

Tender Notification for the Procurement of Two Make in India air cooled 25 TR chiller systems (Last Date for Submission: Monday, November 15th, 2021)

Best quotations are invited for the procurement of two Make in India air cooled 25 TR chillers system with following technical specifications with following technical specifications in INR only (FOR-IISc Bangalore basis) and the quotation should come only from Indian Original Equipment Manufacturer (OEM) or their Indian authorized distributor only. Your quotation should mention the terms of delivery, delivery schedule, estimated delivery date, and payment terms. The tender should be submitted in two separate sealed envelopes: one containing the technical bid and the other containing the commercial bid, both of which should reach us, duly signed on or before 17:00 hours on 15th November 2021, Monday.

The bids should be addressed to:

The Convener,

Central X-Ray Facility
Department of Physics,
Physical Sciences Building, E0-16
Indian Institute of Science,
Bangalore – 560012, India
Kind attention: **Professor Jaydeep K Basu**
E-mail: basu@iisc.ac.in

The sealed bids should be sent to:

Professor Jaydeep K Basu

Department of Physics,
Physical Sciences Building, E0-16
Indian Institute of Science
Bangalore – 560 012. INDIA
Tel: 91 80 2293 3281 (O); 91 80 2293 2759 (L)Fax: 91 80 2360 2602
e-mail: basu@iisc.ac.in

Please enclose a compliance statement along with the technical bid.

Section 1: Bid Schedule

1.	Tender No	<i>IISc/SSCU/2021/25TRchiller01</i>
2.	Tender date	22 nd October, 2021
3.	Instrument	Two Air cooled 25 TR chiller system
4.	Tender type	i) Technical bid (part A) ii) Commercial bid (part B)
5.	Place of tender submission	The Convener, Central X-Ray Facility Indian Institute of Science (IISc) Bengaluru, India - 560012. Kind attention: Prof. Jaydeep K Basu
6.	Last date and time of tender submission	15 th November 2021, Monday, 17:00 hours
7.	For Further clarification	Professor Jaydeep K Basu Department of Physics, Physical Sciences Building, E0-16 Indian Institute of Science Bangalore – 560 012. INDIA Tel: 91 80 2293 3281 (O); 91 80 2293 2759 (L)Fax: 91 80 2360 2602 e-mail: basu@iisc.ac.in

Section 2 - Technical Specifications for two air cooled 25 TR chiller systems

Items	Specifications
Cooling Capacity	25 TR (75,000 Kcal/hr.)
Refrigeration Circuits	02 Nos
Refrigerant	R407c (Eco-Friendly) or equivalent
Ambient temperature	15 - 45°C
Operating Temperature	15 - 30 °C
Temperature stability	±2°C
Coolant media	Soft water
Internal circulation pump	250 LPM @ 2 Bar
Process pump	300 LPM @ 4-6 Bar
Compressor	Scroll/reciprocating reputed make
Condenser	Air cooled Aluminum fins Copper tube
Frame	CRCA frame with PU coating
Color	Standard
Input Power supply	415 V/3 PH/ 50 Hz ± 10%, AC
Control supply	230 V
Controller	PLC based controller
MOC internal piping	SS 304
End connection	1-1/4" Hose nipple
Exhaust Fans	Heavy duty axial flow
Evaporator	Brazed plate heat Ex-Changer Compact & copper brazed

Water Tank	Appropriate water tank (600 -750 liters) should be provided as per the requirement with nitrile foam insulation
Safety interlocks	HP, LP, WLL, SPP, OLR, AFT trip
Temperature and Flow control display	Digital

2.1 Technical requirement of chiller system

2.1.1 Refrigeration system:

- 2.1.1.1 Hermetically sealed Scroll/Reciprocating Compressor Danfoss/Panasonic or equivalent. (UL certified)
- 2.1.1.2 Air-cooled Condenser (UL certified). Internally grooved copper tubing, aluminum fins and suitable exhaust fan with low noise level (<75 dBa). Air flow direction should be Suction Horizontal and Discharge Vertical.
- 2.1.1.3 Evaporator – Compact and copper brazed Plate Heat Exchanger (UL certified).
- 2.1.1.4 Thermostatic Expansion Valve, dual pressure switch: L/P and H/P, liquid line indicator, repute pin type valve, digital antifreeze
- 2.1.1.5 Filter drier and other refrigeration accessories.
- 2.1.1.6 Hot gas by pass valve, solenoid valve and refrigerant pressure gauge
- 2.1.1.7 In-house copper tube with silver rod brazing, polynitrile insulation

2.1.2 Electrical and control system:

- 2.1.2.1 PLC based Temp Controller and digital temperature display
- 2.1.2.2 High and Low Pressure switch with UL certification
- 2.1.2.3 Anti-Freeze Thermostat (AFT) with UL certification
- 2.1.2.4 Single Phase Preventer (SPP) with UL certification
- 2.1.2.5 MCB, MPCB, Contactor & Main Switch with UL certification
- 2.1.2.6 Control Transformer with UL certification
- 2.1.2.7 Potential Free Contact for Fault signal
- 2.1.2.8 LED indicators with UL certification
- 2.1.2.9 Float Switch

2.1.3 Safety Interlocks:

- 2.1.3.1 High Pressure (HP) Trip

- 2.1.3.2 Low Pressure (LP) Trip
- 2.1.3.3 Anti-freeze Thermostat (AFT) Trip
- 2.1.3.4 Single Phase Preventer (SPP) Trip
- 2.1.3.5 Motor Overload Trip
- 2.1.3.6 Low and High Temperature Alarm
- 2.1.3.7 Dry-run protection
- 2.1.3.8 Potential free contact for machine interlock

2.1.4 Water system and plumbing requirement:

- 2.1.4.1 Stainless steel water pump of reputed make coupled with motor with low noise level for circulation of water in chiller system.
- 2.1.4.2 Only SS 304 piping, valves etc (suitably insulated wherever necessary) are permitted for plumbing work in chiller system for internal circulation.
- 2.1.4.3 Pressure Gauges, flow switch & flow meter should be mounted at suitable place.
- 2.1.4.4 The internal plumbing should include bye pass valve for adjusting the flow requirements.
- 2.1.4.5 SS 304 water reservoir with TIG welded joints, duly insulated to avoid thermal losses.
- 2.1.4.6 100 micrometer basket type water filter with SS flange end.
- 2.1.4.7 Drain port with control valve, top up port and over flow port.
- 2.1.4.8 Water Level indicator

2.1.5 Structural requirement:

- 2.1.5.1 Heavy duty, CRCA profile, pillar construction
- 2.1.5.2 CRCA panels with mesh for good ventilation
- 2.1.5.3 Heavy duty welded base frame
- 2.1.5.4 Treated and powder coated IP 55 protected cabinets
- 2.1.5.5 The system shall include insulated storage tank SS 304 600-750 liters capacity well connected by pipe line with chiller unit.

All components & materials shall be of reputed makes high efficiency, long life & high quality suitable for tough industrial environment. No sub-standard materials or components shall be accepted. Only standard catalogued components shall be used.

2.2 Additional requirement must be fulfilled

2.2.1 This chiller will be utilized for 7 (seven) XRD instruments simultaneously, here are the requirement details for each instrument.

Instruments	Power requirement	Temperature	Water flow	Pressure	Capacity of current chiller
Smart Apex	7.5 KW	18 to 20°C	10 to 12 L/min	60 to 70 psi	150 L
Kappa Apex	3.5 KW	20 to 22°C	4 to 6 L/min	60 to 70 psi	80 L
Thin Film XRD	4.8 KW	20 to 22°C	10 to 12 L/min	60 to 70 psi	60 L
Texture XRD	3 KW	20 to 22°C	4 to 6 L/min	60 to 70 psi	70 L
Powder XRD	3.5 KW	20 to 23°C	4 to 6 L/min	60 to 70 psi	80 L
Low Temp PXR	3.5 KW	20 to 22°C	4 to 6 L/min	60 to 70 psi	80 L
Nano star	7.5 KW	18 to 20°C	10 to 12 L/min	60 to 70 psi	150 L

All the above requirements should be strictly met.

2.2.2 To control the water flow and its temperature for each instrument, a separate digital water flow controller along with digital temperature controller should be provided nearby each instrument.

2.2.3 All the necessary water pipe (50 MM PPR) along with all necessary fittings, clamping, cold insulation etc should be provided.

2.2.4 Digital flow switch, pressure gauge and digital temperature controller should be provided.

2.3 Operation and maintenance manual:

Operation and maintenance manual should be submitted in soft as well as hard copies with the chiller. Bidder has to submit procedure for fault diagnosis or check list consisting of probable fault, probable reason for fault along with their solution. A Do's and Don'ts list shall also be submitted for trouble free operation.

2.4 List of documents to be submitted with offer

Following documents should be submitted by the supplier along with the offer

2.4.1 General arrangement drawing with cross section details of space requirement and relative positions of the components.

2.4.2 The proposed piping layout drawing.

2.4.3 Specification and make of important components like PHE, Pump, Pressure regulator, PID Controller, RTD Sensor, Flow meter, Level Controller, Flow switch, Pressure Transmitter, regulator Valve etc.

2.4.4 The electrical power requirement and weight details of the complete unit. The available power at site is 415 V \pm 10%, 50 Hz \pm 3%, 3 Phase.

2.4.5 Mandatory Compliance Table should be provided.

2.4.6 List of clients with full contact details to whom similar chillers have been supplied.

2.4.7 Authorization letter for sales & service from the OEM in case bidder is not the original manufacturer of the chiller.

2.5 Codes and standards:

Chiller system shall be designed to meet applicable codes like TEMA, ASME/ANSI B31.3 & 31.5 piping code, AHRI and ASHRAE. Chiller system's performance shall be certified in accordance with ARI standard 550/590 (1998) or equivalent standard.

2.6 Pre-dispatch Inspection & testing:

The supplier shall provide all the inspection and testing facility required for pre dispatch inspection. The tests shall be carried out at supplier works & also IISc site after installation and commissioning of chiller. Following approvals are necessary before manufacturing of chiller system:

2.6.1 Engineering drawing, P & I diagram, flow chart of control, electrical wiring diagrams and PLC inter locking schematic diagram of the chiller.

2.6.2 Technical data sheet of critical equipments with make and model

2.6.3 Design calculation report which should include thermal design, flow design etc.

Following tests shall be carried out before dispatching the chiller from supplier's premises

2.6.4 Full load test with dummy load for conformance to design capacity

2.6.5 Safety interlock and control checks to conformance the parameters of technical specification as per section 2.1 and 2.2.

2.6.6 All other critical equipment's internal inspection report with certification of standard.

2.6.7 Material test certificates of part components related to Quality Assurance.

Section 3- Terms and Conditions:

1. All documentations in the tender should be in English.
2. Tender should be submitted in two envelopes (two bid system).
 - a) Technical Bid (Part-A) – Technical bid consisting of all technical details and check list for conformance to technical specifications. The proposal should contain a compliance table with 4 columns in addition to the ones in the technical requirements table that has been included with this RFQ above. The compliance table should include all the items in the same order and format. The first column should describe your compliance in a “Yes” or “No” response. If “No” the second column should state, the extent of deviation. The “third” column should state the reasons for the deviation if any. The fourth column can be used to compare your tool with that of your competitors or provide details as requested in the technical requirements table below. (suppliers who include any indication of prices in the technical bid will be automatically disqualified).
 - b) Commercial Bid (Part-B) – Indicating item wise price for the items mentioned in the technical bid, as per the format of quotation provided in tender, and other commercial terms and conditions.
3. The technical bid and price bid should each be placed in separate sealed covers, superscripting on both the envelopes the tender no. and the due date. Both these sealed covers are to be placed in a bigger cover which should also be sealed and duly superscripted with the Tender No, Tender Description & Due Date.

The SEALED COVER superscripting tender number / due date & should reach the office of the Convener, Central X-Ray Facility, Indian Institute of Science, Bangalore – 560012, India, **Kind attention: Professor Jaydeep K Basu on or before due date mentioned in the tender notice.** In case due date happens to be holiday the tender will be accepted and opened on the next working day. If the quotation cover is not sealed, it will be rejected.

4. Notwithstanding anything specified in this tender document, IISc Bangalore, in its sole discretion, unconditionally and without having to assign any reason, 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 confirming to the tender terms.
5. Any statutory increase in the taxes and duties subsequent to bidder’s offer, if it takes place within the original contractual delivery date, will be borne by IISc, Bangalore subject to the claim being supported by documentary evidence. However, if any decrease takes place the advantage will have to be passed on to IISc, Bangalore. Any information furnished by the bidder found to be incorrect, either immediately or at a later date, would render the bidder liable to be debarred from tendering/taking up of work in IISc, Bangalore.
6. The bidder will provide the prerequisite installation requirement of the equipment along with the technical bid.

7. The vendor is responsible for the installation of the system at the institute.
8. The vendor must provide the certification of the "Make in India" components in the technical document.
9. The price quotation should include the cost of installation and training of potential users.
10. GST must be not more than 5% (Institute will provide you GST exemption certificate).
11. The system should be provided with at least three years of warranty, on all parts and labor, from the date of installation.
12. All items should be delivered FOR-IISc Bangalore basis in INR only and from domestic vendors only.
13. Quote should come only from Indian Original Equipment Manufacturer (OEM) or their Indian authorized distributor.
14. The vendor should have qualified technical service personnel for the equipment based in India and should assure a response time of <48 hours.
15. Vendor must provide a user list (with contact details including emails and phone numbers) of at least at least five identical instruments in JNCASR, IITs, IISERs, NITs with above mentioned specifications. Details of such systems should be provided.
16. The lead-time for the delivery of the equipment should not be more than 6 months from the date of receipt of our purchase order.
17. The indenter reserves the right to withhold placement of final order. The right to reject all or any of the quotations and to split up the requirements or relax any or all of the above conditions without assigning any reason is reserved.
18. Wherever requested data must be supplied along with technical compliance documents. Technical bids without supporting data will be deemed as technically non-compliant.
19. All guaranteed specifications may have to be demonstrated at the time of installation. Printed literature and published papers in support of all compliance with the prescribed specifications may be provided.
20. The vendor must provide a compliance statement in a tabular form concerning each technical specification in the tender document duly supported by the manufacturer's literature and published papers. Any other claim will not be accepted and may lead to rejection of the bid.
21. Technical evaluation by the institute may include a demonstration to verify functionalities and capabilities of the system quoted. The institute reserves the right to provide samples after opening the technical bids for verification of promised specifications. Any discrepancy between the promised specifications and measurements will be deemed as technical non-compliance.
- 22. The supplier must furnish for a trouble free operation of chiller system for a minimum 3-year warranty period from the date of installation at IISc site.** The warrantee should include the visit of engineer/technician not later than a week and shall include replacement & repair of faulty components.
23. The payment will be through FOR-IISc Bangalore in INR only.

24. 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 Bangalore, India.

Annexure 1:

Details of the Bidder: The bidder must provide the following mandatory information & attach supporting documents wherever mentioned:

Sr. No.	Type	Details
1.	Name of the Bidder	
2.	Nature of Bidder (Attach attested copy of Certificate of Incorporation/ Partnership Deed)	
3.	Registration No/ Trade License, (attach attested copy)	
4.	Registered Office Address	
5.	Address for communication	
6.	Contact person- Name and Designation	
7.	Telephone No	
8.	Email ID	
9.	Website	
10.	PAN No. (attach copy)	
11.	GST No. (attach copy)	

Signature of the Bidder

Name:
Designation, Seal

Date:

Annexure 2:

Declaration regarding experience

To,

The Convener,

Central X-Ray Facility

Department of Physics,

Physical Sciences Building, E0-16

Indian Institute of Science,

Bangalore – 560012, India

Kind attention: **Professor Jaydeep K Basu**

Ref: Tender No: XXXXXXXXXX

Dated: XXXXX

Supply and installation of an air cooled 25 TR chiller system or better

Sir,

I have carefully gone through the Terms & Conditions contained in the above referred tender. I hereby declare that my company / firm has ---- years of experience in supplying and installing air cooled 25 TR chiller or better.

(Signature of the Bidder)

Printed Name Designation, Seal

Date:

Annexure 3:

Declaration of track record

To,

The Convener,

Central X-Ray Facility

Department of Physics,

Physical Sciences Building, E0-16

Indian Institute of Science,

Bangalore – 560012, India

Kind attention: **Professor Jaydeep K Basu**

Ref: Tender No: XXXXXXXXXX

Dated: XXXXX

Supply and installation of air cooled 25 TR chiller system or better

Sir,

I have carefully gone through the Terms & Conditions contained in the above referred tender.

I hereby declare that my company / firm is not currently debarred / blacklisted by any Government / Semi-Government organizations / institutions in India or abroad. I further certify that I am competent officer in my company / firm to make this declaration.

OR

I declare the following:

Sr. No.	Country in which the company is debarred/ blacklisted / having pending case	Blacklisted / debarred by Government / Semi Government Organizations or Institutions/ having pending case	Reason	Time Period

(Note: In case the company / firm was blacklisted previously, please provide the details regarding period for which the company / firm was blacklisted and the reason/s for the same).

(Signature of the Bidder)

Printed Name Designation, Seal

Date:

Annexure 4:

Declaration of acceptance of terms and conditions

To,

The Convener,

Central X-Ray Facility

Department of Physics,

Physical Sciences Building, E0-16

Indian Institute of Science,

Bangalore – 560012, India

Kind attention: **Professor Jaydeep K Basu**

Ref: Tender No: XXXXXXXXXX

Dated: XXXXX

Supply and installation of air cooled 25 TR chiller system or better

Sir,

I have carefully gone through the Terms & Conditions contained in the above referred tender document. I declare that all the provisions of this tender document are acceptable to my company. I further certify that I am an authorized signatory of my company and am, therefore, competent to make this declaration.

Yours faithfully

(Signature of the Bidder)

Name:

Designation, Seal:

Date:

Section 5: Checklist

The following items must be checked before the bid is submitted.

1. Sealed Envelope "A": Technical Bid
Technical bid (each page signed by the authorized signatory and sealed) with the below annexures:
 - a. Annexure 1: Bidders details
 - b. Annexure 2: Declaration regarding experience
 - c. Annexure 3: Declaration of track record
 - d. Annexure 4: Declaration of acceptance of terms and conditions
 - e. Annexure 5: Details of item quoted.

2. Sealed Envelope "B": Commercial Bid

Your quotation must be submitted in two separate sealed envelopes: Technical Bid (Envelope A) and Commercial Bid (Envelope B) super scribing on both the envelopes with Tender No. and due date and both in sealed covers and put in a bigger cover which should also be sealed and duly super scribed with Tender No., Tender description & Due Date.