NATIONAL CENTER FOR COMBUSTION RESEARCH AND DEVELOPMENT (NCCRD)
INDIAN INSTITUTE OF TECHNOLOGY MADRAS
CHENNAI – 600036, INDIA

Ref. No. ICS/11-12/013/DSTX/TSUN **Date: 25 Sep. 2015**

Due date: 16 Oct. 2015

Item name: PORTABLE ONLINE GAS ANALYZER

1. Quotations are invited in duplicate for the items shown overleaf (in Annexure I). The quotations duly sealed and superscribed on the envelope with reference no. and due date, should be addressed to the undersigned so as to reach on or before the due date mentioned above.
2. The quotations should be valid for sixty days from the due date and the period of delivery required should also be clearly indicated.
3. The total cost of the equipment in terms of CIP Chennai should be clearly mentioned.
4. Terms of warranty and guarantee should be explicitly mentioned.
5. Packing and delivery charges, customs and clearance duty should be clearly stated.
6. Goods shall not be supplied without an official supply order.
7. Local firms : Quotations should be for free delivery to this institute. If quotations for ex-godown delivery charges should be indicated separately.
8. 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.
9. 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 (CST) 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.
10. Payment : Specify the mode of payment and if advanced payment has to be made. Every attempt will be made to make payment within 30 days from the date of receipt of bill / acceptance of goods, whichever is later.
11. IIT Madras is exempt from payment of excise duty and is eligible for concessional rate of customs duty. Necessary certificate will be issued on demand.
12. IIT Madras has the right to accept the whole or any part of the tender or portion of the quantity offered or reject it in full without assigning any reason.
13. In case of any technical queries/clarifications, please contact Dr. R. Vinu, Dept. of Chemical Engineering, IIT Madras, Chennai, E-mail: vinu@iitm.ac.in; Phone: +91-44-22574187, +91-9500158723.
14. The sealed quotation may be sent to

    Prof. S. R. Chakravarthy
    NCCRD Office
    No. 201, Rarefied Gas Dynamics Lab (Behind Aerospace Engineering Dept.)
    Chennai – 600036
    (P) +91-44-22575025

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Annexure I

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TECHNICAL SPECIFICATION FOR ONLINE, PORTABLE GAS ANALYZER

An online portable gas analyzer (based on electrochemical/NDIR sensors) is required to measure the concentration of the following gases at the outlet of a lab scale combustion/pyrolysis unit.

Gas	Concentration range	Accuracy
O_2	0-30%	±0.1%
CO	0-50%	±0.1%
CO_2	0-50%	±0.1%
CH_4	0-20%	±0.1%
H_2	0-50%	±0.1%
Total hydrocarbons	0-100%	±0.1%
NH_3	0-1000 ppm	±1 ppm
SO_2	0-5000 ppm	±1 ppm
HCl	0-200 ppm	±0.5 ppm

Necessary features:

Outlet temperature of the exhaust gases < 100 ^oC

All the above gas concentrations should be measured and not calculated.

Calibration certificate for all the above mentioned gases.

In-built display of the gas concentrations. Should be capable of transferring data to a USB or to a computer thorough a USB or RS-232 port. (software should be provided)

Tubing (3-5 meters) to connect the outlet of the exhaust to the analyzer.

In-built sampling pump in case the flow rate of exhaust gas is low.

Filter unit to trap the particulates.

Should be capable of choosing the gases based on requirement.

In-built battery for operation in the absence of external power. Charging unit should be provided.

Warranty: minimum 1 year.

Should provide a case for the instrument.