Bharat Heavy Electricals Limited
(High Pressure Boiler Plant)
Tiruchirappalli – 620014, TAMIL NADU, INDIA

An ISO 9001 Company

CAPITAL EQUIPMENT / MATERIALS MANAGEMENT

ENQUIRY- CORRIGENDUM 2	Phone: +91 431 257 7421,7297 Fax: +91 431 252 07 19 Email: vkaruna@bheltry.in, hari.r@bhel.in Web : www.bhel.com

	Enquiry Number:	**Enquiry Date:**	**Revised Due date for submission of quotation:**
NIT NO. 50622	**2631900075**	**18.12.2019**	**07.02.2020**

You are requested to quote the Enquiry number date and due date in all your correspondence. This is only a request for quotation and not an order.

Please note that under any circumstances both delayed offer and late offers will not be considered. Hence vendors are requested to ensure that the offer is reaching physically our office before 14.00 hrs on the Date of tender opening.

Item Description: Bomb Calorimeter – Qty: 1 No.

Details of Corrigendum

1. Part A Clause 1.3 Revised as per Corrigendum 2

2. AMENDMENT TO CLAUSE Nos. 1.0,4.0,5.0,9.0,14.0,15.0& 16.0 (Sub clause No. 5) of PART – B as per Corrigendum 2

3. Tender Due Date is extended to 07.02.2020

All other terms & conditions and specifications as published in the NIT 50622 remain unchanged.

BHEL's General guidelines / instructions (refer MM/CE/GENL/001) including bank guarantee formats and list of consortium banks, commercial terms check-list can be downloaded from BHEL web site http://www.bhel.com or from the Government tender website http://tenders.gov.in (public sector units > Bharat Heavy Electricals Limited page) under Enquiry reference "2631900075"

Tenders should reach us before 14:00 hours on the due date Tenders will be opened at 14:30 hours on the due date Tenders would be opened in presence of the tenderers who have submitted their offers and who may like to be present	Yours faithfully, For **BHARAT HEAVY ELECTRICALS LIMITED** DGM/ Capital Equipment / MM

V. KARUNAKARAN
Dy. General Manager
Capital Equipment / MM
BHEL / Tiruchirappalli - 620 014

CORRIGENDUM 2

BOMB-CALORIMETER FOR FUEL ANALYSIS, Qty. - 1 No.

Ref: NIT No. 50622, Enquiry no. 2631900075 Dated 18.12.2019

1) PART A of the Tender Technical Specification

Sl. No.	BHEL specification	SHALL BE HEREAFTER READ AS
1.3	The bidder shall submit at least one Performance certificate from any of their customers for satisfactory performance of bomb-calorimeter of the quoted model for a period of at least 1 year from the date of commissioning. A suggestive format of performance certificate is given in Annexure	The bidder shall submit at least one Performance certificate for satisfactory performance of bomb-calorimeter of the quoted model supplied to an NABL accredited Lab where such equipment has been supplied in the last 5 years and has worked for a period of at least 1 year from the date of commissioning, as on the date of opening of tender. A suggestive format of performance certificate is given in Annexure

2) PART B of the Tender Technical Specification

Sl. No.	BHEL specification	SHALL BE HEREAFTER READ AS
1.0	**Description:** The intended bomb calorimeter is a bench top apparatus used for the measurement of heat of combustion (gross calorific value) of mainly solid fuels such as various grades of coal and different liquid fuels. The bomb calorimeter shall work wholly under the principle of isoperibol mode (as per 3.1.6 BIS 1350 2017 PART 2) using dedicated microprocessor based control and measurement system. The calorimeter shall have automated external water cooling system for thermal stabilization of the calorimeter components.	**Description:** The intended bomb calorimeter is a bench top apparatus used for the measurement of heat of combustion (gross calorific value) of mainly solid fuels such as various grades of coal and different liquid fuels. The bomb calorimeter shall work wholly under the principle of isoperibol mode (as per 3.1.6 BIS 1350 2017 PART 2) using a dedicated computer based control and measurement system. The calorimeter shall have automated cooling system for thermal stabilization of the calorimeter components.
4.0	Sample Size: Max: min 0.2 g to max 1.0 g	Sample Size : min 1.0 to max 1.3 g
5.0	Precison Range: ≤ 0.5 % (RSD) in standard Benzoic Acid measurements.	Precison Range: ≤ 0.05 % (RSD) in standard Benzoic Acid measurements (each 1.0 g pellet).
9.0	Jacket Cooling: The calorimeter should be working based on the principle of isoperibol method where the outer jacket temperature is maintained in a constant temperature (isoperibol) by an external water circulation system. The water circulation system shall also be	Jacket Cooling: The calorimeter should be working based on the principle of isoperibol method where the outer jacket temperature is maintained in a constant temperature (isoperibol) by an external water circulation system/integral cooling system. The water circulation system shall also be accompanied

Sl. No.	BHEL specification	SHALL BE HEREAFTER READ AS
	accompanied with a chiller for immediate cooling of the jacket temperature and maintaining the same throughout the analysis period in high ambient temperature. (as per A1.4. ASTM D 240 17 and B 3.1.6. BIS 1350 2017 part 2)). The water handling system shall be of imported origin and shall be coupled with auto pipette of 2000 ml capacity for filling the bucket. Jacket and calorimeter vessel (bucket) shall be sufficiently separated by an insulating medium e.g. air gap to avoid heat leakage.	with a chiller/suitable cooling system for immediate cooling of the jacket temperature and maintaining the same throughout the analysis period in high ambient temperature. (as per A1.4. ASTM D 240 17 and B 3.1.6. BIS 1350 2017 part 2)). The water handling system shall be of any reputed make acceptable to BHEL and shall be coupled with auto pipette of 2000 ml capacity for filling the bucket. Jacket and calorimeter vessel (bucket) shall be sufficiently separated by an insulating medium e.g. air gap to avoid heat leakage.
14.0	Calorimeter vessel (bucket) should be removable / fixed and combustion bomb should be removable from the system as and when required for the regular operation of the instrument. The MOC of the bucket shall be declared.	Calorimeter vessel (bucket) should be removable type and combustion bomb should be removable from the system as and when required for the regular operation of the instrument. The MOC of the bucket shall be declared.
15.0	Instrument Control: The bomb calorimeter shall be equipped with a user friendly software based interface for feeding the test parameters and carrying out auto ignition of sample, auto measurement of various parameters up to the end of analysis of calorific value (GCV). In this regard it can have a separate input system such as a PC or it can have on board control system with color LCD display with input peripherals. The calorimeter should have options for getting the data such as temperature increase vs time, energy release vs time. This feature should have demonstrated during commissioning.	Instrument Control: The bomb calorimeter shall be equipped with a user friendly software-based interface for feeding the test parameters and carrying out auto ignition of sample, auto measurement and monitoring of various parameters up to the end of analysis of calorific value (GCV). In this regard a dedicated computer system shall be supplied along with the instrument with all required peripherals. The calorimeter should have options for getting the data such as temperature increase vs time, energy release vs time. This feature should have demonstrated during commissioning.
16	Essential Accessories to be supplied along with the instrument as standard scope of supply: 5. 200 numbers of pellets of benzoic acid (each 1.0 gram) shall be supplied along with the instrument with test certificates for calorific value.	Essential Accessories to be supplied along with the instrument as standard scope of supply: 5. 200 numbers of pellets of benzoic acid (each 1.0 gram) shall be supplied along with the instrument with test certificates traceable to NIST for calorific value. **(All other points under this Sl. No. 16 remains unchanged)**