

**Centre for Biomedical Engineering
Indian Institute of Technology Delhi**

Notice for inviting quotations

Dt: 17th February 2014

Ref: NIQ/CBME/DK/Institute/FEB2014

Sub: Purchase of Laser machining system

Please send your quotation for purchase of above said item(s) as per specifications given below. Your quotations should reach latest by **5 PM** on 10th March 2014. Quotations are solicited only for items manufactured by reputed company with proven past record of sales, supply and after-sale service.

The laser machining system is to cut and machine metals (such as steel 2 mm thickness), composites (such as carbon fibers composites 5 mm thickness), and channeling of polymers (such as PDMS 20 mm thick and channels of 50 to 200 μm width and 10 ~ 100 μm deep). The laser source should be integrated in the CNC workstation with necessary interfacing and optics. Safety features for protection of the laser head to be provided.

Required training to be provided by the company at IIT Delhi. Installation of the machined to be completely taken care by the vendor. Additional cost of travel, boarding and lodging for product installation will not be provided.

S. No.	Item	Technical Specifications	Qty
1	Fiber Laser based stand-alone system machining system. The laser system includes the parts from (a) to (f). Optional parts are mentioned from (g1) to (g7).	Fiber Laser based stand-alone system machining system complete CAM software controlled system.	01
	(a) Lasers	<ul style="list-style-type: none"> • Fiber laser • Options for both Continuous & Quasi CW • Peak power > 2000 W • Average Output Power (Modulated) > 400 W • Modulation upto 10 kHz or higher • Pulse width < 100 μs • Focus spot size < 100 μm • M^2 factor < 1.1 	

	(b) Worktable (CNC controlled)	<ul style="list-style-type: none"> • X, Y and Z - <10 µm accuracy (or better) • X & Y traverse – 100 mm minimum • Z traverse – 50 mm minimum • Servo controlled • Touch screen console/ Mouse controlled console • Table should be made of stainless steel plate table (M3 threaded holes in an array pattern of 1" x 1") • Size of the table > 300 mm x 300 mm 	
	(c) Alignment laser	Visible green or blue or red laser to align incident radiation	
	(d) CNC control, Software & Control panel	<ul style="list-style-type: none"> • CNC Controller with all data exchange support and operated via color touch screen/ mouse controlled using a custom software. • Preferred data exchange ports - 1 x RS232, 1 x USB (for data transfer with USB stick), 1 x Ethernet 10/100Mbit • ADC – Analog Digital Converter 0 – 10 V signal for external laser control (of frequency, pulse width or peak power) • Programmable memory • CAM software for 3 axis • CAM software should allow import of all CAD formats such as IGES, STEP, DWG, DXF etc. 	
	(e) Mandatory features	<ul style="list-style-type: none"> • The workstation should be made of sheet metal construction with durable powder paint finish. • See-through laser safety glass window. • The workstation should provide convenient access to the working chamber via a lifting door opening. • The working chamber is connected to an exhaust system and equipped with all exhaust connection. • Consoles should have two emergency-stop buttons. • Provision for shielding gas and cutting gas integration in the laser head to be provided. • Closed cooling or Integrated water cooling system. No tap water shall be used. • All the related manuals, cables, spare parts and all other related mandatory accessories are to be provided. 	
Optional parts/features Individual cost for each item to be provided			
	(g1) Optional features Compressors and Digital high pressure	<ul style="list-style-type: none"> • 3 to 5 CFM compressor and programmable digital high-pressure regulator for control of cutting gases. 	01

	regulator		
	(g2) Optional features Additional cost to include 5-axis CNC worktable instead of 3-axis CNC worktable	<ul style="list-style-type: none"> • X, Y and Z - <10 µm accuracy (or better) • X & Y traverse – 100 mm minimum • Z traverse – 50 mm minimum • B axis - +- 135 deg • C Axis 360 deg • Rotary stage for tube cutting • Servo controlled interfaced with tube holding • Touch screen console 	01
	(g3) Optional features 5 axis CAM software	<ul style="list-style-type: none"> • CAM software for 5 axis • CAM software should allow import of all CAD formats such as IGES, STEP, DWG, DXF etc., 	01
	(g4) Optional features Warranty	<ul style="list-style-type: none"> • 5 year warranty 	01
	(g5) Optional parts Optics	<ul style="list-style-type: none"> • Itemized optics for additional features (should contain individual cost) 	Multiple
	(g6) Optional parts Camera	<ul style="list-style-type: none"> • Wide angle 5 MP (or better) NIR (Near Infrared) camera for viewing laser operation with in-built controller. Camera should be atleast 60fps. • State options and individual cost for each option 	01
	(g7) Optional components/parts UPS	<ul style="list-style-type: none"> • Appropriate UPS to support machine operation for atleast 30 minutes • State options and individual cost for each option 	01
Note: IIT Delhi is a non-profitable educational institute involved in research & teaching. It is expected that special educational discount would be offered and the same be specifically mentioned in the quotation.			

TERMS & CONDITIONS COVERING SUBMISSION OF QUOTATIONS

1. Technical Bid Requirements

- One year comprehensive on-site warranty is necessary.
- The technical bid must contain all the required technical specifications. Otherwise the quotation will not be accepted.
- Along with the technical bid, please enclose support documents related to previous sale with complete technical details. The technical documents should include SEM images for minimum size features (such as minimum hole size, minimum kerf width) cut on metals. Details on composites and polymers would be encouraged too.
- The technical bid should contain man-power details of the of the above items(s) within India.

- e. The technical bid should contain information on whether the individual sub-systems are in-house manufactured or bought out. It should also include the working mechanism.
- f. If the items are of proprietary nature, please provide proprietary certificate from the manufacturer.
- g. All INDIAN agents should provide agent certificate etc.,

2. DELIVERY: The rates quoted must be for FOB prices. Prices and currency should be mentioned.
3. TERMS OF PAYMENT: 100% post-payment on delivery and satisfactory installation. LC/electronic (wire) transaction options may be specified.
4. INSTITUTE'S RIGHTS: IIT Delhi reserves the rights of acceptance or rejection of any or all quotations.
5. VALIDITY OF QUOTATIONS: Quotations should be valid at least for a period of 3 months.
6. SUBMISSION OF QUOTATIONS: Both Technical and price bids are to be quoted separately in separate sealed covers. Both these bids should be sent in a sealed cover marked at the top SUBJECT AND DUE DATE **10th March 2014 by 5 PM.**

Financial quotation should contain single cost for all items (a) to (f). Quotes for individual items are not acceptable for (a) to (f). For items (g1) to (g7), individual prices (excluding taxes) to be provided.

No excise duty is applicable for IIT. SALES TAX (VAT) OF 5.5% is applicable. Always mention price of items and taxes separately.

Quotations should be sent, on or before due date to:

Dr. Dinesh Kalyanasundaram, Assistant Professor
Centre for Biomedical Engineering, IIT Delhi, Hauz Khas,
New Delhi 110 016, India.