

PESDESP- 001.2A		BHARAT HEAVY ELECTRICALS LIMITED PROJECT ENGINEERING & SYSTEMS DIVISION HYDERABAD, INDIA	Doc. No: PY51589	
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SPECIFICATION FOR PRE-BID TIE UP
WITH
Solid Waste Grate fired Boiler Supplier for RDF Incineration
and
Flue Gas Cleaning System (FGCS)
for Waste-to-Energy (WtE) Project
 as “Qualified Waste to Energy Plant Equipment Manufacturer
 (QWEPM)”

TENDER:
NTPC KAWAS 2x350 TPD WASTE to ENERGY

Revisions: Refer to record of revisions	Prepared by :	Checked by :	Approved by :	Date :
	SBN	BHK	KS	19.03.2020

**1. INTRODUCTION:**

M/s National Thermal Power Corporation (NTPC), India intends to install a Waste to Energy Plant (WtE Plant) having waste disposal (incineration) **capacity of 700 Tons Per Day (TPD)**. The plant shall be installed at NTPC plant premises at Kawas, Surat, in the state of Gujarat, India and shall be disposing the waste i.e. segregated combustible fraction (SCF)/ Refuse Derived Fuel (RDF) obtained from Surat Municipal Corporation (SMC). SCF/RDF consists largely of combustible components of waste such as non- recyclable plastics (not including PVC), wood, pulp or organic waste in the form of fluff.

M/s Bharat Heavy Electricals Limited (BHEL), India (www.bhel.com) intends to participate as a “Indian EPC/ R&M Company” in the above tender.

BHEL is in the process of **identifying suitable Manufacturer and Supplier of Solid Waste Grate fired Boiler for firing RDF and Flue Gas Cleaning System** as “Qualified Waste to Energy Plant equipment Manufacturer (QWEPM)” to have pre-bid tie up and quote jointly for NTPC Kawas 2 x 350 TPD WtE plant.

As per NTPC Tender requirements, BHEL (EPC Contractor) and bidder will **execute a Deed of Joint Undertaking (DJU)** in which the executants of DJU shall be jointly and severally liable to the Employer (NTPC) for successful performance of Solid Waste Combustor cum Steam Generator including its grate and flue gas cleaning system as per format in the bidding documents. The DJU shall be submitted by BHEL to NTPC along with techno-commercial bid, failing which the Bidder shall be disqualified and rejected by NTPC.

In case of award of contract to BHEL by NTPC, Bidder (ie., QWEPM) will be required to **furnish a bank guarantee for an amount of 2.5% of the awarded total contract price awarded on BHEL by NTPC.**

In the event, BHEL is adjudged as successful EPC Bidder and awarded the “Project” by NTPC, BHEL will in turn place an order on selected Bidder ie., “Qualified Waste to Energy Plant Equipment Manufacturer (QWEPM)” for the identified scope.

**2. INTENT OF SPECIFICATION :**

The intent of this specification is to elaborate the scope of bidder for the **proposed 2x350 TPD Grate fired Boiler and Flue Gas Cleaning System** for Waste to Energy Boiler Plant. The bidder shall conform to all technical specification requirements set-forth in the tender documents attached and further agrees to abide by it within the execution schedule.

Bidder shall be responsible for design, engineering, manufacturing & supply of all equipment of the process as per the scope in this document and enclosures, provide performance guarantee, provide technical support on overall WtE plant design and provide technical assistance during execution of the project and till expiry of Operation and Maintenance (O&M) period for the said project.

The techno commercial terms agreed during pre-bid tie up shall be valid upto expiry of Operation and Maintenance (O&M) period of BHEL for the plant as per contractual agreement with M/s NTPC.

3. SCOPER OF WORK [Supply & Services] OF "QWEPM" or BIDDER :

The scope of work of bidder's **Supply & Services** is listed below:-

A. Scope of work during Pre-Bid stage (during bid submission by BHEL to NTPC):

- i. Preparation and **Submission of offer** for the identified scope as per scope division (Attached as **Annexure-1**) to BHEL for consolidation of total offer.
- ii. Furnish all the **necessary technical data** of Boiler & FGCS along with the offer specified elsewhere in the specification.
- iii. **Engineering Services :**
 - a. Provide adequate support to BHEL for Pre-bid engineering, Preparation of detailed Bill of Quantity (BoQ) and Estimation of the cost for BoP portion of the Waste to Energy (WtE) plant by providing technical input data for :
 - Power Cycle Equipment such as
 - Steam Turbine
 - Air Cooled Condenser

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- Boiler Feed water Pumps (BFPs)
- Feed Control Station (FCS) for boilers
- Chimney, etc
- Design of Balance of Plant (BoP) Equipment/systems such as
 - Solid Waste Storage Pit
 - Waste Grab Crane
 - Start-up fuel system
 - DM Plant
 - Utility systems/ equipment
 - Compressed Air system
 - Steam & Water Analyzers System (SWAS)
 - Coal & Ash Handling Systems
 - Odour Control System
 - Fire Protection System
 - AC Ventilation system etc.

b. Provide adequate support BHEL for Technical closure of bid with customer.

- iv. **Execute a Deed of Joint Undertaking [DJU]** along with BHEL in the prescribed format attached as **Annexure – 2** which is to be submitted to end customer along with BHEL's Technical Offer. Scope & responsibilities mentioned in DJU shall be adhered to by QWEPm (ie., bidder) without any deviation.

B. Scope of work during Project Execution (After receipt of Order by BHEL):

- i. Design, Engineering, Manufacturing, **Supply**, Testing, Packing and Forwarding, Transportation of Grate Fired Boiler & Flue Gas Cleaning System as per Bid Specification requirements covering major equipment such as,
- a) Complete Grate fired Boiler with combustion control and monitoring systems
 - b) All boiler auxiliaries including Fans (Forced Draft [FD], Primary Air [PA], Secondary Air [SA], Induced Draft [ID] Fans as applicable), Air Pre-Heater (APH), air & flue gas duct up to inlet of stack / chimney, soot blowers, etc. (Supply of Stack / Chimney is in BHEL's scope)
 - c) All systems / equipment required for flue gas treatment / Flue Gas Cleaning System with fabric filter / Bag Filter / ESP for meeting the emission norms as per requirement specified else where in the specification.

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- d) Complete bottom and fly ash handling system
 - e) Boiler blow down system
 - f) HP Chemical dosing system for boiler drum
 - g) All Special Tools & Tackles
 - h) All Consumables such as Lube oils, Chemicals, Activated Carbon etc. as necessary for entire Boiler Island including flue gas cleaning system.
 - i) Dedicated Control system for boiler & its auxiliaries and FGCS
 - j) Complete field instruments along with hook up within boiler limit
 - k) Instrumentation cables from field/local panel to dedicated boiler control system
 - l) Any interconnection cables between bidders supplied control systems
 - m) Surface Preparation and Painting of all the supplied items [Painting at site by BHEL, necessary input shall be provided by bidder]
 - n) All applicable Commissioning Spares, Essential / Mandatory Spares for O&M Period for bidder's scope of equipment / systems.
- ii. **Engineering support** (by bidder) for engineering / design / supply or procurement of all the equipment / systems by BHEL for all the equipment / systems defined 3(A)(iii)(a) above.
- iii. **Site Supervision of Civil works** of Boiler & Auxiliaries and FGCS [Civil Engineering & Civil execution is in the scope of BHEL. Necessary civil inputs and loading data to be provided by the bidder]
- iv. **Site Supervision of Erection & Commissioning [E&C]** of Boiler & Auxiliaries and FGCS (E&C is in the scope of BHEL. Necessary erection inputs to be provided by the bidder)
- v. Trial run, Site Performance Guarantee Test (PG Test) of boiler & auxiliaries and FGCS supplied by bidder
- vi. Training on boiler operation to BHEL staff & End user personnel, as per Tender specification requirements
- vii. Providing all necessary documentation / clarifications for obtaining necessary statutory approvals by BHEL / end user, such as Indian Boiler Regulations (IBR).
- viii. Resolving punch points list / contract closing issues pertaining to systems / equipment supplied by bidder.
- ix. Any other equipment / systems related to Boiler & auxiliaries and FGCS and feed to the plant which is required for successful operation of supplied system / equipment or for completion of project as per NTPC specifications but is not covered in Technical



Specification / Scope Matrix between BHEL and QWEPM (ie., Bidder) shall be in scope of Bidder only.

4. SERVICES PROVIDED by BHEL to QWEPM (ie., BIDDER):

BHEL will provide the following data, systems / equipment / facilities to Bidder :

- A.** Project Information
- B.** Proposed Plant Layout alongwith location for WtE Boilers & FGCS
- C.** BHEL will provide following services / utilities at one point near Boiler
(further distribution within boiler area shall be by bidder):
 - a) RDF Waste at Boiler inlet chute
 - b) Start-up fuel (LDO) / NG
 - c) DM water
 - d) Feed water
 - e) Auxiliary Cooling water (ACW) [Supply & Return]
 - f) Auxiliary steam / soot blowing steam, if required
 - g) Instrument Air
 - h) Service Air
 - i) Nitrogen, if required
 - j) Service Water, if required
 - k) Potable water, if required
 - l) Chemicals for Dosing systems
 - m) Consumables & Chemicals for FGCS systems
- D.** RDF Waste Reception Pit
- E.** Fire Protection System for boiler & FGCS area
- F.** Ventilation & Air-conditioning system for boiler & FGCS area, if necessary
- G.** Complete electrical systems for boiler & FGCS such as MCC, DC power, cables,
- H.** Cable trays, earthing, illumination.
- I.** Instrumentation cables from boiler field JB's to boiler control system in control room
- J.** Interfacing of boiler control system with plant control system
- K.** Civil Engineering & execution of civil works for the Boiler and FGCS
- L.** Erection & Commissioning (E&C) of the Boiler and FGCS
- M.** Operation & Maintenance (O&M) for Boiler & auxiliaries and FGCS for period of 2 years from the date of successful completion



5. SCOPE MATRIX BETWEEN BHEL and QWEPM (or BIDDER):

Refer **Annexure-I**.

6. TECHNICAL SPECIFICATION :

A. Mechanical:

Respective area of NTPC Specification Doc. No. CS-2600-001-9

B. Electrical:

Respective area of NTPC Specification Doc. No. CS-2600-001-9

C. Control & Instrumentation (C&I):

Respective area of NTPC Specification Doc. No. CS-2600-001-9

7. QUALIFICATION REQUIREMENT FOR “QWEPM” (BIDDER):

S.No	Requirement	Document Submission requirement
A.	Technical Criteria : The Bidder should have designed, engineered, supplied, erected / supervised erection, commissioned / supervised commissioning of at least two (02) numbers of waste to energy plants employing Grate Combustion System and Flue Gas Treatment System, having rated waste incineration capacity of at least 300 metric tonnes per day per stream or higher, anywhere in the world. Both reference waste to energy plants should have been in successful operation for a period of not less than two (2) years prior to the date of techno commercial bid opening. AND The Bidder should have designed, engineered, manufactured/ got manufactured at least Grate Combustion System or Waste Heat Recovery Steam Generator (WHRSG) or both in all two (2) reference waste to energy plants stipulated above. The bidder shall offer only the type of Grate Combustion System or Waste Heat Recovery Steam Generator (WHRSG) or both for which it is qualified.	a) PO copy with issue date indicating the capacity of the plant, scope of supply b) Date of handing over / commissioning certificate signed by customer. c) Certificate indicating successful Operation & Maintenance of WtE plant for a period of minimum 02 years from the date of handing over d) Performance guarantees targeted and achieved duly signed by customer The Bidder shall mandatorily submit above documents in a proper format, in customer's letter head, as evidence signed by end client, not



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		below the rank of Executive Engineer/Plant-in-charge.
B.	Financial Criteria : The average annual turnover of bidder (ie., QWEPM) in the preceding three (3) financial years as on date of Techno-Commerical bid opening, should not be less than INR 910 Million (Indian Rupees Nine Hundred Ten Million only) or in equivalent foreign currency (Also, other details shall be as per Cl.No.2.2.0, Pg 4 of 6, Corrigendum-01 to IFB, enclosed with NTPC specifications)	Audited Financial Statements, Balance Sheets of preceding three (3) financial years (Also, other details shall be as per Cl.No.2.2.3, Pg 5 of 6, Corrigendum-01 to IFB, enclosed with NTPC specifications)

Offers of the bidders meeting the above qualification criteria ONLY will be considered by BHEL for evaluation.

8. QUALITY & INSPECTION :

As per Annexure-III (NTPC Tender Specifications)

9. PROTECTION FOR SHOP FABRICATED ITEMS:

As per Annexure-III (NTPC Tender Specifications)

10. PACKING AND TRANSPORTATION:

As per Annexure-III (NTPC Tender Specifications)

11. NAME PLATES & TAG PLATES:

As per Annexure-III (NTPC Tender Specifications)

12. BIDDER DOCUMENTATION:

A. During Pre-Bid Stage:

Following documents shall be furnished by Bidder to BHEL alongwith Pre-bid Stage offer for Boilers & FGCS:

- Technical Offer with Scope of Supply, Terminal Points, Exclusions list, if any
- Overall Process Flow Diagram /Piping & Instrumentation Diagrams (P&IDs)
- Process Write-up indicating specific operational logics & controls
- Process Data Sheets

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- e. Utility Consumption List (DM water, Auxiliary Cooling Water, Service Water, Potable Water, Instrument air, Service Air, Nitrogen etc, as necessary)
- f. Preferably, bidder to draw the Auxiliary Steam / Soot Blowing Steam requirements, if any, of Boiler & FGCS from within boiler. If technically not feasible, the requirements (Flow, Pressure & Temperature, Continuous / intermittent) to be specified.
- g. Control/ Operation/ Design Philosophy
- h. PLC system configuration with Technical Literature & PLC Requirements
- i. DCS / PLC Input / Output List (DCS / PLC I/O List)
- j. Electrical Load List (ELL) for the offered scope (Normal, Emergency and UPS)
- k. Civil Foundation Loading Data (Foundation Loading data of equipment and structures)
- l. Technical Inputs for Erection & Commissioning of supplied equipment
- m. Performance Guarantees Schedule (as per enclosed Annexure-XI)
- n. List of Special Tools and tackles
- o. List of Commissioning / Start-up Spares
- p. List of Essential / Mandatory Spares for 2 Yrs. O&M Period
- q. List of Special Tools & Tackles
- r. List of Chemicals & Consumables
- s. List of Sub-contractors / Sub-Vendors proposed by bidder for bought out items, if any
- t. Mile stone schedule
- u. Filled in Annexures (Key Information, Recommended spares, special tools & tackles and Deviations)
- v. Filled-in Check List of this specification
- w. UNPRICED Price-Bid Format with TECHNICAL OFFER (please indicate "Quoted" against each offered item)

[Please note that PRICED Price-Bid Format shall be enclosed with PRICE Offer ONLY and **not** with TECHNICAL OFFER]

B. During Project Execution:

- a. Following documents shall be furnished by Bidder to BHEL after receipt of order for Boilers & FGCS:



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Sl. No	DRG/DOC. NAME	Date of Submission
MECHANICAL		
M.01	P&IDs	1 week from PO
M.02	System write-up (Including Control Philosophy)	1 week from PO
M.03	Boiler Performance data	4 weeks from PO
M.04	Design Basis and Sizing Criteria of Boiler Plant including Process Calculations	1 week from PO
M.05	List of Utilities alongwith quantity	2 weeks from PO
M.06	Auxiliary power consumption of Boiler and its auxiliaries	4 weeks from PO
M.07	Equipment Layout	2 weeks from PO
M.08	Equipment list and load details	2 weeks from PO
M.09	Pipe Schedule	2 weeks from PO
M.10	Valve Schedule and valve specification	2 weeks from PO
M.11	List of Terminal Points	2 weeks from PO
M.12	Data sheets of Boiler and its auxiliaries	2 weeks from PO
M.13	GA of ID Fan, FD Fan	3 weeks from PO
M.14	GA of Flue Gas Cleaning Equipment	3 weeks from PO
M.15	Data sheet of Boiler and its auxiliaries	3 weeks from PO
M.16	Piping layouts	4 weeks from PO
M.17	Forces and moments of piping at terminal point for steam & feed water lines	4 weeks from PO
ELECTRICAL		
E.01	Electrical Load List with normal and emergency power requirement	2 weeks from PO
INSTRUMENTATION		
I.01	Instrument Index with BOQ, range, set points etc.,	2 weeks from PO
I.02	Instrument Hook up drawings	4 weeks from PO
I.03	Technical data sheet of Instruments	3 weeks from PO
I.04	DCS / PLC Configuration Diagram, GA & Wiring diagram	4 weeks from PO
I.05	DCS / PLC I/O List	5 weeks from PO
I.06	DCS / PLC Logic Diagram	5 weeks from PO



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I.07	Control Room Layout	5 weeks from PO
I.08	Cable interconnection diagrams	5 weeks from PO
CIVIL		
C.01	Civil input drawings for all buildings	4 weeks from PO
C.02	Civil input drawings for all including Tanks, pits and chambers etc.	4 weeks from PO
C.03	Foundation details of all equipment (Boiler and auxiliaries)	4 weeks from PO
C.04	Foundation details of structures & pipe racks within boiler area	4 weeks from PO
MISCELLANEOUS		
MIS.01	Commissioning spares	5 weeks from PO
MIS.02	Essential / Mandatory spares for 2 yrs O&M	5 weeks from PO
MIS.03	Recommended spares	5 weeks from PO
MIS.04	Consumable list (Chemicals, oil, grease etc.)	5 weeks from PO
MIS.05	O&M manual	5 weeks from PO
MIS.06	Performance Test Procedure	5 weeks from PO

Note: The date of first submission is indicated above. Bidder shall submit all subsequent revision within 5 working days of comments by BHEL.

b. The O&M manuals shall contain the following details as minimum in addition to those indicated in the above table:-

- Identification details of the equipment like BHEL PO NO., Bidder's Sl. No., Bidder's contact address with Telephone, Fax details etc
- Description of the equipment
- Final Data sheets and Drawings of the equipment supplied
- Recommended 2 years operational spares.
- Test reports.

c. The Erection documentation shall consist of

- All Drawings/Documents of the supplied equipment
- All such drawings/documents, not submitted for review, but essential for Erection/ Commissioning, Eg. Assembly Drawings, etc.
- Master document list
- Site dispatchable Bill of Materials (BoM)

**13. PERFORMANCE GUARANTEES (FUNCTIONAL GUARANTEES) :**

Bidder to prove the Functional / Performance Guarantees of supplied equipment systems, as required by the Technical Specifications enclosed. The guarantees shall be submitted as per Annexure-XI.

All the performance guarantees (all the specified categories), Guarantee Tests, Acceptance Tests, Liquidated Damages (LD), Bid Evaluation Factors etc shall be as per the terms and requirements specified in Sec-VI, Part-A, Sub-Section-IV (Functional Guarantees & Liquidated Damages) of Annexure-III. Refer this section for the definitions Categories of Guarantees also.

The Guarantees pertaining to bidder's scope are :

A. Category I :

- a. Boiler Efficiency / Steam Generator Efficiency (as per Annexure-III)
- b. Auxiliary Power Consumption (as per Annexure-III)
- c. Annual Operational Availability (as per Annexure-III)

B. Category II :

- a. Emission Performance (as per Annexure-III)

C. Category III :

- a. Noise Level (as per Annexure-III)
- b. Waste throughput as per Firing Diagram (as per Annexure-III)
- c. Boiler Capacity (Steam Generation - Flow, Pressure & Temperature) [To meet Gross Power Output for NTPC by BHEL]

- D. Any other guarantees, whether or not specified above, as applicable for Bidder's scope, to meet all the specification requirements of Annexure-III.

The guarantees shall form contract guarantees to be proved after the completion of the Plant as per Performance Test Procedure approved by BHEL & NTPC. The schedule of Performance Guarantee (PG) Test shall be finalized during the detail engineering stage.

The Bid Evaluation Factors and LD rates as applicable to Boiler performance parameters shall be as below (derived based on Annexure-III (NTPC specifications):



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E. Liquidated Damages applicable for Category-I Guarantees:

The following are the Liquidated Damages applicable for the performance guarantees, as per the conditions specified in Annexure-III.

S.No.	Guarantee	Rate of Liquidated Damage (LD)	Acceptable shortfall limit
1.	<u>Boiler Efficiency:</u> For each 0.1% shortfall in guaranteed Boiler efficiency with rated ambient temperature and RDF of design GCV, Hydrogen content and moisture. Plant operating at its peak load capacity.	INR 95,27,095/- (Indian Rupees Ninety Five Lakhs Twenty Seven Thousand and Ninety Five only)	(-) upto 1.6% of the guaranteed value
2.	<u>Auxiliary Power Consumption:</u> For increase in auxiliary power consumption from guaranteed value, (required for continuous station operation at 17.1 MW i.e. 115% rated load of all the units)for all auxiliaries under bidder's scope)	INR 5,19,835/- (Indian Rupees Five Lakhs Nineteen Thousand, Eight hundred and thirty five only)	1.0% of guaranteed maximum Auxiliary Power Consumption
3.	<u>Plant Availability:</u> For each 0.1% shortfall in specified plant availability in a year, for the reasons attributable to bidder's supplied equipment/ system's performance	INR 77,45,531/- (Indian Rupees Seventy Seven Lakhs Forty Five Thousand Five Hundred and Thirty One Only)	Upto 1% below the specified plant availability in a year

F. Bid Evaluation Factor:

Bid prices shall be adjusted using the bid evaluation factor for Boiler Efficiency, provided in the below table. Adjusted price of Bidder will be considered for Bid Evaluation and shall be calculated as follows :

Adjusted Price =

Quoted Price + Rate of Bid Evaluation Factor for Boiler Efficiency × (Maximum Boiler efficiency quoted by any of the bidders - Boiler efficiency quoted by Bidder)

S.No.	Guarantee	Rate of Bid Evaluation Factor
1	<u>Boiler Efficiency:</u> For each 0.1% shortfall in guaranteed Boiler efficiency with rated ambient temperature and RDF of design GCV, Hydrogen content and moisture. Plant operating at its peak load capacity.	INR 47,41,440 (Indian Rupees Forty Seven Lakhs Forty One Thousand Four Hundred and Forty Only)



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Illustration of Bid evaluation :

Say, for example, the boiler efficiency quoted by bidders A & B as 85.0% and 84.5% respectively. In this case, Bidder 'A' has quoted better efficiency than Bidder 'B'. Hence, Bidder 'B's price will be adjusted and Adjusted Price of Bidder 'B' price is

= Quoted price of 'B' + 4741440 (85.0-84.5)

= Quoted Price of 'B' + 2,37,07,200 INR

14. DELIVERY SCHEDULE

Time for completion of supplies of all the equipment / items under the scope of bidder shall be **18 months** from the date of notification of award.

15. WARRANTY :

The Warranty for the supplied equipment shall be at least 18 months. However, warranty for all the spares shall be as per enclosed NTPC specifications.

16. Terminal Points / Interface Points between Bidder and BHEL:

Sl. No.	Equipment	Terminal Point
Mechanical		
1	RDF	At Waste Reception Pit
2	Start-up fuel	At Boiler front column of each boiler
3	Feed Water	At inlet of Feed check valve of each Boiler [Feed check valve by BIDDER]
4	Spray water to Desuperheater / Attemporator	At Boiler front column for each boiler
5	Main Steam (Superheated Steam from Boilers)	At outlet of Main Steam stop Valve (MSSV) of each Boiler [MSSV by BIDDER]
6	<u>Utilities :</u> - Auxiliary Cooling water (Supply & Return) - Instrument Air - Service Air - Nitrogen - Potable Water - Service Water - DM Water	At Boiler front column of each boiler
7	Ash	At Bunker/ Pit Outlet
8	Boiler filling line	At Boiler front column for each boiler

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Sl. No.	Equipment	Terminal Point
9	Boiler hydraulic testing	At Boiler front column for each boiler
10	Flue gas	At inlet of Chimney / Stack [mating flange by BIDDER]
11	Safety valve exhausts & vents	To atmosphere at 1.0 m above boiler roof
12	Drains	To respective drain vessels
13	Sampling lines	Up to sample coolers [Sample coolers by BHEL]
Electrical		
1	Power Supply 415 V	At Consumption points (Motors/VFDs etc) of bidder's loads.
Control & Instrumentation		
1	Power supply to DCS/ PLC	At one (1) point in DCS / PLC panel incomer. Further distribution to all associated equipment including HMI, Printer etc. shall be taken care by Bidder.
2	I & C cables	At the DCS / PLC

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S.No.	Document Title	Document Description	Remarks
1	ANNEXURE-I	Scope Matrix between Bidder and BHEL	Editable file enclosed
2	ANNEXURE-II	Format for Deed of Joint Undertaking (DJU)	File is enclosed
3	ANNEXURE- III	NTPC Tender specifications with its Amendments, Corrigenda, Errata, Clarifications, PBQ responses	Files enclosed
4	ANNEXURE-IV	Key Information of Bidder	Part of this document
5	ANNEXURE-V	List of Commissioning Spare Parts	Part of this document
6	ANNEXURE-VI	List of Essential / Mandatory Spare Parts for 2 yr O&M Period	Part of this document
7	ANNEXURE-VII	List of Recommended Spare Parts	Part of this document
8	ANNEXURE-VIII	List of Special Tools & Tackles	Part of this document
9	ANNEXURE-IX	List of Chemicals & Consumables	Part of this document
10	ANNEXURE-X	Format of Deviations List	Part of this document
11	ANNEXURE-XI	Performance Guarantee Schedule	Part of this document
12	ANNEXURE-XII	QAP Guidelines	Part of this document
13	ANNEXURE-XIII	PRICE SCHEDULE	File is enclosed
14	ANNEXURE-XIV	MOU between BHEL& Bidder	File is enclosed



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ANNEXURE - IV

KEY INFORMATION OF BIDDER

1.	Name of the Bidding Company	
2.	Registered in (mention the name of the Country)	
3.	Name & Designation of Contact person for correspondence	
4.	Address for correspondence	
5.	Telex, Telephone & Mobile number and e-Mail id	
6.	Name & Designation of responsible <u>Indian</u> Representative / Officer in <u>Indian</u> Branch / Office	
7.	Address for correspondence, of <u>Indian</u> Office / branch	
8.	Telex, Telephone & Mobile number and e-Mail id of <u>Indian</u> Representative	
9.	Bidder's proposal number / Reference number of this proposal	
10.	Bidder's proposal date	
11.	Validity of offer, counted from the date of opening of bid	
12.	Guaranteed completion period, counted from date of issuance of LOI (Letter of Intent)	

Signature of Bidder's

Authorized representative

Date.....

**ANNEXURE - V****LIST OF COMMISSIONING SPARE PARTS**

Bidder shall tabulate in the proforma below list of all commissioning spare parts for regular, reliable operation. In case the Bidder has to add any other relevant information, the same shall be indicated herein. Continuation sheets of like size and format may be used as per Bidder's requirements.

A) List of Commissioning spares for Boiler :

S.No.	Description of Spare part	Qty. offered for main equipment / system	Spare quantity offered	Remarks
1				
2				
3				
4				

B) List of Commissioning spares for FGCS :

S.No.	Description of Spare part	Qty. offered for main equipment / system	Spare quantity offered	Remarks
1				
2				
3				
4				

Signature of Bidder's

Authorized representative

Date.....

**BHARAT HEAVY ELECTRICALS LIMITED**
PROJECT ENGINEERING & SYSTEMS DIVISION
HYDERABAD, INDIADoc. No:
PY51589Rev. No. | **01**Page **19** of **27****ANNEXURE - VI****LIST OF ESSENTIAL / MANDATORY SPARE PARTS FOR 2YRS. O&M PERIOD**

Bidder shall tabulate in the proforma below list of all O&M spare parts for regular, reliable operation. In case the Bidder has to add any other relevant information, the same shall be indicated herein. Continuation sheets of like size and format may be used as per Bidder's requirements.

A) List of O&M spares for Boiler :

S.No.	Description of Spare part	Qty. offered for main equipment / system	Spare quantity offered	Remarks
1				
2				
3				
4				

B) List of O&M spares for FGCS :

S.No.	Description of Spare part	Qty. offered for main equipment / system	Spare quantity offered	Remarks
1				
2				
3				
4				

Signature of Bidder's

Authorized representative

Date.....

ANNEXURE - VII
LIST OF RECOMMENDED SPARE PARTS

Bidder shall tabulate in the proforma below list of all Recommended spare parts, in addition to the above which may be recommended but not mandatory, for regular & reliable operation. In case the Bidder has to add any other relevant information, the same shall be indicated herein. Continuation sheets of like size and format may be used as per Bidder's requirements.

A) List of **Recommended** spares for Boiler :

S.No.	Description of Spare part	Qty. offered for main equipment / system	Spare quantity offered	Remarks
1				
2				
3				
4				

B) List of **Recommended** spares for FGCS :

S.No.	Description of Spare part	Qty. offered for main equipment / system	Spare quantity offered	Remarks
1				
2				
3				
4				

Signature of Bidder's

Authorized representative

Date.....

ANNEXURE - VIII
LIST OF SPECIAL TOOLS AND TACKLES

Bidder shall tabulate in the proforma below, the list of all Special Tools and Tackles as recommended by the respective manufacturer for regular, reliable operation. In case the Bidder has to add any other relevant information, the same shall be indicated herein. Continuation sheets of like size and format may be used as per requirements.

Sl.No.	Description	Quantity	Purpose (Boiler or FGCS)	Remarks
1				
2				
3				
4				

Signature of Bidder's

Authorized representative

Date.....

**BHARAT HEAVY ELECTRICALS LIMITED**
PROJECT ENGINEERING & SYSTEMS DIVISION
HYDERABAD, INDIADoc. No:
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Bidder shall tabulate in the proforma below as recommended by the respective manufacturer for regular, reliable operation. In case the Bidder has to add any other relevant information, the same shall be indicated herein. Continuation sheets of like size and format may be used as per requirements.

Sl.No.	Description	Purpose (Name of Equipment/ system)	Quantity	Remarks
1				
2				
3				
4				

Signature of Bidder's

Authorized representative

Date.....

ANNEXURE - X

FORMAT FOR LIST OF DEVIATIONS FROM SPECIFICATION

If the proposal submitted has got any deviation from the technical stipulations in the bidding document, the Bidder shall tabulate those in the below format. Additional sheets may be enclosed, if necessary.

Deviation is to be furnished with mention of specific clause numbers. Technical and Commercial deviations shall be indicated separately. Bidders shall bring out only those deviations which are impractical to meet (or) not advisable (or) not feasible.

Sl.No.	Vol No., Part No.	Sec.No., Sub- Sec No.	Cl.No., Page No.	DESCRIPTION AS PER SPECIFICATION	DEVIATION BY BIDDER

We confirm that all the deviations/exceptions to the Technical Specification PY51589 and enclosures including reference documents attached are listed in this Annexure only. No other deviations or exceptions even if mentioned elsewhere shall be considered for any technical/ commercial evaluation or for ordering.

Signature of Bidder's

Authorized representative.....

Date

ANNEXURE - XI

FORMAT PERFORMANCE GUARANTEE SCHEDULE

Bidder shall tabulate in the proforma below, all the performance guarantee parameters pertaining to Boiler & auxiliaries and FGCS equipment / systems supplied by Bidder under conditions specified in Annexure-III for Performance Guarantees. In case the Bidder has to add any other relevant information, the same shall be indicated herein.

Sl.No.	Performance Parameter	Unit	Guaranteed value by Bidder	Remarks
A. GUARANTEES UNDER CATEGORY-I				
1.	Boiler Efficiency	%		
2.	Auxiliary Power Consumption per each set of Boiler & FGCS	kW		
3.	Annual Operational Availability of complete supplies of bidder	%	Confirmed as per Annexure-III.	shall meet as per Annexure-III
B. GUARANTEES UNDER CATEGORY-II				
1.	Emission Performance for each FGCS system	---	Confirmed as per Annexure-III.	shall meet as per Annexure-III
C. GUARANTEES UNDER CATEGORY-III				
1.	Noise Level	dBA		
2.	Waste throughput as per Firing Diagram	---	Confirmed as per Annexure-III.	
3.	Boiler Capacity	---		Flow, Pressure & Temperature at bidder's terminal point

We confirm that all the above guarantees shall be met to meet the NTPC bid specifications.

Signature of Bidder's

Authorized representative.....

Date



BHARAT HEAVY ELECTRICALS LIMITED
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1.0 CHECK LIST

BIDDER to note that Check List shall be completely filled and the data required in-line with Check List shall be submitted along with their Offer to enable Purchaser to evaluate the offer submitted.

S.No.	Description	Enclosed or [Yes/No]	Remarks/ Comments
1.	BIDDER to confirm compliance with spec. PY-51589 and its annexure without any deviations.		
2.	BIDDER has already raised pre-bid queries (if any) on Purchase specification.		
3.	BIDDER Shall submit <u>signed copy</u> of completely filled-in all the Annexures IV to XI enclosed with this Technical Purchase Specification PY 51589 along with their offer :		
4.	Bidder to confirm that Tentative Electrical Load List is enclosed with offer.		
5.	Bidder to confirm that Civil Foundation Loading Data is furnished.		
6.	Bidder to confirm that Utility Consumption Data is furnished		
7.	Bidder to confirm that Technical Inputs for Erection are furnished.		
8.	BIDDER to fill Deviation list (Refer Annexure-VII of PY 51589). <u>Only those deviation indicated in this list will be considered</u> during technical evaluation of offer. Bidder to indicate the deviations which are impractical. Technical and Commercial Deviations List shall be submitted separately. [In case of no deviation also, Annexure -X to be submitted by writing "NIL" in the format]		
9.	BIDDER noted that all other requirements except the deviations brought out under deviation list, have been taken into consideration in the offer.		

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10.	BIDDER has submitted unpriced "Price bid format" with "Quoted" mentioned against price for each line item of Price Bid Format and enclosed with Technical offer.		
11.	Confirm that Scope of supply and services are exactly as per specification requirement		
12.	Confirm Technical Compliance with Specification		
13.	Confirm Commercial Compliance with Specification		
14.	Confirm that LD rates and Bid evaluation factors are noted by bidder.		

Signature of Bidder's

Authorized representative.....

Date

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RECORD OF REVISIONS				
Rev. No.	Date	Revision Details	Revised By	Approved By
00	16.08.2019	First Issue	SC	JKP
01	19.03.2020	Generally revised	SBN	KS