La fabrication additive : un procédé industriel innovant pour les produits de demain

Frédéric IMPELLIZZERI
Business Development
Our company

Created in July 2007
Located close to Paris and close to Aix en Provence (2013)
Turnover (2012) : 750 000 Euro - 60% is export business
9 employees dedicated to direct manufacturing (SLM) and rapid prototyping (SLS)
5 production machines (Trumpf, EOS, Concept Laser) / Milling (2013) / Post treatment (2012)

Certifications :
EN ISO 9001:2008
EN ISO 13485:2003

Standard and Special SLM equipment :
High Laser power : 200, 500 and 1000W
Several process chambers : up to 640 x 400 x 500 mm (h)
O₂ level control up to 35 ppm
Pre-heating up to 500°C

Poly-Shape S.A.S
Espace Green Parc. Route de Villepècle. France.
www.poly-shape.com

Systèmes de Production du Futur
ANR : FUTURPROD
Our technology: Selective laser melting

3D-CAD Model in layers

Direct Laser Forming

Applying new powder layer

Melting by Laser

Lowering of Build Platform

New geometries out of serial metallic materials

Standard Metal Powder
Our technology: Selective laser melting
Typical part properties

- Density close to 100% (no porosity)

- Fine and homogeneous microstructures

- Mechanical properties are the same than with conventional manufacturing process

- Properties can be adjusted using thermal post treatment

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12 Février 2013
Our SLM production equipment
Our special CAD software based on FEA:

New designs for new performances
Direct manufacturing of industrial parts with Selective Laser Melting for nEUROn project

12 parts assembly (TA6V)

8 parts assembly (TA6V)

33 parts assembly (TA6V)
Technical parts

Advantages
- **Cost/time reduction** during the product development phases
- **New functionalities** (light weight structures, …)
- **No specific tool** (cost reduction for small lot series)
- **Creativity and reactivity** for the customer

Application
- Automotive
- **Aeronautics / Aerospace**
- Other ...

Materials
- Ti alloy
- Aluminium alloy
- Stainless steel
- Inconel
- Other ...

Dimensions:
- X/Y = 200 x 200 mm²
- Z = 190 mm
Medical Application

Materials

- Titanium GdII
- TiAl6V4
- CoCr-Alloys
- Stainless steal 316 LVM
- 17-4 PH

Advantages

- No time consuming conventional manufacturing
- New geometric options
- Improvement of medical performance

In cooperation with the Fraunhofer ILT
Manufacturing of bone-like structures with SLM for implantology

Objective:
bone-like implants with improved cell ingrowth

method:

- adaptation of process layout for manufacturing of structures < 1 mm
- generation of the structures made of titanium alloys by SLM

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Medical Application

New functionalities
First Implantation in 2010

Today more than 200 implants have been implanted
Quality management

Certifications:

- EN ISO 9001 : 2008
- EN ISO 13485 : 2004
- EN ISO 9100 (en cours)

Customer Qualifications:

- Aeronautical:
  - Dassault Aviation & Hellenic Aerospace Industry Achieved
  - 3 Aeronautical qualifications started
  - 2 Aerospace qualifications started
- Motorsport: 4 Formula 1 teams
- Medical: 2 companies for implanted parts
Quality management

Internal reporting

Certifications:

EN ISO 9001 : 2008
EN ISO 13485 : 2004
EN ISO 9100 (en cours)
Contact

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Produce with the speed of ligth !

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