NATIONAL INSTITUTE OF TECHNOLOGY SRINAGAR

(An Autonomous Institute of National Importance Established by the Act of Parliament)

OFFICE OF THE COORDINATOR TEQIP III

Tel: +91-194-2422032 Extn: 2818, 2814, 2806

Email: teqip3@nitsri.net Website: http://new.nitsri.ac.in

NO.: NIT/TEQIP/20/402

Dated: 30-07-2020

CORRIGENDUM

With reference to the Invitation for Bids for the supply of 3-Axis Laser System for Surface Texturing vide IFB No. TEQIP-III/2020/nits/309 Dated 20-07-2020, the commercial and technical specifications were discussed during the pre-bid meet held on 29-07-2020 and have been revised which can be found at Annexure I and Annexure II.

30/07/2020

Nodal Officer Procurement
TEQIP III

Copy to:

1. **Chairman CRFC.**
2. **Chairperson CSC, with a request to kindly upload the Corrigendum on Institute website.**
3. **Concerned File.**

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Annexure I

Qualification Criteria:

The supplier should have an annual turnover of Rs. 15 crores in the last 3 years.

Bid Security/ Tender Fee:

In view of the COVID 19 Crises, the Bid Security/ Tender Fee can also be transferred through NEFT/ RTGS in the bank account details given below:

Account Name: TEQIP III NIT Srinagar
Account No.: 0391040100011025
Bank Name: J&K bank
Branch: REC Srinagar
IFSC Code: JAKA0RECSGR
MICR Code: 190051054

The payment receipt may be sent to the office of TEQIP III through mail (teqip3@nitsri.ac.in).

Annexure II

Section 01: Laser Unit

3-Axis Laser System with Dual Heads

Machine Specifications

Electrical Power Requirement	110/220 VAC
Operating Temperature	10°C-35°C
Operating Humidity	5%-95%
Cooling	Air cooled
Marking Area	60 x 60 mm (For laser source 1) and 100x100 mm (For laser source 2)
Marking preview	- Gives the operator the chance to preview the pattern and adjust the component according. - Highly recommended for error proof laser operation.
Red pointer (useful to fine tune laser focus)	- Useful when laser operations need to be performed on different components which differ in thickness & shape.

Granite Base & Granite Z-Axis Portal

For both the source and it acts as a vibration isolator and provides excellent parallelism

- Granite surface plate of *Grade-0*
- As per standards *IS: 7327-2003*
- Inserts of *M-8*, having 20 mm depth
- Flatness tolerance: *4 µm* or better

Laser source 01: Technical Specifications (with integrated optical z-axis for 3D functionality)

Wavelength	532 nm (Green Laser)
Beam Quality/Intensity Distribution	$M^2 \leq 1.3$ Single mode: It should generate very fine spot sizes (<20 µm)
Pulse Energy	400 micro-joules
Frequency Tuning	10kHz – 100kHz
Average Output Power	5 W
Pulse width	2 – 80 ns
Cooling	Air

Laser source 02: Technical Specifications (with integrated optical z-axis for 3D functionality)

Wavelength	1059-1065 nm (Fiber laser)
Beam Quality (M^2)	≤ 1.6
Frequency Tuning	1kHz – 1000kHz

Average Output Power	20W
Pulse Duration Range	3-2000 ns
Pulse tune waveforms	48
Single Shot Pulse Repetition Frequency to	1 MHz
Maximum Peak Power	>10 kW
Mode of Operation	Pulsed and CW

Pulse Tune Functionality

Pulse Tune Waveforms Up to 48

It should give the ability to select waveforms with pulse durations from 3 ns – 2000 ns.

Higher peak power and pulse energy with only minor increase in spot size and good depth of focus

Single shot to 4 MHz Pulse Repetition Frequency

Output power stability (% p-p)	<5
Maximum pulse energy (mJ)	<1
Pulse to pulse energy stability (%rms)	<3
Emission bandwidth (nm)	<10
Beam Offset (mm)	≤0.1
Pointing error (mrad)	≤10
Astigmatism (Z_R)	<0.3
Degree of polarization (%)	<20

Scanning System for both the laser sources

High resolution scanner

High precise scanner in x, y and z directions for laser positioning to avoid any laser errors.

Can process **3-Dimensional Texturing**

Optical Performance	**Required value**
Typical scan angle (rad)	± 0.35
Gain Error (mrad)	< 5
Zero Offset (mrad)	< 5
Dynamics	
Aperture (mm)	10
Tracking error (ms)	≤ 0.14
Marking speed (m/s)	≥ 2.5
Positioning speed (m/s)	≥ 12.0
Step response time	
1% of full scale (ms)	≤ 0.35

10 % of full scale (ms)	≤ 1.0
Precision & Stability	
Repeatability (RMS) [µrad]	< 2
Positioning resolution [bit]	16
Nonlinearity	< 3.5 mrad/44°
Temperature drift	
offset[µrad/K]	< 30
Gain [ppm/K]	< 160
Long term drift (8 h drift after 30 min warm up)	
offset[µrad/K]	< 100
Gain [ppm/K]	< 250
High performance positioning of the laser focus along the optical axis	
Maximum lens expansion	3x
Tracking error	0.9 ms
Typical travel speed	≤140 mm/s
Repeatability	<1µm
Nonlinearity	1.5% FS
Long term drift (over 8 hours)	<6µm

Section 02: M/C Elements

Quantity

Motorized Z-Axis — **02**

Type	Precise servo driven system
Features	- For focusing of laser beam for precise laser operations. - Stoke Length: 250mm - Positional Accuracy: ±50µm - Software controlled (Client control interface) with autofocus functionality

PC — **01**

Configuration Type	HIGH configuration industrial PC, 2U rack, Industrial motherboard
Processor	i7 (8th Gen)
RAM	16GB
Hard Disk	512 GB SSD
Installed Licenses	Windows 10 pro
Graphics Card	4Gb (Amd Radeon / N Vidia)
Monitor	Dell or Equivalent (size:24")

Lens — **02**

Lens 1 (For Laser Source 1)

Working area	60x60 mm
Telecentric Objective with Focal Length	100 mm
Theoretical ($1/e^2$) spot size	13 µm (M^2 of 1 and 10 mm of beam diameter and 10 mm scan head aperture)
Max. scan angle (rad)	0.36
Working distance	234 mm from center

Lens 2 (For Laser Source 2)

Focal Length	160 mm
Wavelength	1030…1080 nm
Scan field (X x Y)	100 x 100 mm
Diagonal scan angle	60°
Input beam ($1/e^2$)	10 mm
Focus size ($1/e^2$)	31 µm
Group delay dispersion (GDD)	934 fs^2
LIDT coating pulsed; CW	5.0 J/cm² * (τ/[ns]) ^ 0.30; 5.0 MW/cm²
LIDT system pulsed; CW	5.0 J/cm² * (τ/[ns]) ^ 0.30; 5.0 MW/cm²

Section:03 Software

File formats	Many bitmap and vector import and export formats (bmp, plt, dxf, ai, svg,). Can support 3D formats such as STL, CNC, PLT etc.
Barcodes	1D and 2D barcodes like EAN, EAN-128, Code-128, UPC-A, Data Matrix, extended Data Matrix ECC 200, Data Matrix dot generation
Text	Linear and radial text, Windows True Type fonts, serial numbers, customizable date/time objects, laser fonts, font editor for defining customized laser fonts
User Interface	- Runs under Windows 10, 8 and 7 (32 + 64 bit) - Customized installer and GUI - Password protected user levels - Can communicate with Client Control Interface or any third-party software
Job Editor	Transformation of data with mouse and keyboard input Property page concept for fast adjustment of pens, hatch parameters etc. Transformation of point items Entity list for defining the order of marking

Optic	Variable adjustment of laser and scanner parameters
	Easy management of multiple optic settings
	Scanner movement preview
	Laser power save and shutter control
Text and Fonts	Linear and radial text
	Windows true type fonts (*.ttf)
	Laser fonts

Customized Client Control Interface (CCI)

Features:	Provide different administrative levels (3 levels)
	I/O signals/alarms
	Automatic laser head movement up on recipe selection
	Maintenance mode selection features

Section 04: Safety Elements and Related Standards

Quantity

Class-I Safety Cabinet — **01**

Standard	IEC 60825-1
Safety	Class-I
Features	Prevents laser radiations from reaching the operator.
	Integrated with tower light for indicating the machine status.
	Integrated with Emergency Button to cutoff air and critical electrical supply.
Other safety standards	EN 12100:2010 & EN 60204-1:2006/AC:2010

Safety Goggles — **05**

Standard	Complies with ANSI Z136
Features	Reduce the amount of incident light of specific wavelength to **safe levels**, while transmitting enough light for good vision.
	Gives Protection against accidental laser beam.

Safety Door — 01

Features	With Safety Interlocks, laser will not work when the door is opened

Maintenance Mode — 01

Features	Laser will work during the maintenance mode weather the door is opened or closed (Integrated with the C.C.I)

Section 05: Other Elements

	Quantity
X-Y Linear Transport system	**1**
Features	Drive system: Ball Screw Repetitive Positioning Accuracy: ±0.02mm Resolution: The motor can be set resolution between 100～10000 [P / R]. Travelling Parallelism: 0.03 mm Stroke length up to 300 mm
UPS (Uninterrupted power supply)	**01**
Type	Online (Eaton)
Features	Online UPS is an essential component required for better voltage regulation, no disturbance in the current when the mains fail. **Technical Data:** Rating (VA) 3000VA Voltage 220/230/240 VAC Voltage Regulation Power Factor: 0.8 Frequency Range: 45-55Hz/54-66Hz Overload Capacity: 1 min @105%~110% load 30s @110%~125% load Backup: 1hr

Optional Item

Item	Description
Fume Extractor	The fume extraction system should be designed to capture hazardous fumes coming out while using a laser processing/machining. The fume extraction filtration systems should consist of reverse flow technology with Deep Pleat Duo Pre-Filters, Advanced carbon filter technology, HEPA and gas combined filters for removing harmful fumes and return purified air to the workplace. **Technical Specs** Capacity: 380 m3/hr Cabinet Dimension: 430(W) x 430(D) x 980(H) mm) Filter type: DeepPleat Duo Pre-Filters, Advanced carbon filter technology, HEPA and gas combined filters Filter Status Warning Motor (kW/Volts/ Hz) :1.1 kW /215 V/ Single Phase / 50Hz Noise ievel: < 60 dBA CE Compliance Filter Efficiency: F8 (95% @ 0.9 Microns) Independent Filter Condition Monitoring Real Time Air Flow Reading Remote Diagnostic Via. USB