

CMTI - CENTRAL MANUFACTURING TECHNOLOGY INSTITUTE

Tumkur Road, Bengaluru - 560022, Karnataka, INDIA

INVITATION FOR EXPRESSION OF INTEREST (EOI)

Eoi Tender No.CMTI/PUR/01(G)/2023-24

Date: 14.09.2023

1. CMTI - Central Manufacturing Technology Institute, Tumkur Road, Bengaluru - 560022, Karnataka, India, Invites sealed Technical Bids from OEM and their Distributors / Indian Agents with authorization letter from OEM, if any, for purchase of items listed below.

Sl. No.	EOI Tender No.	Description of Equipment	Qty	Last Date for Submission of Offer	Opening Date
1.	CMTI/PUR/01(G)/2023-24	Supply of Ballscrew Lead Error Measuring Equipment	01 No	05.10.2023	06.10.2023

2. Interested Bidders may obtain further information from the office of the Group Head, Purchase & Stores, CMTI - Central Manufacturing Technology Institute, Tumkur Road, Bengaluru - 560022, Karnataka, India, mail: purchase@cmti.res.in
3. The Bidding Documents can be downloaded at <https://cmti.res.in/all-tender/>.
4. As this is only Expression of Interest, only Technical Bid must be shared. **NO PRICE BID TO BE SUBMITTED.**
5. CMTI will not accept late receipt on any reasons
6. Technical bid, in its complete form in all respects as specified in the technical Specification along with the Bidding Document with signature & stamp on all pages must be submitted. In exceptional circumstances and at its discretion, CMTI may extend the deadline for submission of proposals, in which case all rights and obligations of CMTI and the bidders previously subject to the original deadline will thereafter be subject to the deadline as extended.
7. EMD is not applicable.

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8. The Director, CMTI- Bengaluru, reserves the right to accept any or all tenders either in part or in full or to split the order without assigning any reasons therefore.
9. Bidding Document can be downloaded free of cost from our website www.cmti.res.in

OBJECTIVE

THE OBJECTIVE OF THIS EXPRESSION OF INTEREST (EOI) IS FOR IDENTIFICATION OF EXISTING PROSPECTIVE MANUFACTURERS OF BALLSCREW LEAD ERROR MEASURING EQUIPMENT AND FINALIZATION OF TENDER SPECIFICATIONS ONLY. There is no commercial aspect associated to this EOI. The equipment must be part of already existing product catalogue displayed by the manufacturer, preferably in their website.

CMTI reserves the right to evaluate the responses, based on technical merits, in the process of identification of several potential Manufacturer's and their equipment's and also in finalizing specification.

VENUE & DEADLINE FOR SUBMISSION OF TECHNICAL BID

BID REFERENCE	CMTI/PUR/01(G)/2023-24
DEADLINE FOR RECEIPT OF EOI BIDS	05.10.2023
DATE AND TIME OF OPENING OF EOI BIDS (TECHNICAL BID ONLY)	06.10.2023
VENUE FOR BID OPENING	Central Manufacturing Technology Institute (CMTI).
ADDRESS FOR COMMUNICATION	Group Head, (Purchase & Stores) Central Manufacturing Technology Institute, Tumkur Road, Bengaluru-560022, Karnataka, India Email ID: purchase@cmti.res.in

VALIDITY OF OFFER:

The offer for TECHNICAL BIDS as per this document shall be valid for a period of two months initially which may be extended further if required by CMTI.

INSTRUCTIONS TO VENDORS (MANUFACTURERS)

Technical bids is to be submitted in the manner prescribed below

- i. Detailed technical references are enclosed at **Annexure-I**.
- ii. Applicant's Technical Bid as per (Format-1)
- iii. Organizational Details (Format-2)
- iv. Experience in Manufacture and supply of same or similar specification (Format-3)
- v. Financial strength of the organization (Format-4)
- vi. Detailed Catalogue/Brochure/presentation of company highlighting facilities of the company, past customers to whom same or similar equipment has been

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supplied, images of equipment and any other relevant details,

PRE-QUALIFICATION CRITERIA

Following will be the minimum pre-qualification criteria. Each eligible vendor should possess all the following pre-qualification criteria. Responses not meeting the minimum pre-qualification criteria will be rejected and will not be evaluated.

Sl.No.	Pre-qualification Criteria	Supporting Compliantdocument
1.	The applicant shall be a firm/ company/ partnership/ proprietorship firm	Copy of Certificate of incorporation. If any other then please enclose the document accordingly.
2.	The firm should be in the business of same or similar equipment for at least 05 years as on 31.03.2023	Certificate by Company Secretary of the Bidder's organization
3.	The Bidder shall have experience of manufacturing and supplying: i. Similar Equipment to Ballscrew Manufacturer's ii. Product must be a standard catalogue product preferably listed in their website.	List of customers with Contact Details
4.	Preference will be given to agency/organization having ISO 9000 and ISO IEC 17025 Certification and who are having experience in designing and manufacturing dimensional metrology equipments and into measurements and also have greater understanding in the field.	Detailed presentation/ Brochure and other supporting documents.

EVALUATION CRITERIA AND METHOD OF EVALUATION

- i. Screening of technical bid shall be carried out as per eligibility conditions mentioned in this document.
- ii. Technical bids will be evaluated for short listing inter alia based on their past experience of handling similar type of project, strength of their man power, financial strength of firm and presentation / proposal to the selection committee whose decision will be final.

Response: Bidders must ensure that their Bid response is submitted as per the prescribed formats. Special comments on the objectives and scope of the service projected in the enquiry may also be submitted along with the offer.

ANNEXURE-I

TECHNICAL SPECIFICATIONS FOR BALLSCREW LEAD ERROR TESTING MACHINE FOR EOI

CMTI is seeking to procure Ballscrew Lead Error Measuring Equipment. The equipment to have automatic measuring capability. For every revolution, several hundred measured values need to be recorded, calculated, plotted graphically and reported. The equipment to have precision granite as base to support ballscrew to be measured between centres or V Blocks depending on different ballscrew size. Physical probe shall be inserted into thread groove for tracing the profile of thread during ballscrew rotation and Laser interferometry is used for measuring longitudinal position with high accuracy. All the subsystems and elements used in the equipment to have highest possible accuracies to achieve measurement of CO class Ballscrew as per ISO 3408. The following table lists the EOI specification of the equipment desired.

Important Note: Merely stating, "comply" does not constitute sufficient information. Exact numerical values are to be specified wherever applicable. **Specified technical data should be supported by product catalogues, manuals, test procedures and test plots etc. and demonstratable later at site. In case of insufficient technical data, the quote will be summarily rejected without seeking any clarifications.**

SI No	Parameter& Specification	Guidelines for vendor to provide inputs
1	Equipment to have 1. Headstock Vertical axis 2. Headstock Spindle Rotary Axis with high precision Chuck 3. Length Measuring Axis (Non-Interfering in Measurement)	Vendor to Comment on their equipment Configuration and attach detailed tech data sheet to completely elaborate on working principle
2	V-Block Support for Ballscrew Rotation with antifriction pads	Vendor to confirm
3	Lapped high-precision Granite Bed (covering full length of measurement and supported by cast iron base frame)	Vendor to offer
4	Motorised Rotary Headstock Axis with Torque Motor	Vendor to confirm
5	High Precision Rotary Encoder for Headstock Rotation axis	Vendor to confirm
6	Motorised Vertical headstock Axis (Auto Height Adjustable)	Vendor to confirm
7	Vertical probing Axis (With adjustable Force Measurement)	Vendor to Offer
8	CNC-controller for minimum 3 axis	Vendor to Offer and comment

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9	Three-jaw precision chuck	Vendor to Offer
10	Linear guide ways	Vendor to confirm
11	Between centres device for small screw \varnothing 5 mm to \varnothing 25 mm. (To Include Tail Stock, Rotating Centre in Tail Stock, 3 Jaw Chuck in Headstock and Rotating Driver)	Vendor to confirm
12	Laser measuring system: Renishaw XL-80Q or equivalent for length measurement with XC-80 environmental compensation unit or equivalent with 2 no temperature sensor. Laser Interferometry to be solely used for linear measurement of ballscrew.	Vendor to Offer
13	<p><u>Industrial PC</u> Spectra 19"/4HE Rack or equivalent ATX Industrial Grade Rack or equivalent with support to 7th generation or above Intel core i7 processor 2xGigabit Ethernet, 2xUSB 3.0, 2xUSB 2.0, 1xRS232, 1xRS-485, DVI-D, VGA, HDMI, iDP 16GB RAM DDR4 Free slots: 4xPCI; 1xPClex16; 1xPClex4, 1xPClex1 512GB SSD + 512GB SSD, 1xDVD RW WIN10/64BIT/en or latest version MS Office 2021 or latest version PC-keyboard (US layout) Optical wheel mouse HP P22 G4 21.5" Monitor or equivalent</p>	Vendor to Offer same or propose equivalent
14	Laser Printer: HP LaserJet Pro M404dn or equivalent	Vendor to Offer
15	Electrical Cabinet with Console	Vendor to Offer
16	Measurement Software as per ISO 3048	Vendor to Offer
17	Min. Measurable Workpiece Diameter without centring device = \varnothing 20 mm	Vendor to Offer
18	Max. Measurable Workpiece Diameter without centring device = \varnothing 80 mm	Vendor to Offer
19	Min. Measurable Workpiece Diameter with centring device = \varnothing 5 mm	Vendor to Offer
20	Max. Measurable Workpiece Diameter with centring device = \varnothing 25 mm	Vendor to Offer

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21	Max. Measurable Ballscrew length =4000 mm	Vendor to Offer
22	Max. travel along measuring axis = ≥ 4050 mm	Vendor to confirm
23	Max. travel headstock axis = ≥ 80 mm	Vendor to confirm
24	Total weight	Vendor to Specify
25	Resolution of Headstock Rotary Axis = $\leq 0.001^\circ$	Preferable, Vendor to confirm
26	Headstock Bearing Accuracy = $1 \mu\text{m}$	Vendor to Offer
27	Precision of Rotary Axis = ± 5 arc sec	Vendor to Offer
28	Resolution of length measuring system = $\leq 0.01 \mu\text{m}$	Preferable, Vendor to confirm
29	Precision of laser system = $1 \mu\text{m} / \text{m}$	Vendor to Offer
30	Straightness of Probing axis = $\leq 0.15 \mu\text{m}$	Vendor to confirm
31	Straightness of Length measuring axis (Horizontal) = $1 \mu\text{m} + 1 \mu\text{m} / \text{m}$	Vendor to confirm
32	Straightness of Length measuring axis (Vertical) = $1 \mu\text{m} + 1 \mu\text{m} / \text{m}$	Vendor to confirm
33	<p>Measurement, Display & Reporting of measured parameters in values and graphs/charts (Travel Deviation Diagram) as per ISO 3408 Standard. Sample certificate will be provided by CMTI which needs to adhered and further customised to our requirement for certificate and report.</p> <p>Measurement parameters:</p> <ul style="list-style-type: none"> • Travel variation over useful path • Travel variation over path of 300 mm • Travel variation over one revolution • Mean travel deviation • Quality grade <p>Software Features:</p> <ul style="list-style-type: none"> • Easy control of the machine via software with simple manual control unit • Easy-to-learn use of the software, no special know-how of the user required • Different user levels (user, admin) • Real-time compensation of laser environment conditions, including material temperature of the specimen (always displayed and 	<p>Desirable, Vendor to confirm and comment in detail. To compulsorily provide supporting document listing each and every features of software.</p>

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	<p>selectable)</p> <ul style="list-style-type: none"> • Real-time compensation of measuring slide pitch error • Fully-automated measuring process • Display with actual position of all axis • Zero / reference function of axis (laser interferometer length measuring axis) • Selectable unit (metric, inch) • Data load / save function, also by using .csv data • Travel compensation for useful path • Measuring variables (speed, measuring points or measuring step, further needed inputs) • Sense of rotation (for right / left ball screws) • Automatic display of the measuring diagram after measurement • Filtering options for evaluation of the measurement • Filtering options of periodical 2π error • Software statistic tool • Support both between centres measurement and on V-block measurements 	
34	Required air compression	Vendor to specify
35	Air consumption	Vendor to specify
36	Air Dryer	Vendor to specify
37	Electrical connection 400 VAC @ 50/60 Hz	Vendor to confirm
38	Ambient temperature $20\pm 2^{\circ}\text{C}$ and Class 10000 at installation site where quoted specification to be proved	Vendor to note and confirm
39	Engineering Manual	Vendor to Offer
40	Maintenance Manual	Vendor to Offer
41	Operator Manual	Vendor to Offer

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42	<p>Set of probe heads (To enable measurement of different profile sizes) (Ø0.800mm, Ø1.000mm, Ø1.500mm, Ø2.000mm, Ø2.3812, Ø3.175, Ø3.9688, Ø4.7625, Ø5.5562, Ø6.350, Ø7.1438, Ø7.9375, Ø8.7312, Ø9.525, Ø10.3187, Ø12.700, Ø15.875, Ø19.050, Ø25.400, Ø3.000, Ø4.000, Ø5.000, Ø6.000, Ø7.000, Ø8.000, Ø9.000, Ø10.000, Ø11.000, Ø12.000, Ø13.000, Ø14.000, Ø15.000)</p>	Vendor to Offer and comment
43	Master Ballscrew Set of 3 covering size range	Vendor to Offer
44	Tool Kit (If any specialised tooling's involved)	Vendor to confirm

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	<p>Installation, Testing, Commissioning and Training Unloading, unpacking, installation, testing & commissioning to be carried out by a factory trained engineers at CMTI by supplier free of cost.</p> <p><i>Factory Acceptance Test:</i> Manufacturer shall arrange free pre-dispatch equipment audit for two CMTI personals on equipment construction on basis of accuracy, hardware & software installed, operation, maintenance, application and safety at manufacturer place includes transport, accommodation and hospitality for period of one week.</p> <p>Testing: During pre-dispatch testing at factory site and also during testing at CMTI site, the Equipment working and Machine accuracies to be proved as per Tender Specification. Vendor to provide necessary equipment like laser interferometer with related optics and other necessary masters and artifacts, free of charge, during Inspection, at both supplier’s place and customer’s place.</p> <p>Following pre-dispatch equipment audit, comprehensive training to ensure the equipment specifications, smooth daily operation and maintenance shall be provided at free of cost by the vendor</p> <p>Training: For a batch of CMTI personals for 3 business days at site immediately after completing installation, manufacturer must train hardware & software, operation, maintenance, application and safety</p>	<p>Vendor to Offer</p>
<p>45</p>	<p>Acceptance Criteria of CMTI</p>	<p>Vendor to Offer</p>

FORMAT 1: APPLICANT'S TECHNICAL BID

To,

Group Head, Purchase & Stores,
Central Manufacturing Technology Institute (CMTI),
Tumkur Road,
Bengaluru - 560022, Karnataka, India

Sub: Submission of Technical bid for manufacture and supply of Ballscrew Lead Error Measuring Equipment

Dear Sir,

In response to the Invitation for Tender No. **CMTI/PUR/01(G/2023-24** Published at <https://cmti.res.in/all-tender/> website for the above purpose, we would like to submit following technical documents to carry out the aboveproposed task.

1. Organizational Details (Format-2)
2. Experience in related fields (Format-3)
3. Financial strength of the organization (Format-4)
4. Additional information (Company Brochure/catalogue, ppt with images of similar jobs,current customers)

Sincerely Yours,

Signature of the applicant

Full name of theapplicant

Stamp & Date

Note: This is to be furnished on the letter head of the organization

FORMAT 2: ORGANIZATION DETAILS

Sl. No	Organizational Contact Details	
1.	Name of Organization	
2.	Main areas of business	
3.	Type of Organization/ Business structure	
4.	Address of registered office with telephone no. & fax	
5.	Contact Person with telephone no. & email ID	

Enclose:-

1. Copy of Certificate of Incorporation.

Signature of the applicant

Full name of the applicant
Stamp & Date

FORMAT 3: EXPERIENCE IN RELATED FIELDS

Sl.No.	Items	Number of Equipment supplied in last 5 years (Minimum 3 No mandatory)	Mention the name of Customer and Address (Preferably Ballscrew Manufacturer's)	Order Value of each Equipment
1	Experience in supply of similar equipment with Purchaser Name and contact details.			
2	Experience in supplying similar equipment in Government organization if any			

Signature of the applicant

Full name of applicant Stamp & Date

FORMAT 4: FINANCIAL STRENGTH OF THE ORGANIZATION

S. No	Financial Year	Whether profitable Yes/NO	Annual net profit	Overall annual turnover
1.	2019-20			
2.	2020-21			
3.	2021-22			

Note: Please enclose auditor's certificate in support of your claim.

Signature of the applicant

Full name of applicant Stamp & Date