

 <p>IIT PALAKKAD</p>	<p>भारतीय प्रौद्योगिकी संस्थान पालक्काड  <b>Indian Institute of Technology Palakkad</b>  अहलिआ 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>
---	--	---

Prof. Job Kurian  
Registrar i/c

Date : 23.11.2017

Open Tender No: IITPKD/CIF/JB/066/2017

Due Date: 14.12.2017 at 3.00 PM

**Cryogen-free Variable Temperature Superconducting Magnet System**

Dear Sir/Madam,

On behalf of the Indian Institute of Technology, Temporary campus, Palakkad, Quotations are invited for “**Cryogen-free Variable Temperature Superconducting Magnet System**”. The Specifications are given in the Annexure.

*Pre-bid meeting – The pre-bid meeting is scheduled to be held on 30.11.2017 at 11 A.M at Conference Room, Academic Block, IIT Palakkad.*

*Technical bid Opening: The Technical bid will be opened on 15.12.2017 at 11 AM 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 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 **14.12.2017 at 3.00 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 "**Cryogen-free Variable Temperature Superconducting Magnet System**" 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).** **Advance payment may be considered on submission of Bank Guarantee equal to the amount of advance payment.**
- 14) On-site Installation:** - The equipment or machinery has to be installed and commissioned by the successful bidder within 15 to 20 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 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**

**TENDER SPECIFICATIONS FOR THE PROCUREMENT OF CRYOGEN FREE VARIABLE  
TEMPERATURE SUPERCONDUCTING MAGNET SYSTEM  
INDIAN INSTITUTE OF TECHNOLOGY - PALAKKAD**

**Main Equipment:**

Low temperature measurement equipment with rotating probe containing a magnet, cryostat, pulse tube cooler and compressor and variable temperature sample space. All three need to be integrated. Magnet power supply gas circulating pumps and temperature controller included.

1. Pulse tube based cryo-free refrigerator system with two stages of cooling and a cooling power of at least 1W at 4.2 K. Specify the pulse tube model and make. The basic tool kit for installation of the pulse tube system should be provided free of cost.
2. Variable temperature insert (VTI) with appropriate heat shields and sample in vacuum option.
  - a. Temperature range: 1.6 K to 420 K (Maximum Temperature of VTI is limited to 300K when the magnet is at full field).
  - b. Sample space of at least 45 mm. Sample space should be separate from the cooling gas loop.
  - c. Sample in vacuum
  - d. Continuous controllable temp range: 1.6K to 420K, no sudden temperature jump across 4.2K
  - e. Temperature stability: better than  $\pm 50\text{mK}$  and preferably less than  $\pm 10\text{ mK}$  at both base temperature and room temperature
  - f. Motorized needle valve, with PID and associated computer control.
  - g. Calibrated 420K cernox Sensor fitted at sample.
  - h. Temperature Stability whilst running magnet : 100mK at both base temp and room temp
  - i. Sample in Vacuum, pressure  $< 1\text{E-}5$  Torr.
  - j. Overpressure protection
  - k. Scratch free internal Surfaces.
3. Magnet:
  - a. Central field :  $\pm 12\text{T}$  vertical field magnet with homogeneity better than 0.1% over 1 cm sphere.
  - b. Magnet should be compatible with the sample space mentioned above.
  - c. Appropriate bi-polar magnet power supply which allows continuous sweeping from -12T to +12 T and back.
  - d. Magnet Sweep Rate: Minimum Sweep Rate : 0.5 Oe/s or better  
Maximum Sweep Rate : 110 Oe/s
  - e. Relevant accessories including persistent switch and quench protection circuit must be included.
  - f. No blockage during loading and unloading, needs to be demonstrated.

- g. Electrically isolated from the VTI system.
4. Appropriate water-cooled helium compressor with full charge of high purity Helium gas, with at least 15m flexible SS lines. Power consumption of the compressor not to exceed 8kW at 50Hz. Electrical requirements and cooling water requirements for the compressor must be specified
  5. All helium lines will contain electrical isolators.
  6. Cool down for the VTI to base temperature without any load should be ~ 3 hours or less (Provide supporting data.)
  7. Maintenance interval for the compressor must be at least 30,000 hours and for the cold head must be at least 20,000 hours.
  8. Calibrated field independent temperature sensors mounted on the sample position and magnet plate for high precision temperature measurements. Additional temperature sensors on cryo-cooler 1<sup>st</sup> and 2<sup>nd</sup> stages, 1.5 K- (He-) pot, persistent switch and VTI.
  9. Heaters at the sample position and VTI.
  10. Rotating Probe:
    - a. A mechanical rotator probe with sample in Vacuum to rotate sample from in plane to out-of plane magnetic field. This should work for sample in vacuum and preferably be operated via computer control. A 44-pin LCC socket based sample holder to be attached at the sample end of the probe. In addition a 22 pin LCC socket with ESD protection should also be quoted. The system should allow the easy interchange of the sample holder between 44 pin and 22 pin sockets.
    - b. At least 22 twisted pairs of resistive wiring (Phosphorous Bronze) at the sample position and at the probe end the connections to be terminated with two 24 pin fischer connectors. On each fischer connector pins 1-22 will be used for wiring
    - c. The probe should be able to operate between the temperature range 1.6K – 420 K
    - d. Minimum resistance between wires >50 Giga Ohms
    - e. Minimum resistance between wires and ground >50 Giga Ohms
    - f. Heater and cernox sensor fitted near the sample position. Heater and cernox sensor should be mounted in a way such that they can be easily replaced.
    - g. Rotate adjust range 200 degree, positioning accuracy 0.5 degree or better
    - h. Monitor the angle of rotator
    - i. The axis of rotation: perpendicular to the field
    - j. No blockage during loading and unloading
    - k. Electrically isolated from the VTI system.
  11. Electrical feed through (Fischer connector) for heater and temperature sensor wiring.
  12. Two semi-rigid coax lines (UT85 SS-SS, frequency upto 18GHz with SMA connector on one end; left loose at the sample end.
  13. Temperature controller with at least 2 PID control loops, compatible with RTDs and diodes. Temperature controller in addition to the basic USB interface should have additional (1) one IEEE card for GPIB interface and (2) an additional heater card.
  14. The instrument should have Intuitive touch screen interfaces and remote software control allowing direct and remote control.

15. Additional blank port at the top of the probe, with access to sample space for additional wiring in future, if necessary.
16. Appropriate safety pressure release valve on the cryostat and the probe
17. Appropriate dry scroll pump for the VTI space including hoses, valves and fittings required for VTI operation to be supplied.
18. Provision to upgrade the system to lower base temperature of  $\sim 300\text{mK}$  or better  $< 25\text{ mK}$ .
19. Appropriate system software suite to control all aspects of the system operation and measurements including magnet control with flexibility to add modules by the user for customized measurements. The vendor should provide the Labview compatible drivers for all sub-systems including magnet control and temperature control power supplies. If the vendor has Labview interface for integrated control of magnet and temperature, it should be provided along with the system.
20. The vendor should specify clearly the power requirements including cables and electrical socket requirements, back-up power capacity required, water line for chiller and all other relevant information for smooth installation at site.

Optional Items:

The vendor should also provide separately the quote for the following optional items

1. Additional Heater wires and temperature sensors
2. At least 25m long twisted pair phosphor bronze resistive wire
3. Pumping station with turbo pump and rotary-vane backing pump with all necessary valves hoses, and fittings required.
4. Appropriate probe and related accessories to achieve 300mK or better base temperature.

Additional Requirements:

1. Warranty: 3 years onsite warranty for the complete instrument.
2. Training: Training must be provided by factory-trained engineers at free of cost at the site. Training will include basic knowledge about the installation of the equipment and operation of the system with accessories quoted.
3. Service Support:

The principal must also list down total number of other major product lines they are dealing with in India.

  - The vendor must provide the details of support engineers in south Indian region.



## 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 Cryogen-free variable temperature superconducting magnet system 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 Cryogen-free variable temperature superconducting magnet system 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 Cryogen-free variable temperature superconducting magnet system worth exceeding INR **50 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 Cryogen-free variable temperature superconducting magnet system 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.