IPG’s Laser Welding 4-Axis Workcell is a highly cost-efficient tool for welding of a wide range of metal components, enclosures and fabrications. The high pulsed mode peak power of the QCW laser provides deep penetration in highly reflective materials for low heat, constant quality welding.

With a rugged industrial construction, this system includes a granite table and superstructure for thermal and mechanical stability and is easily programmed for maximum tool flexibility. The Laser Welding Workcell, fiber laser and welding head are designed, manufactured and supported by IPG – your partner for precision laser welding systems.
Laser Welding 4-Axis Workcell
Laser Welding for Small Parts

Laser Options
- CW: 300, 500, 1000, 2000 and 4000 W
- QCW: 150/1500, 300/3000 and 450/4500 W
- Lasers below 1000 W can be Internally Mounted

System Enclosure
- CDRH Class 1 Enclosure with Laser-safe Viewing Windows
- Front Doors Available as Manual or Automatic Operation from HMI or G-code Programmable
- Access Panels on Front and Sides of Cell for Easy Access and Maintenance

Modular Work Area
- 500 mm X Travel, 300 mm Y Travel, 300 mm Z Travel
- Aluminum T-slot Tooling Table
- Rotary Stages Available

Beam Delivery
- IPG’s FLW-D30 Welding Head Standard, Power up to 6 kW
- Lightweight for High-speed Part Processing
- Maintenance-free Fiber Feed to Head
- Coverslide with Integrated Contamination Sensor
- Computer Controlled Welding Gas Supply
- Coaxial Vision System and Display

User Interface
- Intuitive HMI for Machine Control
- Multiple Screens for Programming All Process Parameters
- G/M-code Programming
- CAD/CAM Software (Optional)

Up to 4-Axes of Coordinated Motion for 2D, Tube and 3D Materials Processing
- Linear Stages for Demanding Applications Requiring High Speed and High Accuracy
- Stages are Sealed to Protect against Damage, Contamination and Debris

Compact Footprint
- 1600 D x 1300 W x 2220 H mm (63 x 51 x 88”)
- Minimizes Floor Space Requirements
- Easy to Install
- Ergonomic Work Height: Easy Part Loading and Unloading

Laser Options
- YLS Lasers >1000 W Housed in NEMA 12 Air-conditioned and Sealed Cabinet
- YLS Lasers have Module Redundancy for Increased Tool Availability
- Wide Choice of IPG Fiber Lasers Available
- User Interface
- Modular Work Area
- Beam Delivery
- Compact Footprint
Laser Welding 4-Axis Workcell
Automotive Components & Electrical Enclosures

System Specifications

| Laser Power Options | CW: 300, 500, 1000, 2000 and 4000 W  
QCW: 150/1500, 300/3000 and 450/4500 W |
|---------------------|----------------------------------------|
| Beam Delivery       | IPG Photonics’ FLW-D30 Welding Head  
Includes Co-axial Viewing System |
| Work Envelope       | X: 500 mm (19.6 in.); Y: 300 mm (12 in.); Z: 300 mm (12 in.) |
| X Stage Option      | Drive: Travel: 500 mm, Accuracy ±8 µm, Repeatability ±2 µm, Velocity 1 m/sec |
| Y Stage Option      | Direct Drive: Travel: 300 mm, Accuracy ±8 µm, Repeatability ±2 µm, Velocity 1 m/sec |
| Z-Stage Options     | Ball-screw Drive: Travel: 300 mm, Accuracy ±25 µm, Repeatability ±3 µm, Velocity 400 mm/sec |
| Tooling             | Aluminum T-slot Table |
| Rotation Stage Options (about X-axis) | Direct Drive: Travel: 360° Continuous, Speed: 600 rpm max  
Accuracy ±10 arc-sec, Repeatability ±4 arc-sec  
Integral, Pneumatic ER25 Collet Chuck |
|                     | Gear Drive: Travel: 360° Continuous, Speed: 30 rpm max  
Accuracy ±180 arc-sec, Repeatability ±45 arc-sec  
5C Collet, 3 Jaw Chuck |
| Controls/ Interface | Industrial Motion Controller, Full Look-ahead Contouring Capability  
Laser Power Proportional to Velocity, Windows-based CNC Interface  
G/M-code Programming, Editable Materials and Laser Parameter Database |
| Process Gas         | Manually Adjustable Pressure Regulator and Computer Controlled  
Solenoid Valve for Welding Gas up to 250 psi |
| Exhaust             | 4” Blast Gate with Exhaust Plenum for Optional Welding Table |
| Safety              | CDRH Class I Laser System (Complies with 21 CFR Chapter 1, Subchapter J) |
| Dimensions, LxWxH, mm in. | 1600 x 1300 x 2220  
63 x 51 x 88 |

The Laser Welding Workcell can be custom-configured by IPG to include additional rotary axes and part handling capabilities. Please consult IPG for custom-designed laser welding solutions.

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