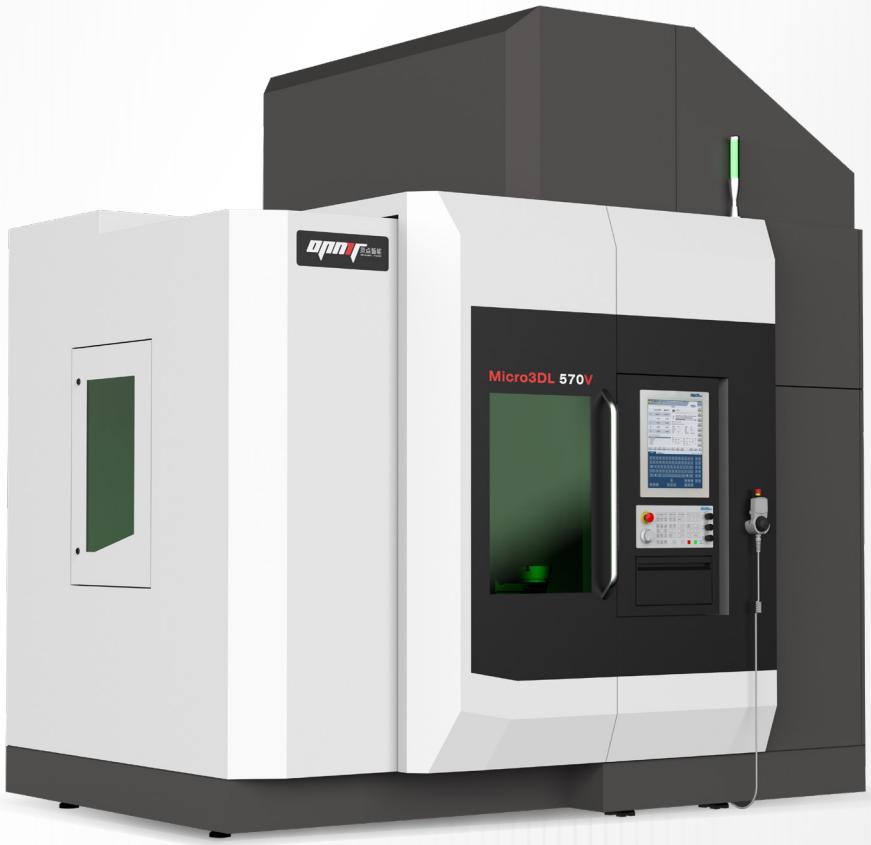
OPMT Mold Texture Industry Processing Solutions

Micro 3D L570V

5-Axis Mold Texture Laser Processing Machine Tool



Innovation in Mold Texturing Technology

In today's mold manufacturing field, texturing technology is undergoing a significant transition from traditional methods to modern technological advancements. The traditional etching process for creating textures on molds requires going through 12 complex procedures to complete the chemical etching treatment of the workpiece surface. This method not only has high requirements for mold materials but also results in subpar product surface quality, with rough textures that typically can only achieve 3 to 5 layers. Moreover, when dealing with large curved surfaces, traditional processes struggle to meet processing needs, often leading to side erosion, edge damage, and poor replicability and consistency. Additionally, this process occupies a large area and poses certain environmental pollution issues.

With the continuous innovation and development of laser technology, its application in the field of mold texturing is seen as a significant technological upgrade. Compared with traditional etching techniques, using laser technology requires only 5 procedures to complete the processing, greatly improving production efficiency and economic benefits. Laser equipment takes up less space, does not cause environmental pollution, making it a more environmentally friendly choice. The advantages of laser processing for mold textures include: high precision, good stability, and no side erosion or edge damage, ensuring high repeatability during the processing. More importantly, laser technology reduces the requirements for processing materials, suitable for various materials including graphite, ceramics, silicon carbide, and all kinds of metals, producing excellent surface quality with fine textures, capable of achieving 30 to 50 layers, especially suitable for processing complex shapes such as curved surfaces, inclined planes, and spherical surfaces.

In summary, the application of laser technology marks a major leap forward in mold.

Unlimited possibilities

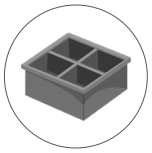
- Ability to process metal wire drawing, 3D texture, fine texture, leather texture, microstructure, etc.

- Laser texture processing accuracy up to **0.01mm**

Suitable for

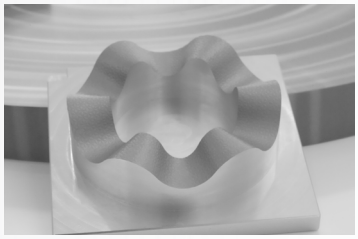
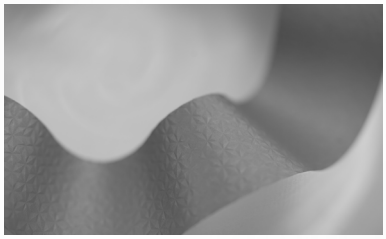
Automobile mold industry

Medical machinery industry

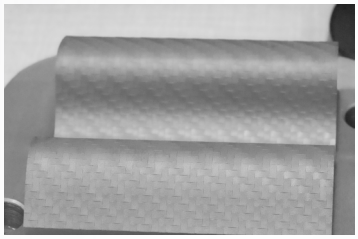
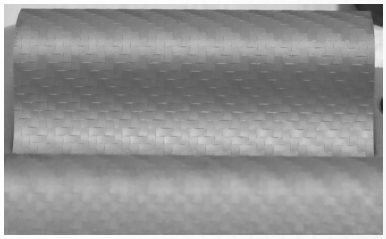
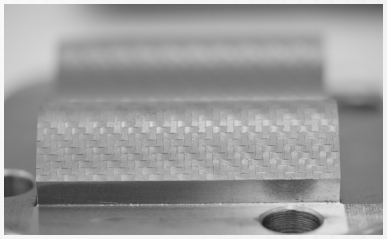


Plastic molds industry

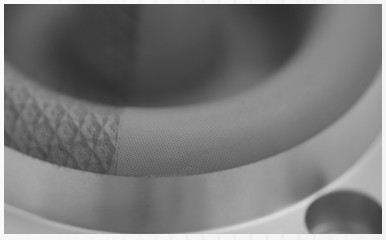
Extreme texturing and engraving quality


Material: Aluminum Alloy
Dimension: 90 x 90 x 50mm
Texture Depth: 0.08mm
Texture Type: Diamond 3D Texture
Processing advantages: 3D surface high repeatability precision etching processing

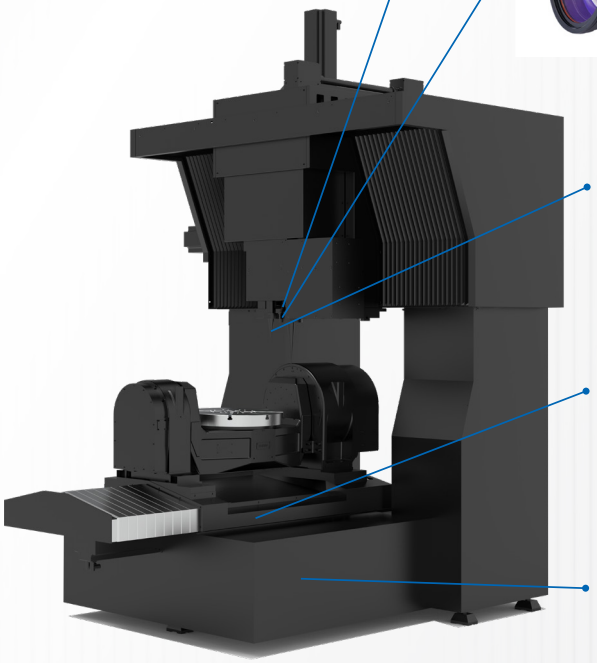
Material: NO.45 Steel
Dimension: 90 x 90 x 30mm
Texture Depth: 0.08mm
Texture Type: Carbon Fiber Texture
Processing advantages: 3D surface high repeatability precision etching processing


Material: Aluminum Alloy
Dimension: 90 x 90 x 50mm
Texture Depth: 0.08mm
Texture Type: Geometric Texture
Processing advantages: 3D surface high repeatability precision etching processing

High-performance components, higher productivity

Deliver highly accurate and repeatable laser texturing and microstructural processing solution combines outstanding quality, efficiency, and femtosecond laser technology



High-resolution positioning CCD camera

Supports adjustment of resolution and pixels through software settings

High-precision 3D scanning F-theta Lens

Scanning lens optional: F163, F255

MP250 machine tool probe system

Quickly realize the calibration of the machine tool rotation center and the precise positioning and processing of various parts

Grating scale

Full closed-loop for fast dynamic response

Long-term stability

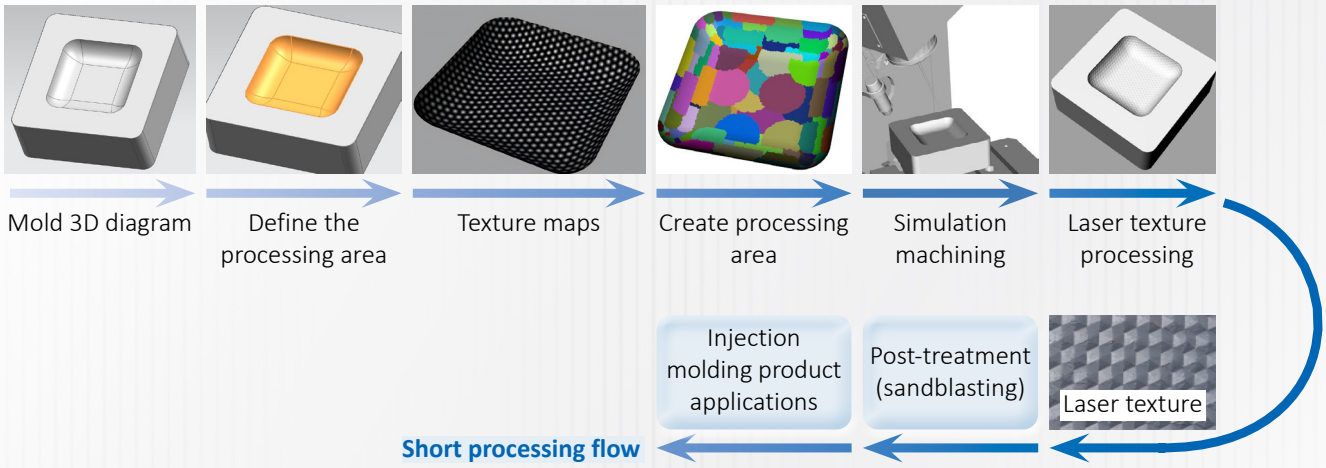
High-strength gray cast iron base: good rigidity, high precision

- **X/Y/Z - axis: Adopt high-precision servo motors**
  Fast dynamic response and high positioning accuracy
- **Workpiece size up to ϕ600 x 350mm**
  3 optical axes and 5 mechanical axes, five-axis machining, integrated NC cradle and rotary table
- **Optional nanosecond/femtosecond laser**

Simplify your process and achieve infinite repeatability

Limit human error, open new design possibilities and easily texture your parts, molds and dies—regardless of surface constraints—with our fully digital five-axis process. Fast, accurate and easy surface calculation is built into our Laser solutions to save you time and increase your productivity.

Laser texture processing



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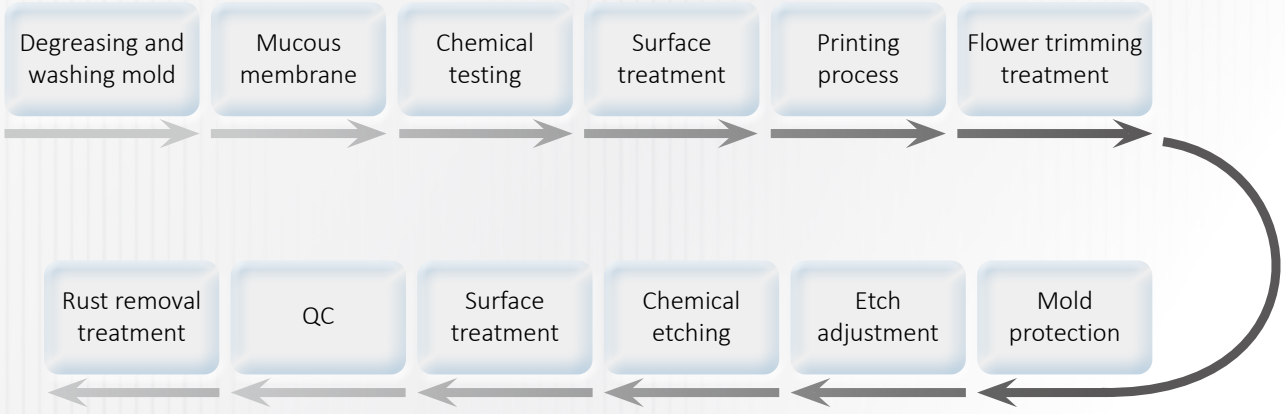
Traditional Texture Processing



Complex and numerous processing flow

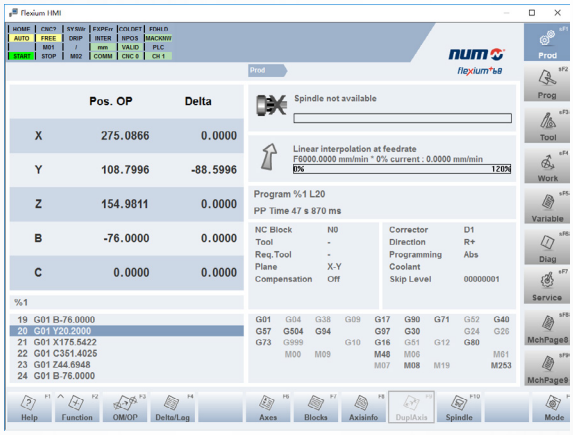
Technology features for an optimized process and the highest flexibility

• With the function of 3D model drawing and can perform 3D simulation;
• Customize the processing area, automatically plan and generate processing blocks;
• Special functions such as arbitrary layered design, intelligent generation of splicing processing programs and linkage processing;

Laser Texturing	Traditional Texture Processing
☑ Environmentally friendly: No chemical pollution	Chemical potions (strong acids) pollute the environment
☑ Accuracy up to 0.01mm with good stability,no side erosion and tooth edges	Poor precision and stability: side erosion and tooth edge will occur
☑ Mold processing uniformty (repeatable)	Repeatability can not be achieved by copying molds
☑ Pattern design is not restricted	Pattern design is very restricted
☑ Capable of processing 30-50 layers with strong three-dimensional effect and fine texture	Only can process 3-5 layers with poor three-dimensional effect, rough texture
☑ Low material requirements: metal, graphite, ceramics silicon carbide and other materials can be processed	High requirements for mold materials
☑ Texture attachment surface:curved surface, inclined surface, spherical surface can be processed	Texture attachment surface: Complex surfaces are difficult to process
☑ Short processing flow	Complex and numerous processing flow

Powerful and user-friendly NUM CNC control system

Ensures maximum ease of operation and process reliability, combine high-tech performance with genuine customer benefits and ensure application-orientated, simple programming and operation



•The open universal CNC system can meet various machine tool applications such as turning, milling, planing, grinding, laser, water jet, etc.

•The core of the CNC system is NCK, each NUM® system composed of 8 NCKs, each NCK provides up to 32 axes/spindles, and provides up to more than 200 axes/spindles, and is compatible with RTCP.

Perfect surface microstructure processing

Complete texture processing of extremely hard materials, includingthree-dimensional complex structure surface texture engraving, freeform surface microstructure etching processing, chip breaker shapeprocessing.

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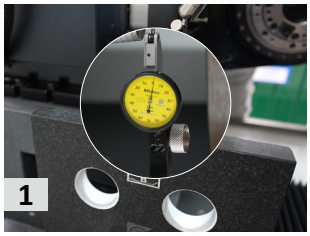
1 ZOLLER-Setting for tool presetting

2 ZOLLER-Presetting and Measuring Machine

3 Laser microscope

Undergoes rigorous testing and calibration to maintain high precision and reliability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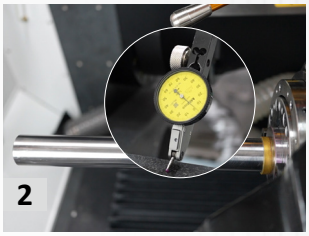
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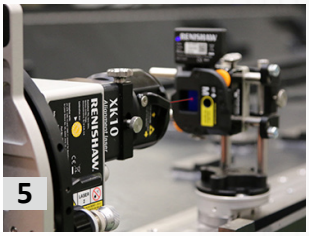

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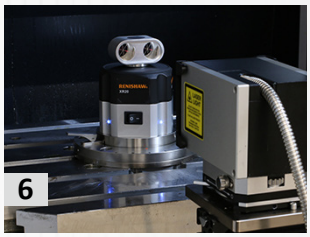
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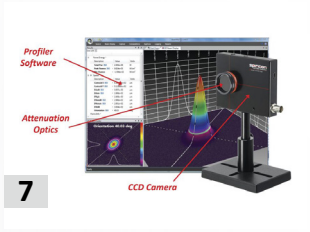

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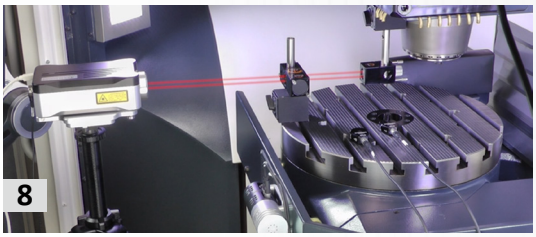
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1 X/Y/Z-axis parallelism accuracy detection

2 B/C-axis parallelism accuracy detection

3 Precision line parallelism accuracy detection

4 Ballbar

5 Alignment laser

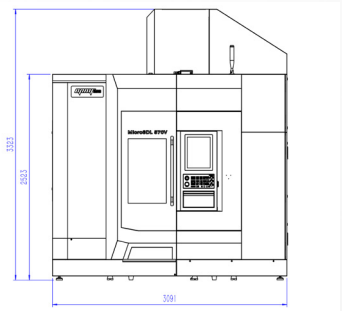
6 Rotary axis calibrator

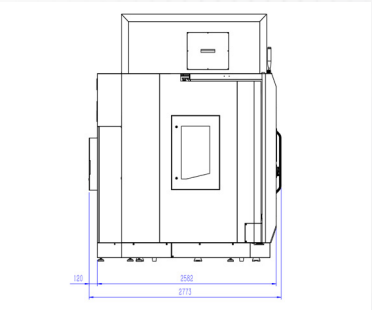
7 Laser beam profiler

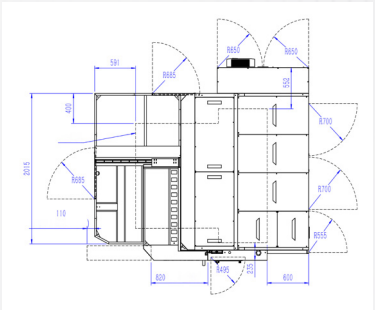
8 Laser interferometer

Travel	Unit	Micro 3D L570V
X-axis	mm	700
Y-axis	mm	600
Z-axis	mm	500
A-axis	°	±110
C-axis	°	360
Feed speed		
X/Y/Z-axis rapid traverse speed	m/min	30/30/30
A-axis max. rotation speed	rpm	60
C-axis max. rotation speed	rpm	90
Accuracy		
X/Y/Z-axis positioning accuracy	mm	±0.004
X/Y/Z-axis repeat positioning accuracy	mm	±0.003
A/C-axis positioning accuracy	"	±5
A/C-axis repeat positioning accuracy	"	±3
Workbench		
Table diameter	mm	ϕ500
Processing diameter (five-axis)	mm	≤ ϕ600
Processing height (five-axis)	mm	≤ 350
Maximum load capacity (five-axis)	kg	300
Acceleration		
X/Y/Z	m/s^2	0.5
Lasers		
Nanosecond (optional)	W	≥50
Femtosecond (optional)	W	≥20

Machine dimensions	Unit	Micro 3D L570V
Floor space (L x W x H)	mm	3091 x 2773 x 3323
Weight	kg	7515







Best ergonomic solution for your easy of use

Dedicated protective glass

The machine operation interface and the protective window are in the same direction which is convenient to operate. The protective window adopts special design to prevent burns from the laser light source and facilitate monitoring of the processing process.

Ergonomic structural design

The operator adjustment space is within 1.6m from the ground.

Laser CNC machine tool safety lock device

Effectively improve the safety of operators and maintenance personnel, reduce the risk of personal injury, and reduce facility maintenance costs.

Comfortable utilization

Doors open for easy loading and optimal workpiece access.
Doors closed: the large window provides an excellent view inside the machine for process monitoring.

Obtained RoHs certification, ISO14001 and ISO45001 management system certification

1,000 sets/year
Full production capacity

300+ Patents
302 patents for inventions, utility models, etc.
62 invention patents,
147 utility model patents,
17 exterior design,
9 software

113 R&D Employees
54% total employees
7 PH.Ds
7 Masters,
65 Undergraduates, covering talents in various fields such as Laser application, Mechanics, Electrics and Software

5 R&D Centers & Labs
Provincial Manufacturing Innovation Center,
Engineering Technology Research Center,
Ultrafast Laser Processing Joint Laboratory,
Foshan Postdoctoral Workstation,
Graduate Student Joint Training Demonstration Site

EASY MAINTENANCE
Use high-end international universal accessories

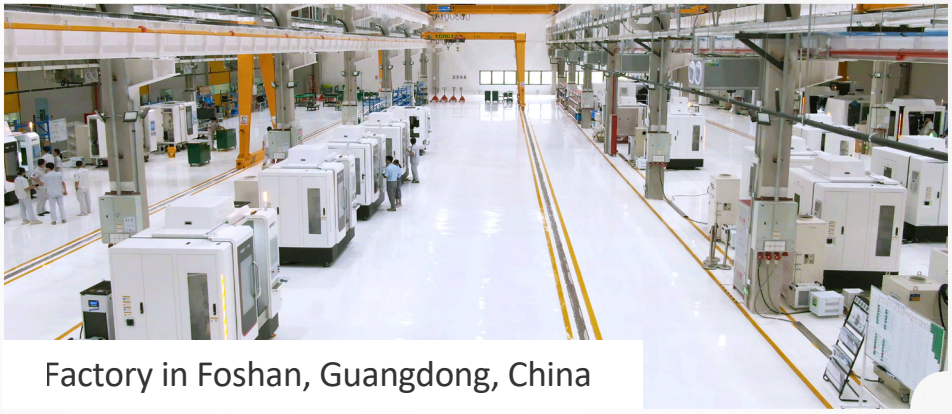
FLEXIBLE CUSTOMIZATION
Customized base on customer needs

TRAINING PROGRAM
Provide operation training

Turnkey provider with impressive technology expertise

Cover 30, 000 m², 210 employees, multi-axis CNC laser machine manufacturer, and provide smart factory manufacturing solution.

Factory in Foshan, Guangdong, China



Factory in Foshan, Guangdong, China

R&D Centers & Labs

Guangdong Original Point Intelligent Technology Co., Ltd.

To make manufacturing smarter and intelligent manufacturing easier

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From origin to infinity

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