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Pulsed Nd:YAG Laser Welding System

The W series of pulse Nd:YAG laser welding systems are suitable for a wide range of precision spot & seal welding and cutting applications in the electronics, medical, automotive and fine mechanics markets. Typical applications include:

- Welding of stainless steel, aluminium alloy and other metals
- Welding of electron guns, titanium capacitors
- Spot welding of optical fiber coupler parts
- Welding of containers
- Seal welding of lithium batteries

Laser welding has a number of advantages over conventional techniques including:

- low heat input
- reduced distortion
- no mechanical forces
- no tool wear and hence
- consistent weld penetration

W series laser welding systems use optical beam delivery. An assistant gas nozzle is also provided. CNC control system provides a convenient programming on the welding/cutting speed, pattern, laser beam on/off, gas on/off. The laser power is adjustable by setting laser pulse width, pulse repetition rate and lamp operation current.

A laser welding system typically consists of laser head, switching power supply, CNC control system, beam delivery, motor-driven XY stage & chiller.

Model	W-xxx[1)]
Laser type	Flashlamp-pumped pulsed Nd:YAG laser
Laser wavelength	1064nm
Laser power	50 to 400W depending on model
Laser beam diameter	5-8mm depending on model
Max. laser energy	30-100J depending on model
Pulse width	0.1-10ms, adjustable
Pulse repetition rate	1-200Hz, adjustable
Focused beam diameter	<0.2mm
Beam delivery	Optical beam delivery with a gas nozzle
Internal cooling	Closed water cooling with chiller
Table	Motor-driven XY table with 200x200mm moving range[2)]
Power requirements	380VAC, 3-phase, 50Hz

Remark: 1) W-xxx: xxx means laser power in watt. It is from 50 to 500W.
2) Other laser welding systems available upon request.

Pulsed Laser Spot Welding Machine

WS series laser spot welding machines are used for perforation and spot welding of sand hole for gold and silver jewelleries. Laser spot welding is an important application of laser materials processing technology. Spot welding is thermal conduction, namely, the laser radiates the surface of the part, and the heat on the surface expands inside through heat conduction. By controlling parameters such as laser pulse width, energy, peak value and repeating frequency, the part will melt, and thus forming specific molten pools. Due to its unique benefit, the product has been successfully applied to gold and silver jewelleries processing, and welding of small-sized parts.

Characteristics

- Energy, pulse width, frequency and focus can be adjusted within a wide range to achieve different welding effects.
- Ceramic reflector used in the laser pump chamber is imported, which is corrosion resistant, high temperature resistant, high electrical/optical conversion.
- World-leading automatic light shielding system is employed to remove harmful lighting on eyes during operation.
- 24-hour continuous operation, with stable operating performance, and free of maintenance within 10000 hours.
- Personalized design in compliance with ergonomics principles.

Advantages

Fast, efficient, deep, little distortion, little affect area, quality welding, welding points free from pollution, and energy saving.

Model	WS100	WS150	WS200
Max. average power	100W	150W	200W
Laser wavelength	1064nm	1064nm	1064nm
YAG rod dimension	6x120mm	7x120mm	7x145mm
Lamp dimension (model)	STX-8x110x250-5x10	STX-8x110x250-5x10	STX-8x130x270-5x10
Focused beam diameter	0.1-3.0mm	0.1-3.0mm	0.1-3.0mm
Maximum pulse repetition rate	<50Hz	<50Hz	<50Hz
Pulse duration	0.5~20ms	0.5~20ms	0.5~20ms
No. of assistant gas channel	1	1	1
Input electricity	220Vsingle phase 50Hz/20A	220Vsingle phase 50Hz/20A	220Vsingle phase 50Hz/30A
Dimensions (LxWxH)	1000X480X1080mm	1000X480X1080mm	1000X480X1080mm
Dimensions (LxWxH)	400X350X880mm	400X350X880mm	400X350X880mm