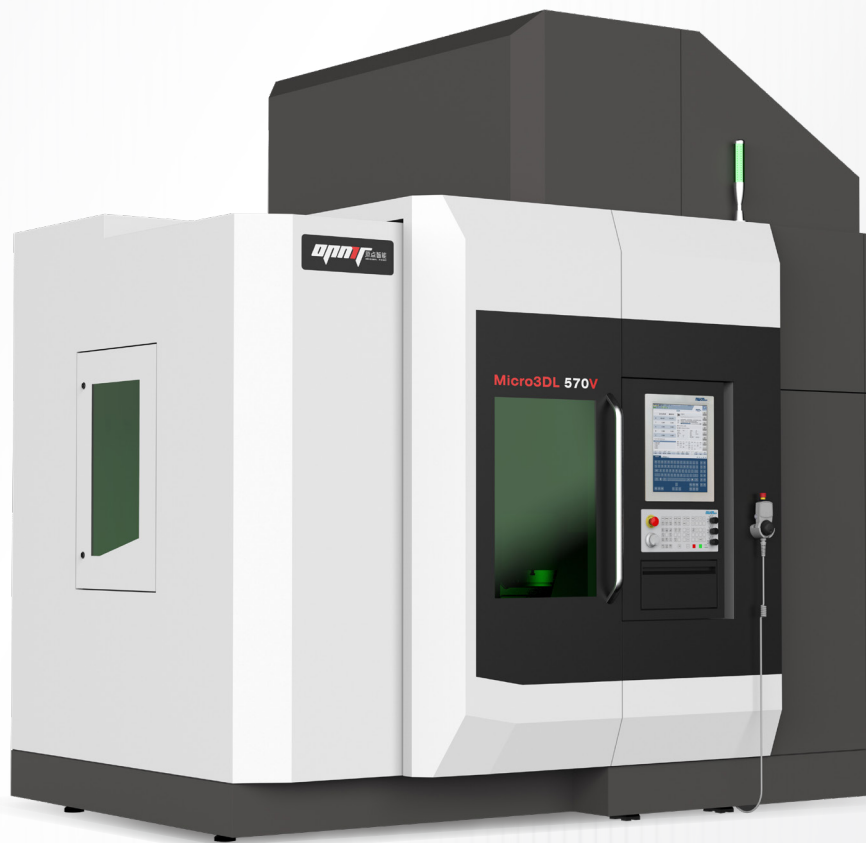


OPMT Mold Texture Industry Processing Solutions

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**

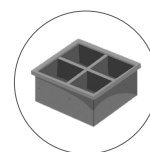
Suitable for



Automobile mold
industry



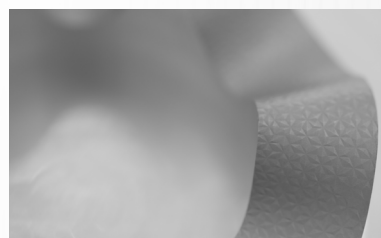
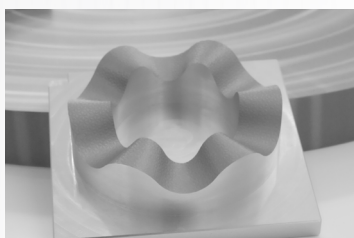
Medical machinery
industry



Plastic molds
industry



Extreme texturing and engraving quality



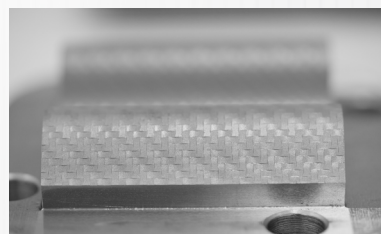
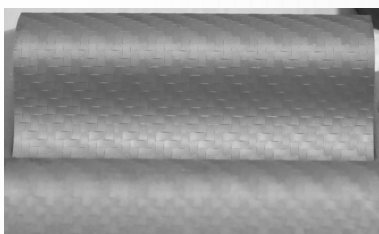
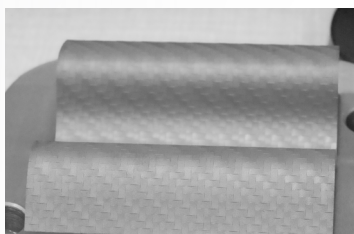
Material: Aluminum Alloy

Dimension: 90 x 90 x 50mm

Texture Depth: 0.08mm

Texture Type: Diamond 3D Texture

Processing advantages: 3D surface high repeatability precision etching processing



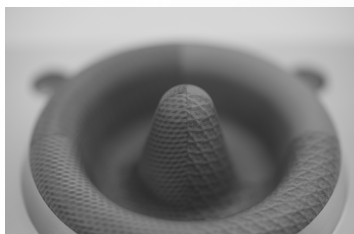
Material: NO.45 Steel

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

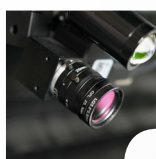
Texture Depth: 0.08mm

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



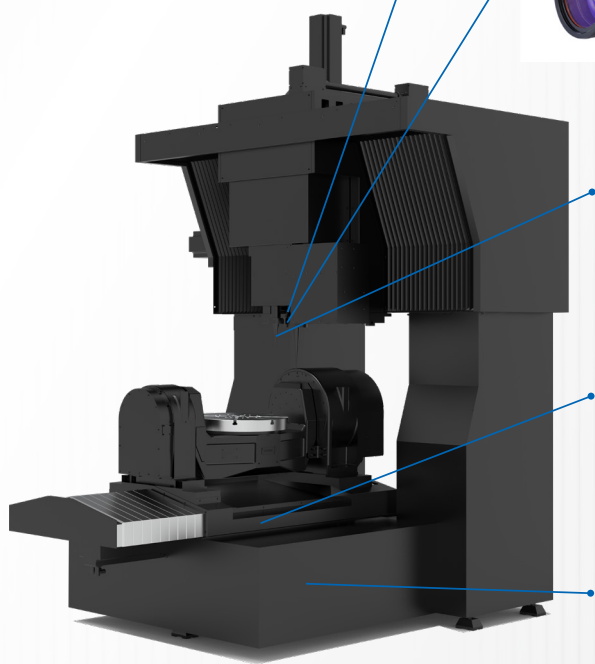
Grating scale

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 $\phi 600 \times 350\text{mm}$

3 optical axes and 5 mechanical axes, five-axis machining, integrated NC cradle and rotary table

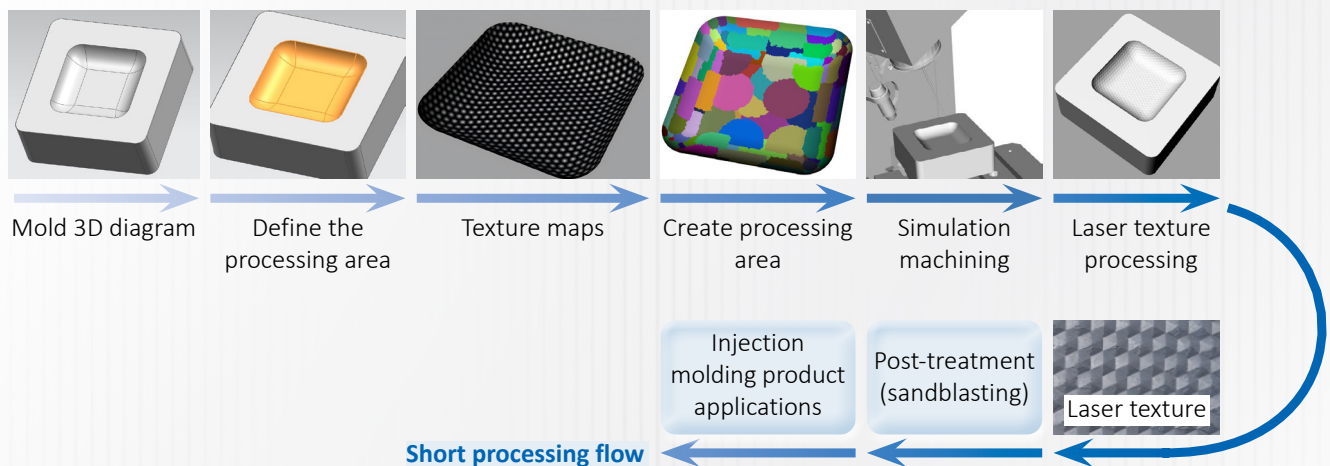
● Optional nanosecond/femtosecond laser



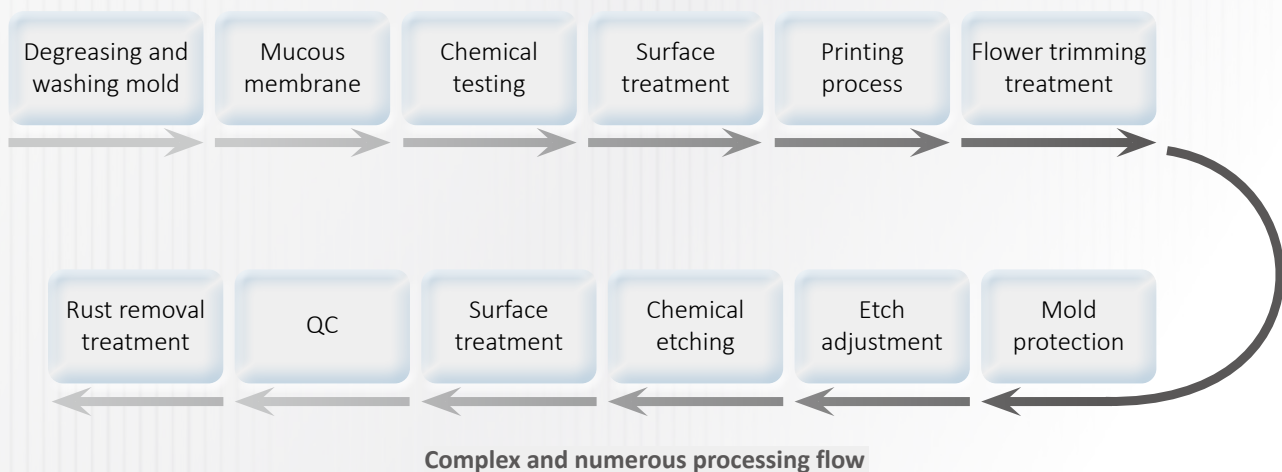
Simplify your process and achieve infinite repeatability

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



Traditional Texture Processing



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

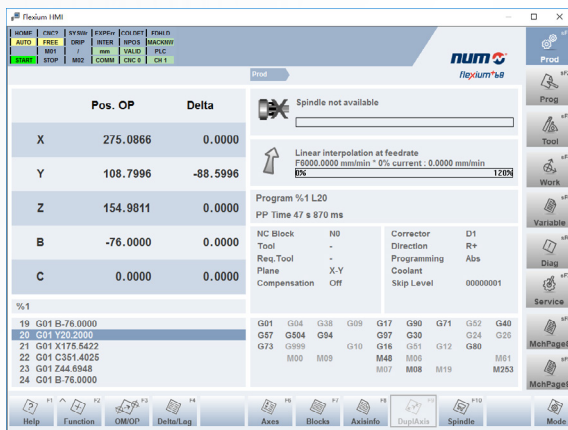
- ✓ Environmentally friendly: No chemical pollution
- ✓ Accuracy up to 0.01mm with good stability, no side erosion and tooth edges
- ✓ Mold processing uniformity (repeatable)
- ✓ Pattern design is not restricted
- ✓ Capable of processing 30-50 layers with strong three-dimensional effect and fine texture
- ✓ Low material requirements: metal, graphite, ceramics, silicon carbide and other materials can be processed
- ✓ Texture attachment surface: curved surface, inclined surface, spherical surface can be processed
- ✓ Short processing flow

Traditional Texture Processing

- Chemical potions (strong acids) pollute the environment
- Poor precision and stability: side erosion and tooth edge will occur
- Repeatability can not be achieved by copying molds
- Pattern design is very restricted
- Only can process 3-5 layers with poor three-dimensional effect, rough texture
- High requirements for mold materials
- Texture attachment surface: Complex surfaces are difficult to process
- Complex and numerous processing flow

Powerful and user-friendly NUM CNC control system

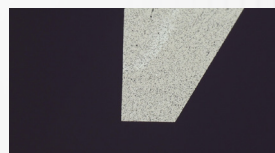
Ensures maximum ease of operation and process reliability, combine high-tech performance with genuine customer benefits and ensure application-orientated, simple programming and operation



- 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.

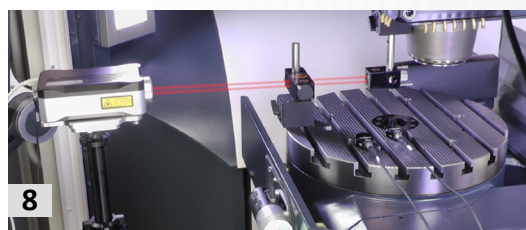
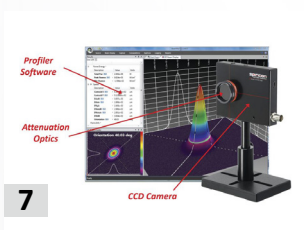
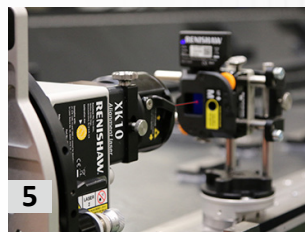
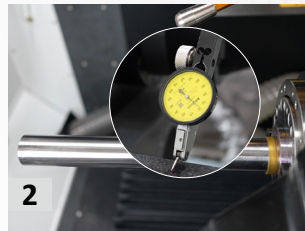
Perfect surface microstructure processing

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



- 1 ZOLLER-Setting for tool presetting
- 2 ZOLLER-Presetting and Measuring Machine
- 3 Laser microscope

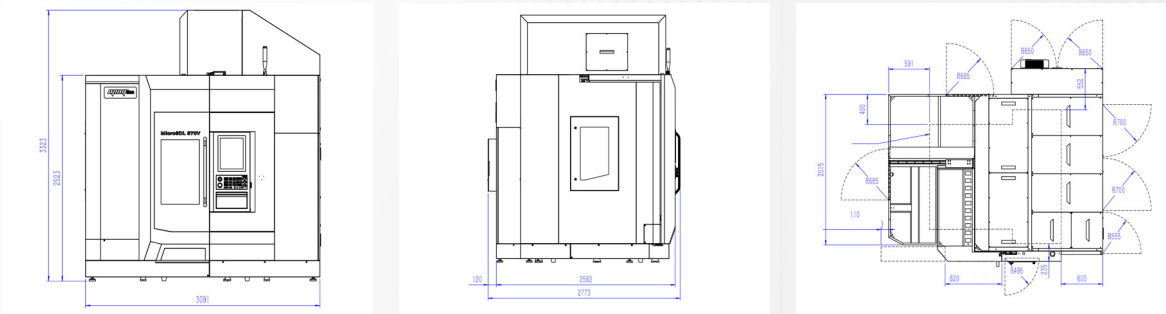
Undergoes rigorous testing and calibration to maintain high precision and reliability



- 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	350
Acceleration		
X/Y/Z	m/s ²	0.5
Laser		
Pulse Width	ns	20-200
Power	W	100

Machine dimensions	Unit	Micro 3D L570V
Floor space (L x W x H)	mm	3100 x 2800 x 3300
Weight	kg	8000



Best ergonomic solution for your easy of use

● Dedicated protective glass

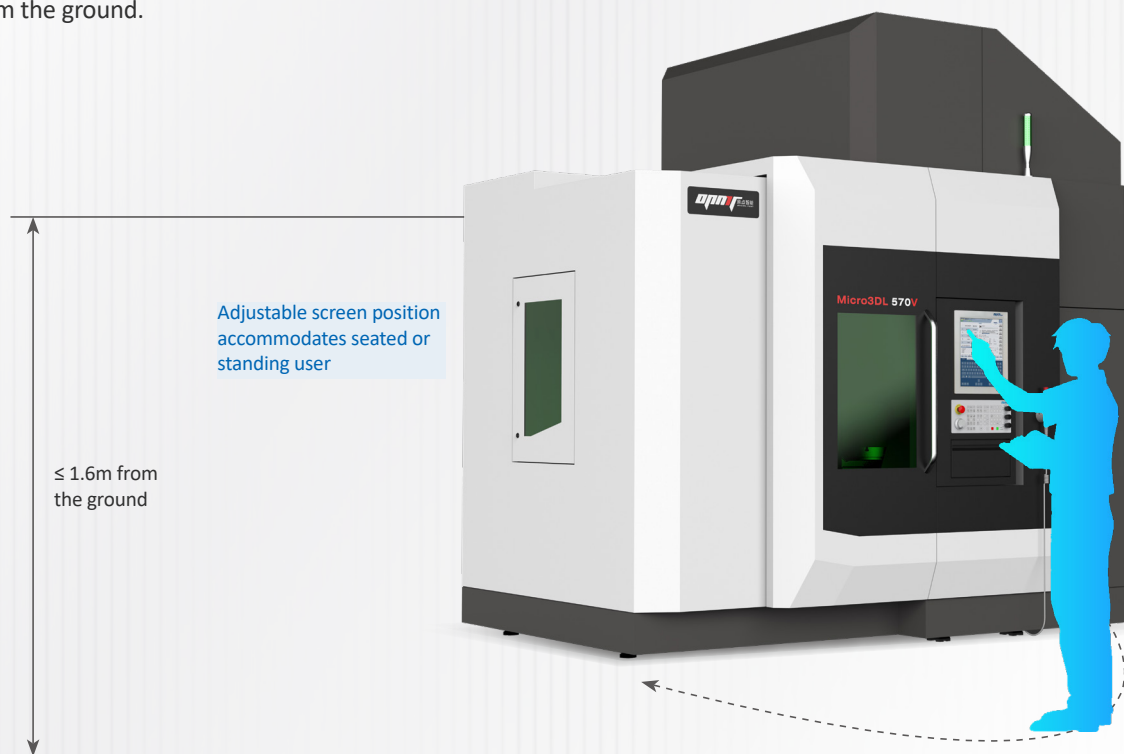
The machine operation interface and the protective window are in the same direction which is convenient to operate. The protective window adopts special design to prevent burns from the laser light source and facilitate monitoring of the processing process.

● 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

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

300⁺ Patents

302 patents for inventions, utility models, etc.

62 invention patents,

147 utility model patents,

17 exterior design,

9 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

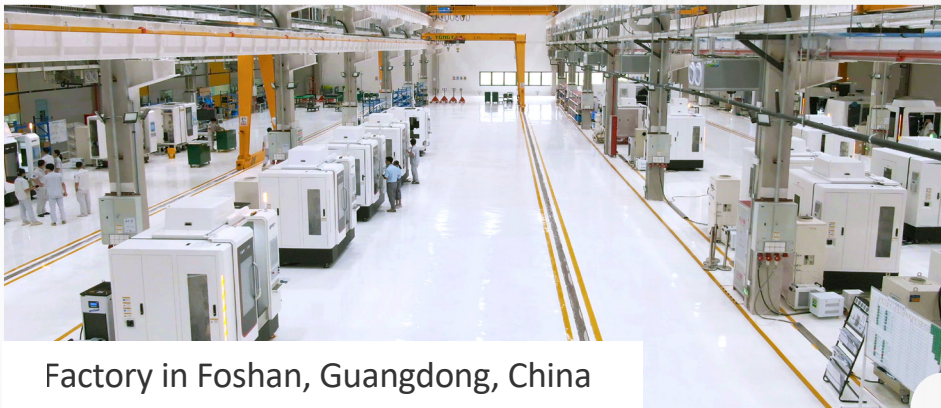
Provide operation training

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

Address: No.3 Lizhong Road, Danzao Town, Nanhai
District, Foshan, Guangdong, China



From origin to infinity