

New standards: Swiss Medtech uses 3D laser for precise plastic labelling

"We are fast, flexible, innovative and we deliver Swiss quality," is how Stefan Okle summarises the company philosophy of Samaplast AG. Okle is CEO of the company, which is based in St Margrethen, Switzerland. Here in the canton of St Gallen, Samaplast AG manufactures medical products and implants made of plastic as well as medical devices under clean room conditions. "We cover all process stages ourselves, from the initial idea to 3D-printed prototypes to the sterile packaged product. We are fast and flexible, and this is only possible thanks to our high level of vertical integration," explains Okle, who has been with the company for almost 30 years. Samaplast AG started producing its first injection-moulded prototypes seven years ago. "We have seen that it helps our customers if they can test genuine material on components as quickly as possible. This is where the idea for rapid manufacturing came from," says Okle. "We use it to print patient-specific implants such as cranial plates in batch size one, TÜV-tested in a clean room."



Samaplast AG

www.samaplast.ch

Samaplast AG has been manufacturing products for the medical and technical industries for more than 60 years. The company supports its customers from the initial idea right through to the sterile packaged medical device and implant or the finished technical assembly. Customers in the medical sector primarily come from Switzerland and Europe. Among other things, the company produces meniscus and spinal prostheses, port and heart catheters and components for hearing implants for them. All of this is delivered sterile and packaged in a plastic injection moulding process under the most stringent clean room conditions. To achieve this, Samaplast AG relies on a high degree of vertical integration, the technical expertise of its 95 employees and a high level of investment.

INDUSTRY
Medical
technology

NUMBER OF EMPLOYEES
95

LOCATION
St Margrethen
(Switzerland)

TRUMPF PRODUCTS

- TruMark Station 5000 with TruMark 6030
- TruTops Mark 3D and VisionLine

APPLICATIONS

- 3D marking of medical devices and plastic implants under clean room conditions

Challenges

The high level of vertical integration is a decisive competitive advantage for Samaplast AG. But at the same time, this means that the Swiss have to process an enormous variety of plastics in different colours. These include thermoplastics such as PEEK, PPSU, TPE, POM and absorbable materials. The parts are very

diverse - everything is included, from flat to complex 3D shapes. For example, hip prostheses made of PPSU, which do not remain in the body but are used during the operation to test the size of the final implant.

Samaplast AG mainly manufactures small production runs. "We're usually talking about one to several thousand items," says Okle, adding, "but we also produce large series in the million item range." Most of them are produced in a clean room. The requirements in medical technology are high. It's a challenging environment. "But it's exciting!", says Okle. Here, Samaplast AG can rely on the concentrated expertise of its 95 employees. Stefan Schär is one of these. As Head of Finishing and Logistics, he is responsible for the laser labelling of medical products and implants, among other things. In addition to serial numbers, Schär and his team apply matrix and UDI codes. The company has been using Vektormark lasers from TRUMPF for 20 years. The lasers work reliably, but products with round shapes cannot be labelled without distorting the lettering.

When Christopher Hoyle, Product Manager Software at TRUMPF Switzerland, asked Okle and Schär in 2019 whether they would like to test the TruMark 6030 with the TruTops Mark 3D software as a development partner, he was met with open arms. Together, they are daring to take the leap into the third dimension of laser marking.



"With TruTops Mark 3D, we can mark intricate component shapes quickly and effortlessly. The lettering is meticulously applied, even on spherical surfaces, without any distortion."

STEFAN SCHÄR
HEAD OF FINISHING AND LOGISTICS AT
SAMAPLAST AG



Solutions

A TruMark Station 5000 equipped with the TruMark 6030 marking laser, the TruTops Mark 3D labelling software and the VisionLine image processing system will soon be moving into production in St Margrethen. Ready to be put through its paces by the Samaplast team. Okle recalls: "We were able to install the device without any time pressure and then run tests independently of production, but also manufacture technical parts. The chance to contribute to the further development of the system in this way was a great opportunity for us."

What he expects from the laser solution is clear: optimum legibility and abrasion resistance. Both are top priorities for the customers of Samaplast AG. Even repeated steam sterilisation, known as autoclaving, must not damage the labels. The TruMark 6030 seems to be the perfect solution. The system has a decisive advantage: thanks to its 3D functionality, it also labels workpieces with complex shapes without optical distortion of the marking.

Development partnerships with customers such as Samaplast AG are also important for TRUMPF software developers: "We need a direct link to practical applications in order to optimise our software to meet the needs of the medtech industry. Samaplast AG was an ideal and challenging partner due to the variety of complex parts and the high demands on operability and efficiency. Direct feedback flowed

straight into the continued development of our software and the collaboration proved to be extremely valuable."

Implementation

"The TruMark 6030 was a real quantum leap for us in terms of quality," says Stefan Schär. "We can use it to label implants with difficult shapes such as hip joint balls quickly and easily. We load the STEP files of the workpiece into the TruTops Mark 3D labelling software, position the labelling and then we are ready for the first marking."

In most cases, additional equipment is still required and the position of the workpiece, equipment and laser must be measured. Thanks to VisionLine, this step is now no longer necessary in the case of plastic positioning aids for implants. "We label the parts completely without additional equipment. This is an enormous advantage for us," emphasises Schär. "We simply place the part on the processing table and the labelling process can start in a few simple steps. This saves us a lot of time and money," explains Schär.

The TruTops Mark 3D parameter library also offers a major advantage. "For example, if I repeatedly have a component made of PEEK, I can access the library and load the appropriate parameters. This gives me a basis. It means that we can optimise the process more quickly. This helps us to handle the large variety of materials," says Schär.

The extra laser power also speeds up the process. The result: reduced production times. "Depending on the component, we are three to four times faster than before," emphasises Schär. Samaplast AG now marks the handle of a surgical drill in 30 seconds – it used to take them more than a minute.



Outlook

This pleases Okle, Schär and Hoyle in equal measure. In general, they are very positive about their development partnership. "The collaboration with Samaplast AG was very enlightening for TRUMPF," says Christopher Hoyle from TRUMPF. "The company has a clear focus on innovation and likes to think unconventionally. Of course, they expect the same from their partners, by which I mean us. They have really challenged us with demanding marking applications and their high demands on the software. Thanks to the valuable input, we have been able to develop these further." For Stefan Okle, the advantages are also plain to see: "We have benefited from the close collaboration with TRUMPF for 20

years. Thanks to the partnership, we have a direct line to the developers and can provide them with important practical information. And we all benefit from this."

He plans to stick to this model in the future – and already has new ideas. His vision: to mark all parts completely without additional equipment in the future. Until now, Samaplast has built these itself according to the poka-yoke principle. They have to be extremely precise and are therefore expensive and time-consuming to manufacture. Equipping the systems also takes time, as each workpiece must first be fixed to the equipment.

"Simply place the part on the processing table, the AI simply recognises even highly complex 3D geometries, compares it with the 3D file, defines the labelling and the parameters and starts the marking process automatically – that would be our dream for the future," says Okle. Perhaps a starting point for further development co-operation? He has already found the right partner in TRUMPF.

Date: 26/03/2024

