

Industrial machinery and heavy equipment

Kaspar Schulz

Solid Edge provides recipe for success for one of the world's oldest manufacturers of brewery machinery

Product

Solid Edge

Business challenges

Development of energy- and cost-efficient brewing systems for the global market

New developments like the SchonKoch-System (gentle processing system)

Sustainability through CO₂ reduction

Sophisticated design and aesthetic appearance of microbreweries

Solutions from Siemens PLM Software and partner Solid System Team enable Kaspar Schulz to significantly speed its pipe routing process

A recipe for success

The Kaspar Schulz family business was established in 1677 in the beer city of Bamberg, Germany. It is recognized as one of the oldest manufacturers of brewing machinery in the world. The 10th generation owner, graduate engineer Johannes Schulz-Hess, manages about 125 employees.

The custom production of brew houses and complete systems for all beer types, as well as microbreweries for operation in restaurants, continues to expand. Right now, a new facility is being constructed for building and testing systems that will be delivered throughout the world.

The combination of Kaspar Schulz's brewing tradition and new technologies is proving to be a recipe for success. For example, the company has developed a gentle boiling method for wort, where a masher with a radial agitator helps provide consistent product quality in spite of different raw materials or a compact malt house. With this system, it is now possible

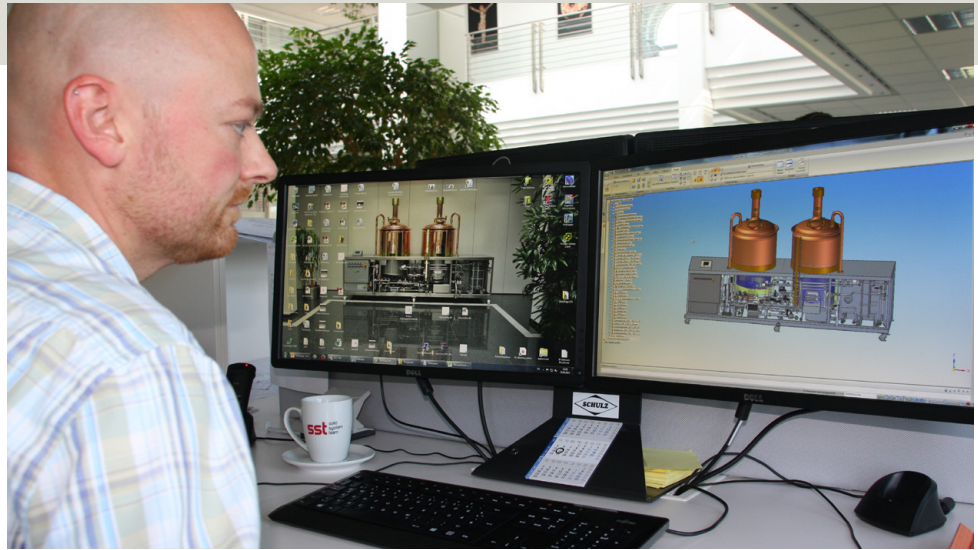


Keys to success

Early migration to 3D design
Integration of project planning, pipe routing and 3D design
Data exchange with ERP system

Results

Delivered outstanding technological product improvements
Sped up the pipe routing process
Eliminated potential production problems during the design process versus downstream
Completed significant steps toward integration of the pipe bending machine and plasma sheet metal cutter
Developed parameterized modular system



to germinate and kiln-dry in one drum in conjunction with the most modern control technology. As a result, microbreweries are able to raise their brand identity and profile in a cost-effective manner. Such solutions are developed in open offices on one floor of the administrative building in a dialog between brewery production engineers and designers.

Enjoying 10 years of success with Solid Edge

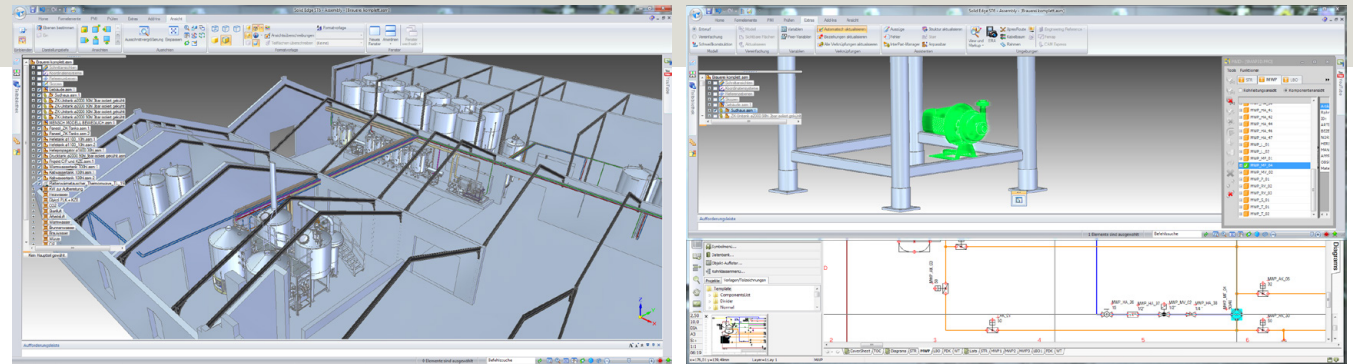
In 2004, product development was shifted to new 3D technology – the 2D/3D computer-aided design (CAD) system Solid Edge® software from product lifecycle management (PLM) specialist Siemens PLM Software.

“Solid Edge convinced us with its convenient module for pipe routing, XpresRoute, outstanding 2D-functionalities and the intuitive user guide,” says Christian Montag, the team leader of design and CAD officer at Kaspar Schulz. “In addition, a module for sheet metal construction was integrated right from the start. We have not regretted our decision!”

Over the years, Solid Edge was installed on additional workstations, as needed. During this time, Siemens PLM Software continuously updated the software, keeping Solid Edge at the leading edge of product development technology.

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Christian Montag
Team Leader of Design and CAD Officer
Kaspar Schulz



“We aim to regularly install the newest version because there are always so many improvements,” says Montag. He became familiar with these improvements at the customer days event sponsored by Solid System Team, a Siemens PLM Software partner. Solid System Team also assists with training programs and support. “They always respond quickly when we have questions,” says Montag.

The Solid System Team also provides two other solutions, Smap3D PDM and Smap3D Plant Design. The latter provides additional convenience in the design, planning and 3D design of pipelines with the piping as well as the piping and instrumentation diagram (P&ID) modules.

Utilizing synchronous technology

One of two teams of designers works together on an individual project that is

dimensioned with the building plans of the client. The architect provides DXF or DWG files that are read and further processed with Solid Edge.

“Data exchange with the architects, import as well as export, works very well,” says Montag. “We mainly request third party data about parts from suppliers in the STEP file format, and we’ve never had any problems processing that data.”

Different components of the plant are developed by individual members of the team. The cylindrical containers are available as parameterized modules in a type of modular system. The variables can be accessed via Excel® spreadsheet software so that, in a short time, new specifications with the required dimensions and capacities are available.

“During design we work closely with production employees who have the practical knowledge. The 3D visualization allows us to avoid a lot of problems that we only noticed during initial assembly.”

Christian Montag
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“That is why we continue to build our models sequentially,” says Montag. “We use the synchronous technology of Solid Edge with its speedy options for direct processing above all for the modification of third-party data.”

All sheet metal parts are defined and developed within the Solid Edge Sheet Metal environment. A material table contains all the parameters for sheet copper or high-grade steel V2A or V4A, in thicknesses of between 2 and 25 millimeters. Using a number of predefined values, the module can be used to calculate all the necessary parameters for sheet metal processing, from floor production to cutting cones to size. The final contour data is then passed on in DXF format to the plasma cutting equipment.

Gradually, a module of the entire plant emerges from the original layout. In the case of a large brewery, there can be as many as 10,000 components in about 600 subassemblies, requiring a total of one gigabyte of memory.

“Steadily increasing module sizes poses a challenge with regard to performance,” says Montag. “But the desired areas can be processed quickly by hiding and showing different areas, with the help of different display options.”

Collision detection or checks for accessibility and easy operation can be performed even faster. For microbrewery plants, achieving a tidy, elegant design and orderly, ergonomic operating options are the top priority. This is largely influenced by the pipework routing and the location of fittings and instruments. In the past, schematic drawings of the pipe routing were given to production: “Already with the 3D pipe routing with XpresRoute, we have made an important stride forward,” says Montag.

Two points are defined within the 3D modules so that the system can automatically propose collision-free paths that can be selected and partially changed. One important objective is to avoid welded connections because every weld seam is a hygienic “failure point” in product lines.

“During design we work closely with production employees who have the practical knowledge,” says Montag. “The 3D visualization allows us to avoid a lot of problems that we might only notice during initial assembly.”

If a pipe meets the requirements for machine bending, its data is saved in the IGES format and imported using the software of the bending machine. Continuous dataflow to production secures the process.

“The integrated solution for pipe routing has made us up to three times faster in comparison to the earlier procedure. In addition, the CAD administrator is happy about the easy learning curve and user-friendliness of the 2D/3D CAD system.”

Christian Montag
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Solutions/Services

Solid Edge
www.siemens.com/solidedge

Customer's primary business

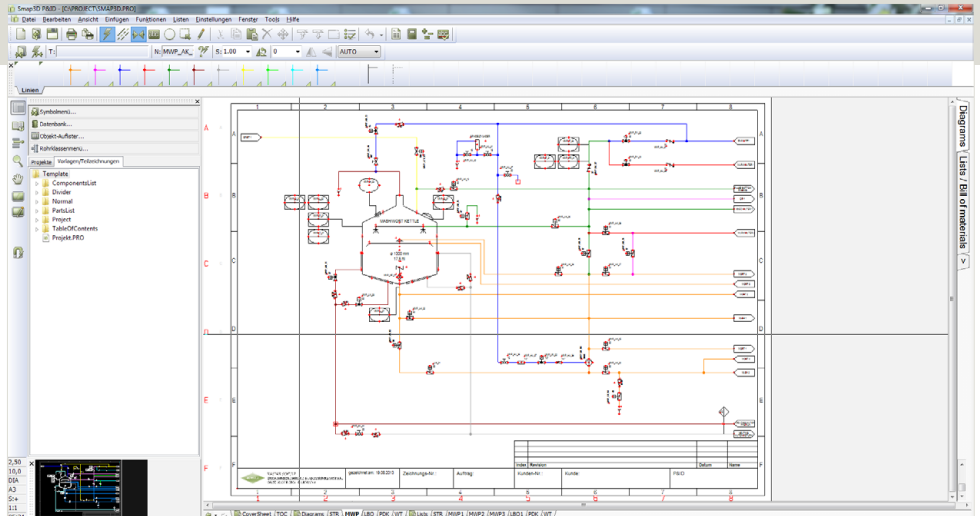
Kaspar Schulz is a 10th-generation family business that produces fully automated brewing facilities, including fermentation and maturation tanks. Kaspar Schulz products are used around the world, and the company also offers a wide spectrum of services.
www.kaspar-schulz.de

Customer location

Bamberg
Germany

Partner

Solid System Team



Speeding up the pipe routing process

With the piping module from Smap3D Plant Design integrated in Solid Edge, the potential for failure is significantly reduced and convenience is increased. The designer is offered a selection from four centrally defined pipe classes with the appropriate fittings that can be placed in the 3D module. Until recently, this took place in accordance with a 2D drawing and an Excel list. Now, with Smap3D P&ID, an additional step toward integration has been taken.

Technologists design the pipeline layout in 2D flow diagrams that can be comfortably created with an extensive icon library. The icons are linked to database elements that the designer then places in the piping module in accordance with a task list. Differences between the P&ID diagram and Excel list are thus a thing of the past.

"The modification expenditures due to errors that are not detected until production has decreased tremendously," says Montag.

In addition, the database elements are linked to article information from the enterprise resource planning (ERP) system. After that has been completed, a design interface allows the user to automatically migrate the components from Smap3D Plant Design. As a result, designers are saved from doing the same work twice in creating parts lists. The Smap3D PartFinder has also been integrated, which is the central search and administration center for standard and frequently used parts.

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