

In alphabetical order:

ALBOMED

Brainlab

Electro Medical Systems

GO Implants

ImplanTec

Königsee Implantate

LINK Orthopaedics

Orthofix Medical Inc.

stimOS GmbH

United Orthopedic



stimOS GmbH

Bio-inspired Approach to a Pain-free Life

Going through surgery is hard enough but having to go under the knife again because of healing abnormalities or undesirable body reactions caused by an implant is traumatic. These repeat procedures are not uncommon, but it is evident that repeatedly opening a wound deteriorates the patient's already compromised immune system. Often the life of orthopedic implants is severely hampered by infections, corrosion, excessive inflammation, toxicity, poor osseointegration, and foreign body effects. In many instances, when an implant doesn't heal properly, it results in severe discomfort, amputation, hospitalization, and, in some circumstances, more fatal consequences. Adding to the woes is the age-old challenge of implant loosening and inflammatory reactions caused by inert implant materials, which is yet to be successfully addressed. For years, material manufacturers, medics, and implant manufacturers have been looking for an implant material that heals and anchors optimally in the patient's body while being free of negative side effects. This is where stimOS comes in, with its innovative smart implant technology providing patients with the best treatment possible while minimizing revisions due to botched procedures.

Germany-based stimOS's ISO validated and certified revolutionary smart implants modification processes address the patient's requirement for improved osseointegration and less inflammatory reactions. With the patented stealth innovation, Mimicking Bone Technology (MBT) offered by stimOS, the company is able to functionalize implant surfaces, conceal the undesired qualities of the original material, and provide osseointegrative, antibacterial, or corrosion-protective capabilities as required. This one-of-a-kind biochemical technology promotes early and healthy bone formation, provides optimal anchoring in osteoporotic bone, is anti-inflammatory, and respects all regulatory requirements. This is demonstrated by the company's voluntary quality seal S.P.E.L. As one of the first companies stimOS informs patients and users about the Safety and Performance Evidence Level of the technology during design and development. This transparency offensive is just as unique and revolutionary as the surface technology itself.



Dietmar Schaffarczyk

The primary goal of stimOS is to transform implant surfaces from an artificial barrier in the patient's body to a bone-identical implant body interface to eliminate inflammatory responses, infections, and re-operations. "MBT masks the implant material in a way that the patient's anatomy no longer recognizes implants as foreign bodies," says Dietmar Schaffarczyk, CEO and managing partner of stimOS.

Schaffarczyk points out that other solution providers in the market merely put a covering on the implant surface. However, methods like this are troublesome since the coating process frequently negatively affects the implant material, and there are major issues with abrasion, delamination, and/or metal ion leakage. With MBT, stimOS provides a completely new solution. Rather than

depending on coating methods, the company biochemically restructures implant surfaces with a covalently bonded activation layer. By doing so, stimOS provides inert materials with biological properties similar to those found in nature.

Benchmark in Smart Implant Technology

With a commitment to providing the highest quality products, services, and technologies, stimOS not only assists the medical device sector, but also supports surgeons and hospitals, in implementing additive manufacturing processes. This includes everything from manufacturing services to evaluating, building, and operating competence centers. Along with innovative smart implant technology, stimOS also provides 3D printed implants and instruments, as well as point of care solutions to doctors, enabling them to deliver the best possible treatment to patients and ensure a pain-free life after surgery.

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To showcase stimOS' expertise, Schaffarczyk draws attention to a project done with an exclusive network—AG PolyMORE network, in which the company was able to produce an additively manufactured polymer implant for the cardio surgery department of a renowned university hospital. The network is home to a consortium of experts that combine knowledge in filament and composite material manufacturing with construction and additive manufacturing know-how, as well as medical 3D printing manufacturers' expertise. Alongside this team of experts, stimOS was able to produce one of the first additively manufactured, 3D printed polymer cardiovascular implants in a unique competence center setting using a patient-matched manufacturing method. This was not traditional 3D printing because the majority of 3D printed implants or additive manufactured implants are



fabricated from titanium by electron beam melting or other 3D printing techniques. Adding into the bargain, this project also exemplified the effective combination of antimicrobial implant surfaces, polymer materials, additive manufacturing of polymer implants, and approval expertise in a patient-benefiting project.

With an outstanding value proposition already in place, Schaffarczyk believes stimOS has a lot more to offer in the upcoming years. The company is currently actively working towards the success of two important milestones, implantation of surface-modified spine and 3D printed polymer implants as well as complete metal-free highly osseointegrative dental implants in a point of care manufacturing setting. Over the next few years, stimOS intends to expand into drug and pharmacy distribution via implant surfaces, as well as address antibacterial properties not inside the pharmacy but by biochemically transforming the surface. Additionally, the company also intends to share its findings and its industrial scalable process with any industry partner interested in this technology, as the stimOS technology is evolutionary and has the potential to create a new gold standard in the implant market.

stimOS is awarded TOP 10 Orthopedic Company Europe 2021

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