

INVITATION FOR TENDER FOR SUPPLY OF EQUIPMENT

Sealed tender offers are invited in two separate sealed covers (Technical and Commercial offers) from eligible manufacturers/suppliers or their direct Indian agents for the supply of the following equipment.

Multichannel electrochemical system

Please send offers, ALONG WITH DESCRIPTIVE CATALOGUE/ BROCHURE. The validity of the bid should be at least four months (120 days) or more from the date of the opening of this tender. Please ensure that your quotation reaches not later than ~~16.04.2018(Monday) at 15:00 Hrs~~ **04/05/2018 (Friday) by 15:00 Hrs(extended date)** **18/05/2018 (Friday) by 15:00 Hrs (extended date)** at the following address:

**Professor-in-Charge,
DHI Centre of Excellence on Advanced Manufacturing Technology,
(Inside Steel Technology Centre),
Indian Institute of Technology Kharagpur,
721 302, West Bengal, India**

Earnest money of **Rs. 30,000/-** is to be deposited in the form of Account payee Demand Draft in favour of IIT Kharagpur, payable at Kharagpur, India. Any bid which is not accompanied with an EMD shall be summarily rejected. Earnest money deposited will be forfeited if the tenderer withdraws or amends its tender or impairs or derogates from the tender in any respect within the period of validity of its tender. No interest will be paid on the earnest money of the unsuccessful bidders.

Tender Reference	IIT/SRIC/CoE_AMT/DHI/2018/EQ10, dated 22/03/2018
Tender Fee	Rs. 5000/- (Account payee Demand Draft in favour of IIT Kharagpur, payable at Kharagpur, India); Non-refundable
Last Date and Time for submitting the tender document	16.04.2018 at 15:00 Hrs (Indian time) Extended to 04/05/2018 at 15:00 Hrs (Indian time) Extended to 18/05/2018 at 15:00 Hrs (Indian time)
Time and Date of Opening of Technical Bids	16.04.2018 at 18:00 Hrs (Indian time) Extended to 04/05/2018 at 16:00 Hrs (Indian time) Extended to 18/05/2018 at 16:00 Hrs (Indian time)
Place of Opening Tender	Office of Professor-in-Charge, DHI Centre of Excellence on Advanced Manufacturing Technology, (Inside Steel Technology Centre), Indian Institute of Technology Kharagpur, 721 302, West Bengal, India
Address of Communication	As stated above
Contact Telephone Numbers	+91- 3222 - 281576
E-mail	coeamt@gmail.com

DETAILED TECHNICAL SPECIFICATIONS FOR

Multichannel electrochemical system with specification similar or better than as given below

(A) Multichannel electrochemical system

- System should have minimum 2 channels to operate simultaneously.
- Both channels should operate in simultaneously or synchronized mode.
- Both the channels should be able to operate in Bi-pot mode also.
- System should work in floating grounded mode when used in field/ grounded cells/ auto clave etc.

(B) Hardware specifications-Electrochemical system:

SI No.	Description	Requirements
1	Compliance Voltage	+/-12V or more
2	Voltage accuracy	1mV or better
3	Voltage resolution	5 mV or better
4	Current limit	1nA or less & 500mA or more – minimum 5 ranges should be provided
5	Current accuracy	@ 0.1% of the range or better
6	Amplitude	1mV to 2.3 Volt or better with the single and multi sine facility
7	Electrometer input impedance	1T Ohms or more
8	Data acquisition rate	100000 samples/sec or better
9	One channel should have impedance Frequency range from 10 μ Hz to 2Mhz or better	
10	Optional: Minimum 2 additional voltage recording input (ADC) for 0-10V range. Input received in this channel should be scalable and interpretable to control the software measurement protocols. (e-g: recording optical sensor info, LED light source info etc.)	
11	Optional: Minimum one number of DAC (0-10V) to control the external devices from main system	
12	Cell connections: 2,3,4,5 or better	
13	Multistage cell switch for accurate measurement	
14	Better noise and ripple correction measurements	

(C) Machine should support following things:

- Voltammetry techniques- CV, Multiple CV, SWV, Staicase Voltammetry
- Pulse: DPV, Normal Pulse, RNPV, Chrono amperometry , Chronopotentiometry
- Corrosion: Potentiostatic/Gavanostatic-Gavanodynamic, LPR, Tafel, ECN, CPT
- Energy: charge/discharge Constant potential, Constant current, Constant power, Constant resistance/load, Calculation efficiency of cycle.
- Software for Battery testing / Fuel cell characterisation / Super capacitors analysis.

- Complete analysis software for CV
- EIS circuit fitting facility and software.
- Floating Ground for electrodes (for corrosion studies in autoclave or furnace).
- 2, 3, 4, 5 or better Electrode measurements. Minimum 4-Electrode measurement required for Galvanic Corrosion and ZRA measurements

(D) Licence Software should be provided and should support following basic measurements:

- **Corrosion Techniques:** Corrosion potential, polarization resistance, R_p/E_c Trend, Tafel plots, Cyclic polarizations, Potentiodynamic curve, Critical pitting potential, Cyclic galvanostaircase, Galvanic corrosion, Electrochemical reactivation, Potentiostatic, Galvanostatic, Galvanodynamic.
- **Physical Electrochemistry:** Cyclic voltammetry, Linear sweep voltammetry, Chronoamperometry, Repeating chronoamperometry, Multistage pulse voltammetry, Controlled potential coulometry.
- **Pulse Voltammetry:** Square wave techniques, Square wave stripping, Differential pulse, Differential pulse stripping, reverse normal pulse, reverse normal pulse stripping, Sampled D.C, Sampled D.C. stripping, Genetic pulse.
- **Electrochemical Impedance Spectroscopy:** Potentiostatic EIS, Opti EIS Potentiostatic, Opti EIS galvanostatic, Multiplexed potentiostatic EIS, Galvanostatic EIS, Hybrid EIS, Single frequency EIS, Mott schottky.
- **Energy conversion:** Cyclic voltammetry (CV), Cyclic charge voltammetry (CCV), Discharge in three modes (constant current, constant resistance, and constant power), Constant current charge for Li Ion battery, Polarization curve test for voltage measurements as a function of load, Simple potentiostat and galvanostat, CCD with EIS spectra in each charge state.

(E) Computer & Printer:

A suitable branded Computer for system control & data acquisition should be offered with the system. It should have following minimum specifications:

- ✓ i5 processor or better,
- ✓ 8 GB RAM,
- ✓ 1TB HDD,
- ✓ 52 x CDD read/write combo drive,
- ✓ 4 nos USB Ports,
- ✓ 17" TFT Colour Monitor,
- ✓ 101 Keys Keyboard, Optical mouse,
- ✓ Black and white branded Laser Printer.

GENERAL TERMS & CONDITIONS

PLEASE SPECIFICALLY INDICATE THE FOLLOWING POINTS IN YOUR QUOTATIONS AND COMPLY THE TERMS AS MENTIONED HEREUNDER:-

1. TENDERS ARE INVITED COMPLYING THE REQUIREMENT FOR TENDER AS DETAILED IN THE TENDER SPECIFICATION TO BE SUBMITTED IN THE COMPANY'S / FIRM'S LETTERHEAD NEATLY PRINTED / TYPED DULY SIGNED BY AUTHORIZED PERSON WITH THE SEAL OF THE BIDDERS. ALL ENVELOPES CONTAINING THE TENDER SHOULD BE PROPERLY SEALED. SEPARATE ENVELOPS SHOULD BE USED FOR TECHNICAL AND PRICE BID AND INDICATION TO THEIR EFFECT MAY PLEASE BE SUPERSCRIBED ON THE ENVELOPE.

THE FOLLOWING DOCUMENTS ARE REQUIRED FROM THE INDIAN AGENTS OF FOREIGN FIRMS:

1.1 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.

1.2 COPY OF THE AGENCY AGREEMENT WITH THE FOREIGN PRINCIPAL INDICATING THE NATURE OF AFTER SALES SERVICES, PRECISE RELATIONSHIP BETWEEN THEM AND THEIR MUTUAL INTEREST IN THE BUSINESS.

2. TECHNICAL CATALOGUE/LEAFLET SHOULD BE ENCLOSED WITHOUT FAIL. PROVIDE COMPLIANCE STATEMENT WITH RESPECT TO THE TECHNICAL SPECIFICATIONS MENTIONED ABOVE.
3. PLEASE CONFIRM WHETHER YOU ARE AUTHORISED TO QUOTE ON BEHALF OF YOUR PRINCIPALS AND IF SO, PLEASE ENCLOSE A COPY OF SUCH AUTHORISATION WITH YOUR QUOTATION.
4. **PRICE BIDS FOR FOREIGN FIRMS:** PRICES ARE TO BE QUOTED ON 'EX-WORKS' DULY PACKED OR ON "FCA/FOB" INTERNATIONAL PORT" BASIS AND ALSO INCLUDING AGENCY COMMISSION PAYABLE TO YOUR INDIAN AGENTS, IF ANY, SHOWING CLEARLY THE FOLLOWING BREAK UP:-

- I) EX-WORKS PRICE
- II) PACKING & FORWARDING
- III) FREIGHT
- IV) ANY OTHER RELEVANT EXPENSES.
- V) TAXES PAYABLE BY THE INSTITUTE

INSURANCE WILL BE PAID BY OUR INSTITUTE SEPARATELY AND SHOULD NOT FORM PART OF THE QUOTED PRICE.

PRICE BIDS FOR INDIAN FIRMS: PRICES ARE TO BE QUOTED ON F.O.R., IIT KHARAGPUR, ON DOOR DELIVERY BASIS CLEARLY SHOWING THE BREAK UP.

5. **PERIOD OF VALIDITY:** BIDS SHALL REMAIN VALID FOR ACCEPTANCE FOR A PERIOD OF 120 DAYS FROM THE DATE OF OPENING.
6. INDIAN AGENTS ADDRESS AND PERCENTAGE OF AGENCY COMMISSION INCLUDED IN ABOVE F.O.B./EX-WORKS PRICE. (THIS WILL BE PAID TO THE INDIAN AGENTS IN INDIAN RUPEES ONLY AND NOT IN FE). PLEASE ENCLOSE COPY OF AGENCY AGREEMENT ENTERED

INTO WITH YOUR PRINCIPALS INDICATING THE NATURE OF AFTER SALES SERVICES OF INDIAN AGENTS, PRECISE RELATIONSHIP & MUTUAL INTEREST IN THE BUSINESS.

7. **MEASUREMENTS/WEIGHT:** NETT/GROSS OF THE CONSIGNMENT. IN CASE OF AN ORDER, YOU SHALL USE AIR WORTHY PACKAGE (AS APPLICABLE) DULY CERTIFIED WITH DOCUMENTS – PLYTO – SANITARY CERTIFICATE (AS PER QUARANTINE ORDER 2003).
8. **SCOPE OF SUPPLY:** SHOULD INCLUDE FREE INSTALLATION AND COMMISSIONING
9. **PAYMENT TERMS FOR FOREIGN FIRMS**

The offer will be made on a single currency and only one PO will be issued for the entire scope of the supply.

- A) 90% PAYMENT THROUGH SIGHTDRAFT/FOREIGN DEMAND DRAFT/LC (EXCEPTIONAL CASES)/SWIFT TELE TRANSFER AFTER RECEIPT OF STORE IN GOOD ORDER AND CONDITION AND 10% AFTER SUCCESSFUL INSTALLATION & COMMISSIONING.
- B) BANK CHARGES ON LC/SD (WITHIN INDIA APPLICANT ACCOUNT AND OUTSIDE INDIA TO BENEFICIARY ACCOUNT).

PAYMENT TERMS FOR INDIAN FIRMS

A) 100% PAYMENT THROUGH CROSSED ACCOUNT PAYEE CHEQUE / ELECTRONIC TRANSFER AFTER RECEIPT OF STORE IN GOOD ORDER & CONDITION AND SUCCESSFUL INSTALLATION & COMMISSIONING.

B) ENSURE MENTIONING

i) BANK DETAILS OF THE BENEFICIARY, GST NO. AND PAN NUMBER

ii) FULL NAME AND ADDRESS OF THE BENEFICIARY ON WHOM ORDER HAS TO BE PLACED

10. WHETHER ANY EXPORT LICENCE IS REQUIRED FROM YOUR GOVERNMENT, IF SO, PLEASE CONFIRM WITH DETAILS.
11. COUNTRY OF ORIGIN OF THE GOODS IS TO BE MENTIONED.
12. THE INSTITUTE SHALL PROVIDE THE CONCESSIONAL CUSTOMS DUTY AND EXCISE DUTY EXEMPTION CERTIFICATE AS PER GOVT. NOTIFICATION NO. 51/96 CUSTOMS DATED: 23.07.1996 AND CENTRAL EXCISE DUTY EXEMPTION IN TERMS OF GOVT. NOTIFICATION NO. 10/97 – CENTRAL EXCISE DATED: 01.03.1997 AS AMENDED FROM TIME TO TIME.
13. **LIQUIDATED DAMAGES:** THE STORES SHOULD BE DELIVERED/ DISPATCHED TO DESTINATION AND READY FOR OPERATION NOT LATER THAN THE DELIVERY DATE SPECIFIED. IF THE SUPPLIER FAILS TO DELIVER ANY OR ALL THE STORES OR PERFORM THE SERVICE BY THE SPECIFIED DATE, LIQUIDATED DAMAGES AT 1% PER MONTH OR PART THEREOF IN RESPECT OF THE VALUE OF STORES WILL BE DEDUCTED FROM THE CONTRACT PRICE SUBJECT TO A MAXIMUM OF 5%. ALTERNATIVELY, THE ORDER WILL BE CANCELLED AND THE UNDELIVERED STORES PURCHASED FROM ELSEWHERE AT THE RISK AND EXPENSE OF SUPPLIER.
14. **PATENT RIGHTS:** THE SUPPLIER SHALL INDEMNIFY THE PURCHASE AGAINST ALL THIRD PARTY CLAIMS OF INFRINGEMENT OF PATENT, TRADEMARK OR INDUSTRIAL DESIGN RIGHTS ARISING FROM USE OF THE GOODS OR ANY PART THEREOF IN INDIA.

15. ONLY THOSE BIDDERS WHO'S BIDS HAVE BEEN TECHNICALLY FOUND ACCEPTABLE WILL ONLY BE INVITED FOR PARTICIPATION IN THE PRICE BID.
16. THOSE BIDDERS WHO DO NOT RECEIVE ANY COMMUNICATION FOR PARTICIPATION IN PRICE BID OPENING MEETING MAY PRESUME THAT THEIR BID HAS NOT BEEN ACCEPTED BY THE INSTITUTE.
17. CONDITIONAL OFFER WILL NOT BE ACCEPTED.
18. LATE TENDERS I.E. TENDER RECEIVED AFTER THE DUE DATE AND TIME OF SUBMISSION AS MENTIONED ABOVE SHALL NOT BE ACCEPTED.
19. BIDDERS TO ENCLOSE THE FOLLOWING DOCUMENTS:-
 - A) INCOME TAX RETURN (3 YRS) AND LATEST SALES TAX RETURN (GST No.), AND PAN NO.
 - B) BANKER'S SOLVENCY CERTIFICATE
 - C) SUMMARY OF AUDITED STATEMENT OF ACCOUNTS FOR THE LAST THREE YEARS TO BE ENCLOSED AND FINANCIAL HIGHLIGHTS AND THE KEY PERFORMANCE DURING THE LAST THREE QUARTERS TO BE ENCLOSED AS PER FORMAT:-

COMPANY'S KEY PERFORMANCE

DESCRIPTION	JAN. TO MARCH	APRIL TO JUNE	JULY TO SEPT.
GROSS REVENUE			
PROFIT BEFORE TAX			
PROFIT AFTER TAX			
RETURN ON INVESTED			
CAPITAL (ROIC)			

- D) CUSTOMER SATISFACTION CERTIFICATE FROM ONE SUCH ORGANIZATION IS TO BE ATTACHED WITH THE TECHNICAL BID AND PRICE BID.
- E) NAME AND ADDRESS OF MINIMUM THREE CLIENTS TO WHOM SUCH EQUIPMENT HAVE BEEN SUPPLIED SHOULD BE MENTIONED.
20. **WARRANTY/ GUARANTEE:** THIS COMPREHENSIVE WARRANTY/ GUARANTEE SHALL REMAIN VALID FOR **36 MONTHS** AFTER THE GOODS (OR ANY PORTION THEREOF AS THE CASE MAY BE) HAVE BEEN DELIVERED AND COMMISSIONED TO THE FINAL DESTINATION.
21. THE INSTITUTE DOES NOT BIND ITSELF TO OFFER ANY EXPLANATION TO THOSE BIDDERS WHO'S TECHNICAL BID HAS NOT BEEN FOUND ACCEPTABLE BY THE EVALUATION COMMITTEE OF THE INSTITUTE.
22. ALL TENDERS (UNLESS OTHERWISE SPECIFIED) ARE TO BE SUBMITTED / HANDED OVER TO **Office of Professor-in-Charge, DHI Centre of Excellence on Advanced Manufacturing Technology, (Inside Steel Technology Centre), Indian Institute of Technology Kharagpur, 721 302, West Bengal, India** AND ACKNOWLEDGEMENT TO BE OBTAINED.

IMPORTANT

1. IIT Kharagpur authority may accept or reject any or all the bids in part or in full without assigning any reason and does not bind itself to accept the lowest bid. The Institute at its discretion may change the quantity/ upgrade the criteria/ drop any item or part thereof at any time before placing the Purchase Order.
2. Promptly make arrangements for repair and/ or replacement of any damaged item (s) irrespective of settlement of claim.
3. In case of any dispute, the decision of the Institute authority shall be final and binding on the bidders.
4. For any query pertaining to this bid document correspondence may be addressed to
Professor-in-Charge,
DHI Centre of Excellence on Advanced Manufacturing Technology,
(Inside Steel Technology Centre),
Indian Institute of Technology Kharagpur 721 302,
West Bengal, India
E-mail: coeamt@gmail.com

LAST DATE FOR SUBMISSION OF SEALED BIDS: ~~16.04.2018 at 15:00 Hrs (Indian time)~~
~~Extended to 04/05/2018 at 15:00 Hrs (Indian time)~~
Extended to 18/05/2018 at 15:00 Hrs (Indian time)

- 1) Please Note that the Institute remains closed during Saturdays & Sundays and all specified government holidays.
 - 2) Fax, e-mail Tender will not be accepted.
 - 3) The General Terms and Conditions as stated above relate to supply of stores/ equipment/ assets etc. and for specific service other terms and conditions of the Institute will apply.
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