Picosecond Laser Processing Machine

Equipment Precision:

- Overall processing precision: ±20 μm
- X–Y stage positioning precision: ±3 μm
- X–Y stage repeatability: ±1 μm
- Laser focal position precision: 5 μm
- Camera recognition precision: 6 μm

Processing Performance:

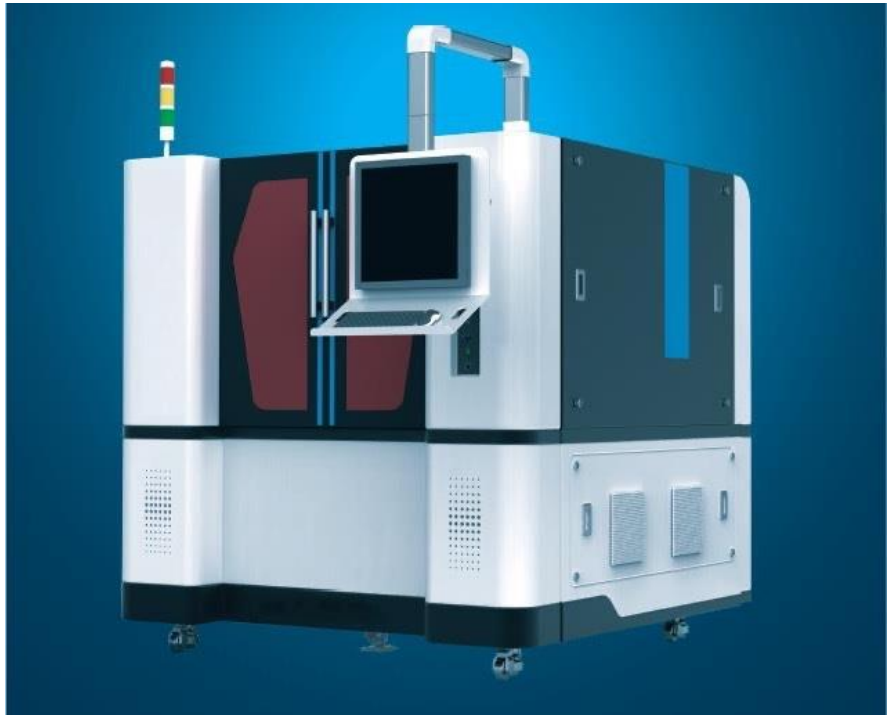
- Effective table size: 590 mm × 550 mm
- Stroke range: 750 mm × 750 mm
- Maximum table travel speed: 900 mm/s
- Maximum galvanometer scan speed: 3000 mm/s
- Spot diameter: 15 μm

Laser Source:

- Wavelength: 355 nm
- Maximum output power: 30 W
- Pulse width: 10 ps
- Variable frequency range: 301–2000 kHz

Dimensions & Weight:

- Dimensions (W×D×H): 1600 mm × 1600 mm × 2200 mm
- Weight: Approx 2000 kg

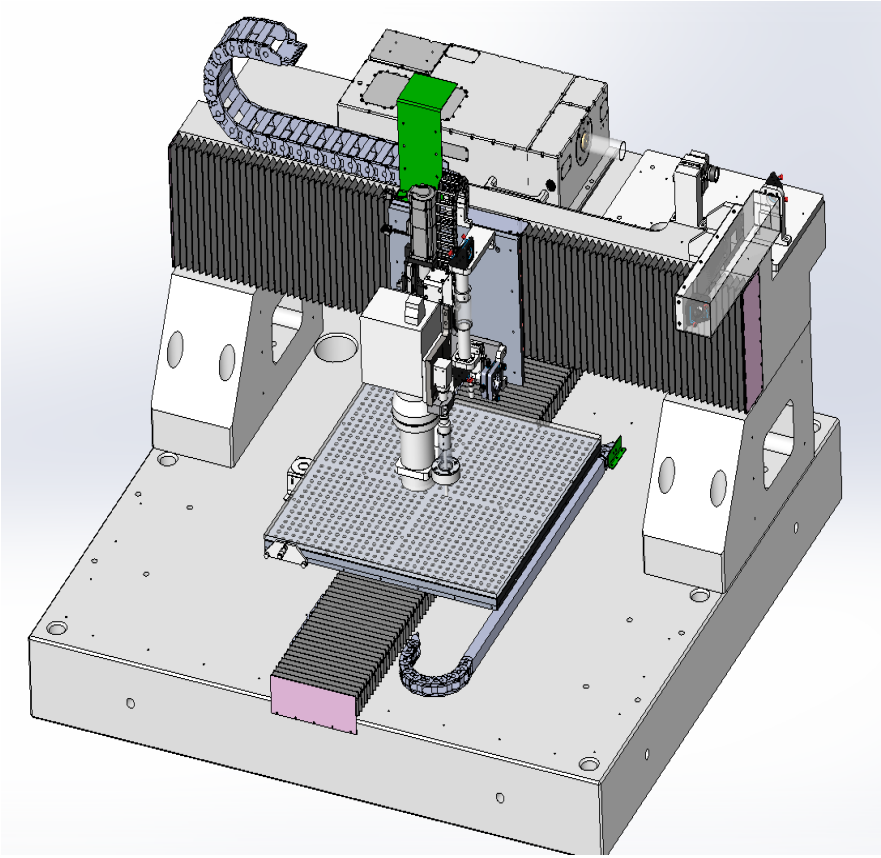


Laser Processing Equipment

Integrates optical, mechanical, electrical and numerical control systems
Includes laser source, optical system, motion platform, image positioning & control system
Complete and versatile processing workstation

Supported Laser Types

Industrial lasers
Semiconductor lasers
Fiber lasers
Solid-state nanosecond lasers
Solid-state picosecond lasers
CO_2 lasers



Cold Processing

Picosecond lasers emit ultrashort pulses (~10 ps) with minimal thermal impact
Cold ablation delivers smoother cuts, less dust, and higher efficiency
Short pulses minimize heat-affected zones and enable precise micromachining

Available Wavelengths & Materials

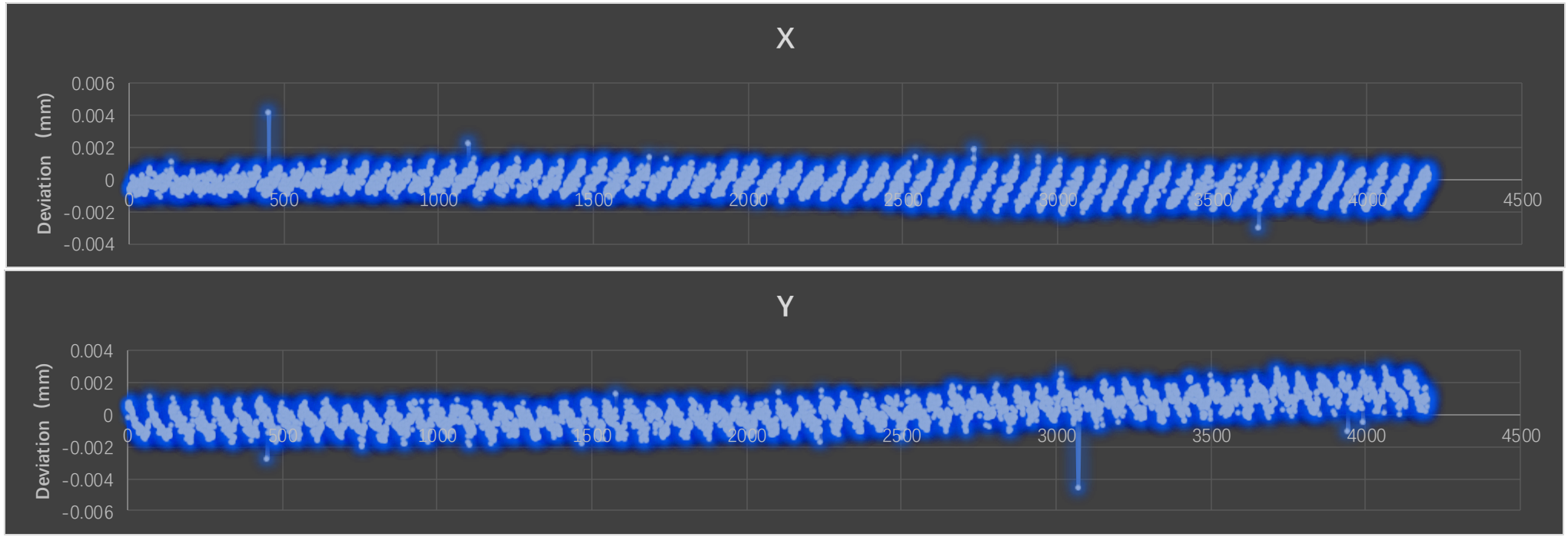
UV 355 nm: PI materials, copper foil, silicon wafers, flexible boards
Green 532 nm: brittle materials such as toughened glass and ceramics
IR 1050–1070 nm: non-strengthened glass and metal plates

Edgewave InnoSlab PX Series
Beam quality: $M^2 < 1.5$
Repetition frequency: up to 2.0 MHz
Pulse width: 10 ps
Beam divergence: < 200 µrad

High-Precision Motion Control

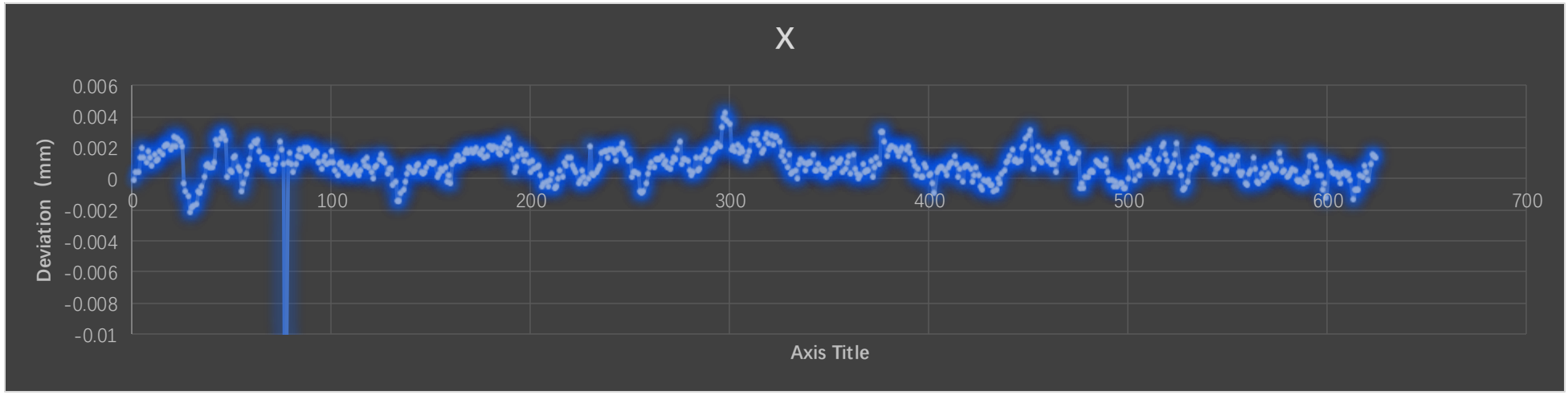
Linear motors in X & Y form a 2D motion platform
Calibrated using a high-precision board, achieving ≈3 µm motion accuracy

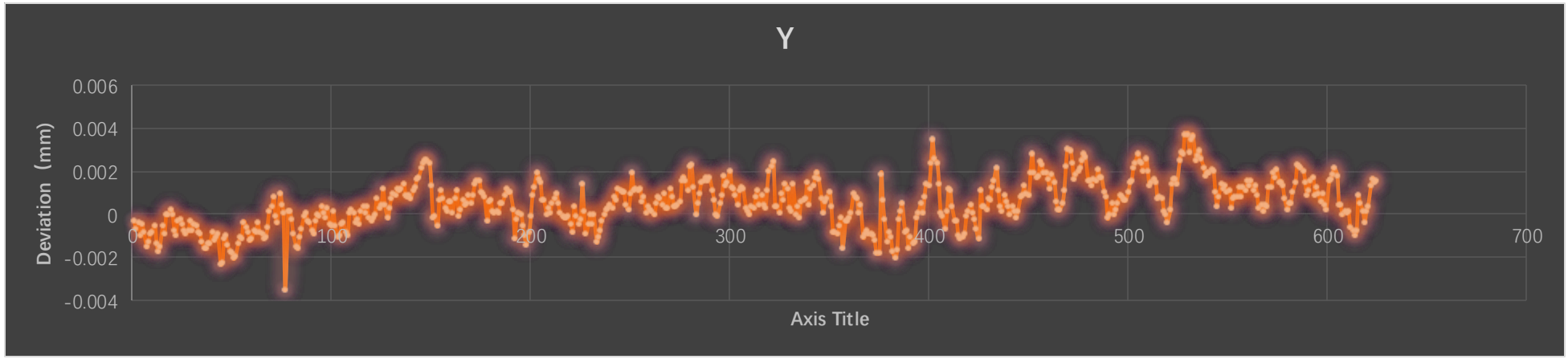
Telecentric lens + CMOS camera deliver distortion-free imaging and 5 µm positioning precision



High-Precision Scan Control

German-made calibration software calibrates the galvanometer
Achieves ±5 µm system positioning accuracy (platform + galvanometer + camera)
Ensures high scan precision and uniform performance

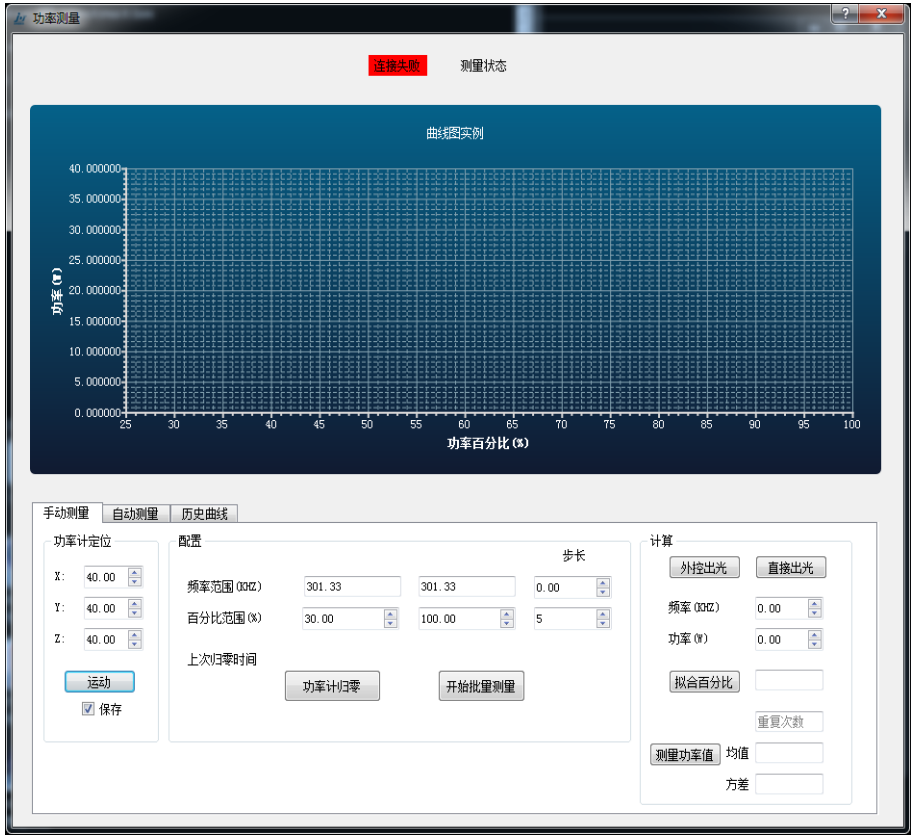




Fully Automated Processing

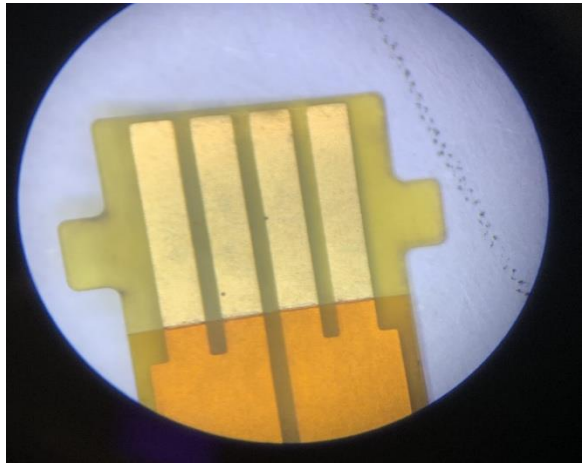
User-friendly software controls the entire process

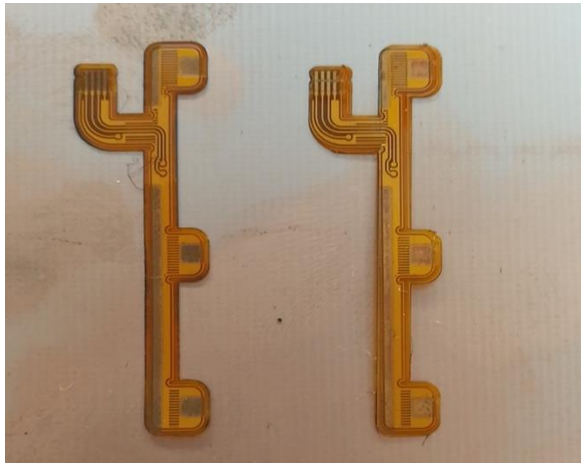
- Import processing path files generated by CAM.
- Set the necessary laser parameters, feed speeds, and scan speeds for processing.
- Use the camera system to determine the position of alignment points and complete alignment and coordinate system transformation of the workpiece.
- Select the processing area using the numerical control software virtual platform window and begin process.
- Measure and calibrate laser output to ensure uniform processing quality.
- Use the Step & Repeat processing mode; however, with high-precision motion control and high-precision scan control, continuous seam-free processing can be completed without setting overlap areas.



Applications of Picosecond Lasers

Cutting flexible printed circuits (FPC)
Drilling holes in smartphone glass and displays
Grooving and scribing for microelectronics





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