

BHARAT HEAVY PLATE & VESSELS LIMITED.,
(A Subsidiary Bharat Heavy Electricals Limited)
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NOTICE INVITING TENDER(NIT)

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

**SUB: RETROFIT AND RECONDITIONING OF
VULCAN MAKE FURNACE**
i. 30 BURNER FURNACE
ii. 20 BURNER FURNACE
iii. 8 BURNER FURNACE

Our Ref: **MM/2/10/3314/CAP/W-246/5253**

DATE: 20.12.2012

Sealed quotations in duplicate are invited from suppliers on or before **16.01.2013** **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 AND RECONDITIONING OF VULCAN MAKE FURNACE i. 30 BURNER FURNACE (Estimated Cost of work is Rs. 71 Lakhs approx.) ii. 20 BURNER FURNACE (Estimated Cost of work is Rs. 66 Lakhs approx.) iii. 8 BURNER FURNACE (Estimated Cost of work is Rs. 73 Lakhs approx.)	1 No. 1 No. 1 No.
	Encl: 1. Technical Specifications 23 Pages 2. General Terms/ commercial terms and conditions (INCLUDING CHECK LIST) 9 pages	

For BHARAT HEAVY PLATE & VESSELS LIMITED,

For Dy. GENERAL MANAGER (MM)

RETROFIT AND RECONDITIONING OF VULCAN MAKE FURNACES – 3 Nos

1.0 BRIEF SCOPE:

Complete retrofit and reconditioning of LPG/HSD fired bogie hearth stress relieving VULCAN make furnaces(3 Nos) with prove-out of temperature accuracies, complete painting and handing over to Production at BHPV works by the vendor.

NOTES:

1. Vendor must submit complete information for all the clauses mentioned below. The offer meeting this clause would only be processed.
2. 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.
3. The offer and all documents enclosed with offer should be in English language only.
4. Vendors MUST visit BHPV, Visakhapatnam and study the existing furnaces before submission of quotation. The cut-off date for visit to BHPV for inspection of Machines, clarification to the vendors to be completed 7 days prior to the tender due date. There will be no further extension of due date.
5. Reconditioning of all the three Furnaces must be completed with in 6 Months from the date of Release of PO. Vendor to mobilize resources accordingly to complete the job in 6 Months respects. The machines will be given for retrofit one after the other and each machine should be completed with in 2 Months.
6. Vendors must indicate makes of all components that are being supplied as a part of this tender 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 VULCAN MAKE FURNACES – 3 Nos

PART A

2.0 QUALIFICATION CRITERIA FOR RECONDITIONING OF VULCAN MAKE FURNACES

SL NO	PRE-QUALIFICATION	Vendor's confirmation YES/NO
A.1.	<p>PRE-QUALIFICATION REQUIREMENTS (Proofs to be enclosed for verification) 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.</p>	
	<p>1. The party must be a reputed Manufacturer/Reconditioner of LPG/HSD fired stress relieving Furnaces with at least 5 Years experience in this field (by 31.10.2012). The experience reference shall be for a period preceding immediately to the date given above. Party must submit at least one satisfactory certificate issued by customer. 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. List of the customers along with respective contracting officers addresses (including Phone no. /E-Mail ID) for whom machines were manufactured / rebuilt should be enclosed with the offer.</p>	
	<p>i. Tender value for 30 Burner furnace : Rs 71 Lakhs. ii. Tender value for 20 Burner furnace : Rs 66 Lakhs. iii.Tender value for 8 Burner furnace : Rs 73 Lakhs.</p> <p>2. The annual turnover during the last three Years ending March 31st 2012 should be at least 1.5 times of the tender value for the item/s quoted (CA certified copy of balance sheet / P&L statements to be enclosed).</p>	
	<p>3. Latest Bankers' solvency (not later than six months from the date tender notice) for an amount of equivalent to tender value of the item/s quoted from any scheduled commercial bank.</p>	
	<p>Experience of having successfully completed similar works during the last 5 Years (by 31.10.2012) should be either of the following.</p> <p>a. Three similar completed works costing not less than the amount each equal to at least 30% of the tender value for the item/s quoted or</p> <p>b. Two similar completed works costing not less than the amount each equal at least 40% of the tender value for the item/s quoted or</p> <p>c. One similar completed work costing not less than the amount each equal to at least 60% of the tender value for the item/s quoted</p>	
A.2	<p>Definition of "Similar Works" Manufacturer / Reconditioner of LPG/HSD fired stress relieving Furnaces.</p>	

RETROFIT AND RECONDITIONING OF VULCAN MAKE FURNACES – 3 Nos

3.0 Existing Furnaces:

SNO	MAKE	MODEL NO	YEAR OF INSTALLATION	BRIEF SPECS
1.	VULCAN	VULCAN Engineers (P) Ltd Mumbai Modified by M/s. WESMAN	1969	Bogie hearth LPG / Diesel fired Furnace Size(8000X5200X1700)mm 20 Burners
2.	VULCAN	VULCAN Engineers (P) Ltd Mumbai	1969	Bogie hearth LPG fired Furnace Size(4000X600X6000)mm, 8 Burners
3.	VULCAN	VULCAN Engineers (P) Ltd Mumbai	1969	Composite Bogie hearth LPG fired Furnace 5000X4000X5000 – 12 burners 7000X4000X700 – 18 burners

Brief description:

BHPV is having three numbers of gas fired box type VULCAN make Furnaces supplied By M/s. VULCAN Engineers Pvt. Ltd commissioned during the Year 1969 with the specifications mentioned below. At present the Furnaces are working with frequent breakdowns. The 20 burner furnace (SI No.1) was modified to dual fired LPG/HSD by WESMAN (I) Ltd.

FURNACE NO 1(30 Burners):

This furnace is LPG fired furnace. This furnace is provided with bogie supported on 8 wheels, 31mtrs high chimney to withstand wind pressure of 200Kg/M², air piping, gas piping etc.

The refractory lining of the furnace is having the following

1. Roof: The refractory lining of the roof is fitted with fire bricks confirming to IS-8 quality.
2. Nose construction: The refractory lining of the nose construction is special shaped IS-8 quality fire bricks.
3. Bogie:
 - a. The refractory lining of bogie is special shaped IS-8 quality blocks for supporting the plates on the bogie
 - b. One layer of IS-6 quality fire bricks
 - c. One layer of light fire bricks
 - d. One layer of insulation bricks
 - e. Special shaped IS-8/IS-6 bricks around the periphery
4. Back all:
 - a. First layer hot face insulation bricks
 - b. One layer of insulation bricks
5. Vertical wall from nose to furnace roof
 - a. First layer hot face insulation bricks
 - b. One layer of insulation bricks
 - c. Holder bricks of is-6 quality at suitable intervals

RETROFIT AND RECONDITIONING OF VULCAN MAKE FURNACES – 3 Nos

FURNACE NO 1(30 Burners):

6. Vertical wall from nose to furnace roof
 - a. First layer hot face insulation bricks
 - b. One layer of insulation bricks
 - c. Holder bricks of IS-6 quality at suitable intervals
7. Fixed hearth:
 - a. One layer of insulation bricks
 - b. Special shaped IS-8 bricks around the periphery
8. Door;
 - a. First layer hot face insulation bricks
 - b. One layer of insulation bricks
9. Flue pipe and flue channel:
 - a. One layer of insulation bricks
 - b. Special shaped IS-6 bricks around the periphery
10. Chimney:
 - a. Special shaped IS-6 quality fire bricks
 - b. One layer of insulation bricks
11. The burner blocks: The burner blocks are of sillimanite material.
12. All furnace refractory work is with air setting cement.

Castings:

The hanging roof bricks are of heat resisting grey cast iron. The front portion of the furnace around the door opening is built up from grey iron castings. The flue gas damper located in the flue pipe is of heat resisting material. Bogie rails are clamped in position on the sleepers by means of GI castings.

Fuel burning system:

The furnace is provided with 30 nos. of Impulse type high velocity gas burners. The burners are located on two longitudinal sides of the furnace. 15 burners are arranged on each side. Out of 30 burners, 12 nos. are in front portion of furnace where the height is 5 Mtrs and the size of burner is larger corresponding to capacity of $8.5\text{Nm}^3/\text{hr}$. The remaining 18 burners of small capacity corresponding to an output of $5\text{Nm}^3/\text{Hr}$. Each burner is provided with its own continuously firing pilot burner. The blower capacity is $6000\text{Nm}^3/\text{Hr}$ and is driven by 25HP squirrel cage induction motor.

Door and bogie winches:

The door of the furnace operates vertically up and down. The door is self sealing type and moves with an inclination with respect to furnace front wall. The door operating winch consists of electric motor, electromagnetic brake, worm gear reduction unit, wire rope drum, axles, bearings etc. The door is being lifted by wire ropes pressing over pulleys mounted on antifriction bearings on EN-8 axles. For hauling the bogie, a wire rope drum type motorized winch is provided.

RETROFIT AND RECONDITIONING OF VULCAN MAKE FURNACES – 3 Nos

Flue gas disposal:

The flue gas outlet is provided from the intermediate vertical wall. The flue gases pass through refractory lined flue pipe into an underground flue channel. The chimney is of self supporting structure.

Temp control & Switch gas system:

The entire furnace is divided into 4 automatic temp control zones. Each zone is provided with its own temp controller. The temp inside the furnace is sensed by a thermocouple and corresponding Milli volt reading will get recorded in temperature controller. Depending on the direction of impulse with respect to the set point, the temperature controller switches the main burners either on or off in the particular zone. The gas supply to the burners is interrupted by electrically operated solenoid valve. The air supply to the burners is interrupted by butterfly valve operated through a pneumatic cylinder.

FURNACE NO 2(20 Burners):

This furnace is of dual fired (LPG and HSD) furnace. The complete furnace casings are fabricated from mild steel plates of 5mm in thickness reinforced with rolled steel sections. Originally, complete refractory lining material for furnace walls were with hot face insulation bricks and table mortar. Complete refractory lining material for hanging roof consisting of fire bricks conforming to IS-8 quality with special shapes. Refractory lining material of firebricks with IS-8 quality backed by two layers of load bearing light fire insulation bricks with necessary refractory mortar. Retaining castings of heat resisting chrome alloy grey cast iron castings to hold the refractory lining of the bogie in position. When dual fired alteration was made the total inside lining was changed to ceramic wool lining / insulation. Only bogie is with insulation bricks. Sand seal cups of heat resisting chrome alloy grey cast iron castings/grey cast iron castings suitable for bolting along the two longitudinal sides and the back side of the bogie.

Sand seal tongues manufactured from heat resisting chrome alloy grey cast iron castings for bolting on the two longitudinal sides and back side of the furnace. Wheels are mounted on anti-friction bearings are provided as under carriage for the bogie. The wheels are having axles, bearing flanges etc. Bogie is having motorized bogie driving mechanism consisting of motor, starter, push buttons, reduction units, bearings, electro magnetic brake, limit switches, roller chain sprocket, rack/roller chain, shafting etc.

For movement of bogie, mild steel rail tracks with cross supports to enable withdrawal of bogie on one side are provided with interlocking mechanism. The refractory lining material is of castable refractory corresponding insulating castable. The castings are of heat resisting chrome alloy grey cast iron to cover the periphery of the door.

The operation of the door lifting device is from remote push button station controlled from main panel. The door is having necessary counter weights. Furnace front plate castings are of graded grey iron castings.

RETROFIT AND RECONDITIONING OF VULCAN MAKE FURNACES – 3 Nos

FURNACE NO 2(20 Burners):

The fuel burning system consists of

- 20 nos. high velocity impulse burners for LPG firing
- 20 nos. continuously firing pilot burners
- 20 nos. burner blocks
- 20 nos. burner plates
- 20 nos. gas shut off valves for main gas burner.
- 20 nos. gas shut off valves for pilot burners.
- 20 nos. shut off valves for air for pilot burners.
- 20 nos. butterfly valves for air for main burners.
- 1 no double stage gas pressure regulator to give constant required pressure to above burners at different loads.
- 1 no gas flow meter
- 1 no safety valve incorporated with alarm device and with safety switch against air, gas and power failure and 1 no hooter. 1 no 20 HP combustion air blower for supplying combustion air to burners having a capacity of 1750 Nm³/hr at a total pressure of 500mm WG. The blower is of centrifugal type and is totally enclosed with fan cooled motor and starter.
- For supplying combustion air from air blower to main and pilot burners, combustion air piping is mounted on the furnace.
- gas piping for connecting main closing valve is located on the furnace with main and pilot burners with individual connection for each burner. Waste gas outlet duct and flues are lined with fire bricks backed by insulation bricks for connection of furnace to chimney.
- The furnace is also provided with self supporting chimney of 31 Mtrs high. Furnace is provided with induced draught equipment consisting of stainless steel nozzle plates, manually operated butterfly valves, blower complete with motor and starter.
- Damper is fitted at the outlet flue duct for manual control of furnace pressure.
- Automatic temp controlling, recording and pressure indicating system is provided along with the new furnace but it is not working at present. New Automatic controlling, recording and pressure indicating system have to be provided new. The following were commissioned at the time of this furnace.
 - i. Milli Volt type temperature controller (Range: 0 to 1200°C)
 - ii. Three point strip chart temp recorder(Range 0 to 1200°C)
 - iii. Duplex thermocouples
 - iv. Compensating leads
 - v. Solenoid valves for gas line
 - vi. Butterfly valves for air line.
 - vii. Two position control motor for operation of butterfly valves.
 - viii. Furnace pressure indicator

RETROFIT AND RECONDITIONING OF VULCAN MAKE FURNACES – 3 Nos

FURNACE NO 2(20 Burners):

- Refractory lining of the door is having 1. Light fire castable refractory 2. Insulation bricks and mortar.
- Complete front plate castings and top and sealing cup manufactured from heat resisting cast iron.
- Box girder at top for bolting the front plate castings
- Door locking device
- Heat resisting steel wall holders for stabilizing the brick walls.

FURNACE NO 3(8 Burners):

This furnace is LPG fired furnace. The complete furnace casings are fabricated from mild steel plates of 5mm in thickness reinforced with rolled steel sections. Complete refractory lining material for furnace wall is with hot face insulation bricks and table mortar. Complete refractory lining material for hanging roof consisting of fire bricks conforming to IS-8 quality with special shapes. Refractory lining material of firebricks with IS-8 quality backed by two layers of load bearing light fire insulation bricks with necessary refractory mortar. Retaining castings of heat resisting chrome alloy grey cast iron castings to hold the refractory lining of the bogie in position. Sand seal cups of heat resisting chrome alloy grey cast iron castings/grey cast iron castings suitable for bolting along the two longitudinal sides and the back side of the bogie.

Sand seal tongues manufactured from heat resisting chrome alloy grey cast iron castings for bolting on the two longitudinal sides and back side of the furnace. Wheels are mounted on anti-friction bearings are provided as under carriage for the bogie. The wheels are having axles, bearing flanges etc. Bogie is having motorized bogie driving mechanism consisting of motor, starter, push buttons, reduction units, bearings, electro magnetic brake, limit switches, roller chain sprocket, rack/roller chain, shafting etc. For movement of bogie, mild steel rail tracks with cross supports to enable withdrawal of bogie on one side are provided with interlocking mechanism. The refractory lining material is of castable refractory corresponding insulating castable. The castings are of heat resisting chrome alloy grey cast iron to cover the periphery of the door.

The operation of the door lifting device is from remote push button station controlled from main panel. The door is having necessary counter weights. Furnace front plate castings are of graded grey iron castings.

RETROFIT AND RECONDITIONING OF VULCAN MAKE FURNACES – 3 Nos

FURNACE NO 3(8 Burners):

The fuel burning system consists of

- 8 nos. high velocity impulse burners for LPG firing
- 8 nos. continuously firing pilot burners
- 8 nos. burner blocks
- 8 nos. burner plates
- 8 nos. gas shut off valves for main gas burner.
- 8 nos. gas shut off valves for pilot burners.
- 8 nos. shut off valves for air for pilot burners.
- 8 nos. butterfly valves for air for main burners.
- 1 no double stage gas pressure regulator to give constant required pressure to above burners at different loads.
- 1 no gas flow meter
- 1 no safety valve incorporated with alarm device and with safety switch against air, gas and power failure and 1 no hooter. 1 no 7.5 HP combustion air blower for supplying combustion air to burners having a capacity of 600 Nm³/hr at a total pressure of 500mm WG. The blower is of centrifugal type and is totally enclosed with fan cooled motor and starter.
- For supplying combustion air from air blower to main and pilot burners, combustion air piping is mounted on the furnace.
- gas piping for connecting main closing valve is located on the furnace with main and pilot burners with individual connection for each burner. Waste gas outlet duct and flues are lined with fire bricks backed by insulation bricks for connection of furnace to chimney.
- The furnace is also provided with self supporting chimney of 31 Mtrs high. Furnace is provided with induced draught equipment consisting of stainless steel nozzle plates, manually operated butterfly valves, blower complete with motor and starter.
- Damper is fitted at the outlet flue duct for manual control of furnace pressure.
- Automatic temp controlling, recording and pressure indicating system is provided along with the new furnace but it is not working at present. New Automatic controlling, recording and pressure indicating system have to be provided new. The following were commissioned at the time of this furnace.
 - a. Mv type temp controller (Range: 0 to 1200°C)
 - b. Three point strip chart temp recorder(Range 0 to 1200°C)
 - c. Duplex thermocouples
 - d. Compensating leads
 - e. Solenoid valves for gas line
 - f. Butterfly valves for air line.
 - g. Two position control motor for operation of butterfly valves.
 - h. Furnace pressure indicator

RETROFIT AND RECONDITIONING OF VULCAN MAKE FURNACES – 3 Nos

TECHNICAL DETAILS OF ALL THE THREE FURNACES:

SNO	DESCRIPTION	30 BURNER FURNACE	20 BURNER FURNACE	8 BURNER FURNACE
1	Brief description	This furnace is intended for used in production for shell sections etc.	This furnace is intended for used in production of small forgings, flanges, hot pressings, Dished end petals, sphere petals or stampings for boilers, pres sure vessels etc., Heat treatment like SR, normalizing & solution annealing etc.	This furnace is intended for used in production for heating up sections, tubes, flanges, shaping parts etc.
2	Inside length	12.5 Mtrs	8000mm	6000mm
3	Inside width	4000mm	5200mm	4000mm
4	Inside height	4000mm(for first 5 mtrs from door 700mm(for remaining 7 mtrs upto back wall))	1700mm	600mm
5	Hearth level above floor		1200mm	
6	Max charge weight	40 Tons	20 Tons	10 Tons
7	Fuel	LPG(To be changed to dual fired LPD & HSD)	LPG / HSD	LPG
8	No of Burners	30	20	8
9	Max size of plates	150mm Thick 12000mm	5000mm dia 130mm thick	
10	Average size of plates		4000mm dia X 40mm thick	
11	Calorific value		27,600 K cal/Nm3	
12	Max furnace temp	1200°C +-10%	1200° C +-15%	1100° C,+15%
13	Power supply	415V +-10%,3 Phase, 50Hz,+3% four wire system	415V +-10%,3 Phase, 50Hz,+3% four wire system	415V +-10%,3 Phase, 50Hz,+3% four wire system
14	Type of heat treatment	a. Plate heating b. Stress relieving c. Normalising	a.Plate heating b.Stress relieving c.Normalising d. Solution annealing	a.Plate heating b.Stress relieving c.Normalising

RETROFIT AND RECONDITIONING OF VULCAN MAKE FURNACES – 3 Nos

SNO	DESCRIPTION	30 BURNER FURNACE	20 BURNER FURNACE	8 BURNER FURNACE
15	No of temp control zones	4	3	1
16	No of recording thermo couples	4	4	4
17	Pressured at which gas should be made available at furnace mains	7 to 10 lbs sq inch gauge	7 to 10 lbs sq inch gauge	7 to 10 lbs sq inch gauge
18	Compressed air requirement	2cft/min at 95 lb/sq inch	2cft/min at 95 lb/sq inch	2cft/min at 95 lb/sq inch

EXISTING INTERLOCKS :

1. Furnace door can be operated only when the bogie is in fully 'IN' or 'OUT' position.
2. Bogie can be operated only when the Door is in fully 'UP' position.
3. Main gas solenoid valve and main oil solenoid valves to be disabled if
 - a. Combustion air pressure low
 - b. Gas pressure/oil pressure low
 - c. Failure of power
 - d. Atomizing air pressure lower
4. Main zonal gas solenoid valve and main zonal oil solenoid valve are interlocked with individual zone temperature high so as to disable the flow of fuel.
5. Oil solenoid valve and gas solenoid valve near each burner are interlocked such that in case of flame failure, the flow of fuel to be disabled.

Most of the interlocks are not functioning at present. The above interlocks are to be replaced to restore originally designed interlocks for the furnace.

RETROFIT AND RECONDITIONING OF VULCAN MAKE FURNACES – 3 Nos

PART B

SCOPE OF WORK: For the entire work defined, supply, erection and commissioning is included in vendor's scope.

S.No.	PARTICULARS	SPECIFICATION / DESCRIPTION	BIDDER'S OFFER (WITH CONFIRMATION & COMPLETE TECHNICAL DETAILS)
4.0	The following items are to be supplied and commissioned		
4.01	The existing all refractory bricks on the bogie must be rectified and lined with new conventional refractory insulation bricks of IS-6 standards. Atleast 25% of the bricks to be replaced with new bricks. Unused material should be retained with BHPV.	Vendor to confirm	
4.02	Refractory Lining for furnace (roof,side walls and door): Vendor to supply and install new Ceramic Fiber Modules/Bricks (with atleast 25% of new material) for repair of roof, side walls and door inside the furnace with back up blanket insulation lining of suitable density and thickness to ensure that the skin temperature of the furnace is with in limits. (Calculation should be submitted in proof of the same). Unused material should be retained with BHPV. The sizes of stud and modules holding clips should be of SS 310 suitable enough to withstand module weight without bending, at high temperatures. The ceramic fibre materials should confirm to ASTM -C-892-1993. The bricks should confirm to IS-6 standard. (The pattern of insulation should be easily repairable with out disturbing the adjacent refractory and drawings to be submitted to BHPV for approval before execution of the work)	Vendor to confirm	
4.03	All the burners are to be reconditioned. For 30 burner furnace - 8 nos, for 20 burner furnace - 5 nos and for 8 burner furnace - 2 nos of burners are to be considered for replacement with new ones in the scope of work. However, if the existing burners are in good condition, the unused burners are to be handed over to BHPV. All the allied accessories, control valves etc are to be replaced with new ones. The type, model and specifications of the same are to be furnished by vendor.	Vendor to confirm	

RETROFIT AND RECONDITIONING OF VULCAN MAKE FURNACES – 3 Nos

S.No.	PARTICULARS	SPECIFICATION / DESCRIPTION	BIDDER'S OFFER (WITH CONFIRMATION & COMPLETE TECHNICAL DETAILS)
4.04	<p>The furnace shall be divided into equal zones and all the zones shall be controlled by PID controllers. For 30 Burner furnace 3 nos. of 6 point Microprocessor based digital strip chart recorders, for 20 Burner furnace 2 nos. of 6 point Microprocessor based digital strip chart recorders, for 8 Burner furnace, 1 nos. of 6 point Microprocessor based digital strip chart recorders with 180mm width along with 50 nos. of chart paper packs to be provided for temperature measurement. 1 no of 6 point Microprocessor based digital strip chart recorders for each furnace are to be supplied.</p> <p>Preferable Makes: Chino/ Yokogawa/ Honeywell/ Eurotherm.</p>	Vendor to confirm	
4.05	<p>Ignition & Flame Supervision: Spark igniter 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 for its reliability. 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). Spark ignitors, U.V. scanner are to be supplied by vendor.</p>	Vendor to confirm	
4.06	<p>Furnace temperature control: Vendor to supply and commission Mass Flow Control (MFC) system with PID controllers along with Auto tuning of PID controllers in all zones. Vendor to supply new burner sequence controllers. Individual burner ON/OFF should be controlled by Burner Sequence Controllers. Any local short interruption to the heating cycle during the operation has to be restarted from the existing temperature or current segment by selecting Auto or manual mode.</p>	Vendor to confirm	

RETROFIT AND RECONDITIONING OF VULCAN MAKE FURNACES – 3 Nos

S.No.	PARTICULARS	SPECIFICATION / DESCRIPTION	BIDDER'S OFFER (WITH CONFIRMATION & COMPLETE TECHNICAL DETAILS)
4.07	<p>Zonal thermocouples: 2 Nos. of Duplex thermocouples per zone to be provided. One thermocouple to the temperature controller, second to the excess temperature controller, third to the recorder and fourth to the PID Controller. The thermocouple should be of Cr/Al and thermocouple sheath should be of inconel with 1 Mtr adjustable flange. Asbestos compensating cables to be provided.</p>	Vendor to confirm	
4.08	<p>Main line damper shall be reconditioned suitably. BHPV will provide LPG around 2 bar(max) pressure in pipe line with shut off valve near furnace within 5 meter distance. Suitable pressure regulators to get the required LPG pressure for furnace to be provided by the vendor.</p>	Vendor to confirm	
4.09	<p>Vendor to use the existing chimney. Any refractory repair work inside the chimney to be done by the vendor. Vendor to provide suitable venturi (SS304) in the flue path.</p>	Vendor to confirm	
4.10	<p>After retrofitting, the emission shall be well with in Andhra Pradesh Pollution Control Board (APPCB) norms with respect to SOx; NOx and Suspended Particulate Matter (SPM).</p>	Vendor to confirm	
4.11	<p>A).MCC Panel: One number new MCC panel shall be provided with dust, vermin proof, sheet metal clad, floor mounted, totally enclosed for the operation of various motors and heaters.</p> <p>B).Instruments Control panel: A separate Floor mounting type Instrument panel with all the controllers etc to be provided by vendor. Vendor has to provide separate control transformer (415V/230V) for the Instrumentation panel.</p> <p>Dimensional sketches of the above control panels along with the details regarding the panel size, cable entry etc. to be submitted 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. Both the panels are to 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. Air conditioner for the panel has to be provided by the vendor.</p>	Vendor to confirm	

RETROFIT AND RECONDITIONING OF VULCAN MAKE FURNACES – 3 Nos

S.No.	PARTICULARS	SPECIFICATION / DESCRIPTION	BIDDER'S OFFER (WITH CONFIRMATION & COMPLETE TECHNICAL DETAILS)
4.12	All Power and control cables, connections, circuit breakers etc. required for connecting BHPV'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	
4.13	Tropicalization: All electrical / electronic equipment shall be tropicalized.	Vendor to confirm	
4.14	All Electric enclosures shall have IP 54 protection	Vendor to confirm	
4.15	All electrical components in the cabinets should be mounted on DIN Rail	Vendor to confirm	
4.16	All electrical and electronic panels including operator's panel should be provided with fluorescent lamps for sufficient illumination and power receptacles of 220 Volts, 5/15 Amp AC by the vendor. All adaptors / receptacles should have compatibility with Indian equivalents. (Suitable transformer should be used for 220V supply)	Vendor to confirm	
4.17	All electrical components supplied by vendor like contactors and OLRs etc., should be of Siemens, L&T or Telemecanique make and VVVF for FD fan (if provided) shall be of ABB / Siemens / Eurotherm make.	Vendor to confirm	
4.18	All cables should be FRLS design only	Vendor to confirm	
4.19	All the panels should be suitably sized so that they are accommodated in the existing furnace control room. Instrumentation panel shall be separated from electrical panel by the vendor.	Vendor to confirm	
4.20	All power, control, reference cables, including termination material, cable racks, conduits, earthing material to be supplied new and commissioned. Cables: Instrument cables and the compensating cables to be separated from the power cables. All the cables should be of FRLS design only. Instrument cables of Toshniwal / Polycab or any other make which is acceptable to BHPV to be provided.	Vendor to confirm	
4.21	For 30 Burners furnace, provision shall be made to use the furnace under HSD also. Suitable system to be designed for using this furnace under LPG and HSD. Necessary insulation with ceramic wool for the inside of all walls, top etc shall be done for dual fire (as available in case of 20 burner furnace).	Vendor to confirm	

RETROFIT AND RECONDITIONING OF VULCAN MAKE FURNACES – 3 Nos

S.No.	PARTICULARS	SPECIFICATION / DESCRIPTION	BIDDER'S OFFER (WITH CONFIRMATION & COMPLETE TECHNICAL DETAILS)
4.22	The existing height(inside) of the 8 burner furnace is 600 mm. The effect height of this furnace shall be increased to 2000mm. The physical structure including furnace door, winch, motors, motor gear boxes etc as required to suit increase in furnace height are to be modified/supplied by the vendor. Related Civil works if any, are also under the scope of Vendor. Additional burners required to achieve the desired temperature are to be provided by the vendor in the furnace. Heat calculation for the same shall be submitted to BHPV.	Vendor to confirm	
4.23	New safety interlocks must be provided wherever required particularly whenever the thermocouples fails, burners fails, solenoids open/closes, furnace pressure increases etc. The following interlocks shall be provided in addition to some other interlocks which the vendor can suggest and implement. <ul style="list-style-type: none"> a. Furnace door can be operated only when the bogie is in 'IN' or 'OUT' position. b. Bogie can be operated only when the furnace door is in partially 'UP' position. c. Main gas solenoid valve and main oil solenoid valves are to be disabled if <ul style="list-style-type: none"> i. Combustion air pressure low ii. Gas pressure is low iii. Failure of power iv. Atomizing air pressure lower v. Main zonal gas solenoid valve is interlocked with individual zone temperature high so as to disable the flow of gas. vi. gas solenoid valve near each burner are interlocked such that in case of flame failure, the flow of fuel is be disabled. 	Vendor to confirm	
4.24	All limit switches are to be replaced with new ones.	Vendor to confirm	
4.25	Where ever the refractory retainer castings for bogie and fixed hearth are not available, must be replaced with new castings. Strengthening of side support casting plates for retaining the bricks to be examined since these are getting broken frequently.	Vendor to confirm	
4.26	Pre-fired curb blocks shall also be provided all around the bogie corners made of 40% AL ₂ O ₃ quality or equivalent material.	Vendor to confirm	

RETROFIT AND RECONDITIONING OF VULCAN MAKE FURNACES – 3 Nos

S.No.	PARTICULARS	SPECIFICATION / DESCRIPTION	BIDDER'S OFFER (WITH CONFIRMATION & COMPLETE TECHNICAL DETAILS)
4.27	New air pressure gauge, air pressure switch, fuel pressure gauge, fuel pressure switch have to provided and installed for all the three furnaces.	Vendor to confirm	
4.28	Audio visual alarm annunciator shall be supplied installed on instrument panel. It must operate for the following mal-functions. <ul style="list-style-type: none"> a. Low combustion air pressure b. High gas pressure c. Low gas pressure d. Low oil pressure e. High temp of zone f. Flame failure g. Any unforeseen circumstances other than above 	Vendor to confirm	
4.29	Where ever the combustion air pipeline is damaged, that must be replaced with new pipeline. All the valves and fittings must be replaced with new. Where ever the gas/oil pipelines are damaged, they must be replaced with new pipeline. All the zonal valves, main shut off valves and fittings must be replaced with new.	Vendor to confirm	
4.30	The pressure transmitter and rotary electrical actuator for flue exhaust damper (wherever available) actuation must be replaced with new items.	Vendor to confirm	
4.31	All incoming and outgoing cables shall be through 3mm thick gland plate provided at the bottom of the panel.	Vendor to confirm	
4.32	Instruments Calibration: Calibration certificates to be provided for process values measuring instruments, Transmitters, Thermocouples and compensating cables. Test certificates required for Pressure switches and modulating motors etc. are to be provided by the vendor. Vendor has to carry out re-calibration for all the above calibrated items at BHPV site during commissioning.	Vendor to confirm	
4.33	Max. flow rate of LPG/HSD required at inlet (supporting heat calculations to be provided)	Vendor to confirm	

RETROFIT AND RECONDITIONING OF VULCAN MAKE FURNACES – 3 Nos

S.No.	PARTICULARS	SPECIFICATION / DESCRIPTION	BIDDER'S OFFER (WITH CONFIRMATION & COMPLETE TECHNICAL DETAILS)
4.34	Two way solenoid valve shall be brass material and should be flame proof as per IS:2148 gas group class IIA, IIB.	Vendor to confirm	
4.35	Ball isolation valves shall be fire safe design as per IS:2148	Vendor to confirm	
4.36	Open/close limit switch of all vent valves to be incorporated in Control panel.	Vendor to confirm	
4.37	All field instruments in the gas line shall be flame proof enclosure with double compression cable gland provision for cable entry /exit.	Vendor to confirm	
4.38	Under gas firing system, all limiting orifice valves in gas line, metering orifice valves, manual gas shut off valves (burner wise) shall be provided.	Vendor to confirm	
4.39	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	
4.40	Orifice type flow meter with pressure transmitter & tubing shall be provided at main line of LPG/HSD to measure the flow. Vendor must supply the same and install. Vendor to specify the brand / model.	Vendor to confirm	
4.41	Suitable system for recording the consumption of fuel for each cycle shall be provided	Vendor to confirm	
4.42	All power, control, reference cables, including termination material, cable racks, conduits, earthing material shall be replaced with new.	Vendor to confirm	
4.43	Any tools and tackles, instruments and materials required for further maintenance of BHPV shall be provided.	Vendor to confirm	
4.44	Essential spare items, consumables, spare bricks, insulating material, refractory material must be supplied along with the items of retrofitting the furnace.	Vendor to confirm	
4.45	Vendor has to compulsorily provide support for spares etc. for minimum 5 years.	Vendor to confirm	
4.46	Complete Printed Circuit Board Schematics indicating check points (Test Points) for Electronic Controls.	Vendor to confirm	
4.47	Complete calculations for heat load, skin temperature, refractory selection, efficiency, fuel consumption, etc to be submitted by vendor.	Vendor to confirm	

RETROFIT AND RECONDITIONING OF VULCAN MAKE FURNACES – 3 Nos

S.No.	PARTICULARS	SPECIFICATION / DESCRIPTION	BIDDER'S OFFER (WITH CONFIRMATION & COMPLETE TECHNICAL DETAILS)
4.48	Panel layout with details for panel size, 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 submitted by vendor.	Vendor to confirm	
4.49	Alarm log, error code, error messages and remedies for on-line fault diagnostics to be submitted by vendor.	Vendor to confirm	
4.50	Calibration certificates for all the Panel instruments, Transmitters, Flow meters, Thermocouples and test certificates for Pressure switches, modulating motors and regulators to be	Vendor to confirm	
4.51	The bogie movement for all the furnaces shall be checked and repaired.	Vendor to confirm	
4.52	The fixed hearth of side wall, under ground flue duct shall be lined with conventional refractory and insulation bricks and ceramic wool.	Vendor to confirm	
4.53	The existing blowers are to be checked and reconditioned.	Vendor to confirm	
4.54	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 should be thoroughly checked and reconditioned.	Vendor to confirm	
4.55	Under LPG gas train equipment shall be thoroughly checked for replacement/reconditioning	Vendor to confirm	
4.56	All valves, gas shut off valves, pumping unit under gas firing shall be thoroughly checked and replaced if required.	Vendor to confirm	
4.57	All necessary accessories for conversion of 30 burner furnace to LPG/HSD are to be supplied, commissioned and testing by the party.	Vendor to confirm	
4.58	P&I Diagram with complete Bill of materials giving make and specification of components in it should be supplied by vendor.	Vendor to confirm	
4.59	Electrical Wiring Drawings – Power & Control Circuits to be submitted by vendor	Vendor to confirm	
4.60	Terminal drawings with check points shall be provided for Electronic Controls	Vendor to confirm	
4.61	Trouble Shooting Chart for Main and all Sub-Systems to be submitted by vendor	Vendor to confirm	

RETROFIT AND RECONDITIONING OF VULCAN MAKE FURNACES – 3 Nos

S.No.	PARTICULARS	SPECIFICATION / DESCRIPTION
5.0	<p>Painting of the Furnaces : Complete Furnace body, bogie, blower and all furnace related items etc., shall be painted with two coats of reputed brand of Premium heat resistant Apple Green color paint. Letters, numerals etc. will have to be painted with a different color as required / as indicated by BHPV 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 furnaces aesthetic view should be taken care of.</p>	Vendor to confirm
6.0	<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> <ol style="list-style-type: none"> a. Spares to be bought out b. Spares to be manufactured <p>The list should be approved by BHPV. Drawings of spares to be manufactured and specifications for bought out items shall be submitted to BHPV by the vendor for approval.</p> <p>SPARES : For the above mentioned spare parts (electrical/ mechanical / electronics / Instrumentation) required to be replaced beyond the spares quoted by the vendor along with offer, approved by BHPV after joint inspection, BHPV 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> <ol 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 BHPV before such replacement is affected. Cost of such spares shall be absorbed by the Contractor. BHPV will not pay for these items. b. Prior intimation has to be given to BHPV by the contractor for deputing the team for joint inspection at BHPV / contractor works. 	Vendor to confirm

RETROFIT AND RECONDITIONING OF VULCAN MAKE FURNACES – 3 Nos

S.No.	PARTICULARS / SPECIFICATION / DESCRIPTION	BIDDER'S OFFER (WITH CONFIRMATION & COMPLETE TECHNICAL DETAILS)
6.01	A spare parts manual should be provided along with the parts list.	Vendor to confirm
7.0	Prove-out test	
7.01	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 BHPV. The job trials for sufficient number of jobs must be shown to BHPV personnel. The heat treatment cycle and furnace temperature graphs must be certified by the quality department of BHPV.	Vendor to confirm
7.02	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
8.0	BHPV's Scope of work:	
8.01	Material handling facilities to be given for Mechanical, Electrical and Instrumentation requirements which should come up during retrofitting.	Vendor to note
8.02	Oil, gas, water, compressed air etc required for testing the furnace will be provided by BHPV.	Vendor to note
8.03	All necessary documents, drawings available with BHPV related to Furnace will be given to vendor	Vendor to note
9.0	Miscellaneous	
9.01	The supplier should give a point-by-point reply to the specifications	Vendor to confirm
9.02	The following manuals should be supplied along with the retrofit of the furnace. <ol style="list-style-type: none"> 1. Electrical Circuit diagrams – 3 sets 2. Circuit diagrams for all PCBs - 3 Sets 3. O&M Manuals (hard copy & Soft Copy) for Instrumentation system – 3 sets 4. Details of all Mechanical, Electrical, instrumentation, Electronics modifications & fittings with drawings – 3 sets 5. Spare parts manual – 3 sets 6. Complete block diagram with pipelines of furnace after retrofit -3 sets. <p style="margin-left: 40px;">All the manuals, wiring diagram, circuit diagrams etc in CD – 2 sets.</p>	Vendor to confirm

RETROFIT AND RECONDITIONING OF VULCAN MAKE FURNACES – 3 Nos

S.No.	PARTICULARS / SPECIFICATION / DESCRIPTION	BIDDER'S OFFER (WITH CONFIRMATION & COMPLETE TECHNICAL DETAILS)
9.03	The operation manual should contain exhaustive details of the operation of Furnace.	Vendor to confirm
9.04	The supplier should provide at least 2 days training in operation and maintenance at BHPV for production and maintenance personnel for each furnace.	Vendor to confirm
9.05	The supplier should provide 1 Year warranty from the date of retrofit & reconditioning of the Furnaces.	Vendor to confirm
9.06	Operational spares for 2 Years should be quoted separately. The spares should include spare bricks, ceramic fibre modules, solenoid valves, limit switches, insulating material, relays, pressure gauges, instrumentation items, bogie wheels and other essential spares.	Vendor to confirm
9.07	Place of Work: The supplier can execute the complete reconditioning and retro fitment activity at BHPV, 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) has to be borne by the supplier.	Vendor to confirm
9.08	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
9.10	Bar chart showing the time required for the following elements to be given covering the period of delivery quoted a) Dismantling of furnaces at BHPV works b) Complete cleaning and joint inspection of components at BHPV 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 BHPV works f) Job trial and prove out	Vendor to confirm
9.11	Any modifications carried out shall not sacrifice original temp ranges, safety features, bogie speed, refractory linings, original function of furnace etc.	Vendor to confirm
9.12	<u>REWORK IN LIEU OF REPLACEMENT :</u> Reworks in lieu of replacement on the parts like (bushes, box nuts, screw rods etc.) preferably chrome plating / welding / machining / grinding etc. identified initially and also during joint inspection shall be in the scope of vendor. BHPV will not pay extra for these works.	Vendor to confirm
9.13	BHPV reserves the right to inspect the progress as well as workmanship at any stage of the work. Decision of BHPV 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

RETROFIT AND RECONDITIONING OF VULCAN MAKE FURNACES – 3 Nos

S.No.	PARTICULARS / SPECIFICATION / DESCRIPTION	BIDDER'S OFFER (WITH CONFIRMATION & COMPLETE TECHNICAL DETAILS)
9.14	All discarded / replaced parts shall be returned to BHPV.	Vendor to confirm
9.15	Any work (Mechanical, Electrical and Instrumentation) not mentioned in this scope of work to keep the Furnaces in working condition with all features and accuracies are in the scope of the contractor.	Vendor to confirm
9.16	The contractor is required to study the furnaces, 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 BHPV before submission of the offer.	Vendor to confirm
9.17	Lodging & Boarding 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). BHPV is not responsible for this.	Vendor to confirm
9.18	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
10.0	Preferable Makes:	Vendor to confirm
	1.Duel fired burners (LPG / DIESEL)	WESMAN or equivalent
	2.PID Temperature Controller (Double Loop)	Eurotherm/Honeywell/Chino/ Yokogowa
	3.Excess Temperature Controllers	Honeywell/Eurotherm/Chino/ Yokogowa
	4.Microprocessor based Six point Temperature Recorder (Paper strip chart) Range: 0-1100°C	Chino/Yokogowa/Honeywell
	5.Thermocouples	Tempsens/EEE/Toshniwal
	6.Compensating Cable	Tempsens/EEE/Toshniwal
	7.Burner Sequence Controllers	Kromschroder / Honeywell/ Eclipse
	8.Modulating Motors	Kromschroder / Honeywell
	9.Gas Train System	Kromschroder / Eclipse
	10.Solenoid Valves	Kromschroder / Dungs
	11.UV sensor	Kromschroder / Satronics
	12.Alarm Annunciator	Bharani / L&T or any other reputed make acceptable to BHPV
	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

RETROFIT AND RECONDITIONING OF VULCAN MAKE FURNACES – 3 Nos

	Preferable Makes:	Vendor to confirm
	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

Dy. General Manager (MM)
BHARAT HEAVY PLATE & VESSELS LIMITED
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 BHPV 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 BHPV 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 BHPV 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 BHPV Visakhapatnam basis. Freight charges from works to BHPV 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 & BHPV 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 within 45 days 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 BHPV, 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 BHPV 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 BHPV. 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 BHPV 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 BHPV in the format, given by BHPV 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, BHPV 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 BHPV 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, BHPV - Visakhapatnam, basis.

- 5.16 **Inspection & Testing:** All goods shall be subject to inspection by BHPV or its authorized representatives at supplier's works or at BHPV 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 BHPV, 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 Dba
- 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 BHPV).
- 5.22 BHPV also reserves its right to allow to the Public Sector Enterprises ordering and price preference facilities as admissible under the existing policy.
- 5.23 BHPV reserves its right to reject a tender due to unsatisfactory past performance in the execution of a contract at another project / unit.
- 5.24 BHPV 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 BHPV.
- 5.25 BHPV 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. BHPV 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. BHPV 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. BHPV 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. BHPV will provide the calculation sheet (e.g., EXCEL sheet) which will help to arrive at “Total Cost to BHPV like Packing & Forwarding charges, taxes and Duties, Freight charges, Insurance, Service Tax for Services and loading factors (for non-compliance to BHPV 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 BHPV 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 BHPV as per prevailing procedure.
 11. In case BHPV 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 BHPV shall be opened as per BHPV’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 BHPV's Standard Commercial Terms & Conditions.

Applicable for Indian bidders

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

BHPV 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 BHPV" 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 BHPV's Standard Commercial Terms & Conditions.

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

BHPV 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