

NATIONAL INSTITUTE OF TECHNOLOGY KARNATAKA, SURATHKAL

DEPARTMENT OF MECHANICAL ENGINEERING

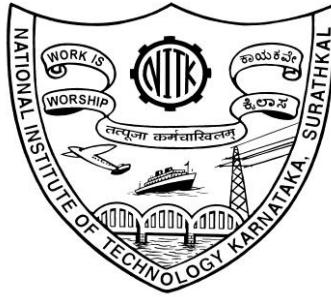
POST SRINIVASNAGAR, MANGALORE – 575 025 (D K)

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TENDER DOCUMENT

Tender Notification. No. NITK/ME/ECR/2635/04

Dated 11/04/2019

Name of Goods : Dynamic Rotational Rheometer

Estimated amount put to Tender : Rs 30,64,570/-

E M D Amount (2%) : Rs 61,292/-

Time for Supply of item : 5 Weeks
after release of Purchase order

Last Date for submission of tender : **13/05/2019 before 3.00 PM**

Address for Submission of Tender : **Dr. Poornesh Kumar K,
Assistant Professor,
Dept. of Mechanical Engineering,
NITK, Surathkal - 575025. Ph.: + 91 9740938897**

Date of opening of technical bid : 14/05/2019 at 3.30 PM (if possible)



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NOTICE INVITING TENDER (NIT)

The National Institute of Technology Karnataka, Surathkal (in short – NITK, Surathkal) is an autonomous body under Ministry of HRD Govt. of India , a Deemed University , imparting Technical Education and engaged in Research Activities. It is proposed to procure the items for the departmental academic/research activities.

Sealed Tenders are invited for the following items in **two cover system** (i.e., Technical bid and financial bid) subject to the following terms and conditions, from the reputed manufacturers or its authorized dealers so as to reach this office on or before scheduled date and time. The tender (Technical bid) will be opened on the same day if possible in the presence of bidders or their authorized agents who may choose to be present. The financial bid of only such bidders whose technical bid is accepted shall be opened on the same day or later pre-informed date.

1. **Name of Goods: Strain indicator and recorder unit**
2. **Estimated Cost: Rs 30,64,570/- (Rupees Thirty Lakh Sixty Four Thousand Five Seventy Only)**
3. **E M D : Rs 61,292/- (Rupees Sixty One Thousand Two Ninety Two Only)**
4. **Time for completion of Supply after Placing Purchase Order: 5 Weeks.**
5. **Last date at time for submission of Tender : 13/05/2019 before 03:00 PM**
6. **Tender to be submitted at the following address: Dr. Poornesh Kumar K
Assistant Professor, Dept. of Mechanical engg.,
NITK, Surathkal - 575025. Ph: + 91 9740938897**
7. **Place, Date and Time of opening of technical bid:
Date: 14/05/2019 Time: 3:30 PM VENUE: Board Room**

Note: Institute shall not be responsible for any postal delay about non-receipt /non delivery of the bids or due to wrong addressee.

**Sd/-
HOD, Dept of Mechanical Engineering**

SECTION 1: INSTRUCTION TO BIDDER (ITB)

1. The bid should be submitted in two cover system-Technical Bid and Financial Bid:

1.1 Envelope No.1 – Technical Bid: The agencies should give details of their technical soundness and provide list of customers of previous supply of similar items to Universities, Institutes or Government Departments/ Undertakings/ public sectors with contact details. The details of the agency/ profile should be furnished along with the copy of all related documents. This envelope should be sealed and duly super-scribed as “**Envelope No. 1 – Technical Bid**”. Full name and address of the agency should also be mentioned on envelope and should be addressed to The Director, NITK, Surathkal.

1.2. Documents to be submitted in the technical bid:

- a) The agency should possess Licence certificate for manufacture /supply of the item.
- b) List of Owner/partners of the firm and their contact numbers
- c) The agency should possess Income tax PAN Number.
- d) The agency should possess GST number.
- e) Catalogue of the Product with detailed product specifications.
- f) List Service Centres
- g) List of customers with contact details.
- h) The average annual turnover should not be less than 30% of the estimated cost put to tender/quotation for the job work. The copy of the Balance sheet, Profit & Loss A/c., Trade or Manufacturing A/c for the last 3 years should be enclosed
- i) **Warranty Period Offered for the tendered item to be specified. If the Warranty period is not conforming with the schedule of requirements given in section 3 of the document, the bid is liable to be treated as non-responsive and rejected.**
- j) **EMD in original form valid for minimum six months, through Bank Guarantee only drawn on any scheduled bank in favour of “Director NITK, Surathkal”, payable at Surathkal should be submitted. EMD shall bear no interest. Any bid not accompanying with EMD is liable to be treated as non-responsive and rejected.**
- k) **Contract form given in section 5 need to be submitted.**

The above documents should be furnished in the technical bid envelope.

2. Envelope No.2 – Financial bid: The agencies should submit their financial bid as per the format given in Section 4 of the Notice Inviting Tender in this cover. The rate should be quoted both in words and figures. All the pages of the financial bid should be signed affixing the seal. All corrections and overwriting should be initialled. This envelope should be duly superscribed as “**Envelope No. 2 – Financial bid**”. Full name and address of the agency should also be mentioned on the envelope and should be addressed to The Director, NITK, Surathkal.

Both the Envelope No. 1 and 2 should be kept in another separate envelope duly superscribed with the following details.

(i) Tender Notification Number

(ii) " Tender for the supply of Strain indicator and recorder unit"

(iii) Not to Open before 29/04/2019 3:30 PM

Mention “Kind Attention: Dr. Poornesh Kumar K. Asst. Professor, Dept. of Mechanical Engineering, NITK, Surathkal-575025 Ph: +91 9740938897”, and submit at the address given in the Notice Inviting Tender.

3. The tender will be acceptable only from the manufacturers or its authorised supplier.

4. The Institute **reserves the right to visit to the factory** before or after issue of supply order to satisfy itself regarding quality of production. In case of any remarks /default noted, the EMD will be forfeited even if pre-qualified.
5. **The Financial bid shall be in the format of Price Schedule given in Section 4. The Contract form as per format given in section 5 shall be submitted. Incomplete or conditional tender will be rejected.**
6. Details of item to be carried out, approximate quantity and the specifications are mentioned in “**Section 3**” appended to this Notice Inviting Tender.
7. **The item to be used is strictly according to the specification and subject to test by the institute/concerned authorities. It must be delivered and installed in good working condition.**
8. The Institute **reserves the right to cancel or reduce the quantity** included in the schedule of requirements at any time after acceptance of the tender with a notice. The Contractor/Supplier shall have no claim to any payment of compensation or otherwise whatsoever, on account of any profit or advantage which he might have derived from the execution of the work/supply in full but he did not derive in consequence of the foreclosure of the whole or part of the works.
9. **Performance Security of 5 % of contract value in terms of Bank Guarantee by scheduled banks shall be given by the successful bidder for the total period of Warranty.**
10. **Release of EMD:** The EMD shall be released after receipt of performance security from successful bidder.
11. **Validity of bids:** The rate quoted should be valid for a minimum of 90 days.
No claim for escalation of rate will be considered after opening the Tender.
12. **Imports: In case, Goods are to be imported, the Indian agent should furnish authorisation certificate by the principles abroad for submission of the bid in response to this Notice Inviting Tender.**
13. Clarification of Tender Document:
A prospective bidder requiring any clarification of the Tender Document may communicate to the contact person given in this notice inviting tender. The contact person will respond to any request for clarification for the Tender Document received not later than 5 working days prior to the last date for the receipt of bids
14. Amendment of Tender document: At any time prior to the last date for receipt of bids, Institute may for any reason, whether at its own initiative or in response to a clarification requested by prospective bidder, modify the Tender document by an amendment.
15. **Institute may at its own discretion extend the last date for the receipt of bids.**
16. The bids shall be written in English language and any information printed in other language

Shall be accompanied by an English translation, in which case for the purpose of interpretation of the bid, the English translation shall govern.

17. The Institute reserves the right of accepting any bid other than the lowest or even rejecting all the Bids. The decision of the Institute Purchase Committee is final in all matters of tender and purchase.
18. The bidder should give the following declaration while submitting the Tender.

DECLARATION

I/we have not tampered/modified the tender forms in any manner. In case , if the same is found to be tampered/modified, I /we understand that my/our tender will be summarily rejected and full Earnest money deposit will be forfeited and I /we am/are liable to be banned from doing business with NITK, Surathkal and / or prosecuted.

Signature of the Bidder: _____

Name and Designation: _____

Business Address : _____

Place:
Date:

Seal of the Bidder's Firm

19. Any other details required may be obtained from the contact person given in the notice inviting tender during the office hours.

SECTION 2: CONDITIONS OF CONTRACT.

1. The rates should be quoted for preferably FOR destination from supply within India.
2. In case of import both CIF and/ or FOB rate should be quoted. All components of expenditure to arrive at Bangalore need to be explicitly specified.
- 3 The bidder shall indicate the excise duty exemption for the goods if applicable.
- 3 The institute is eligible for customs duty exemption.
4. The rate quoted should be on unit basis. Taxes and other charges should be quoted separately, considering exemptions if any.
5. Rate quoted should be inclusive of Testing, commissioning and Installation of equipment and Training.
6. Payment: No advance payment will be made. Payment will be made only after the supply of the item in good and satisfactory condition and receipt of performance security by supplier.
In case of Imports, the payment will be made through LC / Sight Draft / After Installation, and performance security need to be submitted at the time of LC commitment / issue of sight draft.
7. Guarantee and Warrantee period should be specified for the complete period conforming to the section 3 of this tender document.
8. Period requirement for the supply and installation of item should be specified conforming to the section 3 of this tender document.
9. In case of dispute, the matter will be subject to Mangalore Jurisdiction only.
10. EMD is exempted to the vendors, who are registered under MSME/NSIC

SECTION 3: SCHEDULE OF REQUIREMENTS, SPECIFICATIONS AND ALLIED DETAILS

[To be filled up by the Department / Center of NITK, Surathkal]

Item(s) Name to be procured	: Dynamic Rotational Rheometer
Type	: Equipment
Brief Specifications of the Item(s) (Attach Additional Sheet if necessary)	: Specification details enclosed in separate sheet
Quantity	: 01 set
Any other details / requirement	: NIL
Warranty Period required	: 1 Year
Delivery Schedule expected after release of Purchase order (in Weeks)	: 5 Weeks
EMD (in Rupees)	: Rs 61,292/- (Rupees Sixty One Thousand Two Ninety Two Only)
Performance Security to be given by Successful Bidder after release of Purchase Order (in Rupees)	: 5% of order value

SECTION 4: PRICE SCHEDULE

[To be used by the bidder for submission of the bid]

-
1. Item Name :
 2. Specifications
(Conforming to Section 3 of
Tender document- Enclose additional
sheets if necessary) :
 3. Currency and Unit Price :
 4. Quantity :
 5. Item Cost (Sl. No. 3 * Sl. No. 4) :
 6. Taxes and Other Charges :
(i) Specify the type of taxes and duties
in percentages and also in figures.
(ii) Specify Other Charges in figures.
 7. **Warranty Period** :
**(Conforming to the Section 3 of
Tender document- This should be
mentioned in technical bid also in
order to get qualified for financial bid)**
 8. Delivery Schedule :
(Conforming to the Section 3 of
Tender document
 9. Name and address of the Firm for
placing purchase order :
 10. Name and address of Indian authorized
agent (in case of imports only) :

Signature of the Bidder: _____

Name and Designation: _____

Business Address : _____

Place:

Date:

Seal of the Bidder's Firm

SECTION 5: CONTRACT FORM

[To be provided by the bidder in the business letter head]

1. (Name of the Supplier's Firm) hereby abide to deliver the by the delivery schedule mentioned in the section 3 tender document for supply of the items if the purchase order is awarded.
2. The item will be supplied conforming to the specifications stated in the tender document without any defect and deviations.
3. Warranty will be given for the period mentioned in the tender document and service will be rendered to the satisfaction of NITK, Surathkal during this period.

Signature of the Bidder: _____

Name and Designation: _____

Business Address : _____

Place:
Date:

Seal of the Bidder's Firm

Equipment Specifications

Dynamic Rotational Rheometer:

Motor Technology	Should be equipped with a DC – Drag cup motor for a less inertial effect
Bearing Type	Must have a magnetic levitation thrust bearing for a minimum frictional effect
Minimum Torque In Oscillation	15 nNm or better
Minimum Torque In Steady	25 nNm or better
Maximum Torque	150 mNm or above
Torque Resolution	0.1 nNm
Torque Calibration	The rheometer must have an option for a first principle torque calibration with NIST traceability
Angular Velocity Range	0 to 300 rad/s or better
Frequency Range	10E-7 to 100 Hz
Strain Sensor	High Resolution Optical Encoder
Strain/Displacement Resolution	15 nrad or better
Measurement Types	Rotational , Oscillatory & Transient
Normal Force Sensor	Should be made of high accuracy Force Rebalance Type normal force sensor and not of either Strain gauge or capacitive type sensors
Normal Force	0.1 to 50N
Normal Force Resolution	≤1 mN
Step Time In Rate	5 ms
Step Time In Strain	15 ms
Gap Control	Automatic Gap Control
Auto Recognition	Must include both automatic temperature system and geometry recognition
Rheometer Software	Software must report both raw phase angle and corrected phase angle for oscillation measurements for validation of data quality. This software feature must be demonstrated before and after the installation of the rheometer
Measuring Geometries For Peltier Plate Temperature System	25 mm parallel plate made of Stainless Steel – 1 No
Testing Protocols	1) Oscillation Mode Tests: <ul style="list-style-type: none"> • Torque/Stress sweep (linear or log) at single frequency • Frequency sweep (linear or log) at single torque • Frequency sweep (linear or log) at single strain • Strain/angular displacement sweep (linear or log) at

	<p>single frequency</p> <ul style="list-style-type: none"> • Temperature sweep at single frequency/torque • Superimposed stress oscillation and steady shear • Superimposed strain oscillation and steady shear • Multiple simultaneous frequencies superimposed on above modes <p>2) Flow Mode Tests:</p> <ul style="list-style-type: none"> • Controlled stress or torque sweeps. • Controlled rate (1/s) or speed (rad/s) sweeps. • Stress stepped flow. • Equilibrium stress stepped flow (ensures material has time to respond to each level of stress). • Temperature sweeps at constant stress or rate. • Squeeze flow and pull off. <p>3) Creep Mode Tests:</p> <ul style="list-style-type: none"> • Constant stress creep and recovery. • Automatic sensing of steady state during creep test. <p>4) Stress relaxation</p> <ul style="list-style-type: none"> • Constant strain and stress relaxation test <p>All raw data or instrument parameters must be accessible at anytime.</p> <p>The system should be supplied with necessary instrument control & data analysis based on Windows operating system. It should have real time wave form monitoring capability.</p>
DMA Modes and Clamps	<p>Dynamic mechanical analysis in tension, compression and bending mode for testing of solid samples with suitable clamps shall be provided</p> <p>The rheometer shall enable the Axial DMA mode without changing the drive motor of the rheometer</p>
DMA Testing Modes and Control Features	<ol style="list-style-type: none"> 1. Static testing mode 2. Dynamic oscillatory testing mode 3. Transient testing mode (Creep & stress relaxation test) <p>Above listed modes should be possible on all the DMA clamps</p> <p>The Stabilization and Data Collection Cycles shall allow better control of data collection.</p>

	<p>The Stress/Force Accuracy option should allow one to specify how close one need to be to the target stress or force. This shall be applied to the Multi-Stress & Multifrequency-Stress modes.</p> <p>The option for collect data when Stable should allow one to in experiments on samples with rapidly changing properties. (Applies to the Multi-Strain & Multifrequency Strain modes).</p> <p>The option for ability to track length should allow the DMA to track dimensional changes thereby accurately evaluating the material properties in real-time. Applies to temperature ramp experiments in Tension & Compression.</p> <p>The Measure after Equilibrate option Should allow samples to be re-measured after first Equilibrate method segment.</p>
Temperature System	Convection and radiation oven with automated furnace movement
Temperature Range and Control	RT to 600 °C (with future upgradability to extend temperature range to -100°C with the suitable Mechanical cooling accessory without use of Liquid Nitrogen) with heating rate of 0.1 to 20°C/min in 0.1°C/min increments with isothermal stability of +/-0.1°C
Axial Force Range	0.1 to 50 N better
Minimum Displacement In Oscillation For DMA Testing	1 µm or better
Maximum Displacement In Oscillation for DMA Testing	100 µm or better
Axial Frequency Range For DMA Mode	6×10^{-5} rad/s to 100 rad/s or better
Parameter Measured By Axial DMA Modes:	<ul style="list-style-type: none"> • Stiffness (K) in N/m • Complex modulus (E^*) in tension, compression, Bending in Pa • Elastic modulus (E') in tension, compression, Bending in Pa • Loss modulus (E'') in tension, compression, Bending in Pa • Loss factor or damping factor ($\tan \delta$) • Stress Vs. Strain • Shrinkage • Creep compliance • Relaxation modulus (Pa)

Analysis Software	<p>Shall have the ability to graph, plot in tabular format, as well as analyze peak for temperature or signal values, onset points, slopes, peaks, integration of any curve, curve values, and curve subtractions.</p> <p>Data should be available in an ASCII format and or spreadsheet format. Program should employ programmable macros to automate analyses, as well as the ability to automatically generate custom analysis reports. Master Curve software has ability to automatically shift data and fit with the WLF or Arrhenius equations. All data should be manually available for shifting in addition to the automatic shifting.</p>