

Beam shaper for ultrafast laser

Bids are entitled for the supply installation and commissioning of beam shaper. The proposed item to be purchased should be compatible with the ultrafast laser given in tar ensure A

1.0	Required output beam characteristics	
1(a)	Output shape parameters	
1.1	Type	Free space collimated
1.2	Target/ Feature Dimension	0.06 mm to 3.0 mm
1.3	Target Shape/Geometry (s)	Please specify if available all (circular, square and line)
1.4	Dimension in the processing plane	2 to 4 mm
1.5	Beam quality	Diffraction limited
1.6	Spatial mode	Square or circular flat top
1.7	Total losses	< 10 %
1(b)	Laser environment	
1.1	Ambient temperature	Constant value, set between 18 and 25°C
1.2	Temperature stability	± 1,5 °C
1.3	Humidity	< 50% @ 25°C
1.4	Vibrations	Optical table or stable bench
1.5	Electricity	110-250V AC 50 Hz, < 16 A@220V
2	Application requirements	
2.1	Micro drilling of high aspect ratio holes on thick materials such as Ti6al4V and Nickel alloys with zero conicity (taper angle) , Circularity error < 5 µm	
2.2	Shaped micro holes with an acute angle of 15 to 30°	
2.3	Surface texturing	
3.0	Quotation must include Installation, Commissioning and integration with the existing system and Annual Maintenance for 3 years	
4.0	It should be compatible with the existing system shown in Appendix A	

Other Requirements

1. Quotations with the complete solution for the above requirement will only be accepted.
2. I.I.T. Madras has the right to accept the whole or any part of the tender or portion of the quantity offered or reject it in full without assigning any reason (Quote items separately)
3. Quotations for a prototype machine will not be accepted.
4. Test certificates for all the stages confirming the specifications from OEM are required with shipping/freight documents.
5. Suppliers to provide training for programming, operation and maintenance at IIT Madras at free of cost.
6. All necessary safety regulations should be followed.
7. The complete system and its associated hardware/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 the same will be made available free of cost during the warranty period.

8. All technical literature/catalogues and drawings of various systems should accompany the quotation. All the documents should be in English.
9. Installation and commissioning should be provided by the supplier. The Indian agent should have well proven service capability on similar systems with factory trained service engineers available in India. Details of their engineers expertise should be enclosed along with the offer and will be a key factor in the decision making.
10. The system should have compatibility with Indian environment conditions (for better power/energy stability)
11. Supply detail similar items to other Centrally funded Institutes like IIT's / NIT's should be provided.

Appendix A

S. No.	Specifications	Details
1.0	Details of Existing Laser Features	
1(a)	Laser input characteristics	
1.1.	Type	High power ultrafast fiber laser (Yb)
1.2	Model	SATSUMA HP2
1.3	Principle	M/s. AMPLITUDE SYSTEMS, FRANCE
1.4	Wavelength	1030 nm
1.5	Lenses for beam delivery	Silicon Carbide Mirrors
1.6	Average power	Up to 20W
1.7	Pulse energy range (minimum)	Up to 40 μ J
1.8	Repetition rate (minimum)	2 kHz to 2 MHz
1.9	Pulse width/Pulse duration	300fs to 10 ps
1.10	Traverse mode	TEM00
1.11	Beam quality, M^2	<1.2
1.12	Energy stability	<1% RMS
1.13	Pulse to pulse energy variation	<1%
1.14	Beam diameter	3 ± 0.5 mm
1.15	Beam divergence	0.5-0.6 milli radians
1.16	Operation	Computer control and full automation
1.17	Cooling System	Close loop Air Cooled
1.18	Machine Capability	Minimum spot/feature size 60 μ m
1(b)	Galvo scanner and Laser Head	
1.1	Model	LS Scan - XY 20 (LS View)
1.2	Scanner aperture (input/output)	5 / 20 mm
1.3	F Theta lens	F-Theta lens focuses the beam on a flat field
	Make	Linos F-theta Ronar
	Model:	4401:288:000:20
1.4	TELECENTRIC F-THETA LENS	Addition to focalize the laser beam on flat field, the Telecentric F-Theta objectives allows to conserve the same angle of attack for any points on this field
1.5	Labjack near Galvo Scanner	Utilizes a dual-pantograph design which offers excellent rigidity