

Annexure-C to open tender BAP/PUR/FGD/AIR BLASTERS dt 27.09.2013

S.No	Material Code	Item Description	Unit	Quantity	Destination
1	RFW000610000	8 Nos of Air Cannon/Air Blaster system for two limestone silos as per attached technical specification NTPC:BONG:FGD:AIR CANNON-SPEC-012:REV-00	No	8	BHEL Stores Ranipet

6

**BONGAIGAON- 3X250 MW
FLUE GAS DESULFURIZATION SYSTEM**

TECHNICAL SPECIFICATION

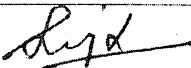
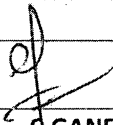
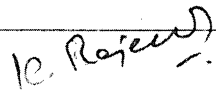
FOR

AIR CANNON/AIR BLASTER

CUSTOMER : NATIONAL THERMAL POWER CORPORATION LIMITED



NTPC:BONG:FGD:AIR CANNON-SPEC-012:REV-00

Prepared	Checked	Approved
		
MANOJ KUMAR THAKUR ENGINEER - FGD	GANESH MANAGER - AQCS	K RAJAVEL DGM - FGD
R00 dated 20 10 2010		

TECHNICAL SPECIFICATION FOR AIR CANNON / AIR BLASTER

1.0 PROJECT INFORMATION	
a) Owner	NTPC
b) Buyer	BHEL, Ranipet
c) Process / application	Wet Lime Stone FGD system
1.1 SITE CONDITIONS	
a) Ambient temperature (Guarantee)	27 Deg C
b) Ambient temperature (Design)	50 Deg C
c) Relative Humidity	60 %
1.2 LOCATION AND APPROACH	
Project location	
a) Place	Kumkuri near Salakati, Bongaigaon
b) District	Kokrajhar
c) State	Assam

2.0 INDENT OF SPECIFICATION

- 1 This Specification and the attached Data sheets define the minimum requirement of Air Cannons /Air Blasters to be used in the limestone silos of Flue Gas Desulphurization (FGD) system.
- 2 There are two number of limestone silos for which air cannons have to be supplied.
- 3 Air Cannon/Air Blasters will be used to dislodge limestone particles that are getting accumulated on the surface of the Limestone Silos without stressing the limestone structure.
- 4 Vendor shall guarantee that after the installation of air cannons, adverse effects like plugging, bridging, rat holing, funneling and arching shall not occur in silo.
- 5 Design, Manufacturing, Inspection and Testing of the Air Cannon /Air Blaster shall comply with all the currently applicable statutes, regulation and safety codes in the locality where the equipment are to be installed. The Equipment shall also conform to the latest applicable Indian/British/American Standards. Nothing in this specification shall construe to relieve the contractor of the required statutory responsibility.
- 6 Compliance to this specification shall not relieve the vendor of responsibility of furnishing the equipment and accessories/auxiliaries of proper design, materials and workmanship to meet the specified requirements.
- 7 A single point of instrument air ($180 \text{ Nm}^3/\text{hr}$ @ 6 kg/cm^2) will be terminated near the limestone silo, vendor to provide necessary arrangement to take air from this point to air cannon/air blaster system.
- 8 Bidder shall provide two control panels with Automatic Sequential timer for the sequential operation of air cannons.
- 9 The Conical Portion of the Limestone Silos where Air Cannon will be installed is coated with SS - 3 mm thick.
- 10 In case of any deviation taken by the vendor, it shall be listed in the proposal under separate section titled as " list of deviations/exceptions" from the enquiry document.

3.0 SCOPE OF SUPPLY

- 1 Design, manufacture, testing and supply Air Cannon /Air Blaster for Limestone silos for the duty condition as specified in respective Technical Data Sheets.
- 2 Supervision of Erection and Commissioning of the equipment at BHEL Bongaigaon site shall be under bidder's scope. Cost for Supervision of Erection and Commissioning shall be included in the offer. It is the bidder's responsibility to commission the air cannons to the satisfaction of end user/BHEL. Duration of visit of engineer for erection/commissioning shall be planned and agreed mutually depending on site condition.
- 3 Suitable type and number of Air Cannons/Air Blasters shall be selected for material & temperature specified in data sheets.
- 4 Life of Air Cannons /Air Blasters shall be guaranteed for a period of minimum two Years.
- 5 Compressed air piping, valves, discharge pipe arrangement, base frame, all mating flanges, gaskets, bolts and fastening, Air Cannon/Air Blaster Accessories required for the Air Cannon /Air Blaster shall be provided by the Bidder.
- 6 In case the vendor considers requirement of additional instrumentation, controls, safety devices and any other accessories/auxiliaries essential for safe and satisfactory operation of the equipment, he shall recommend the same with suitable reasons in a separate section of the proposal and include the same in his scope of supply.
- 7 Part items of the equipment shall be identified by Tag Nos and have to be packed in order to minimize the possibility of damage during storage or transit. The equipment shall be protected for storage of 12 months at site, any extra precaution to be taken by the Purchaser for storage beyond 12 months shall be explicitly indicated in the operation and maintenance manuals.
- 8 Fifteen copies of operation manuals containing all details of reference drawings and technical data shall be furnished by the Bidder.
- 9 Vendor should have supplied air cannons to similar capacity to silos/bunkers which shall be in successful operation for minimum two years. Vendor shall attach experience list with the proposal

4.0 BASIC DESIGN

This section covers the Design, manufacturing and performance requirement of the Air Cannon /Air Blaster and accessories.

4.1 DUTY PARAMETERS

Sl.No	Items	Units	Parameters
1	End User		NTPC
2	Number of Silo	Nos	Two (2)
3	Number of Air Cannon per Limestone Silo	Nos	Four (4)
4	Total number of Air Canon /Air Blaster	Nos	Eight (8)
5	Material to be handled		Limestone
6	Opening size for Air Canon /Air Blaster in the Limestone Silo	NB	150
7	Limestone Silo Capacity	MT	970
8	Limestone Silo dimensions		
	Top section		
	Diameter	Meters	10.00
	Height	Meters	8.675
	Conical section /Bottom Section		
	Diameter	Meters	10.00
	Height	Meters	8.364
9	Reference drawing number		3-FW-000-00195
10	MOC of Limestone Silo		CS

TECHNICAL SPECIFICATION FOR AIR CANNON / AIR BLASTER

5.0 DATA SHEET TO BE PROVIDED BY THE BIDDER

Sl.No	Description	Unit	Parameters
1	Capacity of Air Cannon/Air Blaster	:	
2	Model Number	:	
3	Air Vessel Capacity	:	
4	Quantity of Air required	:	
5	MOC for Vessel	:	
6	Working Pressure	:	
7	Design Pressure	:	
8	Hydrostatic Test pressure(indicate the standard also)	:	
9	Discharge Pipe	:	
10	Discharge pressure	:	
11	Area of influence for each air blaster	:	
12	Location of Air cannon/Air blaster from bottom of the silo	:	
13	Piston Material	:	
14	Piston Diameter	:	
15	Piston Seat	:	
16	Quick Exhaust Valve	:	
17	Solenoid Valve	:	
18	Oil Lubricator	:	
19	Ball Valve	:	
20	Safety Valve	:	
21	Non-return Valve	:	
22	Connection Pipe	:	
23	Electronic Timer	:	

SIGNATURE OF VENDOR

NAME

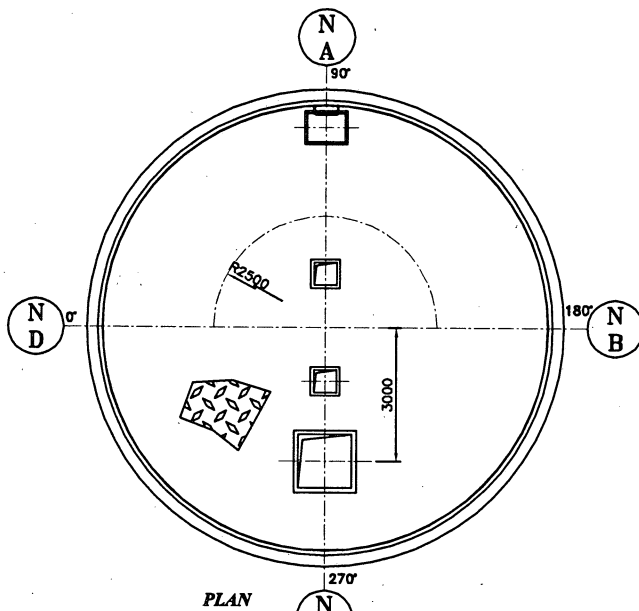
DESIGNATION

7.0 DOCUMENTATION

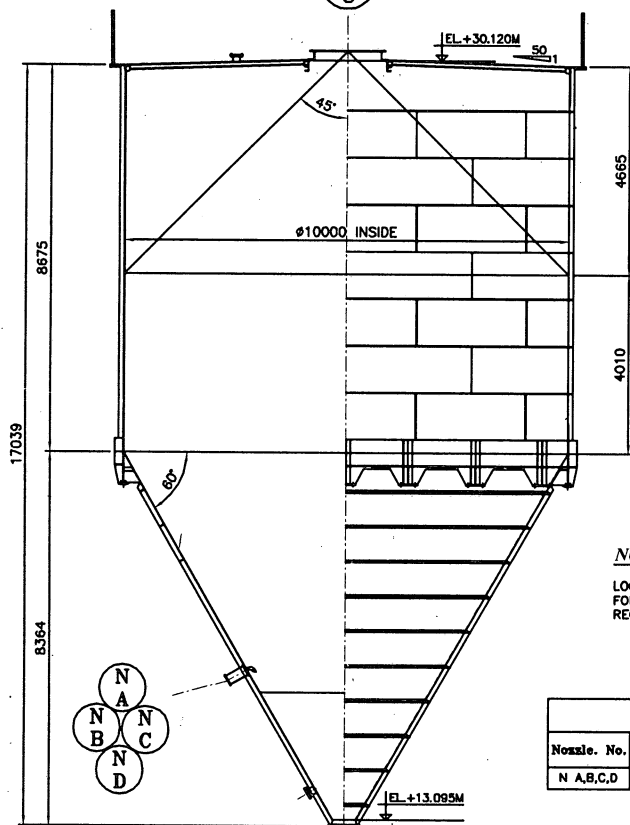
7.1 INFORMATION TO BE FURNISH ALONG WITH THE OFFER

- a) Principle of operation of air cannon / air blaster
- b) General arrangement drawing
- c) Mounting arrangement details
- d) List of Air cannon /Air blaster Accessories
- e) Overall dimension of the air cannon / air blaster
- f) All connection flange dimension
- g) Detailed assembly drawings of the system bringing out the constructional features.
- h) Details of inspection.
- i) Quality plan
- j) Details of maintenance procedure.
- k) Details of maintenance while the system is working.
- l) Requirement of compressed air.
 - Quantity, Max & Min .
 - Quality (moisture, oil content pressure etc.,)
- m) Total weight including individual weight of the system.
- n) Details of lifting hooks, eyes etc.,

ALL DIMENSIONS ARE IN MILLIMETRES



PLAN



SILO DETAIL

VOLUME OF CYLINDRICAL PART
 SILO DIAMETER = 10000mm
 MATERIAL COLUMN HEIGHT = 4010mm
 VOLUME = 314.9m³

VOLUME OF BOTTOM CONE
 CONE HEIGHT = 8365mm
 CONE VOLUME = 226m³

VOLUME OF CONE FORMED DUE TO ANGLE OF REPOSE
 CONE HEIGHT = 5000mm
 CONE VOLUME = 131m³

TOTAL VOLUME OF CONE = 671.9m³
 BULK DENSITY OF MATERIAL = 1.44MT/m³

HENCE SILO CAPACITY = 967.53MT

LIMESTONE CONSUMPTION PER HOUR = 36.9T
 THEREFORE STORAGE CAPACITY = 26.22hrs.

NOTE:

LOCATION OF AIR CANNON ARE INDICATIVE. VENDOR TO SUGGEST THE LOCATION FOR EFFECTIVE DISLODGING OF MATERIAL INSIDE THE SILO AND MUST MEET THE REQUIREMENT MENTIONED IN CLAUSE 2.0.4

< MOUNTING DETAIL >

Nozzle. No.	Opening Size	Flange	Service	Projection	Remark
N A,B,C,D	150NB	ANSI B16.5#150	AIR CANNON	150	

ELEVATION

TYPE OF PRODUCT **3X250MW-NTPC-BONGAIGOAN**
 OR NAME OF
 CUSTOMER/PROJECT **FLUE GAS DESULPHURIZATION SYSTEM**

CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

BHARAT HEAVY ELECTRICALS LTD., UNIT: BOILER AUXILIARIES PLANT, RANIPET - 632 406.	DRN	SRIDHAR	SIGN	DATE	NO. OF VAR.
	CHD	MANOJ			-
	APPD	C.GANESH			
DEPT AOCs-FGD	GRADE OF UNTOL.DIM	SCALE	WEIGHT (KG).	REF. TO ASSY/OLD DRG.	REV. NO.
CODE 789	PR:QA:500				0
TITLE G.A. OF LIMESTONE SILO FOR AIR CANNON				CARD CODE	REV
				DRAWING NO. 3-FW-000-00195	00

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