

PRESS RELEASE

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From raw material to packaging – experience manufacturing in medical technology live

Many individual steps are required to turn a piece of metal into a packaged, complex tool in medical technology. These are essential for the final product, however small and inconspicuous they may seem. How complex and exciting this process is will not only be shown at MedtecLIVE with T4M, but also made tangible. "There will be a special area where the entire production line from raw material to packaging will be set up. This will highlight the networking within production and the importance of each single step in the entire value chain," explains Christopher Boss, Head of MedtecLIVE with T4M and Executive Director Exhibitions at NürnbergMesse GmbH. For most products in medical technology, manufacturing takes place in many different production steps, which are carried out by the competences of different companies. The production line at MedtecLIVE with T4M shows this process in an exemplary, with the support of well-known manufacturing companies.

Production step 1: The material

Once the conception and planning of a product for medical technology is complete, the starting point is the raw material. Forécreu, a leading global manufacturer of cannulated round rods made of stainless steel, special steel and titanium, which are used, for example, for the production of screws, nails, drills or surgical milling cutters, is the starting point. The production line shows how the raw material is machined and processed with cannulation already in place. "Cannulation is a very complex but essential process to use the tools in a way that you can bring them into the exact position and application via the guide wires," explains Markus Naumann, Area Sales Manager at Forécreu.

Production step 2: The component

The production steps are coordinated and proceed in the same way as for any other turned part: "The prepared material arrives at our plant. Based on a drawing of the desired component, the time per piece is calculated in advance and then the turned part is programmed on the CNC machine. In the end, the 100 per cent finished component is produced in complex individual steps," summarizes Sascha

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Gersmann, Marketing Manager at Citizen Machinery Europe GmbH. The production of a turned part by state-of-the-art Citizen machines is efficient and fast. The LFV technology (Low Frequency Vibration Cutting) developed by Citizen optimises the turning of the component through defined chip breaking, avoids built-up edges, protects the tool, and can be used with almost all metals as well as plastics.

Production step 3: Application of plastics

Once the metal part has been manufactured, the next step is the application of plastics, for example to provide the part with a handle. The company Gindele GmbH, a specialist in mould making and plastic injection moulding, will be demonstrating this manufacturing step on the production line at MedtecLIVE with T4M and will be using injection moulding technology for this: "We overmould the component. For this purpose, the insert is in this case manually placed in a negative mould, which is filled with plastic afterwards," explains Matthias Gindele, Managing Director of Gindele GmbH. The standard process is part of a large part of the production lines in medical technology and is therefore an essential part of the presentation.

Production step 4: Cleaning

In order to remove impurities from production processes, but also to enable further processing, it is important that the resulting product is cleaned again and again. Several cleaning steps such as degreasing, pre-cleaning and intermediate and final cleaning can be applied. For this purpose, KKS Ultraschall AG, the only company with expertise in outsourcing and plant engineering for ultrasound-assisted cleaning as well as surface finishing, uses an ultrasound-assisted process technology. By using an ultrasound in combination with aqueous media, the highest degrees of cleanliness are achieved within relatively short cleaning times. A high degree of cleanliness is achieved even with complexly shaped and filigree components with structured, porous surfaces as well as the smallest grooves and bores. Due to the automation capability and increased productivity, cleaning can be optimised to a high degree and the product is ready for the next production step.

Production step 5: Marking by the laser

Laser marking is the next production step. Why is this important? It protects the product, the user, and the patients. Because the product must be clearly marked, for example with a UDI code (Unique Device Identification) or an expiry date. "One advantage of marking with FOBA is that it is possible to mark without costly part

fixtures. Our automated marking function MOSAIC recognises the position of the item and aligns the marking accordingly", explains Christian Söhner, Global Vertical Manager Medical at FOBA Laser Marking + Engraving. For FOBA, internationally leading manufacturer and supplier of innovative precision systems for marking and engraving with lasers, Söhner has been a member of the trade fair advisory board for many years and was significantly involved in the idea and implementation of the production line. "Since marking takes place at the end of the process, freedom from errors and marking quality are enormously important for avoiding rejects. The camera integrated in the marking head helps with this," adds Söhner. This development also shortens the entire production step and provides more flexibility. The laser process takes just two to four seconds, depending on the application.

Production step 6: Passivation and final cleaning

Before the finished product can be packaged, the previously laser-marked surface must be passivated and finally cleaned. Passivation protects the base material from corrosive destruction (passive layer). After passivation, the parts were rinsed intensively with high quality water (osmosis water, deionised water) and dried immediately. As a rule, the surface treatment procedures used, including the pre- and post-treatment when passivating components, are based on the recommendations of the ASTM A380 and ASTM F86 standards. The safety of patients and product users is paramount, which is why it is necessary for the product to meet correspondingly high cleanliness requirements. Passivation or final cleaning is therefore essential for every production line.

Production step 7: Packaging

Once the final product has been cleaned, it can be professionally packaged. "For the packaging, we can supply everything from the film to the finished packaged product. For this, we have the raw material, blisters, lids, pouches and a sealing machine," explains Felix Neidhart, Head of Sales at Medipack AG, a Swiss system supplier for medical packaging. For the packaging, the product is placed in a blister and sealed with a sealing lid. Important criteria are that the packaging is easy to open, protects the product and keeps it sterile. Both the sealing machine and the packaging process are special features that are made visible and illustrative on the production line.

Added value for visitors

The production line at MedtecLIVE with T4M shows what cooperation makes possible and which manufacturing steps are part of a medical product. "The goal is for visitors to learn new things and for us to answer their specific questions, maybe even untie knots," Söhner hopes. After all, nowadays it is possible these procedures can shorten the production time of other manufacturers or otherwise make it more efficient. "It would be nice if the visitors could take away the interaction of the manufacturers, get impulses and thus also improve their own production," summarises Niklas Kuczaty, Managing Director of the VDMA Medical Technology Working Group. By experiencing the process chain needed for production up close, the special features of medical technology can be perceived with all the senses. Gindele also sees this as an advantage: "With the production line, we can take all visitors with us, and everyone can get involved. It's a meeting place with added value and an experience factor."

The production line project at MedtecLIVE with T4M makes medical technology tangible and understandable. "That's important because you can only optimise a process if you understand it in its entirety. That's why it was so important to us to enable visitors to network personally on site with the various manufacturers and to make solutions visible. That's also what trade fairs are all about - hands-on technology. For this purpose, the event provides a platform and the framework for the development and implementation of new ideas that move the industry forward," says Christopher Boss.

About MedtecLIVE with T4M

The trade fair MedtecLIVE with T4M is the leading European spring event for medical technology and is held annually alternately in Stuttgart and Nuremberg. The event covers the entire value chain and connects the most important medical technology regions in Germany. This is where decision-makers from the distributors and OEMs meet the most important suppliers of medical technology.

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