

■ **Waldemar Link GmbH & Co. KG, Germany**

# Implants with Polish

The production of bone and joint implants requires equipment with cutting-edge technology. The latest software tools allow optimal interaction between CAM and CNC systems and guarantee a perfect finish and the highest levels of product quality.

The world's first artificial hip, which was implanted in Germany in 1963, was produced by the German company Waldemar Link GmbH & Co. KG. Since then, the specialist manufacturer has repeatedly set standards in the development of artificial implants. "We have a wide range of special one-off designs, starting from slightly modified standard knee joints and extending up to and beyond complete femur replacements, that is, implants that completely rebuild the thighbone. Our day-to-day work primarily involves the series production of bone and joint implants," explains Kai Lemke, production manager at Link.

Link uses highly sophisticated CNC grinding machines to produce knee implants such as the femur components of the Gemini SL bone surface replacement, which is available in eight variants to suit the most diverse medical indications. Grinding is now a validated method in the overall CNC process and helps create products that are identical. With up to 600 grinding paths side-by-side on the surface of a knee joint, a great deal of computing power is required from the CAM workstations and the machine tool used. Grinding helps combine an extremely high-quality surface finish with a high degree of repeat accuracy, especially on the extremely hard materials used for these implants, such as cobalt-chromium-molybdenum alloys.

## Integration of all available product data

From the original idea to the sterile packing of the product, almost all tasks are performed within the company's internal production network. In addition to manufacturing the blanks in the company's own foundry, there is also an internal research and development (R&D) division called Deru. As part of its R&D process, Deru uses the NX CAM and Team-



Link manufactures thighbone implants using sophisticated CNC machines from Haas

Grinding achieves an extremely high-quality surface finish with a high degree of repeat accuracy, especially on the exceptionally hard materials used in medical technology



Haas Schleifmaschinen GmbH

center software tools for its product lifecycle management (PLM), which supports a consistent process chain across the company, from construction to the finished workpiece. "The optimal interaction between CAM and CNC that we get by combining NX CAM and the Sinumerik control system is essential for creating excellent products," stresses Lemke.

Production plans, created by the NX CAM system from the individual parts, contain not only the CNC programs for the implants themselves, but also complete information on the required production resources, such as machines, tool lists, clamping devices, and so on. The accessibility of all these data in the Teamcenter software facilitates the seamless transfer of information to the production department. The data are linked in the PLM system, ensuring that all processes are completely transparent, and the CNC programs are sent directly to the machine over the network.

### Strict safety requirements fulfilled

"Because we place a lot of emphasis on an integrated overall process, our employees need to have a general understanding of that whole process, as well as solid and specific expertise in their own particular area of responsibility," explains Lemke. "We also place correspondingly high demands on our equipment partners." When it comes to grinding, the company works closely with Haas Schleifmaschinen GmbH based in the German town of Trossingen. The extensive implementation of Siemens products at the implant specialist is also based on the same requirement. Both companies understand the strict regulations and restrictions governing the medical technology sector and are therefore able to provide optimal support for customers. Link polishes its knee implants on Multi-

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Kai Lemke, Production Manager, Waldemar Link GmbH & Co. KG

grind CB machines. These work with directly driven grinding spindles and are equipped with the high-performance Sinumerik 840D sl CNC and automatic handling systems. "Our machines use only components that are innovative and that we know really work," explains Philip Burkard, project manager at Haas. These include the Sinumerik Safety Integrated safety functions that are integrated into control system and drive technology. The safety package monitors the machine tool in all its operating states, with safety indicators linked to process steps so that both machine and operator are protected from possible hazards. ■

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