buffer sizes (e.g. decoupling buffers in the production area) Problem areas and bottlenecks in the material flow)
- Necessary number of vehicles, pucks (e.g. for AGV systems, electric monorail systems, MagneMover)
- Effects of what-if scenarios

Layout

Performance data

Order dats

Photo: Methodology of the process simulation

Basic properties

Comprehensive building block libraries with highly parameterizable building blocks are available in Sim3D for the construction of simulation models. Standard libraries include

- QuickStart for modeling conveyor technology
- People catalog for mapping workers (transport, picking, palletizing)
- Robot catalog (articulated axis robots, portal robots, flexpickers)
- Vehicle Framework for the simulation of vehicle systems (industrial trucks, overhead conveyor technology, driverless transport systems)
- QuickLogic Racks for any type of type of storage systems
- BHS for the simulation of baggage handling systems

Photo: Simulation model of a tire mounting, sorting and buffering system

MagneMover® LITE:

MagneMover® LITE is an intelligent and cost-effective transport system from Rock-well Automation that has been specially developed for the fast and efficient transportation of light loads. A module box is available in Sim3D for the simulation of these systems, with which systems can be quickly modeled and also simulated.

Integration of 3D CAD - CAD Is The Model: If detailed machine components or robots are to be included in the simulations, or if these are the focus, 3D CAD data can be read in via numerous CAD interfaces and then kinematized using the "CAD Is The Model" module. This means that the individual movement axes and joints are assigned the corresponding functions. Native CAD interfaces to AutoCAD, Creo Parametric, Inventor, Onshape, Sketchup, SolidWorks and Solid Edge are currently available for this purpose. Other formats can be imported via STEP or VRML..

Sequence control: All standard components have built-in and customizable sequence control. Machines or robots can be controlled via a Sim3D internal controller. For robots, it is also possible to have the axis positions controlled by a connected robot simulator or control emulator and thus simulate real path curves.
Standard interfaces to Fanuc Roboguide, Omron ACE and ABB Robotstudio are available for this purpose..

Photo: Sim3D enables the standard integration of robot simulators

Input data: For meaningful simulation results, a large number of input parameters must usually be stored (speeds, cycle times, order data, etc.). These can be entered either directly in the simulation components or centrally in table structures. If required, data can also be read from databases during runtime, for which an ODBC interface is available, for example.

Experiments and evaluation: The Experiment Manager is available for the automated execution of simulation runs. This allows you to create series of experiments, which are then run automatically.

The individual simulation runs are started in parallel and distributed across the available CPU cores in order to obtain the results as quickly as possible. The results data is visualized by the Analysis module, which displays typical key figures such as throughput, capacity utilization, etc. in bar, line and pie charts. However, it is also possible to export the raw data and evaluate it in Excel or other tools.
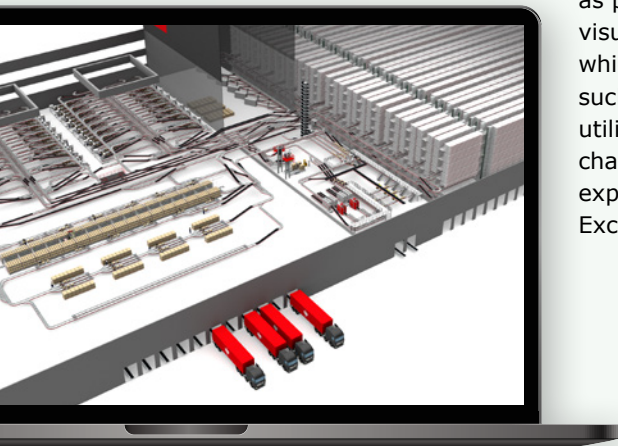
Further features

Sim3D can be customized in many areas. These can be, for example, specific modules, automatisms or connections from/to third-party systems. Sim3D offers the possibility to integrate and debug C# scripts from Visual Studio. Sim3D thus becomes a development framework with which a great deal is conceivable.

Sim3D Editions

If Demo3D models are already available from previous project phases, they can be further developed into fully-fledged simulation models with the help of Sim3D and thus a large part of the work can be taken over.
Similarly to Demo3D, Sim3D also offers the Professional and Enterprise editions. In addition to the Professional license, the Enterprise license allows the use of C# scripts, which can be helpful for the creation of parameterizable components and the implementation of complex material flows and movements.

Extract from the
current references

- Accenture
- Bühler AG
- Continental Reifen Deutschland GmbH
- Dachser Group SE & Co. KG
- DHL Sorting Center GmbH
- Dematic GmbH
- Ehrhardt + Partner GmbH & Co. KG
- Fortna
- G. Siempelkamp GmbH & Co. KG
- GEBHARDT Fördertechnik GmbH
- Interroll Group
- IWL AG
- Jungheinrich AG
- KHS GmbH
- KNAPP AG
- Körber AG
- Lidl Stiftung & Co. KG
- Miebach Consulting GmbH
- REWE Markt GmbH
- Schenker Deutschland AG
- SEW-EURODRIVE GmbH & Co. KG
- SWAN GmbH
- Swisslog GmbH
- TGW LOGISTICS GROUP GmbH
- Vanderlande Industries GmbH
- viastore SYSTEMS GmbH

Our Locations

Bremen

Braunschweig

Dresden

Witten

Hanau

Regensburg

Langenau

Sindelfingen

München

Neufelden

Wien

SIM3D

Do you have any quetstions about the Sim3D Software?

Please feel free to contact us:
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