



An ISO 9001
Company

Bharat Heavy Electricals Limited

(High Pressure Boiler Plant)

Tiruchirappalli – 620014, TAMIL NADU, INDIA

CAPITAL EQUIPMENT / MATERIALS MANAGEMENT

ENQUIRY	Phone: +91 431 257 7421/ 7297 Email : vkarna@bhel.in , hari.r@bhel.in Web : www.bhel.com
NOTICE INVITING TENDER	

TWO PART BID	Enquiry Number:	Enquiry Date:	Due date for submission of quotation:
Tender to be submitted in two Parts	2631900032	11.09.2019	07.10.2019

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	Quantity
10	Online Stack Monitoring System as per the technical specification & commercial conditions applicable (to be downloaded from web site www.bhel.com or https://eprocure.gov.in/epublish/app)	1 No.

Important points to be taken care during submission of offer

1. Delivery terms shall be FOR BHEL Stores, Trichy for indigenous vendors and CFR Chennai Airport/ Seaport for foreign vendors.
2. Compliance Form MM/ CE/ TRY/ IMP/ 02 & MM/ CE/ TRY/ IND/ 02A to be filled and enclosed along with the offer failing which, the offer will not be considered for evaluation.
3. EMD applicable for this enquiry is INR 60,000/-
4. Delivery period required is 5 months from the date of Purchase Order.
5. Erection and commissioning activities shall be done by the supplier, at BHEL, Trichy works.
6. Time period required for Erection and Commissioning activities shall be 3 weeks from the date of intimation by BHEL
7. All updates, amendments, corrigenda, etc., (if any), for each tender will be posted only on the above websites from time to time, as and when required, until each tender is opened. There will be no publication of such updates, amendments, corrigenda, etc., through newspapers or any other media.

BHEL's General guidelines / instructions (refer MM/CE/GENL/001- EMD), compliance form and technical specification can be downloaded from BHEL web site <http://www.bhel.com> or from <https://eprocure.gov.in/epublish/app> under Enquiry reference "2631900032".

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

V. Karunakaran 11/9/19
DGM / MM/ Capital Equipment

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

Part A:- Pre-Qualification Criteria for Installation of Online Stack Emission Monitoring System

Sl No	BHEL's Requirement	Vendor's Response
1	The vendor should have designed, supplied and installed "Online Continuous Stack Emission Monitoring Systems" to measure SOx, NOx, CO and SPM (Suspended Particulate Matter) in stack of LPG furnaces/ gas engines/ diesel engines etc. as per CPCB/ TNPCC guidelines in last 5 years. Vendor shall provide copy of purchase orders/work orders as proof of the same.	
2	Along with Technical offer, the Vendor should submit performance certificate for the Purchase Order indicated in Sl. No: 1 for the satisfactory performance of the system for a minimum period of one year.	
3	Vendor's having authorised service support in India, are eligible to quote for the tender. The copy certifying the company availability in india shall be provided by the vendor.	
4	Documents pertaining to Part-B (Technical Bid) along with point-wise compliance to be provided with the offer.	
5	Complete list of BOM shall be provided by the vendor at enquiry stage for evaluation of the offer.	

Part B:- Compliance Statement Sheet for Installation of Online Stack Emission Monitoring System

SI No	BHEL's Desired Parameter/ Specification	Vendor's Comments
1.0	General Requirements	
1.1	Installation and commissioning of a real time web based system (online monitoring system) for uploading of stack emission parameters of LPG fired furnace. The monitored data has to be captured from all the stack emission sensors and to be connected to a common PC. PC (with specification mentioned below) will be provided by BHEL. This PC should be used as a server to upload the stack emission data to internet via a public domain IP address. Suitable Server Software shall be provided by the vendor. Installation, configuration, running of the server shall be done by the vendor on the PC provided by BHEL. Suitable front end web page to monitor the parameters from the server shall be developed/ provided by the vendor. Installation & commissioning of all the necessary hardwares and softwares to capture, transmit & store the data in PC and to upload the data in the internet web page "https://www.tnpcb.gov.in/careair-centre.php" for Online Continuous Monitoring System as per the latest guidelines of CPCB/ TNPCB are in vendor's scope.	
1.2	Vendor is advised to visit the site and get all details as may be required, prior to submitting the offer. On award of the work, vendor shall have to depute their engineer to site to collect data and for technical discussion with BHEL's personnel.	
2.0	Scope of Supply and Work	
2.1	Complete set of equipment for the online monitoring system such as stack emission monitors, data acquisition hardware, operator interfaces and online data uploading system, signal/protocol converters, power supply units, cables, connectors and other accessories as required for normal functioning of the system are in vendor's scope.	
2.2	All required softwares for the system such as for data acquisition, data logger, data concentrator, web uploading, web application etc. are in vendor's scope. The scope shall also include development of a data acquisition and monitoring system as required for continuous data collection from the field instruments and monitoring the data and hosting the same to the server. The dedicated broadband connection will be provided by BHEL.	
2.3	Any item not mentioned in vendor's offer but found required during testing or commissioning shall be supplied by the vendor without any extra cost.	
2.4	All softwares supplied shall be along with appropriate comprehensive licenses for permanent use of the softwares. The scope shall include free upgrade of vendor's software for the data acquisition system, monitoring and web uploading, for a period of at least 5 years from date of commissioning of the system.	
2.5	All works related to inserting the probes in to the chimney will be in vendor's scope. Vendor should bring all tools and consumable items required for mounting the probes and routing of various cables.	

Part B:- Compliance Statement Sheet for Installation of Online Stack Emission Monitoring System

SI No	BHEL's Desired Parameter/ Specification		Vendor's Comments
2.6	The system should consist of but not limited to the following units;		
	Field elements:- The field elements should include probe with suitable filters, dryer (if required), gas analyzers, dust monitors etc.		
	Signal converters and amplifiers		
	Data acquisition system		
	Networking Component & accessories		
	Real time web uploading systems		
	Licensed version of all required softwares		
3.0	Gas Analyzer		
3.1	Gases to be analyzed	Simultaneous and continuous measurement of NOx, SOx, CO components of flue gases.	
3.2	Measurement principle	Non Dispersive Infra-Red Spectroscopy. Vendor to confirm.	
3.3	Measurement range for NOx SOx CO	NOx:0-2000 ppm SOx: 0-2000 ppm CO: 0-5000 ppm	
3.4	Ambient temperature	Up to 50 deg C.	
3.5	Gas temperature range	Up to 300 deg C.	
3.6	Resolution	0.1% on % or 1 PPM on PPM	
3.7	Accuracy	2% of reading or better	
3.8	Response time	Maximum 60 seconds.	
3.9	Display	Graphical	
3.10	Keypad	Touch screen	
3.11	Linearity	+/-1% of full scale for < 1000 ppm; +/-2.5% of full scale for > 1000 ppm	
3.12	Output signal	Minimum 6 linear, isolated, 4-20 mA output, load 500 ohm (selectable)	
3.13	Interference	Interference minimization techniques should be incorporated to reduce the effects of interference from other gas components.	
3.14	Sampling unit	The gas analyzer should consist of a sampling system that includes suction pump, electronic cooler unit (for dehumidifying the sample gas), dust filter, flow meter, needle valve, flanges, switching system between sample and calibration lines etc.	

Part B:- Compliance Statement Sheet for Installation of Online Stack Emission Monitoring System

SI No	BHEL's Desired Parameter/ Specification		Vendor's Comments
3.15	Sampling probe	Sampling probe of suitable material with all necessary accessories like flange, air blower, air tubes, primary filter etc. should be supplied by the vendor.	
3.16	Power supply	180 - 260 V AC, 50Hz.	
3.17	Power rating	Vendor to specify.	
3.18	Auto calibration facility	Built in calibration facility should be incorporated in the instrument. Auto calibration unit should be supplied with calibration gas cylinders with regulators and all required accessories.	
3.19	Communication interface	RS232/USB/Ethernet; compatible software/ modem for PC communication and data download from the internal memory of the instrument.	
3.20	Software	User friendly data format transferrable to user software and data logger.	
3.21	Dimension	Vendor has to mention the physical dimension of the equipment.	
3.22	Calibration certificate	Calibration certificate/ test certificate from authorized agency should be provided.	
3.23	Make and model	Only reputed makes like Yokogawa, Siemens, Horiba, Fuji or its equivalent	
4.0	Dust/ Opacity Monitor for Suspended Particulate Matter		
4.1	Device Type	Probe type	
4.2	Measurement principle	Dual beam method.	
4.3	Measuring transmission	100 - 0%	
4.4	Measuring opacity	0 - 100%	
4.5	Measuring optical density	0 - 3%	
4.6	Measuring dust concentration	0 - 1000 mg/Nm ³	
4.7	Display	LCD display/ Graphic User Interface. Vendor to specify.	
4.8	keypad	Suitable keypad to be provided.	
4.9	Test function	Manual and auto calibration facility should be provided.	
4.10	Accuracy	± 0.2% full scale.	
4.11	Gas temperature range	Up to 300 deg C	

Part B:- Compliance Statement Sheet for Installation of Online Stack Emission Monitoring System

SI No	BHEL's Desired Parameter/ Specification		Vendor's Comments
4.12	Ambient temperature	Up to 50 deg C.	
4.13	Interface	Remote control unit, RS- 232, RS-485 interface etc. Vendor to specify.	
4.14	Relay outputs	System ok, Maintenance, low & high Alarm, status, blower status, power failure, calibration indication, failsafe shutter failure indication, etc..	
4.15	Analog outputs	Electrically isolated outputs 4-20mA.	
4.16	Fail safe shutter	Automatic fail safe shutter should be provided.	
4.17	Purge air blower	Purge air blower with necessary filter should be supplied.	
4.18	Make and model	Only reputed makes like Yokogawa, Siemens, Forbes Marshall, Emerson, Horiba	
5	Data Acquisition System		
5.1	The data from the analyzers has to be gathered by a Data Acquisition System (DAS) to a PC based system and the data has to be uploaded to the web "https://www.tnpcb.gov.in/careair-centre.php" through internet via a dedicated broadband connection (to be provided by BHEL). Whenever required, the uploaded live data can be accessed with the IP at TNPCB office by logging on to the remote server IP address. The specification of the data acquisition system is mentioned below.		
5.2	No of components	Minimum data logging of 8-channels	
5.3	Types of input	Universal inputs such as 4-20 mA DC, RS485, RS232 etc.	
5.4	Power supply	180 - 260 V AC, 50Hz.	
5.5	Display	Local display of all the channels simultaneously	
5.6	PC connectivity	Through USB, Wireless, RS232/485. It has to be connected to the PC provided by BHEL the specification of which is mentioned below. If any accessory is required for interconnection, it would be in vendor's scope.	
5.7	Interface device	Suitable for various signal inputs with high isolation between inputs power supply and output.	
6	Documentation		
6.1	Three sets of following documents (hard copies) in English should be supplied. One copy in CD should also be supplied.		
6.2	O&M manual of all the equipment like gas analyser, recorder, signal converter, probe etc.		
6.3	Detailed drawings of the system.		
6.4	Complete master list of parts (BoM) used in the system.		

Part B:- Compliance Statement Sheet for Installation of Online Stack Emission Monitoring System

SI No	BHEL's Desired Parameter/ Specification		Vendor's Comments
6.5	Drawings showing all interconnections in block level and circuit level.		
6.6	The supplier should produce valid calibration and test certificates for all the instruments and the supplier should provide details of the sources from where we can get the certificates in future. All the instruments are certified by labs accredited to ISO 17025		
7.0	Erection and Commissioning		
7.1	The supplier has to take full responsibility for installation of complete system and carrying out the testing & commissioning of stack emission monitoring system and all other supporting equipment at BHEL,Trichy works.		
7.2	All required tools, equipment and instruments for erection and commissioning should be brought by the supplier. Only welding machine, gas cutting machine and welding electrodes, electricity will be issued by BHEL at free of cost.		
7.3	All spares required for commissioning of the stack monitoring system are under vendor scope.		
8.0	Guarantee: The vendor should offer guarantee for all the hardware and software components for 18 months from the date of supply or 12 months from the date of commissioning, whichever is earlier.		
9.0	Acceptance (tests/ activities to be performed by vendor after commissioning)		
9.1	Vendor should demonstrate all features of the complete system to BHEL personnel.		
9.2	Supplier's representatives should impart training for BHEL personnel regarding operation and maintenance of the online stack monitoring system.		
9.3	The supplier has to co-ordinate with CPCB or TNPCB officials and should demonstrate the functioning (performance prove out) of the system as per their requirement.		
10.0	BHEL's Scope		
10.1	BHEL will provide desktop PC, UPS, BSNL broadband connection with following specifications		
10.2	Operating system	Windows 7 professional version.	
10.3	System type	64 bit operating system.	
10.4	Processor	Intel i5-2400 CPU @ 3.10 GHz.	
10.5	RAM	4 GB	
10.6	Monitor	17" LCD monitor.	
10.7	Accessories	Keyboard, mouse.	
10.8	UPS	500 VA	

Part B:- Compliance Statement Sheet for Installation of Online Stack Emission Monitoring System

SI No	BHEL's Desired Parameter/ Specification		Vendor's Comments
10.9	BSNL broadband connection	Uplink speed: 1 Mbps Modem will be provided by BHEL. One fixed external IP will be provided by BSNL. Configuration of the modem so as to access the server from outside shall be done by the vendor.	
10.10	Power supply	BHEL will provide only 230 V, 50 Hz AC supply at the analyser rooms, the control room and near the outdoor display unit. If any other voltage (like 24 V supply etc.) is required, vendor has to provide suitable equipment for that.	