

## FOCUS ON APPLICATIONS

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*PERFECT SURFACE FINISHING WITH THE OTEC DRAG FINISHING MACHINE*

### PROSTHETIC HIPS

Endoprotheses are implants that remain permanently in the body and completely or partially replace a damaged joint. The artificial or prosthetic hip joint is one of the best known such implants. A prosthetic hip joint is generally understood to be a replacement for the femoral head and the acetabulum (hip socket). At the femoral head, bone is removed on the thigh side and a long stem is inserted into the medullary cavity, to which the prosthetic femoral head is attached. One of the objectives of the prosthetic hip is to guarantee a long service life.

To ensure the prosthesis is installed well and withstands a long period of use, there are important factors that must be taken into consideration during manufacture, such as the design, the anchoring and the quality of the surface.



Prosthetic hip joint

The prosthetic hip joint comprises the prosthetic femoral head (ball) and the femoral component (stem). Stems are installed in the medullary cavity in one of two ways: cemented or non-cemented installation. A stem that is not cemented is partially coated and is generally only polished at certain points. The coating guarantees better bonding between bone and implant. With a cemented stem, the entire stem is polished.

An OTEC DF series drag finishing machine is used to finish the surface of the stems and the balls. It is critical that the stems are not damaged when being fixed in the machine, so special holding fixtures are required for this. The stems are clamped in these special holders in the OTEC drag finishing machine and processed with a grinding media in a wet process. Afterwards, they are treated with a hard shell granulate in order to obtain a highly polished surface.

The balls are also processed in the DF machine. Here too, a grinding media is often used in the wet process as a first step. Likewise after grinding, a hard shell granulate is used to create a

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high gloss finish. The OTEC drag finishing machine can be used to finish a variety of materials including stainless steel, titanium, cobalt chromium and ceramic.

The hip joint components are clamped in special holding devices in the OTEC drag finishing machine and are dragged at high speed and in a circular motion through grinding or polishing granulate. These rapid movements ensure that an optimal finish is achieved. In addition, blank areas are processed evenly, guaranteeing a homogeneous, finished surface. The DF machine from OTEC ensures the correct combination of abrasive, tool holder and process parameters for a surface finish that is on a par with hand-finished quality.



DF-5 HD

The unique feature of the OTEC drag finishing machine is the choice of machine variants, which make it possible to meet the requirements of individual customers. With the OTEC drag finishing machine, the hip prostheses achieve process-reliable results. To guarantee these results, OTEC supports its customers by using its long years of expertise to develop customised processes. A broad spectrum of knowledge in the field of implant finishing is guaranteed at OTEC. Renowned manufacturers around the globe use this technology.

With the OTEC method, a flawless, highly polished surface is achieved for both the stems and balls of hip prostheses.

### **The company**

OTEC Präzisionsfinish GmbH offers precise technology for perfect surface finish. OTEC machines for deburring, grinding, smoothing and polishing guarantee an efficient and perfect surface finish of tools and products. Operating a worldwide distribution network comprising over 60 agencies, OTEC is represented locally for international customers from various industries. Thousands of customers benefit from the extensive know-how of the technology leader OTEC in the development of a perfected interplay of machine and process media.



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