



Department of Metallurgical and Materials Engineering
Indian Institute of Technology, Madras, Chennai – 600 036

Enquiry No.

MET	Prathap	002	2015
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Date: 25.9.15

Due Date: 6.10.15

Dear Sirs,

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, Rate Contract Number 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. If so, please send copy of the R.C. (Please note that we are not Direct Demanding Officers).
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 are for Ex-Godown, delivery charges should be indicated separately.
7. **Firms Outside Chennai :** Quotations should be for F.O.R Chennai. 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 Certificates will be issued at the time of final settlement of the bill.**
8. Goods should be supplied carriage paid and insured.
9. Goods shall not be supplied without an official supply order.
10. 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,

1) Fuel Cell Station - 1 NO
Specification on Per Compliance Sheet enclosed.

Pl send Sealed tender addressed to

Dr. Prathap Haindoss


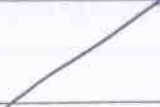
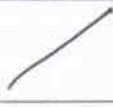
PROJECT CO-ORDINATOR
DEPT. OF METALLURGICAL & MATERIALS ENGG.
INDIAN INSTITUTE OF TECHNOLOGY MADRAS
CHENNAI - 600 036

for The Head of the Department
The Project Co-ordinator
Met. & Materials Engineering
IIT Madras, Chennai – 600 036

*Strike Out whichever is not applicable.

COMPLIANCE SHEET FOR FUEL CELL TEST STATION

Fuel Cell Test Station			1 Unit	Rate : _____
Sl No	Description	Yes (Y)	No (N)	Remarks
1.	Cell Voltage Range of load bank: 0.1 to 10 V or greater			
2.	Current range of load bank : 0 - 25 Amps or greater			
3.	Maximum Watts of load bank : \geq 50 W			
4.	Design of load bank enables and permits control by computer (Computer independently available in laboratory – need not quote for computer)			
5.	Type of Controls : constant voltage /constant current/constant power/constant resistance/ polarization curve control			
6.	Resolution : 1 mv/0.1 mA or better			
7.	Two (2) Cell Heater : \geq 150°C			
8.	Two (2) Line Heaters \geq 150°C			
9.	Two (2) humidifier heaters \geq 150°C			
10.	H ₂ /O ₂ Humidification: 0°C – 150°C			
11.	Pressure Transducers [Two (2) for Hydrogen at Inlet and Outlet , Two (2) for Oxygen at inlet and Outlet] , Pressure Indicators [Two (2) for Hydrogen at Inlet and Outlet , Two (2) for Oxygen at inlet and Outlet] , Pressure Gauges [One (1) for Hydrogen Inlet and one (1) at Oxygen Inlet]			
12.	Temperature indicators, controllers, thermocouple, six (6) in number			
13.	Temperature controlled Gas Humidifier (Bubbler Type) for Hydrogen and Oxygen – 500 ml			
14.	Nitrogen purge to Anode and Cathode – Mechanical (Not Automated)			
15.	Low/High voltage cut off, Low/high load cut off and gas cutoff, should be possible automatically.			
16.	Software to control and operate the fuel cell under standard operating conditions such as constant voltage /constant current/constant power/constant resistance and ability			

	to generate a polarization curve in a user specified manner. It should be possible to program multiple steps at the same time.			
17.	Software should send message via email or mobile in case the station/fuel cell trips for any reason.			
18. 17	Data acquisition system that enables automatic data collection of variables such as Voltage, Current, Temperature, and pressure. It should permit control on the frequency with which the data is recorded (data points per minute being recorded should be user controllable and changeable). Data should be automatically stored in the computer in a standard format importable by excel etc.			