

## 3D SIMULATION FOR SPECIALIZED PRODUCTION MACHINERY

### Fill optimizes costs with VISUAL COMPONENTS

To maintain its position as a leading Austrian production engineering company, Fill uses simulation software from VISUAL COMPONENTS to support their sales, planning and engineering processes. The software produces highly accurate 3D simulated layouts that help improve communication in the project team, and with external suppliers, to make sure the project meets its design goals. Fill uses the software to optimize system concepts for their high-end machine designs, and to avoid errors early on in the design phase.

## **VISUAL COMPONENTS benefit for sales, planning and engineering**

From their Gurten headquarters in Austria, Fill delivers production lines and machinery for processing metal, plastic, and wood type materials, globally. Supported industries include automotive, aerospace, wind energy, sports, and construction. The company recognized the advantages of simulation early on and, in collaboration with an external software provider, presented the first simulation-based system to customers, in 2009.



**YOUR FUTURE**

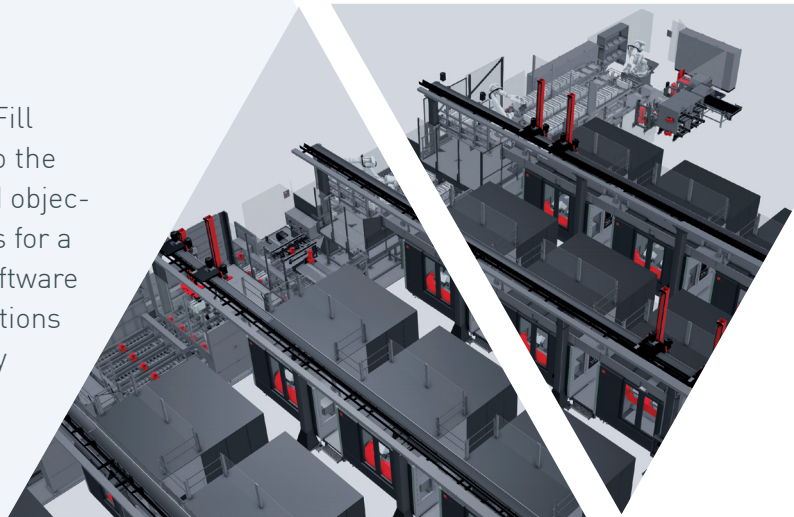
### **Evaluation: Clear set goals**

Based on the initial simulation success, Fill decided to bring simulation expertise into the organization. An evaluation team gathered objectives and criteria and set the requirements for a new simulation process within Fill. The software would support sales with run-time simulations and 3D layout animations that can be easily shared to improve internal and external communications, and help secure orders. Additionally, the new tool would be capable of fine tuning a proposed layout's performance and provide reliable performance metrics on which a good investment decision could be made.

In line with these objectives, the evaluation team started with a list of 69 different simulation tools. Of these only 19 made the cut based on selection criteria that included industrial focus, Excel con-

nectivity, CAD import, and both 2D/3D capabilities. Following a background check on the software companies, the number of potential systems was reduced to just six, with Fill ultimately opting for the 3D solution from the Finnish supplier, VISUAL COMPONENTS.

Crucial to the decision for the Finnish company was the localized support available through DUALIS GmbH IT Solution. The Dresden based software company had many years of simulation experience with VISUAL COMPONENTS and demonstrated to Fill that close cooperation would result in new features and improvements to keep abreast with Fill's expanding business needs. In addition, the software demonstrated a very good price/benefit ratio.



### **Smooth development and implementation of individual components**

During a nine-month implementation phase the project team worked with the first simulation project and developed a component catalogue of standardized equipment models for future Fill projects.



While standard industrial components such as conveyors and robots were available from existing VISUAL COMPONENTS libraries, we needed to add the numerous custom components that make Fill systems unique and most effective in production. First impressions from our customers were very positive.

### 3D simulation enables easy system planning and optimization

At Fill, the 3D simulation is used not just for supporting the sales and marketing processes, but also for machine and line design. The equipment is modelled and configured to optimize performance and detect any processing errors. By catching problems early in the design cycle, Fill is able to significantly reduce costs and development times.

A practical example comes from the woodworking industry. For a major customer, Fill proposed a "speed-filler" line to detect and repair defects in parquet wood planks. The line identifies milling defects

on the wood surface with the aid of image processing, and depending on the surface material type a partial or complete repair is made using viscous fillers. Using an Excel spreadsheet with static cycle times, the initial calculations indicated an output of 500 planks per hour would be achievable for the production line with the speed-filler process.

However, the simulation gave a different result, and indicated a much lower throughput of only 400 planks per hour, could be achieved. Analysis of the simulation, indicated a randomly higher amount of defects seemed to be causing a bottleneck at the repair unit. Simulating an extra repair unit, still did not increase the throughput as required. The project planners then turned to optimizing other processes including the performance specification of the milling unit, until finally an output of 500 planks per hour was achieved, as required by the customer.



"This example shows that a purely static analysis, in which all units operate at the same speed with no dynamic interaction, will not give a realistic performance result" explains Alois Wiesinger. "It was only through the simulation and its realistic modelling of dynamic interactions that we were able to discover, at an early stage, the system weak points, and ultimately meet the requirements to the full satisfaction of everyone involved."

In the meantime, the entire value chain, from sales to automation technology, is accessing the models created by Fill's simulation team. With VISUAL COMPONENTS Premium, the highest configuration level of the simulation platform, which has also been in use since 2015, Fill has developed its own machine library to ensure quick access to basic components.

This enables a consistent step-by-step detailing of the simulation model in the project planning phase, when often, the final processes are not yet been fully refined. Accompanying the libraries, is an in-house simulation summary that is used to make the life cycle of components comprehensible and simplify comparisons between different concepts. All the development was based on know-how imparted by DUALIS through targeted training courses, and demonstrates Fill's innovative drive in the field of 3D factory simulation.

### From 3D Simulation to effective layout planning

The latest example of effective collaboration between Fill and DUALIS is DUALIS's new AREAPLAN layout planning tool. AREAPLAN was born out of an idea from Fill and then developed by DUALIS in close coordination with Fill specialists. Now companies can use AREAPLAN to allocate limited factory floor space for the manufacture of large-scale products much more effectively.



## Facts and figures



Year implemented: 2009



Aim: Simulation-based plant design and optimization, improved sales success rate

3D

Scope of licenses:

1 x Premium, 5 x Professional, 3 x Essentials



Highlights:

Customized component libraries for specific industries (metal casting, machining, woodworking), complete internal know-how build-up to be able to develop components independently

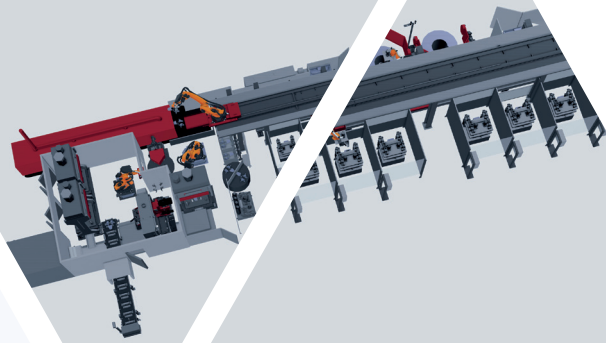


Interfaces: OLP, MS Excel



Applications:

Layout and line planning, visualization, robotics, work cell analysis, sales support, project management, product development



"The first impression to our customers was very positive. Simulation gives us the opportunity, to present machine modules and processes in a way that everyone understands them and this creates a common basis for discussion."

Dipl. Ing. Alois Wiesinger, Head of Engineering, Fill GmbH



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