INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
MATERIALS MANAGEMENT DIVISION
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TECHNICAL SPECIFICATIONS FOR CHNS(O) Analyser

Fully automated computer controlled element analyser capable of rapid quantitative determinationof elements viz. Carbon (C), Hydrogen (H), Nitrogen (N), Sulphur (S) & Oxygen (O) in wide analysis of organic substances. Tender Should be quoted by OEM or their direct subsidiariesonly.

1. The instrument should have following features:

1.1 Built-in helium and oxygen pressure reducers and gauges preventing air diffusion into the pneumaticcircuit.
1.2 Combustion/reduction in a single furnace furnaces with electronic temperaturecontrol offering full compliance with the most demanding safety regulations
1.3 Quick connectors to simplify the reactors connections without any need of tool.
1.4 Classical GC separation column for reliable gases separation method.Adsorption desorption separation technique will not be acceptable.
1.5 Detector oven with electronic temperature controller.
1.6 Thermo-regulated Electronic Flow Control of helium &Oxygen.
1.7 Automated programmable wake up, start-up and stand-by functions enhancing the independent operation of the Analyser and minimizing running cost.
1.8 System should have dedicated furnace for CHNS & separate dedicated furnace for oxygen.
1.9 System should have automated gas switch over accessory.

2. **Measuring Range:** 0.01% (100 ppm) - 100% for solid samples & 1-10 ppm (low level) for liquid samples (using TCD Detector

3. **Sample size:**0.01 mg to 100 mg or more depending on nature of sample.

4. Furnace:

4.1 Furnaces: Maximum temperature of 1100 °C with 15-years warranty provided by OEM under standard operational conditions.
4.2 Furnaces with Maximum temperature of 1100 °C or more.
4.3 Decrease by 50% of the furnace temperature in Stand-By Mode.
4.4 There should be full compliance with general safety regulations.

5. **TCD Detector:** Housed in a thermally insulated environment (GC oven) and maintained at constant temperature, Maintenance free Thermal Conductivity Detector (TCD) with15- years warranty provided by OEM under standard operational conditions.

6. **GCcolumn:** GC separation Column should be non-consumable under standard operating conditions.
7. **Autosampler:**
7.1 Two Autosampler with a capacity of 32 sample positions or more. (Separate for Oxygen furnace)
7.2 Dedicated viewer which enables real-time monitoring of the flash combustion

8. **Software:**Window based operating software controlling the instrument operations, recording data, performing calculations, diagnostic recording like leak testing and condition monitoring, and manage calibrationprocedures
8.1 Pre-set default methods (instrument, integration, calculation and reportingparameters) available for an easy instrument start-up andrunning
8.2 User reference library: to promptly check sample quality versus a selected reference.

8.3 Automated Leak Check through Electronic Flow Controllers
8.4 Maintenance Control Program
8.5 Automated Evaluation of the Empirical Formula: a valuable tool for obtaining the empirical formula of the sample with a straight forward function
8.6 Automated and programmable wake-up, start-up,shut-off.
8.7 Control of Solid and Liquid Autosampler through one single software.
8.8 Automated transfer of the weight from the balance to the software..

9. **Accessories;**
9.1 Sample Analysis Kit: CHNS kits for 2000 samples analysis should be supplied.
9.2 Sample Analysis Kit: Oxygen kits for 2000 samples analysis should be supplied.
9.3 Suitable configuration of Computer,window 10 operating system and Monitor.
9.4 UHP Helium (99.999% Purity) with Gas filled in 47Ltrs water capacity
9.5 UHP Oxygen (99.999% Purity) with Gas filled capacity 47Ltrs water capacity
9.6 Gas traps should be provided for flow check
9.7 Any other paraphrenia for setting up this instrument

10. **Provide List of Users in India**
11. **Microbalance, UPS and liquid sample accessory are not included in specification , as it is with us.**

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