

Laser for welding/brazing and surface modification applications

Pulsed Laser for surface modifications		
1. Technical specifications		
1.1	Type of Laser	Pulsed Nd:YAG Laser
1.2	Wavelength	1064 nm, 532 nm, 355 nm
1.3	Spectral width	$\leq 1 \text{ cm}^{-1}$ (FWHM)
1.4	Pulse Energy (Variable)	1.5 J or higher at 1064 nm, 0.75 J or higher at 532 nm, 0.4 J or higher at 355 nm
1.5	Pulse duration	5 to 10 ns
1.6	Repetition rate (Variable)	10 Hz or higher
1.7	Harmonic Modules	All harmonic modules can be attached or detached with ease and without optical realignment
1.8	Beam diameter	5 to 10 mm
1.9	Beam divergence	$< 1 \text{ mrad}$
1.10	Energy Stability	$< 3 \%$ RMS
1.11	Pointing Stability	$< 100 \mu\text{rad}$ at 1064 nm
1.12	Cooling System	Air to water cooling is preferred or close loop water cooling
1.13	Temperature Range	18 – 28 °C or wider
1.14	Optics and Safety goggles (Accessory)	The beam delivery optics must be included with accessories for vertical focussing on to target
1.15	Input Power	Standard matching with Indian requirements (240/415V/single phase, 3-phase circuit/ 50 Hz)
1.16	Operation	Computer control and full automation
1.17	Installation, Warranty and Maintenance	Quotation must include installation, 3 years warranty for all the components with annual

		maintenance
1.18	Consumables	Must include any required consumables for 3 years
2. Others		
2.1	Machine capability	Shot peening and surface modifications of metals
2.2	User manual	Suitable user manual must be provided
2.3	Offer	Special Educational discount should be given to IIT Madras for the proposed laser system

Other requirements	
1	Suppliers are required to provide training for at least 1 person on programming, operation and maintenance at vendors place and also at IIT Madras free of cost
2	The complete system and its associated hardware / software should have a standard warranty of 3 years from the date of installation, commissioning and acceptance of the system at IIT Madras. Supplier modification(s) / Software upgrades shall be intimated and same will be made available free of cost during the warranty period.
3	All Technical literature / catalogues of various systems should accompany the quotation. All the documents should be in English.
4	Details of their engineer's expertise should be enclosed along with the offer.
5	The system should have compatibility with Indian environment conditions (for better power/energy stability)
6	The System shall be capable of external control/triggering.
7	Long term support requirements: Major active components of the Laser (pump laser/pump diodes) should be manufactured by Vendor Company to ensure long service (availability of spare parts) of the system. Exact lifecycle of the offered unit has to be specified