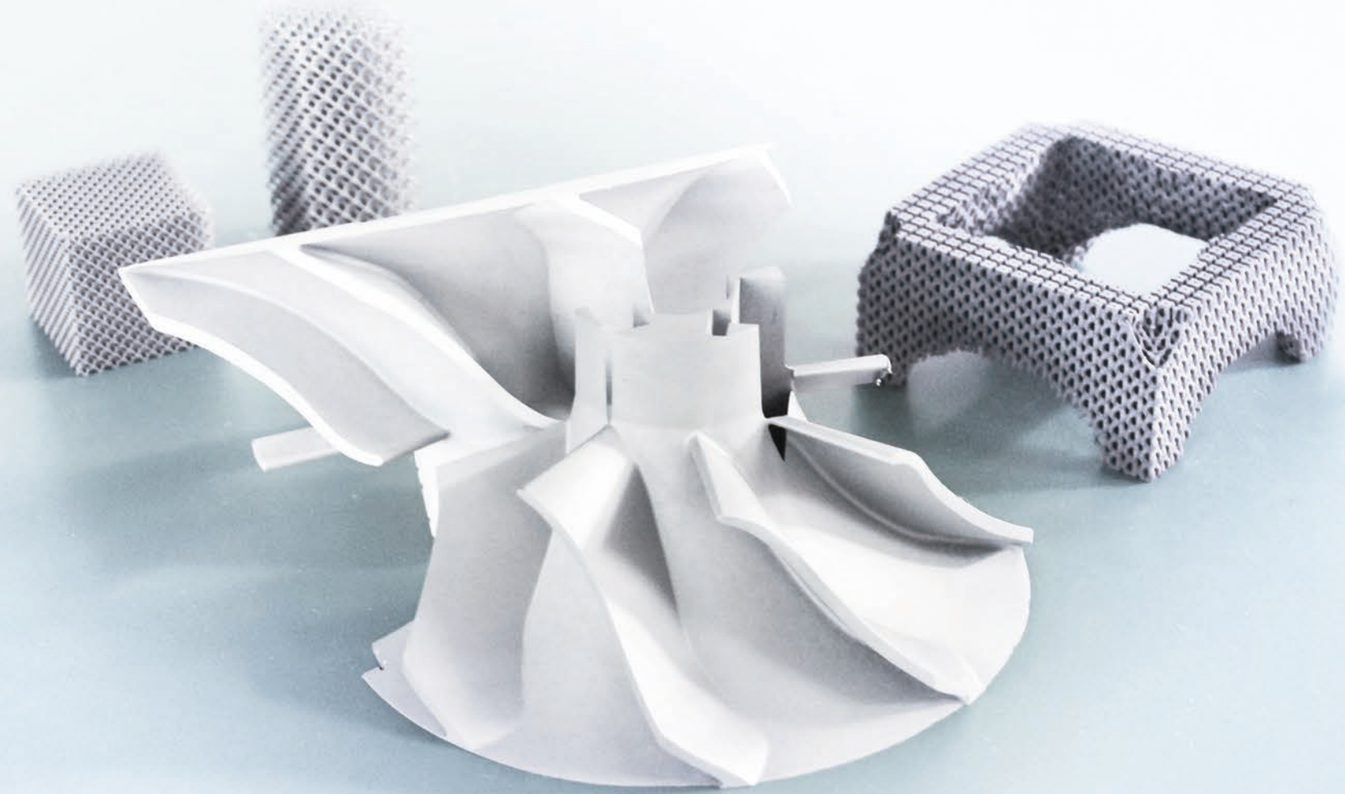
High-tech Enterprises

FASTFORM
美光速造



FASTFORM
美光速造

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ISO 9001:2015

Content

大连美光速造 科技有限公司

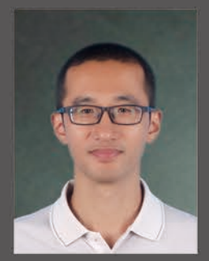
FastForm Technology Co.,Ltd

Established in 2016

As a high-tech enterprise, FastForm is specializing in the research and development of 3D printing technology and equipment based on laser, which can provide top-notch rapid prototyping services and solutions for equipment. Now we have established in-depth cooperation with enterprises, universities and research institutes, addressing for 3D printing experiments and researches on key components in aerospace, automotive moulds, biomedical and other fields in the near future. Our team are confident and powerful to provide rapid and accurate technical supports and update for sold machines, and we are able to overcome the difficulties of research and development in terms of new technology and equipment, due to collaborative efforts. In 2016, FastForm won the titles of "Star of Entrepreneurship" and "the 7th China Oversea Promising Project" in Dalian.

Li Shuai Chief Engineer

As a joint Ph.D. of Huazhong University of Science and Technology (China) and Nanyang Technological University (Singapore), supervised by Prof. Shi Yusheng (China), an expert in 3D printing in China, and Prof. Chua Chee-Kai (Singapore), the ancestor of 3D printing, respectively, he mainly researched on laser selective melting and additive manufacturing.



Xue Pengju Deputy Engineer

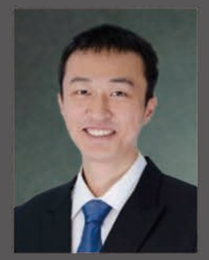
In 2014, he received a Ph.D. in engineering from Huazhong University of Science and Technology. His research topics are the hot isostatic pressure strengthening technology for 3D printers and complex key components such as aerospace, weapons and equipment.

Chen Zhichao Software Engineer Engineer

An engineering Ph.D. from both Huazhong University of Science and Technology (China), Loughborough University (United Kingom). He is mainly responsible for the development of software for additive manufacturing, which can provide intelligent slicing and splicing technology for multi-laser based 3D printers.

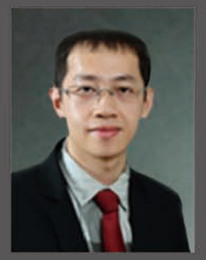
Li Weidong Electrical Engineer

A Ph.D. from Nanyang Technological University (Singapore), who mainly studies the optimization and design of metal composite materials for 3D printing, he is specialized in putting forward the design schemes of materials according to 3D printing technologies.



Yao Xiling Technical Consultant

A Ph.D. from Nanyang Technological University (Singapore), who mainly studies the optimization and design of metal composite materials for 3D printing, he is specialized in putting forward the design schemes of materials according to 3D printing technologies.



Zhu Zicheng Technical Consultant

He is a researcher of University of Cambridge (United Kingdom). He mainly researches on design theory of structural-functional integration, especially to make heavy parts light weighted. He is used to direct the design of 3D printing parts under complex technical conditions.

FastForm FF-M140

- For Dental and Educational Sciences
- Inteligent Software for Part Slicing and Path Planning
- Closed-loop System for Z-axis
- Suitable for major 3D Printing Metals
- High Quality and Cost-effective Products and Services

The small 3D SLM Printer was developed especially for dental applications and scientific researches. With a heating platform up to 500°C, this machine can print the following materials: stainless steel, titanium alloy, titanium, die/mould steel, cobalt-chromium alloy, aluminum alloy and so on.

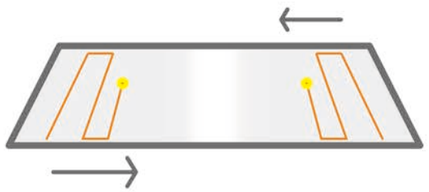
产品参数 Parameters

Build volume	140mm × 140mm × 140mm
Preheating temperature	250℃
Coating methods	One-way coating
Equipment power	5KW
Power supply	380V NPE
Laser type	Fiber laser
Laser power	300W/500W optional
Galvanometer Type	High speed digital galvanometer
Beam diameter	50-80 μm
Scaning speed	0-7m/s³
Gas protection	Argon, nitrogen 0.5-1 .5 L/min
Circulatory system	0-1.5m , Air curtain protection
Layer thickness	10-40 μm
Filter system	> 0.5 μm particle filtration efficiency 99.9 %)
Scaning Method	One-way scan，Cheese box scan，Strip scan
Z axis resolution	1 μm

Scanning accuracy	Size error of ± 0.1 mm for all dimensions within 100 mm and above 100 mm is ± 0.1 %
Printable material	Stainless steel, titanium alloy, die steel, cobalt chromium alloy, aluminum alloy and other metal materials
Processing Software	FastLayer,Support STL model processing, model layout and transformation,automatic model repairment
Slice sofaware	FastLayer,Support thickness 0.02-0.1 mm, material parameters bank, material parameters bank, multiple scanning mode selection, parameter bank open
Control software	FastFab,Level control, process guidance and online monitoring

FastForm FF-M500

- **Dual Laser and Galvanometer**
- **Powder Served in Bi-direction with Variable Speed**
- **Closed-loop System for Z-axis**
- **Highly Automatic and Efficient Control of Shielding Gas**



It is the first domestic 3D SLM printer with dual laser and galvanometer, and the powder can be served in bi-direction with variable speed, which greatly increase the efficiency by more than 50%. The Z-axis is a closed-loop system, with ultra-high precision and positioning accuracy (5 microns). Efficient atmosphere control system

产品参数 Parameters

Build volume	No less than 490mm X 290mm X 390mm
Preheating temperature	250℃
Coating methods	Up powder, two-way powder
Equipment power	8KW
Power supply	380V NPE
Laser type	IPG fiber laser
Laser power	2*500W
Galvanometer Type	Scanlab high speed digital galvanometer
Beam diameter	50-120μm
Scaning speed	0-7m/s
Gas protection	Argon, nitrogen 3 .5 L/min
Circulatory system	0-2.5m^3/min，Air curtain protection
Filter system	> 0.5 μm particle filtration efficiency 99.9 %)
Scaning Method	Both lasers printed independently or in combination
Z axis resolution	1μm

Scanning accuracy	Size error of ± 0.1 mm for all dimensions within 100 mm and above 100 mm is ± 0.1 %
Printable material	Stainless steel, titanium alloy, die steel, cobalt chromium alloy, aluminum alloy and other metal materials
Processing Software	FastLayer,Support STL model processing, model layout and transformation,automatic model repairment
Slice sofaware	FastLayer,Support thickness 0.02-0.1 mm, material parameters library, multiple scanning method selection)
Control software	FastFab,Level control, process guidance and online monitoring

FastLayer slicing software introduction

1. Layout management and fast slicing for complex parts

2. Up to more than 70 parameters to fully satisfy the demands of customized parts.

3. Unique slicing parameters for all parts, and one-key processing.

4. Smart multi-core acceleration for extremely large and complex parts (the size of binary slicing data is more than 10G).

5. Intelligent repair during slicing to ensure the print quality, regardless of some parts with serious errors.

6. Various splicing modes for multi-laser (maximum 36 galvanometers) to increase the build volume and keep the printed parts away from stress concentration.

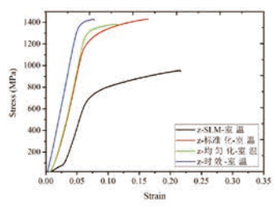
Multi-Laser Splicing Display (4 Lasers)

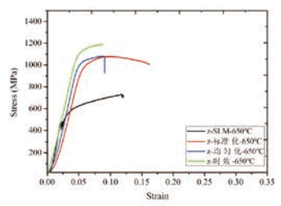
(1) Chessboard (2) Honeycomb (3) Octagon (4) Equal length line (5) Strip

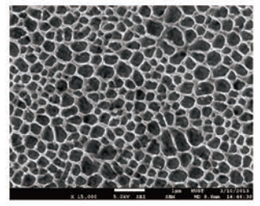
力学性能 Mechanical Property

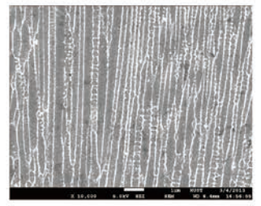
激光选区熔化力学性能与传统成形方式比较

材料	成型工艺及状态	S_b/MPa	$S_{0.2}$/MPa	d /%
钛合金 TC4	锻件退火态标准 Forging heat treatment	≥ 895	≥ 825	≥ 8
	激光选区熔化成型 Laser melt forming constituencies	1040~1065	920~1030	8~15
铝合金AlSi10Mg	铸造退火态标准 Casting annealing state standards	≥ 300	≥ 170	≥ 3.5
	激光选区熔化成型 Laser melt forming constituencies	335~345	215~220	9~15
镍基合金IN718	锻件退火态标准 Forging heat treatment	≥ 1280	≥ 1040	≥ 14
	激光选区熔化成型 Laser melt forming constituencies	1380~1500	1155~1300	13.5~21
镍基合金IN625	板材标准 Plank standard	≥ 760	≥ 345	≥ 30
	激光选区熔化成型 Laser melt forming constituencies	1097~1129	732~771	35~45
不锈钢 316L	板材标准 Plank standard	≥ 480	≥ 177	≥ 40
	激光选区熔化成型 Laser melt forming constituencies	540~640	470~530	40~50

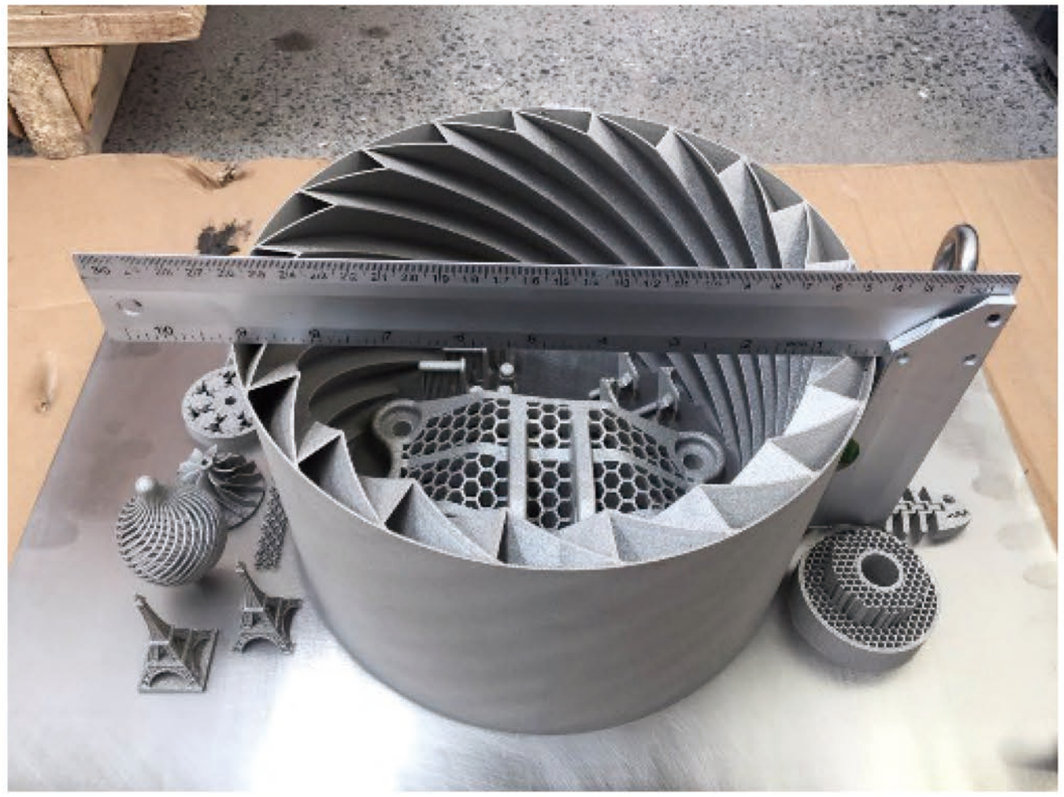


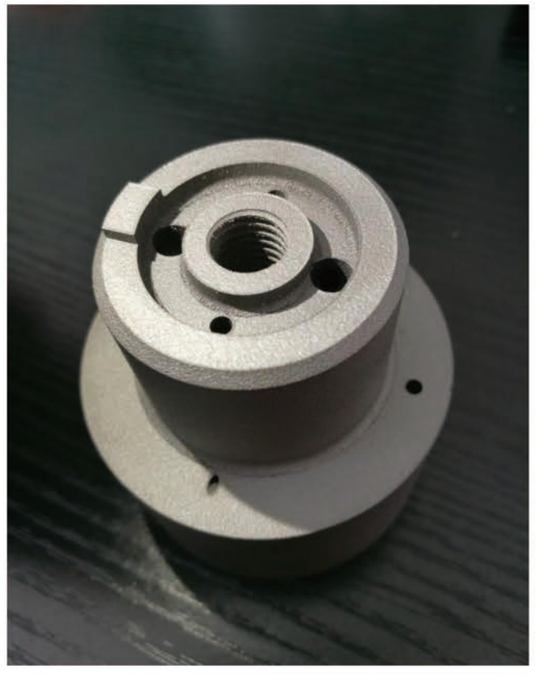


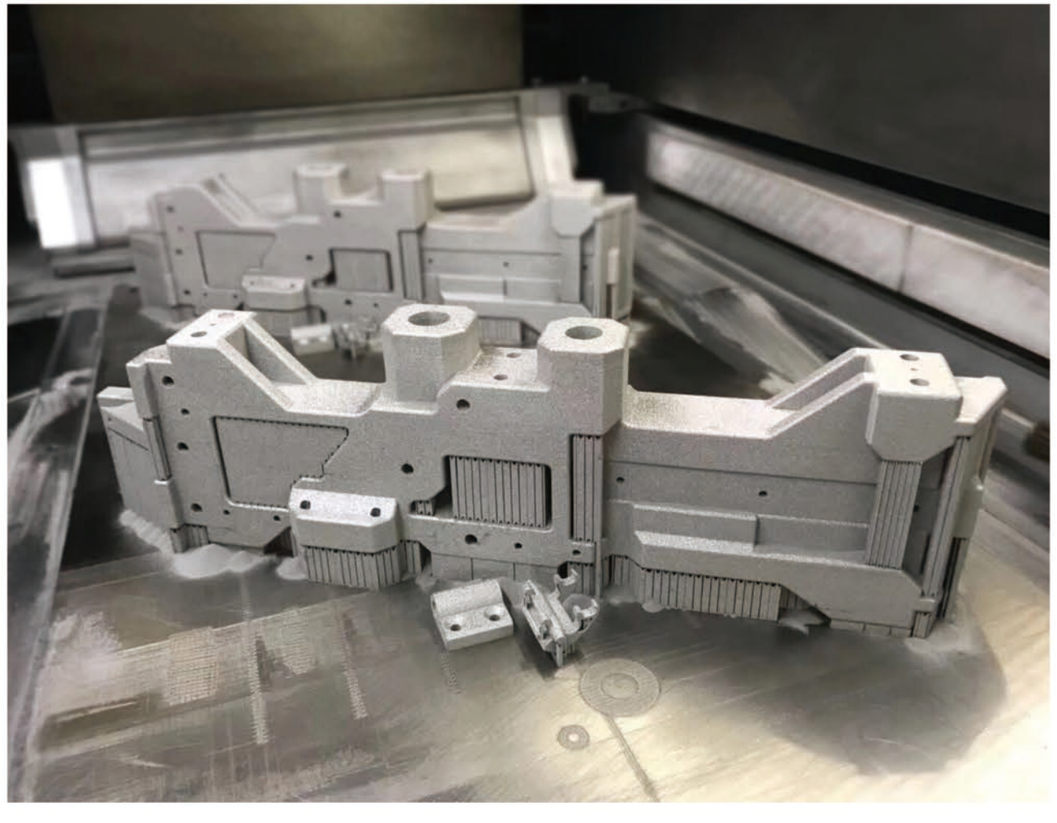




Samples Pictures



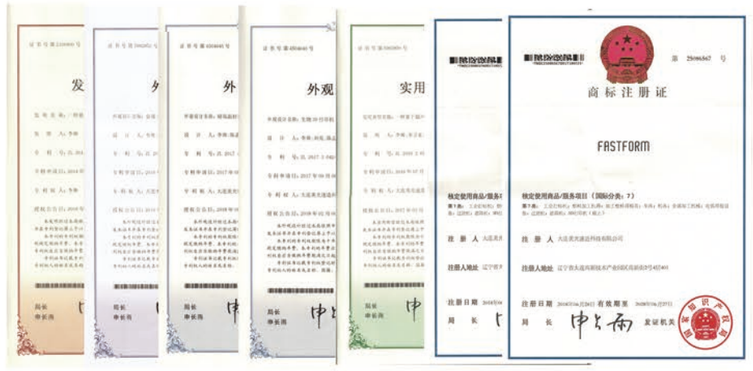




权威认证 Certification

ISO9001证书

Patents



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