



Lincotek secures patent for novel 3D-Printed Orthopedic Screw

Customizable system designed for spine, SI joints, avascular necrosis, and more.

Rubbiano, Parma (Italy) | 2025, March 10: - The Medical Division of Lincotek – which offers integrated supply chain solutions to orthopedic manufacturers in the medical devices industry – has announced a new patent for a groundbreaking 3D-printed, customizable screw with an integrated lattice structure, allowing for quick bone ingrowth.

Recently approved (US 12,171, 464 B2), the patent describes a novel concept, where the central shaft of the screw can be customized for surgeries on the spine, sacroiliac joint, avascular necrosis and other applications. Essentially, the screw's mechanical properties can be adjusted to the specific needs of a given procedure and to the patient's bone.

Customization could include:

- **Different thread profiles**—such as self-tapping, cortical, or cancellous
- **Variable shaft diameters** to accommodate different anatomical needs
- **Internal channels** or features for drug delivery or electrical stimulation

This screw system offers **unprecedented flexibility**, enabling surgeons to utilize implants precisely tailored to anatomical sites, patient needs, and surgical requirements.

Furthermore, the patent covers porous structures designed to promote **bone ingrowth and biological fixation**, ensuring both short-term stability and long-term osseointegration.

*"We are excited to introduce this groundbreaking 3D-printed orthopedic screw, a true innovation in patient-specific implant application," says **Francesco Bucciotti, Head of Global Business and Business Development at the Medical Division of Lincotek.***

"Lincotek's R&D team is dedicated to pushing the boundaries of medical technology to develop solutions for our OEM customers that enhance patient outcomes. This novel

design offers unparalleled customization, promoting faster healing and better integration with the patient's bone—ultimately setting a new standard in orthopedic care.”

“Finding the right balance between load sharing with host bone, structural stability and facilitating bone ingrowth is the key to a successful implant” - **says Mukesh Kumar, Technology and R&D Director at the Medical Division of Lincotek.**

“Conventional bone screws are machined out of titanium and have a smoother surface. They have a solid construction with only bone ongrowth facilitating recovery - in this case, recovery is entirely dependent on elimination of micro-motion. With our new patented 3D-printed screw, there's a support system to allow the body to form new bone tissue and evoke bone ingrowth as a means to prevent micro-motion. We feel it will be of great interest for reconstruction applications, as well as hip and spine customers. Our design engineers can tailor the proportions of porous region, threads, shape, and structure to the central shaft to design for the specific bone site.”

The patented design supports both **patient-specific implants and scalable mass production**, offering a streamlined manufacturing process without complex assembly—reducing clinical risks associated with disassembly.

By harnessing additive manufacturing, this patent establishes a new standard in orthopedic implants, delivering a transformative opportunity for companies seeking cutting-edge advances in implant technology.

About Lincotek – Lincotek is a global solution provider for services in niche markets including Industrial Gas Turbines, Aerospace and Medical Device applications, as well as a leading manufacturer of industrial coating equipment and one of the most respected producers in the Additive Manufacturing field. The Group is family-owned and has more than 1,800 employees located in 18 production facilities across Europe, North America and Asia – lincotek.com. Media Contact: Francesca Pedrotti, Head of Global Communication – lmarketing@lincotek.com