

BHARAT HEAVY ELECTRICAL LIMITED, JHANSI



Specification No.	9097 Rev 03
Item No.	SP/STEAM/9097
Location	Boiler House
Quantity	1 no.

**SPECIFICATION CUM COMPLIANCE CERTIFICATE OF GAS FIRED BOILER**

**NOTE:-**

- Vendor must submit complete information against clause no. 13.0 (Qualifying Condition). The offer meeting this clause would only be processed.
- Vendor to furnish the offer using this standard template of the specification. While furnishing the offer, no change is to be made in the first three columns (i.e. 'S.NO.', 'DESCRIPTION FOR BHEL REQUIREMENT' & 'ACTION BY VENDOR'). Only the "Offered" column and where applicable, the "Deviations" & "Remarks" Column of this format shall be filled in by the Vendor and submitted along with the offer. Inadequate / incomplete, ambiguous, or unsustainable information against any of the clauses of the specifications/requirements shall be treated as non-compliance.
- The offer and all documents enclosed with offer should be in English language only.
- Wherever "vendor to specify" or "suitable" is mentioned, suitable backup data or calculation or justification is required for establishing the suitability.
- Circuit diagram of the system offered is to be enclosed with proper writeup.

NAME & ADDRESS OF THE SUPPLIER :  
 TELEPHONE NOS.:  
 FAX NOS.:  
 E-MAIL ADDRESS :

NAME & ADDRESS OF THE INDIAN AGENT :  
 TELEPHONE NOS.:  
 FAX NOS.:  
 E-MAIL ADDRESS :

**SCOPE: DESIGN, MANUFACTURING, SUPPLY, INSTALLATION, COMMISSIONING AND TESTING/ PROVING FOR 10 MTPH CAPACITY GAS FIRED BOILER COMPLYING WITH SPECIFICATIONS AS BELOW**

S.NO.	DESCRIPTION FOR BHEL REQUIREMENT	VALUE	ACTION BY VENDOR	OFFERED	DEVIATION/REMARK
1.0	<b>WORK PIECE MATERIAL</b>				
1.1	This specification governs the quality requirements of Design, Manufacturing, Supply, Installation & Commissioning at BHEL JHANSI PLANT (with material/scope of supply) in all respect for 10 MTPH capacity Gas Fired Boiler. FOR SCOPE OF SUPPLY & WORK REFER POINT SR. NO. 2.0 TO 4.2		VENDOR TO NOTE & CONFIRM		
2.0	<b>MATERIAL AND FACILITY AVAILABLE WITH BHEL:</b> The below mentioned items of this plant are available and shall be provided by BHEL. The vendor will have to design the associated system accordingly and supply all the balance components to achieve the desired performance. Vendor may visit the site before submitting the offer to assess the work, to analyse the technical requirement, to witness available items & the space available for installation of the boiler. Vendor will have to design the lay out such that all the supplied modules / equipment are accommodated in the available space only.		VENDOR TO NOTE & CONFIRM		
2.1	DM Plant (15 KLPH capacity) water connection point available within 100 meter distance from proposed location. Items required for interconnection ( pipeline, Valve, Tee, Union, NRV etc.) to be provided by Vendor.		VENDOR TO NOTE & CONFIRM		
2.2	Connection point in main Steam pipeline (going to shops) available within 50 meters distance from proposed location. Items required for interconnection (Pipeline, isolation Valve, NRV, Drain module etc.) to be provided by Vendor.		VENDOR TO NOTE & CONFIRM		
2.3	Complete Civil Work will be in the scope of BHEL JHANSI (As per drawing submitted by vendor within 15 days after issuing of Purchase Order)		VENDOR TO NOTE & CONFIRM		
2.4	BHEL will provide single point air @4-6 bar and electric supply near the plant. Further distribution of these services as per requirement will be in the scope of vendor.		VENDOR TO NOTE & CONFIRM		
3.0	<b>SCOPE OF WORK &amp; SUPPLY</b>				
3.1	<b>DESCRIPTION</b>				

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S.NO.	DESCRIPTION FOR BHEL REQUIREMENT	VALUE	ACTION BY VENDOR	OFFERED	DEVIATION/REMARK
3.1.1	Boiler shall be horizontal, three pass, fully wet back, smoke tube steam boiler, with reversal chamber, Hinged ceramic lined front doors, smoke chamber with soot cleaning door, one Manhole, two head hole on the boiler shell to inspect the internal of the boiler, one access opening at the back of the IRC to inspect the internal of the furnace, fusible plug for mechanical safety to prevent the boiler from overheating, automatically controlled, gas fired burner capable of firing Natural gas, Skid mounted.		VENDOR TO CONFIRM & SUBMIT THE CATALOG		
3.1.2	Boiler shall be complete with all structure, air ducting, piping, valves, mountings, fittings, filters, accessories, controls etc..		VENDOR TO CONFIRM		
3.1.3	Boiler construction should be in accordance with the latest revision of Indian Boiler Regulations 1950. All materials used should be approved and tested as per relevant existing codes. All the welded joints should be as per code requirement.		VENDOR TO CONFIRM		
3.1.4	Boiler should be designed and constructed to generate steam at minimum efficiency of minimum 92 % on net calorific value (NCV) basis. Efficiency should be demonstrated as per standard BS - 845 part1- indirect method.		VENDOR TO CONFIRM		
3.2	<b>TECHNICAL SPECIFICATION</b>				
3.2.1	Boiler Type	Three pass wet back smoke tube boiler	VENDOR TO CONFIRM		
3.2.2	Design Code	IBR	VENDOR TO CONFIRM		
3.2.3	Capacity Steam Output F & A 100 °C (Min.)	10000 kg/hr	VENDOR TO CONFIRM		
3.2.4	Design Pressure (Min)	10.5 kg/cm2 (g)	VENDOR TO CONFIRM		
3.2.5	Safety valves (1 & 2) set pressure	kg/cm2 (g)	VENDOR TO SPECIFY		
3.2.6	Efficiency on NCV as per BS845 on 100% NG firing only (With HRLU) (Min.)	92%	VENDOR TO CONFIRM		
3.2.7	Dryness Fraction (Min.)	98%	VENDOR TO CONFIRM		
3.2.8	Fuel	NG	VENDOR TO CONFIRM		
3.2.9	NCV of fuel considered -NG	8500 kcal/MM3	VENDOR TO CONFIRM		
3.2.10	Fuel consumption at maximum output - NG	Nm3/h	VENDOR TO SPECIFY		
3.2.11	Fuel supply rate - pressure and flow rate	m bar & kg/hr	VENDOR TO SPECIFY		
3.2.12	Electric Supply: AC, 3Phase, 415+/-5%V, 50+/-3% HZ, 4 Wire System		VENDOR TO NOTE		
3.2.13	Burner turn down ratio	1:3 or better	VENDOR TO CONFIRM & SPECIFY		
3.2.14	Quantity of safety valves (Min 2 nos.)	Nos	VENDOR TO SPECIFY		
3.2.15	Chimney height	M	VENDOR TO SPECIFY		
3.3	<b>SCOPE OF SUPPLY</b>				
3.3.1	Gas fired package boiler shall be complete with all accessories as specified such as fuel system, feed water system, Air preheater, drain & vent piping, FD fan, chimney, flue gas ducting, structure, insulation, boiler mountings, motors, starters, electrical cabling, instruments & control etc.. Foundation bolts for all items shall be supplied.		VENDOR TO CONFIRM		
3.3.2	Complete Air pre-heater with all necessary accessories and attachment.		VENDOR TO CONFIRM		
3.3.3	Two nos. feed water pump of adequate capacity and rating complete with motor, stators etc.. Piping from feed water header (of DM water storage tank) to Pump Inlet, required Valves and Strainer in the feed water line. Feed water piping from feed water pumps to shell inlet. Pressure gauges at outlet of pumps, Isolation valves for pressure gauges.		VENDOR TO CONFIRM & SPECIFY		

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3.3.4	Manual hydraulic pump of suitable capacity with hydraulic test arrangement (Piping, required valves, pressure gauge with isolation valves and Strainer etc.) shall be provided for hydraulic testing of boiler pressure parts in line with IBR requirement.		VENDOR TO CONFIRM & SPECIFY		
3.3.5	In Gas firing system the burner offered shall be Pressure jet burner of step less modulation type. The burner fires the gas into the furnace. A flame sensor on the burner as a part of flame failure safety control. Burner with combustion air fan, Servomotors for gas valve, air damper and ignition electrodes, Gasket for burner flange. Gas flow meter shall be provided.		VENDOR TO CONFIRM		
3.3.6	Gas Train to regulate the Gas Pressure from 2.5 bar to 100-150 mbar. Gas Train should consist of double shut off valves, Automatic leakage detector for main gas valves (pressure switch) Ignition gas valve (Pilot valve), Pressure switches for gas (min, max), Gas Filter, Safety Relief Valve, Gas flow control valve etc. to meet the requirement of boiler.		VENDOR TO CONFIRM		
3.3.7	One forced draft combustion air fan with flexible duct at suction & discharge of the fan shall be provided with air regulating assembly and all other accessories.		VENDOR TO CONFIRM		
3.3.8	Feed water tank of minimum 6 KL capacity shall be provided with level indicator and high & low level switch integrated with suitable capacity make-up water pump. Deaerator Head & Steam injection system with supporting structure shall be provided for the feed water tank.		VENDOR TO CONFIRM		
3.3.9	LP dosing system consists of Dosing pump with suitable capacity tank, valves and fittings, Motorized Agitator		VENDOR TO CONFIRM		
3.3.10	Supply of Inter connecting piping, Drain & vent piping for safety valve discharge to atmosphere, Boiler air vent to atmosphere, Shell drain & blowdown piping to blow down pit, PID logic based automatic Drum Level Control using level transmitter & PLC and gauge glass drain (Common drain to blow down pit, Sample Cooler (two points) with piping for Blow Down piping, fittings etc.,		VENDOR TO CONFIRM		
3.3.11	All the items required for installation, commissioning & start up of boiler		VENDOR TO CONFIRM		
3.3.12	Insulation & cladding on boiler, flue gas duct, steam piping, water piping, drain vent piping		VENDOR TO CONFIRM		
3.3.13	Self-supported chimney made out of MS sheet of 30-mtr height with suitable diameter. Chimney shall be complete with ladder up to 30 mtrs, aviation lamp (Neon), lighting arrester, wind cutter/ spiral wings, necessary foundation bolts & platforms at suitable heights. Chimney to be painted with heat resistance anti corrosive paint.		VENDOR TO CONFIRM		
3.3.14	<b>ELECTRICAL CONTROL PANEL</b> Power cum control panel, free standing type conforming to IP 42 with MCB/MCCB. The panel should be made out of 14 / 16 SWG CRCA sheets, metal clad, dust and vermin proof, powder coated, Siemens gray color and with neoprene gaskets. Panel wiring with PVC 2.5 sqmm, copper wire 1.1 KV and having all standard accessories. Power & Control section physically isolated with partition plate, power section provided with a main incomer isolating switch with MCCB, required switch gears for all the feeders housed in the power section, auxiliary contactor, and control circuit of all motors, indication lamps & hooter for the alarm, thermal Overload Relays, MCB's and Contactors should be housed in the control section.		VENDOR TO CONFIRM		
3.3.15	All outgoing Power & Control cables shall be in the scope of vendor. Power cabling from control panel to all drive motors for boiler, cable armoured with copper conductor. Control cabling from control panel to boiler mounting instruments, cable armoured with copper conductor. Supply of complete termination hardware. Electrical control panel shall have one incomer (MCCB type) and further distribution for all drives shall be done by vendor. Power cable from nearby source of sufficient current rating shall be provided by BHEL.		VENDOR TO CONFIRM		
3.3.16	Earthing GI flat 25mm x 3mm & 50mm X 6mm and supply of complete material for earth pits.		VENDOR TO CONFIRM		
3.3.17	Cable tray for above cabling		VENDOR TO CONFIRM		
3.3.18	Structural supports on existing structure for cable tray, ducting, piping etc shall be provided by vendor.		VENDOR TO CONFIRM		
3.3.19	Ladder & catwalk to operate the valves & fittings mounted on the boiler shall be provided by vendor.		VENDOR TO CONFIRM		

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S.NO.	DESCRIPTION FOR BHEL REQUIREMENT	VALUE	ACTION BY VENDOR	OFFERED	DEVIATION/REMARK
3.3.20	Accessories - List to be provided		VENDOR TO SUBMIT		
3.3.21	Mountings & Fittings - List to be provided		VENDOR TO SUBMIT		
3.3.22	<b>PLC BASED CONTROL PANEL</b> The PLC Control Panel shall comprise of centralized CPU in fully wired panel with pluggable type DIN rail mounted interposing relays in a ready to connect state to the field I/Os. Redundant power supply together with all Panel Accessories.		VENDOR TO CONFIRM		
3.3.23	<b>PLC Panel Enclosure: 1 no.</b> a) A fully wired electrical control panel conforming to IP 52 of suitable size housing complete PLC system, I/O modules, power supplies, relays contactors, fuse, TB etc. along with other accessories as per requirement. b) The TBs, relays, modules installed in the panel should be properly tagged, wires should have printed ferrules, all control cable should be properly dressed and routed through cable trays. c) Aux 240VAC single phase socket point inside PLC panel should be provided. d) Panel Illumination LED lamp 20W through door close switch for each section. e) Input Supply 415 VAC. Suitable 415V/230V Isolation Transformer shall be provided.		VENDOR TO CONFIRM		
3.3.24	<b>PLC CPU Rack:</b> The PLC shall comprise of the following:- i) Independent Power Supply module: 2 Nos. ii) CPU rack and Memory Card suitable to project requirement. iii) Backup battery for the CPUs; 1 No. <b>PLC acceptable makes: Siemens /ABB/Allen-Bradley/ Honeyell/ Fugii/ Mitsubishi.</b>		VENDOR TO CONFIRM		
3.3.25	<b>PLC Input, Output Rack:</b> The PLC I/O Rack shall comprise of the following:- i) I/O Rack Power Supply Module: As per requirement ii) 24 VDC Digital Inputs : As per requirement iii) 24 VDC Digital Outputs: As per requirement iv) Analog Input 16 bit resolution: As per requirement v) Analog Outputs 16 bit resolution: As per requirement. x) Input/Output rack suitable for above I/O's.		VENDOR TO CONFIRM		
3.3.26	<b>DIN rail mounted PLC-INTERFACE Relay:</b> All the PLC digital outputs shall be wired to the field, through PLC-INTERFACE Relay for protection against interference currents or interference voltages on the control side. Consisting of basic terminal block with Push-in connection and plug-in miniature relay with power contact of 6A and 10 A, 230 V AC changeover contact as per requirement. Typical specs shall be as follows: a) Coil Voltage: 24VDC b) Contact Single Changeover Contact <b>Acceptable makes: Phoenix Contact/Siemens/ABB/Schneider/Allen-Bradley/ L&amp;T.</b>		VENDOR TO CONFIRM		
3.3.27	<b>CONTROL DESK:</b> 19" All-in-One Desktop PC will be required for overall operation and monitoring of Boiler and PLC programming/troubleshooting & report generation. 19" All-in-One Desktop PC shall communicate with PLC.		VENDOR TO CONFIRM		

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3.3.28	<p><b>19" All-in-One Desktop PC:</b>                      a) This PC shall be used for overall display of selection, control and status of boiler &amp; Auxiliary equipments's. Necessary MIMIC screens will have to be configured for the purpose as per BHEL requirement during commissioning. This PC shall be equipped with licenced fully functional SCADA package for display, configuration and online diagnostics of the PLC System by Operator /Engineer. This PC shall communicate with PLC.                      Typical Specification of All in One 19" FHD Desktop PC shall be ( Core i5 or better Processor/ 16GB RAM/256GB SSD/2GB Integrated Graphics/OS : Windows 10 + MS Office).                      Acceptable make of PC: Dell/HP/Lenovo</p>		VENDOR TO CONFIRM		
3.3.29	<p><b>Wiring Accessories:</b>                      All the accessories like Cable glands, Cable markers, Ferules, Lugs, Legends for Control &amp; Signalling devices, as per requirement shall be in scope of vendor.</p>		VENDOR TO CONFIRM		
3.3.30	<p><b>Other Instruments</b>                      Steam totaliser Flow Meter                      Feed Water totaliser Flow Meter                      Fuel pressure and flow measurement                      Pressure Transmitter on Shell                      Flue gas temperature for flue gas outlet</p>		VENDOR TO CONFIRM & SPECIFY		
3.3.31	Operator Desk with pedestal drawers & well cushioned revolving chair.		VENDOR TO CONFIRM		
3.4	<b>SCOPE OF WORK &amp; SERVICES</b>				
3.4.1	<p><b>INSTALLATION &amp; COMMISSIONING OF THE BOILER</b>                      The erection of the items as supplied under this specification is the responsibility of vendor, to the satisfaction of BHEL. Erection shall be carried out according to well-established practices. Providing erection tools tackles. Hoists, derricks, slings scaffolding, rigging tools, welding sets, instruments, appliances, consumables etc. required for erection, inspection, testing and commissioning to accomplish the work, providing complete workers, supervisory personnel, ensuring pre-commissioning checks, trial run of all rotating equipment shall be in the scope of vendor.</p>		VENDOR TO CONFIRM		
3.4.2	IBR Approval of boiler upto provisional firing order shall be in the scope of vendor.		VENDOR TO CONFIRM		
3.4.3	All IBR formalities at site and its registration shall be in the scope of vendor.		VENDOR TO CONFIRM		
3.4.4	<p><b>PLC/SCADA</b>                      PLC Programming as per BHEL requirement for safe selection, control, operation, visualization data logging of critical operational parameters of Supplied 10 MTPH Boiler and its associated Auxiliaries/equipments from SCADA control desk.</p>		VENDOR TO CONFIRM		
3.4.5	Design and development of Screens for Boiler operation, Visualization and control, MIMIC Screens shall be ergonomically designed having Complete realtime information of critical parameters. Separate Screens shall also be provided for DI/DO/AI/AO live status in SCADA for troubleshooting purposes as per BHEL Requirement during commissioning.		VENDOR TO CONFIRM		
3.4.6	Faults/Error Messages will have to be configured for easy fault identification and diagnosis.		VENDOR TO CONFIRM		
3.4.7	Commissioning and proveout of complete system. All interlocks to be checked and validated for their effective functioning by physical operation.		VENDOR TO CONFIRM		
3.5	<b>PREFERRED MAKES OF THE BOUGHT OUT COMPONENTS:</b>				
3.5.1	<b>MECHANICAL</b>	<b>MAKE</b>			
1	Feed pumps	Grundfos/ KSB/ LUBI/CNPF/ Xylem			
2	Direct Water level gauge	Levcon/Pure Techtrol			

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3	IBR Plates	SAIL/ JINDAL	VENDOR TO SPECIFY		
4	Tubes (ERW)	TATA/TPI/Pennar/ BHEL Tiruchirappalli	VENDOR TO SPECIFY		
5	Burner	Unigas/ URET/ Combustion Concept/Thermax Oertli/ Forbes Marshall	VENDOR TO SPECIFY		
7	IBR valves	KSB L&T/Uniklinger/Forbes Marshall/Rushas/ Micon/ Expert	VENDOR TO SPECIFY		
8	Safety valves	Fainger Laser/Uniklinger/ Forbes Marshall/Darling meusco	VENDOR TO SPECIFY		
9	Blow down valves	Flosteer/Uniklinger/ Forbes Marshall/ Darling meusco/Punjab Metals/ Inditech/ Atam	VENDOR TO SPECIFY		
<b>3.5.2</b>	<b>ELECTRICAL</b>				
1	Motors	ABB / Siemens / GE / Bharat Bijlee / Marathon / Kirloskar Electric / Crompton Greaves	VENDOR TO CONFIRM/ SPECIFY		
2	Relays / Circuit Breakers / MCCB / MCB/Contactors / Lamps / PB / SFU / Timers / Fuses	ABB / Siemens / GE / L&T / Schneider / Legrand	VENDOR TO CONFIRM/ SPECIFY		
3	Switches	Kaycee / Salzer / ABB	VENDOR TO CONFIRM/ SPECIFY		
4	Meters	AE / Secure / Rishabh / Schneider / L&T	VENDOR TO SPECIFY		
5	PLC, SCADA	Siemens / ABB / Allen-Bradley/Honeywell/ Fuji/ Mitsubishi	VENDOR TO CONFIRM & SPECIFY		
6	Control & Power Cables	KEI / Havells / Polycab / Finolex / Gemscab / Cords	VENDOR TO CONFIRM/ SPECIFY		
7	Desktop PC	Dell / HP / Lenovo	VENDOR TO CONFIRM & SPECIFY		
<b>3.5.3</b>	<b>INSTRUMENTS</b>				
1	Temp. gauges	E&H/BaumerHoneywell/Wika/Yokogawa/GIC	VENDOR TO CONFIRM/ SPECIFY		
2	Pressure gauges	E&H/BaumerHoneywell/Wika/Yokogawa/ GIC	VENDOR TO CONFIRM/ SPECIFY		
3	Thermocouples	E&H/BaumerHoneywell/Wika/Yokogawa/GIC	VENDOR TO CONFIRM/ SPECIFY		
4	Pressure Switch	E&H/BaumerHoneywell/Wika/Yokogawa/ Switzer	VENDOR TO CONFIRM/ SPECIFY		
5	Pressure Transmitter	Wika/EdwardPfeiffer/honeywell/Yokogawa	VENDOR TO CONFIRM/ SPECIFY		
6	RTD	E&H/Baumerhoneywell/Wika/Yokogawa/GIC	VENDOR TO CONFIRM/ SPECIFY		
7	Level Gauge	Honeywell/Yokogawa/ Pune Techtrol	VENDOR TO CONFIRM/ SPECIFY		
8	Level switch	E&H,/Truman/Honeywell/ Pune Techtrol	VENDOR TO CONFIRM/ SPECIFY		
9	Limit switch	BCH/Siemens/ABB/L&T/Honeywell	VENDOR TO CONFIRM/ SPECIFY		
10	Draught gauge	Wika/Switzer/honeywell/yokogawa/ GIC	VENDOR TO CONFIRM/ SPECIFY		
11	Vortex Flow meter( Steam & water)	ABB/Yokogawa/Honeywell/E&H/ Emerson/ Armstrong International	VENDOR TO CONFIRM/ SPECIFY		
3.5.4	If the party is offering any item of equivalent make other than mentioned above the same should be clearly indicated in the offer and will be accepted only in case specifically approved by BHEL.				
4.0	TESTS/ PERFORMANCE PROVE OUT:				

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4.1	Vendor to prove the performance of the boiler as per specifications & IBR requirement.		VENDOR TO CONFIRM		
4.2	The boiler shall be tested for continuous full load operation.		VENDOR TO CONFIRM		
5.0	<b>SAFETY ARRANGEMENTS</b> Following safety features in addition to other standard safety features should be provided on the boiler.				
5.1	Boiler should have adequate and reliable safety interlocks / devices to avoid damage to the workpiece and the operator due to the malfunctioning or mistakes. Boiler functions should be continuously monitored and alarm / warning indication through lights / alarm number and audio alarm with message (on panels) should be available.		VENDOR TO CONFIRM		
5.2	A detailed list of all alarm / indications provided on Boiler should be submitted by the vendor with the offer.		VENDOR TO CONFIRM AND SUBMIT		
5.3	All the pipes, cables etc. on the Boiler should be well supported and protected.		VENDOR TO CONFIRM		
5.4	All the rotating parts used on Boiler Plant should be statically & dynamically balanced to avoid undue vibrations and well protected with safety guards.		VENDOR TO CONFIRM		
5.5	Emergency switches at suitable locations as per international Norms are to be provided.		VENDOR TO CONFIRM		
5.6	Oil & water pipe lines should not run with electrical cable in the same tray / trench.		VENDOR TO CONFIRM		
5.7	Required PPEs shall be used by all the workers engaged by vendor at site from start of work till completion and other safety arrangements like lifeline, safety net, fire extinguisher shall be arranged by vendor at his own cost as per requirement.		VENDOR TO CONFIRM		
6.0	<b>ENVIRONMENTAL PERFORMANCE</b> The Boiler shall conform to the following factors related to environment:				
6.1	Maximum noise level shall be 85 dB at normal load condition, 1mtr. away from the Boiler House with correction factor for back ground noise, if necessary. This will be measured as per international standards like DIN 45635-16. Supplier to demonstrate compliance to noise level, if so required.		VENDOR TO CONFIRM		
6.2	If any safety / environmental protection enclosure is required, it should be built in the plant by the VENDOR.		VENDOR TO CONFIRM		
7.0	<b>ERECTION AND COMMISSIONING</b>				
7.1	All the erection and commissioning will be carried out by vendor with his own labour in BHEL-Jhansi. Laying & termination of all power & control cables shall be in the scope of vendor.		VENDOR TO CONFIRM		
7.2	Tools & ladders, equipments and consumables like paint, welding electrodes, gas, hardwares etc required for work to be brought by supplier		VENDOR TO CONFIRM		
7.3	Supply, fabrication & erection of required structures, plat form and ladders to be done by vendor as per site requirement.		VENDOR TO CONFIRM		
7.4	Supply and application of various paints for lines and components as per the approved colour code and labeling (letter/number embossed metal plates) of the Plants to be done by vendor.		VENDOR TO CONFIRM		
7.6	E&C of the boiler shall be completed within 6 weeks from the date of intimation to the vendor by BHEL.		VENDOR TO CONFIRM		
7.7	Erection and commissioning schedule must be submitted before start the work for approval in line with time schedule indicated by BHEL (Complete activity Bar Chart with no. of days required to complete the desired work).		VENDOR TO CONFIRM		
8.0	<b>GENERAL</b>				
8.1	GA drawing, single line diagram, foot print of complete system showing all individual systems and BOM must be submitted with tech. offer for the evaluation.		VENDOR TO SUBMIT		
8.2	Any thing else which is required to prove the performance of boiler upto the satisfaction of BHEL as per specification will be in the scope of vendor without any extra cost.		VENDOR TO CONFIRM		
8.3	Any deviation to the scope and conditions to be mentioned pointwise.		VENDOR TO CONFIRM		

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8.4	After placement of order by BHEL, the vendor to complete detailed designs and submit the drawings/data sheets with complete Bill of material along with rating/specification of all equipments/ components.		VENDOR TO CONFIRM		
8.5	Scope of work includes installation & commissioning of all supplied item/ items required and any additional work & material required to operate the plant in auto & manual mode will be in the scope of vendor with out any extra cost.		VENDOR TO CONFIRM		
8.6	All required instruments should be calibrated through OEM or NABL certified agencies.		VENDOR TO CONFIRM		
8.7	Supply should complete within 05 months from the date of drawing approval by BHEL.		VENDOR TO CONFIRM		
8.8	Predispatch inspection will be carried out by representative of BHEL for all components assemblies etc. at suppliers works.		VENDOR TO NOTE & CONFIRM		
8.9	Quality Assurance Plan to be submitted by vendor alongwith offer		VENDOR TO CONFIRM & SUBMIT		
8.10	List of mandatory spares shall be submitted along with technical offer .		VENDOR TO CONFIRM & SUBMIT		
9.0	<b>DOCUMENTATIONS</b>				
9.1	Complete P&I diagram (electrical, mechanical, hydraulic, pneumatic, water and steam circuit), General arrangement, terminal point/ hook up drawing, foundation drawing for all equipment, Boiler house drawing, electrical interfacing drawing (as commissioned) shall be provided in 03 nos. hard copies & 01 no's soft copy.		VENDOR TO CONFIRM		
9.2	Complete technical literature /brochure with specifications of all supplied bought-out items shall be provided in 03 nos. hard copies		VENDOR TO CONFIRM		
9.3	Operation, maintenance, Spare parts manual and technical data sheet to be submitted alongwith supply in 03 nos. hard copies & 01 no's soft copy.		VENDOR TO CONFIRM		
9.4	Complete Electrical Schematic Drawings, PLC Project backup file, SCADA project backup file in Soft copies with comments in English, PDF copy of PLC Ladder and screens of SCADA, all loaded in one USB 32GB Pen drive. Ghost image backup file of SCADA PC for system restoration in case of PC's hard disk failure. Note: *All the documentation/backup files etc shall be "As finally Commissioned" **PLC project backup should not be password Protected. *** PLC programming software is not required in case supplied PLC is of Siemens make.		VENDOR TO CONFIRM		
9.5	A complete set of IBR drawings and documents certified by the Inspecting Authority of the State of its origin. Boiler IBR Folder at the time of dispatch (original)		VENDOR TO CONFIRM		
9.6	Test certificates - After placement of P.O. and at the time of commissioning conformance to be provided.		VENDOR TO CONFIRM		
10.0	<b>GUARANTEE</b>				
10.1	Material (against any manufacturing and design defect) and work carried out & performance shall be guaranteed for the period of 24 months from the date of commissioning.		VENDOR TO CONFIRM		
10.2	Performance guarantee runs shall be conducted as per BS 845 part1 -1987 indirect test; method after one month of continuous trouble free operation/ trail operation.		VENDOR TO CONFIRM		
10.3	Any defect due to faulty material / bad workmanship shall be rectified free of cost to the entire satisfaction of BHEL.		VENDOR TO CONFIRM		
11.0	<b>TRAINING</b>				
11.1	Boiler operational training shall be provided by vendor to BHEL operators at site.		VENDOR TO CONFIRM		
11.2	Maintenance training shall be provided (Mechanical, Electrical and Electronics) by vendor to concerned BHEL persons.		VENDOR TO CONFIRM		
11.3	PLC & SCADA Project backup/restore/online diagnosis training shall be provided by vendor to Electronics maintenance.		VENDOR TO CONFIRM		
12.0	<b>AMBIENT CONDITIONS &amp; THERMAL STABILITY:</b>				

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S.NO.	DESCRIPTION FOR BHEL REQUIREMENT	VALUE	ACTION BY VENDOR	OFFERED	DEVIATION/REMARK
12.1	Boiler and all supplied items should work trouble free and efficiently under following operating conditions and should give specified accuracies. POWER SUPPLY : Voltage :- 415 V -10%, +10%. Frequency - 50 Hz +1.5Hz, -1.5Hz No. of phases - 3, no neutral Ambient Conditions - Temperature = 5 to 50 degree celsius, Relative Humidity. 95 % (Vendor to confirm that Boiler is suitable for above).		VENDOR TO CONFIRM		
12.2	Weather conditions are tropical, Atmosphere may be dust laden during some part of the year. Boiler shall be kept in the Boiler house. Max. temperature variation is up to 25 deg Celsius in 24 hours. (VENDOR to confirm that Boiler is suitable for above).		VENDOR TO CONFIRM		
13.0	<b>QUALIFYING CONDITION :</b>				
13.1	Only Original Equipment Manufacturers (OEMs) or their Authorized Dealers/Partners meeting the following conditions are eligible to participate in the tender. (a) The vendor, submitting the quotation or it's OEM, should have supplied and commissioned at least 1 nos. Gas Fired Boiler of minimum 6 TPH capacity in the past seven years from date of opening of this tender can participate. (Vendors other than OEM shall have to submit valid authorization certificate issued by OEM and back-to-back guarantee from their OEM for satisfactory performance of the offered plants with all technical support.) Or Indian Vendors who have a running Collaboration/ Joint Working arrangement with Foreign Manufacturer [meeting above specified qualifying conditions mentioned in 13.1 (a)] can also participate. Such Indian Vendors shall have to submit a back-to-back guarantee from their foreign partner for satisfactory performance of the offered plants and collaboration certificate/ joint venture documents to be submitted along with offer.		Vendor to confirm & furnish		
13.2	The following information is to be submitted by the VENDOR about the company where such plant has been supplied. This is required from all the VENDORS for qualification of their offer.		Vendor to Confirm		
13.2.1	Name of the customer / company where such Plant is installed (unpriced copy of purchase order to be furnished in line with point no. 13.1)		Vendor to furnish		
13.2.2	Name, designation, Complete postal address, Phone no. and E-mail address of the contact person of the customer.		Vendor to furnish		
13.2.3	Year of commissioning.		Vendor to furnish		
13.2.4	Application for which plant has been supplied.		Vendor to furnish		
13.2.5	Performance certificate from the customer of the Boiler supplied in line with point no. 13.1 regarding satisfactory performance of supplied Boiler for minimum one year after commissioning.		Vendor to furnish		
13.2.6	BHEL reserves the right to verify information or visit the place of installation of customer as indicated by VENDOR. In case the information is found to be false / incorrect, the offer shall be rejected.		Vendor to note & confirm		

*[Signature]*  
12/08/23

VIVEK KUMAR GUPTA/ SR. MANAGER

*[Signature]*  
12/08/23

PAWAN KUMARI/ DGM

*[Signature]*  
12/08/23

SATISH SONI/ MANAGER

*[Signature]*  
12/08/23

HIRENDRA RAUT/ SR. MANAGER