सीएसआईआर - केन्द्रीय काँच एवं सिरामिक अनुसंधान संस्थान
196, राजा एस सी मल्लिक रोड, कोलकाता - 700 032, भारत
CSIR - CENTRAL GLASS & CERAMIC RESEARCH INSTITUTE
196, Raja S C Mullick Road, Kolkata - 700 032, India

CORRIGENDUM

REFERENCE NO. : - P/NC/53/AT/SO/OTE/24-24 DATE: 17/10/2024

NAME OF EQUIPMENT: "SUPPLY, INSTALLATION, COMMISSIONING & TRAINING OF LASER BASED PHASE-SHIFT INTERFEROMETER WITH 4" (100 mm) APERTURE" [CPPP PORTAL TENDER ID:2024_CSIR_209171_1]

NOTE: The Bids must be submitted in the Central Public Procurement Portal (URL: https://etenders.gov.in/eprocure/app) only. Manual/Offline bids shall not be accepted under any circumstances. Bidders should quote in INR only.

CONSEQUENT TO THE PRE-BID MEETING HELD ON 03/10/2024, THE REVISED SPECIFICATION IS GIVEN BELOW:-

Details of the Item: Laser based Phase-shift Interferometer with 4"(100 mm) Aperture

Technical Specifications:

LASER BASED PHASE-SHIFT INTERFEROMETER SYSTEM		
Configuration	Fizeau Phase Shifting Interferometer.	
Laser source specification	Laser source	Frequency Stabilized He-Ne
	Wavelength	632.8nm
	Frequency/ wavelength stabilization	≤ 0.0001 nm
	Coherence Length	≥ 100 m
	Laser life time	≥ 20000 hrs. Laser should be covered under warranty for 3 years.
Sample	Glass or glass ceramic, ceramics or others	• Disc: Sample diameter 100 mm (maximum) and sample thickness 100 mm (maximum) • Rectangular: Adjustable to cover a dimension of 320 x 160 x 45 mm^3 (L x B x T) [Maximum] with a focusing area 100 mm
Operation & alignment specification	Measurement Capability	• The interferometer shall measure the reflective and transmitted wavefront of optical components/systems (both planar and spherical). • The instrument should be capable of measuring the Bulk Optical Homogeneity/Wavefront Error test (quantitative measurement) of Polished Glasses of the λ/10 surface quality and measuring the Radius of Curvature (RoC) of Lenses. • Ability to measure surface wave fronts even in low light levels with reflections of a minimum 5%.
	Measurement technique	Phase-Shifting Interferometry (PSI)
	Alignment System	Two spot with reticle with 2° capture range
	Test beam diameter	4-inch (Minimum)
	Alignment Field of View	± 2°
	Height of optical center line	4.25 inch or more

Controller system	Integrated Computing system/controller	• System shall be compatible to the interferometer and preloaded with metrology software with two display monitors. • Focus, Zoom, New Measurement, and alignment control
Software	Metrology software	The software should provide the following features: i. Software shall have provision to different masking option during acquisition and analysis. ii. Software shall display surface interactive plot in 2Dand 3D, MTF, PSF plots, encircled energy etc. iii. Software should be capable of Zernike analysis and including OPD map, dat and txt data. iv. Software shall have provision to export the file format of the measured optical wave front to optical design software like Zemax/ CodeV etc. and should have interface with MATLAB etc. v. Software should provide facility for term removal of aberration coefficients while analysing the data vi. The vendor should provide software upgrades/updates during warranty period. vii. Life time validity of license.
Measurement Specifications	RMS wavefront repeatability	≤ 0.06 nm RMS 2σ RMS Wavefront Repeatability is defined by the mean RMS difference plus 2X the standard deviation for the differential between all even numbered measurements and a synthetic reference (defined as the average of all odd numbered measurements); 36 sequential measurements (16 averages) form the basis for calculation.
	RMS Simple Repeatability	≤ 0.6 nm RMS 2σ RMS Simple Repeatability is defined by 2X the standard deviation of the RMS for36 sequential measurements (16 averages) of a short 4 inch plano cavity.
Cameraspecification	Camera resolution	≥1200 x 1200 pixels
	Digitization	≥8 bits
	Camera Frame Rate	≥80 Hz

	Zoom	≥ 4X
	Pupil focus range	± 2 m
System Controller Specifications	Monitor	24-inch flat panel dual (02 Nos.) monitor for fringe evaluation and analysis (in software).
	Processor	System processor like Intel Core i5 or higher
	RAM	≥ 32 GB
	Storage	≥ 2 TB(HDD) & ≥ 512GB(SSD)
	CD Drive	DVD-RW
	Operating System	Windows 11 or latest, 64-bit
Environment Condition	Operating temperature	15° to 30° (in Celsius)
	Storage temperature	10° to 45° (in Celsius)
	Humidity conditions	Relative 5% to 95%, No condensation
Essential Accessories	Transmission Flat(compatible with quoted system)	4 inch 4% Reflectivity, 1/20 Wave PVr, 633 nm **(Quantity required: 1 No.)**
	Reference Flat (compatible with quoted system)	4 inch 4% Reflectivity, 1/20 Wave PVr **(Quantity required: 1 No.)**
	Reference Flat (compatible with quoted system)	4 inch 90% Reflectivity, 1/20 Wave PVr **(Quantity required: 1 No.)**
	4" Optical Attenuator, Pellicle (compatible with quoted system)	**(Quantity required: 1 No.)**
	Self Centering Element Holder (SCEH) -	4" (100 mm) 3 finger adjustable part holder(compatible with quoted system) **(Quantity required: 1 No.)**
	Adjustable Mount (Tip/Tilt) (compatible with quoted system)	4" (100 mm) attenuating pellicle, 108 mm optical centerline height **(Quantity required: 1 No.)**
	Adjustable Mount (compatible with quoted system)	For holding of maximum sample dimension 320 x 160 x 45 mm^3 (L x B x T) X and Y-axis movement to cover total sample area in steps. **(Quantity required: 1 No.)**
	Transmission Spheres(compatible with quoted system):	(I) 4"- F/0.75 - 1/20 wave PVr - 48.0 mm Radius **(Quantity required: 1 No.)**

		(ii) 4"- F/1.5 - 1/20 wave PVr – 142.7 mm Radius **(Quantity required: 1 No.)** (iii) 4"- F/3.3 - 1/20 wave PVr – 344.7 mm Radius **(Quantity required: 1 No.)** (iv) 4"- F/7.1 - 1/20 wave PVr – 800.13 mm Radius **(Quantity required: 1 No.)**
	Rail Assembly	Encoded Rail: 2 meter Radius of Curvature rail system with 1 µm resolution encoder **(Quantity required: 1 No.)**
		Encoded Radius Kit: The kit should include stand alone 5-axis (X/Y/Z/Tip-Tilt) mount with integrated encoder read head and external display. The required software should be provided with the kit. **(Quantity required: 1 No.)**
	Vibration isolation table (Compatible with the offered system)	Specifications: 1. Optical table with Pneumatic vibration isolation with auto levelling function. 2. Size: 4' x 10' x 12", 1/4-20 tapped holes on 1" centres, 3. Optical table top material: Stainless steel 4. Flatness of the table top: ±0.15mm over 300 mm sq area or better (Test Report to be provided for the table) 5. Supporting Legs Height: 700 mm (±100mm) 6. Weight bearing capacity: ≥ 1000 kg 7. Vertical Isolation at 10 Hz: > 90% (Test Report to be provided for the table) 8. Horizontal Isolation at 10 Hz: > 90% (Test Report to be provided for the table) 9. Compatible silent air compressor to be supplied, **Quantity: 1 No.**
Certification	Calibration Certificates and Test reports	The calibration certificates for all the optics, Transmission Flat, Transmission Spheres and Reference Flats should be provided with standard calibration certificates and test reports from OEM.
Manufacturing of equipment & essential	Date of manufacturing	Date of manufacturing of the equipment & essential accessories should be after

accessories		placement of purchase order.
Installation and Commissioning	Installation and Commissioning	Installation and commissioning of the instrument should be done by the manufacturer's Engineer at CSIR-CGCRI, Kolkata.
Training	Training	Operational/ maintenance training and demonstration by system manufacturer as per the technical specifications of the equipment should be carried out during the primary installation at CSIR-CGCRI, Kolkata.
Acceptance		• Equipment acceptance subject to successful installation and demonstration of all the performance specifications of the system offered at CSIR-CGCRI, Kolkata. • **Supplier should provide λ/10 polished glass samples such as flat and lens to measure the properties such as surface wavefront, homogeneity/Wavefront Error and radius of curvature.**
Manufacturer Experience		• Vendors must have supplied similar equipment/instrument at government organizations in India in last five years. • The same should be supported by the necessary documents along with contact details.
Warranty	Instrument warranty	Instrument should come with warranty of three years from the day of installation. Factory trained engineers should be available in India either from direct OEM/local office in India. Turn around time shall be within 48 hrs in case of any system breakdown during the warranty period.
Maintenance Assurance		Beyond the warranty, maintenance assurance should be provided for 10 years.
AMC Offer		Party should quote AMC after expiry of warranty period for consecutive 05 years. Price of AMC must be indicated separately.
Power Supply (available at CSIR-CGCRI)	Input power supply	230 ± 10 V AC, 50 Hz
Utilities requirement		Vendor should clearly specify the utility required for smooth operation of equipment/instruments.
General documents to be submitted with the bid	Supporting documents	The party has to mention details technical specification of the offered equipment/instruments in their technical

		tender bid, which must be supported by document like technical brochure, catalogue, factory data sheet or equivalent. In case of tailor made equipment/items the party has to clearly indicate it in their offer.
	Compliance statement	The party has to submit a compliance statement mentioning all those tender specification and clearly mention the deviation with proper justification.

All other Tender terms and conditions remain unchanged.

18/10/2024

(Bodhisattwa Dhar)
Stores & Purchase Officer

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मण्डार एवं क्रय अधिकारी/Stores & Purchase Officer
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