

NATIONAL INSTITUTE OF TECHNOLOGY KARNATAKA, SURATHKAL

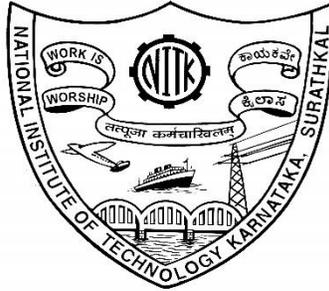
CENTRAL RESEARCH FACILITY

POST SRINIVASNAGAR, MANGALORE – 575 025 (D K)

Phone: (0824) 2474000.

E- mail: info@nitk.ac.in

Fax: (0824) 2474033

Website: <http://www.nitk.ac.in>**TENDER DOCUMENT**

Tender Notification No: NITK/CRF/Fatigue/02-S3

Date: 22/11/2018

Name of Goods : 250kN Servo-hydraulic Fatigue Testing Unit

Estimated amount put to Tender : 650 Lakh Rupees

EMD Amount (2% of estimated value) : Rs. 13 Lakh

Time for Supply of item : 32 weeks after release of Purchase order

Last Date and Time for submission of tender : December 24th, 2018 on or before 3.00pm.

Address for Submission of Tender: Prof. S. M. Murigendrappa,
Department of Mechanical Engineering,
NITK Surathkal,
Srinivasnagar PO, Mangalore-575025
Phone: 0824-2473651, Mob: 9343889072

Date of opening of technical bid: 27th, December, 2018, 4.00 PM
Board Room, Main Building, NITK Surathkal



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Central Research Facility

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NOTICE INVITING TENDER (NIT)

The National Institute of Technology Karnataka, Surathkal (in short – NITK, Surathkal) is an autonomous institute under Ministry of HRD Govt of India imparting Technical Education and engaged in Research Activities. It is proposed to procure equipment for Central Research Facility.

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 it's 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** : 250kN Servo-hydraulic Fatigue Testing Unit
2. **Estimated Cost** : 650 Lakh Rupees
3. **E M D** : 13 Lakh Rupees
(2% of estimated value)
4. **Time for completion of Supply after Placing Purchase Order** : 32 weeks after release of Purchase order
5. **Last date and time for submission of Tender** : December 24th, 2018 on or before 3.00pm.
6. **Tender to be submitted at the following address:** Prof. S. M. Murigendrappa,
Department of Mechanical Engineering,
NITK Surathkal,
Srinivasnagar PO, Mangalore-575025
Phone: 0824-2473651, Mob: 9343889072
7. **Place, Date and Time of opening of technical bid:** 27th, December, 2018, 4.00 PM
Board Room, Main Building, NITK Surathkal

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

Sd/
Signature of Chairman, CRF

SECTION 1: INSTRUCTION TO BIDDER (ITB)

1. **The bid should be submitted in two cover system (sealed)-Technical Bid and Financial Bid**
2. **Technical Bid:** Documents related to the Technical Bid should be submitted in sealed envelope and duly super-scribed as “Envelope No. 1 – Technical Bid”. Full name and address of the bidder should be mentioned on the envelope and should be addressed to The Director, NITK, Surathkal
3. **The Technical Bid should contain the following documents:**
 - a) Compliance statement of specifications as per **Annexure-‘A’**.
 - b) License certificate for manufacture /supply of the item & Factory license
 - c) Agreements / Purchase Orders / Completion certificates if any, for similar items to other Universities, Institutes, and Government Department/Undertakings/Public sectors the details of such supplies for the preceding three years should be given together with the prices eventually or finally paid with contact details of persons as per **Annexure –‘B’**.
 - d) List of Owner/partners of the firm and their contact numbers (Bidder Information)
 - e) Declaration of abandoned or suspended any awarded service & Blacklist Certificate. **Annexure ‘C’**
 - f) Integrity Pact (for procurements above Rs1.0 Crore (Rs10.0 Million). **Annexure ‘D’**
 - g) Copy of GST certificate & PAN No.
 - h) Catalog of the Product with detailed product specifications.
 - i) Undertaking that the successful BIDDER agrees to give a Performance Security amounting to 10% of the purchase order value in favor of “The Director, NITK Surathkal”.
 - j) The copy of the Balance sheet, Profit & Loss A/c., Trade or Manufacturing A/c for the last 3 years should be enclosed and the turnover must be 30% of the estimated cost.
 - k) Duly filled in checklist should be submitted along with the Technical Bid.
 - l) Contract form given in Section 5 need to be submitted.
 - m) **EMD must be** in the form of Bank Guarantee (**ANNEXURE –G**) / Fixed Deposit Receipt / Demand Draft. It will be valid for **180 days** from the date of opening of the tender. The firm registered with MSME/NSIC as a manufacturer for the supply of the same category of item for which the party is submitting quotation will be exempted from submission of EMD. Intended parties will have to give proof of registration along with their tender. EMD of the unsuccessful bidders shall be refunded without any interest at the earliest after finalization of the purchase of the concerned item.
 - i) The EMD will be returned to the BIDDERS(s) whose offer is not accepted by NITK within one month from the date of the placing of the purchase order(s) on the selected BIDDER(s).In case of the BIDDER(s) whose offer is accepted the EMD will be returned on submission of

Performance Security in the form of Bank Guarantee (BG). However, if the return of EMD is delayed for any reason, no interest/penalty shall be payable to the BIDDERS.

- ii) The successful BIDDER, on the award of contract/order, must send the contract/order acceptance in writing, within 15 days of award of contract/order failing which the EMD will be forfeited.
- iii) The EMD shall be forfeited in case a successful BIDDER fails to furnish the Performance Security.

4. Financial bid : The bidders should submit their financial bid as per the format given in Section 4 of the Notice Inviting Tender in the sealed envelope. This envelope should be duly superscribed as **“Envelope No. 2 – Financial bid”**. Full name and address of the bidder should also be mentioned on the envelope and should be addressed to The Director, NITK, Surathkal

After evaluation of technical bid, the technically successful bidder shall be intimated to witness the opening of their financial bid along with date, time and venue through e-mail. Financial bid of only those bidders' will be opened who are declared “Technically Successful or Technically Responsive”.

Note that both the sealed envelopes, No. 1 and 2, should be submitted in a single sealed envelope duly superscribed with the following details.

(i) Tender Notification Number (ii) “Tender for the supply of.....” (iii) Not to Open before (Date and Time)

Mention “Kind Attention: Contact Person’s Name and Phone Number”, and submit at the address given in the Notice Inviting Tender.

5. Bid Evaluation:

On the due date, the Technical bids will be opened and referred to the Purchase Committee which is duly constituted by the Director, NITK. The committee will go through the technical aspects of the tender and recommend shortlisted firms. The recommendation of the committee is final and binding on all the parties. The committee may visit the manufacturing site to assess the capabilities to manufacture the tendered items as per the specifications. In case of any remarks /default noted, the EMD will be forfeited even if pre-qualified.

6. Quoting of Price(s):

- a. Indian bidder should quote firm prices in Indian rupee only unless otherwise specified elsewhere in this tender. Prices quoted in any other currency shall not be considered.

- b. In case of Global Tender, Price quoted should be in Indian Rupees /US Dollar / Euro / Pound Sterling / Yen or in a currency under Reserve Bank of India's notified basket of currencies and must include delivery at NITK, Surathkal including loading/unloading.
 - c. For the purpose of price evaluation, if the bid is submitted in Foreign Currency, then the bid price shall be converted to Indian Rupees as per the RBI Exchange Rate prevailing on the day of opening of the price bid.
7. The Bid will be accepted only from the manufacturers (OEM) or its authorized supplier.
8. The incomplete or conditional tender will be rejected.
9. The Institute reserves the right to cancel at any time after acceptance of the tender with a notice. The Supplier shall have no claim to any payment of compensation or otherwise whatsoever, on account of any profit or advantage which might have derived from the execution of the supply.
- 10. Performance Security** The successful bidder shall deposit a performance security of 10% of the quoted price in the form of Bank Guarantee (**ANNEXURE -G**) / Demand Draft / Fixed Deposit Receipt of any scheduled bank drawn in favour of the **Director, NITK Surathkal, Mangalore** payable at Mangalore. In case the bidder fails to deposit the said performance Security within the stipulated period, including the extended period if any, the Earnest Money deposited by the bidder shall be forfeited automatically without any notice. Please note the following points:
 - a) Successful bidder should submit performance Security as prescribed above to the Purchase Section, NITK Surathkal, on or before 30 days from the date of issue of order acknowledgment.
 - b) Performance Security shall be for the due and faithful performance of the contract and shall remain binding, notwithstanding such variations, alterations for extensions of time as may be made, given, conceded or agreed to between the successful bidder and the purchaser under the terms and conditions of acceptance to tender.
 - c) The successful bidder is entirely responsible for the due performance of the contract in all respects according to the terms and conditions of the tender.
 - d) The validity of the Performance Security must cover the warranty period plus two months.
 - e) In case of imported goods, the Indian agent has to furnish Performance Bank Guarantee in Indian Rupees only from Scheduled Bank.
- 11. The validity of bids:** The rate quoted should be valid for a minimum of 180 days. No claim for escalation of the rate will be considered after opening the Tender.

- 12. Warranty / Guarantee & On-site skill support:** On-site comprehensive warranty will be effective from the date of successful installation and commissioning. The OEMs/Authorized Distributors and Dealers must attach a certificate of sales and service facilities, escalation support for on-call service or station engineer etc.
- 13. Imports:** In case, equipment is to be imported, the Indian agent should furnish authorization certificate by the principals abroad for submission of the bid in response to this Notice Inviting Tender.
- 14. 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.
- 15. 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 a prospective bidder, modify the Tender document by an amendment. Further, 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 another 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 Purchase Committee is final in all matters of tender and purchase.
- 18. Cancellation of Tender:**
Notwithstanding anything specified in this tender document, NITK Surathkal in its sole discretion, unconditionally and without having to assign any reasons, reserves the rights:
- a) To accept OR reject lowest tender or any other tender or all the tenders.
 - b) To accept any tender in full or in part.
 - c) To reject the tender offer not conforming to the terms of the tender.
 - d) To give purchase preference to Public Sector undertakings when applicable as per Govt. Policy/ Guidelines.

19. Delivery Period: The Delivery Period/Time shall be deemed to be the essence of the Contract and delivery must be completed not later than such date(s). If the Supplier does not perform its obligations within the Delivery Period/Date mentioned in the Contract, the same would constitute the breach of the Contract and the Institute shall have the right to cancel or withdraw the Contract for the unsupplied portion after the expiry of the original or extended delivery date or period stipulated in the Contract. Such cancellation of contract on account of non - performance by the Supplier would entitle the Buyer to forfeit the EMD / Performance Security besides other actions such as debarment from the Institute as per GFR 2017.

20. Liquidated Damages: Timely delivery is the essence of contract and hence if the Supplier fails to deliver Goods within the original/extended delivery period(s) specified in the contract, the Institute will be entitled to deduct/recover the Liquidated Damages for the delay, unless covered under Force Majeure conditions aforesaid, **@ 1% per week or part of the week of delayed period** as pre-estimated damages not exceeding 5% of the contract value without any controversy/dispute of any sort whatsoever.

21. Terms of Payment:

- a. Payment within 30 days from the date of delivery and & Acceptance Certificate of concerned Department / Section / Purchase Section.
- b. Payment shall be made by Cheque or such other mode / electronic fund transfer offered by the Bank. NITK, Surathkal will not pay advance payment to party. Any request for Advance payment will be rejected summarily. In case if it is necessary, the advance payment will be paid strictly against Bank Guarantee only.
- c. Payment will be made by Standard Payment terms and conditions of NITK, Surathkal as per tender document only. Any request for a change in payment terms and conditions will not be accepted.
- d. If the above conditions are not acceptable then tender will be rejected.

22. Bidders are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their bid as to the nature of the installation site, the means of access to the site and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their tender. A bidder shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charges consequent on any misunderstanding or otherwise shall be allowed. Submission of a bid by a bidder implies that he has read this notice and all other contract documents and has made himself aware of the scope and specifications of the installation to be done and local conditions and other factors having a bearing on the execution of the bid.

23. If there are varying or conflicting provisions made in any one document forming part of the contract, the Accepting Authority shall be the deciding authority with regard to the intention of the document and his decision shall be final and binding on the bidder.
24. The rate quoted by the bidder **shall be firm throughout the contract** period and there shall be no revision of the rates for any reasons whatsoever. It should be clearly understood that any claim for changes will not be entertained in any case once the bids are opened.
25. **One bid per bidder:** Each bidder shall submit only one bid either by himself or by representing a firm.
26. **Cost of bid:** The bidder shall bear all costs associated with the preparation and submission of his bid. The Institute in no case shall be responsible or liable for those costs.
27. The bidder shall not make or cause for any alteration, erasure or obliteration to the text of the tender document.
28. The Institute will declare a bidder ineligible, either indefinitely or for a specified period of time, at the sole discretion of the Institute, for the award of contract/ participating in any other tender, if at any time the Institute determines that he has furnished false information/ engaged in corrupt or fraudulent practices.
29. If any overpayment is detected as a result of the post-payment audit, it shall be recovered by the Institute from the Supplier out of his Performance Security.
30. **Determination of successful bidder:** The technically qualified bidder whose offer is evaluated as the **lowest total bid** shall be the successful bidder subject to its meeting the statutory requirements.
31. **Price variation:** The rate quoted by the bidder shall be firm throughout the contract period. No price variation clause is applicable to this contract.
32. **CANVASSING:**
- a) Canvassing in connection with tenders is strictly prohibited and the Tenders submitted by the Tenderers who resort to canvassing shall be liable to rejection.
 - b) Subject to the provisions concerning clarification of Bids, no Bidder shall contact the purchase committee on any matter relating to its bid from the time of the bid opening up to the time that the contract is awarded.
 - c) Any effort by the Bidder or Bidder's representative however described to influence the purchase committee- in any way concerning scrutiny, consideration, evaluation of the Bid(s) or decision concerning award of contract shall entail rejection of Bid and action against the bidder as deemed fit.
 - d) The purchase committee will deal with the Bidder on a Principal basis, without involvement in any manner in India or abroad of any agent or consultant or associate or other person howsoever described.

33. LATE BIDS:

- a) Any bid received on or before specified time and date (including any extension(s) thereof) will be accepted and late submission of the bids will be declared as "Late" and shall be rejected.
- b) Unopened "Late Bid" shall be returned to the bidder in due course.

34. Legal Matter: All Domestic and International disputes are subject to Mangalore Jurisdiction only.

SECTION 2: CONDITIONS OF CONTRACT.

1. The rate quoted should be FOR NITK, Surathkal for Indian supplier.
2. In case of import CIF rates should be quoted. All components of expenditure to arrive by air at Bangalore need to be explicitly specified. If shipped by sea, nearest sea port is Mangalore/Chennai. In both cases, the item should be landed at NITK Surathkal and this responsibility is with the bidder.
3. The institute is eligible for customs duty / GST exemption.
4. The rate quoted should be on per 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. Performance security needs to be submitted at the time of LC commitment.
7. Guarantee and Warranty 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 Equipment should be specified conforming to the Section 3 of this tender document.

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 : **250kN Servo-hydraulic Fatigue Testing Unit**

Type (Equipment / Software / Furniture / Others) : Equipment

Brief Specifications of the Item(s)
(Attach Additional Sheet if necessary) : Please find in Annexure-H

Quantity : 01

Any other details / requirement : Please find in Annexure-H

Warranty Period (in months)
: 36 months

Delivery Schedule expected
after release of Purchase order
(in Weeks) : 32 weeks

EMD
(2% of estimated value) : 13 Lakh Rupees

Performance Security to be given
by Successful Bidder after release of
Purchase Order (in Rupees) : 10% of the purchase order value.



NATIONAL INSTITUTE OF TECHNOLOGY KARNATAKA, SURATHKAL

SECTION 4 - PRICE BID (for indigenous Supplies)

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

Reference Number:

Date:

S. No.	Description of the Item and Specification	Qty. in Units	Unit Price (Rs.)	Discount %	Excise/Customs Duty %	GST (%)	Other charges if any (please specify details)	Total Price (Rs.)

1. Delivery Mode: Delivery at NITK Surathkal, at the site only.

Total Bid Price in the above column should be inclusive of all taxes and levies transport, loading, unloading etc.

Delivery Period:..... days.

Validity Date: Minimum 180 days from the date of submission of quotation/ tender.

2. Payment Term: Payment within 30 days from the date submission of bill Acceptance Certificate to concerned Dept./ Sect.

3. a) AMC Charges after warranty period :

b) Comprehensive AMC charges after warranty period :

Price Bids will be compared considering 3 a) or b). NITK reserves the right to consider 3 a) or 3 b) for price comparison.

PAN No. :

GST Registration No. :

Seal and Signature:.....

Name & Business Address:.....

Note: Price Bid should be submitted in given format only. For additional information/extra items above format may be typed and used.

Place:

Date:



NATIONAL INSTITUTE OF TECHNOLOGY KARNATAKA, SURATHKAL

SECTION 4 - PRICE BID (for Imported Supplies)

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

Reference Number: _____

Date: _____

S. No.	Description of Items & Specifications	HSN/SAC Code	Quantity in Units	IGST %	Price basis (CIF)	Total Bid Price
	Installation and Commissioning Charges (if any, quote in INR)					
	Agency Commission (if any quote in %)					
	Other Charges (please specify details)					
Grand Total						

HSN Code: Harmonised System of Nomenclature Code no. and # SAC Code: Service Accounting Code no.

1. Delivery Period:..... days.
2. Validity Date: Minimum 180 days from the date of submission of quotation/ tender.
3. a) AMC Charges after warranty period _____ :
 b) Comprehensive AMC charges after warranty period: _____
 Price Bids will be compared considering 3 a) or b). NITK reserves the right to consider 3 a) or 3 b) for price comparison.

1. Validity of the bid: 180 days from the date of submission of the quotation or tender.
2. Mode of Shipment: _____
3. Port of Shipment: _____

Place: _____

Date: _____

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 by the delivery schedule mentioned in 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

Compliance Statement of Specifications

S.No.	Name of specification/Part/Accessories of tender enquiry	Specifications of the quoted Model / Item	Compliance Whether YES or NO	Deviations if any to be indicated in unambiguous terms

Signature and Seal of the Bidder

Previous Supply Orders Executed

Name of the firm: _____

Order placed by [Full address of the purchaser]	Order No. and Date	Order Value	Specified Delivery Date	Actual Delivery Date	Remarks indicating reasons for late delivery, if any and justification for the price difference of their supply order and those quoted to us	Has the equipment been installed satisfactorily?	Contact person along with telephone, mobile number, fax, and E-mail address

Signature and Seal of the Bidder

FORMAT OF DECLARATION
(To be submitted on Letterhead)

I / we Mr./Ms. _____, S/o/ of Mr. _____ aged about _____ years, resident of _____
, working as -----(designation) for ----- (name and address of the bidding agency).

I solemnly affirm and state as under:

1. That I am working as ----- /proprietor of the ----- (name of the firm) and authorized to sign this declaration.
2. That the firm M/s---- (complete address of the firm) has not abandoned or suspended any contract work of any organization/ department so far/ during the previous five financial years.
3. That the firm M/s---- (complete address of the firm) has not been blacklisted/ debarred for competing in tenders by any organization/ department so far/ during the previous five financial years.
4. I solemnly confirm that the facts stated above are true and nothing has been concealed.

Seal and Signature of Bidder

INTEGRITY PACT AGREEMENT

(To be signed by the bidder/ same signatory authorized to sign the relevant contact)

This Integrity Agreement is made at Surathkal on this day of20

BETWEEN

National Institute of Technology Karnataka, Surathkal, an Institute of National Importance (under NIT Act -2007) represented through the Registrar, NITK, Surathkal (hereinafter referred as the '**Buyer**', which expression shall unless repugnant to the meaning or context hereof include its successors and permitted assigns)

AND

.....
(Name and Address of the Individual/firm/Company)

Through (Hereinafter referred to as the "Bidder/Contractor" and which expression shall unless repugnant to the meaning or context hereof include its succession and permitted assigns)

Preamble

WHEREAS **NITK Surathkal** has floated the Tender (Tender No-----
-- dated 00-00-2018) (Hereinafter referred to as "Tender/Bid") and intends to award, under laid down organizational procedure, contract for "**Furniture**"

[Hereinafter referred to as the "**Contract**").

AND WHEREAS the Principal/Owner values full compliance with all relevant laws of the land, rules, regulations, economic use of resources and of fairness/transparency in its relation with its Bidder(s) and Contractor(s).

AND WHEREAS to meet the purpose aforesaid both the parties have agreed to enter into this Integrity Agreement (hereinafter referred to as "**Integrity Pact**" or "**Pact**"), the terms and conditions of which shall also be read as integral part and parcel of the Tender/Bid documents and Contract between the parties.

NOW, THEREFORE, in consideration of mutual covenants contained in this Pact, the parties hereby agree as follows and this witness as under:

Article 1: Commitment of NITK Surathkal

- ii. **NITK Surathkal** commits to take all measures necessary to prevent corruption and to observe the following principles:

Seal and Signature of the bidder

Registrar, for NITK Surathkal

- (a) No employee of NITK Surathkal, personally or through any of his/her family members, will in connection with the Tender, or the execution of the Contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.
 - (b) NITK Surathkal will, during the Tender process, treat all Bidder(s) with equity and reason. NITK Surathkal will, in particular, before and during the Tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential/additional information through which the Bidder(s) could obtain an advantage in relation to the Tender process or the Contract execution.
 - (c) NITK Surathkal shall endeavor to exclude from the Tender process any person, whose conduct in the past has been of biased nature.
- iii. If NITK Surathkal obtains information on the conduct of any of its employee which is a criminal offence under the Indian Penal code (IPC)/Prevention of Corruption Act, 1988 (PC Act) or is in violation of the principles herein mentioned or if there be a substantive suspicion in this regard, NITK Surathkal will inform the Chief Vigilance Officer and in addition can also initiate disciplinary actions as per its internal laid down policies and procedures.

Article 2: Commitment of the Bidder(s)/ Contractor(s)

- 1) It is required that each Bidder/Contractor (including their respective officers, employees and agents) adheres to the highest ethical standers, and report to the Government / Department all suspected acts of **fraud or corruption or Coercion or Collusion** of which it has knowledge or becomes aware, during the tendering process and through the negotiation or award of a contract.
- 2) The Bidder(s)/Contractor(s) commit himself to take measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the Tender process and during the Contact execution:
 - a. The Bidder(s)/Contractor(s) will not, directly or through any other person or firm, offer, promise or give to any of the Principal/Owner's employees involved in the Tender process or execution of the Contract or to any third person any material or other benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the Tender process or during the execution of the Contractor.
 - b. The Bidder(s)/Contractor(s) will not enter with other Bidder(s) into an undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to cartelize in the bidding process.
 - c. The Bidder(s)/Contractor(s) will not commit any offense under the relevant IPC/PC Act. Further the Bidder(s)/Contractor(s) will not use improperly, (for the purpose of competition or personal gain), or pass on to others, any information or documents provided by the Principal/Owner as
 - d. part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

Seal and Signature of the bidder

Registrar, for NITK Surathkal

- e. The Bidder(s)/Contractor(s) of foreign origin shall disclose the names and address of agents/representatives in India if any. Similarly, Bidder(s)/Contractor(s) of Indian Nationality shall disclose names and address of foreign agents/representatives if any. Either the Indian agent on behalf of the foreign principals or the foreign principal directly could bid in a tender but not both. Further, in cases where an agent participates in a tender on behalf of one manufacturer, he shall not be allowed to quote on behalf of another manufacturer along with the first manufacturer in a subsequent/parallel tender for the same item.
- f. The Bidder(s)/Contractor(s) will, when presenting his bid, disclose any and all payments he has made, is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the Contract.
- iv. The Bidder(s)/Contractor(s) will not instigate third persons to commit offenses outlined above or be an accessory to such offenses.
- v. The Bidder(s)/Contractor(s) will not, directly or through any other person or firm indulge in fraudulent practice **means a wilful misrepresentation or omission of facts or submission of fake/forged documents in order to induce public official to act in reliance thereof, with the purpose of obtaining unjust advantage by or causing damage to justified interest of others and/or to influence the procurement process to the detriment of the Government interests.**
- vi. The Bidder(s)/Contractor(s) will not, directly or through any other person or firm use Coercive practices (means the act of obtaining something, compelling an action or influencing a decision through intimidation, there or the use of force directly or indirectly, where potential or actual injury may befall upon a person, his/her reputation or property to influence their participation in the tendering process).

Article 3: Consequences of Breach

Without prejudice to any rights that may be available to NITK Surathkal under law or the Contract or its established policies and laid down procedures, the Principal/Owner shall have the following rights in case of breach of this Integrity Pact by the Bidder(s)/Contractor(s) and the Bidders/Contractor accepts and undertakes to respect and uphold the Principal/Owner's absolute right:

- 1) If the Bidder(s)/Contractor(s), either before awarded or during execution of Contract has committed a transgression through a violation of Article 2 above or in any other form, such as to put his reliability or credibility in question, the Principal/Owner after giving 14 day notice to the contractor shall have powers to disqualify the Bidder(s)/Contractor(s) from the Tender process or terminate/determinate the Contract - if already executed, or exclude the Bidders/Contractor from future contract award processes. The imposition and duration of the exclusion will be determined by the severity of transgression and determined by the Principal/Owner. **Such exclusion may be forever or for a limited period as decided by NITK Surathkal.**

Seal and Signature of the bidder

Registrar, for NITK Surathkal

- 2) **Forfeiture of EMD/Performance Guarantee/Security Deposit:** If NITK Surathkal has disqualified the Bidder(s) from the tender process prior to the award of the Contract or terminate/determinate the Contract or has accrued the right to terminate/determinate the Contract according to Article 3(1), the Principal/Owner apart from exercising any legal rights that may have accrued to NITK Surathkal, may in its considered opinion forfeit the entire amount of Earnest Money Deposit, Performance Security of the Bidders/Contractor.
- 3) **Criminal Liability:** If NITK Surathkal obtains knowledge of conduct of a Bidder or Contractor, or of an employee or a representative or an associate of a Bidder or Contractor which constitutes corruption within the meaning of Indian Penal code (IPC)/Prevention of Corruption Act, or if the Principal/Owner has substantive suspicion in this regard, NITK Surathkal will inform the same to law enforcing agencies for further investigation.

Article 4: Previous Transgression

- 1) The Bidder declares that no previous transgressions occurred in the last 5 years with any other Company in any country conforming to the anticorruption approach or with Central Government or State Government or any other Central/State Public Enterprises in India that could justify his exclusion from the Tender process.
- 2) If the Bidder makes an incorrect statement on this subject, he can be disqualified from the Tender process or action can be taken for banning of business dealings/ holiday listing of the Bidder/Contractor as deemed fit by the Principal/Owner.
- 3) If the Bidder/Contractor can prove that he has resorted/recouped the damage caused by him and has installed a suitable corruption prevention system, the Principal/Owner may, at its own discretion, revoke the exclusion prematurely.

Article: 5 Equal Treatment of all Bidder/Contractors/Subcontractors

- 1) The Bidder(s)/Contractor(s) undertake(s) to demand from all subcontractors a commitment in conformity with this Integrity Pact. The Bidders/Contractor shall be responsible for any violation(s) of the principles laid down in this agreement/Pact by any of its Sub-contractors/sub-vendors.
- 2) The Principal/Owner will enter into pacts on identical terms as this one with all Bidders and Contractors.
- 3) The Principal/Owner will disqualify Bidders, who do not submit, the duly signed pact between the Principal/Owner and the bidder, along with the Tender or violate its provisions at any stage of the Tender process, from the Tender process.

Article 6: Duration of the Pact

This Pact begins when both the parties have legally signed it. It expires for the Contractor/Vendor 12

Seal and Signature of the bidder

Registrar, for NITK Surathkal

months after the completion of work under the contractor or till the continuation of defect liability period, whichever is more and for all other bidders, till the Contract has been awarded.

If any claim is made/lodged during the time, the same shall be binding and continue to be valid despite the lapse of this pacts as specified above, under it is discharged/determined by the Competent Authority of NITK, Surathkal.

Article 7: Other Provisions

- 1) This Pact is subject to Indian Law, place of performance and jurisdiction is **Mangaluru**, the Headquarters of NITK Surathkal, who has floated the Tender.
- 2) Changes and supplements need to be made in writing. Side agreements have not been made.
- 3) If the Contractor is a partnership or a consortium, this Pact must be signed by all the partners or by one or more partner holding power of attorney signed by all partners and consortium members. In case of a Company, the Pact must be signed by a representative duly authorized by board resolution.
- 4) Should one or several provisions of this Pact turn out to be invalid; the remainder of this Pact remains valid. In this case, the parties will strive to come to an agreement to their original intensions.
- 5) It is agreed on term and condition that any dispute or difference arising between the parties with regard to the terms of this Integrity Agreement / Pact, any action was taken by the Owner/Principal in accordance with this **Integrity Agreement / Pact or interpretation thereof shall not be subject to arbitration.**

Article 8: LEGAL AND PRIOR RIGHTS

All rights and remedies of the parties hereto shall be in addition to all the other legal rights and remedies belonging to such parties under the Contract/ or law and the same shall be deemed to be cumulative and not alternative to such legal rights and remedies aforesaid. For the sake of brevity, both the Parties agree that this Integrity Pact will have precedence over the Tender/Contract documents with regard any of the provisions covered under this Integrity Pact.

IN WITNESS WHEREOF the parties have signed and executed this Integrity Pact at the place and date first above mentioned in the presence of following witnesses:

.....
(For and on behalf of NITK Surathkal)

.....
(For and on behalf of bidder/ contractor)

WITNESSES:

1.
(Signature, name, and address)

2.
(Signature, name, and address)

Place: Surathkal.

Dated:

Format for Bank Account details of the bidder

Name of the account holder (bidder)	
Complete address	
Contact number	
Email address	

Bank Account details:

Bank name	
Branch name	
MICR number	
Account type	
Account Number	
Please re-type Account number again	
IFSC code of the Bank	

I hereby declare that the particulars given above are correct and complete. If the transaction is delayed or not effected at all for reasons of incomplete or incorrect information, I would not hold the Institute responsible for this.

I have read the option invitation letter and agree to discharge responsibility expected of me as a participant under the scheme.

Seal and signature of the bidder.

Certification from the banker:

Certified that the particulars furnished above are correct as per our records.

Seal and signature of the authorized officer of the bank.

FORMAT FOR PERFORMANCE GUARANTEE BOND

(To be typed on Non-judicial stamp paper of the value of Indian Rupees of One Hundred) (TO BE ESTABLISHED THROUGH ANY OF THE NATIONAL BANKS (WHETHER SITUATED AT MANGALORE OR OUTSTATION) WITH A CLAUSE TO ENFORCE THE SAME ON THEIR LOCAL BRANCH AT MANGALORE OR ANY SCHEDULED BANK (OTHER THAN NATIONALISED BANK) SITUATED AT MANGALORE. BONDS ISSUED BY CO-OPERATIVE BANKS ARE NOT ACCEPTED.)

To,
Registrar,
National Institute of Technology Karnataka,
Srinivasnagar P.O., Surathkal
Mangalore – 575025

LETTER OF GUARANTEE

WHEREAS National Institute of Technology Karnataka (Buyer) have invited Tenders vide Tender No..... Dt. for purchase of AND WHEREAS the said tender document requires that any eligible successful tenderer (seller) wishing to supply the equipment / machinery, etc. in response thereto shall establish an irrevocable Performance Guarantee Bond in favour of “**Registrar, National Institute of Technology Karnataka, Surathkal**” in the form of Bank Guarantee for Rs (10% (ten percent) of the purchase value) and valid till **one year or upto warranty period whichever is later** from the date of issue of Performance Guarantee Bond may be submitted within 30 (Thirty) days from the date of Order Acknowledgement as a successful bidder.

NOW THIS BANK HEREBY GUARANTEES that in the event of the said tenderer (seller) failing to abide by any of the conditions referred in tender document / purchase order / performance of the equipment / machinery, etc. this Bank shall pay to National Institute of Technology Karnataka, Surathkal on demand and without protest or demur Rs (Rupees.....).

This Bank further agrees that the decision of National Institute of Technology Karnataka, Surathkal (Buyer) as to whether the said Tenderer (Seller) has committed a breach of any of the conditions referred in tender document/purchase order shall be final and binding.

We, (name of the Bank & branch) hereby further agree that the Guarantee herein contained shall not be affected by any change in the constitution of the Tenderer (Seller) and/ or National Institute of Technology Karnataka, Surathkal (Buyer).

Notwithstanding anything contained herein:

1. Our liability under this Bank Guarantee shall not exceed Rs. (Indian Rupees only).
2. This Bank Guarantee shall be valid up to(date) and
3. We are liable to pay the guaranteed amount or any part thereof under this bank guarantee only and only if National Institute of Technology Karnataka (NITK) Surathkal serve upon us a written claim or demand on or before(date).

This Bank further agrees that the claims if any, against this Bank Guarantee, shall be enforceable at our branch office at situated at (Address of local branch).

Yours truly,
Signature and seal of the guarantor:
Name of Bank & Address:
Date:

Instruction to Bank: Bank should note that on expiry of Bond Period, the Original Bond will not be returned to the Bank. Bank is requested to take appropriate necessary action on or after expiry of bond period.

(To be typed on Non-judicial stamp paper of value Indian Rupees One Hundred)

(TO BE ESTABLISHED THROUGH ANY OF THE NATIONAL BANKS (WHETHER SITUATED AT MANGALORE OR OUTSTATION) WITH A CLAUSE TO ENFORCE THE SAME ON THEIR LOCAL BRANCH AT MANGALORE OR ANY SCHEDULED BANK (OTHER THAN NATIONALISED BANK) SITUATED AT MANGALORE. BONDS ISSUED BY CO-OPERATIVE BANKS ARE NOT ACCEPTED)

LETTER OF GUARANTEE

To

Registrar,
National Institute of Technology Karnataka,
Srinivasnagar P.O., Surathkal
Mangalore – 575025

IN ACCORDANCE WITH YOUR TENDER for supply of, M/s.
(hereinafter called the "Bidder") having its Registered Office at....., wish to participate in the said bid for the supply as an irrevocable Bank Guarantee against Earnest Money Deposit for an amount of Rs. (Rupees.....) valid up to **(180 days from the date of issue of Bank Guarantee)**, is required to be submitted by the bidder as a condition precedent for participating in the said bid, which amount is liable to be forfeited by the Purchaser on (1) the withdrawal or revision of the offer by the bidder within the validity period, (2) Non acceptance of the Letter of Indent / Purchase order by the Bidder when issued within the validity period, (3) failure to execute the contract as per contractual terms and condition with in the contractual delivery period and (4) on the happening of any contingencies mentioned in the bid documents.

During the validity of this Bank Guarantee :

We,(Bank name) having the registered Office at.....guarantee and undertake to pay immediately on first demand by NITK Surathkal, an amount of Rs..... (Rupees.) without any reservation, protest, demur and recourse. Any such demand made by the NITK Surathkal shall be conclusive and recourse. Any such demand made by the purchaser shall be binding on the Bank irrespective of any dispute or difference raised by the Bidder.

The Guarantee shall be irrevocable and shall remain valid up to(180 days from the date of issue of Bank Guarantee) If any further extension is required, the same shall be extended to such required period on receiving instruction from the Bidder, on whose behalf the is Guarantee is issued.

Notwithstanding anything contained herein :

- * Our liability under this Bank Guarantee shall not exceed Rs..... (Rupees.....) .
- * This Bank Guarantee shall be valid up to..... (date).
- * We are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee Only and only if you serve upon us a written claim or before..... (date).

This Bank further agrees that the claims if any, against this Bank Guarantee shall be enforceable at our branch office at situated at(Address of local branch).

Yours truly,

Signature and seal of the
guarantor: Name of Bank:
Address:
Date:

Instruction to Bank: Bank should note that on expiry of Bond Period, the Original Bond will not be returned to the Bank. Bank is requested to take appropriate necessary action on or after expiry of bond period

Detailed Technical Specifications

A. Feature
This system shall be used to fatigue test dynamic characteristics of high temperature advance materials and composite.
The system must include all components necessary for complete system operation including high stiffness frame and hydraulic actuators, digital control electronics, hydraulic service manifold, Hydraulic Power Unit, Software, Personal computer for control,
The system must include fully automated control, data acquisition and analysis for high rate testing
All transducer ranges should have a traceability calibration as NIST standards.
The vendor should provide all technical drawings, data and catalogs for reviewing the bid proposal. If there is no published brochure and detail of drawings which describes the above system, it will be recognized by purchaser that the vendor is not qualified.
B. Specification
1. 250 kN Load Unit Assembly
1.1. Load Frame
It should be a freestanding, self-supporting unit requiring no special foundation.
Nominal dynamic load rating: ± 250 kN, fatigue rated.
Moveable crosshead.
Nominal frame stiffness of 4.7×10^8 N/mm or stiffer
Column spacing : 635 mm or higher
Test space: Height 160~1500mm
Crosshead hydraulic lifts and controls.
Crosshead hydraulic locks and controls.
Elastomeric isolation mounts
1.2. Hydraulic Actuators
Integrated Actuator. – bolt-on actuator in the crosshead is not accepted
Nominal dynamic force rating: ± 250 kN
Annular Step Bearing or equivalent
Dynamic force rating must be more than 90% of static force for generating optimistic dynamic performance
Displacement: 150 mm or longer
Coaxially mounted full stroke linear variable displacement transducer (LVDT) for measurement and/or control of actuator displacement.
Internal threads in the piston rod for mounting a grip or a load cell.
Direct Actuator Porting without the need for flanges or manifolds.
1.3. Hydraulic Servo Valve and Service Manifold
Dual servo valve (60 lpm or above) and (3 lpm or above) with manual port shut switch for LCF/HCF and general dynamic material testing
Fifth port servo valve for pilot pressure
Close-coupled accumulators (1 liter) allowing maximum high frequency response of servo valve(s).
Maximum operating pressure: 210 bar
Operating temperature: -40°C to $+135^{\circ}\text{C}$
Rated full-flow input signal current: 25 mA
Off/Low/High pressure control.
Fast emergency unload for system depressurization.
During test setup like as specimen installation, the actuator should be moved in position control and its velocity limit should be slower than 10 mm/sec according to European Community Machinery Directive 2006/42/EC

1.4. Load Transducer

Fatigue rated at ± 250 kN
Used for load measurement and/or control of force.
Non-linearity: 0.15% of full scale or better
Hysteresis: 0.15% of full scale or better
Self-identification capabilities adopted IEEE 1451.4 standard.

1.5. Standalone Hydraulic Grip Controls

Standalone hydraulic grip control operation of a variety of hydraulic-powered specimen grips.
Gripping/ clamping pressure must be activated and monitored via independent controls & pressure gauges.
Cross ported check valves that eliminate cross talk between grips during clamping and unclamping.
Easy-to-turn valve knobs that require low activation force, even with high pressure grip systems
Up to 70 MPa (10,000 psi) pressure

1.6. Load Frame Alignment fixture

Capacity: 250kN
Capability to perform alignment adjustments while the load train is fully preloaded
The Supplier must provide own alignment control and analysis package.

2. 100 kN Load Unit Assembly

2.1. Load Frame

It should be a freestanding, self-supporting unit requiring no special foundation.
Nominal dynamic load rating: ± 100 kN, fatigue rated.
Moveable crosshead.
Nominal frame stiffness of 4.50×10^8 N/mm or stiffer
Column spacing : 500 mm or higher
Test space: Height 80~1200mm
Crosshead hydraulic lifts and controls.
Crosshead hydraulic locks and controls.
Elastomeric isolation mounts

2.2. Hydraulic Actuators

Integrated Actuator. – bolt-on actuator in the crosshead is not accepted
Nominal dynamic force rating: ± 25 kN
Annular Step Bearing or equivalent
Dynamic force rating must be more than 90% of static force for generating optimistic dynamic performance
Displacement: 150 mm or longer
Coaxially mounted full stroke linear variable displacement transducer (LVDT) for measurement and/or control of actuator displacement.
Internal threads in the piston rod for mounting a grip or a load cell.
Direct Actuator Porting without the need for flanges or manifolds.

2.3. Hydraulic Servovalve and Service Manifold

Dual servovalve (18 lpm or above) and (3 lpm or above) with manual port shut switch for LCF/HCF and general dynamic material testing
Fifth port servovalve for pilot pressure
Close-coupled accumulators (1 liter) allowing maximum high frequency response of servovalve(s).
Maximum operating pressure: 210 bar
Operating temperature: -40°C to $+135^{\circ}\text{C}$

Rated full-flow input signal current: 25 mA

Off/Low/High pressure control.

Fast emergency unload for system depressurization.

During test setup like as specimen installation, the actuator should be moved in position control and its velocity limit should be slower than 10 mm/sec according to European Community Machinery Directive 2006/42/EC

2.4. Load Transducer 25 kN

Fatigue rated at ± 25 kN

Used for load measurement and/or control of force.

Non-linearity: 0.15% of full scale or better

Hysteresis: 0.15% of full scale or better

Self-identification capabilities adopted IEEE 1451.4 standard.

2.5. Load Transducer 5 kN

Fatigue rated at 5 kN

Used for load measurement and/or control of force.

Non-linearity: 0.08% of full scale or better

Hysteresis: 0.05% of full scale or better

Self-identification capabilities adopted IEEE 1451.4 standard.

2.6. Standalone Hydraulic Grip Controls

Standalone hydraulic grip control operation of a variety of hydraulic-powered specimen grips.

Gripping/ clamping pressure must be activated and monitored via independent controls & pressure gauges.

Cross ported check valves that eliminate cross talk between grips during clamping and unclamping.

Easy-to-turn valve knobs that require low activation force, even with high pressure grip systems

Up to 21 MPa (3,000 psi) pressure.

2.7. Load Frame Alignment fixture

Capability to perform alignment adjustments while the load train is fully preloaded

The Supplier should provide own alignment control and analysis package.

3. Digital Control Electronics

3.1. Digital Control Electronics

Should be digital servo control, function generation, data acquisition, hydraulic control, and digital I/O.

The controller must be compactible to support both load frame and must be expandable maximum up to 4 channels or above

DDC (Direct Digital Control) bandwidth update rate: 5 kHz or faster

Signal conditioner data sample rate: 100kHz or faster.

Function generation by 32 bit processor, standard haversine, square, and ramp waveforms and downloaded wave shapes.

Computer controlled transducer limits.

Digital I/O (3 in, 3out) or above.

Automated dynamic control mode switching between any connected transducer. Any connected transducer or calculation can be selected for control (typically load, strain or displacement) including load limited displacement during specimen loading.

2 Computer-selectable channels of 16 bit resolution analog output for easy access to transducer signals and other critical parameters.

Ability to save and restore PID tuning settings

Adaptive controls compensation: Peak-Valley and Null Pacing

Cables for hydraulic control, servovalves, conditioners, and communications to personal computer. It should be connected with high-speed serial interface with personal computer. It's not acceptable any parallel interface.

Required system cables.

3.2. Digital Conditioner

The conditioner must be support transducers.

Conditioners interface to DC or AC transducers and eliminate the need for separate conditioner types.

Low-noise, low-drift, high- accuracy signal conditioning, and shunt calibration verification insure testing accuracy.

3.3. Valve Driver Card

VD must be configured to drive a two-stage valve and condition a transducer.

Valve drivers with digitally controlled fault protection logic provide maximum safety, specimen protection, and testing accuracy.

Hydraulics-On Mode-Switching of control parameter facilitates flexibility and accuracy of testing conditions.

Bump-less start should be available for safe and controlled application of hydraulic power to the system and specimen.

3.4. Analog Input Package

Should provide set of minimum 8 auxiliary input channels for high level (+/- 10V) analog signals which can be used for control and data acquisition.

Include adapter supporting BNC connectors

3.5. Handset

Should provide ability to adjust actuators, auto-offset signals, start/stop test, turn hydraulics on/off.

3.6. Digital Transducer Interface Card

Compatible Eurotherm temperature controllers, or two encoders or other digital transducers, Handset.

3.7. System Software

Should provide a software interface for configuring the controller and the user interface to the test station.

The user can enter and save user preferences(units, valve adjustments, loop tuning) for recall at any time.

Include a two channel on line data display (X vs. Y or Time vs. YY), digital displays, and a system exerciser for setting up tuning parameters and warming up the system prior to testing.

Software should be an easy program for simple monotonic and cycle test execution including data acquisition.

Test data may be stored in choice of ASCII, Lotus, or Excel formats for analysis with your favorite tools.

Null pacing adaptive control algorithm for use with ramp command signals

Adaptive phase and amplitude algorithm for use with sine wave command signals including constant sine and blocks of sine.

Performs amplitude control to ensure desired amplitudes should be achieved.

Data acquisition (timed, P/V, Level Crossing, Cyclic/Logarithmic)

Function generation up to 600 Hz on all channels

Sine, square, triangle, ramp, hold, processes, and ability to play digitized profiles

Soft start/stop should be available on all channels

Should include Amplitude Phase Control S/W to adjust the amplitude and phase of the command to realize the desired feedback signal.

Access to test status information from any web-enabled, internet-connected device

System Views – to provide information about a single test system

Lab Views – to provide information about all the test systems your lab

Alerts – to allow for email, text message or Tweet notification to interested parties when the state of a test changes

Security - Data transfers use SSL/TLS 256-bit encryption

User Access Control – Should provide ability to create individual passwords for a page, or limit access to specific users

3.8. General Application software

Application software must be included for generating and executing tests. The application software should include the ability to control or to capture data from any installed AC or DC transducer, or externally conditioned transducer.

The application software must allow the following kinds of tests to be defined and executed.

- monotonic tests including tensile, compression, and flexure
- block loading fatigue
- constant amplitude fatigue
- random fatigue using an input file to define end levels and rates any of the above in combination.

The application software should allow data to be collected and stored to disk during any simple or complex test. Available data acquisition routines should include timed data collection, peak/valley data collection, maximum / minimum value collection, and level crossing data collection. The software should allow selection of the master channel to be used for peak/valley and level crossing data acquisition and the additional slave channels to be collected simultaneously. Any or all internal or externally conditioned channels can be used as the master or as the slave channel. More than one data acquisition routine can be running simultaneously.

The application software must allow the operator to directly interact with the progress of the test through user definable software buttons. The operator can define software buttons with names and descriptions that when clicked with the mouse causes the test program to sequence to the next desired test sequence.

The application software must allow the operator to set up command segment end levels that are from a different transducer channel than the channel being used for test control. The end level or "data limit" can be set up to terminate the current segment when the data limit is approached from below, above, or either direction. The data limits can also be used to trigger data acquisition and other definable test system processes. Data limits can be set up to cause the test system to go to any definable state upon detection.

3.9. Low-Cycle Fatigue Software

This module should contain test and report templates and calculations needed for low-cycle fatigue testing up to 12 Hz. This module must be compliant with ASTM E606-04 and D3479-07 strain-controlled, low-cycle fatigue test standards.

Include templates for LCF and transition to HCF tests.

3.10. High-Cycle Fatigue Software

This module should contain test and report templates and calculations needed for high-cycle fatigue testing. This module must be compliant with ASTM E466-07 and D3479-07 stress-controlled high-cycle fatigue test standards.

3.11. Fatigue Analyzer Software

Software should provide the ability to analyze test run data and following methods should be included:

History charts

Hysteresis charts

Failure cycle charts

Creation of variables

Calculations based on variables

3.12. KIC Fracture Toughness Software

The KIC Module should perform fatigue pre-cracking and must use the compliance method as primary crack length measurement. The main test should be executed in load, crack opening displacement, or actuator displacement control.

Predefined test template should be available as per ASTM E 399-08 test standard.

Supported specimen: FFC(T), SE(B)

3.13. JIC Fracture Toughness Software

The JIC Module should calculate J R curves, CTOD R curves, critical J and critical CTOD. Predefined test template should be available as per ASTM E 1820-08 test standard. Supported activities are fatigue pre-cracking and use of the compliance method as primary crack length measurement.

The software should be capable with the features such as online load-displacement plotting, test shutdown/restart and test parameter changes during test execution.

Supported specimen: FFC(T), LLC(T), SE(B)

3.14. Fracture Analyzer Software

Fracture Analyzer Software should have ability to analyze test run data from the following methods include:

Fatigue Crack Growth charts

Load, displacement, COD vs. time

Da/dN vs. delta K

Load, K vs. cycle

delta K vs. crack length

Fracture Toughness charts

J, CTOD vs. crack growth

Review and change of input data and calculation methods

Display of ASTM standard validation results

3.15. Standalone Personal Computer for each Load Frame

Processor: 64 bit

8GB RAM Memory

2 x 500GB Hard Drive

23 inch Flat-Panel Monitor, expanded keyboard, mouse.

Windows 7 or compatible windows OS

Should be able to operate any load frame on any computer

3.16. Uninterruptible Power Supply

For increased safety, such as to address the European Machinery Directive, an acceptable Uninterruptible Power Supply (UPS) should be properly integrated in hydraulic test systems. The UPS should be wired to provide power to the servo controller and any peripheral equipment that is instrumental in safe system operation and shut-down.

4. Hydraulic Power Unit

4.1. Hydraulic Power Unit

Variable-volume pump.

Flow Rated, 100 lpm or higher

210 bar pressure, and 380 Vac, 50 Hz, 3 phase power

Direct-coupled submerged motor for high operating efficiency.

Nominal noise rating of 63 dB(A) or less measured at 3 feet with the pump operating at high pressure and dumping the full flow over the relief valve.

Corrosion resistant stainless steel oil to water heat exchanger to dissipate all heat generated by the power unit.

Submersed pump/motor design to eliminate the release of ambient heat.

Temperature controlled water-saver and water shut-off valves to minimize water consumption.

Cabinet with lockable cover to reduce noise and to prevent tampering of controls.

Full flow 3-micron absolute filter in the return line to provide excellent oil cleaning.

Integrated reservoir, pump/motor, heat exchanger, design to restrict the release of oil from seals and fittings.

Approved electrical disconnect interrupts power to the unit when the door is opened.

Interlock circuitry for over-temperature and low-fluid level protection.

Switches for start, low/high pressure, and stop must be located on the front panel of the enclosure.

Components prone to nuisance leakage must be located within the reservoir to eliminate the possible release of oil.

High quality face seal fittings minimize the potential for leakage outside of the reservoir.

Indicators for power on, low oil level, over temperature, and dirty filter warnings must be placed on the starter enclosure door for at-a-glance monitoring.

First fill of the oil should be provided by the supplier. Mobil- DTE or equivalent grade

Suitable chiller unit to be supplied along with the supplied HPU

Health monitoring of the HPU should be available such as connectivity, Power, Fluid contamination, Temperature and Heat Exchanger water saturation

4.2. Hydraulic Hose Set for (pressure, return & drain)

5. Grip and Accessories

5.1. 250 kN Hydraulic Wedge Grip

Dynamic force capacity : ± 250 kN

Adjustable gripping pressure to accommodate variety of specimen materials

Control pressure from 100 ~ 10,000 psi

Pressure stability: ± 100 psi

Water cooled Flat specimen wedge of diamond surface: 50mm wide, 1 ~ 25 mm diameter

Water cooled Round specimen wedge of serrated surface: 10 ~ 26 mm diameter

Attachment kits must be included to assemble grips to the load-cell and actuator.

5.2. 25 kN Hydraulic Wedge Grip

Dynamic force capacity : ± 25 kN

Adjustable gripping pressure to accommodate variety of specimen materials

Control pressure from 100 ~ 3,000 psi

Pressure stability: ± 10 psi

Water cooled Flat specimen wedge of diamond surface: 25mm wide, 1 ~ 14 mm diameter

Water cooled Round specimen wedge of serrated surface: 3 ~ 14 mm diameter

Attachment kits must be included to assemble grips to the load-cell and actuator.

5.3. 3 & 4 Point Bend Fixtures for 25 kN Frame

Dynamic Force should be up to 8 kN or above

Static Force should be up to 25 kN or above

Lower Fixture Span: 30 - 150 mm or above

Upper Fixture Span: 30 - 70 mm or above

Temperature Range: -129°C to 130°C

Should provide compatible 5 mm roller

5.4. 3 & 4 Point Bend Fixtures for 250 kN Frame

Dynamic Force should be up to 100 kN or above

Static Force should be up to 250 kN or above

Lower Fixture Span: 50 - 300 mm or above

Upper Fixture Span: 50 - 150 mm or above

Temperature Range: -129°C to 150°C

Should provide compatible 20 mm & 25 mm roller

5.5. Mixed Mode Bending Fixture

Fixture are recommended for testing in accordance to ASTM D6671

Should have the maximum Specimen Width: 35 mm or above

Should have the maximum Specimen Thickness: 6 mm or above

Should have the maximum Length: 220 mm or above

Maximum Capacity: 4 kN or above

Temperature Range: -85 to 120°C or above

5.6. Compression Platen

Dynamic Rating should be: 260 MPa or above

Static Rating: 650 MPa or above

Specimen diameter maximum up to 200 mm

It should have One Fixed and One Spherical Platen

Temperature Range: -129°C to 150°C

5.7. 25 kN Manual Wedge Grips

Should be compatible with the 25 kN Actuator)

Type of actuation should be manual

Temperature Rating: -130°C to 300°C

Flat specimen wedge of Serrated surface should not exceed 25 mm wide & 50 mm length and thickness ranging from 1 ~ 12 mm

5.8. Bollard Grips

Maximum Static Force: 1 kN

Type of actuation should be manual

Temperature Rating: -130°C to 150°C or above

Should be Stainless Steel Construction

5.9. Axial Extensometer

Gage Length: 25 mm

Strain Range: -10% ~ +20%

Operating Temperature range: -100° C to 175° C or above

It should be meet ASTM E83 Class B1 and ISO 9513 Class 0.5 Standard

NIST or NABL traceable factory calibration

Self-identification capabilities adopted IEEE 1451.4 standard.

5.10. High Temperature Hydraulic Grips

Should have dynamic force up to 60 kN or above at 700°C

Should have dynamic force up to 8 kN or above at 1000°C

The grip interface should be button head with the shank diameter of 12 mm and Buttonhead Diameter: 21.1 – 21.6 mm

Required Hydraulic Pressure Rating with the separate pump

5.11. Environmental Chamber

Temperature range of environmental chamber should be -120 to +310°C (or more) and controller.

Chamber controller

Internal Dimensions:

Minimum height: 800 mm or above

Minimum width: 350 mm or above

Minimum depth: 400 mm or above

Door with optical-quality heated glass window.

Removable wedge-ports with instrumentation cut-out.

LN2 cooling option.

Roller Carriage Brackets for use with Chambers, to allow chamber to be rolled back from test area for full access to load string between tests or when not in use.

Chamber controller to achieve following:

Temperature stability: $\pm 2^{\circ}\text{C}$

Temperature gradient: $\pm 1\%$ of Set point

Maximum temperature overshoot: 2°C

Power requirements: 200-240V 50/60Hz Single phase

5.12. Non Contact Video Extensometer

Mounting Assembly with tripod stand

Should be supplied with the required post processing software

Should include lighting controller, Advanced Software Package, and 2D DIC software

Measurement Head

At Gage Length: 10 mm / Max Tensile Strain: 450% or above

At Gage Length: 25 mm / Max Tensile Strain: 140% or above

At Gage Length: 50 mm / Max Tensile Strain: 35% or above

Maximum Transverse Gage Length (mm): 60 mm or above

Typical Extension Resolution (μm): 0.18 μm

Minimum Specimen Width for Axial measurements (mm): 1.4 mm or above

Minimum Specimen Width for Transverse Measurements: 6.4 mm or above

Maximum Data Tracking Speed (mm/minute) (@ 15 Hz): 250 mm/minute or above

It should be able to measure strains for both static and dynamic tests.

It should work for metals, plastics, composites, films and biomaterials.

It should have minimum 150 drag-and-drop measurements including displacement gages, distance measurements, virtual extensometers, strain gages, dual averaging strain gages, Poisson's ratio, rotation, and shear strain

5.13. Box Type Furnace

1000°C Two zone furnace and controller

It should be compatible to perform the LCF test with the specimen ranging from 115 mm to 150 mm

Viewing window and Ports for Extensometer and COD slot

Maximum specimen temperature : 1000 °C

Minimum specimen temperature : 200 °C

Master –slave configuration capable of following a single ramp to set-point.

Should include indicator configured as an over temperature alarm.

Should be able to accommodate Compact Tension (CT) Specimens to 25 mm thick (W= 50 mm).

PID control and digital readout for each heating zone and type K thermocouples should be available

Both center-zone controller and alarm indicator feature an RS232 interface for temperature control/logging via software. Also includes auxiliary interlock to enable connection of an external device (such as customer-supplied water flow switch) to switch off furnace.

All instrumentation is mounted in a desk-top console and furnace to controller cable loom length is 3 meters.

Should include 5 meter RS232 cable for connection to PC serial port.

Should include suitable mountings for both the 100kN axial and 250kN axial servo hydraulic frame.

5.14. High Temperature COD Gage

Should have compressed gage length of 15.24 mm. and Travel range of 10 mm.

Specimen Temperature Range: Ambient up to 1000 Deg C

Should be column mounted to supplied load frames.

Should be Air cooled to minimize thermal drift.

Should include replaceable high temperature Quartz contact arms 4 sets

Should be able to work in the Frequency range up to 10 HZ.

5.15. High Temperature Clevis Grips for CT Specimens

Dimension of specimens

Specimen W=50 mm and B=25 mm (per ASTM E399)

Specimen size W=25 mm and B=12.7 mm (per ASTM E399)

Specimen temperature range: Ambient to 1000 deg C

Should be supplied with required pull rods and water cooled adapters to minimize heat transfer area

Should reduce the specimen temperature gradient and protect the load cell and actuator.

Should provide the required attachment kits to load cell and actuator

5.16. High Temperature Axial Extensometer

Gage Length: 25 mm.

Strain Range: +10%, -5%.

Max. Specimen Temperature: 1000° C

Contact Force per Rod: 400 grams.

Should include chisel rods with a spare

Should provide compatible Mounting Bracket

Should provide required Air Regulator

NIST or NABL traceable factory calibration

Self-identification capabilities adopted IEEE 1451.4 standard.

5.17. Fracture Mechanics Grip

ASTM E-399, E-647, E-813, E-1152, & E-1290 Compliant.

Pin Diameter: 12.7 mm & 25 mm

Specimen Thickness: 12.7 mm & 25 mm

Temperature Range: -129° C to 177° C.

Include attachment kit

5.18. COD Gage 1

Designed specifically for ASTM E399.

Should perform K1C, J1C, and crack growth rate tests.

Compressed Gage Length: 5 mm.

Travel: -1 mm to 3 mm.

Operating Temperature range: -100° C to 150° C

Max frequency, 50 Hz

Non-linearity 0.15% or better

NABL or NIST traceable factory calibration

Self-identification capabilities adopted IEEE 1451.4 standard.

5.19. COD Gage 2

Should perform K1C, J1C, and crack growth rate tests.

Compressed Gage Length: 6 mm.

Travel: 0 mm to 12 mm.

Operating Temperature range: -100° C to 150° C

Max frequency 50Hz

Non-linearity 0.2% or better

NABL or NIST traceable factory calibration

Self-identification capabilities adopted IEEE 1451.4 standard.

C. Remark

Supplier's engineer should provide installation support and check-out service.

On-line system manuals on the CD.

Training should be included.

All extensometer should be compatible among 25kN and 250kN Axial testing system.

Spares and necessary tools must be included.

The supplier must be ISO 9000 series certificated.

Checklist for BIDDERS

BIDDERS to indicate whether the following are enclosed/mentioned by striking out the non- relevant option and the relevant technical bid documents should be in order.

Sl. No.	Documents	Content	Document Attached
1	Technical Bid	Self-Attested copy of GST & PAN Number	(Yes /No) Pg. No.
2		Licence certificate for manufacture /supply of the item & Factory license. Registration with EPF and ESI	(Yes /No) Pg. No.
3		Undertaking that the successful BIDDER agrees to give a 10% Performance Security.	(Yes /No) Pg. No.
4		Catalogue of the Product with detailed product specifications.	(Yes /No) Pg. No.
5		Copy of Balance Sheet	(Yes /No) Pg. No.
6		List of Owner/partners of the firm and their contact numbers (Bidder Information)	(Yes /No) Pg. No.
7		Contract form given in section 5	(Yes /No) Pg. No.
8		Format of compliance statement of specification as per Annexure-'A'	(Yes /No) Pg. No.
9		Previous Supply Order as per Annexure-'B'	(Yes /No) Pg. No.
10		Declaration of abandoned or suspended any awarded service & Blacklist Certificate. Annexure 'C'	(Yes /No) Pg. No.
11		Integrity Pact. Annexure 'D'	(Yes /No) Pg. No.
12		Bank details of the bidder. Annexure 'E'	(Yes /No) Pg. No.
13		EARNEST MONEY DEPOSIT Annexure -G In case of exemption from submission of EMD, proof of registration with NSIC/MSME	(Yes /No) Pg. No.
1	Financial-Bid	Price bid	(Yes /No)

Seal and Signature of the bidder