

Ref. No.: IISc/CE/Tender/2022/Domestic/MEWS1 Date: 13 Apr 2022

Tender Notice for Procurement of Multichannel Electrochemical Workstation for General Electrochemistry, Battery and Supercapacitors from Domestic Manufacturers.

(Last Date for Submission: 24th April 2022)

(TENDER FROM DOMESTIC VENDORS)

Date: 13 Apr 2022

Dear Sir/Madam,

This is a Request for Quote (RFQ) from Class I and Class II local suppliers/manufacturers only for the procurement of a Multichannel Electrochemical Workstation for general electrochemistry, battery and supercapacitors, for the Department of Chemical Engineering at the Indian Institute of Science (IISc), Bangalore.

Only the Indian Original Equipment Manufacturer (OEM) or their distributor shall submit a response demonstrating their capabilities to produce the requested equipment to the primary point of contact listed below. The quotations should be on FOR-IISc Bangalore basis in INR only.

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. The bidders must go through the Government of India order stated above and follow all the rules and regulations therein. Relevant definitions as per Government of India order:

Class-I local supplier - A supplier or service provider, whose goods, services or works offered for procurement, has local content equal to or more than 50%.

Class-II local supplier - A supplier or service provider, whose goods, services or works offered for procurement, has local content more than 20% but less than 50%.

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 24th April 2022, 5PM. The bids should be addressed to:

The Chairman,
Department of Chemical Engineering
Indian Institute of Science
Bangalore 560012, India.
Kind attention: Dr Ssanjeev Kumar Gupta, Chemical Engineering
Email: chair.ce@iisc.ac.in, sanjeev@iisc.ac.in

Technical Specifications for Multichannel Electrochemical Workstation For General Electrochemistry, Battery and Supercapacitors

- Multi-channel PC controlled electrochemical workstation with minimum of 2 channels (Bi-POT/GAL) or more in a single chassis for Testing, Characterizing and Evaluating Battery, Supercapacitors and Solar Cells.
- Two electrodes as well as Three Electrodes Tests should be possible with provision to connect Independent Reference Electrodes for both Channels independently and simultaneously.
- Bi-Potentiostat facility should be available for RRDE experiments
- Both channels should work independent as well as simultaneous.
- Provision to connect 2 Working Electrodes and Measure EW1 and EW2 simultaneously in one Cell Setup with common Reference and common Counter Electrode in a single experiment

Detailed Specifications as below-

- Multichannel Single Chassis – expandable up to 2 Channels
- Channels Required: 02 Channels (Both Channels to be equipped with EIS Facility)
- Cell Cable 1.5M long with Electrode Connection: 2, 3, 4 electrode + ground or more for both Channels
- Compliance voltage: 0-20 V or better
- Applied Voltage: ± 10 V or better
- Maximum Output Current: ± 1 A at ± 10 V or better
- Current Ranges: ± 10 μ A to 1 A or better
- Accuracy of applied and measured current: ± 0.1 % of Full-scale range or better for both channels
- Voltage accuracy applied and measured: 0.1% of Full scan range or better for both channels
- Frequency range: 10 μ Hz to 1 MHz or better
- Impedance accuracy of 1%, 1°
- Input Impedance: 1 T Ω or better for both channels
- Bandwidth of electrometer with Booster: >1 MHz or better
- Acquisition: 200,000 samples/second or better
- Interface for connection with PC: USB, Ethernet LAN
- Possibility to upgrade to high current upto 200A for future expansion
- 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

Electrochemical Software:

- Complete Electrochemistry Software with Cyclic Voltammetry, Linear Sweep Voltammetry, Staircase Voltammetry, Chronoamperometry, Analysis (PSA), Open Circuit Potential-Time (OCPT), Integrated Pulse Amperometry Detection Chrono Potentiometry, Galvanostatic Charge / Discharge (Including C rate control) with voltage vs. time
- Multigraph window capable of displaying up to 50 graphs within a single window
- Voltage vs. Capacity plot during Charge/Discharge Cycles
- At least 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)
- GITT and PITT Techniques Battery Characterization -Polarization Curve measurement/IV Testing/ Linear
- 20V Adjustable potential window should be available for the reference Electrode
- Analysis tools (peak, convection wave, integral), with classical fits (linear, circular) and CV fitting tool.
- EIS measurements simultaneously on the working and on the counter electrodes.

- 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

Items to be Quoted in Optional

- Branded PC i3, 4GB RAM, 500 HDD, LED Monitor, Windows 10 OS
- 1KVA UPS with at least 30 Minutes Backup

Terms and conditions:

- **Warranty:** The Main system Should Have a Warranty of Minimum Two Years from the date of installation and commissioning of equipment and Non-Comprehensive AMC for one year after completion of warranty