



46 GOOD REASONS for plant simulation with fe.screen-sim

GENERAL ADVANTAGES

#1 fe.screen-sim is **sector-independent** and guarantees a wide range of applications in mechanical and plant engineering, logistics, materials handling, the automotive industry and its suppliers, as well as in automation and robotics.

#2 The software has **very high performance data** and can also be used for the simulation of complete, interlinked plants with more than 20 PLCs and over 20 robots.

#3 A **true-to-detail representation** of the plant in 3D is possible through the most modern graphics technologies.

#4 **Contained material is actually run through the system** and not shown or hidden.

#5 Contained **sensor technology** is positioned in the 3D model at the position corresponding to reality and **does not need to be programmed**.

#6 A **CAD library** from Cadenas is integrated in fe.screen-sim for importing CAD objects from various suppliers.

#7 Any number of 3D windows and all UI elements can be distributed across the available monitors. This way **you always keep a perfect view of the simulation**.

#8 **No material flow definition** within the plant is necessary. The behaviour results from the simulation model.

#9 A **bidirectional exchange** of the simulation to the CAD system ensures that the design data can be easily updated.

#10 CAD data are converted into a separate format during import. This ensures **optimal protection of the plant's know-how**.

#11 It is always possible to implement a **highly idealised model structure for testing processes**.

#12 fe.screen-sim has the **most up-to-date software architecture** currently available.

PRICE AND LICENSING

#13 **Licensing via floating licences** enables flexible use at different workstations.

#14 Thanks to the **modular structure, flexible functional use** is possible. Only those functions are licensed that are actually needed.

#15 Users do **not need expensive workstations**. A standard PC with a powerful graphics card and multi-core processor is sufficient.



TECHNICAL AREA

#18 fe.screen-sim is **multi-user capable**. Several users can work on one project/model at the same time.

#19 A **role and authorisation concept** is available for model editing with several users.

#20 **No switching between model creation and simulation** is necessary. Changes in the model are therefore immediately visible in the simulation..

#21 A separate interface is available for **viewing and forcing variables** for targeted monitoring and analysis of the system statuses.

#22 fe.screen-sim contains a **Software Development Kit (SDK)**, which ensures maximum flexibility for the development of own applications and extensions.

#23 External programs can communicate with fe.screen-sim via a **programming interface (API)** and be used, for example, for automated model construction.

#24 An integrated **signal recorder** enables rapid fault analysis in the event of a malfunction. Signals in the PLC that have led to a fault can be analysed together with the model.



TRAINING AND DISTRIBUTION

#16 An integrated **material and model editor** ensures a realistic representation of models - also for documentation and the simulation experience.

#17 The **simple and uncomplicated connection to common VR glasses** ensures a realistic use of the model.

MODELLING

#25 Thanks to extensive **CAD import options** including kinematic information of many common formats, easy model creation is guaranteed.

#26 An **automated generation of simulation models** through open interfaces (API) is possible and guarantees rapid model creation, e.g. in combination with the CAD system.

#27 A **data transfer and delivery** can be tailored by the user to a **wide variety of systems** (control systems, HMI etc.).

#28 fe.screen-sim contains an **object catalogue** that can be combined quickly, flexibly and as desired. The areas of application are wide-ranging - from mechanical engineering to logistics.

#29 A **fast and flexible kinematisation** of the simulation model with an editor is possible at any time. Changes can even be made to the mesh and vertical model.

#30 A **library function** with available behavioural models and code examples for special requirements as well as **CAD model libraries** (e.g. Kuka, ABB, Fanuc robots) guarantees a fast construction of simulation models.



CONNECTION OF CONTROL SYSTEMS, ROBOTS AND THIRD PARTY SYSTEMS

#31 The assignment of variables and simulation elements is possible in the following ways:

- **Graphical interface**
(drawing of connection lines)
- **Tabular assignment**
(drag & drop assignment)
- **Automated assignment**
via rule definitions

#32 fe.screen-sim contains **interfaces to the most common control systems** on the market: Siemens, Beckhoff, Wago, Schneider, Rockwell etc.

#33 **Recording simulations in a 3D video** offers the possibility to move freely in the plant to analyse the processes during the simulation.

#34 **New interfaces** - such as future systems - can be created **quickly and easily** by the customer or by F.EE.



#35 It is possible to **combine and use any number of different interfaces** for data exchange. For example, data from Excel, Visio or other subsystems can be transferred directly.

#36 A **connection and combination** even of a large number of **controllers from different manufacturers** is possible in a very flexible and simple way.

#37 **Safety-Signals** can be simulated using the different manufacturer options.

#38 The operating modes „**Hardware in the Loop**“, „**Software in the Loop**“ and „**Model in the Loop**“ as well as a **mixed operation** are possible.

#39 Common **robot systems** - such as Kuka, ABB, Fanuc, Yaskawa, Stäubli or Universal Robots - can be connected via the manufacturers' software. This ensures realistic implementation without robot macros.

#40 **Control engineering processes** can be simulated through interfaces to MATLAB® and Simulink®. This ensures that the simulation solution can be expanded for a wide range of applications.

#41 **Co-simulation with other simulation solutions** - such as WinMOD by Mewes & Partner, ISG-virtuos or even other systems - is possible. Other systems can be connected via an easily configurable interface, e.g. via „shared memory“.

CREATING LOGIC ELEMENTS FOR DEVICES AND INTERFACE EMULATION

#42 **Function sequences** can be created and edited as follows:

- FUP
- C#
- Own DLL developments or interfaces to third-party systems
- FMU/FMI

DATA SECURITY AND PROJECT MANAGEMENT

#43 All **project data is stored in a readable XML format** and can therefore also be processed with other systems, such as PLM/PDM solutions.

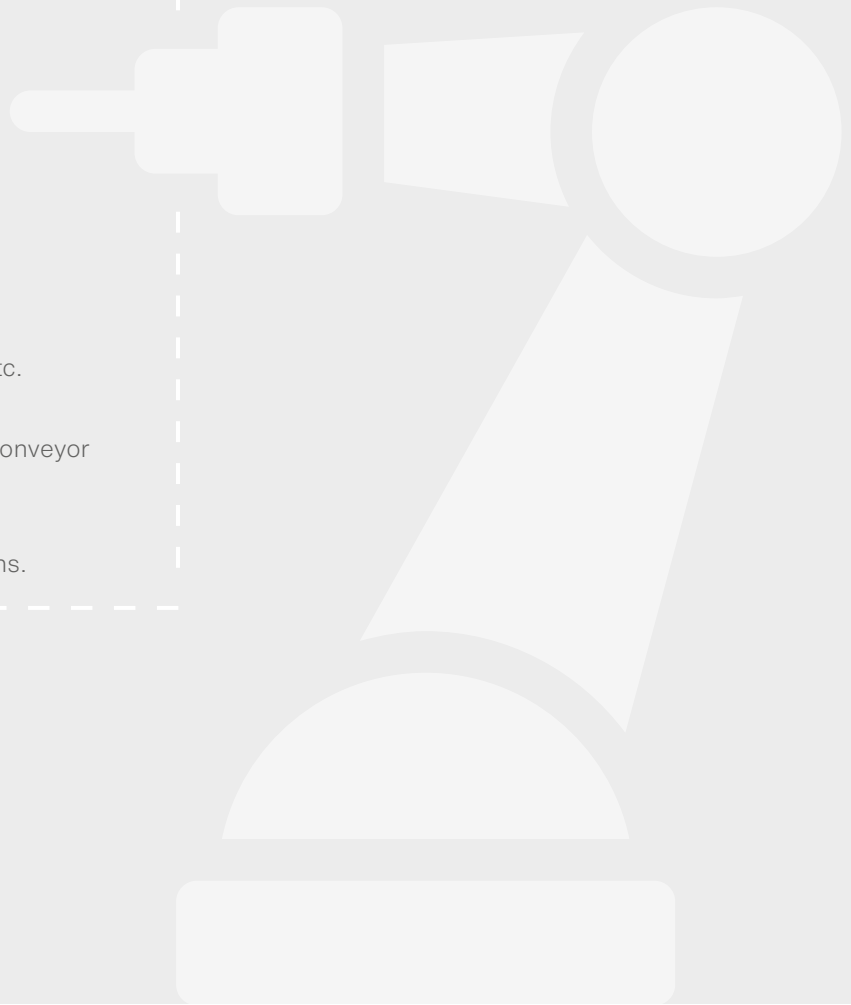
#44 Each time you save, a **completely new set of project data** is generated. This ensures a simple return to a previous situation in the model.

#45 **SQLite data** from the selection of signals and simulation object parameters are generated for later evaluation and generation of reports and statistics.

SIMULABLE TECHNOLOGIES

#46 A variety of different technologies can be implemented using fe.screen-sim. These include for example:

- **Classical floor conveyor technology:**
Turntables, lifters, accumulation chains etc.
- **Electric overhead conveyors:**
Switches, vehicles etc.
- **Driverless transport systems (AGV):**
Trains, vehicles etc.
- **Robotics:**
Robots, tools, grippers etc.
- **Process engineering:**
Pumps, accumulators, valves etc.
- **Control cabinet elements:**
Buttons, fuses, motor protection etc.
- **P&F:**
Chain links, switches, blocking points, etc.
- **Logistical applications:**
E.g. large warehouses with associated conveyor technology.
- **Human Animation:**
E.g. worker simulation in assembly booths.



YOUR CONTACT PERSON: WERNER POSPIECH



Contact:

Werner Pospiech

phone: +49 9672 506-47507

e-mail: werner.pospiech@fee.de



F.EE GmbH | Business division Software + Systems

Industriestraße 6 | 92431 Neunburg vorm Wald | Germany

phone: +49 9672 506-0 | e-mail: fescreen-sim@fee.de | www.fescreen-sim.com

Visit us on
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