Kaspar Schulz

Smap3D Plant Design brings the recipe for success for one of the oldest manufacturers of brewery equipment

Smap3D Plant Design solution speeds up the piping process

The recipe of success

The family owned company KASPAR SCHULZ was founded in the beer town of Bamberg in 1677 and is said to be the oldest manufacturer of brewery machines in the world. In the 10th generation, the graduate engineer Johannes Schulz-Hess manages around 140 employees. The customer-specific individual production of brewhouses and complete plants for all types of beer as well as microbreweries for operation in restaurants is expanding: A new hall is currently being built to set up and test plants, which will then be delivered all over the world. The combination of traditional brewing with new technologies proves to be a recipe for success.

Among others, this is demonstrated by an energy-saving gentle cooking process for wort, a mash maker with a radial agitator for consistent product quality despite different raw materials, or a compact malting plant. With this plant, germination and kilning in a drum in conjunction with the latest control technology allows continuous operation. Microbreweries gain in more individuality and profile. Such services are created in open offices on one floor of the administration building - in a dialogue between brewing technologists and designers.
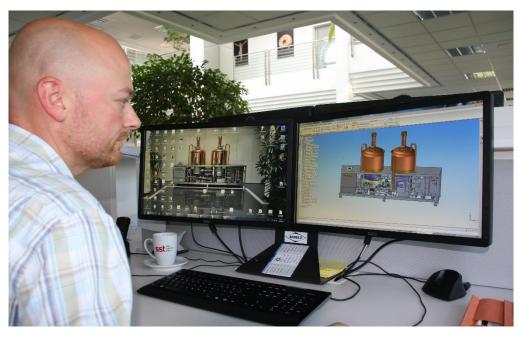
Successful for ten years with 3D design

Already in 2004, product development was switched to the new 3D CAD technology.

„At that time, the CAD system convinced us with a comfortable module for pipeline planning, excellent 2D functionalities and the intuitively understandable Windows operated user guidance", remembers Christian Montag, group leader construction and CAD manager at SCHULZ. „In addition, a module for sheet metal construction was integrated right from the start. We didn't regret that decision!"

During these years, the CAD installation at ten workplaces was regularly modernized. „We regularly install the latest versions because there are always a lot of improvements," says Christian Montag.

The CAD system was expanded with the Smap3D Plant Design piping software. With the Piping and P&ID modules, this brings additional convenience to the design, planning and 3D construction of pipelines.

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Plant construction in large assemblies

One of two teams of designers works together on an individual project that is dimensioned with the building plans of the customer. The architect provides DXF or DWG files for this, which are read into the CAD system and further processed.

„The exchange with the architects, import as well as export, works very well," reports Christian Montag. „We mainly request external data from supplier parts in STEP format, as we have never had any problems with that."
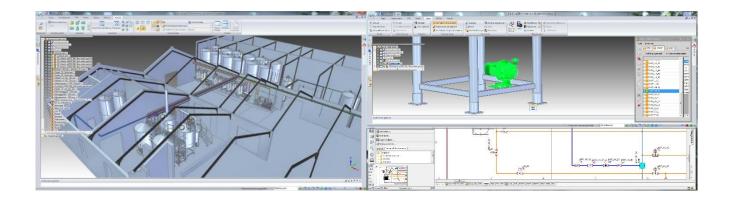
Now the various components of the plant are developed by individual members of the team. The cylindrical containers are available as parametrized assemblies in a kind of modular system.

The variables can be controlled via Excel tables, so that new characteristics with the required dimensions and capacities can be created in a short time.

All sheet metal parts are defined and processed using a special module for sheet metal construction. A material table contains all parameters for copper sheet or stainless steel V2A or V4A, in thicknesses between 2 and 25 millimeters. The module calculates all the necessary parameters for sheet metal processing, from the floor production to the cutting of the cone, based on many predefined values. The final contour data are finally transferred to the plasma cutting system in DXF format.

„We work closely together with manufacturing staff during the construction. This brings the practical knowledge to the table. 3D visualization enables us to avoid many of the problems that we identified earlier during the initial assembly."
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An assembly of the entire system is gradually created on the original floor plan. A large brewery already brings together 10,000 components in around 600 sub-assemblies. That takes up a total of one gigabyte of storage space.

„Constantly larger assemblies challenge us in terms of performance," says Christian Montag. „By hiding and showing with the help of different view configurations, however, the desired areas can be edited quickly."

Collision checks or controls of accessibility and ease of use can be carried out even faster. Especially in the microbrewery plants, a tidy, elegant design and orderly, ergonomic operating options are in the foreground. This is mainly determined by the laying of the pipes with the placement of fittings and instruments.

Pipe planning convenience
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Comfortable pipe planning
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Two points are defined within the 3D assemblies - the system now automatically suggests collision-free paths that can be selected and partially changed. An important goal is to avoid welded connections, because every weld is a hygienic „weak point" in the pipes.

„During the design phase, we work closely together with manufacturing employees who have practical knowledge," says Christian Montag. „With the 3D visualization, we can avoid many of the problems that we identified earlier during the initial assembly."
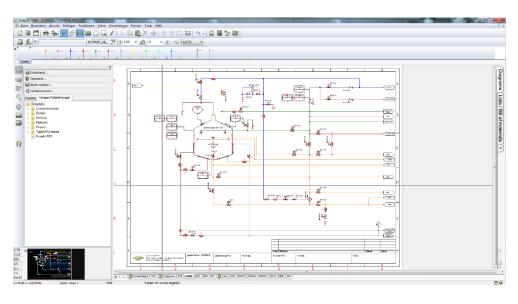
If a pipe meets the requirements for machine bending, it is saved in IGES format and imported using the software of the bending machine. The continuous data flow in the production secures the process.

Integrated solution for P&ID and piping
With the piping module from Smap3D Plant Design, which is fully integrated in the CAD system, the possibility of errors is again significantly reduced and the comfort increased. From four centrally defined pipe classes, the designer gets always offered pipes with the appropriate fittings to choose from, which can be placed in the 3D assembly.

Until recently, this was done using a 2D drawing and an Excel list.

But now with Smap3D P&ID a further integration step has been taken: The design of the pipelines is defined by the technologists in 2D flow diagrams, which are conveniently created with an extensive symbol library. The symbols are linked to database elements, which the designer then installs in the piping module according to a to-do list. Differences between the P&ID scheme and the Excel list are also a thing of the past.

„The effort required to make changes due to errors that get only noticed during production has decreased enormously," says Christian Montag. In addition, the

database elements were linked to article information from the ERP system »ams«.

After completion of the design, an interface enables the components from Smap3D Plant Design to be automatically adopted. This saves the designers duplication when creating the parts list. The Smap3D PartFinder was also integrated, which represents the central search and administration center for standard and repeat parts.

„The integrated solution for pipeline planning has made us up to three times faster than the previous procedure." In addition, the CAD supervisor is still happy about the ease of learning and the user-friendliness.

„Smap3D Plant Design not only impresses with the integrated process chain, but also with its great flexibility when connecting ERP systems."
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