SIEMENS
Ingenuity for life

Medipack

Convincing design of comprehensive, customer-specific packaging solutions for medical devices

Product

Solid Edge

Business challenges

Regulatory compliance with error-free processes

Customer-specific designs

Time-to-market pressures

Keys to success

Modular design approach

Part families for packages, tools and sealing tool

Built-in data management

Easy creation of freeform surfaces

Results

Rapid development of samples

Shorter project cycles

Last-minute changes before manufacturing enabled by parts families

Easy path to productivity for new employees

With Solid Edge part families, Medipack AG solves demanding packaging tasks for international clients and offers a comprehensive range of packaging services

Growing on 3D design

In the tradition-steeped Plant III of GF Georg Fischer in Schaffhausen, Switzerland, today's Mühlental commercial center, Medipack AG (Medipack) has become one of the world's leading system suppliers of medical packaging. Established in 1977, the second-generation family business headed by Reto Artusi has grown to 150 employees, meeting the strict quality requirements of ISO 9001:2008 and ISO13485:2003 with clean room production and serving the global market as one of the few manufacturers in this branch. Since 2002, the comprehensive business model has been based in its entire production depth on digital 3D models, which are developed using Solid Edge® software, the 3D/2D computer-aided design (CAD) system from Siemens Digital Industries Software.

Digital development platform

In the packaging of medical products such as catheters, hip and knee replacements, metal rails and other implanted devices, client-specific solutions are always expected to meet high aesthetic demands, along with those for stability and sterility. In order to meet the steadily increasing requirements with respect to purity, product conditions and traceability for the raw material, Medipack also produces the polyethylene terephthalate glycol (PETG) foils used for the thermoforming in house. "Each year we receive several hundred inquiries about packaging," reports Georg Oesterreicher,

head of engineering and design at Medipack. "The interested parties send us 3D models of their products and receive an initial proposal for a customer-specific solution from us free of charge."

The original product models are always imported as STEP files using Solid Edge: "This works from any third-party system and is completely sufficient," says Stefan Hässig, design engineer at Medipack, "because the client models must never be changed." New packages are developed from them, often double-sterile packaging consisting of inside and outside blisters for use directly in the

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Cleanroom Class ISO 7

operating room. Blisters must offer support and stability, often accommodate several sizes and components and meet the requirements of plastics engineering with respect to radii and draft angles.

"With material thicknesses of tenths of millimeters, the thin wall command of Solid Edge is critical for thermoforming areas," says Oesterreicher. "This function was one reason why we decided on Solid Edge in 2002." The integrated functions of the 3D system allow users to appropriately visualize the finished, simplified package design. Thanks to 3D PDF, viewers can turn and rotate the model without using special equipment and examine it from all sides.

Dependencies of the family of parts
Once the client accepts Medipack's proposal, the package designers work with the client on the details and refine the proposal for a solution. Proceeding from the 3D package model, the engineers create the tooling for the package using Solid Edge. The tooling for the first samples is manufactured in a rapid prototyping method. "Around here every Tuesday is samples day," says Oesterreicher." On this day we produce a small batch of samples for all of the new projects, on the same machine we will later use for series production."
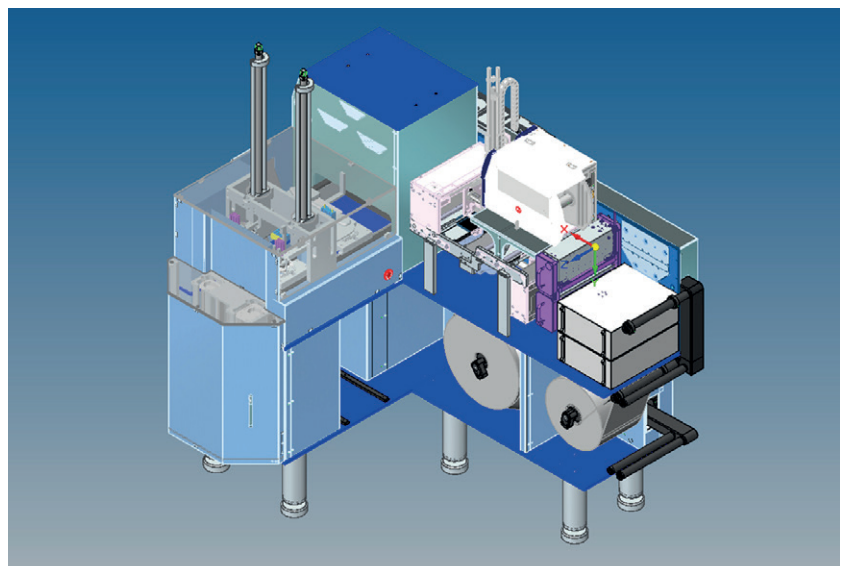
With the help of the shared samples, tool design begins for the series. All tool components remain linked to the package model – so that each late change is automatically reflected in all components. "We use the functions of the family of parts from Solid Edge to control all components," says Oesterreicher. "All components are controlled by it. That is the second important advantage of Solid Edge for us."
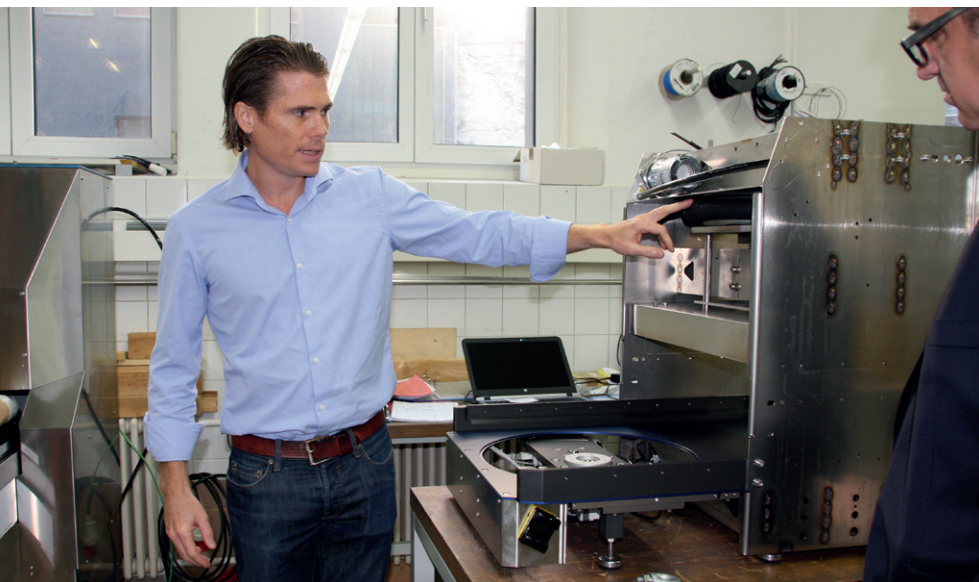
For design and client part models, freeform surfaces are also among Medipack's CAD system requirements. "Whenever we had to define freeform surfaces, it always worked

great," says Hässig. "In addition, we always got very good support when we needed it." After release to manufacturing the Solid Edge models are seamlessly loaded into the computer-aided manufacturing (CAM) system by the computer numerical control (CNC) programmers. With three cutting-edge CNC machining centers, the company's own tool making department produces the forms from non-deforming aluminum in high-speed machining with up to 40,000 revolutions per minute. Depending on size, the forms are machined for up to 20 hours, frequently on the night shift when machines are unattended. The air holes are

then drilled manually. "As a rule, the process from order to production startup takes five weeks," says Oesterreicher. "Due to the perfect collaboration using a uniform database and the enormous production depth, we are able to reduce the time from the initial sample to the production launch to five days in case of emergencies."

In-house mechanical engineering
The blister packages are frequently sealed with sealing lids made of Tyvek®. The tools used for this purpose are developed as counterparts that reference the package model. Since the introduction of Solid Edge the design of medical heat sealing machines is also among the tasks of the total system and the designers. Today eight employees handle all design tasks from packaging to mechanical engineering. As a simultaneous service provider for contract packaging, the company is very familiar with the requirements of universal packaging machines. With the comprehensive design functions including the leading sheet metal module and weld point definition tools, Solid Edge supports efficient implementation. "The sheet metal derivations correspond to the design process and are ideally automated, including the simulation for collision avoidance," says Oesterreicher. With the help of the DXI data output, the sheet metal parts are laser cut, bent and welded. "The sheet metal module is a blessing," adds Hässig.

Milled parts are saved as a part file and loaded into the CAM system – 99 percent of all components are produced on the in-house shop floor. Around 40 different machine types with 100 to 300 model components impose substantial demands on modularization and data management, which can be handled with the integrated functions of Solid Edge. "The handling of the modules and sub-modules of the machines is fast and transparent," confirms Oesterreicher. Using the largest heat sealing machine with a 700 by 500 millimeter work surface, Medipack recently handled a complex client project for sealing using shielding gas with subsequent printing.

Solutions/Services

Solid Edge
solidedge.siemens.com

Customer's primary business

With around 150 employees, Medipack offers total solutions for packaging in the medical industry. They range from design of the blisters and tool making along with clean room production and sealing technology to comprehensive services in packaging.
www.medipack.ch

Customer location

Schaffhausen
Switzerland

Solution Provider Partner

Quadrix AG
www.quadrix.ch

One-stop service

Medipack offers its clients the entire process: the packaging, the sealing tool and the machine – shouldering the entire responsibility for the client. "We create the entire system in every individual step with Solid Edge," says Oesterreicher. "The system supports us in all respects. The high user friendliness of Solid Edge is not only reflected in efficient workflows; it also promotes the growth of the company. New employees become acquainted with the system with the help of sample parts and tutorials. Our two apprentices have also become productive in a hurry."

Distinguished Siemens partner Quadrix also plays a significant role. "Good consultation in a very specific branch and long years of personal contact with the support staff improve cooperation," says Oesterreicher.