MORE EFFICIENT
IN MANUFACTURING

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LIM LASER

METAL 3D PRINTING TOTAL SOLUTION PROVIDER

LASER IS MAKING

CHINA

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COMPANY PROFILE

Tianjin LiM Laser Technology Co., Ltd. (referred to as the company or LiM Laser) is located in Zhongbei Industrial Park, Xiqing District, Tianjin. LiM Laser is committed to providing advanced additive manufacturing equipment, auxiliary equipment and 3D printing services for global customers. It is a leading provider of metal 3D printing integrated solutions in China.

LiM Laser covers an area of more than 60,000 square meters, with an annual production capacity of 450 sets of various types of 3D printing equipment.The company has more than 300 employees including more than 90 technical R&D engineers, and more than 50% of the team members have more than10 years of product development and lean manufacturing management experience. LiM Laser has more than 100 core technology patents and has been a national high-tech enterprise. The company has passed ISO9001, ISO14001, ISO45001 management system certificates and CE, ECM, FDA certifications

With years of technical accumulation and industry exploration, LiM Laser has independently developed LiM-X150A, LiM-X260A, LiM-X400M+, LiM-X400, LiM-X650, LiM-X800, LiM-X650H, LiM-X800H, LiM-X800H+, LiM-X1300H, LiM-X1500H, LiM-X1500HF, LiM-X2000H+ and other selective laser melting equipment, LiM-S series directed energy deposition equipment, LiM-R series laser cladding equipment and customized equipment for special industries. LiM Laser has mature production processes of various kinds of materials, such as titanium alloy, aluminum alloy, superalloy, copper, die steel, stainless steel, high strength steel etc., especially for building and printing of medium and large parts, LiM Laser has mature solution. At present, LiM Laser's 3D printing equipment and many technical achievements have been widely used in aerospace,mold, education, medical, automotive manufacturing,energy,locomotive and many other fields.

LiM Laser will always adhere to high-quality manufacturing, continuously carry out industrial technological innovation, stays closely around the additive manufacturing industry and innovative development trends, and strive to become a first-class metal 3D printing equipment manufacturer in the field of additive manufacturing.



EMPLOYEE 300+	NO.R&D ENGINEERS 90+		TOTAL AREA 60000+ m²	PRODUCTION CAPACITY 450+ Sets/year
PATENTS 110+	EQUIPMENT TYPE 30+	MATERIAL VERIFICATION 30+	CUSTOMERS SERVEC 100+	PRINTED PARTS DAIVRRSSERVICE 50000+





Metal additive manufacturing R&D, production and testing base

Assorting the entire supply chain of 3D printing post-processing equipment and production lines

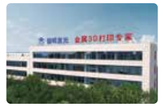





DISTRIBUTION OF GROUP
STRATEGIC DEVELOPMENT

Tianjin LiM Laser

Metal 3D printing equipment
R & D and production base



Anhui LiM Laser

Mass production base of
metal 3Dprinting equipment

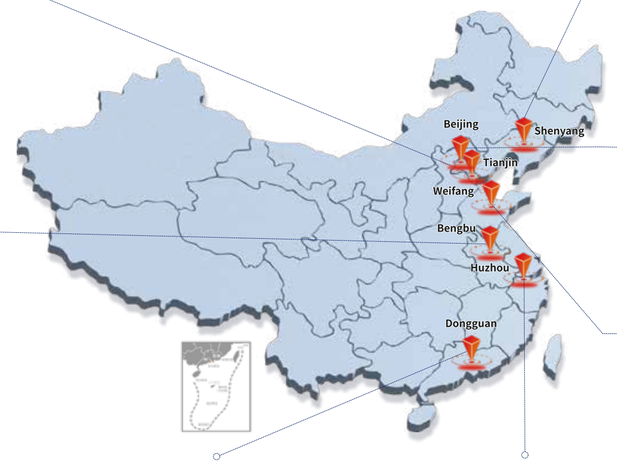




Guangdong LiM Laser

South China
marketing display center





Huzhou TSC

Headquarters

Shenyang Jinghe CNC

Metal 3D printing service &
Machining & Welding base



Beijing TSC

Technology R&D Center



Weifang TSC

Metal 3D printing service &
Machining & Welding base



CERTIFICATION AND SUPPORT
PROPERTY RIGHTS 100+

CE Certification

FDA Certification

SIL Certification

ISO9001:2015/ISO14001:2015
ISO45001:2018



APPLICATION FIELDS
AND APPLICABLE SCENARIOS

AIRCRAFT

AEROSPACE

MARINE

GAS ENGINE

CONSTRUCTION MACHINES

AUTOMOTIVE

MEDICAL

MOLD

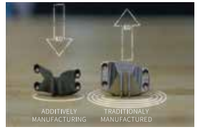
EDUCATION

CULTURE & CREATIVITY

3C PRODUCTS



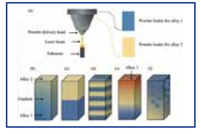
Complex Structural Components



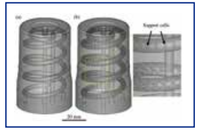
Lightweight



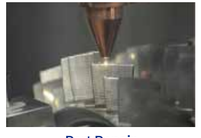
Integration Of Parts



Functionally Graded Material



Conformal waterway

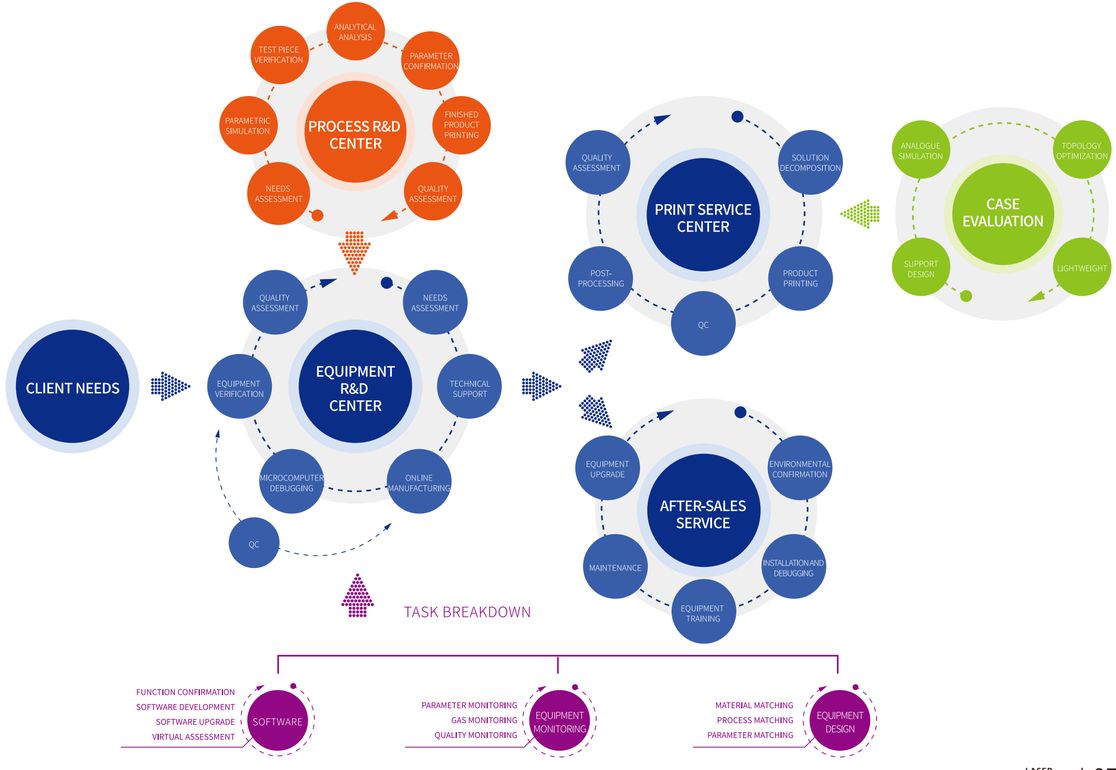


Part Repair

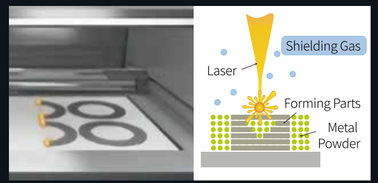


Localized Manufacturing

FULL PROCESS SOLUTION



SELECTIVE LASER MELTING



Selective laser melting technology

INTRODUCTION

Selective laser melting (SLM) is a major technology in metal additive manufacturing. The technology selects laser as the energy source, scans the metal powder bed layer by layer according to the path planned in the 3D CAD slice model, then the scanned metal powder will be melted and solidified to achieve the effect of metallurgical bonding, finally the metal parts designed by the model will be formated.

Material Build Process and Staus

Material	Build Process and Staus	Tensile strenth (Mpa)	Yelid Stenth (Mpa)	Eongation at Break(%)
TC4	Forging annealed state	⩾895	⩾825	⩾10
	SLM	960~1060	900~1010	12~18
TA15	Forging annealed state	930~1130	⩾855	⩾10
	SLM	960~1130	960~1030	11~20
AlSi10Mg	Cast solution+artificial aging state	⩾240	-	⩾2
	SLM	330~350	200~230	5~11
AlMgScZr	Bar solution state	⩾540	⩾480	⩾7
	SLM	530~580	480~530	7~12
GH4169	Forging solution+artificial aging state	⩾1280	⩾1030	⩾12
	SLM	1350~1500	1150~1260	15~25
GH3625	Forging solution state	⩾830	⩾410	⩾30
	SLM	860~950	450~550	40~60
GH3536	Forging solution state	⩾690	⩾275	⩾25
	SLM	700~820	300~360	40~65
316L	Plate standard	⩾480	⩾175	⩾40
	SLM	580~700	280~400	50~70

General configuration of LiM-X series equipment

Shielding Gas: Ar/N_2, 4~7bar
Oxygen Content Requirement: ⩽100ppm
Laser Beam Quality: $M^2 \leqslant 1.1$
Fieldlens: Sill F- θ (Lens)
Scanner: Scanlab(High-speed Scanner)

Molding Material	Material Brand
Aluminum Alloy	AlSi10Mg、AlMgScZr、AlSi7Mg
Titanium Alloy	TC4、TA15、TC11、TA0、TA1
High-temperature Alloy	GH4169、GH3536、GH3625 GH3128、GH4099、GH5188 GH3230、GH4202
Cobalt-base Alloys	CoCrW、CoCrMo、CoCrWMo
Stainless Steel And High-strength Steel	316L、304、304L、321(1Cr18Ni9Ti) S-03、630(17-4PH)、15-5PH、CX 420、MS1(18Ni300)、H13、42CrMo4 20CrMnTi
Copper and Copper Alloys	Pure Copper、CuCZr、CuNI2SiCr、 CuSn10、CuNi30、H85
Refractory Alloy	W、Mo、Ta10W
Function Alloy	4J36、1J80、1J50、4J32
High-entropy Alloys	AlCoCrFeNi、CoCrAlNi

The performance of printed materials is close to that of forgings, and some are better than forgings.

TECHNICAL ADVANTAGES

HIGH-STABILITY FORMING PLATFORM

Equipment research and development takes technology as the starting point, integrating the data and experience accumulated by the R&D and technical service teams. During the equipment testing and verification phase, iterative optimization is continuously performed based on team feedback to achieve the best match between equipment and technology.

REASONABLE DESIGN

The overall structure of the equipment is reasonable in design, beautiful in appearance, easy to operate and maintain.

ENDURING EFFECT FILTER SYSTEM

The recycling system adopts permanent filter element, with a lifespan of more than 100,000 hours, with backflushing function, and the printing is not interrupted.

CUSTOMIZABLE

The series of equipment adopts a modular design, and laser power, scanner number, building size, monitoring module, etc. can be customized,according to customer needs. Each module is independently designed, widely used in series products, and has good reliability. The stability of customized products and standard products is equivalent.

INTELLIGENT MONITORING

The oxygen content monitoring function in the forming chamber is maintained within 100ppm, and the limit is automatically alarmed; it is equipped with a powder bed monitoring module and a built-in high-definition camera. After each powder laying and fusing, photos of the powder bed conditions are taken and analyzed by the algorithm. By comparison, the powder quality and fusing quality of each layer can be monitored, and the abnormal powder can be automatically replenished.

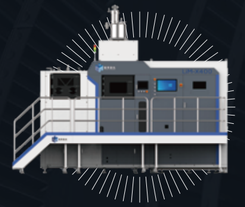
MULTIPLE POWDER RECYCLING SYSTEM

Fully automatic powder recycling system
During printing, the system can automatically and efficiently complete three processes of powder recovery, sieving, and feeding. After printing completion, it moves to the powder cleaning position, where the powder in the forming cylinder can be recycled to the powder storing bin via recycling system under argon protection, which people is isolated from powder throughout the process.
Separated powder recycling system
During printing, powder can be pumped with only one-click, and also it is equipped with a large-capacity powder drop tank, a transfer tank, and an efficient sieving system. The powder is transferred with people isolated from powder throughout the entire process in high work efficiency and low failure rate.

Mature and stable additive manufacturing system



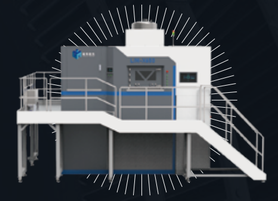


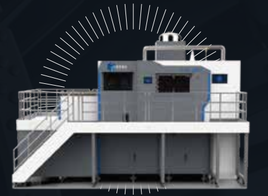


	Technical Parameters of LiM-X150A Series	Technical Parameters of LiM-X260A Series	Technical Parameters of LiM-X400
Build Envelope	150mm×150mm×220mm Incl.20mm Substrate Sleeve cylinder:Φ100x75mm,φ80x75mm(Optional)	260mm×260mm×430mm Incl.30mm Substrate	450mm×450mm×550mm Incl.50mmSubstrate
Laser Power	Domestic (IPG optional)200W; 500W	IPG 500W; 500W×2	IPG 500W×4; 500W×6 1000W×4; 1000W×6
Beam Focus Diameter	40~60μm	70~100μm	70~100μm
Building Speed[1]	30cm³/h	30cm³/h; 50cm³/h	140cm³/h; 200cm³/h
Power Dissipation	⩽6kW	⩽6kW; ⩽8kW	⩽15kW; ⩽20kW
Preheating Temperature	RT+20°C~200°C, Optiona RT+20°C~500°C	RT+20°C~200°C	RT+20°C~200°C
Recoater	Variable Speed Powder Recoater<One-way>	Variable Speed Powder Recoater<One-way>	Variable Speed Powder Recoater<One-way/Two-way>
Power Input	AC220V, 50Hz	AC380V, 50Hz, 3Ph/N/PE	AC380V, 50Hz, 3Ph/N/PE
Dimensions	Cuboid Cabin: 1.5m×1m×1.85m ; Cylinder Cabin : 1m×1.7m×2.1m (Optiona)	3.42m × 1.21m × 2.4m (excluding tricolor light)	4.8m×3.5m×4.5m
Weight	~1000kg	~3200kg	~8000kg
Installation Size	2.7m×2.6m×2.3m	5m×3.5m×3.4m	9m×9m×6m

(1) It depends on the geometry, material and parameter set of the part.

Diverse application scenarios, efficient solutions





	Technical Parameters of LiM-X650	Technical Parameters of LiM-X800
Build Envelope	650mm×650mm×860mm Incl. 60 mm Substrate	800mm×800mm×920mm Incl.120mm Substrate
Laser Power	IPG 500W×4; 500W×6; 1000W×4; 1000W×6	IPG 500W×6; 500W×8; 500W×10 1000W×6;1000W×8;1000W×10
Beam Focus Diameter	70~100μm	70~100μm
Building Speed[1]	140cm³/h; 200cm³/h	200cm³/h; 280cm³/h; 320cm³/h
Power Dissipation	⩽15kW; ⩽20kW	⩽22kW; ⩽25kW; ⩽26kW
Preheating Temperature	RT+20°C~200°C	RT+20°C~200°C
Recoater	Variable Speed Powder Recoater<One-way/Two-way>	Variable Speed Powder Recoater<One-way/Two-way>
Power Input	AC380V, 50Hz, 3Ph/N/PE	AC380V, 50Hz, 3Ph/N/PE
Dimensions	6.6m×5.6m×5.1m	7.6m×5.8m×5.6m
Weight	~19000kg	~25000kg
Installation Size	9m×8m×5.8m	8m×9.7m×6m

(1) It depends on the geometry, material and parameter set of the part.

BOOST THE CONSUMER GOODS INDUSTRY

IMPROVE QUALITY AND EFFICIENCY

HIGH MOLDING QUALITY

A variety of scanning strategies are used to segment a single part, so that the part can acquire diverse physical properties at a microscopic level, improve performance dimensions, and thereby improve printing quality.

PRODUCTION QUALITY MANAGEMENT

Predictive maintenance is provided for the overload alarm of the overflow toner bucket, which is the most common problem in the printing production process. Users can predict the time to clean the toner overflow bucket through the powder volume curve to avoid unexpected shutdowns.

LiM-X400M+



EFFICIENT PRINTING

six-laser high-efficiency printing, two-way powder spreading, giving full play to the ultimate efficiency of the laser.



GRAFTING PROCESS

Positioning and printing directly on the processed part base, the positioning accuracy of automatic grafting technology can reach ±0.1mm.



BREATHABLE TECHNOLOGY

LiM LaserThe third-generation breathable steel technology achieves small pore size and multi-directional ventilation. By optimizing the quality at the interface between the breathable and dense zones, it greatly improves the overall yield of parts, offering a flexible and robust solution to gas trapping in molds.



Technical Parameters of LiM-X400M Series

Build Envelope	450mmx350mmx420mm Incl. 60mm Substrate
Laser Power	IPG 500W×3;500W×6
Beam Focus Diameter	70~100μm
Building Speed(1)	75cm³/h;150cm³/h
Power Dissipation	⩽9kW;12kW
Preheating Temperature	RT+20°C~200
Recoater	Variable Speed Powder Recoater<One-way/Two-way>
Power Input	AC380V, 50Hz, 3Ph/N/PE
Dimensions	2760mmx1300mmx2500mm
Weight	~2500kg
Installation Size	5mx3.5mx3.5m

(1) It depends on the geometry, material and parameter set of the part.

AUTOMATED MASS PRODUCTION LINE FOR SLM

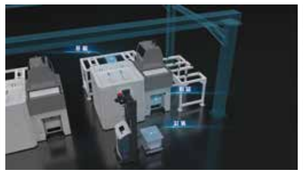
"DARK FACTORY" ILLUMINATES LARGE-SCALE MANUFACTURING



Highly Integrated and Located Side by Side



Customized AGV for Mass Production



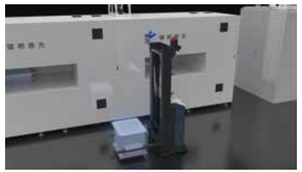
AGV Compatible with Building Unit, Powder Tank and Substrate



Innovative Building Unit Loading Method



Innovative,Safe and Automatic Powder Tank Auto-fit Method



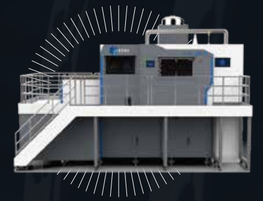
Argon Protection During Transfer

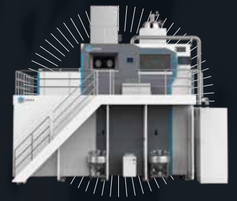


One-Stop Preparation for Next Printing Cycle.

High form factor solutions



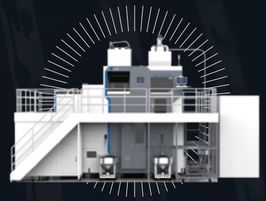


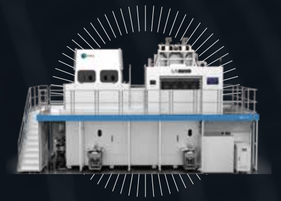


	Technical Parameters of LiM-X650H	Technical Parameters of LiM-X800H	Technical Parameters of LiM-X800H+
Build Envelope	650mm×650mm×1580mm Incl.80 mm Substrate	800mm×800mm×1660mm Incl.80 mm Substrate	800mm×800mm×2620mm Incl.120mm Substrate
Laser Power	IPG 500W×4; 500W×6; 1000W×4; 1000W×6	IPG 500W×6; 500W×8; 500W×10 1000W×6;1000W×8;1000W×10	IPG 500W×6; 500W×8; 500W×10 1000W×6; 1000W×8; 1000W×10
Beam Focus Diameter	70~100μm	70~100μm	70~100μm
Building Speed(1)	140cm³/h; 200cm³/h	200cm³/h; 280cm³/h; 320cm³/h	200cm³/h; 280cm³/h; 320cm³/h
Power Dissipation	⩽15kW; ⩽20kW	⩽22kW; ⩽25kW; ⩽26kW	⩽22kW; ⩽25kW; ⩽26kW
Preheating Temperature	RT+20°C~200°C	RT+20°C~200°C	RT+20C~200°C
Recoater	Variable Speed Powder Recoater <One-way/Two-way>	Variable Speed Powder Recoater <One-way/Two-way>	Variable Speed Powder Recoater <One-way/Two-way>
Power Input	AC380V, 50Hz, 3Ph/N/PE	AC380V, 50Hz, 3Ph/N/PE	AC380V, 50Hz, 3Ph/N/PE
Dimensions	7.5m×5.5m×5.5m	7.6m×6m×7.2m	8m×5.8m×6.9m
Weight	~20000kg	~20000kg	~30000kg
Installation Size	10m×8.3m×6.5m	9.1m×7m×7.5m	9.5m×6.8m×7.2m

(1) It depends on the geometry, material and parameter set of the part.







	Technical Parameters of LiM-X1250H	Technical Parameters of LiM-X1300H	Technical Parameters of LiM-X1500H
Build Envelope	1250mm×1250mm×1650mm Incl.150mm Substrate	1300mm×650mm×1600mm Inc.100mm Substrate	1500mm×1500mm×1650mm Incl. 150mm Substrate
Laser Power	IPG 500W×9;500W×16 1000W×9; 1000W×16	IPG 1000W×8; 1000W×10; 1000W×12	IPG 1000W×16; 1000W×24
Beam Focus Diameter	70~100μm	70~100μm	70~100μm
Building Speed(1)	310cm³/h; 540cm³/h	280cm³/h; 320cm³/h; 400cm³/h	540cm³/h; 850cm³/h
Power Dissipation	⩽64kW ; ⩽78kW	⩽37kW; ⩽38kW; ⩽41kW	⩽78kW; ⩽88kW
Preheating Temperature	RT+20C~200°C	RT+20°C~200°C	RT+20°C~200°C
Recoater	Variable Speed Powder Recoater <One-way/Two-way>	Variable Speed Powder Recoater <One-way/Two-way>	Variable Speed Powder Recoater <One-way/Two-way>
Power Input	AC380V, 50Hz, 3Ph/N/PE	AC380V, 50Hz, 3Ph/N/PE	AC380V, 50Hz, 3Ph/N/PE
Dimensions	9.6m×6.2m×7.5m	7.3m×7.9m×7.6m	10m×6m×6.5m
Weight	~65000kg	~45000kg	~70000kg
Installation Size	12m×8.6m×8.7m	10.5m×10m×8m	12m×8m×7.5m

(1) It depends on the geometry, material and parameter set of the part.

LARGE FORMAT ADDITIVE MANUFACTURING EQUIPMENT

FLYING PRINTING

A movable multi-beam system which is 1unit module composed of multiple galvanometers, moves and prints one by one along the same direction.Which helps extending the print range with a limited number of galvanometers. The 1.5-meter forming format integrates 20 laser beams, with high forming efficiency and stable and reliable forming quality.

Technical Parameters of LiM-X1500HF

Build Envelope	1500mm×1500mm×1650mm Incl. 150mm Substrate
Laser Power	IPG 1000W×16;1000W×20
Beam Focus Diameter	70~100μm
Building Speed(1)	540cm³/h;700cm³/h
Power Dissipation	⩽78kW;⩽88kW
Preheating Temperature	RT+20°C~200°C
Recoater	Variable Speed Powder Recoater <One-way/Two-way>
Power Input	AC380V , 50Hz , 3Ph/N/PE
Dimensions	11m×6m×7m
Weight	~80000kg
Installation Size	13mx8mx8m

INTELLIGENT POWDER RECOATING

Intelligent variable speed powder recoating, efficiency improvement plus single recoater bidirectional powder recoating structure, simplifies tool adjustment procedures, reduces complexity.

EXTREME LARGE WIND FIELD DESIGN

The dust removal tuyere moves with galvanometers, shortened the span between the air outlet and inlet to 300mm, reduced the difficulty of dust cleaning and ensured printing quality.

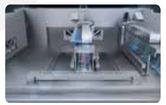
Z-AXIS PRECISION DRIVE SYSTEM

The over-heavy double drive balance system ensures Z-axis positioning accuracy of better than 10μm and repeated positioning accuracy of better than 5μm.

(1) It depends on the geometry, material and parameter set of the part.

LiM-X1500HF

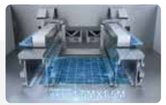




Galvanometer movement
Reduce flow path distance

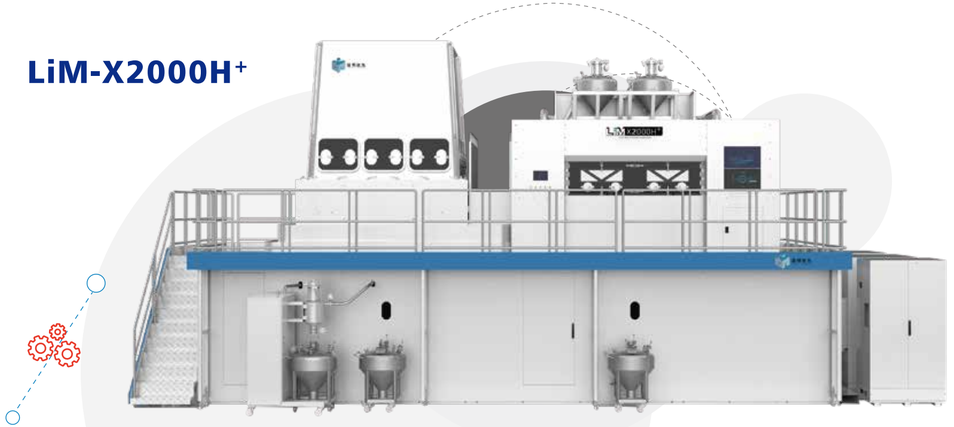


Optimize air outlet and wind field control
More beams for the same format



Combination solution enables ultra-large size printing
High power, large layer thickness

LiM-X2000H⁺



Technical Parameters of LiM-X2000H⁺

Build Envelope	2000mm×2000mm×2700mm Incl.200mm Substrate
Laser Power	IPG 1000W×25;1000W×36;1000W×55
Beam Focus Diameter	70~100μm
Building Speed(1)	500cm³/h;720cm³/h;1100cm³/h
Power Dissipation	⩽89kW;⩽111kW;⩽142kW
Preheating Temperature	RT+20°C~200°C
Recoater	Variable Speed Powder Recoater <One-way/Two-way>
Power Input	AC380V , 50Hz , 3Ph/N/PE
Dimensions	12.5m × 6.5m (main unit + step platform) H = 6.2m (above ground)
Weight	~140000kg
Installation Size	17m × 9m, H = 7.2m (above ground), pit depth 4.7m

(1) It depends on the geometry, material and parameter set of the part.

LASER ARRAY, COLLABORATIVE FORMING

Standard 25 laser, optional 36 and 55 laser collaborative forming, doubling the number of lasers to drive the efficiency of forming and significantly shorten the production cycle.

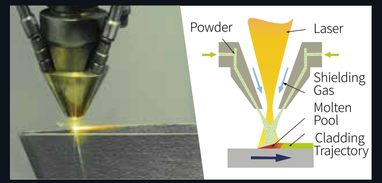
SELF DEVELOPED SOFTWARE WITH INTELLIGENT FAULT TOLERANCE

Our self-developed software provides intelligent protection, relying on advanced algorithms to achieve laser redundancy guarantee. It automatically diagnoses, isolates, and dynamically optimizes the scheduling of other laser connections for single point faults, ensuring continuous high resilience printing and rejecting unexpected downtime losses.

DOUBLE LAYERED WIND FIELD DESIGN

Innovative double-layer wind field design can effectively remove smoke and dust under ultra large spans, improving the uniformity and stability of ultra large format multi laser printing.

LASER ENGINEERED NET SHAPING TECHNOLOGY



Schematic diagram of LENS

INTRODUCTION

LENS technology is a combination of rapid prototyping and laser cladding. The metal powder is used as raw material and high energy laser is used as heat source. The metal powder is melted layer-by-layer and rapidly solidified according to the CAD model of the part.

LENS--TC4 titanium alloy material properties (Room Temperature)

	tensile strength Rm/Mpa	yield strength RP 0.2/Mpa	Elongation rate A/%	reduction of area Z/%	Impact toughness aKU(J/cm²)
Lengthways	⩾920	⩾850	⩾12	⩾30	⩾45
Horizontal	⩾920	⩾850	⩾10	⩾25	⩾45
GJB2744A Forging annealed state	⩾895	⩾825	⩾8	⩾20	—

LENS--TA15 titanium alloy material properties

	Greenhouse tensile strength Rm/Mpa	high temperature tensile strength (500°C) Rm/Mpa	Elongation rate A/%	impact toughness aKU(J/cm²)	500°C/470Mpa Durability life(h)
Lengthways	⩾960	⩾660	⩾12	⩾50	>70
Horizontal	⩾970	⩾665	⩾10	⩾45	>80
GJB2744A Forging annealed state	930~1130	⩾855	⩾8	⩾20	⩾50

TECHNICAL ADVANTAGES

PROCESS BASED

Equipment development takes process as the starting point, integrates the data or experience accumulated by the process development and technical service team, and continuously iterates and optimizes based on feedback from the process team during the equipment testing and validation stage to achieve the optimal match between equipment and process.

HIGHLY INTEGRATED CUSTOMIZED ON DEMAND

The operating system is highly integrated. Optical, mechanical, dedusting and purification, powder feeding and other major systems are centrally operated and monitored in a unified manner; new functions can also be customized according to customer needs.

INNOVATION LEADS INDEPENDENT R&D

The core components such as the powder feeder are all independently designed, which can realize the uniform distribution of various materials; with the self-developed pre-processing software, it is stable and easy to operate, and the product forming quality is high.

WIDE RANGE SUPPORT

Thanks to our strategic positioning, we are able to provide technical support to our customers in the whole process dimension of additive manufacturing. Additive manufacturing equipment cannot exist in isolation. The upstream and downstream processes, such as powder selection and testing, machining, heat treatment, nondestructive testing, etc. all play an important role in a successful additive manufacturing process, so the comprehensive support work is also one of our core competitiveness.

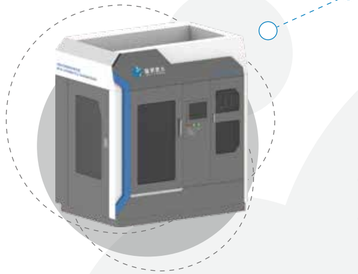
EXCELLENT QUALITY HIGH RELIABILITY

Through years of practical application verification, equipment selection and system integration are safe and reasonable. The main components, lasers and cladding heads are imported from well-known brands; the machine tool adopts high-precision transmission device; the box structure is strong, safe and reliable. A filter element with life monitoring is equipped to achieve long-term stable operation.

SAFE DESIGN WORRY-FREE OPERATION

The sealing system is safe, stable, simple and reliable, with multiple monitoring interlocking devices to warn the current equipment status and prevent argon gas damage;High-efficiency dust removal and purification method and unique filter element replacement device can effectively prevent the damage of purification column and the risk of explosion;Professional laser protective glass to protect operators from laser radiation.

CUSTOMIZABLE LENS
S SERIES MACHINE



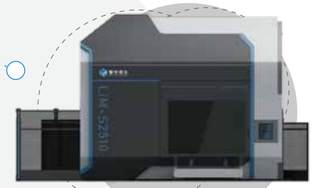
LiM-S0402 | Building Size 500mm×300mm×400mm

Small equipment Customizable Range 200mm×200mm×200mm~1000mm×300mm×350mm



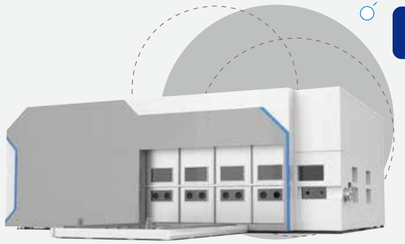
LiM-S1006 | Building Size 1000mm×800mm×500mm

Medium equipment Customizable Range 400mm×400mm×400mm~1500mm×800mm×550mm



LiM-S2510 | Building Size 2500mm×2000mm×1500mm **Large equipment**

Large equipment Customizable Range 1000mm×1000mm×1000mm~4500mm×4500mm×1500mm



LiM-S4510 | Building Size 4500mm×4500mm×1500mm **Large equipment**

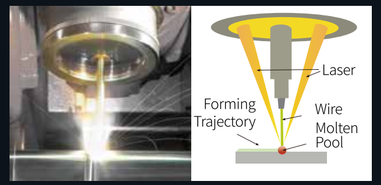
Technical Parameters of LENS Machine

Machine Series	Small	Medium	Large
Standard Machine	LiM-S0402	LiM-S1006	LiM-S2510，LiM-S4510
Customizable Range	200mm×200mm×200mm~1000mm×300mm×350mm	400mm×400mm×400mm~1500mm×800mm×550mm	1000mm×1000mm×1000mm~4500mm×4500mm×1500mm
Building Size	500mm×300mm×400mm	1000mm×800mm×500mm	2500mm×2000mm×1500mm；4500mm×4500mm×1500mm
Laser Power	Recommended 4kW	Recommended 6kW	Recommended 8kW
Function	Bilding-Cladding		
Cladding Head	Midium and low laser power		High laser power
Minimum Spot Diameter	1.2mm		2.7mm
Layer Thickness	0.8mm		
Positoning Accuracy	0.08mm		
Repeatability	±0.05mm		
Feed Rate	1~2000mm/min		
Expandable Axes	Two-axis Positioner		
Working Gas	Ar/N_2		
Oxygen	<50ppm		
Powder Feeding Method	Negative ballast air powder feeding		
Available Powder	Titanium Alloy，Iron-based Alloy，Cobalt-based Alloy，Nickel-based Alloy，etc.		
Power Supply	3P+N+PE 380V±5%		
Pre-processing Software	LiMAMS-LENS Customizable		
D*W*H/ Installation Size	5m×4m×3.5m	6m×6m×5m	10m×10m×7m；12m×15m×7m

Note: For the parameters of standard machine, we can further evaluate customer's demands and adiust them for a hioh dearee of customization.



LASER COAX WIRE CLADDING



Schematic diagram of Laser Coax Wire Cladding

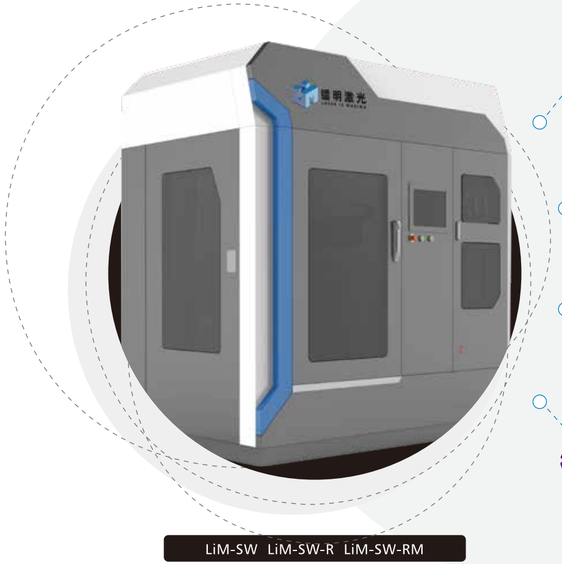
INTRODUCTION

Laser Coax Wire Cladding, based on the unique annular optical path and coaxial supply of materials, the welding wire can be welded uniformly, and a good connection with the molten pool at the target position can be achieved. Compared with the powder feeding laser forming, 100% of the material is imported and processed, so the material utilization rate is very high. Even if the working distance fluctuates within a certain range, the energy can be evenly distributed in a completely annular focus area, thereby ensuring a stable processing process. The application fields of laser coaxial wire feeding process currently mainly include high-end workpiece repair, coating of corrosion-resistant materials, generation of thin-walled 2.5D structures, and large-volume additive manufacturing.

Parameters of Laser Coax Wire Cladding System

Structure	Machine Tool	Six-axis Robot	
		Fixed Workstation	Mobie Workstation
Series	LiM-SW	LiM-SW-R	LiM-SW-RM
Longest Shaft Repair	10000mm		————
Size Range	Customizable		
Laser Power	2-6kW		
Wire Diamete	1.0~1.6mm		
Molten Pool Width	2.0~3.5mm		
Positioning Accuracy	0.08mm		
Repeatability	±0.05mm		
Feed Rate	1~2000mm/min		
Expandable Axis	Two-axis Positioner	Linear axis ,Gantry axis Two-axis Positioner	Two-axis Positioner
Diameter of Positioner	Customizable 210mm，320mm，630mm		
Available Wire Material	Titanium Alloy，Stainless Steel，High Temperature Alloy，etc.		
Power Supply	3P+N+PE 380V±5%		
Pre-processing Software	LiMAMS-SW Customizable		

LASER COAX WIRE
CLADDING SERIES MACHINE



LiM-SW LiM-SW-R LiM-SW-RM

CUSTOMIZABLE

With accumulated years of process service and equipment R&D experience, we can provide high maturity of process and equipment ,We also provide customized equipment with customer's specific needs.

SELF-DEVELOPED SOFTWARE

The pre-processing software system is independently developed, with complete functions, convenient operation, perfect compatibility with equipment. New functions can also be customized.

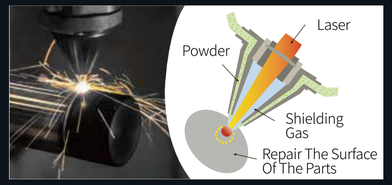
SAFE AND RELIABLE

Equipment integration is scientific and reasonable, ensuring the safety of operators, equipment and parts through high quality of equipment components, good hardware and software logic design , production and processing monitoring and other aspects.

HIGH INTEGRATION

The system is highly integrated.The main parts such as laser , mechanical , dedusting and purification system and material feeding system are operated centrally, with unified and friendly monitoring interface.

LASER CLADDING



Schematic diagram of laser cladding technology

INTRODUCTION

Laser cladding technology is the placement of certain coating materials on the surface of the coated substrate with different filling methods, and the laser makes both the coating material and the substrate surface melt at the same time. The cladding layer has low dilution but strong bonding force. It is metallurgically combined with the substrate, which can significantly improve the wear resistance, corrosion resistance, heat resistance, oxidation resistance or electrical properties of the surface of the substrate material, so as to achieve the purpose of surface modification or repair, and meet the specific performance requirements of the material surface while saving a lot of materials.

Laser Cladding Series Machine

Structure	Machine Tool	Six-axis Robot	
		Fixed Workstation	Mobie Workstation
Series	LiM-SC	LiM-SC-R	LiM-SC-RM
Longest Shaft Repair	10000mm		————
Size Range	Customizable		
Laser Power	2-8kW		
Positioning Accuracy	0.08mm		
Repeatability	±0.05mm		
Feed Rate	1~2000mm/min		
Expandable Axis	Two-axis Positioner	Linear axis ,Gantry axis Two-axis Positioner	Two-axis Positioner
Diameter of Positioner	Customizable 210mm，320mm，630mm		
Available Powder	Titanium Alloy，Iron-based Alloy，Cobalt-based Alloy，Nickel-based Alloy，etc		
Power Supply	3P+N+PE 380V±5%		
Pre-processing Software	LiMAMS-SC Customizable		



LiMPF001-2 powder feeder

Adopting the principle of airborne scraper powder feeding, with high automation integration, all process parameters can be remotely controlled by logic, resulting in high powder feeding accuracy and strong stability. At the same time, online powder mixing components can be selected to achieve online mixing and feeding of two different material powders, and the mixing ratio can be controlled in real time, which is very suitable for processing occasions such as gradient melting that require powder mixing.

LASER CLADDING SERIES MACHINE



LiM-SC LiM-SC-R LiM-SC-RM

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AUXILIARY EQUIPMENT AND POWDER CIRCULATION SYSTEM

SPLIT-TYPE POWDER CIRCULATION SYSTEM

MATERIAL SUCTION MACHINE



LiM-XFJ200	
transport efficiency	180L/h
rated power	4kW
rated voltage	AC380V
frequency	50Hz
Device dimensions	1240mm×1220mm×2290mm
weight	~700kg

PURIFIER





LiM-PCE1500 LiM-PCE800-H1600

LiM-PCE400/800/800H/1500				
Applicable powder	Titanium alloys, aluminum alloys, superalloys, stainless steel, etc.			
Maximum installation substrate And the dimensions of the workpiece	457mm×457mm ×800mm	864mm×864mm ×1500mm	864mm×864mm ×800mm	1570mm×1570mm ×1500mm
Maximum load capacity of the platform	700Kg	2000Kg	3000Kg	15000Kg
Substrate and workpiece	380V,50Hz			
working power supply	8KW	12KW	15KW	17KW
rated power	⩽2%			
oxygen content	0.5~0.7 MPa (Air、Ar)			
work gas	2600mm×2600mm ×3100mm	3000mm×3000mm ×3100mm	3000mm×3000mm ×4600mm	5500mm×5900mm ×5800mm
Overall dimensions				
weight	1500Kg	3500Kg	4500Kg	20000Kg

SCREENING MACHINE



LiM-SFJ200	
Applicable powder	Titanium alloy, aluminum alloy, superalloy, stainless steel, etc.
working power supply	380V,50Hz
rated power	600W
Maximum cleaning time	⩽10min
oxygen content	⩽5%
work gas	0.5~0.8Mpa(Air、Ar)
Screening efficiency	~120L/h





POWDER SUPPLY UNIT

LiM-BFQ15/40/200			
Overall dimensions	300mmX360mm X700mm	470mmX470mm X750mm	DN800mm X1100mm
Pump powder efficiency		20L/min	
Tank weight	~30kg	~30kg	~30kg
structural material	304 stainless steel		
Inert working gas	Ar、0.3~0.4Mpa		

INTEGRATED POWDER CIRCULATION SYSTEM

INTEGRATED POWDER ROAD

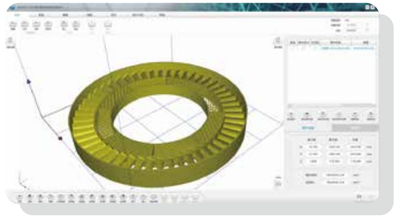
LiM-FL450	
processing efficiency	100L/h
Overall dimensions	1760mmX1930mmX4300mm
power supply	AC380V,50Hz
power	5KW
weight	2300kg
working gas	Ar、0.5~0.7Mpa,minimum flow 300L/min
control gas	Air、0.5~0.7Mpa,minimum flow 50L/min
Working oxygen content	3%

SOFTWARE

Relying on the deep accumulation of metal additive manufacturing, LiM Laser independently develops industrial-grade control software. The software has the ability to manage data throughout the life cycle, collect and analyze key manufacturing data in real time, and dynamically adjust the process with adaptive control strategies.

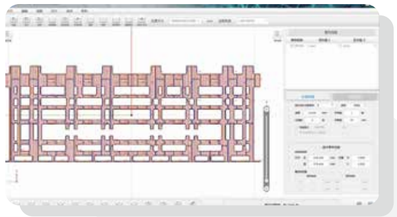
Based on rich experience in equipment manufacturing and process development, a dual closed-loop system of path planning and parameter optimization is constructed, combined with the material property database, automatically matching the optimal process parameters, efficiently planning the scanning path, and taking into account the molding accuracy and efficiency.

The software is open to standardized APIs, SDKs and other secondary development interfaces, which can quickly customize functions and integrate systems for the needs of aerospace, medical implantation, mold manufacturing and other fields, help customers create personalized additive manufacturing solutions, and provide solid digital support for industry innovation.



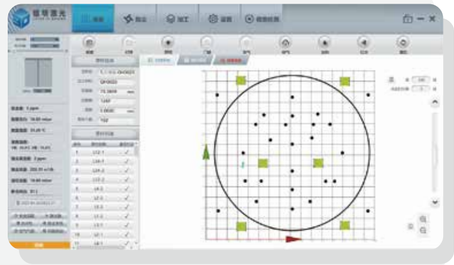
LiMAMS-SLM

LiMAMS-SLM is a preprocessing software for SLM additive manufacturing that completes slicing and path planning of models and supports.



LiMAMS-LENS/SC/SW

LiMAMS is a customizable 2/3D data processing software. The software is suitable for laser engineered net shaping, laser deposition manufacturing, laser cladding with the wire feeding technique and additive manufacturing with the wire feeding technique. In addition to compatible with a variety of file formats, it can also set different process parameters for different process schemes, and has the function of realizing intelligent path optimization and path custom planning.



LiMPCS-SLM

LiMPCS-SLM is a SLM equipment control software. The software has the functions of loading multiformat data files, evaluating printing time, system control, real-time setting of printing parameters, process monitoring, log recording, data transmission to cloud platform , etc., maintaining the normal operation of SLM equipment. The software can be customized to achieve more and more extensive applications.



LiMPCS-LENS/SC/SW

LiMAMS-LENS/SC/SW is series of pre-processing software which can be respectively applied to LENS, laser cladding, laser coax wire cladding and WAAM process and equipment. Different process parameters can be set for different process schemes to achieve intelligent path optimization, custom path planning and other functions.

LiMPCS-LENS is a control software for laser engineered net shaping additive system. LiMPCS-SC is a control software for laser repair system based on coaxial powder delivery. LiMPCS-SW is a control software for laser building or repair system based on coaxial wire feeding.

This series of software can be customized according to customer specific requirements, and can be embedded in each other's structure, to achieve more and more extensive applications.

SLM CASE

AEROSPACE INDUSTRY

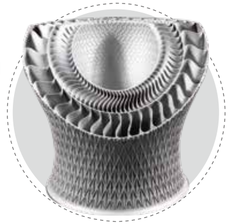


Round To Square

The part size is large, the traditional process of parts manufacturing is difficult, 3D printing greatly simplifies the production process, and SLM3D printing integrated forming compared with LMD can increase more than 50% of the forming efficiency, the machining cycle is shortened accordingly.

Heat Exchanger

It is made of titanium alloy. The optimized design of topology structure is applied, and the metal 3D printing is used for integrated forming. It perfectly combines bionic structure, conformal structure and additive manufacturing process.



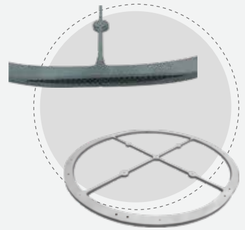


Bay Section

The use of high-strength aluminum powder printing forming, printing appearance effect is good, metallographic, mechanical and other properties are good, the main characteristics of low density, high strength, the material can be mature used in our equipment printing. At the same time, the topology optimization is applied to enhance the structure of the part, and the lattice is used to lightweight the structure of the part.

Frame component used on the Mars Exploration Project

The component is made of titanium alloy and adopts a lightweight design, the micro-unit envelope structure replaces the original solid structure. It is integrally formed by 3D printing and weighs only more than 600g, which is much lower than the weight of the solid structure.





Prespinning nozzle of a certain type

Large volume lattice structure, traditional manufacturing process can not be manufactured. High design freedom. High material utilization, cost saving. By removing the physical structure of non-critical areas, the purpose of lightweight is achieved. The printed lattice structure has the properties of absorbing energy and is very effective at dissipating shock and shock loads.



Helical Structure

The new SLM equipment has achieved a breakthrough in 2.5-meter ultra-high integrated forming, and multi-laser collaborative technology ensures high-precision printing of complex spiral structures, adapting to the rapid manufacturing needs of ultra-size lightweight parts in aerospace, large molds and other fields.

NUCLEAR
POWER INDUSTRY



Electrode plate holder

The complex geometric structure design is formed in one body, with high heat dissipation efficiency, and the integrated printing reduces the assembly demand and shortens the overall production cycle.



A complex flow channel instrument valve body

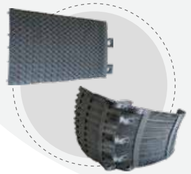
The complex flow channel instrument valve body of the nuclear power plant is printed by SLM technology, the material chemical composition and basic mechanical properties meet the international nuclear power standard RCC-M, which opens the application of metal 3D printing in the field of nuclear power.

SHIPBUILDING
INDUSTRY



A Gas Turbine Flame Tube

The metal 3D printing process replaces 90% of welding processes, shortens processing time, improves the overall structural strength and stability of parts, reduces process scrap rate, greatly improves part manufacturing stability, and reduces part manufacturing costs.



A Gas Turbine Combustion Chamber Shell

Designed in accordance with SLM process,3D prmting is its only manufacturing solution.

AUTOMOTIVE
INDUSTRY



Wheel

The complex structure is formed, the process chain is shortened, the material is saved, and the overall strength is greatly improved through structural design optimization.



Venturi tube

Venturi tube and other parts printed by LiM-X260 equipment have withstood harsh tests under extreme conditions of about 750°C, which greatly saves development costs, shortens verification cycles,and improves verification efficiency.

MOULD
INDUSTRY



Waterway

LiM-X400M series equipment printing automotive parts mold waterway display.



GRAFTING WATER ROAD mold

Realize the combination of different materials for the same part; if traditional processing methods cannot achieve this, a half-machine and half-printing method can be adopted to reduce costs and meet usage requirements.

BICYCLE
INDUSTRY



Bicycle rack



Saddle bracket



Seat post clamp



Middle shaft

3C
INDUSTRY

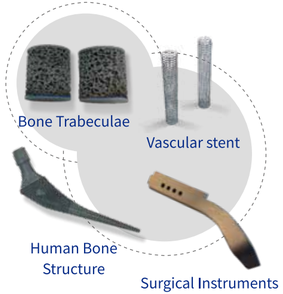


Hinge



Watch frame

MEDICAL
INDUSTRY



Bone Trabeculae

Vascular stent

Human Bone Structure

Surgical Instruments

CULTURAL
CREATIVITY INDUSTRY



Eiffel Tower



The Chosen One



Badminton



Pen

LENS CASE

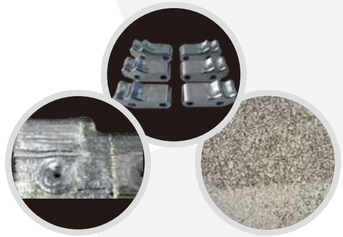
AEROSPACE INDUSTRY



The new-generation manned spaceship test ship has a heat-resistantoutsole for the return cabin.

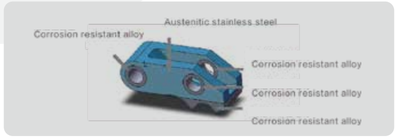
With a diameter of 3.95m, it is Composite manufacturing by 3D printing, which solves the problem of "deformation and cracking" of large integral components. The material utilization rate is increased by 67%, which greatly improves the efficiency of subsequent assembly.

NUCLEAR POWER INDUSTRY



Claw, the key moving parts of nuclear reactor generator sets

Claw, the key moving parts of nuclear reactor generator sets, is formed using LENS technology, which has high material utilization rate and greatly shortens the delivery time of parts.



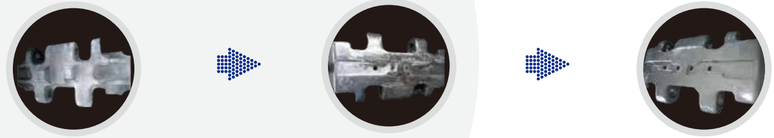
Mining sprocket ring



Repair of hydraulic props in coal mine industry



Track for construction machinery



Before repair

Wear weight 50Kg;The upper and lower surfaces are severely worn, with a thickness of 10-20mm;No obvious abnormalities.

Repair process

Removing fatigue layer→surfacing wear layer→machinng to meetsizerequirements→Laser cladding the wear-resistant layer.

Repair complete

The size is the same as the new one;Using status is observed for 6 months.

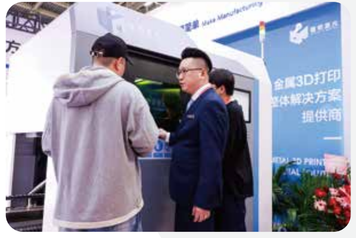
TEAM STYLE

PROFESSIONAL LEADERSHIP, CHASING LIGHT AND DREAMS

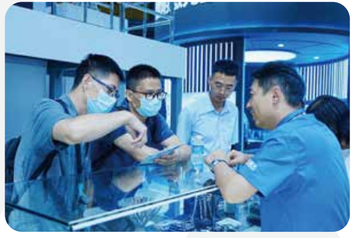










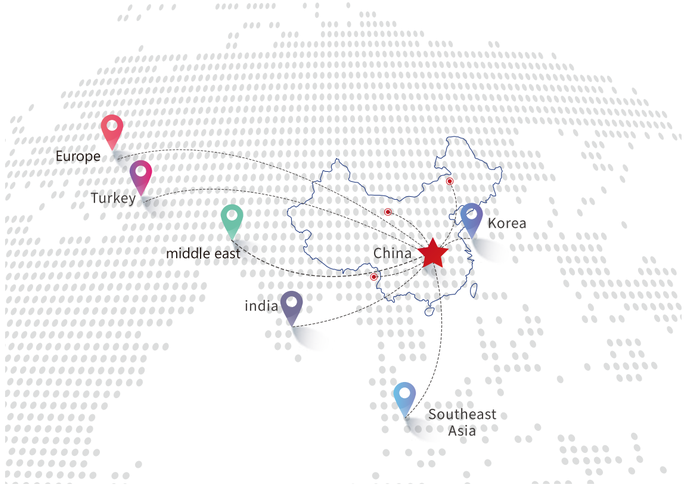


ENDEAVOR·RESPONSIBILITY·PROFESSIONAL·LOVE

PARTNER

THE CUMULATIVE INSTALLED CAPACITY EXCEEDS 300 SETS

SALES NETWORK



SERVICE AND SUPPORT

Independent online technical service group

LIM-Laser establishes a service group for each customer, including sales staff, technical staff and company management, to provide timely feedback within 1 hour for customer issues, and help customers solve problems quickly through video group chats, etc.

Training services

LIM-Laser provides customers with training on the operation, operation, maintenance and common problems of metal 3D printing equipment systems, ensuring the development of customers' technical capabilities, and can provide customized services according to customers' needs.



Establish lifelong maintenance files

LIM- Laser establishes lifelong maintenance files for each equipment put into operation, saving all design documents, equipment factory configuration, maintenance records, etc. during the original equipment manufacturing process. Any time, any place, any event can be traced, thus ensuring the safe and stable operation and quality control of the system

On-site service station and open service

For metal additive manufacturing production line construction projects, LIM-Laser sets up on-site service stations for customers and dispatches professional technicians to stay on site. In addition to installation and commissioning, technical training, it provides a full set of solutions and technical services based on customer needs, as well as solving after-sales service problems of equipment operation, so as to achieve "zero-distance" service