



**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: 2 Jan. 2014

Due date: 22 Jan. 2014

Item name: Proximate 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 queries/clarifications, please contact Dr. R. Vinu, Chemical Engineering, IIT Madras, Chennai, Ph. +91-44-22574187, E-mail: vinu@iitm.ac.in.
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

Ref. No. ICS/11-12/013/DSTX/TSUN

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Technical Specifications for Proximate Analyzer

Component	Requirement
Proximate analyzer	<p>Measurement variables: moisture, volatiles, fixed carbon, ash and loss on ignition (LOI)</p> <p>Principle: Thermogravimetric analysis</p> <p>Scope of application: coal, biomass, crude oil, liquid fuels, plastics</p> <p>Maximum furnace temperature: 1000 °C</p> <p>Programmable heating rate: 5 to 50 °C/min</p> <p>Temperature stability: minimum of ± 2 °C</p> <p>Sample size: 0.1gm – 5 gm, desired max. weight = 10 gm</p> <p>Sample weight accuracy: ± 0.2 milligram</p> <p>Selectable gas environments: N₂, O₂ or air</p> <p>Should be able to analyze atleast 19 samples in a single run</p> <p>Should conform to ASTM D-5142-90 standards for volatiles measurement</p> <p>Dual carousel to automate placing and removing the crucibles inside the furnace</p> <p>Ceramic parts for crucibles, lids, carousels are desired</p> <p>Desired facility: autostart after power failure</p> <p>Faster cooling of furnace using air or nitrogen purge</p> <p>Power supply: 220 VAC, 50/60 Hz</p>
Consumables	Gas cylinders, regulators, filter cartridges
Warranty	1 year warranty at the minimum + 2 years AMC
Software	Software compatible with Windows 7 or higher platform. Provide manual and software CD. Computer – not required (will be procured by us)