



金密激光

Metal Hermetic Sealing Solutions

METAL SEALING

CATALOGS

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打造完美气密封装!

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15⁺

Focus on hermetic sealing
welding for 15 years



382⁺

The laser welding process database
has accumulated 382 items



856⁺

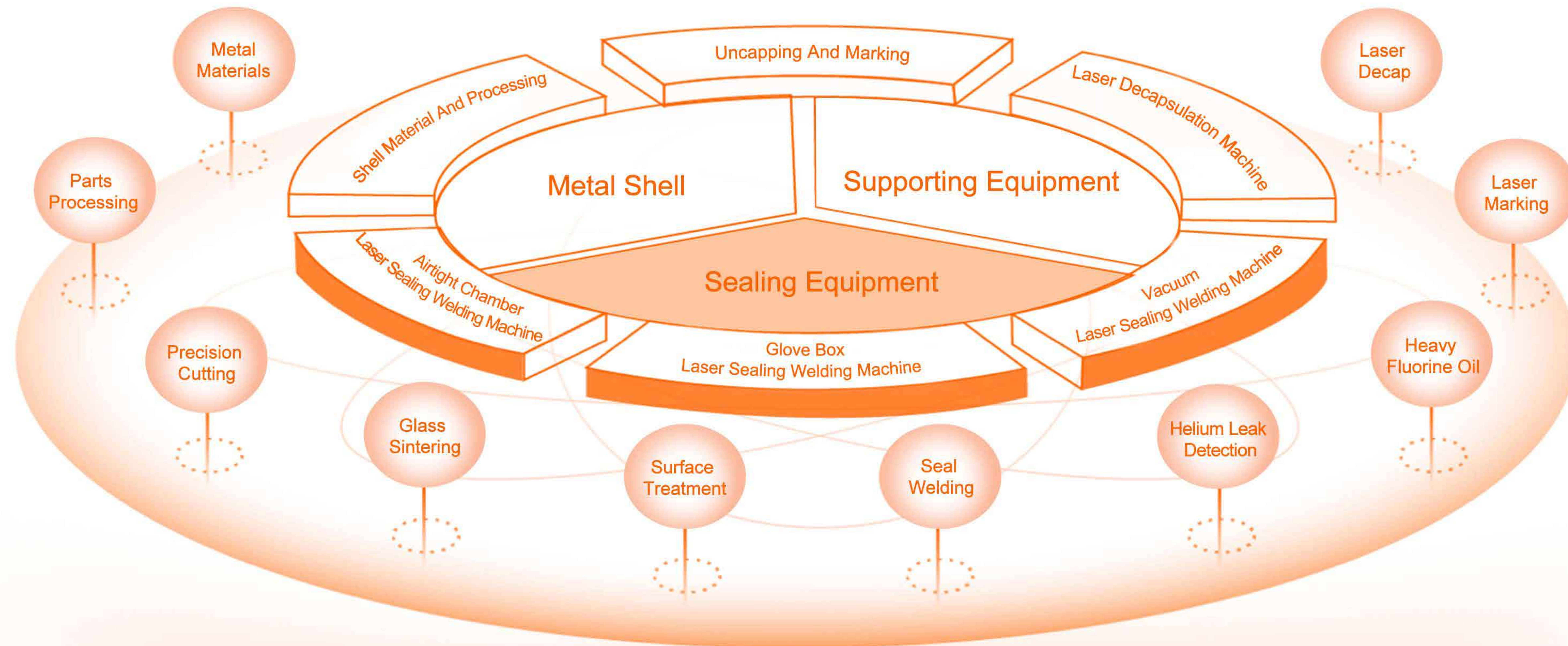
We have successfully cooperated
with more than 800 customers

Wuhan Jinmi Laser Technology Co., Ltd. is committed to providing comprehensive solutions for the global high-precision metal hermetic sealing needs. Our core products **run through the entire metal metal hermetic sealing industry chain**, serving high-end metal hermetic sealing application fields such as military industry, scientific research, aerospace, medical, semiconductors, etc., and continue to make unremitting efforts to promote the localization process of **metal hermetic sealing**!

Faced with the increasing diversity of materials and complexity of products in high-end application fields, we rely on our long-term experience in metal hermetic sealing and work with many top domestic universities and research institutions to jointly promote technological innovation and research and development. The project results have been published in **NATURE magazine** many times.

Metal Hermetic Sealing Solutions

Jinmi Laser provides a full range of complete metal hermetic sealing solutions including metal raw materials and processing, laser welding equipment and welding supporting equipment covering the products and services required in the entire metal laser sealing welding field



Hermetic Sealing Laboratory

The Jinmi laser hermetic sealing laboratory integrates detection, testing and analysis, intuitively and realistically displays the metal Sealing welding effect, and provides strong data support to ensure the reliability and accuracy of Sealing quality.

Failure Analysis Laboratory

After the welding is completed, the deformation, airtightness, weld quality and other test data of the product are analyzed to verify the Sealing effect.



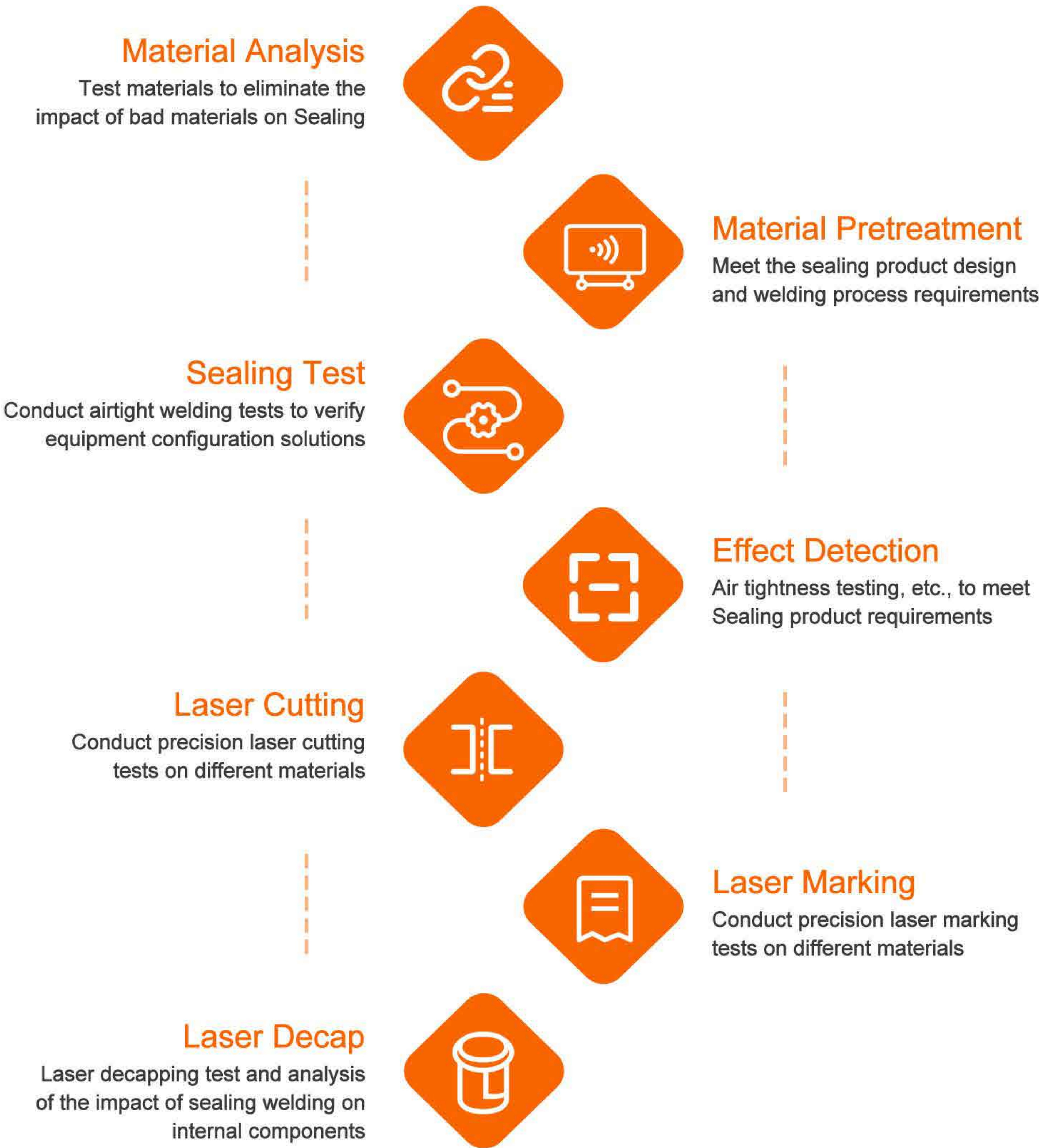
Metal Materials Laboratory

We study the optical properties, thermal conductivity, melting temperature, surface treatment process, etc. of the material to achieve better sealing effect.



Laser Technology Laboratory

Explore the effects of various factors such as welding environment, process parameters, laser type, etc. interacting with different materials and structures.





Integration of industry
academia and research
Development of new
technologies and processes



IUR

EDUCATION AND RESEARCH

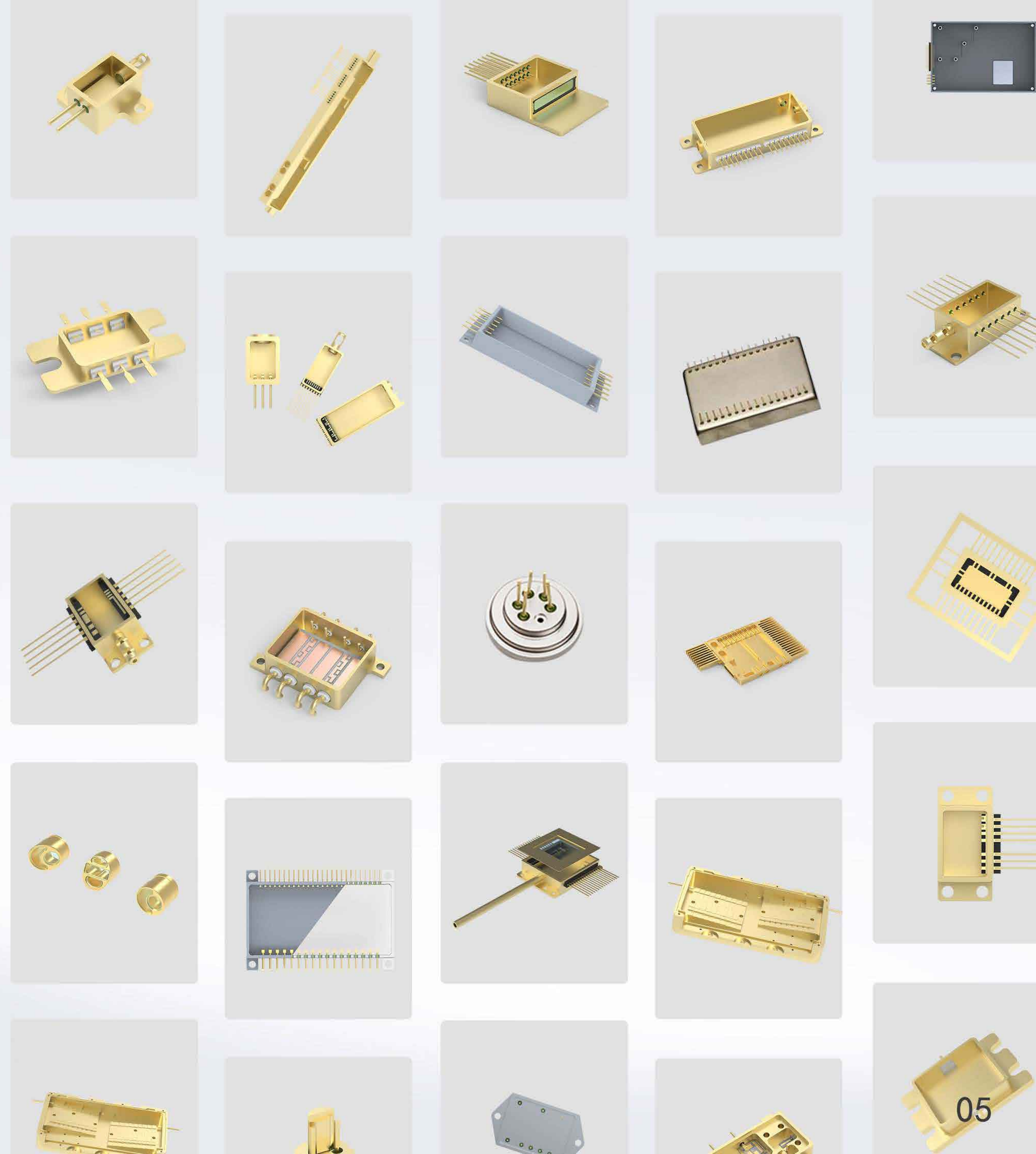


We have carried out joint development with many universities and research institutes such as Peking University, Tsinghua University, Zhejiang University, Institute of Metal Research, Chinese Academy of Sciences, Institute of Thermophysics, Chinese Academy of Sciences, Huanjiang Laboratory, etc., to achieve a virtuous cycle of mutual support and seamless connection between industry, academia and research, and accelerate the industrialization process of scientific research results.

Metal Raw Materials And Processing

The quality of metal raw materials is a key factor affecting sealing performance. Using raw materials with low quality, uneven composition, lower than standard content or inconsistent quality between batches may result in Sealing effects that fail to meet product design standards. We are committed to providing **high-quality and stable metal materials** to ensure that the Sealing effect meets and exceeds customer expectations.

At the same time, we also provide **metal Sealing shell processing** services, with mold development and manufacturing, parts processing, glass sintering plating and surface treatment, precision cutting, detection and analysis capabilities, providing metal shell products for many fields such as aerospace, military weapons, shipbuilding, and communication equipment.



Airtight Chamber Laser Sealing Welding Machine

Air tightness level $1 \times 10^{-9} \text{ Pa} \cdot \text{m}^3/\text{s}$ | Inert gas environment



Airtight Chamber Laser Sealing Welding Machine

I Equipment Introduction

Laser welding equipment equipped with a closed chamber can be filled with inert gas to provide a better welding environment than air blowing protection, greatly reducing the impact of weld oxidation on the sealing welding effect and effectively avoiding the generation of cracks and pores.

It has a coaxial visual observation function, which can realize the visualization of the processing area and the two-dimensional morphology of the molten pool during the processing. The software and hardware systems have good openness and operability, which is convenient for upgrading and expansion of new functions.



Inject inert gas to improve welding effect and protect electronic components

Inert Gas Protection



Customized equipment based on different materials and products

Customized Equipment



Scope Of Ultra Clean Working Environment

Ultra-clean Environment



Equipped with CCD monitoring real-time monitoring of the welding process

Process Monitoring



I Equipment Parameters

Airtight Chamber

Box Size: 1000 (L) * 1000 (W) * 900 (H) mm, customizable	Gloves: Imported butyl gloves
Filter: Outlet and inlet filters, filtering <0.3µm	Lighting: LED lighting on top of front window
Window: Panel 12mm thick safety tempered glass, customizable	Box Leakage Rate: <0.001 vol%/h
Air Pressure: Automatic control, air pressure can be set	Box Material: 304 stainless steel, thickness 5mm
Transition Warehouse: Can be equipped with large and small transition warehouses	

Laser System

Laser: Continuous fiber laser, QCW laser, YAG laser, semiconductor laser, etc	
Welding Trajectory Setting: CNC programming or teaching	Laser Power: 200W--3000W
Laser Welding Head Angle Adjustment: rotation ±45°	Maximum Welding Speed: 80mm/s
CCD Weld Monitoring: Magnify 20 times to observe product quality	Cooling Method: Water cooling, air cooling
Welding Head: Non-swing, single-swing, double-swing, galvanometer and other welding heads	
Blowing Method: Coaxial, side-axis blowing, or in-box atmosphere protection	

Control System And Others

Control Mode: PC+PLC control, equipped with 17-inch LCD display	Wire Feeding: Automatic wire feeding
X, Y, Z Axis Travel: 400*200*300MM (customizable), repeat positioning accuracy ±0.02mm, electric	
W-axis Travel: Clamping diameter 10mm-80mm (customizable), infinite rotation, electric	
Dust Removal: Independent exhaust dust removal system	Fixture: Tooling, etc. can be customized
Expansion Space: Can expand 5-axis linkage system, multi-station processing system, etc	
Applicable Environment: Suitable for clean rooms of 10,000 to 1 million levels, conventional workshops and laboratories	

Glove Box Laser Sealing Welding Machine

Inert gas and water oxygen control | Air tightness level $1 \times 10^{-12} \text{ Pa} \cdot \text{m}^3/\text{s}$



Glove Box Laser Sealing Welding Machine

I Equipment Introduction

The glove box is a high-performance, high-quality closed-loop working system that automatically absorbs water and oxygen molecules and purifies the working environment, providing an inert atmosphere that can meet the water and oxygen content environment $H_2O \& O_2 < 1PPM$

Laser welding of metal materials in harsh environments or critical applications with strict Sealing requirements can be completed. The sealing effect is more reliable and durable than epoxy resin, mechanical seals, etc., and the oxygen and moisture content in the weld can be controlled to ensure that the components are not affected by oxidative pollutants from beginning to end.



Inject inert gas to improve welding effect and protect electronic components

Inert Gas Protection



Scope Of Ultra Clean Working Environment

Ultra-clean Environment



Real Time Control Of Water Oxygen Content

Water Oxygen Control



Customized equipment based on different materials and products

Customized Equipment



I Equipment Parameters

Glove Box

Box Size: 1200 (L) * 750 (W) * 900 (H) mm, customizable	Gloves: Holes can be customized
In-box Filter: HEPA-compliant high-efficiency filter	Glove Box Water And Oxygen Content: <1ppm
Box Material: 304 stainless steel, thickness 5mm	Box Leakage Rate: <0.001 vol%/h
Transition Warehouse: large and small transition warehouse	Lighting: LED lighting on top of front window
Window: Removable glass front window with laser protection film	Control Accuracy: ± 2 degrees Celsius
Heating: The transition chamber can be evacuated and heated, with a temperature of up to 200 degrees Celsius	

Laser System

Laser: Continuous fiber laser, QCW laser, YAG laser, semiconductor laser, etc	
Welding Trajectory Setting: CNC programming or teaching	Laser Power: 200W--3000W
Laser Welding Head Angle Adjustment: Rotation $\pm 45^\circ$	Maximum Welding Speed: 80mm/s
CCD Weld Monitoring: Magnify 20 times to observe the weld	Cooling Method: Water cooling, air cooling
Welding Head: Non-swing, single-swing, double-swing, galvanometer, etc	
Blowing Method: Coaxial, side-axis blowing, or in-box atmosphere protection	

Control System And Others

Control Mode: PC+PLC control, equipped with 17-inch LCD display	Wire Feeding: Automatic wire feeding
X, Y, Z Axis Travel: 400*200*300MM (customizable), repeat positioning accuracy $\pm 0.02mm$, electric	
W Axis Travel: Clamping diameter 10mm-80mm, infinite rotation, electric	
Dust Removal: Independent exhaust dust removal system	Fixtures: Customized tooling and other fixtures
Expansion Space: Can expand 5-axis linkage system, multi-station processing system, etc	
Applicable Environment: Applicable to clean rooms of 10,000 to 1 million levels, conventional workshops and laboratories	

Vacuum Laser Sealing Welding Machine

Negative pressure vacuum | Air tightness level $1 \times 10^{-12} \text{ Pa} \cdot \text{m}^3/\text{s}$



Vacuum Laser Sealing Welding Machine

I Equipment Introduction

Laser welding can be performed in an ultra-high vacuum environment. Laser welding in a vacuum environment can significantly increase the penetration depth and reduce defects such as pores. At the same time, it can meet the key applications that require vacuum inside the packaging cavity and complete the activation task of products with getters.

Compared with other vacuum Sealing welding methods, vacuum laser welding technology avoids the damage of high temperature to electronic components, and the welding is fast and efficient. It has huge advantages in the assembly of microelectronic devices, medical device manufacturing and precision component production.



Ultra High Vacuum Environment Packaging
Ultra-high Vacuum



Customized equipment based on different materials and products
Customized Equipment



Activation Mechanism Of Inhaler
Getter Activation



Equipped with CCD monitoring real-time monitoring of the welding process
Process Monitoring



I Equipment Parameters

Vacuum Box

Vacuum Box Size: customizable	Vacuum Degree: <10 ⁻⁶ Pa
Box Material: 304 stainless steel, thickness 20mm (customizable)	
Pump Body: Mechanical pump + molecular pump + ion pump	Box Leakage Rate: <0.001 vol%/h
Cooling Method: Water cooling	Lighting: LED lighting on top of front window
Heating Temperature: Room temperature---200 degrees Celsius, control accuracy, ±2 degrees Celsius	

Laser System

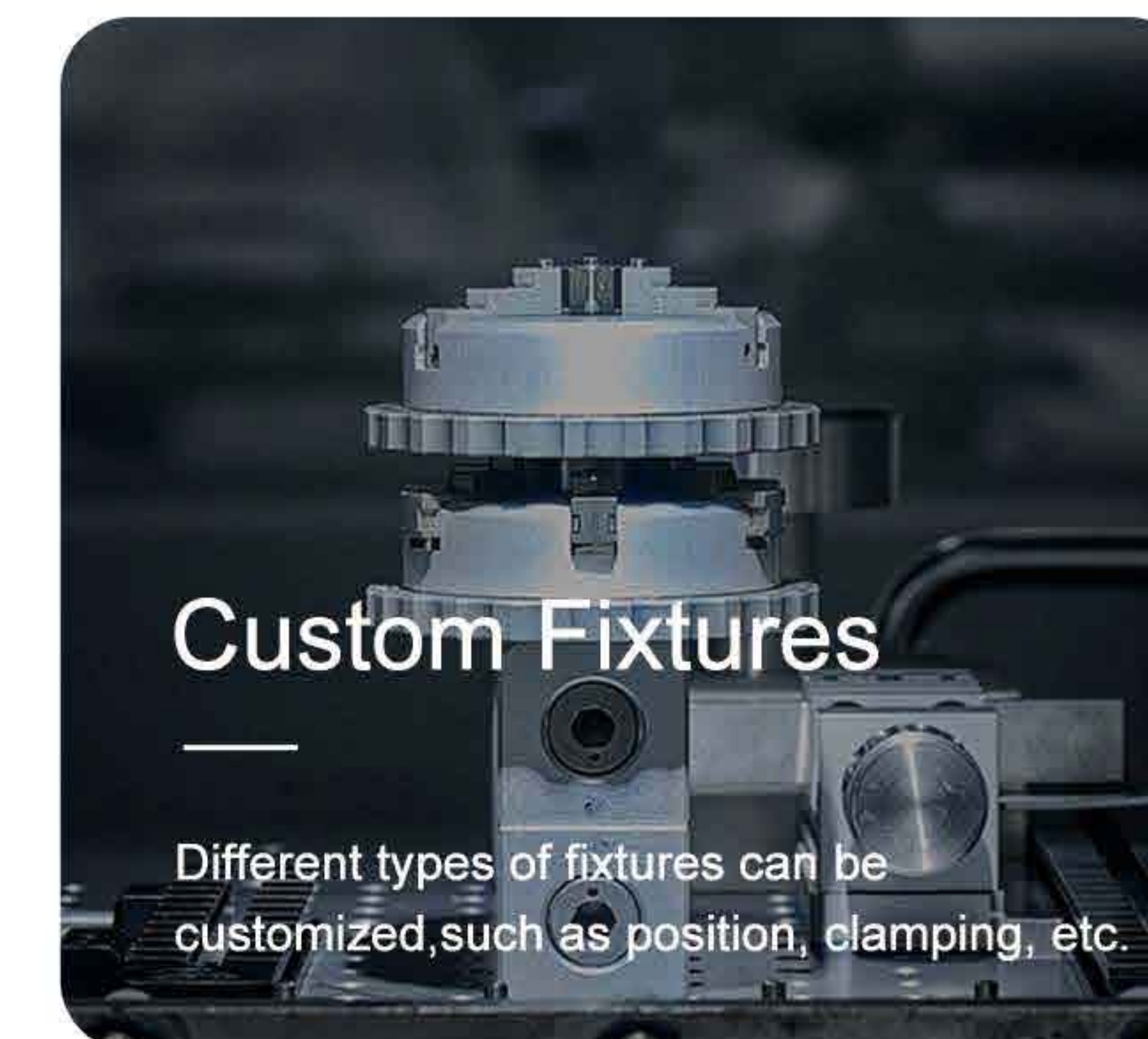
Laser: Continuous fiber laser, QCW laser, YAG laser, semiconductor laser, etc	
Welding Trajectory Setting: CNC programming or teaching	Laser Power: 200W--3000W
Laser Welding Head Angle Adjustment: Rotation ±45°	Maximum Welding Speed: 80mm/s
CCD Welding Seam Monitoring: 20 times magnification observation	Cooling Method: Water cooling, air cooling
Welding Head: Non-swing, single-swing, double-swing, galvanometer, etc	
Blowing Method: Coaxial, side-axis blowing, or in-box atmosphere protection	

Control System And Others

Control Mode: PC+PLC control, equipped with 17-inch LCD display	Tooling: Tooling fixtures can be customized
X, Y, Z Axis Travel: 400*200*300MM (customizable), repeat positioning accuracy ±0.02mm, electric	
W-axis Tavel: Clamping diameter 10mm-80mm (clamping range can be customized), infinite rotation, electric	
Dust Removal: Independent exhaust dust removal system outside the box	
Expansion Space: Can expand 5-axis linkage system, multi-station processing system, etc	
Applicable Environment: Applicable to clean rooms of 10,000 to 1 million levels, conventional workshops and laboratories	

Non-standard Customization

Jinmi Laser provides customized laser sealing solutions for products with different requirements, including customization of workstations and welding environments, customization of process parameters, and technical training services.

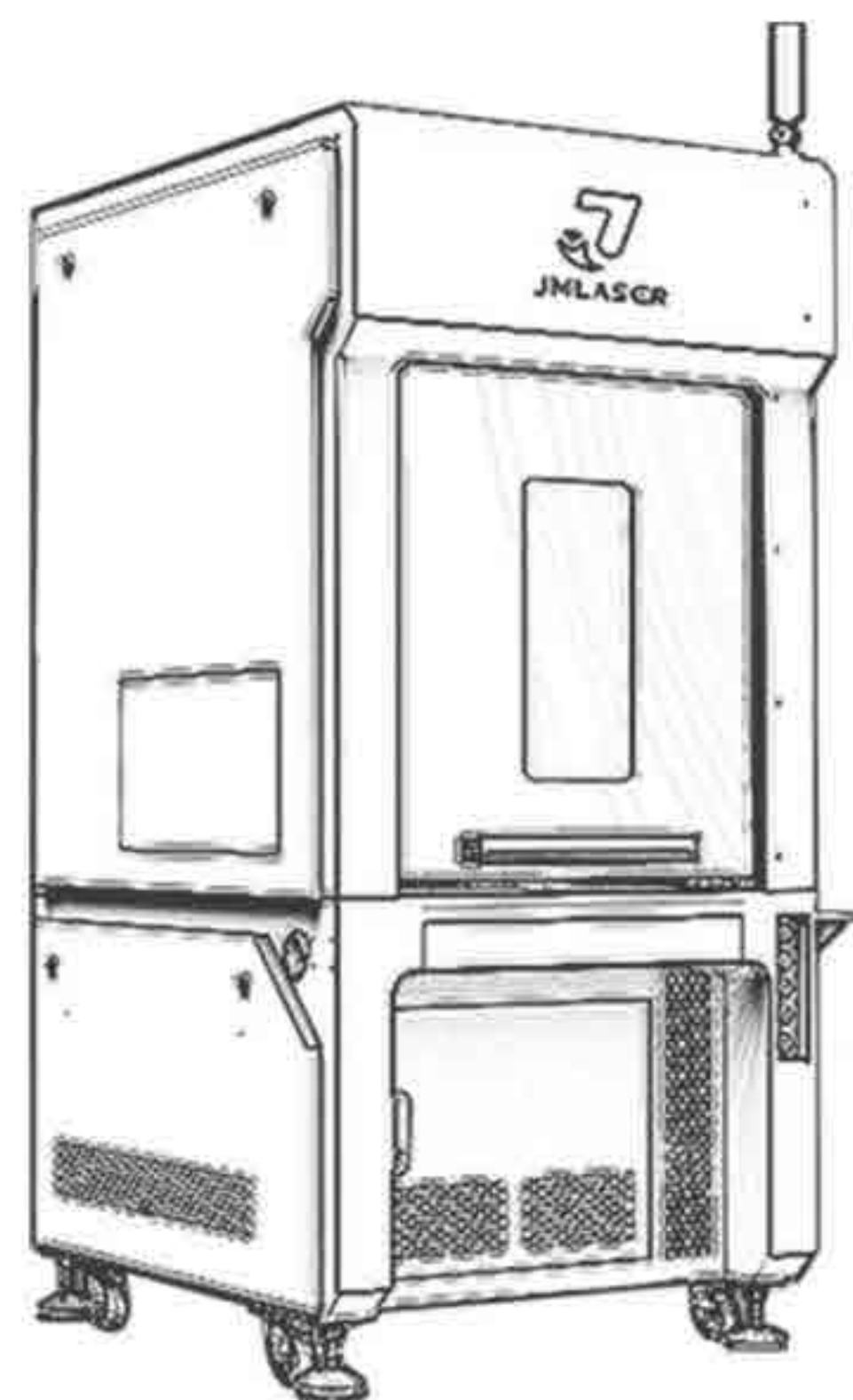


Laser Decapping Machine

The metal shell can be opened accurately after laser sealing and welding. After opening, the cover can be replaced and sealed again. It adopts dry, stress-free and damage-free flexible processing technology without chemical etching to improve work efficiency.



- Precision Etching
- Layer Cutting
- Failure Location
- Precise Opening



Precision Decapping Machine

- | | |
|---------------------------------------|---|
| Laser Type: Air-cooled fiber laser | Laser Scanning Head: High-precision scanning head |
| Laser Wavelength: 1064nm | Focus: Automatic software focus (optional) |
| Pulse Width: 1ns-250ns | Beam Quality: $M^2 \leq 1.3$ |
| Laser Frequency: 1Khz-1000Khz | Opening Depth: 0.01mm-3mm |
| Opening Speed: $\geq 8000\text{mm/s}$ | Scanning Range: 110mm x 110mm |
| Laser Safety Level: Class IV4 / 10 | Laser Life: Up to 10 years |

Laser Marking Machine

QR codes, LOGOs, product nameplates, product serial numbers and other information can be marked on metal packaging shells for brand identification, tracking and tracing, etc.

- Mark With Good Wear Resistance
Strong Wear Resistance
- High Processing Efficiency
High Efficiency
- No Consumables Required
No Consumables
- Environmental Protection
Safety



Laser Marking Machine

- Laser: Pulsed fiber laser, Mopa laser, UV laser, etc. (depending on the specific materials and requirements)
- Laser Power: 20W-60W (pulsed fiber), 20W-100W (mopa), 5W-30W (ultraviolet)
- Maximum Marking Speed: 7000mm/s (depending on material process)
- Marking Range: F=160 / 105mmx105mm (standard) Minimum Character Height: 0.2mm @ F=160mm
- Minimum Marking Line Width: 0.06mm Cooling Method: Air cooling, water cooling
- Control Mode: PC+PLC control, equipped with 17-inch LCD display
- X, Y, Z Axis Travel: 100*100*300MM (customizable) Extension: Expandable multi-station system
- W-axis Travel: Clamping diameter 10mm-80mm (clamping range can be customized), infinite rotation, electric
- Exhaust And Dust Removal: Can be equipped with an independent exhaust and dust removal system
- Tooling And Fixtures: Customizable tooling and fixtures, automatic fixtures, etc
- Applicable Environment: Suitable for cleanroom and conventional environments

Precision Laser Cutting Machine

I Product Introduction

For precision high-speed laser cutting of metal sheets, the whole machine has stable operation, mature technology, high cutting efficiency and fast cutting speed. It can process any design graphics and form them in one time without subsequent processing, which greatly improves processing efficiency.

The frame adopts marble structure, with good overall rigidity and high strength. At the same time, it adopts high-performance aluminum beam system, advanced and reasonable design, and all key components use international and domestic professional brand products, with the advantages of high precision, high life, high reliability and low consumption performance. The moving part adopts linear motor module, and the driving mode has higher dynamic characteristics, control accuracy, running speed and acceleration, longer service life, lower vibration noise and less wear. The overall layout of the machine tool is compact and reasonable, and it occupies a small area. It is a professional choice for precision cutting of thin metal plates.



Intelligent Numerical Control
Intelligent CNC



Stable And Reliable
High Reliability



Precise Control
Precision



Visual Positioning
Position



I Equipment Parameters

Laser System

Laser: Fiber laser, QCW laser, etc. (depending on the specific materials and requirements)

Laser Power: 1000-3000W (fiber laser), 150W-450W (QCW laser)

Maximum Speed: 60m/min

Maximum Acceleration: 1.2G

Laser Cutting Head: Auto focus

Cooling Method: Water cooling, air cooling (QCW)

Control System

Control Mode: Bus control, linear motor module, equipped with 17-inch LCD display

Effective Processing Area: 800×800(mm)

X, Y, Z Axis Travel: 800*800*100mm (customizable)

Positioning Accuracy: ±0.02mm

Z-axis Travel: 100mm (customizable)

Repeat Positioning Accuracy: ±0.005mm

Other Configuration

Exhaust And Dust Removal: Can be equipped with independent exhaust and dust removal system

Tooling And Fixtures: Customizable tooling and fixtures, automated fixtures, etc

Visual Positioning: Format up to 800*690.5 (mm); positioning accuracy up to ≤0.05mm

Industrial Camera: 5 megapixels, 50mm focal length, 14fps, with frame storage, network port

Nitrogen Generator: Independent nitrogen generator system with purity up to 99.99%

Fluorine Oil Testing Equipment

The heavy fluorine oil is heated to $125^{\circ}\text{C}\pm 5^{\circ}\text{C}$ by an electric heating system to detect electronic components that have been pressurized with light fluorine oil. Leaking components will produce bubbles due to the gasification of light fluorine oil. The equipment is equipped with a magnifying glass that can magnify the bubbles more than 5 times, making it easier to observe tiny bubbles and improve leak detection efficiency.

For the detection of large leaks (gross leaks), a heavy fluorine oil leak detector can be used, which is suitable for gross leak detection of components such as discrete electronic devices, semiconductor devices and microcircuit packages with internal cavities.

Product Advantages



Accurate Temperature Control
Precision



Recessed Power Supply
Power



Magnifying Glass Equipped
Magnifier



Self Weight Blocks High Temperature
Blocking

Equipment Parameters

Heavy fluorine oil leak detection

Voltage/Power: 220V/400W	Heating Temperature: $125^{\circ}\text{C}\pm 5^{\circ}\text{C}$
Heating Rate: $3.5^{\circ}\text{C}/\text{min}$	Fluorine Oil Box Capacity: 6L
Equipment Weight: 20KG	Dimensions: 530*270*375mm
Temperature Sensor Model: PT100	



Helium Mass Spectrometry Equipment

The helium mass spectrometer leak detector uses the high permeability and small molecular size of helium to fill the object to be tested with helium, detects the leaked helium through the suction probe, and determines the leak by detecting the signal intensity through the photomultiplier tube.

For the detection of small leaks (fine leaks), a helium mass spectrometer leak detector is more suitable because of its relatively high sensitivity, non-destructiveness and high detection efficiency.

Product Advantages



High Sensitivity



Easy To Operate



Quick Response



Wide Applications

Equipment Parameters

Helium Mass Spectrometer

Minimum Detectable Leak Rate: $5\times 10^{-13}\text{ Pa}\cdot\text{m}^3/\text{s}$	Detection Gas: Helium (He)
Leak Rate Display Range: $1\times 10^{-3}\sim 1\times 10^{-13}\text{ Pa}\cdot\text{m}^3/\text{s}$	
Start-up Time: $\leq 5\text{ min}$	Response Time: $\leq 1\text{ s}$
Maximum Working Pressure Of Mass Spectrometer Room: $3\times 10^{-2}\text{ Pa}$	
Working Environment: Temperature, $5\sim 35^{\circ}\text{C}$, Relative humidity, $<80\%$	
Power : Single-phase AC $220\text{V}\pm 10\%$, Maximum operating current, 10A	



德国 · Germany

英国 · Britain

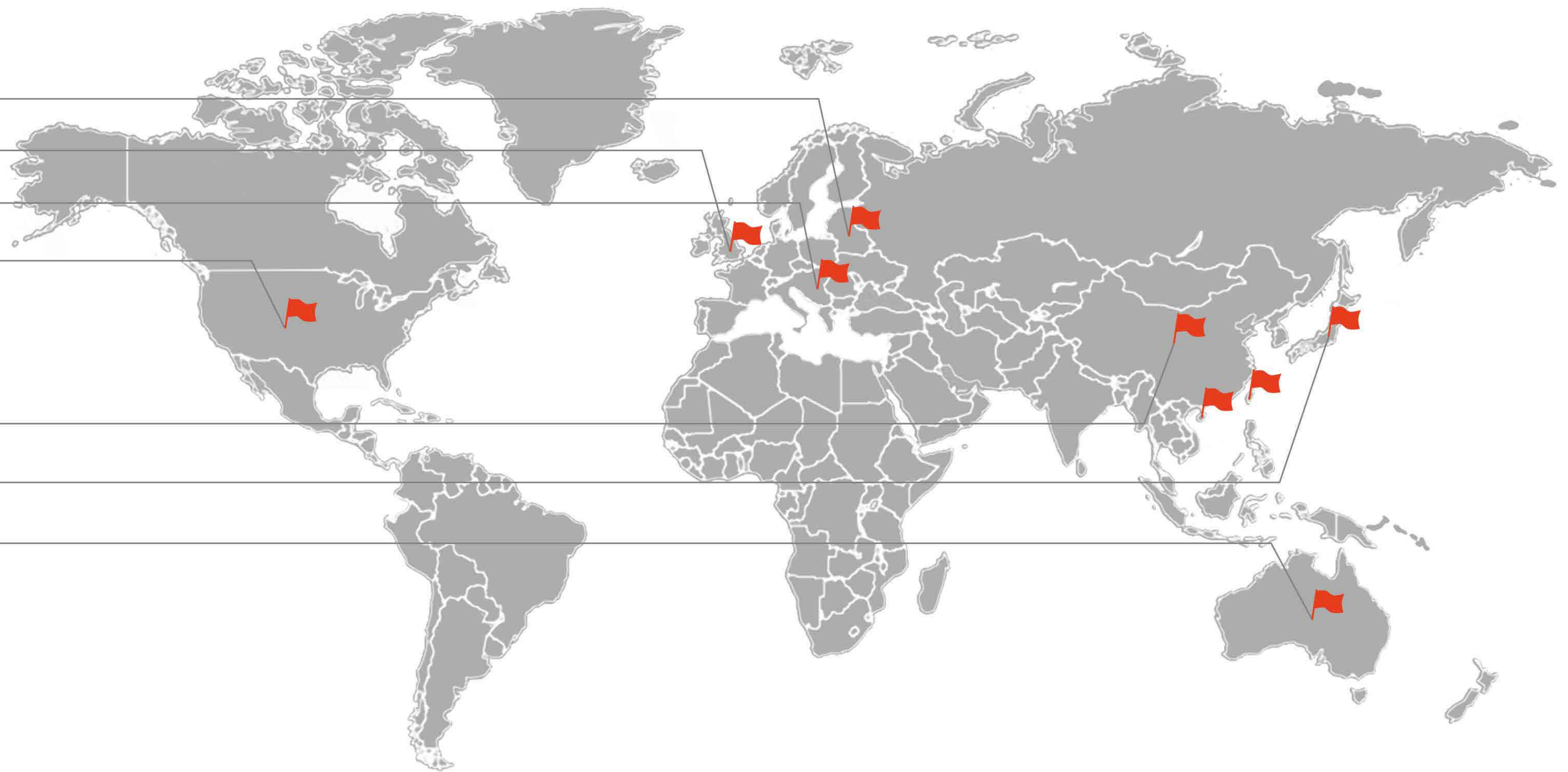
意大利 · Italy

美国 · America

中国 · China

日本 · Japan

澳大利亚 · Australia





“那些年，我們走過的每一天”

EVERY DAY WE WALKED THROUGH THOSE YEARS

“实践是检验真理
的唯一标准”



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