INTERDISCIPLINARY CENTRE FOR ENERGY RESEARCH

Indian Institute of Science (IISc), Bangalore, INDIA

Tender Notice

Local Tender (Indian Bidders and OEM manufacturers in located in India)

Tender Notification Ref No.: ICER/ENQ/TNDR/PK/24-25/04 Date: 21st November 2024

The *Interdisciplinary Centre for Energy Research*, Indian Institute of Science Bangalore, invites tenders for supply of "**Diffusion bonded Printed Circuit Heat Exchanger (PCHEs)**". This Invitation for Bids is open to all domestic (India based) manufacturers, Indian OEM or its authorized Indian distributors only. All the bidders are requested to follow below mentioned **Detailed Technical Requirements**, Terms and Conditions for submission of bids.

1) Technical Specifications:

Sr. no	Specification	Values
A	**Multi-Stream PCHE (MOC: 316L) – Qty-1 No**	
1.1	***Heater side***	
1.1a	Hot fluid	Thermic Oil
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)	250-530°C
1.1f	Outlet Temperature (Hot fluid)	150-490°C
1.1g	Inlet Temperature (Cold fluid)	165-475°C
1.1h	Outlet Temperature (Cold fluid)	250-500°C
1.1i	Inlet Pressure (Hot fluid)	4-10 bar
1.1j	Inlet Pressure (Cold fluid)	140-210 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	**Gas Cooler -– Qty-1 No**	
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^3/hr
1.2e	Inlet Temperature (Hot fluid)	100-180°C
1.2f	Outlet Temperature (Hot fluid)	25-60°C
1.2g	Inlet Temperature (Cold fluid)	20-40°C
1.2h	Outlet Temperature (Cold fluid)	30°C-50°C
1.2i	Inlet Pressure (Hot fluid)	80-90 bar
1.2j	Inlet Pressure (Cold fluid)	4 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

C	**Recuperator – Qty-1 No**	
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)	160-470 C
1.3f	Outlet Temperature (Hot fluid)	140-220°
1.3g	Inlet Temperature (Cold fluid)	110-120 C
1.3h	Outlet Temperature (Cold fluid)	150-460°C
1.3i	Inlet Pressure (Hot fluid)	80-90 bar
1.3j	Inlet Pressure (Cold fluid)	140-210 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
D	**Hot Oil Heat Exchanger PCHE (MOC: 316L) – Qty 1 No**	
2a	Hot fluid	Thermic Oil
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)	250-530°C
2f	Outlet Temperature (Hot fluid)	150-490°C
2g	Inlet Temperature (Cold fluid)	165-475°C
2h	Outlet Temperature (Cold fluid)	250-500°C
2i	Inlet Pressure (Hot fluid)	4-10 bar
2j	Inlet Pressure (Cold fluid)	140-210 bar
2k	Pressure drop (Hot fluid)	<100 kPa
2l	Pressure drop (Cold fluid)	<100 kPa
2m	End Connection	Suitable size SS316 Grayloc Coupling

3) Vendors scope of supply for the above Printed Circuit Heat Exchanger (PCHEs):

a) All PCHE's conform to ASME pressure vessel standards. Pre-dispatch inspection and testing report (both design and test report)
b) Installing commissioning and demonstration of the complete system must be done at IISc, Bengaluru
c) Training on operation and troubleshooting of the product must be provided at IISc, Bengaluru

4) Mandatory non-technical requirements:

a) The bidders must enclose a client list, contact details, relevant brochures and 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 16-24 weeks from the date of release of the Purchase Order.

5) 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

TERMS AND CONDITIONS FOR SUBMISSION OF BIDS

Both the Technical and Commercial bid should be put in separate sealed envelopes and both the envelopes should be put in another cover subscribing **"Printed Circuit Heat Exchanger (PCHEs)"** and should reach "*The Chair, Interdisciplinary centre for Energy Research, IISc, Bangalore-560012* on or before **Friday, 13th December 2024 @ 5PM**.

Tender Summary

1.	Tender Number	**ICER/ENQ/TNDR/PK/24-25/XX**
2.	Tender Date	**21st November 2024**
3.	Item Description	**Printed Circuit Heat Exchanger (PCHEs)**
4.	Tender Type	Two bid system: (a) Technical Bid (Part A) (b) Commercial Bid (Part B)
5.	Place of tender submission	Prof. Pramod Kumar Interdisciplinary Centre for Energy Research, Indian Institute of Sciences, Bengaluru 560012
6.	Last Date & Time for submission of tender	**13th December 2024, 5:00 PM**

To whom it may concern

This is a **Request for quote (RFQ)** from **Indian Agencies** for supply and installation of **"Printed Circuit Heat Exchanger (PCHEs)"** at the **"Interdisciplinary Centre of Energy Research (ICER), Indian Institute of Science, Bangalore.**

This Invitation for Bids is open to only domestic (India based) manufacturers, Indian OEM or its authorized Indian distributors. All interested vendors shall submit a response demonstrating their capabilities to produce the requested equipment to the primary point of contact listed below.

With respect to this tender, the rules laid out by the Government of India in order No. P45021/2/2017-pp-BE-II issued by the Public Procurement Section, Department or Promotion of Industry and Internal Trade, Ministry of Commerce and Industry, dated 4th June 2020 will be followed. As per the order the government has defined a 'Class-I local supplier' as "a

supplier or service provider whose goods, services or work offered for procurement, has local content equal to or more than 50%". A 'Class-II local supplier' is "a supplier or service provider, whose goods, services or works offered for procurement, has local content more than 20% but less than 50%". **Only Class-I and Class-II local suppliers are eligible to participate** in this open domestic tender. Any "Non-local supplier" i.e. "a supplier or service provider, whose goods, services or works offered for procurement, has local content less than 20%" is ineligible to participate in this tender.

The deadline for submission of proposals is **13th December 2024, 5:00 PM.** Proposals should arrive at the office of **The Chair, Interdisciplinary Centre of Energy Research (ICER), Indian Institute of Science, Bangalore, Karnataka 560012, India.**

Direct all questions concerning the acquisition to addresses to **Prof. Pramod Kumar** at: pramod@iisc.ac.in

General Terms and Conditions

1. The bid should be submitted in the 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 in a "yes" or "no" response against each of the items in the table listed in this RFQ. If "no" the second column should state, the extent of deviation. The third column should state the reason 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 requirement table below.
3. In the commercial bid, the price should be inclusive of all discounts.
4. The quotations should be on FOR-IISc Bangalore basis in INR only.
5. The vendor should have qualified technical service personnel for the equipment based in India (preferably in Bangalore).
6. The covering letter should clearly state that whether the vendor is a Class-I or Class-II local supplier. Failing this the bid will be automatically rejected.
7. The vendor to state the percentage of the local content and provide self-certification that the item offered meets the minimum local content requirement. They should also give details of the location(s) at which the local value addition is made.
8. The lead time for the delivery of the equipment should not be more than 3 months from the date of receipt of our purchase order. It should be clearly mentioned in the technical and commercial bids.
9. All the quotations must be valid for at least 90 days at the time of submission.
10. List of customers and references: **The Bidder should have supplied similar equipment in Central Universities, preferably in centrally Funded Technical Institutes (IITs, IISC, IISER, NIT). Please provide the details and contact information**.
11. 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.

12. Items in addition to that 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.
13. The Bidder should belong to either Class-1 or Class-2 suppliers distinguished by their "local content" as defined by recent edits to GFR. They should mention clearly which class they belong to in the cover letter. a) Class-1 supplier: Goods and services should have local content of equal to or more than 50%. b) Class-2 supplier: Goods and services should have local content of equal to or more than 20 % and less than 50%.
14. Bidders offering imported products will fall under the category of non-local suppliers. They cannot claim themselves as Class-1 local suppliers/Class-2 local suppliers by claiming the services such as transportation, insurance, installation, commissioning, training, and other sales service support like AMC/CMC, etc., as local value addition.
15. Purchase preference as defined by the recent edits to GFR (within the "margin of purchase preference") will be given to the Class-1 supplier.
16. MSMEs can seek an exemption to some qualification criteria. IISc follows GFR2017 for such details.
17. Vendors are encouraged to highlight the advantage of their systems over comparable systems from the competitors.
18. If needed, a meeting for any technical clarifications can be scheduled with the undersigned by sending an email.
19. 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.
20. 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.
21. Terms and conditions for the annual maintenance contract beyond the warranty period should be mentioned.
22. After the award of purchase order, the vendor must provide an Order Acknowledgement within 30 days from the receipt of the Purchase Order.
23. Please quote the price of each optional line item, separately.

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 meets 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.

Annexure-I

Note: Compliance Certificate to be enclosed with the Technical Bid

Sr. no	Specification	Values	Comply	Non-Comply	Deviation	Remarks
A	**Multi-Stream PCHE (MOC: 316L) – Qty-1 No**					
1.1	***Heater side***					
1.1a	Hot fluid	Thermic Oil				
1.1b	Cold fluid	Supercritical CO2				
1.1c	Mass flow (Hot fluid)	180 l/min				
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1.1m	End Connection	Suitable size SS316 Grayloc Coupling				
B	***Gas Cooler -Qty 1 No***					
1.2a	Hot fluid	Supercritical CO2				
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1.2l	Pressure drop (Cold fluid)	<100 kPa				
1.2m	End Connection	Suitable size SS316 Grayloc Coupling				
C	***Recuperator -Qty 1 No***					
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)	160-470 C				
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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 Manufacture's factories], do herby 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]