TECHNION
Israel Institute
of Technology

TECH med

Technion R&D Foundation
IIM TechMed

Additive manufacturing lab

ISO
13485
Quality Managment
Sydtems- Manufacturing
of Medical Devices by
Electron Beam Melting

Patient specific implants

Orthopedic

Cranial

Dental

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Introduction

Complex geometries – free form structures are difficult to produce using conventional manufacturing methods such as milling, turning or casting. At the same time there is a growing desire to replicate the successful models use by nature and for example to make implants based on bionic principles. The objective is to accelerate the patients healing process.

One aim of medical technology is to maintain, assist or restore a person's mobility. In many areas doctors and patients are reliant upon custom made designs or individualized small series for the production of medical devices. Both the materials and workmanship of the devices have to meet high quality standards. Products must also be quickly available, and preferably at an economical price

Medical Devices

Mass customization can be implemented sustainably only through 3D printing, there design flexibility does not compromise cost effectiveness.
For the reason, the medical industry was one of the earliest adopters of additive manufacturing to make custom parts such as implants and personalized medical devices.

The bio-compatibility of printed titanium combined with the ability to create complex structures has opened new opportunities to minimize surgical impact, stimulate bone ingrowth, and improve a patient's mobility. At that level of patient-specific customization, 3D printing is the only technically feasible and cost effective production method.

Technion production capabilities:

ARCAM A2X

Melting: Electron beam
Power: 3KW
Powder: 45-120 µm
Productivity: 1kg/hr

Electron beam source
High preheating temperature (~700C)
Needs less supports
Less thermal stresses
Difficult for building internal channels

EOS M290

Melting: Laser beam
Power: 400W
Powder: 20-50 µm
Productivity: 0.5 kg/hr

Laser beam source
Low preheating temperature (<200C)
Needs more supports
Finer resolution
Wider material pallet

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IIM TechMed

We are your partner in every type of Additive Manufacturing challenge

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