

## ANNEXURE - IV

### Item: 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/reactor unit.

| Gas                | Concentration range | Accuracy |
|--------------------|---------------------|----------|
| O <sub>2</sub>     | 0-30%               | ±0.1%    |
| CO                 | 0-100%              | ±0.1%    |
| CO <sub>2</sub>    | 0-100%              | ±0.1%    |
| CH <sub>4</sub>    | 0-20%               | ±0.1%    |
| H <sub>2</sub>     | 0-50%               | ±0.1%    |
| Total hydrocarbons | 0-100%              | ±0.1%    |
| NH <sub>3</sub>    | 0-1000 ppm          | ±1 ppm   |
| SO <sub>2</sub>    | 0-5000 ppm          | ±1 ppm   |
| HCl                | 0-200 ppm           | ±0.5 ppm |

Necessary features:

Required Features:

Outlet temperature of the exhaust gases < 100 °C

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

Continuous sampling and analysis of the gases should be possible.

Calibration certificate should be provided for all the above mentioned gases and their mixtures.

In-built display of the gas concentrations.

Include data logger to record and transfer the data to a PC.

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

In-built sampling pump provision is required.

Filter unit to trap the particulates and tarry vapors.

Should be capable of choosing the gases based on requirement.

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

Warranty: minimum 1 year.

Should provide cabinet or casing for the instrument.

### **Essential Conditions:**

- 1) The bidder must be a registered company. Necessary certificate shall be attached. The authorized business partner must submit letter of endorsement form the OEM, if applicable.
- 2) The local vendor of OEM must have supplied similar at least 7-10 similar Furnaces to IITs, NITs, IISERs, CSIR Labs and other Govt. of India R&D organizations (attach proof and purchase order copies, preferably in last 3 years).
- 3) The company should not have been banned/suspended/blacklisted for any reasons by any Government Organization/PSU/CSIR lab in last 3 years. A self- Certified letter must be submitted at the time of bid submission.
- 4) The company should have existence with IIT's for last 5 years, and the necessary proof should be attached along with quotation.
- 5) Machine should come with 3 year warranty from date of supply.
- 6) AMC for 5 year post warranty must be quoted for the system.
- 7) The company must have their service branch/engineer located in nearby location of Chennai.
- 8) Performance certificate from at least 10 users testifying the good performance of the supplied/installed equipment from the vender or their OEMs in past years.