



Indian Institute of Technology Madras

I.I.T.P.O., MADRAS-600 036

DEPT.OF CHEMICAL ENGG.

Form for Inviting Quotations

Ref.No.

Date: 15-2-2016

CHE	2015	004	STORES
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Under Certificate of Posting

Dear Sirs,

DUE DATE: 01-3-2016

1. Quotations are invited in duplicate for the various items shown below / overleaf / Enclosed list.
2. The Quotations duly sealed and superscribed on the envelope with the reference No. and due date, should be addressed to the undersigned so as to reach him on or before the due date stipulated above.
3. The Quotations should be valid for sixty days from the due date and the period of delivery required should also be clearly indicated.
4. If the item is under DGS&D Rate contract No. and the price must be mentioned. It may also please be indicated whether the supply can be made direct to us at the Rate contract price (Please note that we are not Direct Demanding Officers). If so please send copy of the RC.
5. Relevant literature pertaining to the items quoted with full specifications (and drawing, if any) should be sent along with the Quotations, wherever applicable. Samples if called for, should be submitted free of charges, and collected back at the supplier's expenses.
6. Local Firms : Quotations should be for free delivery to this Institute. If Quotations for Ex-Godown delivery charges should be indicated separately.
7. Firms Outside Madras : Quotations should be for F.O.R. Madras. If F.O.R. consignor station, freight charges by passenger train / lorry transport must be indicated. If Ex-Godown, packing, forwarding and freight charges must be indicated.
8. The rate of sales / General Taxes and the percentage of such other taxes legally leviable and intended to be claimed should be distinctly shown along with the price quoted. Where this is not done, no claim for Sales / General Taxes will be admitted at any stage and on any ground whatsoever. The taxes leviable should take into consideration that we are entitled to have concessional Sales Tax applicable to non Government Educational Institutions run with no profit motive for which a concession. Sales Tax Certificate will be issued at the time of final settlement of the bill.
9. Goods should be supplied carriage paid and insured.
10. Goods shall not be supplied without an official supply order.
11. Payment : Every attempt will be made to make payment within 30 days from the date of receipt of bill / acceptance of goods, whichever is later

Yours faithfully,

C. Raghuram

डॉ. रघुराम चेट्टी / Dr. Raghuram Chetty
सह प्राध्यापक / Associate Professor
रासायनिक अभियांत्रिकी विभाग
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INDIAN INSTITUTE OF TECHNOLOGY MADRAS
Chennai - 600 036 भारत / India

*The quotations are to be two parts:
- one Technical offer and
- one Commercial offer
enclosed in one envelope.*

Specifications for PEM Fuel Cell Test Station

The fuel cell test station should be compact, automatic, and fully integrated equipment with electronic load management in a single chassis of table-top size with provision for gas control humidification. It should have precise and reliable data acquisition system, with alarm management for maximum operational safety.

Electronic load in fuel cell test station

Maximum current load: 50 A or better

Maximum power load: 100 W or better

Current Resolution: 10 mA or better

Voltage Measurement in fuel cell test station

Maximum Voltage: 10 V or better

Voltage accuracy: 0.1 % of the selected value

Voltage Resolution: 2 mV or better

Precise digital temperature controller to be provided for the cell and for preheating the anode and cathode feed gases to desired set temperatures.

Reactant gas control system in fuel cell test station

Humidifiers: Should be designed with by-pass

Temperature range of humidifier: Ambient to > 90°C

Automated water filling provision should exist for the humidifier.

Mass Flow Controller in fuel cell test station

Hydrogen: 0-120 L/h

Oxygen: 0-300 L/h

Digital mass flow controllers should be calibrated for oxygen and air.

The system should be supplied with latest model personal computer compatible with the instrument with provision for data storage and retrieval, along with the required preloaded software and printer.

The instrument should operate with line power 230 V/50 Hz. There should be internal alarm on temperatures and pressures and provision for automatic purging and system shut down under conditions of adversities with respect to temperature and pressure.

All necessary technical manuals required for operation and maintenance of the equipment must be supplied along with the system.

Preferred Accessories: The fuel cell test station should have the capability to add on the following parts as factory fit option.

- (i) The fuel cell test station should have option to integrate with electrochemical impedance analyzer.
- (ii) The fuel cell test station should have the option to integrate pump for liquid reactant flow control for testing direct alcohol fuel cells such as methanol supply for DMFC configuration.
- (iii) The fuel cell test station should have back pressure control system.

Optional Accessories: Offer shall include all the other accessories required for operation of test station.

Warranty: Warranty for a minimum period of 1 year from the date of installation.