



INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
MATERIALS MANAGEMENT DIVISION
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Detailed Technical Specifications for Aerobic/Anaerobic Respirometer System

S.no.	Specification	Remarks
1.	Mode of operation: Aerobic and anaerobic	Should also contain CO ₂ in-line stripper
2.	No. of reactors: 8 (modular) Capacity of reactor: 250 ml-1000 ml	With stirring base mechanism for adequate mixing Water bath for temperature control and heating recirculation (30-70 °C): 8-position water bath and cover
3.	Gas Flow Measurement	0.03mg of oxygen per input cycle to 1000 mg/hr Anaerobic gas flow: 5 -2000 mL/hr
4.	Parameters to be measured: methane generation, carbon dioxide generation, oxygen uptake rate, respiration activity	1. sensitivity for aerobic environment-0.05 mg 2. sensitivity for anaerobic environment- 0.05 ml Should have oxygen pressure control module
5.	Laptop with data collection/ acquisition module	Laptop with data collection/acquisition module should be provided with the latest software and compatible to latest version of MS windows. Bidder should also provide complete specification of laptop provided with the software. Data measurement interval for data acquisition software should be at least between 1 minute to 60-minute range. Note: If the data acquisition software for adding additional reactor to system (for e.g. 8 main+ 8 additional) is different please mention it separately as note with additional price.
6.	Materials	The control modules and stirring units

		should be of stainless steel. Covers should be made of high-density polymer for durability and corrosion resistance
7.	Stirrer Mixing Speeds	The mixing speed for each reactor should be independently controllable with range of 100 to 1000 rpm.

Note:

1. Additional 8 Anaerobic reactor flow meter price should be quoted as separate line item. The flow meter should be able to measure biogas flow in 8 reactors simultaneously with range of 5-2000 ml/hr in each reactor.
2. Vendor has to provide installation and onsite user training.
3. The instrument should be ready in all aspects and ready to use. Also, may include the necessary consumable like glass ware.
4. As reference, details of systems (Format 4) previously installed in reputed Govt. Institutions/Research Laboratories in last 3-5 years must be provided. Past PO copies can be provided along with the Technical Bid. The feedback from previous organization will be considered for technical evaluation.
5. The data recorded and processed by the software program should generate excel spread sheet containing information as: date, time, flow (ml/hr) or (mg/hr), gas concentration and valve number.
6. The software which will be installed in the PC should also be provided in CD/DVD/USB.
7. The instrument must have electrical compatibility with the Indian power outlet in terms of voltage, phase and current.
8. The technical committee may ask the vendors to demonstrate the working of respirometer, if the committee is not specified with the provided information.
9. Bidder should provide a minimum 2-year warranty on the complete instrument. Bidder should quote for 1- and 2-year AMC as a separate line item.