

New standards: Swiss medtech company refines plastic markings using a 3D laser

"We are fast, flexible, innovative, and deliver Swiss quality," states Stefan Okle explaining the company philosophy of Samaplast AG. Stefan Okle is the CEO of the company based in St. Margrethen, Switzerland. In the canton of St. Gallen, Samaplast AG manufactures plastic medical products and implants, as well as medical equipment in cleanroom conditions. "We cover all of the process steps, from the initial idea, through to the 3D-printed prototypes, and sterile packaged product. We are able to operate quickly and flexibly, thanks to our vertical range of manufacture," explains Okle who has worked for the company for nearly 30 years. Samaplast AG started working on the first injection-molded prototypes seven years ago. "We realized that it helped our customers if they were able to test the original material on components as quickly as possible. This is how we developed the idea of rapid manufacturing," explains Okle. "This enables us to print single patient-specific implants, such as plates for the skull, that are TÜV-tested in the cleanroom."



Samaplast AG

www.samaplast.ch

Samaplast AG has been manufacturing products for the medical sector and technical industry for more than 60 years. The company guides customers through the process from the initial idea through to the sterile packaged medical product and implant, or complete technical assembly. The customers from the medical sector are mainly from Switzerland and Europe. Amongst other things, the company manufactures meniscus and vertebral prostheses, port and cardiac catheters, and parts for cochlear implants. Everything is made of injection-molded plastic under cleanroom conditions, and is delivered sterile in the final packaging. To achieve this, Samaplast AG relies on a high vertical range of manufacturing, the technical expertise of its 95 employees, and a high degree of investment.

INDUSTRY	NUMBER OF EMPLOYEES	SITE
Medical technology	95	St. Margrethen (Switzerland)

TRUMPF PRODUCTS	APPLICATIONS
■ TruMark Station 5000 with TruMark 6030, ■ TruTops Mark 3D, and VisionLine	■ 3D marking of plastic medical products and implants in cleanroom conditions

Challenges

The high vertical range of manufacturing offers Samaplast AG a decisive competitive advantage. At the

same time, this does mean that the Swiss-based company has to process an enormous range of plastics in different colors. This includes thermoplastics such as PEEK, PPSU, TPE, POM, and other absorbable materials. The range of parts is very versatile and includes flat through to complex 3D shapes. Hip ball joints made of PPSU, for example, that do not remain in the body but are used during the operation to test the final size of the implant.

Samaplast AG particularly manufactures small batches. "Generally, this ranges from a single unit to several thousand," states Okle adding, "although we also produce large batches comprising millions of units." The majority of parts are produced in cleanroom conditions. The requirements of the medical technology sector are high. It is a challenging environment. "But it is exciting!" states Okle. Samaplast AG can rely on the combined expertise of its 95 employees. Stefan Schär is one of these employees. As the Head of Finishing and Logistics, he is responsible for the laser marking of medical products and implants amongst other things. In addition to serial numbers, Schär and his team add matrix and UDI codes. The company has been using the Vector mark laser from TRUMPF for this process for 20 years. The lasers work reliably, however products with round shapes cannot be marked with it without distorting the marking.

When Christopher Hoyle, the Software Product Manager at TRUMPF Switzerland, approached Okle and Schär in 2019 to ask if they would be interested in becoming development partners to test the TruMark 6030 with the TruTops Mark 3D software, they welcomed him with open arms. Together they are taking the plunge into 3D laser marking.



"With TruTops Mark 3D we can easily and quickly mark difficult component shapes. The writing can even be clearly added to a sphere with no distortion."

STEFAN SCHÄR

HEAD OF FINISHING AND LOGISTICS,
SAMAPLAST AG



Solutions

The TruMark Station 5000 equipped with the TruMark 6030 marking laser, the TruTops Mark 3D marking software, and VisionLine image processing system is quickly installed in the production department in St. Margrethen. Ready to be tested to its core by the Samaplast team. Okle recalls: "We were able to install the device without any time pressure and then conduct tests independently of the production process, as well as using it to produce technical parts. It was a great opportunity for us to be involved in the further development of the system."

A clear expectation of the laser solution was to achieve optimum readability and abrasion resistance. Both of these are of the utmost importance at Samaplast AG. Even repeated steam sterilization (autoclaving) must not have an impact on the markings. The TruMark 6030 seems to be the perfect solution. This is because the system offers a decisive advantage: Thanks to its 3D function, it can also mark workpieces with complex shapes without distorting the marking.

Development partnerships with customers such as Samaplast AG are also important for TRUMPF

software developers: "To ensure our software is optimally adjusted to the requirements of the medtech sector, we need a direct link to practical applications. Due to the wide range of complex parts and high requirements regarding functionality and efficiency, Samaplast AG was a perfect partner to challenge us. The direct feedback was immediately implemented in the further development of our software and the collaboration was extremely valuable."

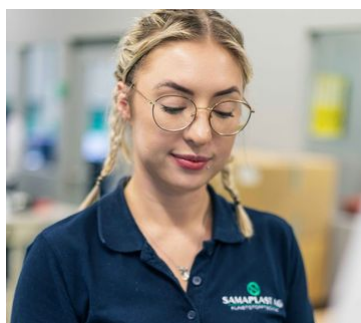
Implementation

"The TruMark 6030 was a real quantum leap in terms of quality," states Stefan Schär. "Especially implants with difficult shapes, such as hip ball joints, can now be marked easily and quickly. We load the STEP files for the workpiece into the TruTops Mark 3D marking software, position the marking, and then we are already ready to complete the first marking."

Usually, fixtures are required, and the position of the workpiece, device, and laser have to be remeasured. Thanks to VisionLine, this step is no longer required for plastic positioning aids for implants. "We mark the parts without any fixtures. This provides us with enormous advantages," adds Schär. "We simply place the part on the work table and the marking process can be started in just a few steps. This saves us a lot of time and money," explains Schär.

The TruTops Mark 3D parameter library is also a great advantage. "If I am repeatedly processing a component made of PEEK, for example, then I can access the library and load the relevant parameters. This gives me a basis to work with. This speeds up the optimum process. This helps us to process the large variety of materials," explains Schär.

The added laser power also speeds up the process. The overall result is that the production time is reduced. "Depending on the component, we are now three to four times faster than before," emphasizes Schär. Samaplast AG can now mark the handle of a surgical drill in 30 seconds, a process that used to take more than one minute.



Outlook

Okle, Schär, and Hoyle are equally delighted about this. Overall, the development partnership has been an altogether positive experience. "The collaboration with Samaplast AG was very insightful for TRUMPF," states Christopher Hoyle from TRUMPF. "The company clearly focuses on innovations and is happy to think outside the box. Of course, they expect the same from their partners, i.e. us. They really

challenged us with advanced marking applications and their high software requirements. Thanks to their valuable input, we were able to develop these further." The advantages are clear to Stefan Okle as well: "We have benefited from our close collaboration with TRUMPF for 20 years. The partnership provides us with a direct link to the developers and we can feedback important information based on our practical experience. Everyone benefits."

He hopes that this approach will continue in future and already has some new ideas. His vision for the future is to mark all of the parts without any fixtures. To-date, Samaplast has developed these in-house based on the Poka-Yoke principle. They must be extremely accurate and are therefore very expensive and time-consuming to manufacture. Even loading the system takes time as each workpiece has to be fixed to the device first.

"Our dream for the future would be to simply place the part on the work table, AI would easily recognize the highly complex 3D geometries, compare them to the 3D file, define the marking and parameters, and automatically start the marking process," explains Okle. Maybe this could be a starting point for another development collaboration? He has already found the right partner to work with – TRUMPF.

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