

## Technical Specifications of “Isoperibol Bomb Calorimeter”

### 1.0 Bidder Eligibility Criteria:

I	<b>Bidder Eligibility Criteria-I (Public Procurement – Preference to Make in India)</b>	<b>Class I / Class II</b>	<b>Local Content value</b>	<b>Reference, Page No.</b>
I	Only 'Class-I local suppliers' and 'Class-II local suppliers', as defined under DIPP, MoCI Order No. P-45021/2/2017-PP (BE II) dated 16 <sup>th</sup> September 2020 and other subsequent orders issued therein.			
<b>2.0</b>	<b>Bidder Eligibility Criteria-II</b>	<b>Complied/Not Complied</b>	<b>Reference Page No.</b>	<b>Remarks, If any</b>
1	The supplier/vendor must be an original equipment manufacturer or an authorized agent/dealer/seller of the item. The vendor should have supplied at least 10 similar units at other IITs or NITs, or national laboratories and research centres (DRDO/CSIR/BARC/IGCAR), or R&D centres of reputed multinational companies, or globally recognized universities, in the last 5 years. PO copy, or performance certificate, along with contact details (for these organizations) needs to be submitted.			

### 3.0 Technical Compliance:

#### Equipment feature:

Sl.No	Specifications	Complied/Not Complied	Reference Page No.
<b>A Equipment Features::</b>			
1	1. Microprocessor controlled bomb calorimeter for the measurement of heat of combustion, gross calorific value of solid and liquid fuels		
	2. Scope of application: coal, biomass, solid wastes, soil samples, hydrocarbon liquid fuels, crude oil, bio-/pyrolysis oils		
<b>B Standard Technical Specifications</b>			
1.	Analysis type: isoperibol or continuously compensated isoperibol		
2.	Measurement units: J/kg, cal/g, BTU/lb		
3.	Temperature: highly accurate electronic measurement		
4.	Temperature resolution: 0.0001 °C		
5.	Combustion vessel/Bomb: stabilized stainless steel to resist corrosion		
6.	Resolution: 0.001 cal/g or better		
7.	Relative standard deviation: 0.1% or better		
8.	Upper range of measurement range: greater than 10,000 cal/g		

9.	Crucible type: metallic Ni-Cr alloy or quartz		
10.	Gelatin capsules for volatile liquid samples		
11.	Analysis time per sample: 10 to 15 minutes		
12.	Chiller (if required)		
13.	Automatic oxygen filling		
14.	Capability in-built for thermal correction and correction of spikes, ash/nitrogen, acid, fuse wire, sulfur and hydrogen		
15.	Measurements should conform to ASTM D-5865 and other methods		
16.	Bomb type: same or different bombs for solid and liquid samples		
17.	Power supply: 220-240 V, 50 Hz AC with single/three-phase power supply		
18.	<p><b>Data Analysis Requirements</b></p> <p>The equipment should have an in-built graphic display (touch screen is preferred) for standalone operation and display of results. Should be upgradable to a software-controlled system using PC In-built data storage capability for atleast 1000 analyses and test report archiving using SD memory card.</p>		
<b>Consumables:</b>			
19.	O2 gas cylinder with instrument-grade O 2 and regulator with filter cartridge		
20.	Sample crucibles (Ni-Cr alloy or quartz), gelatin capsules (100 nos.)		
21.	Ignition threads for atleast 2000 analysis, chemical standard for calibration (benzoic acid or equivalent) with certificate		
22.	<b>Warranty:</b>	3 years	
23.		Optional Quote-1: Pellet press with ¼” punch and die set	
24.		Optional Quote-2: Additional 2 years warranty may be quoted separately.	
25.		Optional Quote-3: AMC for 2 years after 3 Years Warranty period	
26.		(Optional quotes will not be taken up for price bid comparison)	
<b>Other Terms and Conditions</b>			
1.	The system should be delivered within 14-16 weeks from the opening of the letter of credit or issue of the purchase order, whichever is later.		
2.	Costs and related information should be given only in the financial bid.		
3.	The cost should include all delivery costs up to IIT Madras.		
4.	The warranty shall commence only from the date of equipment installation at IITM.		

5.	IIT Madras reserves the right to exclude some items from the purchase.		
6.	As part of tender technical evaluation, IIT Madras will approach the past end users for feedback and in case of any adverse feedback the bidder will be technically disqualified.		
7.	The system should be installed and commissioned with no additional cost.		
8.	Training at IIT Madras should be provided with no additional cost.		
9.	System manual should be provided in CD or pen drive form.		
10.	Services and spares should be necessarily available within India.		

S.No	Technical Bid should comprise of the following	Complied/ Not Complied	Reference Page No.
1.	Detailed Technical brochure		
2.	Detailed technical write up explaining how each of the Technical Specifications are complied with, indicating the location in the brochure		
3.	The vendor should guarantee round the clock technical support not only during the warranty period but even beyond through an annual maintenance contract. Demonstration of having provided such satisfactory technical support to customers shall be enclosed with the technical bid.		
4.	The manufacturer must have a well-qualified technical support team		

(Note: It is mandatory for the bidders to provide the compliance statement in tabular column format along with catalogue page number (comply/not comply) for the Above points with document proof as required. Failing which bidders will be technically disqualified)