

BHARAT HEAVY ELECTRICALS LIMITED,
(A Government of India Enterprises)
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NOTICE INVITING TENDER(NIT)

**Category of Tender: TWO BID
(PRICED + UN - PRICED)**

**SUB: RETROFIT AND RECONDITIONING OF LPG Fired
120MT BOGIE HEARTH ANNEALING WELLMAN FURNACE**

Our Ref: **MM/2/10/3776/CAP/W-070/5071**

DATE: 22.07.2014

Sealed quotations in duplicate are invited from suppliers on or before **16.08.2014** **SUPERSCRIBING OUR REFERENCE AND CATEGORY OF TENDER** on the cover, for supply of the under mentioned stores within the above due date, otherwise send **REGRET LETTER**, strictly subject to the Terms & Conditions attached herewith.
LATE TENDERS ARE NOT ACCEPTABLE.

ITEM No.	DESCRIPTION / SPECN. / SIZE	QTY
1.	Retrofit & Reconditioning of LPG Fired 120MT Bogie Hearth Annealing Wellman Furnace (Estimated Cost of work is Rs. 120 Lakhs approx.)	1 No.
	Encl: 1. Technical Specifications 20 Pages 2. General Terms/ commercial terms and conditions 9 Pages (INCLUDING CHECK LIST)	

For BHARAT HEAVY ELECTRICALS LIMITED,

For Sr. MANAGER (MM)

RETROFIT AND RECONDITIONING OF LPG FIRED BOGIE HEARTH ANNEALING WELLMAN FURNACE

BRIEF SCOPE:

Repair/reconditioning of furnace structure, refractory, bogie, bogie drive etc. Supply and installation of new combustion system (except burners) with complete electrical accessories, controls and instrumentation system suitable for the existing LPG fired burners. The existing burners are to be reconditioned however, and retained on the furnace.

NOTES:

Vendor must submit complete information for all the clauses mentioned below. The offers meeting these clauses would only be processed.

1. The column "**BIDDER'S OFFER WITH CONFIRMATION & COMPLETE TECHNICAL DETAILS**" of this format shall be filled in by the Vendor and submit 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 and lead to disqualification of the offer without asking queries.
2. The offer and all documents enclosed with offer should be in English language only.
3. The vendors should have visited HPVP unit, BHEL, Visakhapatnam for study of the existing furnace before submission of quotation (during the period 1st July 2008 till submission of offer). If not visited during the period mentioned above, the cut-off date for visit to BHEL for inspection of furnace, clarifications regarding furnace to be completed 7 days prior to the tender due date.
4. Reconditioning of the Furnace must be completed within 6 Months from the date of release of PO. Vendor to mobilize resources accordingly to complete the job in 6 Months in all respects.
5. Vendors must indicate makes of all components that are being supplied as a part of this tender shall be clearly indicated in a separate sheet.

ADDRESS OF THE SUPPLIER :	ADDRESS OF THE INDIAN AGENTS :
TELEPHONE NOS.:	TELEPHONE NOS.:
FAX NOS.:	FAX NOS.:
E-MAIL ADDRESS:	E-MAIL ADDRESS :

RETROFIT AND RECONDITIONING OF LPG FIRED BOGIE HEARTH ANNEALING WELLMAN FURNACE

QUALIFICATION CRITERIA FOR RECONDITIONING OF WELLMAN FURNACE

SI No	PRE-QUALIFICATION	Vendor's confirmation
1.0	PRE-QUALIFICATION REQUIREMENTS (Proofs to be enclosed for verification)	
2.0	All the following conditions are to be satisfied by the bidder. Documentary proof is to be enclosed with techno-commercial bid satisfying all these conditions. In case the bidder fails to enclose the same, the offer will be liable for rejection.	
3.0	The party must be a reputed Manufacturer or reconditioner of LPG/HSD fired stress relieving Furnaces with minimum capacity of 50 Tons for furnace temperature of 800°C and at least 3 Years experience from the date of opening of this tender. The experience reference shall be for a period preceding from the date of opening of tender. Copies of purchase orders/work orders and corresponding completion certificates should be submitted as proof for verification. The dates of the P.O / certificates should be with in this period only. Offers with out these documents will be rejected.	
4.0	Party must submit at least one satisfactory performance certificate issued by customer.	
5.0	List of the customers along with respective contracting officers addresses (including Phone no. /E-Mail ID) for whom furnaces were manufactured / reconditioned should be enclosed with the offer.	
6.0	The vendor should submit following information where similar furnace has been supplied for qualification of their offer.	
6.1	Name and postal address of the customer or company where similar Furnace is installed.	
6.2	Name and designation of the contact person of the customer.	
6.3	Phone, FAX no and email address of the contact person of the customer	
6.4	Month and Year of commissioning of the furnace	
6.5	Application for which the furnace is supplied	
6.6	BHEL reserves the right to verify the information provided by vendor. In case the information provided by vendor is found to be false/ incorrect, the offer shall be rejected.	
6.7	Details on SERVICE-AFTER-SALES set-up in India including the address of agents/service centers in South India.	
7.0	The average annual turnover during the last three Years ending March 31 st 2013 should be equal to our estimated cost (CA certified copy of balance sheet / P&L statements to be enclosed).	
8.0	Latest Bankers' solvency (not later than six months from the date of opening of tender) for an amount equal to our estimated cost (Rs 1.20 Cr) from any Nationalized bank.	
9.0	Experience of having successfully completed similar works during the last 5 Years(from the date of opening of tender) should be either of the following.	
10.0	Three similar completed works costing not less than the amount each equal to 30% of the estimated cost. OR Two similar completed works costing not less than the amount each equal to 40% of the estimated cost. OR One similar completed work costing not less than the amount each equal to 60% of the estimated cost.	
11.0	Definition of "Similar Works" Manufacturer / Reconditioner of LPG/HSD fired stress relieving Furnaces.	

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Brief description of existing Furnace:

BHEL is having one number of WELLMAN Furnace supplied by M/s. WELLMAN Incandescent India Ltd, Kolkata which was commissioned during the Year 1969 with the specifications mentioned below. At present the Furnace is working with frequent breakdowns.

The existing WELLMAN furnace is a car bottom (Bogie Hearth) LPG fired annealing Furnace with 36580mm long x 5300mm wide x 5600mm high including bogie haulage gear complete with electronic potentiometric type instrumentation and waste gas extraction system together with all the necessary safety and other devices as mentioned below.

EXISTING CONFIGURATION:

SNO	DESCRIPTION	DETAILS
1.0	Location of the furnace	BHEL, Visakhapatnam (Bldg No:1, Bay:8)
1.01	Effective length of Furnace	36580mm
1.02	Effective width	5030mm
1.03	Loading height from top of charge supports	5300mm
1.04	Burners	98 Nos
1.05	Combustion air fans	2 Nos
1.06	Gas governors	1 No (in main gas line) 6 Nos (one in each zone)
1.07	Duty: For annealing of welded equipment The Max length of welded equipment: Average diameter: Max diameter: Max gross charge load on the bogie:	34000mm 4000mm 5000mm 120Tonnes
1.08	Max height from floor level	1150mm
1.09	Max furnace temperature	1100°C
1.10	Normal furnace temp	600-800°C
1.11	Total connected heat release	20.5 x 10 ⁶ K Cal/Hour
1.12	No of burners	98 nos
1.13	Type of combustion air blower	Two nos centrifugal type steel plate combustion air blower
1.14	Rate of heating	40-120°C at full load and 140°C per hour(max) at half load
1.15	Rate of cooling	50-140°C at full load
1.16	Temp uniformity	+10°C at the end of soaking at min 600°C
1.17	Door	One no rise and fall type electro mechanically operated door through electric motor at 415V, 50Hz rating, Electromagnetic ac brake, limit switch, reduction gear box, wire rope etc.
1.18	No of bogies	1
1.19	Type of bogie drive	Electro mechanical through double chain-cum-rope type arrangement with the help of electric motor, reduction gear box & AC electro-magnetic brake.
1.20	Mode of control	PID type temp control(which is not working at present)

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1.21	Mode of temp recording	PLC-PC(Which is not working at present). At present working through external temp recorders.
1.22	Safety interlocks	a.The controller goes to upscale in case of thermocouple failure. b. Bogie can be taken OUT or IN only when the door is fully open. c. Limit switches are provided at the extreme ends of bogie & at door to prevent any mechanical damages. d. All motor feeders in the switch gear panel are provided with short circuit and overload protection
1.23	Skin temp	40°C above ambient temp
1.24	Power	415V AC,+10%, 50Hz +-3%, 3-phase, 4 wire. Control voltage:230V AC,50Hz
1.25	Compressed air	At a pressure of 5Kg/Cm2
1.26	Fuel	LPG

Temperature range:

The working temp of furnace is 600 – 800°C, but the furnace is capable of operating at a max temp of 1100°C. The temp uniformity is of +20°C under soaking conditions.

The furnace is divided into 6 zones with 15 burners in each zone. The burners are of rapid nozzle mixing type with mixture of gas and air at the tip of individual burners. The combustion system is of double stage pressure reducing valves. The side wall of the furnace is constructed with two different inner linings. The bottom part of side wall is of 9" thick of IS:8 standard bricks and above this up to arch of the furnace is 9" thick for hot face insulation(1250°C). Both these inner course of refractory are backed by a course of 4 ½" thick cold face insulation.

The arch of furnace is constructed with an inner lining of 12" thick hot face insulation (1250°C) backed by a course of 3" thick cold face insulation.

The bogie brick work consists of a top course of 4 ½" thick IS:8 bricks backed by a course of 4 1/2" thick IS:6 bricks and followed by a course of 4 ½" thick cold face insulation. Supports for furnace brickwork is provided externally by sloping buckstays to give stability to the side wall refractory and horizontal binding together with mild steel plate casing over at the side and rear walls.

Bogie:

The bogie consists of 4 tracks and fabricated from mild steel sections and plates bolted and welded together in sections. Cast steel flanged wheels fitted with carbon steel axles and heavy duty phosphor bronze bush bearings support the main frame. The hearth brickwork is retained in position by suitable curb castings made of retained in position by suitable curb castings made of heat resistant alloy iron containing chromium.

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Bogie haulage:

Electrically operated double chain-cum-rope type bogie drive complete with motor is provided to enable the bogie complete with load to be drawn on the front side of the furnace. The drive motor is of reversible and 2 renold sprockets are driven through a flexible type coupling complete electro magnetic brake and worm gear box. The speed can be further reduced by another cast steel spur gear. The main driving shaft is supported on roller bearings suitably housed in heavy duty cast iron plummer blocks. The wire ropes run on cast iron pulleys which are mounted on a fabricated base frame.

Furnace Door:

The furnace door is of rise and fall type and carried on roller chain and sprockets. Counter balance weights are provided on side of the furnace. Motorized operation of the door is provided in the form of a wire rope and electric winch fitted with suitable limit switch system to regulate the open and close of door operations. Door frame is lined with high temperature insulation. Suitable double sand sealing is provided to prevent any leakage of hot gases. At the end of bogie, a roller seal is provided.

Air Blowing fan:

The direct coupled centrifugal blowing fans are provided for burner equipment (presently 1 no is not working).

Combustion safety Equipment:

To guard against explosion hazards arising out of loss of air, one air pressure switch is provided to cut off air supply in case of fan failure.

Waste gas extraction:

The furnace is provided with underground flue gas duct connected to the waste gas self supporting M S Chimney 5' dia X 75' high.

Instrumentation: The following instrumentation equipment was provided along with the furnace but none of them are working at present.

- a. Six point MV type strip chart temp recorder
- b. Electronic proportional controller 2 term and modulating motor with linkage 2 term with 6 sets.
- c. Rare metal duplex thermocouple assembly
- d. Compensating cable for the above thermocouples
- e. All Air valves and gas valves
- f. Panel mounted in a Cubical for mounting the above

Electrical equipment:

All necessary electrical motors for bogie drive, door, gear and for hot gas extraction plant with push button starters and adequate overload protection, relays etc.

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2.0 SCOPE OF WORK:

Detailed scope of contract: The broad scope of work involves retrofit & reconditioning of existing LPG fuel fired combustion system available with the furnace. The existing burners are to be reconditioned and retained. New combustion system(except burners) along with electrical, instrumentation and controls, pipelines, control valves etc., suitable for firing LPG should be designed, supplied, installed and proved by the supplier. The refractory for roof and Door are to be repaired. Bogie's refractory to be repaired with new refractory, wherever damaged. Bogie and bogie drives to be reconditioned, damaged brick retainer castings to be replaced in bogie. Proper movement of the bogie (in alignment with rails) to the furnace is to be proved. Similarly the damaged castings in furnace are to be replaced. The refractory bricks where ever damaged in the furnace are to be replaced. Combustion air blowers, Atomising air blowers and Dilution air blower of the furnace are to be reconditioned. Chimney insulation to be checked and reconditioned. The scope of supply / work for the furnace reconditioning & retrofitting for LPG firing system covered under this specification shall include but not limited to the following:

NOTE: Vendor to check the existing total furnace system (combustion & its accessories) for operation/working condition before submitting the offer compulsorily. Since the furnace is in working condition and our shop works are being taken up in the furnace only and vendor is expected to retain the working condition of the furnace. Pipe lines of the combustion system at present are in working condition. Vendor to check and confirm before submission of the offer. Vendor to submit a detailed report of the working conditions of the equipments to BHEL along with the list of accessories to be replaced along with the offer. Submission of offer by the vendor without visiting BHEL shall not be considered.

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S. No.	PARTICULARS	SPECIFICATION / DESCRIPTION	BIDDER'S OFFER (WITH CONFIRMATION & COMPLETE TECHNICAL DETAILS)
2.01	The furnace is provided with ninety-eight (98) nos. SELAS FB200 LPG-fired burners. The existing burners are to be reconditioned for their proper functioning. The burners allied accessories, control valves etc. are to be reconditioned for their proper functioning. In case any of the accessories are beyond the reconditioning, as opined / on mutual assessment by BHEL & VENDOR, they are to be replaced with new ones, which will be ordered under spares. The total heat load capacity of the furnace to be arrived considering the job weight, refractory / insulation and maximum rate of heating which is presently producing the requirement.	Vendor to confirm	
2.02	Burner Blocks : Wherever damaged, the Burner blocks are to be replaced during joint inspection and shall be of 90% alumina or SIC materials. Vendor to make necessary mounting arrangements required for the same.	vendor to confirm	
2.03	The burners shall be lighted by means of new spark plug ignitors with pilot burner system with LPG for ignition. Total ignition system to be new and shall be auto with a standby manual option.	Vendor to confirm	
2.04	New flame-failure device and auto ignition system for each burner have to be provided.	Vendor to confirm	
2.05	All Valves in LPG pipe line, zonal valves, regulators, shut off valves, electrical valves, stop valves are to be reconditioned. Any extra items that may have to be provided will be decided during joint inspection .	Vendor to confirm	
2.06	The furnace shall be divided into 6 equal thermal control zones	Vendor to confirm	
2.07	Over temperature controller for each zone working in conjunction with another zonal duplex thermocouple shall be provided.	Vendor to confirm	
2.08	Refractory Lining for furnace Roof,walls & door : The existing hard refractory lining on roof of the furnace has to be repaired where ever required, with new refractory by the supplier and re-lining to be done with new refractory after carrying out the repair work on the structure of the roof. The bogie sealing brick arrangement inside the furnace chamber to be repaired wherever damaged with new shaped bricks to match the shape of bogie bricks. The supply of right grade bricks is under vendor's scope. The refractory for the side walls, end wall and door are to be repaired by replacing the damaged bricks/refractory with new ones by the vendor.	Vendor to confirm	

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S. No.	PARTICULARS	SPECIFICATION / DESCRIPTION	BIDDER'S OFFER (WITH CONFIRMATION & COMPLETE TECHNICAL DETAILS)
2.09	After installation of hard refractory lining for roof and door and patch works for end and side walls the skin temperature of the furnace does not exceed 60 deg. C./ 80 ⁰ C (Calculation should be submitted in proof of the same) The stud and refractory holding clips should be of good standard and suitable enough to withstand refractory weight without bending, at high temperatures. The pattern of refractory insulation should be easily repairable with out disturbing the adjacent refractory and drawings to be submitted to BHEL for approval before execution of the work.	Vendor to confirm	
	Refractory lining on the side walls.		
2.10	The hard refractory lining on the sidewalls / backwall of the furnace has to be retained. Any repairs required for restoration of the refractory pattern has to be executed by the supplier. After completion of the refractory repair, heat resistant non hazardous, non-toxic, non-flammable refractory coating has to be applied on the surfaces to control erosion and heat loss. The refractory materials required for the above work and repair is under the scope of the supplier.	Vendor to confirm.	
2.11	The existing castings and dipper plates of furnace shall be tightened. Any damaged castings and dipper plates shall be supplied by the vendor after joint	Vendor to confirm	
3.0	Castings of the Bogie & hearth during refractory repair:		
3.01	Any refractory bricks and the castings required for the bogie are to be supplied and commissioned by the vendor for repair works. The damaged side supporting castings are to be supplied and re fixed by the vendor. The bogie sealing arrangement inside the furnace chamber to be replaced with new hearth castings and sand sealing castings to match the sand sealing of the bogie.	Vendor to confirm	
3.02	Where ever the refractory retainer castings for bogie and fixed hearth are damaged, must be replaced with new ones by the vendor.	Vendor to confirm	
3.03	The damaged bogie brick support castings to be supplied and replaced with IS-4522 Gr.9 castings must be replaced with new ones by the vendor.	Vendor to confirm	
3.04	The bogie sealing arrangements in bogie and inside the furnace (for side walls & rear wall area) to be done by the vendor with IS-4522 Gr.9 castings.	Vendor to confirm	
3.05	The drawings of casting and brick arrangements with grades of materials to be submitted to BHEL for approval before implementation.	Vendor to confirm	

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S. No.	PARTICULARS	SPECIFICATION / DESCRIPTION	BIDDER'S OFFER (WITH CONFIRMATION & COMPLETE TECHNICAL DETAILS)
3.06	Suitable standard quality fire bricks, cold face insulation bricks, red bricks of suitable size shall be replaced with new bricks where ever necessary for replacement in flue down take, flue duct and chimney.	Vendor to confirm	
3.07	Flue duct: Any repair work (mechanical or refractory) required in the existing usable flue duct area are to be done by the supplier.	Vendor to confirm	
4.0	Dampers:		
4.01	Existing Dampers are to be reconditioned by the vendor.	Vendor to confirm	
4.02	Chimney: Vendor to use the existing chimney. Any refractory repair work inside the chimney to be done by the vendor.	Vendor to confirm	
4.03	The outlet temperature of flue gas at chimney exit to be maintained as minimum as possible. A closed- end test point to be provided by the vendor on flue gas duct for temperature measurement at required locations.	Vendor to confirm	
4.04	The effectiveness of combustion should be taken care to satisfy the requirements of Andhra Pradesh Pollution Control Board (APPCB) norms with respect to emission of SO _x ; NO _x and Suspended Particulate Matter (SPM). Emission of CO (% by volume) and Particulate Matter (mg/Nm ³) through flue gas as per Pollution Control Board norms to be submitted to BHEL.	Vendor to confirm	
4.05	It is in the scope of supplier to measure the velocity of the flue gas at 6D height traverse plane and satisfy the requirements of Andhra Pradesh Pollution Control Board Norms during commissioning of the furnace.	Vendor to confirm	
5.0	Electrical System:		
5.01	New electrical control panel is to be provided by the vendor.	Vendor to confirm	
5.02	All Power and control cables, connections, circuit breakers etc. required for connecting BHEL's power supply point to different parts of the furnace / control cabinets / field elements shall be the responsibility of vendor. The Cables should be of Copper Conductor.	Vendor to confirm	
5.03	Vendor to provide Push button Control Operator Panel Station near the furnace for all manual operations and suitably interconnect with main panel.	Vendor to confirm	
5.04	Tropicalization: All electrical / electronic equipment shall be tropicalized.	Vendor to confirm	
5.05	All Electric enclosures shall have IP 54 protection	Vendor to confirm	

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S. No.	PARTICULARS	SPECIFICATION / DESCRIPTION	BIDDER'S OFFER (WITH CONFIRMATION & COMPLETE TECHNICAL DETAILS)
5.06	All electrical components in the cabinets should be mounted on DIN Rail by the vendor	Vendor to confirm	
5.07	415V +/- 10%, 50HZ +/-3 Hz, 3 Phase AC (4 wire system without neutral) power supply will be provided by BHEL at a single point with in 5Mtrs distance from furnace. Control voltage shall be 230 V AC, 50 Hz.	Vendor to confirm	
5.08	All Cables, Instrument cables and the compensating cables should be supplied by vendor and are of FRLS design only. Instrument cables of Toshniwal / Polycab or any other make which is acceptable to BHEL are to be provided by the vendor.	Vendor to confirm	
5.09	Junction boxes: Metal Junction boxes with suitable terminal blocks and glands to be provided.	Vendor to confirm	
5.10	Limit & Proximity Switches: All the limit and proximity switches must be replaced with new.	Vendor to confirm	
5.11	All electrical and electronic panels including operator's panel should be provided by the vendor with fluorescent lamps for sufficient illumination and power receptacles of 230 Volts, 5/15 Amp AC by the vendor. All adaptors / receptacles should have compatibility with Indian equivalents. (Suitable transformer should be used for 230 V supply)	Vendor to confirm	
5.12	Motors & other electrical components shall conform to IEC or Indian Standards. Motors shall be energy efficient (EFF-1) and makes of ABB / Siemens / Kirloskar or any other reputed make acceptable to BHEL.	Vendor to confirm	
5.13	Vendor should ensure proper earthing for the furnace and its peripherals.	Vendor to confirm	
5.14	All motor feeders must be provided with short circuit and overload protection.	Vendor to confirm	
5.15	All incoming and outgoing cables shall be through 3mm thick gland plate provided at the bottom of the panel.	Vendor to confirm	
6.0	SAFETY SYSTEM: Vendor should provide adequate and reliable safety interlocks/ devices to avoid damage to the furnace, work piece and the operator due to the malfunctioning of instruments or mistakes. Furnace functions should be continuously monitored and alarm / warning indications through lights/ alarm number with messages on the control panel should be available.	Vendor to confirm	

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S. No.	PARTICULARS	SPECIFICATION / DESCRIPTION	BIDDER'S OFFER (WITH CONFIRMATION & COMPLETE TECHNICAL DETAILS)
6.01	<p>Vendor has to provide details of safety systems provided for the following situations during operation .</p> <ol style="list-style-type: none"> 1) Power failure 2) Gas pressure low/High 3) Excess temperature 4) Short power interruption 5) Furnace pressure high/low 6) Thermocouple failure <p>Inter locks for the following operations shall Be provided.</p> <ol style="list-style-type: none"> 1) Furnace door shall be operated when the bogie is in fully IN or OUT position. 2) Furnace door shall be operated when the pneumatic clamps are disengaged. 3) Bogie should operate only when the furnace is fully open condition. 	Vendor to confirm	
6.02	<p>Safety instruments: Necessary air pressure gauge, air pressure switch, fuel pressure gauge and fuel pressure switch, audio visual alarm annunciator to be supplied and commissioned by the vendor. The audio visual alarm annunciator shall indicate the following abnormal conditions:</p> <ul style="list-style-type: none"> ➤ High gas pressure ➤ High temp of zone ➤ Flame failure ➤ Power failure ➤ Combustion air <p>In case of low combustion air pressure, low/high gas pressure and high temp of furnace, the fuel solenoid valve provided in the main fuel line shall shut off where as in case of flame failure respective solenoid valves near the burner shall shut-off.</p>	Vendor to confirm	
6.03	All the pipes and cables etc. should be well supported and protected by the vendor	Vendor to confirm	
6.04	3 nos. of emergency switches to be provided by the vendor to switch off the whole system immediately for safety purpose. Location of the emergency switches are 1) Control panel 2) Left side of the furnace 3) Right side of the furnace. All the field instruments, switches and junction boxes should be with IP-65 enclosure.	Vendor to confirm	
6.05	No. of Gas leak detectors provided by the vendor to cover critical gas leak zones to be mentioned. The system should have independent control with alarm. Vendor to provide the test certificate with LPG sample for LEL as per standard. Functional test with sample test to be done after commissioning of the instruments at site.	Vendor to confirm	

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S. No.	PARTICULARS	SPECIFICATION / DESCRIPTION	BIDDER'S OFFER (WITH CONFIRMATION & COMPLETE TECHNICAL DETAILS)
6.06	Ball isolation valves shall be fire safe design as per IS:2148 shall be supplied and installed by the vendor	Vendor to confirm	
6.07	Open/close limit switch of all vent valves to be incorporated in Control panel by the vendor.	Vendor to confirm	
6.08	All field instruments in the gas line supplied by vendor shall be flame proof enclosure with double compression cable gland provision for cable entry /exit.	Vendor to confirm	
6.09	One isolation valve to be supplied and provided for all pressure gauges and pressure switches by the vendor.	Vendor to confirm	
6.10	<p>Flame monitoring & Auto ignition:</p> <ul style="list-style-type: none"> ➤ Auto ignition should consist of spark plug & ignition transformer with compensating cable, ➤ Ultra violet flame failure device consisting of UV head with bulb & amplifier unit ➤ Required no of gas solenoid valves for auto ignition <p>The above shall be provided by the vendor as an add-on to the furnace and also should be able to work with stand by manual operation.</p>	Vendor to specify & confirm	
6.11	Suitable lining configuration shall be followed for refractory / insulation.	Vendor to confirm	
6.12	Pre-fired curb blocks shall also be provided all around the bogie corners with suitable composition of quality material.	Vendor to confirm	
6.13	For sequential interlocking & light up of burners, burner management panels shall be provided so as to enable to control all zones.	Vendor to confirm	
7.0	<p>Piping lines: Piping lines are to be provided for the new instruments supplied by the vendor with clamps and to be neatly routed. The termination of the Impulse lines for transmitters are to be done with copper tubing. Suitable tags are to be provided for field elements. All flow transmitters with manifold valves for gas & air, control elements should be provided with suitable markings for easy observations of their positions by the vendor.</p> <p>Combustion pipeline: Where ever the combustion air pipeline is damaged(specification: SA106 Gr. B) that must be replaced with new pipeline. All the valves and fittings must be replaced with new.</p> <p>LPG: Where ever the gas pipelines are damaged(specification: SA106 Gr. B), they must be replaced with new pipeline. Required fittings must be supplied by the vendor.</p>	Vendor to confirm	

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S. No.	PARTICULARS	SPECIFICATION / DESCRIPTION	BIDDER'S OFFER (WITH CONFIRMATION & COMPLETE TECHNICAL DETAILS)
7.01	BHEL will provide LPG at one point within 5 mtrs from the furnace, terminated with a shut off valve. All other fittings, valves etc. from LPG Inlet point to the furnace gas control valves and to other points on the furnace to be provided by the vendor.	Vendor to note	
7.02	Make of Gas and Air valves used shall be of Kromschroder / Samson, Mumbai / IL / MIL / Fouress / Fisher Xomas.	Vendor to confirm	
7.03	Gas valves & field instruments in gas line and motorised air valves in air pipelines must be fire proof as per NFPA.	Vendor to confirm	
8.0	INSTRUMENTATION:		
8.01	All controls will be located in a Control Room adjacent to the furnace. The vendor has to plan the location of control panels after seeing the existing room layout. Room layout shall be provided by BHEL. Control panel shall be provided with Panel AC by the vendor.	Vendor to note and specify changes, if any	
8.02	Instruments Control panel: A separate Floor mounting type Instrument panel with all the controllers, recorder etc to be provided by the vendor. Separate control transformer (415V/230V) should be provided for the Instrumentation panel. Dimensional sketches of the entire control panel along with the details regarding the panel size, cable entry etc. to be submitted along with the offer. Details and specification to be given for suitable contactor, MCB, Push buttons, OLR, Indication lamps, ON/OFF rotary switches, isolators, selector switches and safety devices etc. All incoming and outgoing cables shall be through a gland plate at the bottom of the panel.	Vendor to confirm	
8.03	Burner purge cycles with adequate purging time for safe operation shall be provided by the vendor.	Vendor to confirm	
8.04	The operating sequence of the furnace with broad outline of various operations involved should be furnished for final approval after the order by the vendor.	Vendor to confirm	
9.0	General: All the signal cables, Compensating cables and Power cables are to be supplied and laid with suitable separate metal trays by the vendor. Suitable tags are to be provided for field elements. Suitable Cable Glands & hoses are to be provided. Dressings with PVC ties to be done. Metal approaches / Maintenance Platforms to be provided for all the field instruments for maintenance purpose (also on the top of the furnace). One meter distance to be maintained between cable rack and furnace wall to avoid heat radiation.	Vendor to confirm	

**RETROFIT AND RECONDITIONING OF LPG FIRED BOGIE HEARTH ANNEALING
WELLMAN FURNACE**

S. No.	PARTICULARS	SPECIFICATION / DESCRIPTION	BIDDER'S OFFER (WITH CONFIRMATION & COMPLETE TECHNICAL DETAILS)
9.01	Push button control station to be provided by the vendor near the furnace for all the manual operations.	Vendor to confirm	
9.02	All 6 zones to be controlled by PID Mass Flow Control (MFC) with Master-Slave. Individual burner ON/OFF should be controlled by Burner Sequence Controllers. The PID double loop controller with auto tuning function to be constituted (with suitable pre-loaded software). The system to monitor furnace parameters, enhanced interlocks for safety of furnace and process level of furnace automation to be provided. Technical specification of the master-slave control to be provided. The system should be auto with provision for manual operation.	Vendor to confirm	
9.03	Material thermocouples: K-type compensating cables of the temperature recorder should be supplied by the vendor and wired from the control panel to location on either side of the furnace walls for Material temperature measurement. Thermocouples are also to be provided by the vendor including supply of suitable length of compensating cables of make Tempens / Toshniwal.	Vendor to confirm	
9.04	Zonal control elements: Suitable rated modulating motors, Orifice impulse lines, pressure and flow transmitter for gas and air with control elements and all its accessories to be provided by the vendor.	Vendor to confirm	
9.05	Temperature recorders: Vendor to supply 2 nos of 24 point microprocessor based digital strip chart recorder with 180 mm width along with 50 Nos. of chart paper packs to be provided for Temperature measurement. UPS of suitable rating to be provided by the vendor to record the temperature for minimum 30 minutes in case of power failure. Makes: Chino / Yokogawa / Honeywell / Eurotherm	Vendor to confirm	
9.06	Pressure switches and gauges: Gas pressure and air pressure switches with isolation valves to be provided. All pressure gauges in the combustion air line should be of Glycerine filled type and all the other pressure gauges for gas and air lines to be provided with isolation valve by the vendor.	Vendor to confirm	
9.07	In case the zonal temperature overshoots the maximum set value, it should shut off the zonal fuel valve. At the same time, the system should annunciate an audio visual alarm. The details of alarm and fault shall be logged in HMI.	Vendor to confirm	
9.08	Orifice type flow meter shall be provided at main line for LPG to measure the flow. Vendor must supply the same and install. Vendor to specify the brand / model.	Vendor to confirm	

**RETROFIT AND RECONDITIONING OF LPG FIRED BOGIE HEARTH ANNEALING
WELLMAN FURNACE**

S. No.	PARTICULARS	SPECIFICATION / DESCRIPTION	BIDDER'S OFFER (WITH CONFIRMATION & COMPLETE TECHNICAL DETAILS)
9.09	Any tools and tackles which are required to handle the supplied items shall be provided by the vendor.	Vendor to confirm	
9.10	Gas Train System: Any damaged or non working items of Gas Train consisting of Manual shut off valve, filter, Gas pressure regulator, pressure gauge with gauge isolator for inlet and out let of gas train, additional pressure gauge after the main safety valve, Low and high level gas pressure switch, slam-shut off valves, safety shut-off valves, vent line, digital gas flow meter cum transmitter with totalizer and other valves as required for safe operation and as a regular set up for LPG fired furnace shall be replaced with new by the vendor. One more Manual gas shut off valve to be provided apart from the safety shutoff valve by the vendor.	Vendor to confirm	
9.11	Ignition & Flame Supervision: Spark ignitor of high voltage type (H.V) to be used. The spark rod should be of two-electrode system. The flame monitoring system should be with U.V. scanner. A U.V. Scanner (Air cooled) to be used to continuously monitor the flame when the burner is in operation. The flame supervision circuit is linked to the gas solenoid valve for each burner. This enables to monitor and control the flame of each burner continuously. Individual burners to be controlled by Burner Sequence Controllers (BSC). Supply and installation for the above is in vendor's scope.	Vendor to confirm	
9.12	Max. flow rate of LPG required at inlet (supporting heat calculations to be provided)	Vendor to provide	
9.13	There are two blowers for this furnace. The blowers, ID fan, combustion fan, dilution fan etc are to be reconditioned.		Vendor to confirm
9.14	The furnace door rise and fall shall be checked and reconditioned for smooth lifting and lowering movement. The motor, connections, lifting and lowering arrangement, clamping arrangement, top and bottom sand seal arrangement to avoid leakages of hot gases shall be thoroughly checked and reconditioned, including reconditioning of Pneumatic cylinders and its packings.		Vendor to confirm
9.15	Electrical motor to move the bogie and brake system should be thoroughly checked and reconditioned. After reconditioning /alignment of bogie, the movement should be smooth. Existing Gear boxes is working satisfactorily at present. Necessary interlocks such as immobilization of door / bogie during furnace operation to be ensured by the vendor.		Vendor to confirm

**RETROFIT AND RECONDITIONING OF LPG FIRED BOGIE HEARTH ANNEALING
WELLMAN FURNACE**

S.No.	PARTICULARS / SPECIFICATION / DESCRIPTION	BIDDER'S OFFER (WITH CONFIRMATION & COMPLETE TECHNICAL DETAILS)
10.0	<p>Painting of the Furnace : Complete Furnace body, bogie, blower and all furnace related items etc., shall be painted with two coats of reputed brand of heat resistant Premium enamel Apple Green color paint. Interior of the panels are to be painted with two coats of enamel paint(Color to be specified by BHEL at the time of PO). Wherever oil comes in contact with interior of the body, oil resistant paint to be used. Letters, numerals etc. will have to be painted with a different color as required / as indicated by BHEL at the time of final painting. For electrical panel boxes inside area is to be painted with two coats of white enamel paint. Painting should be carried out according to the standard procedure for painting including cleaning and removing old paint, applying metal primer putty etc. Good finish should be ensured. Overall furnace aesthetic view should be taken care of.</p>	Vendor to confirm.
11.0	JOINT INSPECTION	
11.01	<p>1. Dismantling of the furnace assemblies and bogie into individual parts, degreasing, chemically cleaning, pre-painting of structural parts, joint inspection to finalize the detailed list of</p> <ul style="list-style-type: none"> a. Spares to be bought out b. Spares to be manufactured <p>The list should be approved by BHEL. Drawings of spares to be manufactured and specifications for bought out items shall be submitted to BHEL by the vendor for approval. SPARES : For the above mentioned spare parts (electrical/mechanical / electronics) required to be replaced beyond the spares quoted by the vendor along with offer, approved by BHEL after joint inspection, BHEL will supply spares available with them or procuring the spares.</p> <p>2. A separate tender will be floated for these spares (bought out spares and spares to be manufactured). The vendor shall also compulsorily participate in the above tenders quoting for all the spares. The spares will be ordered on the lowest party and the spares will be given to the vendor for assembly into the furnace. No extra cost will be paid for the fitment and assembly of these spares.</p> <ul style="list-style-type: none"> a. Spares required to be replaced other than those agreed to during joint inspection will have to be approved by BHEL before such replacement is affected. Cost of such spares shall be absorbed by the Contractor. BHEL will not pay for these items. b. Prior intimation has to be given to BHEL by the contractor for deputing the team for joint inspection at BHEL / contractor works. 	Vendor to confirm

**RETROFIT AND RECONDITIONING OF LPG FIRED BOGIE HEARTH ANNEALING
WELLMAN FURNACE**

S.No.	PARTICULARS / SPECIFICATION / DESCRIPTION	BIDDER'S OFFER (WITH CONFIRMATION & COMPLETE TECHNICAL DETAILS)
12.0	Prove-out test	
12.01	The required temperatures, safety features prove out, calibration of furnace, pressure gauges, temperature recorders, material temperature, furnace temperature etc must be shown to production and maintenance personnel of BHEL. The job trials for sufficient number of jobs must be shown to BHEL personnel. The heat treatment cycle and furnace temperature graphs must be certified by the quality department of BHEL.	Vendor to confirm
12.02	Calibration certificates to be provided for process valves, measuring instruments, Transmitters, Thermocouples and compensating cables. Test certificates required for Pressure switches and modulating motors etc. are to be provided at the time of inspection of the furnace at vendor works. Vendor has to carry out re-calibration for all the above calibrated items at site during commissioning.	Vendor to confirm
12.03	After successful job tests, the furnace should be handed over to production division for their trail run and regular heat treatment cycle would begin on the furnace. After completely satisfying themselves with regards to the heat treatment cycle, stress relieving jobs, temperature accuracies, loading capacity, complete functioning of furnace etc., the Production and maintenance personnel would then release the satisfactory performance certificate for the furnace. Only on receipt of such certificate, the work would be deemed as completed.	Vendor to confirm
12.04	Prove-out after retrofitting shall be done by the vendor on the job available at that time	Vendor to confirm
12.05	Verification of Calibration certificates of instruments.	Vendor to confirm
12.06	Control logic verification for all functions by simulation.	Vendor to confirm
12.07	Verification of Pollution control norms, skin temperature, etc.	Vendor to confirm
12.08	LPG consumption in Nm ³ /hr under following conditions, which shall be verified at the time of commissioning: a) at No load after soaking for 3 hrs at maximum furnace temperature. b) at 50% load and operating the furnace for one complete cycle from start to end of soaking cycle.	Vendor to confirm
13.0	BHEL's Scope of work:	
13.01	Oil, gas, water, welding machine with power, compressed air etc required for testing the furnace will be provided by BHEL.	
13.02	All necessary documents, drawings available with BHEL related to Furnace will be given to vendor	
14.0	Documentation:	
14.01	Vendor to submit the P&I Diagram along with the offer for evaluation Documents to be submitted for BHEL approval (after PO placing) before manufacturing:	Vendor to confirm
14.02	The vendor to submit the following drawings / details for BHEL approval before manufacturing:	
14.03	P & I Diagram with complete Bill of materials giving make and specification of components in it.	Vendor to enclose

**RETROFIT AND RECONDITIONING OF LPG FIRED BOGIE HEARTH ANNEALING
WELLMAN FURNACE**

S.No.	PARTICULARS / SPECIFICATION / DESCRIPTION	BIDDER'S OFFER (WITH CONFIRMATION & COMPLETE TECHNICAL DETAILS)
14.04	General Arrangement diagram with major and critical dimensions.	Vendor to enclose
14.05	Schematic Instrument circuit diagram	Vendor to enclose
14.06	Electrical circuit diagram	Vendor to enclose
14.07	Heat load calculation	Vendor to enclose
14.08	Panel layout with details for panel size, detailed view of position, layout controls, Painting, Cable entry, etc. Details and specification for contactor, MCB, Push buttons, OLR, Indication lamps, ON/OFF rotary switches, Isolators, selector switches, safety devices, etc to be provided.	Vendor to enclose
14.09	List of all alarms / indications / annunciator.	Vendor to enclose
	Documents to be submitted along with Equipment:	
14.10	Five sets of O&M manuals (5 Hard copies) in English language having the following documents should be supplied along with the furnace parts. Apart from the hard copies, vendor to provide the entire documentation in a single PDF including the catalogues of all bought items and the same shall be provided in a 16GB pen drive. Note: One set of all the documents (hard copy and soft copy) to be shown to the BHEL inspector at the time of inspection at vendor's works to check the sufficiency of documents.	Vendor to confirm
14.11	Electrical Wiring Drawings – Power & Control Circuits	Vendor to confirm
14.12	Terminal drawings with check points shall be provided for Electronic Controls	Vendor to confirm
14.13	Trouble Shooting Chart for Main and all Sub-Systems	Vendor to confirm
14.14	Specifications, Catalogues, O&M Manuals and Engineering manuals for the controllers of all bought out items including drawings, wherever applicable.	Vendor to confirm
14.15	All Mechanical drawings for the items manufactured / covered under scope of vendor. Mechanical drawing includes GA & Sub-assembly drawings with major and critical dimensions, material and weight.	Vendor to confirm
14.16	Furnace Operation Procedure for start up, purging, shutdown, Power failure interruption, Gas fluctuation condition, etc. with all safety instructions	Vendor to confirm
14.17	Complete Casting lay out and individual casting drawings with dimensions, including specification of casting materials used.	Vendor to confirm
14.18	Complete details of Combustion system- Operation and maintenance.	Vendor to confirm
14.19	Calibration certificates for all the Panel instruments, Transmitters, Flow meters, Thermocouples and test certificates for Pressure switches, modulating motors and regulators .	Vendor to confirm
14.20	Complete Printed Circuit Board Schematics indicating check points (Test Points) for Electronic Controls.	Vendor to confirm
14.21	Complete calculations for heat load, skin temperature, refractory selection, efficiency, fuel consumption, etc.	Vendor to confirm
14.22	List of all alarms / indications / annunciator.	Vendor to confirm
14.23	The supplier should provide at least 3 days training in operation, programming, interfacing and maintenance at BHEL for production and maintenance personnel.	
14.24	The supplier should provide 1 Year warranty from the date of retrofit & reconditioning of the Furnace.	

**RETROFIT AND RECONDITIONING OF LPG FIRED BOGIE HEARTH ANNEALING
WELLMAN FURNACE**

S.No.	PARTICULARS / SPECIFICATION / DESCRIPTION	BIDDER'S OFFER (WITH CONFIRMATION & COMPLETE TECHNICAL DETAILS)
14.25	Place of Work: The supplier can execute the complete reconditioning and retro fitment activity at BHEL, Visakhapatnam or at supplier's works. If the furnace / bogie / blower parts are to be taken to the supplier's works, the transportation cost (to & fro, insurance, loading & unloading) has to be borne by the supplier.	
14.26	Name plates, instruction plates shall be replaced with new ones. One plate with Furnace specifications in full, name & address of reconditioning party, year of reconditioning etc. should be riveted on front / rear side of furnace.	Vendor to confirm
14.27	Bar chart showing the time required for the following elements to be given covering the period of delivery quoted a) Dismantling of furnace at BHEL works b) Complete cleaning and joint inspection of components at BHEL works to identify parts for replacement and rework. c) Manufacturing, rework/repairing etc. of the components, completion of scraping work and sub-assemblies d) Complete retrofit & reconditioning work e) Re-erection & re-commissioning at BHEL works f) Job trial and prove out	Vendor to confirm
14.28	Any modifications carried out shall not sacrifice original temp ranges, safety features, bogie speed, refractory alignment, original function of furnace etc.	Vendor to confirm
14.29	BHEL reserves the right to inspect the progress as well as workmanship at any stage of the work. Decision of BHEL Representative shall be final in the matter of inspection at any stage. Contractor shall extend necessary co-operation to enable such inspection.	Vendor to confirm
14.30	All discarded / removed parts shall be returned to BHEL.	Vendor to confirm
14.31	The contractor is required to study the furnace, the scope of supply and certify the completeness of scope in order to execute the work. In case of any discrepancies in the scope of work, the contractor is required to highlight the same to BHEL before submission of the offer.	Vendor to confirm
14.32	Lodging, Boarding and transportation facilities for the contractor personnel are at Contractor's scope (during dismantling period, re-erection & re-commissioning period and for troubleshooting during performance guarantee period). BHEL is not responsible for this.	Vendor to confirm
14.33	Interpretation: Any dispute of difference of opinion in respect of the interpretation, effect or application of this particular condition of the Contract or of the amount recoverable hereunder from the vendor shall be decided by the Contractee and the decision shall be final and conclusive.	Vendor to confirm
14.34	Subletting: The vendor shall not sublet or assign this work or any part thereof without the written permission of BHEL. In the event of the vendor subletting or assigning this work or any part thereof without such permission, BHEL shall be entitled to cancel the contract and execute the contract elsewhere at the risk and account of the vendor and the vendor shall be liable for any loss or damage which BHEL may sustain in consequence of or arising out of such contract elsewhere.	Vendor to confirm

**RETROFIT AND RECONDITIONING OF LPG FIRED BOGIE HEARTH ANNEALING
WELLMAN FURNACE**

15.0	Preferable Makes:		
	1.PID Temperature Controller (Double Loop)	Eurotherm/Honeywell/Chino/ Yokogawa	
	2.Excess Temperature Controllers	Honeywell/Eurotherm/Chino/ Yokogawa	
	3.24 point Temperature Recorder (Paper strip chart) Range: 0-1100°C	Chino/Yokogawa/Honeywell	
	4.Thermocouples	Tempsens/EEE/Toshniwal	
	5.Compensating Cable	Tempsens/EEE/Toshniwal	
	6.Burner Sequence Controllers	Kromschroder / Honeywell/ Eclipse	
	7.Modulating Motors	Kromschroder / Honeywell	
	8.Gas Train System	Kromschroder / Eclipse	
	9.Solenoid Valves	Kromschroder / Dungs	
	10.UV sensor	Kromschroder / Satronics	
	11.Alarm Annunciator	Bharani / L&T or any other reputed make	Vendor to confirm
	12.Mimic Panel	Vendor to specify	
	13.Furnace Pressure Controller	Honeywell / Eurotherm	
	14.All DP Transmitters (should be of same makes)	Honeywell/Yokogawa/ Rosemount	
	15.Gas leak detectors	Oldham/Honeywell/ Ambetronics	
	16.All temperature indicators/leak indicators	Honeywell/Chino/Yokogawa/ Eurotherm	
	17.Gas Flow Totalizer	Masibus/Honeywell/Chino	
	18.Pressure Switches (Gas & Air)	Kromschroder/Dungs	
	19.Pressure Gauges	Kromschroder/Fiebig	
20.Ignition Transformer	Kromschroder/Eclipse		

COMMERCIAL TERMS AND CONDITIONS FOR SUBMISSION OF OFFER**1.0 QUOTATIONS**

Bidders shall submit the offer in TWO INNER ENVELOPES as indicated below which shall be sealed in one outer envelope.

Envelope I: This sealed envelope should contain all the copies of technical bid together with un-priced commercial bid. This envelope should be clearly marked “**Part I – Technical and Un-priced commercial bid**” Indicating Tender No., Due Date and Address & Reference of the Bidder.

Envelope II: This sealed envelope should contain price details this envelope should be clearly marked “**Part II - Price bid**” indicating Tender No., Due Date and Address & Reference of the Bidder.

Both the envelopes (Part I & II) shall be put in one cover, duly sealed, super scribing as Part I and Part II of Tender No., due date of opening and the address and reference of the Bidder

The above offer should reach this office on or before the due date by 14.00 Hrs (IST)
Tender should not be addressed to any Individuals name but only designation to

Sr. Manager (MM)
BHARAT HEAVY ELECTRICALS LIMITED
HEAVY PLATES & VESSELS PLANT
VISAKHAPATNAM - 530 012 (A P), INDIA.

Tenders should be free from CORRECTION AND ERASURES. Corrections if any must be attested. All amounts shall be indicated both in words as well as in figures. Where there is difference between amount quoted in words and figures, amount quoted in words shall prevail.

Offers should be in ENGLISH and accompanied by technical literature catalogue and detailed dimensional drawings in ENGLISH or otherwise the offers will not be considered.

2.0 PART I (TECHNICAL & UN-PRICED COMMERCIAL BID)**2.1 Technical**

This part shall include / indicate the following:

- 2.1.1. Offer should contain complete scope of supply with all technical details, specifications, delivery and other commercial terms and conditions.
- 2.1.2. Point by point confirmation for the Technical Specification enclosed is to be provided. If there are any deviations the same should be clearly specified. Offers received without conformation to our specification will be rejected.
- 2.1.3. List of customers to whom same or similar equipment have been supplied along with performance certificates to be enclosed.
- 2.1.4. Relevant catalogue to be attached.
- 2.1.5. List of spares parts (with part numbers) for two years operation and maintenance should be attached.

2.1.6. Information on shipping weight and cubage (length, width & height) to be provided

2.1.7. In case of foreign bidder offer, the Principal's technical offer only should be enclosed.

2.2 Un-Priced Commercial

This part shall include / indicate the following

2.2.1. Port of shipment / Station of dispatch

2.2.2. Terms of payment

2.2.3. FOB/FCA price along with freight charges up to Chennai port (for foreign bidders) Ex-works/FOR Dispatch Station price along with freight charges up to BHEL Visakhapatnam (for Indian bidders)

2.2.4. Taxes, Service tax & duties including Cess applicable.

2.2.5 Delivery Schedule

2.2.6. Filled-in check list to be enclosed

2.2.7. Offer validity

2.2.8. Country of origin

2.2.9. Percentage of agency commission if any along with a copy of Agency agreement The FOB/FCA/CFR Prices quoted shall include the agency commission.

2.2.10. A copy of "Un-Priced Part II 'i.e., a copy of the Price Bid without the price details to be enclosed.

2.2.11 BHEL Visakhapatnam is eligible for availing CENVAT / VAT credit on both inputs and capital inputs. The suppliers invoice should separately indicate the amount of duty / taxes and should invariably mention the following details:

1. The Central excise registration number, range division and commission rate of the supplier's jurisdiction.
2. The rate of duty and 8 digit central excise tariff heading of the item supplied.
3. The TIN, VAT, CST registration number of the supplier.

The duplicate copy of the invoice is required for availing CENVAT credit and original copy for availing VAT credit, if purchased within the state.

In case of foreign bidders the duplicate copy of the electronic Bill of Entry along with TR6 challan should be made available for availing CENVAT credit on CVD, Cess (S) and SAD.

3.0 **PART II (PRICE – BID)**

This part should contain the schedule of price particulars and to be co-related to the technical details provided in Part-I

4.0 **OPENING OF TENDERS**

The Part I – Technical & un-priced commercial bid alone would be opened on the Tender opening date.

The Part II – Price bid of technically suitable Bidders alone would be opened. The Technically suitable Bidders would be informed about the Price Bid opening date. Clarifications if any required by BHEL Visakhapatnam FOR Technical evaluation / commercial evaluation would be sought from Bidders before opening of Part II – price bid.

GENERAL

5.1 Incomplete offers will not be considered.

5.2 **Fixed priced:** Prices quoted by the bidder shall be fixed and not subject to any escalation whatsoever during the period of bid validity and execution of the Purchase Order A bid submitted with an adjustable price will be treated as non- responsive and rejected Prices shall be written in words and figures. In the event of difference, the price in words shall be valid and binding. Unit prices shall be considered correct in the event of any discrepancy with regards to total price.

5.3 **Bid currency:** Indian bidders should submit the prices only in Indian Rupees. Foreign bidders may submit their bid in their home currency, which should be clearly indicated in the un-priced commercial bid as well as in the price bid. Price bid opening date/ RA date will be considered as effective date for considering exchange rate to evaluate the offers.

- 5.4 **Terms of Delivery:** Bidders are required to quote their best delivery period. Foreign Bidders should submit their offer for net FOB/ FCA – Nearest Sea Port / Air Port as well as CFR / Chennai Seaport/ Airport. Freight charges up to Chennai port to be indicated separately. Indian Bidders should submit their offer for Dispatching station as well as FOR BHEL Visakhapatnam basis. Freight charges from works to BHEL Visakhapatnam to be indicated separately. Delivery from the date of Letter of Intent to be mentioned in the offer.
- 5.5 **Taxes and Duties:** All Taxes and Duties payable as extra to the quoted price should be specifically stated in offers along with CST & TIN No/ Tariff No. etc, failing which the purchaser will not be liable for payment of such Taxes and Duties (Our TIN No.28280189432, APGST No. VSP/04/1/1023 dated 24.08.1968. CST No.VSP/04/1/1012 dated 24.08.1968 & BHEL Visakhapatnam ECC No AAA CB 7076 N-XM001. Assessment circle Visakhapatnam.)
- 5.6 **Validity:** The offers for main equipment and spares shall be kept open for acceptance for a period of 120 days (one hundred and twenty days) from the dates of opening of the tender (part I)
- 5.7 **Terms of Payment:**
- 5.7.1 **Indian Bidders:**
- 5.7.1.1 80% of supply portion along with taxes & duties will be made within 45 days of receipt of material and Balance 20% along with 100% of the Erection & Commissioning portion after submission of BG and after completion of Erection & Commissioning of the equipment at BHEL, Visakhapatnam
- 5.7.2 **Foreign Bidders**
An Irrevocable letter of Credit shall be established for 80% of FOB/FCA/CFR/ (excluding Indian Agent's commission) 2 months prior to shipment and valid for 3 months for negotiation against shipment Letter of Credit shall be opened through a branch of State Bank of India in the country where order shall be placed. In case, in the country where order is placed, State Bank of India is not there, Letter of Credit will be confirmed by foreign banker. Balance 20% of FOB/FCA/CFR value shall be paid through sight draft on Commissioning & acceptance of the equipment at BHEL Visakhapatnam, against submission of 10% performance bank guarantee. All Bank charges outside India are to supplier's account. Lump sum erection and commissioning charges if any, shall be payable after satisfactory erection & commissioning of the equipment by sight draft against certificate issued by the competent authority.
- 5.7.3 **Common to both India & Foreign Bidders.**
Erection & Commissioning (E&C) charges will be released after deduction of Income Taxes as per the Govt. of India rules. The TDS certificate will be issued by BHEL. Applicable service tax on E&C charges will be payable extra. The liability of depositing the same to the Govt. will be of the supplier.
- 5.7.4 **Loading criteria common to both Indian and foreign bidders:** Vendor should accept the payment terms specified above. However for any deviation to the payment terms offered with reference to the above criterion will be loaded with prime lending rate of SBI prevailing on date of opening of price bid + 2%, which shall be computed for the differential period between BHEL Visakhapatnam terms of payment and the offered basic price.
- 5.8 DUNS number (allotted by M/s. DUN & Bradstreet) shall be mentioned in your offer.
- 5.9 **Guarantee:** The equipment shall be guaranteed for a period of 18 months from the date of supply or 12 months from the date of commissioning and acceptance whichever is earlier.
Offers from vendors not accepting to the requested guarantee period will be rejected.

- 5.10 **Contract Execution Bank Guarantee (CEBG):** The successful tenderer shall furnish a Bank Guarantee from any Nationalized Bank for 5% of Purchase Order value (FOR Dispatching station value – Excluding taxes, duties, freight & insurance – for Indian bidders) & (FOB/FCA value – excluding freight & insurance – for foreign bidders) confirming that the order will be executed as per the terms and conditions and this should be valid till final dispatch date (LR/GR/BL/AWB) with additional 2 months claim period. Letter of Credit will be processed only after receipt of CEBG. The CEBG is to be furnished within 3 weeks from the date of Purchase order.
Offers from vendors not accepting to submit CEBG will be rejected.
- 5.11 **Performance Bank Guarantee (PBG):** The supplier shall furnish a Bank guarantee from any Indian Nationalized Bank approved by BHEL Visakhapatnam in the format, given by BHEL Visakhapatnam along with purchase order for 10% of the Purchase Order value (FOR Dispatching station value – Excluding taxes, duties, freight & insurance – for Indian bidders) & (FOB/FCA value – excluding freight & insurance – for foreign bidders) valid for period of guarantee with additional claim period of 2 months.
Offers from vendors not accepting to submit PBG will be rejected.
- The CEBG & PBG shall be obtained from any Indian Nationalized Bank/ Scheduled Commercial Banks.
- 5.12 **Liquidated damages:** Delivery of the goods specified in the purchase order should be made within the time prescribed. Failure to dispatch the materials in the time as per the delivery quoted in our Purchase Order would make the supplier liable to an un-conditional penalty at the rate of ½% of the value of goods for each week of delay subject to a maximum of 10% of the Purchase Order value.
- 5.12.1 **Loading Criteria for Liquidated Damages:** Any deviation from above LD Clause to the extent for which LD is not agreed by the vendor i.e., differential % value will be loaded on basic price, e.g. If some vendor agrees for say maximum of 6% LD then his price will be loaded by 4% (10 – 6) of his quoted basic price.
- 5.13 **Risk purchase:** If the supplier fails to deliver the goods within the delivery specified in the Purchase Order, BHEL Visakhapatnam will be entitled to terminate the contract and to purchase elsewhere at the risk and cost of the seller either the whole of the goods or any part which the supplier has failed to deliver or dispatch within the delivery period mentioned in the Purchase Order.
Offers from vendors not accepting the above Risk Purchase terms will be rejected.
- 5.14 **Indian Agent & Agency commission:** An Indian Agent can represent only one Foreign Manufacturer against a particular Tender. The FOB/FCA/CFR price quoted by the Foreign bidder shall include the agency commission. However, the agency commission component payable to their Indian Agents shall be shown separately in the offer. This will be paid by BHEL Visakhapatnam in India Rupees, on satisfactory commissioning & acceptance of the equipment. Copies of current Agency Agreement / Authorization Letter in respect of Agency Commission shall be furnished along with offer. For calculation of Rupee equivalent of Agency Commission exchange rate as prevailing on the date of Purchase Order will be taken.
- 5.15 **Short shipment / Warranty replacement:** In case of any short shipment in the main equipment / spares, customs duty levied on such supplies, shall be borne by the supplier. Any warranty replacement during the warrantee period shall be on FOR, BHEL Visakhapatnam, basis.

- 5.16 **Inspection & Testing:** All goods shall be subject to inspection by BHEL Visakhapatnam or its authorized representatives at supplier's works or at BHEL Visakhapatnam stores. The supplier will not charge for the facilities provided for inspection of goods. In case of machine tools the machine would be inspected and proved at supplier's works prior to dispatch however, final inspection and acceptance of the machine will be carried after installation of the machine at BHEL, Visakhapatnam.
- 5.17 **Operating and Maintenance manuals:** The Bidders shall clearly mention in their offer that Operating Maintenance Manuals as called for in the Technical Specification in the required number of copies will be provided.
- 5.18 **Cenvat & VAT credit. (for Indian Bidders only):** The quotation must indicate Tariff item number and rate of Excise Duty applicable. The original Excise Duty Gate Pass will be required to be furnished in case charges to us. If the bidder is availing Cenvat credit for his input materials, the effect of proforma credit should be passed on to the purchaser.
- 5.19 **Packing:** The Supplier shall arrange for packing suitably in all respects considering the peculiarity of the material involves for normal transport by sea / air / rail road and suitably protected against effect of tropical salt laden atmosphere in the event of shipment being delayed at ports.
- 5.20 **Salient Points of HSE** (Health, Safety & Environment) that are to be considered while submissions of offer are:
- 5.20.1 Consumption benchmarks related to output shall be provided wherever applicable for key input resources (energy/fuels/chemicals)
- 5.20.2 Competency requirements for operation, maintenance and calibration, if any, shall be communicated
- 5.20.3 If any Hazardous chemicals as per MSIHC (Manufacturing, Storage and import of Hazardous Chemicals) Rules 1989/94/2000 are used, the MSDS shall be provided, along with on site & OFF site emergency plan (as applicable).
- 5.20.4 The noise level at operator level shall be within 90 Db
- 5.20.5 OH&S (Occupational Health and Safety) control measures for safe working of machine as applicable shall be specified
- 5.20.6 The machine/equipment shall be fitted with guard for rolling and moving parts and shall comply with applicable OH&S legislations and Factories Act 1948
- 5.20.7 The supplier shall submit the layout drawing of operating controls, displays etc and operating instructions to enable ergonomics evaluation and approval
- 5.20.8 The recommended PPE (Personal Protective Equipment) for the equipment shall be furnished
- 5.20.9 Alarm System (both visual and audible) and Automatic switch off of the equipment shall be provided for any intrusion, overloading, short circuiting or any malfunctioning of the equipment.
- 5.20.10 Details of all hazardous / harmful substances discharges as by-products / wastes during operations of the machine / equipment, such as fumes, gases, dust particles, aerosols UV./IR (Ultra violet / Infra red) radiations, etc shall be furnished, along with their concentrations and their TLV, (Threshold Limit Value)

- 5.20.11 Appropriate pollution control measures shall be proposed to keep the emissions from the machinery / processes within the prescribed limit as stated in Environment Protection Rules 1986.
- 5.20.12 All furnaces, process units, DG sets, paint booths, shot blasting chambers, etc shall be provided with stack(s) of sufficient height as per guidelines laid down in the Environment Protection Rules 1986.
- 5.20.13 wherever industry specific standards are not available for control of pollutants, general emission standards shall be used
- 5.20.14 Chemicals banned due to their negative impact on the environment shall not be used on the process
- 5.20.15 Fuels with sulphur content less than 0.05% shall be proposed.
- 5.20.16 Details regarding nature of waste generated and appropriate disposal practices available shall be provided, along with the operation procedure of the plant / process.
- 5.20.17 Hazardous chemicals and flammable substances shall be transported only through authorized transporters and all safety practices as laid down in applicable legislative requirements such as Central Motor Vehicle Rules, Manufacture, Storage and Import of Hazardous Chemical 1989, etc. shall be followed.
- 5.20.18 Primary materials used in the equipment shall be specified and they shall be eco - friendly.
- 5.21 Evaluation of offers shall be on the basis of delivered cost (Net cash outflow to BHEL Visakhapatnam).
- 5.22 BHEL Visakhapatnam also reserves its right to allow to the Public Sector Enterprises ordering and price preference facilities as admissible under the existing policy.
- 5.23 BHEL Visakhapatnam reserves its right to reject a tender due to unsatisfactory past performance in the execution of a contract at another project / unit.
- 5.24 BHEL Visakhapatnam shall be at liberty to reject or accept any tender, part or in full, at their own discretion and any such action is not liable for any question or claim against BHEL Visakhapatnam.
- 5.25 BHEL Visakhapatnam reserves the right to go for a Reverse Auction (RA) instead of opening the submitted sealed bid, which will be decided after technical evaluation. Information and general terms and conditions governing RA are given below.

GENERAL TERMS AND CONDITIONS OF RA (REVERSE AUCTION)

Against this enquiry for the subject item/system with detailed scope of supply as per enquiry specifications. BHEL Visakhapatnam may resort to “REVERSE AUCTION PROCEDURE” i.e., ON LINE BIDDING ON INTERNET.

1. For the proposed reverse auction, technically and commercially acceptable bidders only shall be eligible to participate.
2. BHEL Visakhapatnam will engage the services of a service provider who will provide all necessary training and assistance before commencement of on line bidding on internet.
3. BHEL Visakhapatnam will inform the vendor in writing in case of reverse auction, the details of service provider to enable them to contact & get trained.

4. Business rules like event date, time, start price, bid decrement, extensions etc. also will be communicated through service provider for compliance.
 5. Vendors have to fax the Compliance form in the prescribed format (provided by Service provider) before start of Reverse auction. Without this, the vendor will not be eligible to participate in the event.
 6. BHEL Visakhapatnam will provide the calculation sheet (e.g., EXCEL sheet) which will help to arrive at "Total Cost to BHEL Visakhapatnam like Packing & Forwarding charges, taxes and Duties, Freight charges, Insurance, Service Tax for Services and loading factors (for non-compliance to BHEL Visakhapatnam standard Commercial terms & conditions) for each of the vendor to enable them to fill-in the price and keep it ready for keying in during the Auction.
 7. Reverse auction will be conducted on scheduled date & time.
 8. At the end of Reverse Auction event, the lowest bidder value will be known on the network.
 9. The lowest bidder has to Fax the duly signed Filled-in prescribed format as provided on case-to-case basis to BHEL Visakhapatnam through Service provider within 24 hours of Auction without fail.
 10. Any variation between the on-line bid value and the signed document will be considered as sabotaging the tender process and will invite disqualification of vendor to conduct business with BHEL Visakhapatnam as per prevailing procedure.
 11. In case BHEL Visakhapatnam decides not to go for Reverse Auction procedure for this tender enquiry, the Price bids and price impacts, if any, already submitted and available with BHEL Visakhapatnam shall be opened as per BHEL Visakhapatnam's standard practice.
- 5.26 **Force Majeure clause:** If at the time during the continuance of this contract the performance in whole or in part by either party of any obligations under this contract shall be prevented or delayed by reason, of any war, hostilities, acts of the public enemy, civil commotion, sabotage, fires, explosions epidemics, quarantine, restrictions or acts of GOD (hereinafter referred to as events) then provided notice of happening of any such events is given by either party to other within twenty one days from the date of occurrence thereof neither party shall reason of such events be entitled to terminate this contract nor shall either party have any such non performance and delay is resumed as soon as practicable after such events has come to an end or ceased to exist, if the performance in whole or part of any obligation under this contract is prevented or delayed by reason or any such event claims for extension of time shall be granted for period considered reasonable by the purchaser subject to prompt notification by the seller to the purchaser of the particulars of the events and supply to the purchaser if required of any supporting evidence. Any waiver of time in respect of partial installment shall not be deemed to be a waiver of time in respect of remaining deliveries.

CHECK LIST

Bidder's acceptance to BHEL Visakhapatnam's Standard Commercial Terms & Conditions.

Applicable for Indian bidders

(To be submitted along with the offer – please do not change the format)

BHEL Visakhapatnam Tender No: & Date:	Bidders Confirmation / response
Prices have been quoted on "FIRM PRICE" basis only (Yes / No)	
Prices have been quoted on "F.O.R BHEL Visakhapatnam" basis only (Yes / No)	
P & F (Please confirm whether included or not)	
Freight (Please confirm whether included or not)	
Insurance (Please confirm whether included or not)	
Validity of offer (we require a minimum period of 120 days from the date of Tender Opening – please Specify)	
Sales Tax (please Specify)	
Excise Duty (please Specify)	
Delivery period from the date of Purchase Order (please Specify). A loading @ ½ % of the Purchase Order value per week will be done for the grace period requested. For evaluation 4 weeks will be considered as one month. Vendors quoting a delivery period beyond the 'the requested delivery plus the allowed grace period' is liable for rejection.	
Liquidated damages as per clause 5.12 (we require acceptance to @ ½% per week subject to a maximum of 10%) (Yes / No)	
Risk Purchase as per clause 5.13 (Yes / No) (Offers from vendors not accepting the Risk Purchase terms will be rejected)	
Payment terms (As per Clause No. 5.7.1) (Yes / No)	
Contract Execution Bank Guarantee (CEBG) as per Clause 5.10 (Yes / No) (Offers from vendors not accepting to submit CEBG will be rejected)	
Performance Bank Guarantee (PBG) as per Clause 5.11 (Yes / No) (Offers from vendors not accepting to submit PBG will be rejected)	
Guarantee as per clause 5.9 (The equipment shall be guaranteed for a period of 18 months from the date of supply or 12 months from the date of commissioning and acceptance whichever is earlier) (Yes / No) (Offers from vendors not accepting to the guarantee period will be rejected)	
Inspection (please Specify the Place of Inspection)	
Erection & Commissioning/ Installation/ Training (Please confirm whether charges are included in the total cost or not)	
Approximate Net Weight of the total Consignment	
Approximate Gross Weight of the total Consignment	

Signature & Office Seal of the bidder

CHECK LIST

Bidder's acceptance to BHEL Visakhapatnam 's Standard Commercial Terms & Conditions.

Applicable for foreign bidders (To be submitted along with the offer – please do not change the format)

BHEL Visakhapatnam Tender No: & Date:	Bidders Confirmation / response
Prices have been quoted on "FIRM PRICE" basis only (Yes / No)	
Prices basis (FOB/CFR/CIF – Please Specify)	
Insurance (Please confirm whether included or not)	
Validity of offer (we require a minimum period of 120 days from the date of Tender Opening – please Specify)	
Currency in which quoted (please Specify)	
Port of loading (please Specify)	
Country of Origin (please Specify)	
Delivery period from the date of Letter of Intent (please Specify) A loading @ ½ % of the Purchase Order value per week will be done for the grace period requested. For evaluation 4 weeks will be considered as one month. Vendors quoting a delivery period beyond the 'the requested delivery plus the allowed grace period' is liable for rejection.	
Liquidated damages as per clause 5.12 (we require acceptance to @ ½% per week subject to a maximum of 10%)	
Risk Purchase as per clause 5.13 (Offers from vendors not accepting the Risk Purchase terms will be rejected) (Yes / No)	
Payment terms (As per Clause No. 5.7.2)	
Agency commission (refer clause 5.14)	
Contract Execution Bank Guarantee (CEPG) as per Clause 5.10 (Yes / No) (Offers from vendors not accepting to submit CEBG will be rejected)	
Performance Bank Guarantee (PBG) as per Clause 5.11 (Yes / No) (Offers from vendors not accepting to submit PBG will be rejected)	
Guarantee as per clause 5.9 (The equipment shall be guaranteed for a period of 18 months from the date of supply or 12 months from the date of commissioning and acceptance whichever is earlier). (Offers from vendors not accepting to the requested guarantee period will be rejected) (Yes / No)	
Inspection (please Specify)	
Erection & Commissioning/ Installation/ Training (Please confirm whether charges are included in the total cost or not)	
Dimension of the Largest Part (please Specify)	
Packing Schedule (No of containers and their Sizes) (please Specify)	
Approximate Net Weight of the total Consignment (please Specify)	
Approximate Gross Weight of the total Consignment (please Specify)	

Signature & Office Seal of the bidder