

 <p>IIT PALAKKAD</p>	<p>भारतीय प्रौद्योगिकी संस्थान पालक्काड Indian Institute of Technology Palakkad अहलि आ एकीकृत कैम्पस, कोज़िपारा Ahalia Integrated Campus, Kozhipara पालक्काड- 678557 Palakkad – 678 557</p>	<p>दूरभाषसंख्या/ Phone no: 04923 – 226 300/590/586</p> <p>ईमेल/ Email : purchase@iitpkd.ac.in</p>
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Prof. Job Kurian
Registrar i/c

Ref : Mechanical Engineering Research Laboratory
Date : 13.12.2017

Open Tender No: IITPKD/MECH/KESA/082/2017

Due Date: 03.01.2018 @ 2.00 PM

Dear Sir/Madam,

On behalf of the **Indian Institute of Technology, Temporary campus, Palakkad**, Quotations are invited for **“Mechanical Engineering Research Laboratory Equipments”**. The Specifications are given in the Annexure.

Technical bid Opening: The Technical bid will be opened on 03.01.2018 at 2.30 PM at Conference Room, Academic Block, IIT Palakkad.

Instructions to the Bidder

- (i) **Preparation of Bids:** - The tenders should be submitted **under two-bid system (i.e.) Technical bid and Financial bid in separate envelopes**. The technical bid should consist of all technical details along with commercial terms and conditions. No prices should be included in technical bid. Financial Bid should indicate item – wise prices for the items mentioned in the technical bid. The technical and the financial bids should be put in separate covers and sealed. Both sealed covers should be put into a bigger cover. **Bids must either be spiral bound / stapled together. No loose sheets will be accepted. All pages must be numbered.**
- (ii) The Quotations duly sealed and superscribed on the envelope **with the reference No. and due date, should be addressed to the undersigned so as to reach on or before the due date stipulated above.**
- (iii) **Delivery of the tender:** - The tender shall be sent to the below-mentioned address either by post or by courier so as to reach this office before the due date and time specified in the Schedule. The offer/bid can also be dropped in the tender box on or before the due date and time specified in the schedule. **The tender box is kept in the office of the Academic Block, IIT Palakkad, Ahalia Integrated Campus, Kozhipara, Palakkad-678 557.**
- (iv) **Opening of the tender:** - The offer/Bids will be opened by a committee duly constituted for this purpose. The technical bids will be opened first and will be examined by a technical committee which will decide the suitability of the bid as per our specifications and requirements. The bidders will be invited for opening of Technical bids. **The Bidder's**

representative should carry authorization letter from their company empowering them to participate in the Pre-bid and tender opening meetings. In respect of opening of financial bid, those bidders who are technically qualified only will be called.

- (v) **Prices:** - The price should be quoted in nett per unit (after breakup) and must include all packing and delivery charges indicated separately for each item. **The price indicated should be CIF/CIP Kochi.** The clearance and transportation of all the equipment to IIT Palakkad is the responsibility of the bidder or its agencies. The associated cost should be quoted separately in the financial bid. The offer/bid should be exclusive of taxes and duties, which will be paid by the purchaser as applicable. The price should be quoted without custom duty. **The custom duty will be paid at concessional rate against duty exemption certificate.**
- (vi) **Agency Commission:** - Agency commission, if any, will be paid to the Indian agents in Rupees on receipt of the equipment and after satisfactory installation. Agency Commission will not be paid in foreign currency under any circumstances. The details should be explicitly shown in Tender even in the case of 'Nil' commission. The tenderer should indicate the percentage of agency commission to be paid to the Indian agent. **Terms of Delivery:** - The item should be supplied to our Institute as per Purchase order. The installation and commissioning should be completed as specified **by us in the attached schedule.**
- (vii) **Acceptance & Rejection:** IIT Palakkad reserves the full right to accept / reject any tender at any stage without assigning any reason.

Yours sincerely,

Registrar, IIT Palakkad

SCHEDULE

Important Conditions:

- 1) The due date for the submission of the tender is **03.01.2018 @ 2.00 PM**
- 2) The offers / bids should be submitted in two-bids systems (i.e.) Technical bid and financial bid. The Technical bid should consist of all technical details / specifications only. The Financial bid should indicate item-wise price for each item and it should contain all Commercial Terms and Conditions including Taxes (separately), transportation, packing & forwarding charges, installation, guarantee, payment terms, pricing terms etc. The Technical bid and financial bid should be put in separate covers **superscribed clearly as "Technical Bid" and "Financial bid"** and sealed. Both the sealed covers should be put in a bigger cover. Open Tender for **"-Supply, Erection, Testing and Commissioning of Servo Hydraulic Static and Dynamic Material testing Systems for Structural Engineering Lab"** should be written on the left side of the Outer bigger cover and sealed.
- 3) **EMD: - EMD should be at 2% (two percent) of the tender value quoted by the bidder.** The EMD should be enclosed with the financial bid which will not be opened for Technical evaluation. Enclosing the EMD in the Technical bid will automatically DISQUALIFY the tenderer. EMD should be in the form of DD in favour of **"Indian Institute of Technology Palakkad" and payable at Palakkad**". The tender without EMD would be considered as UNSOLICITED and will be REJECTED. Photo/FAX copies of the Demand Draft/Banker's pay orders will not be accepted. No interest will be paid for the EMD and the EMD will be refunded to the successful bidder on receipt of Performance Security.
- 4) **Performance Security:-** The successful bidder will be asked to submit Performance Security for an amount of 5% of the value of the contract/supply. The Performance Security may be furnished in the form of an Account Payee DD or FD Receipt from the commercial bank or Bank Guarantee from any nationalized bank of India. **Only after submission of Performance Security, Purchase Order/Work Order will be released / L.C will be opened.**
- 5) **Performance Security in the form of Bank Guarantee:-** In case the successful bidder is a foreign company and wishes to submit Performance Security in the form of Bank Guarantee, the Bank Guarantee should be routed through the Beneficiary Bank to the end user bank. Otherwise, the Indian Agent of the foreign vendor has to submit a Bank Guarantee from a Nationalized Bank of India.
- 6) The Bank Guarantee should remain valid for a period of sixty days beyond the date of completion of all contractual obligations of the supplier including the warranty obligations.

If an Indian agent is involved, the following documents must be enclosed:

- Foreign principal's proforma invoice indicating the commission payable to the Indian Agent and nature of after-sales service to be rendered by the Indian Agent.
 - Copy of the agency agreement with the foreign principal and the precise relationship between them and their mutual interest in the business.
- 7) The offer/bids should be sent only for a system or equipment that is available in the market and supplied to a number of customers. A list of customers in India and abroad with details must accompany the quotations. Quotations for a prototype machine will not be accepted.
 - 8) Original catalogue (not any photocopy) of the quoted model duly signed by the principals must accompany the quotation in the Technical bid. No prices should ever be included in the Technical bid.
 - 9) Compliance or Confirmation report with reference to the specifications and other terms & conditions should also be obtained from the principal.
 - 10) **Validity:** Validity of Quotation not less than 90 days from the due date of tender.
 - 11) **Delivery Schedule:-** The tenderer should indicate clearly the time required for delivery of the item. In case there is any deviation in the delivery schedule, liquidated damages clause will be enforced or penalty for the delayed supply period will be levied.
 - 12) **Risk Purchase Clause:-** In the event of failure of supply of the item/equipment within the stipulated delivery schedule, the purchaser has all the right to purchase the item/equipment from other sources on the total risk of the supplier under risk purchase clause.
 - 13) **Payment:-** No Advance payment will be made for Indigenous purchase. 100% Payment after supply and successful installation and commissioning and certification by the end user. In case of import supplies the payment will be made only through **100% Letter of Credit i.e. (50% payment will be released against shipping documents and 50% after successful installation and meeting acceptance criteria wherever the installation is being done).**
 - 14) **On-site Installation:** - The equipment or machinery has to be installed and commissioned by the successful bidder within 60 days from the date of receipt of the **item at site of IIT Palakkad.**

- 15) Warranty/Guarantee:** - The offer should clearly specify the warranty or guarantee period for the machinery/equipment. Any extended warranty offered for the same has to be mentioned separately. (For more details please refer our Technical Specifications).
- 16) Late offer:** - The offers received after the due date and time will not be considered. The Institute shall not be responsible for the late receipt of Tender on account of Postal, Courier or any other delay.
- 17) Loading and unloading of the equipment at IIT Palakkad is the responsibility of the bidder or their authorised agents. All associated charges will be borne by the bidder/supplier.**
- 18) Acceptance and Rejection:** - I.I.T. Palakkad has the right to accept the whole or any part of the Tender or portion of the quantity offered or reject it in full without assigning any reason.
- 19) Do not quote the optional items or additional items unless otherwise mentioned in the Tender documents / Specifications.**
- 20) Disputes and Jurisdiction:** - Any legal disputes arising out of any breach of contract pertaining to this tender shall be settled in the court of competent jurisdiction located within the city of Palakkad in Kerala.
- 21) All Amendments, time extension, clarifications etc., will be uploaded on the institute website only and will not be published in newspapers. Bidders should regularly visit the above website to keep themselves updated. No extension in the bid due date/ time shall be considered on account of delay in receipt of any document by mail.**

Acknowledgement:- It is hereby acknowledged that the tenderer has gone through all the conditions mentioned above and agrees to abide by them.

**SIGNATURE OF TENDERER
ALONG WITH SEAL OF THE
COMPANY WITH DATE**

TECHNICAL SPECIFICATION
Materials and manufacturing laboratory

1	<p><u>3D-Laser Based Metal Printing Equipment with accessories</u></p> <p>3D Print build capacity : 250 mm x 250 mm x 325 mm Laser power : Yb-fibre laser, 200 W and above Scanning speed : up to 7.0 m/s Focused diameter : 100 - 500 μm Laser wavelength : 1060 - 1100 nm Layer thickness range : 40μm Machine dimension : 2,200 mm x 1,070 mm x 2,290 mm Recommended installation space: min. 4.8 m x 3.6 m x 2.9 m Electrical requirements: 400 V +6 %/-10 % at 50/60 Hz Printing materials : Bronze, Stainless steel, IN718/625, AlSi10Mg, Cobalt Chrome, Titanium Ti64 Weight : 1,250 kg Power consumption : 5.5kW Argon supply : 100l/min Positioning speed : 40 - 500 mm/s Position repeatability : ≤ ± 0.005 mm</p> <p>Acceptance criteria :</p> <p style="padding-left: 20px;">Vendor should demonstrate the accuracy of +-0.1 to 0.2% with +-50 μm minimum. Demonstrate layer thickness 40 μm with Titanium Ti64 and AlSi10Mg. Vendor should arrange for the materials for demonstration of functionalities demonstration 1 and 2 as well as training.</p>	01 No
2	<p>High temperature fatigue testing machine ±100 kN capacity hard chrome plated two column load frame with a moveable top crosshead with a provision to mount an actuator on it and a fixed bottom crosshead with a provision to mount a load cell on it Column spacing: 600 mm Vertical daylight: 1200 mm Column diameter: 65 mm Load frames are of self-reacting, weather resistant and free from self-induced shocks and vibrations. Load frames aligned to high precision and have adequate factor of safety and high stiffness (600 MN/m)</p> <p>Servo Hydraulic Actuator ±100 kN fatigue rated double acting, double ended, equal area actuator with an integrated manifold and a monolithic piston design. Digital stroke measurement with 1 micron resolution</p>	01 No

Actuator manifold mounted with one 100 LPM servo valve, one NG10 DCV and 0.75 litre pressure and return line accumulators
Total stroke: 150 mm, Operating pressure: up to 210 bar.

Load Cell

±100 kN dynamic capacity loadcell.

Overload capacity:150% of read capacity. Precision machined shear-web design for protection against side load and high stiffness. 350 Ohm precision transducer class strain gauges.

Non-linearity: ±0.3% of full scale Accuracy: ISO7500-1 Class 0.5
Resolution :0.02% of Full Scale Reading.

Servo Hydraulic Power Pack

Contamination insensitive servo-hydraulic power pack of 65 LPM flow

Operating pressure: up to 210 bar, 30 kW system operating on three phase AC supply.

5. 30TR Cooling tower bottle type includes Mounting stand, water pump assembly & 30 feet water hose

Hydraulic Hoses:

Set of hydraulic hard line hoses between powerpack and Actuator manifold each 3m long:

- a. 1/2" pressure line.
- b. 3/4" return line.
- c. 1/4" drain line.

Single Station Digital Servo Controller

Hydraulic Hoses:

Set of hydraulic hard line hoses between powerpack and Actuator manifold each 3m long:

- a. 1/2" pressure line.
- b. 3/4" return line.
- c. 1/4" drain line.

Electrical Cables:

Electrical cables for servo valves, Encoder, Loadcells channels each 15m long.Two emergency push button with 10m long cable.

Enclosure to house controller and PC:

Control Panel:

Split Tube 3 Zone Furnace

Split construction with stainless steel shell.

Dimensions: 5 in. I.D. x 14 in. O.D. x 9 in. Long

	<p>Elements: Kanthal A1, embedded windings. Furnace Temperature Rating: 1000 deg. C 3 zone construction, total heated length 6 in. Total power: 2800 watts/11.7 amps @ 240 VAC, 1Ph, 50 Hz.</p> <p>Temperature Control System: Controller: PID controller with Digital setpoint and programmable heating rates. Make: Eurotherm or equivalent Temperature display of all 3 zones</p> <p>Host computer system - Test work station:</p> <p>Test Builder: Performs Fatigue Test, Static or Monotonic test, Multistep programming and Time History (Custom Waveform) generation. Test can be done in Stroke and Load control modes. Display meters for current readouts, max-min readouts, peak valley readouts, set point and cycle counters. Display of time history graph and X-Y plots.</p> <p>Accessories for Static and Fatigue Tests Accessories for Low Cycle Fatigue Tests Accessories for Fracture Test Applications</p> <p>Acceptance criteria : Vendor should demonstrate the performance curve of the actuator displacement with frequency up to 50 Hz. Temperature stability of +-2 degC at 600 deg C Achieve getting Load-Deflection hysteresis with 25 micron displacement</p>	
3	<p>Rolling contact fatigue system; similar to the now obsolete GE Polymet machine Mechanical assembly for Rolling contact fatigue testing. Pneumatic cylinder to apply load against specimen and discs with load range upto 1000 lbs. Disc diameter that can be used is from dia 175 to 185 mm with 6.25mm nose radius (made of hardened ball bearing steel M50/AISI 52100). Air bearing electrically operated spindle motor to rotate the test specimen from 100 to 24000 rpm. Collet arrangement to hold dia 10 - 30 mm specimen. Oil storing and dripping setup through thread and nut arrangement. Control panel with basic safety features against overload and earth leakage. Control panel with provision for manual start, emergency stop and</p>	01 No

<p>stop on vibration limit. Hand operated speed control for the motor. Hand operated Pressure control for cylinder to load the specimen. Display of speed, load and vibration value. Cycle counter, load sensor, speed sensor and vibration sensor (accelerometer). Accelerometer g sensor with 1g limit. Controls- Accelerometer to pickup the vibration signal and based on the set limit, control should put the machine off. Cover with metallic safety gaurd provision. Acceptance criteria : Vendor should demonstrate the performance of the accelerometer sensitivity with pit size of 25 micron deep. Contact line alignment with the accuracy of 25 micron Achieving constant load throughout the experiments</p>	
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1. 3D-Laser Based Metal Printing Equipment with accessories

Who can participate in the bid?

Only those bidders fulfilling the following criteria should respond to the tender.

1. The bidder should be either an Original Equipment Manufacturer (OEM) of 3D-Laser Based Metal Printing Equipment with accessories or should be an authorized representative (provide documentary proof) of an OEM.
2. The bidder should be a company registered under the Companies Act, 1956/2013 OR a Limited Liability Partnership /a registered partnership firm OR a sole-proprietorship entity. Appropriate Registration incorporation certificate must be submitted.
3. The bidder must have a registered office in Karnataka/Tamil Nadu/Telangana/Andhra Pradesh/Maharashtra or Kerala. Certificate of registration for the offices to be provided.
4. The bidder must also have a service center in Karnataka/Tamil Nadu/ Telangana/Andhra Pradesh or Kerala. Certificate of registration for the centers to be provided. Details about scope of service activities provided by the service centres must be provided. The contact details of the service engineers must be provided.
5. The bidder must be in existence in the business of supplying 3D-Laser Based Metal Printing Equipment with accessories for a minimum period of 5 previous financial years (before or since 01 April 2012). Documentary evidences of experience must be provided.
6. The bidder should have implemented orders of 3D-Laser Based Metal Printing Equipment with accessories worth exceeding INR **500 Lakhs** during previous three financial years (01 April 2014 – 31 March 2017). Copies of the most recent purchase orders and certificates of successful implementation must be included. Copies of financial statements or evidence of turnover must be furnished.
7. The bidder should have documentary evidence of having supplied at least 1 No. of 3D-Laser Based Metal Printing Equipment with accessories to a Centrally Funded Technical Institution (e.g., IIT, NIT, IISc, IISER, etc.) in the recent past. The bidder must provide a certificate of satisfactory performance of the supplied equipment from the institute to which they have recently supplied. Contact details of the faculty-in-charge of the installed setup must also be provided.
8. Compliance sheet for the technical specification and OEM Brochure have to be attached along with the Technical bid. Vendor has to fill the compliance sheet and mention page number or reference number in OEM brochure. Unfilled / partially filled sheets lead to disqualification.
9. The bidder must provide detailed specification of each equipment/item. Model numbers, data sheets and brochures must be included for all equipment quoted, system and all accessories. Specifications corresponding to quoted model number must be available publicly via OEM's website for scrutiny. If not, bid can be disqualified on technical grounds.
10. Service and warranty for a minimum period of three years for the equipment must be provided. AMC for additional three years must be quoted separately.

2. 100 kN high temperature fatigue testing machine with accessories

Who can participate in the bid?

Only those bidders fulfilling the following criteria should respond to the tender.

1. The bidder should be either an Original Equipment Manufacturer (OEM) of 100 kN high temperature fatigue testing machine with accessories or should be an authorized representative (provide documentary proof) of an OEM.
2. The bidder should be a company registered under the Companies Act, 1956/2013 OR a Limited Liability Partnership /a registered partnership firm OR a sole-proprietorship entity. Appropriate Registration incorporation certificate must be submitted.
3. The bidder must have a registered office in Karnataka/Tamil Nadu/Telangana/Andhra Pradesh/Maharashtra or Kerala. Certificate of registration for the offices to be provided.
4. The bidder must also have a service center in Karnataka/Tamil Nadu/ Telangana/Andhra Pradesh or Kerala. Certificate of registration for the centers to be provided. Details about scope of service activities provided by the service centres must be provided. The contact details of the service engineers must be provided.
5. The bidder must be in existence in the business of supplying 100 kN high temperature fatigue testing machine with accessories for a minimum period of 5 previous financial years (before or since 01 April 2012). Documentary evidences of experience must be provided.
6. The bidder should have implemented orders of 100 kN high temperature fatigue testing machine with accessories worth exceeding INR **100 Lakhs** during previous three financial years (01 April 2014 – 31 March 2017). Copies of the most recent purchase orders and certificates of successful implementation must be included. Copies of financial statements or evidence of turnover must be furnished.
7. The bidder should have documentary evidence of having supplied at least 1 No. of 100 kN high temperature fatigue testing machine with accessories to a Centrally Funded Technical Institution (e.g., IIT, NIT, IISc, IISER, etc.) in the recent past. The bidder must provide a certificate of satisfactory performance of the supplied equipment from the institute to which they have recently supplied. Contact details of the faculty-in-charge of the installed setup must also be provided.
8. Compliance sheet for the technical specification and OEM Brochure have to be attached along with the Technical bid. Vendor has to fill the compliance sheet and mention page number or reference number in OEM brochure. Unfilled / partially filled sheets lead to disqualification.
9. The bidder must provide detailed specification of each equipment/item. Model numbers, data sheets and brochures must be included for all equipment quoted, system and all accessories. Specifications corresponding to quoted model number must be available publicly via OEM's website for scrutiny. If not, bid can be disqualified on technical grounds.
10. Service and warranty for a minimum period of three years for the equipment must be provided. AMC for additional three years must be quoted separately.

3. Rolling Contact Fatigue Testing System with accessories

Who can participate in the bid?

Only those bidders fulfilling the following criteria should respond to the tender.

1. The bidder should be either an Original Equipment Manufacturer (OEM) of Rolling Contact Fatigue Testing System with accessories or should be an authorized representative (provide documentary proof) of an OEM.
2. The bidder should be a company registered under the Companies Act, 1956/2013 OR a Limited Liability Partnership /a registered partnership firm OR a sole-proprietorship entity. Appropriate Registration incorporation certificate must be submitted.
3. The bidder must have a registered office in Karnataka/Tamil Nadu/Telangana/Andhra Pradesh/Maharashtra or Kerala. Certificate of registration for the offices to be provided.
4. The bidder must also have a service center in Karnataka/Tamil Nadu/ Telangana/Andhra Pradesh or Kerala. Certificate of registration for the centers to be provided. Details about scope of service activities provided by the service centres must be provided. The contact details of the service engineers must be provided.
5. The bidder must be in existence in the business of supplying Rolling Contact Fatigue Testing System with accessories for a minimum period of 5 previous financial years (before or since 01 April 2012). Documentary evidences of experience must be provided.
6. The bidder should have implemented orders of Rolling Contact Fatigue Testing System with accessories or other equivalent material testing system worth exceeding INR **25 Lakhs** during previous three financial years (01 April 2014 – 31 March 2017). Copies of the most recent purchase orders and certificates of successful implementation must be included. Copies of financial statements or evidence of turnover must be furnished.
7. The bidder should have documentary evidence of having supplied at least 1 No. of Rolling Contact Fatigue Testing System with accessories to a Centrally Funded Technical Institution (e.g., IIT, NIT, IISc, IISER, etc.) in the recent past. The bidder must provide a certificate of satisfactory performance of the supplied equipment from the institute to which they have recently supplied. Contact details of the faculty-in-charge of the installed setup must also be provided.
8. Compliance sheet for the technical specification and OEM Brochure have to be attached along with the Technical bid. Vendor has to fill the compliance sheet and mention page number or reference number in OEM brochure. Unfilled / partially filled sheets lead to disqualification.
9. The bidder must provide detailed specification of each equipment/item. Model numbers, data sheets and brochures must be included for all equipment quoted, system and all accessories. Specifications corresponding to quoted model number must be available publicly via OEM's website for scrutiny. If not, bid can be disqualified on technical grounds.
10. Service and warranty for a minimum period of three years for the equipment must be provided. AMC for additional three years must be quoted separately.