

CLARIFICATION NO. 04 TO BIDDING DOCUMENTS (TECHNICAL PORTION)

Sr. No	Section/ Part / Chapter	Clause No and Clause statement	Statement of Deviations/ Variations/ Exceptions	CLARIFICATION BY NTPC
1	AMENDMENT NO. 01 TO TECHNICAL SPECIFICATIONS (TS), SECTION-VI Sr. No. 34	Clause No - 1.00.00 Maximum 5cum/hr of DM water shall be provided at terminal point from existing DM plant	Employer is requested to share the DM water analysis / quality in detail so as to allow Bidder to designer the steam-water cycle accordingly.	Conductivity is <1.0 ms/cm, pH 5.60 to 6.7, SiO ₂ <20 ppb
2	AMENDMENT NO. 01 TO TECHNICAL SPECIFICATIONS (TS), SECTION-VI Sr. No. 34	Clause No - 1.00.00 Bidder to draw clarified water from existing clarified water tank and store in its clarified water tank for further distribution in its system. Maximum of 20 cum/hr Clarified water shall be provided at terminal point from existing clarified water tanks.	Employer is requested to confirm the clarified water quality in detail	pH -6.5 to 7.70 , Conductivity - 300 to 600 mc/cm, Tottal Hardness- 110 to 200 ppm, TDS- 200 to 375 ppm, FRC(Free Residual Chlorine)- 0.5 to 0.8 ppm
3	SECTION - VI /PART – A/SUB-SECTION-IIA-01	2.01.00 Refractory lined furnace in first pass and water cooled furnace rest of the passes complete with drum, water wall, headers, steam generating tubes, risers, observation ports, inspection doors/manholes, sample connections, Metal Temperature Measurement (MTM) thermocouples etc.	Bidder does not envisage to use Metal Temperature Measurement in their proven design.	Considering the nature of start up and shut down of a WtE plant, it is necessary to understand the Metal temperatures to avoid damage to boiler components and limit the activity within a prescribed limit. Bidder to comply the specification requirement.
4	SECTION - VI /PART – A/SUB-SECTION-IIA-01	2.01.00 Two (2) numbers of optical type temperature probes at the furnace outlet, complete with all accessories like guiding supports, cooling arrangement, control circuit, indicator etc.	Bidder does not envisage optical type temperature probe measurement as per their proven practice.	As per the Environmental norms, the furnace temperature needs to be maintained above a precribed limt to avoid emission. Hence, this requirment warrants the optical type measurement, due to its reliability and proveness. Bidder to comply the specification requirement.
5	SECTION - VI /PART – A/SUB-SECTION IIA-01	2.01.00 - The thermal expansion of the boiler will be compensated by expansion joints between the grate and the vertical first pass as well as between the final pass and the duct to the flue gas treatment section.	As per bidder proven design, expansion joint between grate & the vertical pass is not required	Due to its very peculiar construction(refractories) in a WtE boiler, there shall be great amount of thermal expansion in the boiler. Bidder to comply the specification requirement.
6	SECTION - VI /PART – A/SUB-SECTION-IIA-01	2.23.00 - Refractories in furnace area, first pass and insulation including cladding, lagging, reinforcement, wire mesh, cleats and supports for all the equipment, auxiliaries, ducting, dampers, piping and valves in the scope of this specification so as to ensure skin casing temperature of any surface in Contractors scope is not more than 60 deg.C. with ambient temperature of 45 deg.C. and air velocity of surface air being 0.25 m/s when the steam generator is operating at Full load	As per Bidders proven practices appropriate skin casing temperature should be planned by considering personal protection & heat loss through casing.	Bidder to comply the specification requirement.
7	SECTION - VI /PART – A/SUB-SECTION-IIA-01	2.08.01 Short retractable rotary wall blowers shall be provided for the furnace long fully retractable rotary blowers for superheater and economizer. Each blower shall be provided with motor drive with coupling and coupling guards, base plate frame and holding bolts, speed reducers, cam, chain drives and other ancillaries, emergency hand cranks, flanges, gaskets, seals and bearings for each soot blower and its supporting structures.	Bidder does not envisage any soot blower for furnace walls in its proven design. Hence will not be provided. The location, type and quantity of Soot blowers for superheater & economizer depends on design of individual manufacturer. Hence Bidder will use soot blowers as per their proven design.	Soot blowers are required to keep the furnace clean, so that fouling/slagging and secondary damages can be avoided. Bidder to comply the specification requirement.
8	SECTION - VI /PART – A/SUB-SECTION-IIA-01	2.25.02 - One (1) set of power operated gondola or furnace maintenance cradle/cradle for furnace tube repairs and maintenance. Each set of gondola/maintenance cradles shall be suitable for complete and simultaneous coverage of all the four walls of a steam generator and shall be complete with all slings etc. Steam generators shall have suitable provisions for suspending this cradle from the top.	The size of Furnace is very small to facilitate the movement of Gondola inside the Furnace. As per Bidder's proven practice, scaffolding can be used as and when required during maintenance/inspection of furnace.	Bidder to comply the specification requirement.

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9	SECTION - VI /PART – A/SUB-SECTION-IIC	2.00.01 - The BMS shall comply with the requirements stipulated in NFPA 85.Further, any specific requirements regarding type of control system for tripping of Boiler (e.g. Fail safe system), shall be provided if the same is required as per standard practice of Manufacturer of Boiler & relevant regulations.	As per bidder proven practice BMS will control the burner system without considering requirements of NFPA-85.	Specification requirements are clear .Bidder to comply the specification requirement.
10	TECHNICAL SPECIFICATION SECTION-VI, PART-A	2.26.03 The entire operation of SNCR spray nozzles like ON/OFF, selection of elevation/level, flow control of ammonia / urea etc., shall be fully automatic and based on the NOx level to be achieved at furnace exit.	Selection of level will be manual. Urea injection system will be automatic and operate on feedback from CEMS Nox value.	Bidder to understand that the emission norms for a WtE plant is very stringent and the same needs to be uploaded to the pollution control board website, online. Bidder to comply the specification requirement.
11	TECHNICAL SPECIFICATIONS SECTION-VI, Part-A , SUB-SECTION-IIA-13 SLAG & ASH HANDLING SYSTEM	Clause No - 1.02.00 vi) Suitable air Fans shall be provided so that vapours arising from the bottom ashes/slag leaving the ash extractor shall be ventilated back into the Slag chute by a continuously running air fan. Ducts shall be made of acid resistant plastic material	Bidder will provide the bottom ash extractor system as per the Bidders proven practice	Bidder to understand that, there shall be great amount of vapours / fumes generated in the bottom ash area, due to unburnt or non burnable material in the waste. Bidder to comply the specification requirement.
12	TECHNICAL SPECIFICATION SECTION-VI, PART-A	The contractor shall provide a common DDCMIS based latest state of art microprocessor based control system complying subsection IIIC-02 DDCMIS Part-B, Section VI for the Complete plant/ Equipment & systems being provided by them as indicated below, SG system: Boiler combustion system, SCAPH, SADC, AUX PRDS, soot blower secondary fuel gas system, Gram feeder control, Grate control, NOx control system etc. TG system :steam turbine & generator protection system including generator mechanical protection system, Governing system,EHC,oil system Vacuum system ,Air cooled condenser control system ,Turbine bypass control system ,MDBFP and it's auxiliaries OLCS & CLCS controls. Miscellaneous turbine related start-up, shutdown, drain vent controls etc.	Bidder propose to supply two dedicated DDCMIS system one dedicated for WTE related equipmenst (Viz. Furnace, boiler, FGT, Ash handling system)and other for Turbine generator package including Balance of plant equipments. This will help bidder to provide better system with improved overall system performance, improved co-ordination between technology provider & their partner for EPC Project. Also it will avoid the delay in DDCMIS implementation. Proposed Two DDCMIS system will be integrated to have common operator interface.	Bidder proposal not accepted.Specification requirements are clear. Bidder to comply the specification requiremet.
13	TECHNICAL SPECIFICATION SECTION-VI, PART-C	GENERAL TECHNICAL REQUIREMENTS IS: 9178 Criteria for Design of steel bins for storage of Bulk Materials	For thickness calculations for all Silos / bins shall be done with respect to Bidder's proven practise.	Bidder to comply the specification requirement.

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14	Section VI Part C-G GENERAL TECHNICAL REQUIREMENTS	AREAS OF TRAINING REQUIREMENT: WtE * Mass balance, Design, selection and sizing calculations of WtE * Training on factors affecting sizing/ efficiency of WtE system, equipments & auxiliaries * Materials for WtE & selection * Basic concepts, Design and sizing calculations on grate, feed hopper, hydraulic grab, grate drive system, Fans, bag filter, flue gas treatment, SCR, SNCR, hydraulic pusher, ash handling systems, emission control systems, emission measurement systems including piping, valves, etc.. * WtE electrical system * WtE control system	Bidder would like to clarify that Design & Sizing calculations will be explained only for purpose of Operation & Maintenance to handle the operational or maintenance related issues. The data related to technological & intellectual property will not be shared. And Training is limited to Operational and Maintenance only. Please confirm	Bidder to comply the specification requirement. Only Proprietary details may be excluded.
15	SECTION - VI /PART – B/Book 1 of 5 /SUB-SECTION-A-02	1.04.02 Alloy 625 type filler and cladding material to service temperatures below 450 °C. (such as cladding of membrane walls, evaporators and preheaters). Alloy 686 type filler and cladding material to service temperatures above 450 °C.	As per Bidder's proven practice filler and cladding material will not be required, instead we will provide refractory lining in furnace area for water wall (minimum upto 950 deg C) and part of superheater will be of stainless steel considering high temperature corrosion as per their proven practice.	Bidder to comply the specification requirement.
16	SECTION - VI /PART – B/Book 1 of 5 /SUB-SECTION-A-03	3.06.00 For continuous monitoring of water wall tube metal temperatures provide adequate numbers of thermocouples (as per vendors proven practice) outside the gas path as per specification specified elsewhere in the Technical Specification.	By considering relatively low pressure and temperature boiler, Bidder does not envisage the use of tube metal temperature thermocouple as per their proven practice.	Bidder to comply the specification requirement. Please refer the reply mentioned in Sl.No 3.
17	SECTION - VI /PART – B/Book 1 of 5 /SUB-SECTION-A-03	5.03.01 For continuous monitoring of tube metal temperatures of SH elements, minimum number of thermocouples along with CJBs as per the following shall be provided: (i) As per vendors proven practice, required numbers of Chromel-Alumel thermocouples located outside the gas path for measurement of tube metal temperature covering all stages of Superheaters	By considering low pressure and temperature boiler, Bidder does not envisage the use of tube metal temperature thermocouple as per their proven practice.	Bidder to comply the specification requirement. Please refer the reply mentioned in Sl. No 3.
18	TECHNICAL SPECIFICATION SECTION-VI, PART-A (Part B actually) SUB-SECTION - A-10 SURFACE PREPARATION & PAINTING	1.06.09 a), b),c) 1.06.10 A), B), Primer / Painting Schedule	Painting specifications are given are contradictory to each other. For example if equipment is insulated and outdoor what will be total DFT 300 or 100? Client is requested to give only one clear painting specification with respect to indoor / outdoor or insulated /un insulated.	All the equipment are needs to be placed indoor. No outdoor equipment is envisaged in the specification. Further, there shall be asthetically good looking coverage for the entire facility needs to be provided. Bidder to comply the specification requirement.
19	TECHNICAL SPECIFICATION SECTION-VI, PART-B , Sub-Section – A 11 THERMAL INSULATION	Clause No - 1.00.0 a) For all Piping / SG / TG systems and the equipment with surface operating temperature of 60 deg.C and above,	Bidder will maintain the Surface temperature for the furnace as per the Bidders proven practice	Bidder to comply the specification requirement.
20	TECHNICAL SPECIFICATION SECTION-VI, PART-A (Part B actually) SUB-SECTION - A-10 SURFACE PREPARATION & PAINTING	1.06.10 Primer / Painting Schedule All insulated Pippings, fittings/components, Pipe clamps, Vessels/Tanks, Equipments etc. Primer PS9*, Finish coat PS9*	For all insulated equipments / piping, primer coat of PS9* will be applied having 20 DFT. No finish coat shall be applicable for PS9*	Bidder to comply the specification requirement.

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21	SECTION - VI /PART – B/Book 1 of 5 /SUB-SECTION-A-26	3.02.02 Air & Gas Tightness Test After completion of installation of furnace tubes and/or inner skin casing wherever applicable ducts and airheaters, and before commencement of application of thermal insulation a test shall be performed on the Steam Generator by the contractor to prove or to establish the tightness of the erected equipment's from the outlet of FD fan through Steam Generator to the stack.	As per Bidder proven practice Air & Gas Tightness test is not required for WtE Furnace & Boiler.	Bidder to comply the specification requirement.
22	SECTION - VI /PART – B/Book 1 of 5 /SUB-SECTION-A-26	3.03.11 Cold Air Velocity Test (CAVT) A CAVT shall be conducted on each Steam Generator during commissioning before its initial operation to establish the average cold air velocity and the velocity distribution at minimum three predetermined sections (Employer's Choice) of steam generator	As per bidder proven design, Cold Air Velocity Test (CAVT) will not be required for waste to energy type Boiler. Bidder will take care the performance requirement as per bid document.	Bidder to comply the specification requirement.
23	TECHNICAL SPECIFICATION SECTION – VI, PART-B (Civil) , SUB-SECTION-01 CIVIL WORKS	Clause No - 1.00.0 Design of steel structures shall be done by the Working stress method. Design shall be as per provisions of IS:800 :1984 and other relevant IS standards	Latest Edition available for IS 800 is edition 2007, Employer is requested to confirm the preferable edition between IS 800 : 1984 and IS800:2007	Bidder to comply the specification requirement.
24	General	-	Can Bidder propose to consider Local Control Panels (LCP) instead of separate MCC and Local PLC panel for FGT system, Fly Ash System, Burner Control System, Hydraulic Unit system, Bag Filter System which are vendor specific supplies and shall be as per vendor's standard practice ? Local Control Panel (LCP) houses process equipment's Power supply feeders, motor starter feeders, Programmable logic controller (PLC) and instrument control & monitoring for respective process areas. LCP will be located close to respective process area, equipment/machines which will be helpful during local operation & maintenance. However the remote operation from DDCMIS will also be possible by selecting remote operation from LCP. LCP & DDCMIS will be connected by soft communications like profibus or equivalent. LCP is generally non-compartmental type. Please confirm	Bidder proposal not accepted, MCC to be provided as per specification. The common DDCMIS shall be provided inline with specification requirements . The plant shall be completely automatic with controllability of all the equipment from control room. No operation at local is envisaged. Bidder to comply the specification requirement.