



Ref : CE/416/DADRI/FGD/DA/PS

Rev. : 01

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**PROJECT : DADRI 2x490MW TPP – FGD SYSTEM**

**CUSTOMER : NTPC**

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**PURCHASE SPECIFICATION  
FOR  
DUST ANALYSER**

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DATE

09/05/2018

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## **SECTION- A**

### **GENERAL INSTRUCTIONS TO BIDDERS:**

All required documents against this Tender/Specification shall be submitted in English only.

Introduction: Bidders are required to offer Dust Analyzer – Extractive Type to be used in FGD based Power Plant applications.

In order to accept the Technical offers / proposals from Bidders for the project mentioned in this Specification (refer Sections C & D), certain Pre-qualification criteria are required to be met by Bidder.

Pre-qualification requirements are clearly mentioned in AA of Section-B of this Specification. Bidder to read the same carefully and submit the details required for BHEL's acceptance.

In case Bidder does not include the details or meet the requirements of Pre-qualification requirements, their offer will be summarily rejected and Bidder's Technical offers will not be evaluated.

**Evaluation methodology:** BHEL shall initially open Bidder's PQR documents only as per Section-B of this specification for review & acceptance. Only after acceptance of PQR documents, BHEL shall open Bidder's technical offers for evaluation. Commercial bids of only accepted/approved Bidders by End users/Customers, shall be considered by BHEL for further processing.

Bidders are required to submit offers as detailed below:

- A. Documents pertaining to Pre-Qualification requirements for AA of Section-B along with point-wise compliance to be uploaded as Part-I Bid.
- B. Documents pertaining to Clause BB Section-B along with point-wise compliance to be uploaded in Part-I Bid, documents for this clause to be identifiable separately in the uploaded documents.
- C. Technical offers/proposals for the Project, whose requirements are mentioned in Sections C & D to be submitted along with point-wise compliance and uploaded as Part-II Bid.

Note 1:-Whenever required during evaluation of PQR and Technical offers/bids, vendor is required to be present at BHEL Electronic Division, Bangalore, for discussions. Further in the event of order, during approval of the Vendor documents by End users/Customers, Vendor shall accompany BHEL representative for discussions.

Note 2:- Deviations (if any) shall be discussed with only those vendors who quote for this tender.

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## **SECTION- B**

### **AA. Pre-Qualification Requirements (PQR) of Bidders for Dust Analyzer – Extractive Type:**

1. The bidder should have executed/ completed work of “Design, supply, erection & commissioning of Dust Analyzer – Extractive Type and shall be in successful operation and working satisfactorily for at least one year in one station of power plant of unit rating 200MW or above as on the date of bid opening of this tender. Bidder means either OEM of analyzer or authorized representatives/ system integrators of analyzer OEM.
2. Original Equipment Manufacturers based outside India, who are making offer for this tender shall have authorized representatives in India for support related to Documentation, Erection, Commissioning & any other co-ordination work. This Authorization provided by OEM to representatives shall indicate the Type, Duration & Validity of the agreement. The Indian representative should have the team of experienced service engineers on payroll located at various parts of INDIA.
3. Submit Reference List of Projects wherein offered system is supplied & commissioned.
4. For Vendors offering upgraded/ latest models, PQR of equivalent previous models is acceptable subject to meeting PQR indicated in clause AA.1. OEM shall certify that offered model is upgraded version of previous model.
5. OEM shall furnish an undertaking that in case of change in Indian representative / agent, OEM shall continue to support supplies w.r.t to field service and supply of spare parts.
6. Bidder shall have optimum inventory of critical components like sensors/ electronic modules.
7. BHEL shall issue call for service / commissioning with 07 days’ notice. Bidder shall agree to visit BHEL project sites within above notice period.
8. BHEL shall submit the signed stamped copy of the Sub-Supplier Questionnaire along with vendor credentials to customer and await customer’s decision for a maximum of one month from the date of PQ bid opening. If approval is not received within above period, BHEL shall treat the offer as “NOT Meeting PQ” criteria and offer shall be rejected.

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**BB. Additional Documents to be submitted along with the documents related to PQR above for reference (OPTIONAL):**

1. Technical literature / Manuals of offered Sensors/ System/ Accessories.
2. In the event of technical specification not indicated in Technical literature, confirmation from OEM is acceptable. Such confirmations shall be suitably supported by certificates like Type test/ Routine test certificates.
3. Submit Unpriced Purchase Order copies for executed projects in the past three years.
4. Submit List of Projects, for which Erection & Commissioning of the offered system has been carried out in the past three years. Also, submit reports of successful erection & commissioning Protocols & Minutes of the meetings for handing over of Dust Analyzer – Extractive Type for these projects.
5. Name & registered address of the Indian branch office or Indian representative for support of E&C and after sales service with Organization chart.
6. Bidder shall have facility in India for Engineering activities, preparation of Documents, trouble shooting and calibration of the system. Submit these details.
7. If Bidder is not Original Equipment Manufacturer (OEM), then Bidder to include Authorization letter from OEM for Design, Engineering, Manufacture, Testing, supply, Erection, Commissioning and Servicing of the offered System. This Authorization letter provided by OEM to Bidder shall indicate the Type and Duration of Validity of the agreement.

Important Note: In case Bidder does not submit details mentioned in above clauses (AA) or meet the requirements of Pre-qualification requirements (AA), Offers will be summarily rejected and Bidder's Technical offers/proposals will not be evaluated. Please read carefully the GENERAL INSTRUCTIONS in Section A of this specifications.

Note 3: A point-wise compliance to be submitted for SECTION-B along with all relevant documents and Sub-Supplier Questionnaire.

## SECTION- C

### PROJECT SCOPE OF SUPPLY

#### **SUPPLY REQUIREMENTS:**

Vendor shall quote unit prices for each of the items indicated below. Without this the offer shall be treated as incomplete and shall be rejected. BHEL reserves the right to choose options such as remote calibration, special tests separately for the project.

#### **PROJECT REQUIREMENT:**

**NAME of Owner / End user: NTPC**

**Project: DADRI 2x490MW – 02 Nos.**

#### **SCOPE:**

- Dust analyzer systems as per Specification CE/416/DADRI/FGD/DA/PS. Quantity – 02 Nos. for the project. Unit rates to be provided for all the items in the offer. Typical instrument parameters for the project:

DESCRIPTION	MEDIUM	RANGE	PRESSURE	TEMPERATURE
CHIMNEY DUST ANALYSER	FLUE GAS	0-50/ 0-300 mg/Nm3	10 mmWC	60 Deg. C

- Spares for O&M of Dust Analyzer ( 01 Set common for both units)

SL NO.	DESCRIPTION	QUANTITY	REMARKS
1	Electronic Card Assemblies/ Display unit	Two nos. each type	
2	Light Source and detector	Two nos. each type	
3	Probe Assembly	Two nos. each type	
4	Air Filter & Blower Assembly along with hose & hose clamps	Two nos. each type	

- Erection and Commissioning for offered system
  - Supervision of Erection, Total Commissioning and Handing over of the offered system to Owner / End user.
- Annual Maintenance Contract (AMC) for 10 years for the project (common for 02 Units):
  - a. Quarterly one visit has to be done by the bidder. Bidder shall note that during each visit, cleaning, servicing, testing, checking and calibration of the entire system to be carried out. Bidder to quote for the same on yearly basis.

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- b. Bidder to offer unit rate on 'all inclusive basis' (Stay/ Travel) for the man-days for any additional site visit to meet the system requirement or any site repairs/ replacements.
- c. Bidder to consider all consumables/ calibration gases required for running the system for 10 years. These consumables to be supplied based on their shelf life or yearly whichever is applicable. Unit rates for each of the consumables to be provided.
5. Specific Requirement: Vendors to quote/ confirm the following project specific requirements:
- 5.1 Remote calibration to be offered. Cabling between Remote calibration unit & Dust analyzer at chimney will be in BHEL scope.
- 5.2 Iso-kinetic sampling to be carried out for proving the system at site.
- 5.3 Location of analyzer is at chimney approx. 90m elevation. Chimney Drawing attached for reference.
- 5.4 Vendors to confirm project specific technical requirement as per CE/416/DADRI/FGD/DA/PS REV 01. Any deviation w.r.t this spec to be clearly indicated in the offer.

## SECTION- D

### TECHNICAL REQUIREMENT FOR DUST ANALYSER:

#### **1. General requirements:**

- 1.1. Output signals Analog : 4-20 mA DC isolated
- 1.2. Output signal Binary : 2NO+2NC for High alarm
- 1.3. Zero and span adjustment : To be provided with range selection facility
- 1.4. Ambient temperature : 50 Deg. Centigrade
- 1.5. Indication in Local Unit : Digital Alphanumeric Display. Display of reading in engineering units shall be provided.
- 1.6. Enclosure : Weather and dust proof (IP 55) Die cast Aluminum / SS
- 1.7. Type of Electronics : Microprocessor based with self-diagnostic.
- 1.8. Digital Signal Transmission : HART /RS 485 Port Modbus Protocol/ Ethernet TCP/IP protocol for communication of stack emission data to CEMS PC to be provided.
- 1.9. Calibration : Auto and Manual (from Remote)
- 1.10. Error Diagnostic : To be Provided
- 1.11. Compliance to standards : USEPA, TUV, MCERTS or equivalent standards.
- 1.12. Warranty: 2 years.
- 1.13. Annual Maintenance Contract (AMC) (common for 02 units): Shall be for a period of 10 years after expiry of warranty period (2 years). This shall cover total maintenance of all hardware related to the system and supply of all consumable items. BHEL shall have the option to not renew the AMC after the end of first five years with a notice period of one month. Bidder to provide year wise price break up for the same.
  - 1.13.1. Availability of valid data: At least 95% of time during warranty & AMC period and necessary steps to ensure availability shall be taken by the bidder.
  - 1.13.2. Quarterly one visit shall be made by the bidder. Bidder shall note that during each visit, cleaning, servicing, testing, checking and calibration of the entire system to be carried out. Further, Service reports, in mutually agreed format (check list), are to be furnished for having carried out the services / breakdown services. Service report shall be signed by bidder representative & BHEL representative at site.
  - 1.13.3. Emergency Maintenance Service – as and when required i.e. Bidder shall note that problem shall be attended within 72 hours and furnishing a service report for the same preferably on same day.
  - 1.13.4. Hardware/ Software Replacement – as and when required from the available spares shall be done by the bidder within 72 hrs to ensure system availability for operation.
  - 1.13.5. Bidder to offer all consumables/ calibration gases required for running the system for 10 years. These consumables to be supplied based on their shelf life or yearly whichever is applicable
  - 1.13.6. Personnel deputed for service shall be covered under statutory provisions like insurance, provident fund etc. by bidder and Employer/ BHEL is not responsible for the above.



1.13.7. Bidder to plan for any additional visits to site other than the quarterly visits mentioned above to meet the system requirement or any site repairs/ replacements

**2. Technical requirements for DUST Analyzer:**

- |      |  |   |
|------|--|---|
| 2.1  | Type of instrument   | : Extractive Type with Heated Sampling.   |
| 2.2  | Principle of measurement   | : Scattered Light   |
| 2.3  | Measurement range  | : 0-50/ 0-300 mg/Nm <sup>3</sup> selectable at any value in between.  |
| 2.4  | Accuracy   | : $\pm 2$ % of lowest Measuring Range or better   |
| 2.5  | Linearity  | : $\pm 1$ % of lowest Measuring Range or better.  |
| 2.6  | Repeatability  | : $\leq 1$ % of lowest Measuring Range  |
| 2.7  | Response time (up to 90% of full scale)  | : $\leq 5$ Sec.   |
| 2.8  | Drift :  |   |
|      | 2.8.1 Temperature Drift  | : $< \pm 2$ % /10 Deg. C  |
|      | 2.8.2 Zero Drift   | : $< 1$ % lowest Measuring Range/week   |
|      | 2.8.3 Span Drift   | : $< 1$ % lowest Measuring Range /week  |
| 2.9  | Operating range  | : 0-300°C.  |
| 2.10 | Filter   | : to be provided  |
| 2.11 | Accessories  | : Purging system to be provided with heavy duty blowers along with all required accessories.  |
| 2.12 | Compensation for Temp./ measurement  | : Yes (Temperature measurement using thermocouple and transmitter with 4-20mA flue gas temp. signal to DDCMIS in addition to Dust Analyzer)                                 |
| 2.13 | All interconnecting cabling between the accessories of the dust analyzer including cables up to JB to be provided by the bidder. |   |
| 2.14 | Power supply (nominal)   | : 240 V AC Single phase, 50 Hz.   |
| 2.15 | Process flange   | : As per suitable for 3" 150#. Bidder to provide all required mounting accessories such as stub, mating flange on probe suiting the above along with Gaskets and Fasteners. |
| 2.16 | Chimney elevation  | : at elevation 90m (Approx.) in the chimney.  |

**3. Remote Calibration:**

**The analyzer shall have facility for Remote manual calibration, this shall be in addition to calibration facility available in local control unit. Vendor shall offer all required hardware and software for remote calibration along with necessary details. Typical location of this facility is in main equipment room of Unit Control room. If vendor proposes to use a PC based remote calibration system, a PC OEM manufacturer like HCL, HP, DELL, LENOVO or IBM shall be offered. Assembled PCs are not acceptable. Remote calibration system shall be certified by manufacturer of analyzer for suitability of components and engineering.**

**Bidder shall furnish with the offer Clause-wise compliance / deviation list. This is mandatory for evaluating the offer.**

**4. Iso- Kinetic Sampling:**

Iso-Kinetic Sampling shall be done at site for proving the offered system at site. Bidder is free to hire any agency from their end for this purpose.

**5. Documents to be furnished, with the offer:-**

- 5.1 Datasheets / Schematic and Probe assembly Drawings - 02 set
- 5.2 Technical Literature / Catalogs - 02 set

**6. Documents to be furnished for Approval , in the event of order :-**

- 6.1 Datasheets / Schematic and Probe assembly Drawings - 04 sets. Also a soft copy of all drawings shall also be furnished.
- 6.2 Technical Literature / Catalogs - 04 sets

**7. Quality documents to be submitted for approval.**

Test Certificates/ Reports and Calibration Reports, for approval, before dispatch of items. The calibration reports shall correspond to range of the analyzer as per the instrument schedule.

**8. O& M Manuals – 4 sets (2 Sets to BHEL-EDN Bangalore & 2 Sets to site with Consignment).**

**9. Erection and Commissioning requirement for offered System**

- 9.1. Supervision of Erection, Total Commissioning and Handing over of the offered Dust Analyzer system to Owner / End user.

## SECTION- E

A. Vendors to offer unit prices as per details below:

SL NO	Description	Unit	Quantity for DADRI	Unit Price (Rs.)	Total Price (Rs.)
1	DUST ANALYZER	Nos.	02		
2	Accessories for Dust analyzer like air blowers, hose pipe etc.	Set	02		
	Mounting Accessories with stub, counter flanges, mating flanges & fasteners				
	Remote Calibration Unit				
3	AMC for 10 years after completion of warranty period	Set	01		

B. Unit Rates to be offered as below:

SL NO	Description	Unit Rates
1	Cables of each type	
2	Consumables of each type	
3	Man-day Charges for site visit	

NOTE 4: - Unit rates of all items above to be quoted. These unit rates will be used for addition/deletion during execution.

C. Mandatory Spares as per details below:

SL NO.	DESCRIPTION	QUANTITY	Unit Price (Rs.)	Total Price (Rs.)
1	Electronic Card Assemblies	Two nos. each type		
2	Light Source Bulb	Two nos. each type		
3	Probe Assembly	Two nos. each type		
4	Air Filter & Blower Assembly along with hose & hose clamps	Two nos. each type		

NOTE 5: For Percentage calculation total quantity of the project to be considered. If exact items as indicated in the mandatory spares list are not available for the offered system, then functionally equivalent item shall be offered by the bidder. Unit prices offered will be used for any addition/deletion during execution.

## **SECTION- F**

# **SUB-SUPPLIER QUESTIONNAIRE**



**CORPORATE QUALITY ASSURANCE**  
**SUB-VENDOR QUESTIONNAIRE**

<b>i.</b>	<b>Item/Scope of Sub-contracting</b>	
<b>ii.</b>	<b>Address of the registered office</b>	<b>Details of Contact Person</b> (Name, Designation, Mobile, Email)
<b>iii.</b>	<b>Name and Address of the proposed Sub-vendor's works where item is being manufactured</b>	<b>Details of Contact Person:</b> (Name, Designation, Mobile, Email)
<b>iv.</b>	<b>Annual Production Capacity for proposed item/scope of sub-contracting</b>	
<b>v.</b>	<b>Annual production for last 3 years for proposed item/scope of sub-contracting</b>	
<b>vi.</b>	<b>Details of proposed works</b>	
1.	<b>Year of establishment of present works</b>	
2.	<b>Year of commencement of manufacturing at above works</b>	
3.	<b>Details of change in Works address in past (if any)</b>	
4.	<b>Total Area</b>	
	<b>Covered Area</b>	
5.	<b>Factory Registration Certificate</b>	<b>Details attached at Annexure – F2.1</b>
6.	<b>Design/ Research &amp; development set-up (No. of manpower, their qualification, machines &amp; tools employed etc.)</b>	<b>Applicable / Not applicable if manufacturing is as per Main Contractor/purchaser design</b> <b>Details attached at Annexure – F2.2 (if applicable)</b>
7.	<b>Overall organization Chart with Manpower Details (Design/Manufacturing/Quality etc)</b>	<b>Details attached at Annexure – F2.3</b>
8.	<b>After sales service set up in India, in case of foreign sub-vendor (Location, Contact Person, Contact details etc.)</b>	<b>Applicable / Not applicable</b> <b>Details attached at Annexure – F2.4</b>
9.	<b>Manufacturing process execution plan with flow chart indicating various stages of manufacturing from raw material to finished product including outsourced process, if any</b>	<b>Details attached at Annexure – F2.5</b>



**CORPORATE QUALITY ASSURANCE**  
**SUB-VENDOR QUESTIONNAIRE**

10.	Quality Control exercised during receipt of raw material/BOI, in-process , Final Testing, packing			Details attached at Annexure – F2.6		
11.	Manufacturing facilities (List of machines, special process facilities, material handling etc.)			Details attached at Annexure – F2.7		
12.	Testing facilities (List of testing equipment)			Details attached at Annexure – F2.8		
13.	If manufacturing process involves fabrication then-			Applicable / Not applicable		
	List of qualified Welders			Details attached at Annexure – F2.9		
	List of qualified NDT personnel with area of specialization			(if applicable)		
14.	List of out-sourced manufacturing processes with Sub-Vendors' names & addresses			Applicable / Not applicable  Details attached at Annexure. –F2.10 (if applicable)		
15.	Supply reference list including recent supplies			Details attached at Annexure – F2.11 (as per format given below)		
<i>Project/ package</i>	<i>Customer Name</i>	<i>Supplied Item (Type/Rating/Model /Capacity/Size etc)</i>	<i>PO ref no/date</i>	<i>Supplied Quantity</i>	<i>Date of Supply</i>	
16.	Product satisfactory performance feedback letter/certificates/End User Feedback			Attached at annexure - F2.12		
17.	Summary of Type Test Report (Type Test Details, Report No, Agency, Date of testing) for the proposed product (similar or higher rating) Note:- Reports need not to be submitted			Applicable / Not applicable  Details attached at Annexure – F2.13 (if applicable)		
18.	Statutory / mandatory certification for the proposed product			Applicable / Not applicable  Details attached at Annexure – F2.14 (if applicable)		
19.	Copy of ISO 9001 certificate (if available)			Attached at Annexure – F2.15		
20.	Product technical catalogues for proposed item (if available)			Details attached at Annexure – F2.16		
<b>Name:</b> _____						
<b>Desig:</b> _____		<b>Sign:</b> _____		<b>Date:</b> _____		

Company's Seal/Stamp:-

**SECTION- G**  
**CHIMNEY DRAWING**



