



- 3 *Wasserfeste Unterschenkelprothese.
Waterproof transtibial prosthesis.*
- 4 *Ellenbogenorthese mit Extensions-
und Flexionsbegrenzung.
Elbow orthosis with extension and
flexion limiters.*

DIGITAL PROCESS FOR THE MANUFACTURE OF PROSTHESIS AND ORTHOSIS

Problem definition

There is hardly any sector of industry in which individualization is as important as in orthopedics technology. Orthopedic devices must be adapted precisely to the human body to ensure an optimal support during rehabilitation as well as in daily life. Traditional manufacturing technologies are frequently not suitable for an individual manufacturing of products. Therefore new approaches are needed, new processes must be established and new procedures must be found.

The digital process

The Fraunhofer IPA has been working for many years to facilitate the work of orthopedic technicians and produce better products for patients, using innovative procedures. With the combination of 3D

scanners, software and additive manufacturing technologies, new working processes and a new future-orientated world of products can arise. Thereby the patient data or current orthopedic devices are recorded by means of a 3D scanner. Using a digital library system, an individual prosthesis or orthosis can be created on the computer. Orthopedic devices designed with this procedure are produced in layers with durable plastic or metal, using additive manufacturing technologies. The "prosthesis out of the printer" has long been more than a vision of the future, but has become reality.

On the one hand digital processes can be measured, processed and memorized quickly. On the other hand additive manufacturing enables highly individual, robust and water-resistant components that can be produced within a very short time.

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