SIEMENS

MEDICAL DEVICES AND PHARMACEUTICALS

Single Use Support

Reducing pharmaceutical fluid and cold chain management design and customization cycles by 25 percent

Products

Solid Edge, Teamcenter

Business challenges

Design and manufacture products and systems on tight deadlines

Comply with stringent medical and technical standards

Reliably manage engineering documents and BOMs

Keys to success

Build digital twin of consumables and equipment

Use Solid Edge for 3D design

Use Teamcenter for PLM

Employ automatic BOM interchange with cloud-based ERP software

Results

Reduced design and customization cycles by 25 percent

Reduced project time by 15 percent by eliminating manual BOM creation

Shortened parts purchasing process by one to two days

Supported 30 percent annual company growth across three global sites

Single Use Support leverages Solid Edge and Teamcenter to reduce project time by 15 percent

Maintaining the proper climate

The cost of cancer treatment and vaccinations is rising exponentially. This is partly due to people living longer and partly due to advances in medicine and pharmaceuticals. Medicines for oncological care and vaccines for novel viruses often cost tens of thousands of euros per daily dose. These valuable substances need to be transported and stored at temperatures well below freezing. The packaging must not break due to uneven freezing or thawing of the substances or an interruption in the cold chain. This would not only destroy valuable materials, but it would endanger the health of patients.

Single Use Support has transformed the handling of valuable pharmaceutical substances. The Austrian company manufactures consumables and systems for filling and dispensing liquid medicines and vaccines, as well as storing and transporting them at temperatures well below freezing. These innovative products reliably bridge the gap between the production and use of sensitive pharmaceutical substances. They ensure these products arrive safely and without any losses, with easy handling at both ends of the transportation chain. Consequently, Single Use Support customers include leading global pharmaceutical companies.

Single Use Support consumables and systems cover the entire fluid and cold chain management for manufacturing sensitive liquid drug substances, ranging from the primary packaging of single-use bags to dispensing systems. (photo courtesy of Single Use Support)

"Using Teamcenter for change management enormously simplifies identifying affected components and systems. This makes it very easy to recognize not only how something is defined, but also why."

Markus Fürhapter
Director of Engineering
Single Use Support

All Single Use Support products are designed and produced in house. The workers use monitors to view the Solid Edge models for reference. (photo courtesy of Peter Kemptner)

Single Use Support uses Solid Edge® software and Teamcenter® software, both part of the Siemens Xcelerator business platform of software, hardware and services, for designing and developing systems and consumables for filling, freezing, storing and transporting sensitive liquids.

Mastering ultra-low temperatures

Starting with the single-use bag (2D bag), a primary packaging material for drug substances during production, Single Use Support covers the entire range of products, systems and accessories. This starts with equipment for the aseptic filling and emptying of single-use bags. Single Use Support's use of Siemens Digital Industries Software's and hardware were crucial to developing its core product. The so-called RoSS® Shell serves as an outer packaging for 2D bags with a capacity of 20 milliliters (ml) to 50 liters (l). With its flat base and metal lid, it facilitates controlled freezing and thawing by contact cooling.

This takes place in the company's RoSS.pFTU series freezing and thawing systems at temperatures as low as -80 Celsius (°C). RoSS. LN2F systems can even freeze cultures for cell and gene therapy applications down to -170 °C. Single Use Support's product range is designed to minimize drug losses and includes systems for the long-term storage and transportation of substances with ultra-low temperature cooling.

"Twenty-five percent shorter design and customization cycles allow us to respond immediately to customers' demands, delivering innovative and precise solutions."

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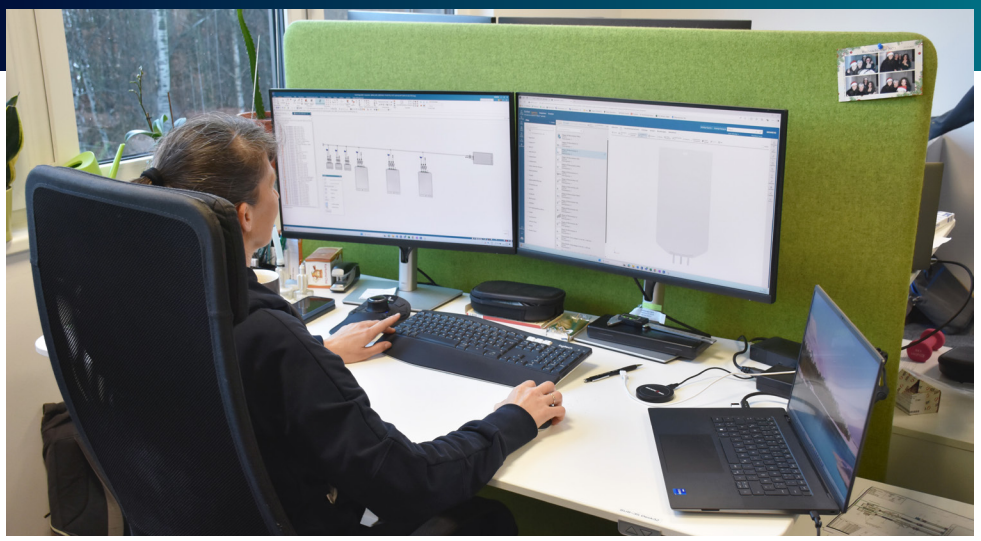

Single Use Support's design engineers use Solid Edge for mechanical design and Teamcenter for product lifecycle management. (photo courtesy of Peter Kemptner)

"Solid Edge has been a game changer for us. Its flexibility and scalability allow us to adapt quickly to industry needs while ensuring our designs are accurate."

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Driving innovation and efficiency

Solid Edge, part of the Siemens Designcenter suite for product design and engineering, plays a pivotal role at Single Use Support in creating precise, scalable designs that meet the demanding requirements of the life sciences and biopharma industry. From machinery to transport racks, applications range from designing single-use assemblies, such as 2D bags and transfer manifolds, to complex equipment or machines for filling and freezing drug substances.

"Solid Edge has been a game changer for us," says Markus Fürhapter, director of engineering at Single Use Support. "Its flexibility and scalability allow us to adapt quickly to industry needs while ensuring our designs are accurate." Since its inception, Single Use Support has embraced Solid Edge, starting with a trial phase and later transitioning to its startup program. Today, the company has expanded to using 17 Solid Edge licenses and is continuously growing its design team to support innovations.

"Solid Edge offers the perfect balance of functionality and usability, allowing us to create innovative solutions efficiently," says Fürhapter. "Its intuitive interface and ability to handle medium-complexity designs have proven invaluable for both seasoned engineers and newcomers."

Full technology and design expertise

The components for the cryogenic systems, including the control equipment, are manufactured by partner companies. The final assembly and programming of the Siemens control systems and the design are carried out entirely in house. Single Use Support has been using Solid Edge since day one. The strong growth led the company to adopt a professional product lifecycle management (PLM) system.

"We intended to create a central database for research and development with the option of automatically transferring bill-of-materials and individual part information to the ERP system," explains Fürhapter. "In addition to the native data from Solid Edge, the system was also meant to manage meta data from the ERP system, data sheets and CAD-neutral formats such as PDF or STEP."

Single Use Support also intended to switch to a workflow-based system with an orderly check-in and checkout of parts and assemblies with predefined release processes. Along with multilevel versioning, this ensures that downstream processes are always based on up-to-date documents. In addition, this was expected to drastically reduce search and coordination processes and improve the traceability of the change history.

Uncommon interface requirements

When Single Use Support was evaluating software, the most important criteria was computer-aided design (CAD) integration, change management, parts list management (manufacturing bill-of-materials) and enterprise resource planning (ERP) integration. “We have a cloud-based ERP system,” Fürhapter points out. “To avoid multiple master data creation and the resulting errors, we demanded a direct connection to this.”

After intensive research, including reference visits to other companies, Single Use Support chose Teamcenter for PLM. “Based on our detailed requirements, Siemens partner ACAM first created a proof of concept,” Fürhapter says. “This was very successful, so we were able to commence implementation immediately afterwards.”

Rapid implementation during ongoing operations

Implementation was accompanied by employee training, also supported by the Siemens solution partner. “With the help of ACAM, we migrated most of the data ourselves,” says Fürhapter. “To better familiarize ourselves with Teamcenter, we started with standard parts, then we worked our way up to complex designs.” Data from existing projects, including assemblies intended for reuse in new systems, was migrated as needed.

The bidirectional interface between the locally installed Teamcenter and the completely cloud-based ERP system was developed in close collaboration with ACAM, the ERP software manufacturer and one of its partners.”We had a strong need for coordination during the concept phase and our requirement specifications had to be modified several times, not least due to the very different design workflows of the consumables and systems,” Fürhapter explains. “In the end, we received a perfectly implemented result in a very short time as a new and unified foundation for the entire scope of our product development work.”

Saving time and avoiding errors

Single Use Support introduced multistage versioning with the following categories: minor changes, minor and major revisions as well as prototype and series releases. Automating the latest documents in native and neutral formats prevents the use of outdated information. At the same time, by retaining the documents in neutral formats, it ensures that all changes remain easily traceable, even in retrospect. “Using Teamcenter for change management enormously simplifies identifying affected components and systems,” says Fürhapter. “This makes it very easy to recognize not only how something is defined, but also why.”

> “With Solid Edge and Teamcenter, we fully digitalized our development and cut project times by up to 15 percent.”

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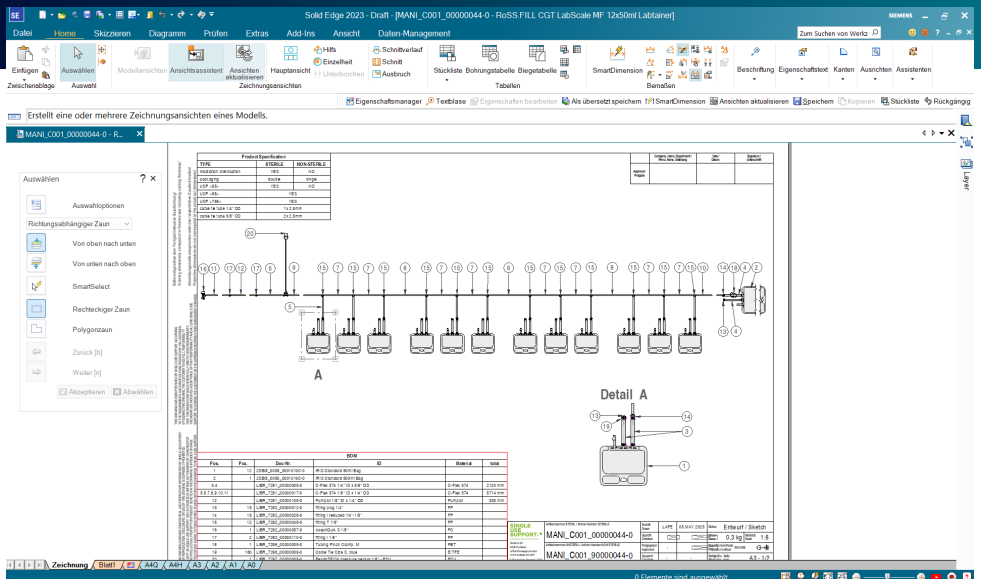
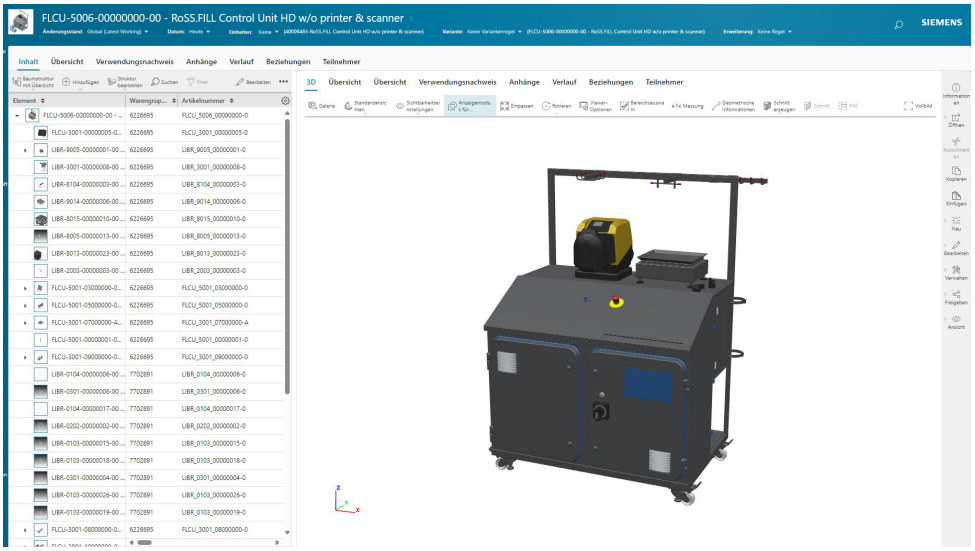


Single Use Support has been using Solid Edge to design the consumables as well as systems for their pharmaceutical logistics solutions since the company was founded.

The benefits of the PLM system implementation are clear. “With Solid Edge and Teamcenter, we fully digitalized our development and cut project times by up to 15 percent,” says Fürhapter. “Twenty-five percent shorter design and customization cycles allow us to respond immediately to customers’ demands, delivering innovative and precise solutions.”

Using Teamcenter as the single source of truth and automating tasks such as deriving parts lists increased design efficiency by up to 15 percent, reduced bill-of-materials (BOM) obsolescence by 70 percent and helped Single Use Support avoid more than 90 percent of BOM errors. With the aid of revisioning, this also eliminated faulty purchasing based on outdated documentation and provided the company’s engineers with a more relaxed working environment and reduced deadline pressure.



As the company’s single source of truth, Teamcenter improved the effectiveness of product development and eliminated faulty purchasing based on outdated documentation.

Solutions/Services

Solid Edge
siemens.com/solidedge

Teamcenter
siemens.com/teamcenter

Customer's primary business

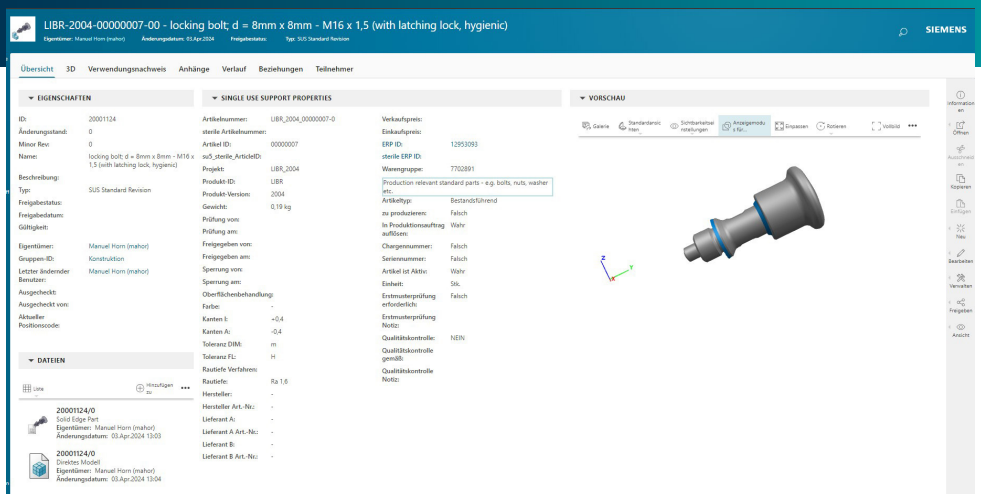
Single Use Support is based in Kufstein, Austria with facilities in Tyrol, Austria and Lexington, Massachusetts, United States. It specializes in developing products and mechatronic systems for the biopharmaceutical industry. With 200 employees worldwide, Single Use Support provides innovative solutions for fluid and cold chain management.
susupport.com

Customer location

Kufstein, Tyrol
Austria

Partner

ACAM Systemautomation
acam.at/en/



Product data is exchanged with the cloud-based ERP software via a bidirectional interface.

Workflow controls also eliminate the need to interpret designs. A design that has been processed and approved in line with the workflow is definitively finished and ready for further processing. This is supported by sending notifications and all the required material to the people responsible for the work. It also eliminates tedious searching and lengthy coordination while simplifying the identification of improvement needs early in functional design revisions based on 3D models, reducing design cycles by up to 25 percent and root-cause analysis time by 15 percent.

The COVID pandemic has shown how important it can be to quickly provide equipment and packaging for the frozen supply of liquid pharmaceuticals. According to Fürhapter, the automated data exchange between the PLM and ERP systems saves considerable time in the prototype and production phase.

"One of the goals of introducing Teamcenter was to save one or two days in the ordering process," says Roland Jenewein, chief technology officer (CTO) of Single Use Support. "All the signs indicate that we are on track to achieving this goal."

Single Use Support plans to expand its use of Solid Edge with add-ons for finite element analysis (FEA) and computational fluid dynamics (CFD), to explore AI-driven design tools, and enhance cross-functional applications, such as quality assurance. The integration of Solid Edge with the company's ERP system is another priority, aiming to eliminate manual processes and reduce errors.

Siemens Digital Industries Software

Americas 1 800 498 5351
Europe 00 800 70002222
Asia-Pacific 001 800 03061910

For additional numbers, click here.

siemens.com/software

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