ANNEXURE-C TO TENDER BAP/FGD/2012/OT-1

BONGAIGAON– 3X250 MW
FLUE GAS DESULFURIZATION SYSTEM

TECHNICAL SPECIFICATION FOR

LEVEL CONTROL VALVE

HANDLING WATER

CUSTOMER : **NATIONAL THERMAL POWER CORPORATION LIMITED**

NTPC: BONG: FGD: VALVES-LEVEL CONTROL VALVE SPEC-044: REV-00

Flue Gas Desulphurization Group
Air Quality Control Systems
BAP :: BHEL :: Ranipet

TECHNICAL SPECIFICATION FOR LEVEL CONTROL VALVES

Prepared	Checked	Approved
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Rev 00 dated 29 08 2012		

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1.0	**PROJECT INFORMATION**	
	▪ Owner	NTPC
	▪ Buyer	BHEL, Ranipet
	▪ Process / application	Wet Lime Stone FGD system
1.1	**SITE CONDITIONS**	
	▪ Ambient temperature (Guarantee)	27 Deg C
	▪ Ambient temperature (Design)	50 Deg C
	▪ Height above sea level	47 m
	▪ Relative Humidity	60 %
1.2	**LOCATION AND APPROACH**	
	▪ Project location	
	▪ State	Assam
	▪ District	Kokrajhar
	▪ Place	Kumkuri near Salakati, Bongaigaon
	▪ Height above sea level	47 m

2.0 INTENT OF SPECIFICATION

This specification together with the attendant Technical Data Sheet and other specifications/attachments to inquiry / order defines the minimum requirements for level control valve along with their accessories /auxiliaries handling process water for use in the process of Flue gas Desulphurization (FGD) system.

Bidder shall make all possible efforts to comply strictly with the requirements of this specification and other specifications/attachments to inquiry/order.

In case, deviations are considered essential by the Bidder (after exhausting all possible efforts), these shall be separately listed in the Bidder's proposal under separate section, titled as "List of Deviations/Exceptions to the Enquiry Document (Annexure-III)". Deviation shall be listed separately for each document with cross reference to Page No./Section/Clause No./Para etc. of the respective document supported with proper reasons for the deviation for purchaser's consideration. Any deviation, not listed under the above section, even if reflected in any other portion of the proposal, shall not be considered applicable. No deviation or exception shall be permitted without the written approval of the purchaser.

The design, material, construction, manufacture, inspection, testing and performance of valves shall comply with all currently applicable statutes, regulations and safety codes in the locality where the valves will be installed. The valves shall conform to the latest editions of applicable codes and standards as mentioned elsewhere. Nothing in this specification shall be construed to relieve the Bidder of his responsibility. Compliance to this specification shall not relieve the Bidder of the responsibility of furnishing equipment and accessories/auxiliaries of proper design, materials and workmanship to meet the specified start up and operating conditions.

In case the Bidder 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 along with reasons in a separate section along with his proposal and include the same in his scope of supply. The Bidder shall offer only proven design in successful operation.

3.0 STANDARDS AND CODES

The valves shall conform to the latest editions of applicable codes and standards as mentioned elsewhere Valves in general shall conform to the requirements of the following standards:

ANSI B 16.34 Standard for valves.

ANSI-B-16.10 Valves face to face and other relevant dimension.

API-598 Valves inspection test.

4.0 SPECIFICATION FOR DESIGN/CONSTRUCTION/MATERIAL

a) Valve shall be suitable for the service conditions i.e flow, temperature and pressure, at which they are required to operate (listed in **Annexure I**).
b) Valve as well as all accessories shall be designed for easy disassembly and maintenance.
c) Valves to be installed outside shall be required to have the stem properly protected against atmospheric corrosion.
d) Valve shall automatically control the rate of filling and will shut off when a predetermined level is reached and close to prevent over flow on pre-set maximum water level. Valve shall also open and close in direct proportion to rise or fall of water level.
e) The valve is used for controlling level of water in the process water tank of 2 m diameter and height 2.64 m
f) The valve to open when the water level in tank drops below 2.54 m and the valve has to close when water level reaches 2.64 m which is summarized as follows:
   $\geq$ 2.64 m valve will be closed.
   ≤ 2.54 m valve will be opened.
g) Valves shall be right angled or globe pattern.
h) Valves shall be balance piston type with float ball.
i) Leather liner shall not be provided.
j) The body and cover material shall be cast iron conforming to ASTM-A 126 Grade 'B' or IS:210 Grade 200 or equivalent, and Float shall be of copper with epoxy painting of two (2) coats.
k) Valves shall be suitable for flow velocities of 2 to 2.5m/sec.
l) The valves shall have ***flanged connections***.
m) Level control valves shall be used for control purpose as provided in Annexure I
n) All valves shall be provided with embossed name plate giving details such as tag number, type, size etc.
o) For gate, globe and check valves wherever thickness of body/bonnet is not mentioned in the valves standards, thickness mentioned in IS- 1538 for fitting shall be applicable.
p) All valves shall be provided with proper name plates indicating complete information about the valves

5.0 RATING PLATE, NAME PLATES AND LABELS:

Each equipment / instrument shall be provided with rating plate or nameplate or label designating the tag no., service of the item etc.

6.0 PAINTING OF VALVES:

The detailed painting procedure is enclosed in Annexure-IV.

Bidder to note that If during transport, unloading/unpacking or erection at site any part of the painted surface gets damaged, the same shall be made good by the

contractor by repainting with compatible painting primer and enamel to the satisfaction of the project manager.

7.0 INSPECTION

Inspection shall be carried out by BHEL Engineers at vendor works.

8.0 DOCUMENTS / DETAILS ALONG WITH BID

The following information / documents shall be submitted along with the offer

a. Duly filled up data sheet for each valve type as per **Annexure-II** in the enclosed format.
b. Detailed assembly drawing with overall dimensions.
c. Valve cross sectional drawings with Bill of Material including the material specifications.
d. Valve Regulation Characteristic Curve.
e. Cv calculation.
f. List of applicable standards for shop test.
g. Reference list for the offered model.
h. Typical Quality plan for supply of the above equipments.
i. Valves Catalogues.
j. List of commissioning spares.
k. Recommended spares list for 3 year O&M along with item wise price.
l. Any deviation shall be specifically mentioned in the enclosed deviation format **Annexure-III**.

In case of any deviation, the Bidder shall indicate the deviation, clause by clause in the deviation format attached in **Annexure-III**. If there is no deviation "**NIL**" statement shall be furnished. In the absence of **Annexure-III**, it will be construed that the bid confirms strictly to the specification. Acceptance or rejection of the offer with or without deviations (either fully or partially) is sole discretion of the purchaser without seeking further clarification from the bidder.

NOTE: Bidders to note that failing to submit the above documents, the bid shall be considered as incomplete and liable for rejection.

9.0 DOCUMENTS / SERVICE AFTER ORDER

9.1. The following documents are to be submitted for BHEL's approval.

- Duly filled up data sheet in the enclosed format.
- Detailed assembly drawing with overall dimensions.
- Valve cross sectional drawings with Bill of Material including the material specifications.
- C_v Calculation
- Final Quality plan

9.2. The following are to be submitted to BHEL's review and acceptance.

- Material test certificate
- Hydraulic & Leak test certificates
- Performance guarantee certificate

- Erection manual
- O&M manuals

10.0 DOCUMENTATION

a. The documentation during bid and post order stage shall meet the following requirements.
b. All documents and drawings shall be submitted in English.
c. Hard copies of all documents and drawings during bid stage to be submitted in duplicate.
d. Hard copies of all documents for approval to be submitted in triplicate.
e. Hard copies of all final documents, drawings, manual etc., shall be submitted in bound folder in duplicate.
f. Soft copies of all final documents in MS office in the form of CD-1 set.
g. Soft copies of all final drawings in AutoCAD, latest version in form of CD-1 set.

11.0 GUARANTEE

The Vendor shall provide guarantee for a period of 12 months from the date of commissioning or 24 months from the date of supply whichever is earlier.

ANNEXURE-I

12.0 DETAILED LIST OF VALVES WITH OPERATING PARAMETERS

Indent no	**RFW00096**
Material Code	**RFW0009601**
Process Liquid	**Process Water**
Service/ Description	**Top up**
Type of valve	**Level Control Valve**
Mode of Operation	**Vendor to Specify**
Size	**3 inch**

Valve / Instrument Tag No	Operating Conditions		Design Conditions		Material of Construction			End Connection (SWD-Socket welded)	QTY
	T (°C)	P (Kg/cm^2)	T (°C)	P (Kg/cm^2)	Body Material	Disc	Stem		
00HTQ03AA003	50	2	100	10	As per Clause -4			FLD	1

13.0 MANDATORY SPARE

Indent no			**RFW00096**						
Material Code			**RFW0009601**						
Process Liquid			**Process Water**						
Service/ Description			**Top up**						
Type of valve			**Level Control Valve**						
Mode of Operation			**Vendor to Specify**						
Size			**3 inch**						
Valve / Instrument Tag No	**Operating Conditions**		**Design Conditions**		**Material of Construction**			**End Connection (SWD-Socket welded)**	**QTY**
	T (°C)	**P (Kg/cm^2)**	**T (°C)**	**P (Kg/cm²)**	**Body Material**	**Disc**	**Stem**		
M1-LCV-MN-PW-3	50	2	100	10	As per Clause -4			FLD	1

ANNEXURE-II

14.0 DATA SHEET FOR VALVES (TO BE FILLED SEPARATELY FOR EACH TYPE OF VALVE):

I. TECHNICAL PARAMETERS

A. VALVE SIZE :

a. Make :
b. Model/ Type :
c. Fluid details - Medium handled :
- Temperature range ° C :
d. Rated flow m^3/Hr :
e. Design Cv of the valve :
f. Valve rating :
g. Valve operation- (Lever/ Gear box) :
h. Pressure Drop for rated flow bar(g) :
i. Design pressure bar(g) :
j. Hydraulic test pressure
- Body bar(g) :
- Seat bar(g) :
k. Max. Shut off pressure bar(g) :

II. CONSTRUCTION DETAILS

a. Material of construction (whatever applicable)
- Body :
- Ball :
- Stem :
- Disc :
- Seat :
- Bushing :
- Handle :
- Fasteners :

b. End Connection / Rating / Standard :
c. Recommended minimum pipe ID mm :
d. Details of Gearbox if applicable :

III. GENERAL

a. Weight per valve :
b. Applicable standards :
c. Valve GA Drawing / Cross Sectional Drg. :
d. Enquiry / PO reference :

ANNEXURE-III

15.0 FORMS FOR TECHNICAL DEVIATIONS (If any):

SL. NO	SEC / CLAUSE NO.	SPECIFICATION	STATEMENT OF DEVIATIONS/VARIATIONS	REASON FOR DEVIATION	COST OF WITHDRAWAL

Date: ***Signature & seal of the Bidder***

ANNEXURE-IV

16.0 PAINTING PROCEDURE:

Primer Coat		**Intermediate Coat**		**Finish coat**			**Total DFT µm (min)**
Paint	No of Coats /DFT	Paint	No of Coats	Paint	No of Coats	Shade	
HB Chlorinated Rubber based Zinc Phosphate Primer DFT= 50 µm per coat (Solid by Volume min 60%)	2	--	--	Chlorinated Rubber Based Finish paint DFT= 30 µm per coat (Solid by Volume min 60%)	2	Gray shade to R9002	160