Supply and Installation of Potentiostat /Galvanostat /Electrochemical Workstation

NOTICE INVITING DOMESTIC TENDER

Department of Materials Engineering
Indian Institute of Science
Bangalore-560012
India

October 30, 2024

Table of Content

1. Bid Schedule

1.	Tender Number	MT/CS/2024/EW
2.	Tender Date	30 Oct 2024
3.	Item Description	Supply and Installation of Potentiostat /Galvanostat /Electrochemical Workstation
4.	Tender type	Two bid system i Technical Bid (Part A) ii Commercial Bid (Part B)
5.	Place of tender submission	Office of the Chair Department of Materials Engineering Indian Institute of Science Bangalore-560012 India
6.	Last Date & Time for submission of tender	20 November 2024
7.	For further clarification	Dr. Chandan Srivastava Professor Department of Materials Engineering Indian Institute of Science Bangalore-560012 India

2. Eligibility Criteria

Prequalification criteria:

1. The bidder must have supplied similar systems to at least 10 educational institutes/universities and/or research organizations in India along with contact details.

2. The Bidder should belong to either class 1 or class 2 supplier 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%.) (please refer to the attached public procurement order I annex)

c. 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.

3. Purchase preference as defined by the recent edits to GFR (within the "margin of purchase preference") will be given to Class-1 supplier.

4. MSME can seek exemption to some qualification criteria. IISc follows GFR2017 for such details

5. The bidder should sign and submit the declaration for Acceptance of Terms and Conditions as per -Annexure 4.

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 3.

7. Original Invoice, Original Warranty Certificate, Original Test Reports should be produced for all imported items from OEM (Original Equipment Manufacturer) at the time of supply of the equipment.

8. System Catalogue should be produced with the Technical Bid.

9. Manufacturers should have ISO or equivalent international standard certificate. Please attach the required certificate with the bid.

10. Details of an experienced service engineer including contact details should be provided in tender document.

12. Bidder shall have to submit audited accounts (Balance sheet profit and loss account) of last three financial years. Audited statements must be signed and stamped by a qualified chartered accounted.

13. Bidder must submit Income Tax return for last three financial assessment years.

14. Bidder must submit up to date sales tax or GST clearance certificate.

15. CE Certification must be provided for the proposed system. The CE certificate should be provided with the Unit.

3. Terms and Conditions

A) Submission of Tender:

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 technical proposal should contain a technical compliance table with 5 columns.

I. The first column must list the technical requirements, in the order that they are given in the technical requirement below.

II. The second column should provide specifications of the instrument against the requirement. Please provide quantitative responses wherever possible with technical details in annexure.

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, if any.

V. The fifth column can contain additional remarks from the OEM. You can use this opportunity to highlight technical features, qualify response of previous columns, or provide additional details.

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.

4.The SEALED COVER superscripting tender number / due date & should reach Chairperson Office, Department of Materials Engineering, 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.

All queries are to be addressed to the person identified in "Section 1 – Bid Schedule" of the tender notice.

5. The price must be quoted in INR (Indian Rupee). Quote should come only from Indian Original Equipment Manufacturer (OEM) or their Indian authorized distributor. The quotations should be on FOR-IISc Bangalore basis in INR only.

6. If price is not quoted in Commercial Bid as per the format provided in tender document the bid is liable to be rejected.

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. Incomplete bids will be summarily rejected.

B) 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.

C) Validity of the Offer:

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

D) Evaluation of Offer:

1. The technical bid (Part A) will be opened first and evaluated.

2. 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.

3. 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 in regard to 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.

4. The award of contract will be subject to acceptance of the terms and conditions stated in this tender.

5. Any offer which deviates from the vital conditions (as illustrated below) of the tender is liable to be rejected:

a. Non-submission of complete offers.

b. Receipt of bids after due date and time and or by email / fax (unless specified otherwise)

c. Receipt of bids in open conditions.

6. In case any BIDDER is silent on any clauses mentioned in these tender documents, IISc Bangalore shall consider that the BIDDER had accepted the clauses as of the tender and no further claim will be entertained. Further if the BIDDER is silent or does not give detail justification of their claim regarding those mentioned in technical specifications, IISc Bangalore reserves the full right to reject the tender due to non-compliance without any further discussion.

7. No revision in the terms and conditions quoted in the offer will be entertained after the last date and time fixed for receipt of tenders.

8. Lowest bid will be calculated based on the total price of all items tendered for Basic equipment along with accessories selected for installation, operation, preprocessing and post processing, optional items, recommended spares, warranty.

E) Pre-requisites:

The bidder will provide the prerequisite installation requirement of the equipment along with the technical bid.

F) Warranty:

The complete system is to be under warranty period of minimum 1 year including free supply of spare parts and data analysis software from the date of functional installation. If the instrument is found to be defective, it has to be replaced or rectified at the cost of the bidder within 30 days from the date of receipt of written communications from IISc, Bangalore. If there is any delay in replacement or rectification, the warranty period should be correspondingly extended.

G) Purchase Order:

1. The order will be placed on the bidder whose bid is accepted by IISc based on the terms & conditions mentioned in the tender document.

2. The quantity of the items in tender is only indicative. IISc, Bangalore reserves the right to increase /decrease the quantity of the items depending on the requirement.

3. If the quality of the product and service provided is not found satisfactory, IISc, Bangalore reserves the right to cancel or amend the contract.

I) 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 system should be delivered, installed and made functional within 180 days 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. No partial shipment is allowed.

The bidder should also arrange for technical training to the local facility technologists and users.

J) Payment Terms:

100% 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 on half-yearly basis at the end of each six months subject to satisfactory services. Price basis must be on FOR-IISc Bangalore basis only. As per GFR, no advance payment can be made to domestic vendors unless an equal amount of bank guarantee is provided.

K) 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 onto IISc, Bangalore.

L) Disputes 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.

M) General:

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

2. 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.

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

4. 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.

4. Technical Specification

	Technical Specifications for Potentiostat /Galvanostat /Electrochemical Workstation
Configuration Design: Potentiostat /Galvanostat / Electrochemical Workstation	
General Description	
Essential	➢ Single-channel PC controlled electrochemical workstation 1 channels in a single chassis for testing, characterizing and evaluating supercapacitors corrosion, fuel cell and all battery components in single unit cells simultaneously with high accuracy and precision and solar cells & possibility to upgradation to 2 channels in future. ➢ Channels required: 01 Channels ➢ Two electrodes as well as three electrodes tests should be possible with provision to connect independent reference electrodes. ➢ Provision to connect two working electrodes and measure EW1 and EW2 simultaneously in one cell setup with common reference and common counter electrode in a single experiment ➢ Electrochemical Impedance Spectroscopy (EIS) measurements at channel with Equivalent Circuit Modelling ➢ Internal resistance determination ➢ Software controlled data acquisition with minimum sampling rate ➢ The channels should be plug & play type and easy to install or to be removed. ➢ Dummy cells to be provided for internal validation. ➢ EIS Quality Indicator should be available.
Specification for Channels	
Essential	➢ Cell connection: 2, 3, 4, 5 electrodes (+ ground) or more and atleast1.5m Cell cable ➢ Required no. of channel with EIS: 01 Nos ➢ Compliance voltage:0-20 V or better ➢ Applied voltage: ±10 V or better ➢ Maximum output current: ± 1A at ± 10 V or better ➢ Applied current ranges: ± 10uA to 1A or better ➢ Accuracy of applied and measured current: ± 0.1 % of Full-scale range or better ➢ Voltage accuracy applied and measured: 0.1% of Full scan range or better for ➢ Resolution of applied potential: 1µV or better ➢ Impedance frequency range: 10µHz to 1 MHz or better ➢ Input impedance: 1TΩ or better for both channels ➢ Impedance accuracy of 1% & 1° at 1Hz ➢ Bandwidth of electrometer with Booster: >1 MHz or better ➢ Acquisition: 200,000 samples/second or better ➢ Interface for connection with PC: USB, Ethernet LAN ➢ Local Area Network to access multiple computers ➢ Safety limits in software on the current and voltage Max and Min values to avoid hazards. ➢ Possibility to record/measure and control Ewe (potential difference between working and reference) and Ece (potential difference between counter and reference) simultaneously in one experiment and in real time on both channels ➢ On site calibration of the channels should be available.

Complete software with following specification & Techniques	
Essential	➢ Should have possibility to resume an experiment after a power cut and to merge the files before and after the power cut.

	➢ Possibility to Record/Measure and control Ewe (potential difference between working and reference) and Ece (potential difference between Counter and Reference) simultaneously in one experiment and in real time. ➢ On site calibration of the channel should be available ➢ Complete battery and supercapacitor cycling software facility with following options: ➢ Galvanostatic Charge / Discharge (Including C rate control) with voltage vs. time ➢ Graph plots ➢ Multigraph window capable of displaying up to 50 graphs within a single window ➢ Customize variables graph plot for each axis ➢ Voltage vs. Capacity plot during Charge/Discharge Cycles ➢ Atleast 3 limits and 3 recording conditions per sequence/cycle (ability to limit a cycle or changeover to next sequence with Time, Voltage/Current, Charge/Power all simultaneously) ➢ Multiple recording conditions with "OR" commands ➢ Industrial CC-CV Method (Constant Current – Constant Voltage) ➢ Cyclic Voltammetry, Current Scan (Current/Galvano Dynamic), Voltage Scan (Potentio Dynamic) ➢ Constant Power / Constant Resistance ➢ GITT and PITT Techniques Battery Characterization -Polarization Curve measurement/IV Testing/ Linear ➢ Sweep Voltammetry should be available down to 0 Volt. OCV/OCP, Cyclic Voltammetry, Chrono Amperometry, Chrono Potentiometry, ➢ Staircase Voltammetry, Corrosion – Linear and Cyclic Polarization, Pitting ➢ Corrosion, ZRA ➢ Columbic Efficiency Determination with fitting tool ➢ Current Interrupt ➢ Rest Time ➢ Multiple loops ➢ Provision to connect and control External devices like Furnace, Thermal chambers ➢ Monitoring status of each Channel using Global Table/Summary Table ➢ Option to update the experimental setting parameters on current running experiment without pausing /stopping the channel/experiment ➢ Profile Importation to study Urban Life Cycle Tests ➢ Analysis tools like Integral, Circular or linear fit and Electro chemical EIS -Z fit should be available ➢ **Experimental Techniques** like All Voltamerometric techniques including Levich Plot:Levitch ➢ **All Voltamerometric techniques Like:** OCV, CV, CVA, LSV, CA/CC, CP, SV, ACV, Levitch. ➢ **Impedance Spectroscopy:** GEIS, PEIS, SGEIS, SPEIS ➢ **Pulsed techniques:** DPV, SWV, NPV, RNPV, DNPV, DPA ➢ **Manual Control:** Current Manual Control, Potential Manual Control ➢ **Ohmic Drop determination:** Manual IR compensation, IR Compensation (PEIS), Current Interrupt ➢ **Batteries testing:** BCD, CCCV, GCPL, GCPL1 to 7, MB, CED, CLD, CPW, APGC, PPI, GPI, RPI, PWPI, CV ➢ **Bipotentiostat techniques:** CV-CA, CP-CA, CA-CA ➢ **Corrosion:** E_{corr} versus Time, Linear Polarization Resistance – LPR, Tafel Plot, Cyclic Polarization, Cyclic, Potentiodynamic Polarization – Critical Pitting Temperature-CPT, Depassivation Potential, Potentiodynamic Pitting, Potentiostatic Pitting, Electrochemical Noise, Biased Electrochemical Noise ➢ **Photovoltaics/Fuel cells:** I-VC, CLD, CPW, CstC, CstV

Essential	➢ **Supercapacitors:** CV, CstV, CstC, CS ➢ **Other Applications:** Polarization Resistance, Stepwise Potential Fast Chronoamperometry, Anodic Stripping Voltammetry, RRDE

	➢ **User Building Techniques:** Modular Potentio, Modular Galvano, Trigger In/ Out, Temperature Control, RRDE Control, External Device Control, Loop, Pause ➢ Reverse Normal Pulse Voltammetry: RNPV ➢ Differential Normal Pulse Voltammetry: DNPV ➢ Differential Pulse Amperometry: DPA ➢ Ohmic Drop determination ➢ Potentiodynamic Cycling with Galvanostatic Acceleration: PCGA, Modulo Bat: MB ➢ Polarization Resistance: PR ➢ Stepwise Potential Fast Chronoamperometry: SPFC
Electrochemical Impedance Spectroscopy (EIS)	
Essential	➢ Real-time fit and simulation analysis as well as live data plotting option for simulation plot must be available as default software protocol. Real time needed for Lissajous curve, Nyquist, Bode, Admittance and Dielectric & Mott-Schottky. The fit and simulation software should include basic options such as find circle, element subtraction and an equivalent circuit library with all the modern EIS equivalent circuit models. Minimum visible plots in real time should be 8 or more. EIS Modelling with Equivalent Circuit Fits. Simultaneous impedance measurement at counter electrode and working electrode. ➢ EIS Quality Indicators should be provided ➢ EIS measurements simultaneously on the working and on the counter electrodes ➢ Graphic Representation of Equivalent Circuit with user selectable circuit elements and their values in the circuit ➢ Impedance fitting tool with battery diffusion elements available (restricted diffusion, restricted modified diffusion, restricted linear diffusion) ➢ The impedance fitting tool should have at least 3 different fitting algorithms ➢ Modify on Fly should be available to update experimental setting parameters on current running experiment without pausing/stopping.
Installation & Commissioning	
Essential	➢ Installation and commissioning of the equipment has to be carried out by supplier at our laboratory in site and the performance has to be demonstrated. ➢ 2. Onsite training must be provided to our personnel on the installed equipment for operation and data processing
Instrument Control	
Essential	➢ A Desktop Computer Branded computer I5, with 500GB SSD, 4GB RAM, 21" Monitor, Windows Operating System (OEM) shall be provided or with better Configuration.
Warranty	
Essential	System shall be warranted for a minimum period of 1 year from the date of installation of the equipment at site
Maintenance	
Essential	The channels Should be plug & play type and easy to install or to be removed.

5. Technical Bid

The technical bid should furnish all requirements of the tender along with all annexures in this section and submitted to

The Chairperson,
Attn: Dr. Chandan Srivastava
Department of Materials Engineering,
Indian Institute of Science
Bangalore – 560012, India

Annexure 1

Details of the Bidder

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

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 Bidder

Name

Designation, Seal Date:

Annexure-2

Declaration regarding experience

To,
The Chairperson,
Materials Engineering Department,
Indian Institute of Science
Bangalore – 560012, India

Ref: Tender No: XXXXXXXXX

Dated: XXXXX

Supply and Installation of Potentiostat /Galvanostat /Electrochemical Workstation.

Sir,

I've carefully gone through the Terms & Conditions contained in the above referred tender. I hereby declare that my company / firm has XXXXXX years of experience in supplying and installing Potentiostat /Galvanostat /Electrochemical Workstation with asked technical specifications.

(Signature of the Bidder)

Printed Name

Designation, Seal Date:

Annexure-3

Declaration regarding track record

To,
The Chairperson,
Materials Engineering Department,
Indian Institute of Science
Bangalore – 560012, India

Ref: Tender No: XXXXXXXXX

Dated: XXXXX

Supply and Installation of Potentiostat /Galvanostat /Electrochemical Workstation.

Dear Sir,

I've 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'm 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 the 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-4

Declaration for acceptance of terms and conditions

To,
The Chairperson,
Materials Engineering Department,
Indian Institute of Science
Bangalore – 560012, India

Ref: Tender No: XXXXXXXXX

Dated: XXXXX

Supply and Installation of Potentiostat /Galvanostat /Electrochemical Workstation.

Dear Sir,

I've carefully gone through the Terms & Conditions as mentioned 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'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-5

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.

6. 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				
1.a	… (details of essential items)				
1.b	…				
2.	Optional items noted in the technical specification				
2.a	….(details of optional items)				
2.b	…..				
3.	Accessories for operation and installation				
4.	All Consumables, spares and software to be supplied locally				
5.	Warranty (1 year)				

Any additional item

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

Addressed to
The Chairperson,
Attn: Dr. Chandan Srivastava
Materials Engineering,
Indian Institute of Science
Bangalore – 560012, India

7. 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

1. Section 5- Technical Bid (each page signed by the authorized signatory and sealed) with the below annexures:
Annexure 1: Bidders details
Annexure 2: Declaration regarding experience
Annexure 3: Declaration regarding clean track record
Annexure 4: Declaration for acceptance of terms and conditions
Annexure 5: Details of items quoted

2. Copy of this tender document duly signed by the authorized signatory on every page and sealed.

2. Sealed Envelope “B”: Commercial Bid

Section 6: Commercial Bid

Your quotation must be submitted in two envelopes: Technical Bid (Envelope A) and Commercial Bid (Envelope B) super scribing on both the envelopes with Tender No. and due date and both of these 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.