MED-EL Elektromedizinische Geräte Gesellschaft m.b.H.

www.medel.com

When Ingeborg and Erwin Hochmair start developing the first cochlear implants at the Vienna University of Technology in 1975, they are laying the foundation for their future company MED-EL. They hire the first employees at the Innsbruck site in 1990. Today, 2,500 people from 80 nations in 30 branches and over 140 countries work for the family-owned company headed by Ingeborg Hochmair. MED-EL offers a broad portfolio of implantable and non-implantable hearing systems. Research and development continue to be of great importance to the innovative company. The focus is always on the individual - and the goal of improving quality of life through the joy of hearing. Customers include clinics, doctors as well as audiologists who accompany patients on their journey.

INDUSTRY
Medical technology

NUMBER OF EMPLOYEES
2,500

SITE
Innsbruck (Austria)

TRUMPF PRODUCTS

- TruMark Station 5000
- TruMark 3130

APPLICATIONS

- Laser marking
- Laser cutting

Challenges

People are different, and so are their ears. Accordingly, cochlear implants have to be individual, as Dietmar Köll explains: "We have a dynamic style of working and try to incorporate customer feedback into our products. That is why we rely on a very broad portfolio with a modular structure. This allows us to find the optimal solution for different hearing situations."

Another challenge: The components are getting smaller and smaller. At the same time, the requirements for traceability and documentation of products and manufacturing processes are increasing. This means that more and more markings have to be applied - and they have to be legible and durable despite the small space. Köll emphasizes: "Patients wear our products in and on their bodies, so they have to be as small as possible, particularly resistant and stable." For production, this means small quantities and individualized components. This requires flexible machines that meet the high standards in medical technology.

Another area of focus for MED-EL is the digitalization of products. “The ability to control my implant using an app on my smartphone is standard practice these days. If you want to remain competitive, you have to keep up with this trend," says Köll.

"We are very experimental and like try out a lot of things. In addition to marking with the lasers, we also do cutting tests on a wide variety of materials."

CHRISTOPH FANKHAUSER
DEPUTY GROUP LEADER, MANUFACTURING EXTERNAL DEVICES AT MED-EL

Solutions

The marking laser - initially a TRUMPF Vectormark VMC4 - has been providing the necessary flexibility for marking tasks at MED-EL since 2004. Previously, external service providers took over the marking of the parts. Over the long-term, this process was too slow and not agile enough. Christoph Fankhauser, Deputy Group Leader, Manufacturing External Devices at MED-EL, explains: "Due to legal requirements, we have to adapt the markings again and again." Fluctuations in material quality also often require quick countermeasures with the laser so that the markings are still easily legible. "When we have to clarify this with a supplier first, we lose too much time." Laser marking of the components is too important for that. In the form of the first TruMark Station 5000, the company brings another system for this central production step in-house in 2010, taking into account the importance and high quality of marking. "We mainly apply serial numbers and machine-readable UDI codes to metal and plastic parts. In addition, symbols such as arrows and notes that simplify handling for users," says Fankhauser.

Since many of the markings are visible on the final product, MED-EL places great importance on uniform font gradients. A high contrast is crucial for this because it ensures good readability. "And, of course, the markings must be reproducible," Fankhauser emphasizes. "The TruMark laser meets these requirements - even on the tiniest components."

Implementation

Currently, MED-EL has a total of three TruMark Stations 5000 in the production area - the systems are used to mark implant parts as well as external system components and accessories. All marking stations work with TruMark Series 3000 lasers. "In the beginning we used a green laser, but now we rely on infrared light with a wavelength of 1064 nanometers because it can be used very flexibly," says Fankhauser.

MED-EL uses the marking lasers to mark plastic components as well as the metal housings of implants. These are made of titanium; some parts are also made of platinum-iridium. The greatest challenge, however, is the labeling of the plastic parts. "We simply have an enormous variety of products, with more than 1,000 different items that we provide with individual product codes and serial numbers," Fankhauser explains. In addition, given the large quantity of different components that we purchase from suppliers, there may be variations in the material quality of individual batches. The production team has to constantly adjust the laser parameters to this. "At the same time, we naturally have very little space on the components and nevertheless have to ensure that the markings are machine-readable. That's not always easy." But with the combination of concentrated expertise and the precise TruMark marking lasers as tools, the dedicated team overcomes even this challenge.

In series production, MED-EL also uses TruMark lasers for depaneling circuit boards. "We are very experimental and like to try out many things," says Fankhauser. "For example, we use the lasers to mark prototypes and, together with the development department, perform cutting and marking tests on a wide variety of materials." For his colleague Dietmar Köll, this spirit defines MED-EL: "Even after all these years, the systems have not become simply routine. We are constantly working on new developments and have the ability to set things in motion and implement changes."

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Forecast

In MED-EL's implant production, the TruMark 6030 is poised to take over part marking in the future. "The laser provides us with built-in laser power control. For us as a manufacturer of medical products, this is of course very exciting," says Dietmar Köll. The power is always automatically adjusted and remains stable. It also means there is no variance between lasers. Köll emphasizes: "We can document the laser's performance stability and thus meet the statutory requirements for logging and documentation." In addition, TRUMPF now also provides support for IQ/OQ certifications to facilitate compliance with statutory requirements. For Köll, there is therefore no question that the choice will once again be a TRUMPF laser: "Reliable machines are very important for our production. And we need a partner who can provide us with support when we want to test something new, have technical questions, or if there is a problem with the system. With TRUMPF, the whole package is simply right for us."

Find out more about our products

TruMark Station 5000

Anyone looking for a compact and flexible laser marking system will find the TruMark Station to be the perfect multipurpose machine. The machine can be used as a standing or sitting station, can be integrated into a flow line, and can be supplemented with options such as a rotary axis or image processing software.

Zum Produkt

TruMark 3330

With the TruMark 3330 marking laser, users are ideally equipped for processing a wide variety of materials. The laser emits ultraviolet radiation. This also enables reliable processing of polymers, or metals such as copper and aluminum. The excellent beam quality and high pulse-to-pulse stability ensure optimal marking results.

Zum Produkt

TruMark 6030

The TruMark 6030 marking laser is a multifunctional tool that emits infrared radiation. It is especially well-suited for processing many metals, as well as plastics that contain additives. These ensure that infrared laser radiation is absorbed particularly well. The laser marking system impresses users with its consistently high reproducible marking quality and provides the option of marking components with free-form 3D geometries.

Zum Produkt

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