



SSCU/IISc/SMB/2024/Tube furnaces/02G

Global Tender Notification for the procurement and Installation of high temperature split tube furnaces

Quotations are invited for the procurement and installation of high temperature split tube furnaces- [(1) Single Zone (2) Three zone gradient] for CIP/CIF IISc Bangalore in USD/EUR only (GTE Approval No IISC-GTE-2024-346). 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 23rd May 2024, Wednesday.

The Solid State and Structural Chemistry Unit (SSCU) was founded in November 1976 by Bharat Ratna Professor C. N. R. Rao. Since its beginning, research in SSCU has been highly interdisciplinary, lying at the intersection of Chemistry, Physics, Biology and Materials Science and Engineering. The culture of excellence that is fostered in SSCU is reflected in the fact that SSCU leads IISc in terms of research quality as well as productivity. Any equipment in SSCU receives significant exposure to the scientific community at IISc and beyond. The vendors are requested to factor in the value of this exposure into their quotes. For more Info <https://sscu.iisc.ac.in/>

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The bids should be addressed to:

The Chair,

Solid State and Structural Chemistry Unit (SSCU)

Indian Institute of Science (IISc)

Bengaluru, India - 560012.

Kind attention: **Dr. Sreedhara M.B**

email: sreedhara@iisc.ac.in, chair.sscu@iisc.ac.in

The sealed bids should be sent to:

Dr. Sreedhara M.B

Solid State and Structural Chemistry Unit

Indian Institute of Science (IISc)

Bengaluru, India - 560012.

email: sreedhara@iisc.ac.in Ph: +91-80 2293 3307

Please enclose a compliance statement duly signed along with the technical bid.

Section-1: Bid Schedule

1	Tender Number	SSCU/IISc/SMB/2024/tube furnaces/02G
2	Tender Date	2 nd May 2024
3	Item Description	High temperature split tube furnaces (1) Single Zone (2) Three zone gradient
4	Tender Type	Two bid system: (a) Technical Bid (Part A) (b) Commercial Bid (Part B)
5	Place of tender submission	The Chair Solid State and Structural Chemistry Unit (SSCU), Indian Institute of Science, Bengaluru 560012, India Attn: Dr. Sreedhara MB
6	Last Date and Time for tender submission	23 rd May 2024, Wednesday, 5:00 PM
7	For further Clarifications	Dr. Sreedhara MB Assistant Professor Solid State and Structural Chemistry Unit Indian Institute of Science (IISc), Bengaluru, India - 560012. Email: sreedhara@iisc.ac.in , Ph: +91-80 2293 3307

Section 2 - Eligibility Criteria

Pre-qualification criteria:

1. Quote should come only from Indian Original Equipment Manufacturer (OEM) or their Indian authorized distributor. The quotations should be on CIP/CIF-IISc Bangalore basis in USD/EUR only.
2. The Bidder's firm should have existence for a minimum of 5 years (Enclose Company Registration Certificate)
3. The Bidder must not be blacklisted/banned or have a record of any service dispute with any organization in India or elsewhere. A declaration of this effect must be given as per Annexure 2.
4. The bidder should sign and submit the declaration of Acceptance of Terms and Conditions as per Annexure 2.

Section 3 - Terms and Conditions

- 1) All documentations in the tender should be in English. Quote can be submitted by any global vendor. The quote should be all inclusive of packaging, transport, installation, and training.
- 2) Tender should be submitted in two envelopes (two bid system).
 - (a) The equipment should meet (or exceed) the technical specifications provided in the 'Technical Specifications' **section 4**. Any additional items that are required beyond the list for the successful performance of the quoted equipment should be mentioned and provided.

- (b) **Technical Bid (Part-A)** – Technical bid consisting of all technical details and check list for technical specifications. The technical proposal should contain a technical compliance table for all essential components and optional components.
- (c) The compliance table should have 5 columns.
- i. The first column must list the technical requirements, in the order that they are given in the Technical specifications (section 4).
 - ii. The second column should provide specifications of the instrument against the requirement. Please provide quantitative responses wherever possible.
 - iii. The third column should describe your compliance with a “YES” or “NO” only. Ensure that the entries in column 2 and column 3 are consistent.
 - iv. The fourth column should state the reasons/explanations/context for deviations.
 - v. The fifth column can contain additional remarks from the Original Equipment Manufacturer (OEM) or from their distributors. You can use this opportunity to highlight technical features, qualify response of previous columns, or provide additional details, compare your solution with that of your competitors or provide details as requested in the technical requirements table below.
- (d) **Commercial Bid (Part-B)** – Indicating prices for all the items mentioned in the technical bid, as per the format of quotation provided in tender, and other commercial terms and conditions.
- (e) The price should be quoted separately for the Essential components and separately for the Optional components. Itemised price quote for each individual component is preferred.
- 3) The technical bid and price bid should be placed in separate sealed covers, superscripting on both the envelopes the Tender number 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 number, Tender Description & Due Date.
- 4) The SEALED COVER superscripting tender number/due date should reach SSCU Office, Indian Institute of Science, Bangalore 560012, India, 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.
- 5) All queries are to be addressed to the person identified in ‘Section 1’ Bid Schedule’ of the tender notice.
- 6) The technical proposal must include references of at least 5 previous installations done in India within last 5 years of similar equipment from the equipment manufacturer. Please provide the names and contact addresses of the three independent referees, so that the committee can contact them independently to get reference.
- 7) The Institute reserves the right to accept or reject any bid and to annul the bidding process and reject all bids at any time prior to the award of contract, without there by incurring any liability to the affected bidder or bidders or any obligation to inform the affected bidder or bidders.

- 8) Cancellation: 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 conforming to the tender terms.
- 9) Validity: The offer shall be valid 90 days from the date of opening of the commercial bid.
- 10) Evaluation of offer:
- (a) The technical bid (Part A) will be opened first and evaluated.
 - (b) Bidders meeting the required eligibility criteria as stated in Section 2 of this document shall only be considered for Commercial Bid (Part B) opening. Further, agencies not furnishing the documentary evidence as required will not be considered.
 - (c) Pre-qualification of the bidders shall not imply final acceptance of the Commercial Bid.
The agency may be rejected at any point during technical evaluation or during commercial evaluation. The decision regarding acceptance and/or rejection of any offer in part or full shall be the sole discretion of IISc Bangalore, and decision in this regard shall be binding on the bidders.
 - (d) The award of contract will be subject to acceptance of the terms and conditions stated in this tender.
 - (e) Any offer which deviates from the vital conditions (as illustrated below) of the tender is liable to be rejected:
 - i. Non-submission of complete offers.
 - ii. Receipt of bids after due date and time and or by email / fax (unless specified).
 - iii. Receipt of bids in open conditions.
 - iv. Technical compliance not backed by needed documentation or data sheet.**
 - (f) In case any BIDDER is silent on any clauses mentioned in these tender documents, IISc Bangalore shall construe that the BIDDER has accepted the clauses as of the tender and no further claim will be entertained.
 - (g) No revision of the terms and conditions quoted in the offer will be entertained after the last date and time fixed for receipt of tenders.
 - (h) Lowest bid will be calculated based on the total price of all items tendered for the equipment specified herein along with any required accessories, installation, and warranty specified herein.
 - i. The institute may, at its discretion, decide to purchase only the Essential components in the Technical Specifications. In this case, the total price of Essential components will be considered.
 - ii. The institute may, at its discretion, decide to purchase the Essential Components and some or all the Optional Components in the Technical Specifications. In this case, the total price of Essential components and the selected Optional components will be considered.
 - (i) The BIDDER submitting the lowest bid may be called for further negotiations.
- 11) **Warranty:** The complete system is to be under **warranty period of minimum 3 years** including from the date of handing over. If the instrument is found to be defective, it must be replaced or rectified at the cost of the bidder within 30 days from the date of receipt of written communications from IISc, Bangalore. In case repair/replacement is required during the first

three years, the duration for which the equipment is not operational should be added to the warranty period.

- 12) The tender document should also indicate what kind of service/maintenance is required for the system. Also mention that whether the service must be carried out by a company engineer or it can be carried by trained service personnel within India.
- 13) The vendor must quote for a non-comprehensive AMC price beyond the 3-year warranty, with a price lock in for 3 years beyond the standard 3-year warranty period, 2/3 services per year should be included in the AMC. The Annual Maintenance Contract should be clearly mentioned after the warranty period.
- 14) Operation and service manual in English (electronic and hard copy) with complete diagram and PCB layout for all equipment should be provided with the instrument.
- 15) Pre-installation site preparation requirements to be indicated and specified along with the bid.
- 16) Bid should include all other essential auxiliary equipment and spares for its operation, even which are not explicitly specified above (please provide list with details). All sample handling kits/consumables should also be provided.
- 17) The vendor should have qualified technical service personnel for the equipment based in India and should assure a response time of <48 hours.
- 18) The deadline for the delivery of the equipment should not be more than 4 months from the date of receipt of our purchase order.
- 19) Wherever requested data must be supplied along with technical compliance documents. Technical bids without supporting data will be deemed technically non-compliant.
- 20) All guaranteed specifications may have to be demonstrated at the time of installation. Any necessary standard samples should be provided.
- 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) Purchase order:
 - (a) The order will be placed on the bidder whose bid is accepted by IISc after negotiations and based on the terms & conditions mentioned in the tender document.
 - (b) If the quality of the product and service provided is not found satisfactory, IISc, Bangalore reserves the right to cancel or amend the contract.
- 23) Delivery, installation, and training: The bidder shall provide the lead time to delivery, installation and made functional at IISc, Bangalore from the date of receipt of purchase order. The supply of the items will be considered as effected only on satisfactory installation and inspection of the system and inspection of all the items and features/capabilities tested by the IISc, Bangalore. After successful installation and inspection, the date of taking over of entire system by the IISc, Bangalore shall be taken as the start of the warranty period. The bidder should also arrange for technical training for the local facility technologists and users.
- 24) Payment terms: 100% of the payments will be released after completion delivery and satisfactory installation subject to TDS as per rules. AMC cost (if ordered), after completion of warranty

period, will be released half-yearly at the end of each six months subject to satisfactory services.
Price basis must be on CIP/CIF-IISc Bangalore basis only.

25) The quote should also include additional spares sufficient for 3 years.

26) The GST should be quoted strictly as per prevailing government norms with respect to all the items mentioned in your quote.

27) General:

(a) All amendments, time extension, clarifications etc., within the period of submission of the tender will be communicated electronically. No extension of the bid due date/time shall be considered on account of delay in receipt of any document(s) by mail.

(b) The bidder may furnish any additional information, which is necessary to establish capabilities to successfully complete the envisaged work. It is, however, advised not to furnish superfluous information.

(c) The bidder may visit the installation site before submission of tender, with prior intimation.

(d) Any information furnished by the bidder found to be incorrect, either immediately or at later date, would render the bidder liable to be debarred from tendering/taking up of work in IISc, Bangalore.

Section-4: Technical requirements:

Please note that the requirements listed below are only guidelines. Vendors are asked to quote equipment that meets the criteria and list deviations if any. Deviations are NOT an automatic reason for disqualification. They will be discussed by a technical committee prior to making an informed decision.

Technical Specifications

1. Split Tube Furnace (Single Zone, Temperature 1200/1300 °C)

1.	Furnace configuration and design	<p>Bench top, compact, split type, horizontal tube furnace.</p> <p>The furnace body and the controller box should be separable in configuration, and it should include a 2-metre cable (including plug and socket) between the furnace body and control box. Vertical work tube support package and its configuration can be quoted as optional.</p> <p>Furnace body should be split into two halves and hinged at the rear: pneumatic dampening struts at either end providing smooth opening action.</p> <p>Enables the ability to open the furnace makes it easier for operators to exchange work tubes with different diameters, up to 60 mm outer diameter or insert vessels, such as reactors, with end flanges that would make them difficult to insert into a non-split furnace.</p> <p>Split tube furnace should be designed with flexibility for usage of accessory work tubes and the use of tube adapters that allow a single furnace to accommodate a variety of tube diameters, while the work tubes themselves can easily be exchanged to meet the different physical or chemical requirements of a process.</p> <p>Support with documents</p>
2	Furnace case	Furnace case design to maintain lower temperatures on external surface as per BSEN 61010/equivalent standards.
3	Temperature Ramp rate & Cooling times	<p>Maximum operating temperature: 1200/1300°C.</p> <p>T-Max continuous operation should be at least: 1100 °C.</p> <p>Min Ramp rate 0.5-1°C/min and Max Ramp rate 5-10°C/min with gradual cooling down</p> <p>Provide technical data sheets</p>
4	Heating Elements	Heating elements positioned in high quality thermal insulation for fast heat up and cool down times and excellent temperature uniformity.
6.	Thermocouple	Type K / N equivalent thermocouple for precise temperature control.

7.	Heated length & Uniform Heated Length	Maximum 500 mm & Uniform Heated Length minimum: 150 mm. Provide technical data sheets
8.	Heating zones	ONE
9.	Insulation	High quality, thicker, lower energy consumption, vacuum formed insulation for fast heat up times, lower case temperature, excellent temperature uniformity and short cool down times.
10	Temperature Controller	Programmable temperature controller preferably Eurotherm to control two relays including the below standard specifications. <ul style="list-style-type: none"> • 1 Program saved in memory. • User levels • Minimum 20 segments per unique program, which can be set as ramp, step or dwell. • Auto tune • Ethernet communication (optional) • Certified by Cybersecurity robustness communication.
11	Control module	Temperature control module with minimum 2 meters length cable for connecting the furnace along with plug and socket to be included in the scope of supply.
12.	Furnace External Dimensions & Weight	Horizontal furnace body external dimensions should be maximum H x W x D in mm: 580 x 670 x 500(Closed) & 800 x 670 x 550 (Open) Control Box external dimensions should be maximum H x W x D in mm: 250 x 630 x 500 Weight: ≤ 40 Kg. Provide technical data sheets
13.	Power consumption/ requirement	≤ 3500 W, Single phase 230 V, 50 Hz.
14.	Required Protection	Overheat and surge current protection for furnace safety
15.	Documents to be submitted along with offer.	The following documents need to be submitted along with offer by all the bidders to meet the qualifying criteria of tender. ISO Certificate CE Certificate with 3 directives as: Low Voltage Directive 2014/35/EU EMC Directive 2014/30/EU RoHS Directive 2011/65/EU including CDD (EU)2015/863/ equivalent. Temperature Uniformity Graphs @ temperatures: 600°C, 700°C, 800°C,900°C,1000°C and 1100°C. Provide technical data sheets

2. Gradient Split Tube Furnace (Three Zone, Temperature 1200/1300 °C)

1.	Furnace design and configuration	<p>Flexible design to use a variety of tube diameters with the use of tube adapters. Specifically designed to provide a temperature gradient along the length of the three heated zones.</p> <p>Vertical work tube support package and its configuration can be quoted as optional.</p> <p>The furnace body and the controller box should be separable in configuration, and it should include a 2-metre cable (including plug and socket) between the furnace body and control box.</p> <p>Support with documents</p>
2.	Temperature	<p>Maximum Temperature:1200/1300 °C.</p> <p>T-Max continuous operating temperature should be at least :1100 °C.</p> <p>Provide technical data sheets</p>
3.	Heating Elements	<p>High quality wire heating elements with elements in high quality vacuum formed insulation with excellent and unsurpassed temperature uniformity along the entire heated length. Fast heat-up and cool-down times.</p>
4.	Thermocouple	Type K / N or equivalent
5.	Insulation	<p>High quality thermal insulation</p> <p>Provide technical data sheets</p>
6.	Number of heated zones	THREE independently operated heated zones with three independent controllers provide gradient heated zones.
7.	Heated zones and unheated zones	<p>Heated zones: 3.</p> <p>Length of each heated zone should be minimum 130 mm.</p> <p>Unheated zone barriers: 2.</p> <p>Length of each unheated zone barriers should be maximum 80 mm</p> <p>Provide technical data sheets</p>
8.	Furnace type and dimensions	<p>Furnace type: Compact, vertical, and split type. Furnace body must be split into two halves and hinged at the rear; pneumatic dampening struts at either end provide a smooth opening action.</p> <p>Furnace body dimensions should be maximum.</p> <p>H x W x D in mm 650 x 820 x 500.</p> <p>Control module dimensions should be maximum.</p> <p>H x W x D in mm 250 x 800 x 500.</p> <p>Weight of the furnace: ≤ 60 kg</p> <p>Provide technical data sheets</p>
9.	Temperature controllers	<p>Programmable temperature controllers to be fitted in three heated zones - 3 Nos. One programmable temperature controller and one thermocouple to be fitted in each heated zone.</p> <p>Number of programs: min .1 / multiple</p> <p>Number of segments per program should be minimum 20.</p>

		Relay operated options:2 (example: Solenoid valve, cooling fan, door lock, etc.) Auto tune. User Interface with Screen size (inch) 1.6", Interface 4 Buttons, Screen Resolution 4 digits + 16 segment scrolling text.
		User levels, Program names displayed Program number with choice of languages 5. Communications: Ethernet communication (optional) Certified for cybersecurity Communication robustness.
10.	Temperature Gradients	Zone 1: 1100 °C, Zone 2: 950 °C, Zone 3: 800 °C. Zone 1: 1100 °C, Zone 2: OFF, Zone 3: 400 °C. Above temperature gradients are to be achieved in 3 zone gradient tube furnace. Document confirming the above data is to be produced. Graphical documentation confirming above data to be produced along with technical literature. Graphical documentation showing gradients and work tube uniformity data at below temperatures need to be produced along with technical literature. <ul style="list-style-type: none"> • 100°C, 150°C, 200°C • 100°C, 200°C, 300°C • 100°C, 250°C, 400°C • 0°C, 500°C, 500°C • 500°C, 500°C, 1000°C • 1000°C, 1000°C, 1000°C • 1000°C, 500°C, 500°C • 1000°C, 500°C, 0°C • 500°C, 500°C, 0°C <p>Provide technical data sheets</p>
11.	Power Supply & Maximum power (W)	230 V, 50 Hz, Single Phase & Power: ≤ 2500 W
12.	Required Protection	Overheat and surge current protection for furnace safety
13.	Certificates	Vendor to submit documentary evidence confirming and attaching manufacturer's ISO certificate and Declaration on CE Conformity with the below directives: <ul style="list-style-type: none"> • Low Voltage Directive 2014/35/EU • EMC Directive 2014/30/EU • RoHS Directive 2011/65/EU including CDD (EU) 2015/863/Equivalent

Acceptance

- The institute reserves the right to accept or reject any bid, or to annul the bidding process and reject all bids, at any time prior to the award of the contract without thereby incurring any liability of the affected bidder or bidders.
- Previous installations can be used by the committee to disqualify vendors with a poor track record of service, build quality, system performance or poor availability of spares.
- IISc will expect acceptance tests, post installation. These can be recorded in the presence of representatives of the OEM. Inability to pass these tests will be counted as a technical failure and breach of contract.

Annexure 1

Details of the Bidder

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

Sl. 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:

Declarations

To,
The Chair,
Solid State and Structural Chemistry Unit,
Indian Institute of Science,
Bangalore – 560012, India

Ref: Tender No: XXXXXXXXX

Dated: XXXXX

Sub: Supply and installation of high temperature split tube - [(1) Single Zone (2) Three zone gradient] furnaces

Sir,

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

I hereby declare that my company / firm has — years of experience in supplying and installing Furnaces.

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'm competent officer in my company/firm to make this declaration.

The details of supply and installation of three similar equipment in India within last 5 years, along with the contact person in each case, are as follows.

1.

2.

3.

Signature of the Bidder

Name

Designation, Seal Date:

Annexure 3: Details of items quoted.

1. Company Name
2. Product Name
3. Part/Catalogue number
4. Product description/main features
5. Detailed technical specifications.
6. Remarks

Instructions to bidders:

1. Bidder should provide technical specifications of the quoted product/s in detail.
2. Bidder should attach product brochures along with technical bid.
3. Bidders should clearly indicate compliance or non-compliance of the technical specifications provided in the tender document.

Section 5: Commercial Bid

The commercial bid should be furnished with all requirements of the tender with supporting documents as mentioned under:

Sl.No	Description	Cat. Number	Quantity	Unit Price	Sub total
1	Essential items noted in the technical specification				
1a	...(details of the essential items)				
1b					
2	Optional items noted in the technical specification				
2b				
3	Accessories for operation and installation				
4	All Consumables, spares and software to be supplied locally				
5	Warranty (3 years)				

Any additional items

Sl.No	Description	Cat. Number	Quantity	Unit Price	Sub total

Section 6 – Checklist

(this should be enclosed with technical bid- PART A)

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: Declarations
- e. Annexure 3: 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.