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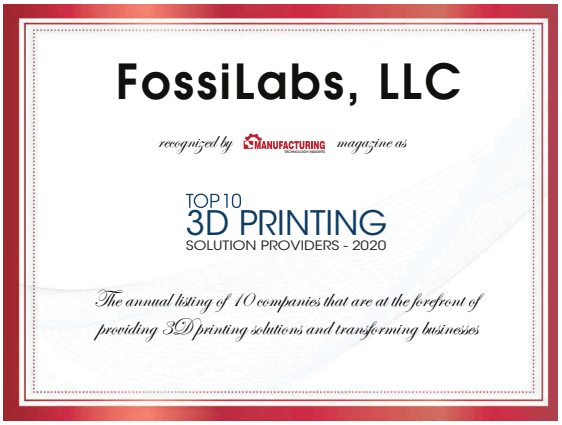
Top 10 3D Printing Solution Providers - 2020

Today, 3D printing is rapidly gaining traction in the manufacturing industry, owing to its ability to redefine the designing of the products. Bridging the gap between design and production, additive manufacturing helps keep the digital thread of the product intact throughout the journey. 3D printing makes it easier for collaborative teams and individuals to design and manufacture end products and mitigate the barriers to innovation.

In comparison to products developed via traditional methods, the customization of products created through 3D printing exhibits improved structural strength. Given these benefits, many organizations are looking to adopt 3D printing technology in a bid to improve outcomes and production procedures. Industry leaders expect that 3D printing will give rise to manufacturing as a service (MaaS) that will enable the manufacturers to lease out the 3D printing equipment, eliminating the need to purchase expensive machinery and making it easy for companies to get started with the technology.

To help organizations strengthen their 3D manufacturing capabilities and simultaneously enable growth in the industry, Manufacturing Technology Insights has compiled a list of top 10 3D printing solution providers and services companies for the year 2020. The companies listed here showcase extensive business knowledge and exhibit competence in delivering cutting-edge solutions and services that meet the needs of the customers. Besides, the magazine also comprises insights from thought leaders in the sector on the industry trends, best practices, recent innovations, and their advice for the aspiring CIOs. We present to you Manufacturing Technology Insights' "Top 10 3D Printing Solution Providers – 2020" and "Top 10 3D Printing Consulting/Services Companies – 2020."



Company:
FossiLabs, LLC

Description:
Engineers porous bone-like structure PEEK using 3D printing FFF process to enhance medical implant devices

Key Person:
Todd Reith,
President

Website:
fossilabs.com

FossiLabs LLC
Engineering bone, layer by layer

Fully-Porous 3D Printed PEEK Scaffolding Structures

In November 2017, Todd Reith, founded FossiLabs, a startup company focused on engineering porous bone-like structure in polyether ether ketone (PEEK) using 3D printing Fused Filament Fabrication (FFF) process to enhance medical implant devices. It is a one-of-a-kind solution, primarily developed for spinal implants, with defined areas of full porosity and advanced hydrophilicity promoting osseointegration—the direct structural and functional connection between living bone and the surface of a load-bearing artificial implant.

Reith's pre-FossiLabs background is quite diverse, and his varied experiences fittingly build-up to the company's inception as well as its self-dependency. Beginning his career as a software engineer, Reith changed track to work with a wide range of materials to manufacture guitars and develop custom inlay and components. Next, he engaged in producing fuel and shock components for Team Penske's IndyCar racing team, before working as a manufacturing engineer at Globus Medical developing spinal expandable and static implants. "After leaving Globus is when I first got involved with 3D printing and was intrigued by its ability to print geometries that couldn't be machined," says Reith, founder and president of FossiLabs. Reith's cumulative, multifaceted experience, coupled with his fascination for 3D printing, eventually culminated in the foundation of FossiLabs. Notably, bolstered by the president's expertise across multiple fields, FossiLabs needed to develop its own 3D printer, exercising full control over both the software and hardware.

FossiLabs' initial challenge was to build a machine that could print PEEK, an extremely challenging polymer to be processed. "Once we achieved it, using the FFF process, and presented our first 3D printed spinal cages, people asked us what was so unique about printing the same thing that can be machined out of regular solid billet material. That's when we began focusing on fully porous structures."

"Using 3D printing technology makes it possible to create a porous structure that would not be possible using traditional methods. The increased surface area and porosity encourage new bone on-growth and in-growth of the implant, leading to greater integration strength," mentions Reith.

FossiLabs' "fully" porous scaffolding structures—Bone-Foam and Bone-Mesh—along with hydroxyapatite (HA) nanocoating offer unmatched performance in the industry. FossiLabs' Bone-Foam and Bone-Mesh structures help clients identify areas within their existing models—primarily for spacers and cages for the spine—where bone growth is desired. The company also runs clients' models through its proprietary software to pinpoint solid and porous areas. Further, the models are sliced, printed and then post-processed to meet client requirements. "We've married all these individual proprietary components so that when clients approach us, we can take their native drawings/models, run them through our procedures, and then have an end result, which is a near seamless process," says Reith.

> **"FossiLabs' Bone-Foam and Bone-Mesh structures help clients identify areas within their existing models—primarily for spacers and cages for the spine—where bone growth is desired"**

The nanocoating boosts hydrophilicity and facilitates osseointegration. For this post-process HA coating, FossiLabs employs Promimic's HAnano Surface while for the filament, the company uses Evonik's VESTAKEEP® i4 G, the world's first FDA approved medical grade PEEK filament.

Unlike 3D printed titanium structures, which block or interfere with X-ray and other imaging methods, PEEK is relatively transparent and is much closer to natural bone properties. "The fully porous Bone-Foam and Bone-Mesh may also help eliminate the need for biologics, thus making surgeons' job easier," adds Reith.

With a proven process and proof of concept, FossiLabs is now targeting development partners along with seeking out medical device companies to license its technology to, and eventually, become their 3D print service. MT