

# INTERDISCIPLINARY CENTRE FOR ENERGY RESEARCH

**Indian Institute of Science (IISc), Bangalore, INDIA**

## **Global Tender Notification for Diffusion Bonded Printed Circuit Heat Exchanger (PCHEs)**

**GTE/ICER/01/2025-26**

**Dated: 30.04.2025**

This is a **Request for Quote (RFQ)** for the **Diffusion Bonded Printed Circuit Heat Exchanger (PCHEs)** for the Interdisciplinary Centre for Energy Research at the Indian Institute of Science (IISc), Bangalore. 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 **22<sup>nd</sup> May 2025 on or before 1700 hrs.** The bids should be addressed to:

The Chair,  
Interdisciplinary Center for Energy Research (ICER)  
Indian Institute of Science  
Bangalore 560012, India.  
GSTN: 29AAAT11501J2ZV  
Kind attention: Prof. Pramod Kumar  
Email: [pramod@iisc.ac.in](mailto:pramod@iisc.ac.in)

Direct all questions concerning the acquisition to **Prof. Pramod Kumar** at:  
[pramod@iisc.ac.in](mailto:pramod@iisc.ac.in)

### **General Terms and Conditions:**

1. The bid should be submitted in a two-cover system, i.e., technical bid and commercial bid separately in sealed covers. The technical bid should contain all commercial terms and conditions, except the price.
2. The technical bid must contain a point-by-point technical compliance document. The technical proposal should contain a compliance table that should describe your compliance with a "√" in comply or non-comply column as response against each of the items in the table listed in this RFQ. If "√" in the "No-Comply" column should state, the extent of deviation in the column mentioned "Deviation". The last column should state the reason for the deviation, if any. The last column can be used to compare your product with that of your competitors or provide details as requested in the technical requirement table below.
3. In the commercial bid, the price should be inclusive of all discounts.
4. The lead time for the delivery of the items should not be more than 16 weeks from the date of receipt of our purchase order. It should be clearly mentioned in the technical and commercial bids.
5. All the quotations must be valid for at least 120 days at the time of submission.
6. List of customers and references: It is preferable for the Bidder should have supplied

similar equipment in centrally Funded Technical Institutes (IITs, IISC, IISER, NIT). Please provide the details and contact information.

7. The Bidder must not be blacklisted/banned/suspended or have a record of any service-related dispute with any organization in India or elsewhere. A declaration to this effect should be provided.
8. Items in addition to those listed in the technical table that you would like to bring to the attention of the committee, such as data sheets, technical plots etc. can be listed at the end of the compliance table.
9. Vendors are encouraged to highlight the advantage of their product over comparable products from the competitors.
10. If needed, a meeting for any technical clarifications can be scheduled with the undersigned by sending an email.
11. **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 contract without thereby incurring any liability of the affected bidder or bidders.**
12. Warranty terms and additional warranty options is a must for all the components. Please specify the service plan like whether the local distributor will address the issue or the parent company.
13. Terms and conditions for the annual maintenance contract beyond the warranty period should be mentioned.
14. After the award of purchase order, the vendor must provide an Order Acknowledgement within 30 days from the receipt of the Purchase Order.
15. Please quote the price of each line item, separately. The institute may at its sole discretion decide to order only some items or all the items provided by the bidder.

## 1) Technical Requirements:

Please note that the requirements listed below are only guidelines. It does not disbar bids that do not meet the criteria listed. Vendors are requested to quote for equipment that meet the criteria to the best extent possible and list deviations. Deviations are NOT an automatic reason for disqualification. They will be discussed by the technical committee prior to making an informed decision.

Sr. no	Specification	Values
<b>A</b>	<b>Multi-Stream PCHE (MOC: 316L) – Qty-1 No</b>	
<b>1.1</b>	<b><i>Heater side</i></b>	
1.1a	Hot fluid	Thermic Oil/ Hytherm 600
1.1b	Cold fluid	Supercritical CO2
1.1c	Mass flow (Hot fluid)	180 l/min
1.1d	Mass flow (Cold fluid)	45-63 kg/min
1.1e	Inlet Temperature (Hot fluid)	210°C
1.1f	Outlet Temperature (Hot fluid)	180°C
1.1g	Inlet Temperature (Cold fluid)	140°C
1.1h	Outlet Temperature (Cold fluid)	200°C
1.1i	Inlet Pressure (Hot fluid)	4-10 bar
1.1j	Inlet Pressure (Cold fluid)	135-210 bar
1.1k	Pressure drop (Hot fluid)	<100 kPa
1.1l	Pressure drop (Cold fluid)	<100 kPa
1.1m	End Connection	Suitable size SS316 Grayloc Coupling
<b>B</b>	<b>Gas Cooler -- Qty-1 No</b>	
1.2a	Hot fluid	Supercritical CO2
1.2b	Cold fluid	Water (RO)
1.2c	Mass flow (Hot fluid)	45-63 kg/min
1.2d	Mass flow (Cold fluid)	3-6 m <sup>3</sup> /hr
1.2e	Inlet Temperature (Hot fluid)	110°C
1.2f	Outlet Temperature (Hot fluid)	45°C
1.2g	Inlet Temperature (Cold fluid)	35°C
1.2h	Outlet Temperature (Cold fluid)	55°C
1.2i	Inlet Pressure (Hot fluid)	80-210 bar
1.2j	Inlet Pressure (Cold fluid)	4-10 bar
1.2k	Pressure drop (Hot fluid)	<100 kPa
1.2l	Pressure drop (Cold fluid)	<100 kPa
1.2m	End Connection	Suitable size SS316 Grayloc Coupling
<b>C</b>	<b>Recuperator – Qty-1 No</b>	
1.3a	Hot fluid	Supercritical CO2
1.3b	Cold fluid	Supercritical CO2
1.3c	Mass flow (Hot fluid)	45-63 kg/min
1.3d	Mass flow (Cold fluid)	45-63 kg/min
1.3e	Inlet Temperature (Hot fluid)	170°C
1.3f	Outlet Temperature (Hot fluid)	110°C

1.3g	Inlet Temperature (Cold fluid)	100°C
1.3h	Outlet Temperature (Cold fluid)	140°C
1.3i	Inlet Pressure (Hot fluid)	80-210 bar
1.3j	Inlet Pressure (Cold fluid)	135-210 bar
1.3k	Pressure drop (Hot fluid)	<100 kPa
1.3l	Pressure drop (Cold fluid)	<100 kPa
1.3m	End Connection	Suitable size SS316 Grayloc Coupling
<b>D</b>	<b>Hot Oil Heat Exchanger PCHE (MOC: 316L) – Qty 1 No</b>	
2a	Hot fluid	Thermic Oil/ Hytherm 600
2b	Cold fluid	Supercritical CO2
2c	Mass flow (Hot fluid)	180 l/min
2d	Mass flow (Cold fluid)	45-63 kg/min
2e	Inlet Temperature (Hot fluid)	210°C
2f	Outlet Temperature (Hot fluid)	180°C
2g	Inlet Temperature (Cold fluid)	140°C
2h	Outlet Temperature (Cold fluid)	200°C
2i	Inlet Pressure (Hot fluid)	4-10 bar
2j	Inlet Pressure (Cold fluid)	135-210 bar
2k	Pressure drop (Hot fluid)	<100 kPa
2l	Pressure drop (Cold fluid)	<100 kPa
2m	End Connection	Suitable size SS316 Grayloc Coupling

## 2) Eligibility Criteria

Prequalification criteria:

1. Only the Original Equipment Manufacturer or their authorized representatives across the globe shall participate in the bid.
2. The order will be placed only on the bidder who participated in the bid.
3. The Bidder should have qualified technical service personnel for the instrument(s) based in India.
4. The Bidder's firm should have existence for a minimum of 5 years. The bidder should enclose the company registration certificate.
5. The bidder should sign and submit the declaration for Acceptance of Terms and Conditions as per Annexure VI.
6. The Bidder must not be blacklisted/banned/suspended or have a record of any service-related dispute with any organization in India or elsewhere. A declaration to this effect has to be given as per Annexure V.

### **3) Pre-Bid requirement**

- a) All interested suppliers who meet the technical specifications are mandated to provide a satisfactory demonstration of the product along with necessary accessories at ICER, IISc, Bangalore, to understand the suitability of the product for specific application.
- b) Depending on the demonstration for the intended application, bidders must include the required accessories, probes and software as needed.

### **4) Vendors scope of supply for the above Diffusion Bonded Printed Circuit Heat Exchanger:**

- a) Pre-dispatch inspection and testing report.
- b) Installing commissioning and demonstration of the complete system must be done at IISc, Bengaluru before supply
- c) Training on operation and troubleshooting of the product must be provided at IISc, Bengaluru

### **5) Mandatory non-technical requirements:**

- a) The bidders must enclose a client list, contact details, relevant brochures and a compliance certificate (Annexure I) with the tender.
- b) The bidders should be well-established firm preferably leaders in the application stated above and must have a proven track record.
- c) Authorization from the OEM/ Principals as in Annexure II
- d) The order should be completed within 12-16 weeks from the date of release of the Purchase Order.

### **6) Optional requirements**

- a. Extended Warranty: 2 years additional Warranty (Standard: 1 year, Additional: 2 years, Total- 3 years) to be provided from the date of delivery at IISc, Bangalore.
- b. AMC for 5 Years

### **7) Cancellation of Tender**

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.

### **8) Validity of the offer**

The offer shall be **valid 90 Days** from the date of opening of the commercial bid

## 9) Payment Terms

For Local Vendors

- i. **IISc does not provide any advance payment. All payments shall be made 2 to 3 weeks after delivery.**
- ii. The price of the goods quoted Ex-works including taxes already paid.
- iii. GST and other taxes like excise duty, entry tax and other applicable taxes which will be payable on the goods to be mentioned if the contract is awarded.
- iv. Kindly mention the charges for inland transportation, insurance and other local services required for delivering the goods to IISc, Bangalore.
- v. The installation, commissioning and training charges including any incidental services, if any with applicable service taxes needs to be indicated.
- vi. Advance Payment of 90% of the base value will be given against Advanced Bank Guarantee.

For Foreign vendors

- i. The price of the goods should be quoted on CIF/DAP Bangalore, India basis.
- ii. Advance Payment can be done only through Letter of Credit (LC) or Bank Guarantee. All charges related to LC incurred by the vendor has to be borne by the vendor only.
- iii. The charges for insurance and transportation of the goods by Air/Sea up to Bangalore India to be included in the quote.
- iv. The agency commission charges, if any to be included.
- v. The installation, commissioning and training charges including any incidental services, if any to be included.
- vi. The milestone of the payment will be determined after mutual discussions with the successful bidder

## 10) Statutory Variation

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.

## 11) Dispute 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 Bangalore, India.

## Annexure-I

**Note: Compliance Certificate to be enclosed with the Technical Bid**

Sr. no	Specification	Values	Comply	Non-Comply	Deviation	Remarks
<b>A</b>	<b>Multi-Stream PCHE (MOC: 316L) – Qty-1 No</b>					
<b>1.1</b>	<b><i>Heater side</i></b>					
1.1a	Hot fluid	Thermic Oil/ Hytherm 600				
1.1b	Cold fluid	Supercritical CO2				
1.1c	Mass flow (Hot fluid)	180 l/min				
1.1d	Mass flow (Cold fluid)	45-63 kg/min				
1.1e	Inlet Temperature (Hot fluid)	210°C				
1.1f	Outlet Temperature (Hot fluid)	180°C				
1.1g	Inlet Temperature (Cold fluid)	140°C				
1.1h	Outlet Temperature (Cold fluid)	200°C				
1.1i	Inlet Pressure (Hot fluid)	4-10 bar				
1.1j	Inlet Pressure (Cold fluid)	135-210 bar				
1.1k	Pressure drop (Hot fluid)	<100 kPa				
1.1l	Pressure drop (Cold fluid)	<100 kPa				
1.1m	End Connection	Suitable size SS316 Grayloc Coupling				
<b>B</b>	<b><i>Gas Cooler -Qty 1 No</i></b>					
1.2a	Hot fluid	Supercritical CO2				
1.2b	Cold fluid	Water (RO)				
1.2c	Mass flow (Hot fluid)	45-63 kg/min				
1.2d	Mass flow (Cold fluid)	3-6 m <sup>3</sup> /hr				
1.2e	Inlet Temperature (Hot fluid)	110°C				
1.2f	Outlet Temperature (Hot fluid)	45°C				
1.2g	Inlet Temperature (Cold fluid)	35°C				
1.2h	Outlet Temperature (Cold fluid)	55°C				
1.2i	Inlet Pressure (Hot fluid)	80-210 bar				
1.2j	Inlet Pressure (Cold fluid)	4-10 bar				
1.2k	Pressure drop (Hot fluid)	<100 kPa				
1.2l	Pressure drop (Cold fluid)	<100 kPa				

1.2m	End Connection	Suitable size SS316 Grayloc Coupling				
<b>C</b>	<b><i>Recuperator -Qty 1 No</i></b>					
1.3a	Hot fluid	Supercritical CO2				
1.3b	Cold fluid	Supercritical CO2				
1.3c	Mass flow (Hot fluid)	45-63 kg/min				
1.3d	Mass flow (Cold fluid)	45-63 kg/min				
1.3e	Inlet Temperature (Hot fluid)	170°C				
1.3f	Outlet Temperature (Hot fluid)	110°C				
1.3g	Inlet Temperature (Cold fluid)	100°C				
1.3h	Outlet Temperature (Cold fluid)	140°C				
1.3i	Inlet Pressure (Hot fluid)	80-210 bar				
1.3j	Inlet Pressure (Cold fluid)	135-210 bar				
1.3k	Pressure drop (Hot fluid)	<100 kPa				
1.3l	Pressure drop (Cold fluid)	<100 kPa				
1.3m	End Connection	Suitable size SS316 Grayloc Coupling				
<b>D</b>	<b>Hot Oil Heat Exchanger PCHE (MOC: 316L) – Qty 1No</b>					
2a	Hot fluid	Thermic Oil/ Hytherm 600				
2b	Cold fluid	Supercritical CO2				
2c	Mass flow (Hot fluid)	180 l/min				
2d	Mass flow (Cold fluid)	45-63 kg/min				
2e	Inlet Temperature (Hot fluid)	210°C				
2f	Outlet Temperature (Hot fluid)	180°C				
2g	Inlet Temperature (Cold fluid)	140°C				
2h	Outlet Temperature (Cold fluid)	200°C				
2i	Inlet Pressure (Hot fluid)	4-10 bar				
2j	Inlet Pressure (Cold fluid)	135-210 bar				
2k	Pressure drop (Hot fluid)	<100 kPa				
2l	Pressure drop (Cold fluid)	<100 kPa				
2m	End Connection	Suitable size SS316 Grayloc Coupling				



## **Annexure-II**

### **MANUFACTURERS' AUTHORIZATION FORM**

*[The bidder shall require the manufacturer to fill in this form in accordance with the instructions indicated. This letter of authorization should be on the letterhead of the Manufacturer and should be signed by the person with the proper authority to sign documents that are binding on the Manufacturer.]*

Date: [insert date (as day, month and year) of Bid Submission]

Tender No.: [insert number from Invitation for Bids]

To: **The Chair, Interdisciplinary Centre for Energy Research, IISc, Bangalore-560012.**

#### **WHEREAS**

We [insert complete name of Manufacturer], who are official manufacturers of [insert full address of Manufacturer's factories], do hereby authorize [insert complete name of Bidder] to submit a bid the purpose of which is to provide the following Goods, manufactured by us [insert name and or brief description of the Goods], and to subsequently negotiate and sign the Contract.

We hereby extend our full guarantee and warranty with respect to the Goods offered by the above firm.

Signed: [insert signature(s) of authorized representative(s) of the Manufacturer]

Name: [insert complete name(s) of authorized representative(s) of the Manufacturer]

Title: [insert title]

Duly authorized to sign this authorization on behalf of: [insert complete name of Bidder]

Pramod Kumar  
Professor  
Interdisciplinary  
Centre for Energy  
Research (ICER)  
Indian Institute of Science  
Bangalore, Karnataka 560012  
[pramod@iisc.ac.in](mailto:pramod@iisc.ac.in)  
Phone: +91-80-2293-3526

## **Annexure-III**

### **Details of the Bidder**

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

#### Details of the Bidder

Sl No.	Items	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- IV**

### **Declaration regarding experience**

To,  
The Chair,  
Interdisciplinary Centre for Energy Research  
Indian Institute of  
Science, Bangalore –  
560012, India

Ref: Tender No: GTE/ICER/01/2025-26 Dated: 30.04.2025

Supply of Diffusion Bonded Printed Circuit Heat Exchangers, IISc Bangalore.

Sir/Madam,  
I've 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 -----

(Signature of the Bidder)

Printed Name

Designation, Seal

Date:

## **Annexure- V**

### **Declaration regarding track record**

To,  
The Chair,  
Interdisciplinary Centre for Energy Research  
Indian Institute of Science,  
Bangalore – 560012, India

Ref: Tender No: XXXXXXXX

Dated: XXXXX

Supply of Diffusion Bonded Printed Circuit Heat Exchangers, IISc Bangalore.

Sir/Madam,

I've carefully gone through the Terms & Conditions contained in the above-mentioned 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'm a competent officer in my company / firm to make this declaration.

Or

I declare the following

Sl.No	Country in which the company is Debarred /blacklisted / case is Pending	Blacklisted / debarred by Government / Semi Government/Organizations /Institutions	Reason	Since when and for how long

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

Yours faithfully  
(Signature of the Bidder)  
Name  
Designation, Seal

Date:

## **Annexure- VI**

### **Declaration for acceptance of Terms and Conditions**

To,  
The Chair,  
Interdisciplinary Centre for Energy Research  
Indian Institute of Science,  
Bangalore – 560012, India

Ref: Tender No: XXXXXX  
Dated: XXXX

Supply of Diffusion Bonded Printed Circuit Heat Exchangers, IISc, Bangalore.

Sir/Madam,  
I've carefully gone through the Terms & Conditions as mentioned in the above-mentioned tender document. 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.

Yours faithfully,

(Signature of the Bidder)

Name  
Designation, Seal

Date:

## **Annexure- VII**

### **Details of items quoted:**

- a. Company Name
- b. Product Name
- c. Part / Catalogue number
- d. Product description / main features
- e. Detailed technical specifications f. 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.