INDUSTRIAL AUTOMATION SOLUTIONS

Precision Laser Solutions Pte Ltd

High precision capability and quality for reasonable prices!

CUSTOMIZED MACHINE ● AUTOMATION ● SOFTWARE ● VISION INSPECTION

Precision Laser Solutions Pte Ltd

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Laser integration is ideal for industries with extremely precise requirements for material processing and micro-material processing. The coherency, high monochromaticity, and ability to reach extremely high powers are all properties which allow for these specialized applications. Laser applications include welding, soldering, cutting, heat treating, marking, scribing etc.

Higher output and increased productivity have been two of the major reasons in justifying the use of automation. Automated systems typically perform manufacturing processes with more stability than human workers, resulting in greater control and consistency of product quality. Speed is also increased without compromising quality. Also, increased process control makes more efficient use of materials, resulting in less scrap.
LASER APPLICATIONS

- Spot welding on stainless steel
- Spot weld of screw & nut
- Spot welding on gold chains
- Welding of 0.2mm coated copper wire
- Seam weld of plastics
- Micro seam weld of stainless steel
- Seam weld of metal parts
- Slot cutting on glass sheet
- High contrast laser marking
- Scribing of TCO on glass for solar panel or TFT
- PS laser cutting on stainless steel
- Drilling on sapphire glass
- Nanometer bump creation on flat surface
- Laser cutting on flex circuit film
- TFT LCD test circuit trimming

PATENTS GRANTED
**AUTO INSPECTION SYSTEMS**

Real-time 9-parameters laser process quality inspection using pattern recognition & image processing/measurement vision software

Upload to Factory Information System for Statistical Process Control and SPC analysis

Fully in-house developed image processing software with flexible customization capability

Optimized vision system best fit to specific requirements

 Patent Granted in Singapore, China, Taiwan and Japan

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**CUSTOMIZED MACHINES**

From simple laser processing stages to complex industrial production systems

Fast Speed Auto Loader

Robotic Arm Auto-Packer

10 operators saved

Unmanned Fully Automatic Robot Transfer Line

30 operators saved
Customized automatic control software to suit your production needs accordingly

Flexible to changes and feature upgrades

Fast remote online support capability

**KEY SPECIFICATIONS:**

- Bump Height (BH): 6, 6.5, 7, 7.5, 8.5nm
- Ultra stable bumps: $\pm 0.4$ nm variance
- Bump pitch = 16 $\mu$m
- Pitch Stability: $\pm 1$ $\mu$m
- Dual spindle independent operation
- In-line conveyor for loading/unloading
- Clean-room class 10 standard
**APPLICATIONS:**

- Fully integrated machine/laser/vision control software
- Versatile 3-axis optical alignment system
- Independent top and bottom side optical adjustment
- Independent bump height control and setting
- High Precision Laser Marking Capability
- Real-time Vision Inspecting for Closed loop process quality control
- Proven technology with 100+ installation in Singapore, Malaysia, Japan and America.

**NANO SCALE LASER INDEX MARKING ON HDD MEDIA**

- 100+ machine installations!

**KEY SPECIFICATIONS:**

- Bump height: 100 ~ 200nm;
- Bump height stability: ±/− 10nm
- Bump diameter: 10 ~ 30um;
- UPH 950
- Cleanroom class 10/100 standard

**FEATURES:**

- Fully integrated machine/laser/vision control software
- Versatile 3-axis optical alignment system
- Independent top and bottom side optical adjustment
- Independent bump height control and setting
- High Precision Laser Marking Capability
- Real-time Vision Inspecting for Closed loop process quality control
- Proven technology with 100+ installation in Singapore, Malaysia, Japan and America.

**FEATURES:**

- XY Scanner Cutting system Integrated with Precision Vision Alignment System
- Win7 Operation System Control Software; User-friendly
- Tailored High resolution Vision Alignment System
- Integrated with powerful marking software
- Motion; laser; and Vision auto Alignment
- Seamless Large Area Laser Marking & Stitching
- Through-the-Scanner in-Line Vision System
- Fast and precise recognition of preset guide markers
- High repeatability accuracy
- Highly customizable for industrial/research use

**NANO SCALE LASER INDEX MARKING ON HDD MEDIA**

- Vision guided laser processing system
- TM

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- Vision guided laser processing system
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**PLS UV Laser Micro-processing Machine**

**FEATURES:**
- XY Scanner Integrated into XYT-Z 4-axis
- Granite Motion Stage:
- Windows 7 Operation GUI
- Integrated software for Motion; laser; and Vision auto Alignment system
- Seamless Large Area Laser Marking & Stitching
- Through-the-Scanner in-line vision system
- Latest high-precision laser scanner from Germany

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**3D Laser Welding Machine**

**FEATURES:**
- Customized workstation for Trumpf 2D/3D PFO Welder
- Manual/Auto welding process control
- Manual/Auto Z-stage movement
- Upto 6KW TruDisk Laser
- Fast 2D/3D Galvo scanner laser welding

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**LASER INTEGRATED MACHINES**

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**LASER INDEX MARKING ON HDD GLASS MEDIA DISKS**

**50+ machine installations!**

**FEATURES:**
- Single-Laser, Dual-Scanner & Optical system
- Independent bump height setting
- Close-loop Laser Pulse Counting technology
- Close-loop in-line bump-height monitoring
- Real-time In-line Vision Inspection Technology
- Cleanroom class 10/100 standard

**KEY SPECIFICATIONS:**
- Bump height: 100-400nm +/- 15nm
- Bump diameter: 20 ~ 50um
- Compact size: 1300(L) x 1040(W) x 1870mm(H)
**PLS-ABB ROBOT TRANSFER LINES**

- **9X Small Robot Line**
  - 20 operators saved

- **7X Big Robot Line**
  - 30 operators saved

**FEATURES:**

- Flexible production
- Consistent product quality
- Safety fence mechanism
- Doubled production, doubled efficiency
- Low maintenance

**PLS PS LASER MICRO-PROCESSING MACHINE**

- **XTZ-ZZ 5 Axis Motion Stage**
- CCD vision for easy focus & position adjustments
- Seamless Large Area Laser Stitching
- 600x400x200mm x 350D
- **1 um repetitive accuracy**
- Windows 7 Operation GUI
- **Motion, laser and Vision Alignment system integration**
- IR + Green + UV ps-laser
- Dual scanner head auto shuttle
**FEATURES:**
- Compact *Fiber Laser*
- Auto Laser Welding with ABB Robot
- Auto *Turn-Table* for fast processing
- In-line Vision for alignment & Inspection
- Full Safety Protection & enclosure
- Windows Control Software; User Friendly
- Customized full-system control *software*
- 9-points *precise spot welding* machine
- 2-port auto-shuffle rotary table with automatic jig & fixture clamping
- Flexible fiber laser interface

**APPLICATIONS:** Multi-functional incl. Laser welding, Cutting, Marking, Cleaning

*Laser Welding-Marking-QC Vision Inspection all in ONE machine*

- Laser Seam welding
- Precision Drilling / Cutting
- Spot welding ss304 & Copper
- welding fine wire to PCB
Dual track vibratory bowl
Speed at 0.3s/pc
4 port rotary table for continuous pick&place
User-friendly PLC touchscreen
Full Safety Protection & enclosure
Full Inspection before sealing
Suitable for small 3D electronic components packing

FEATURES:
- Dual track vibratory bowl
- Speed at 1.2s/pc
- Able to pack parts ranging from 8-13mm
- User-friendly PLC touchscreen
- Full Safety Protection & enclosure
- Full Inspection before sealing
- CCD Vision able to identify and process 90°, 180°, 270° & 360° orientation
- Designed to run more than type of component (using same vibratory bowl)
**PLS DUAL TRACK TRAY PACKING MACHINE**

**FEATURES:**
- Dual track vibratory bowl
- Speed at 0.8s/pc
- CCD Vision System to identify part orientation before picking (Optional)
- User-friendly Customized Windows Software
- Full Safety Protection & enclosure
- Loads 15 trays for one cycle
- Robot Arm PnP enables easy modification for different tray pocket design
- Designed to cater for different tray sizes

**PLS HIGH-POWER LASER WELDING MACHINE**

**FEATURES:**
- Motorized rotary table with 4 different stations
- Speed?
- Removable Jig Fixtures for easy modification
  - User-friendly Customized Windows Software
- Full Safety Protection & enclosure
- Loads 15 trays for one cycle
- Robot Arm PnP enables easy modification for different tray pocket design
  - Designed to cater for different tray sizes
**PLS PORTABLE LASER CLEANING MACHINE**

- **Benefits:**
  - Easy use handheld all-in-one system
  - Upgradable to integrate with robot
  - Ideal for many coatings & metal surfaces
  - Green technology: No chemicals, no residues, no consumables
    - Totally dry process – no water or liquids that can cause moisture damage & corrosion
  - Unmatched cleaning quality: Laser cleaning produces surfaces with excellent bond strength quality for coating durability and corrosion resistance.
    - Non-contact/non-kinetic, No abrasion to delicate surfaces

**Features:**
- Hand-held laser cleaning gun
- Touchscreen user interface
- Rollers for easy control and gliding
- Accessible storage chute
- Adjustable & lockable wheels
- Integrated particle & fume extraction

**PLS 3-AXIS WAFER LASER CUTTING MACHINE**

**Features:**
- Dual track vibratory bowl
- Speed at 0.8s/pc
- CCD Vision System to identify part orientation before picking (Optional)
- User-friendly Customized Windows Software
- Full Safety Protection & enclosure
- Loads 15 trays for one cycle
- Robot Arm PnP enables easy modification for different tray pocket design
- Designed to cater for different tray sizes

**1.2mm thick paint layer**