Ref: FF/PPX/3006/Corrigendum/01 Dated 13.09.2013

Subject:- Corrigendum for technical specification.

With reference to tender enquiry 3618P/360/3/0215F1 dated 30.08.2013 due on 27.09.2013 Of Combustion system for HT Furnace. Technical specification of tender enquiry has been revised. Revised specification LF/SP/13-14/01 Rev 01 dated 07.09.2013.

The due date for opening the tender enquiry no 3618P/360/3/0215F1 has been extended from 27.09.2013 to 09.10.2013. Revised delivery period required is 2 sets by 30.04.2014.

All the vendors are requested to submit their offer according to revised technical specification LF/SP/13-14/01 Rev 01 dated 07.09.2013 and revised delivery period.

The vendor who has already submitted their quotation, they can submit their revised offer in time clearly indicating REVISED OFFER on sealed envelope. In such cases only revised offer will be opened.

Thanking you

Yours faithfully
For & ON BEHALF OF CFFP/BHEL, HARIDWAR

13/09/13

Ranjeet Kumar
Engr. (Purchase)

Sl. No	Description	Confirmation/Vendor's Remarks
1.0	**SCOPE OF WORK** Design, supply, erection, commissioning and successful trial run (Minimum 03 complete cycles) of complete combustion system for HT furnace, chamber size 7mX4mX3.5m. Maximum operating temperature 1200°C. Maximum load capacity 40T. Maximum rate of rise of temperature 100°C/hour.	
	TECHNICAL PARAMETER	
2.1	**Gas Burners Assembly:**	
2.1.1	Gas fired Burners suitable for High Temperature applications. Burner Assembly consisting of Mounting Plate, Block Holder, Silicon Carbide Tube, integrated Air and Gas orifice(suitable for NG), ignition electrode, U.V Sensor & Peep sight etc.	
2.1.2	Burners should be Nozzle Mix/ High Velocity Burners.	
2.1.4	Ignition: Direct Spark ignition.	
2.1.5	Number of zones- Three	
2.1.6	Burner design should be suitable for Natural Gas.	
2.1.7	Air & Gas inlet of burner should be such that they can be independently adjusted in 90° incrementally to suit a variety of piping alternatives.	
2.1.8	Burners should be Low NOx burner as per Norms specified by Pollution Control Board (Less than 100 PPM or better at 3% O_2 level). Manufacturer Test Certificate to be submitted in support.	
2.1.9	Velocity of Burners should be >=400 ft/sec.	
2.1.10	Location of burners will be in the middle of the furnace sidewalls.	
2.1.11	Location of thermocouples should not be in front of burners.	
3.1	**Ignition Transformers**	
	Ignition Transformers should be provided in air tight enclosures so that its performance should not be affected with environment conditions. It should be a 6000 VAC to 10000 VAC, full wave spark A.C Supply of 230V, 50 Hz transformer. It should be provided with H.T Cable of min. 1000 mm Length.	
3.2	**Limiting Orifice Valves:**	
	The limiting orifice valve should be suitable to set Gas flow on burners. The valve should be positioned in such a way that it can be easily inspected or replaced. For better functionality, the limiting orifice valve should be of same make as of the burner.	
3.3	**Air/ Gas Ratio regulators:**	
3.3.1	Suitable to maintain accurately constant air/gas ratio to ensure stoichiometric ratio firing throughout the turn down	

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	of the burner. Turndown ratio of regulator should be min 1:10.	
3.3.2	Pressure Suitability up to 140 mbar.	
3.3.3	Make of the Ratio Regulator will be preferred of same make of Burner for better compatibility.	
3.4	**Gas Valve trains :** Main Gas valve train must be manufactured as per NFPA 86 or EN 746 – 2 (European Standard). Preassembled skid mounted valve train consist of all Necessary safety equipments and capable to perform below mentioned functions :	
3.4.1	Reducing the inlet pressure of the gas by Dual Spring Diaphragm Gas Governor Unit based, so that required amount of gas is allowed into the Burners of furnace and ensure the minimum pressure variation.	
3.4.2	To be a part of automatic operation of combustion system.	
3.4.3	To have the control over the flow of fuel, which is entering into the burner.	
3.4.4	To safeguard the downstream burner components.	
3.4.5	Allowing the filtered gas into the combustion system in order to protect from erosion of the downstream components of gas train and burners.	
	Each Gas valve train should have Valve Proving System.	
3.5	**Auto Reset Safety Shut off Valve**	
	It should be snap acting solenoid for Fast Closing with minimum two visual Indicators of Valve position. For positive Shut off it should have soft seat disc and Ball bearing trip mechanism to reduce wear.	
3.6	**Capacities of Gas Trains**	
	Should be according to Maximum & Minimum Gas flow requirement for respective Furnace to achieve the required temperature of 1200 degree Celsius.	
3.7	**Burner Control Panel:**	
3.7.1	Burner Control Panel must be manufactured as per NFPA 86 or EN 746 – 2 (European Standard) The burner control panel should be self standing with powder coated M.S. enclosure dust & vermin proof as per IP54 in accordance to BS 5490 : 1077 , IEC529,1976 also should comply with IS 694 & IS 736. In case of contradiction, governing standard will be Indian Standard. The cable entry should be from bottom of the panel.	
3.7.2	Burner control panel should have provision of both Auto & Manual Control of burners.	
3.7.3	Burner Control Panel should have Emergency stop switch which should be capable to stop complete operation including gas flow without any failure and it should be clear visible, easy in approach to the operator.	
3.7.4	There should be interlocking with combustion air flow or	

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	Desired Minimum air pressure.	
3.7.5	In control panel there should be clear indications with Light Indicating alarm for conditions of Burner Failure, Low Gas pressure, High gas pressure & Low Air Pressure.	
3.8	**Air Blower:**	
3.8.1	The Blower should be designed to achieve required temperature of equipments.	
3.8.2	The Blower should be complete with Motor, Butterfly valve for control of Air Flow and One no. low air pressure switch on each blower.	

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Annexure II

Scope Of supply

Sl. No.	Material	Components/Specification Details	Quantity
1.	Burner Assembly	1. Gas Burner(Silicon Carbide Tube) 2. Nozzle mix / High Velocity Burner type 3. Max. Capacity – 757 X 1000 Btu/hr 4. Direct Spark Ignition 5. Flame monitoring- UV Sensor	14 Set
2.	Burner Box	1. Burner Controller 2. Ignition Transformer 3. HT Cable	14 Set
3.	Gas and Air Supply System to burner	1. Screwed Type butter fly valve with MS flapper and shaft. 2. Air flexible hose with end connection 3. Limiting orifice valve 4. Gas solenoid valve 5. Ball valve 6. Portable manometer	14 Set
5.	Blower	1. Blower with Impeller and direct drive motor. 2. Butterfly valve for blower. 3. Low air pressure switch.	02 Set (1W + 1S)
6.	Gas train Assembly	1. Inlet Manual Shut off valve 2. Inlet gas pressure guage 3. Gas Filter 4. Safety shut off Valve 5. Gas Governor 6. High/Low Gas Pressure Switches 7. Safety relief valve 8. Outlet pressure Gauges 9. Gas flow meter 10. Valve Proving System 11. Solenoid Valve (Fast Opening) 12. Solenoid Valve (Slow Opening) 13. Wall Mounted Gas Train Control Box	01 Set

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7.	PID based Burner Control Panel to suit the above requirements	1. Safety interlocks circuit interfacing with burner control units 2. Purging circuit 3. Programmable PID Controller. 4. 12 Point Strip chart Recorder 5. Indicators and other switchgear items. 6. Temperature controllers for furnace over temperature safety.	01 Set
8.	Air/Gas Ratio Control	1. Air/Gas Ratio Regulator 2. Air Pressure Guage 3. Inlet Gas Pressure Guage 4. Outlet Gas Pressure Guage 5. Air Zone Control Valve 6. Modulating Motor 7. Linkages with Mounting Bracket 8. Manual Shut off valves	3 Sets
9.	Miscellaneous items	1. Control cables from panel to Burner box along with all wiring accessories.	
10.	Thermocouple (R Type Duplex) with required compensating cables (Length-500 Mtr. Minimum)		05 Nos.

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ANNEXURE-III

APPROVED MAKE OF ITEMS

Sl. No.	Item Description	Make	Bidder to indicate make in tech bid
1	Burner	Wesman/Krom Schroder/ Bloom/ Eclipse	
2	Burner Block	Wesman / Krom Schorder/ Bloom/ Eclipse	
3	Metering Orifice For Gas	Wesman/ Krom Schorder /Unison/ Eclipse	
4	Metering Orifice For Air	Wesman/ Kromschroder/ Unison/ Eclipse	
5	Adjustable Limiting Orifice Valve	Wesman/ Kromschroder/ Honeywell/ Eclipse	
6	Gas Solenoid Valve	Honeywell/ Asco/ Krom Schroder / Madas/ Dungs	
7	Manual Shut off Valve	Audco / Kromschroder/Leader/ Spirax	
8	Air Gas Ratio Regulator	Wesman / Kromschroder /Elster/ Leader/ Eclipse	
9	Pressure Gauge	Fiebig/ Waaree/ H.guru / Krom Schorder /Forbes Marshall/ Calcon	
10	Manual Shut off Valve for Air Gas Ratio Regulator Bye Pass	Audco / Kromschroder / Honeywell /Wesman/ Unison/ Eclipse	
11	Butterfly Valve For Combustion Air	Wesman / Kromschroder /Elster/ Leader/ Eclipse	
12	Air Flexible Hose	Libra Flex / Wesman/ Kromschroder	
13	Combustion Blower	Nadi / ABB/ Wesman/ Flakt	
14	Motor For Blower	Siemens/ ABB/ Kirloskar / Marathan	
15	Wafer style Butterfly Valve	Honeywell /Wesman/Kromschroder /Elster/ Eclipse	
16	Air Pressure Limit Switch	Dungs/ Krom Schorder/ Honeywell/ Madas	
17	Flame relay	Honeywell / Krom Schorder/ Siemens/Wesman/ Eclipse	
18	U.V Sensor	Honeywell/ Krom Schorder/ Siemens /Philips/ Wesman	
19	Burner Sequence Controller	Kromschroder / Wesman/ Honeywell/Siemens / Microcub/ Eclipse	
20	Ignition Transformer	Honeywell / Krom Schorder/ Beru/ Denfos/Wesman/ Eclipse	
21	Burner Control Panel	Wesman/ Kromschroder/ Bloom/ Siemens/ Eclipse	

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Sl. No.	Item Description	Make	Bidder to indicate make in tech bid
22	Manual Gas Shut Off Valve	Audco /Krom Schorder /Honeywell / Leader/Wesman/ Unison	
23	Gas Filter	Dungs / Fitro / Krom Schorder/ Madas	
24	Auto reset Safety shut off Valve with Open Close Indicator	Honeywell/ Krom Schorder/ Madas / Elster/ Eclipse	
25	Gas Governor	Equimeter / Krom Schorder/ Fisher / Elster/ Madas/ Eclipse	
26	Gas Pressure Limit Switch	Dungs/ Krom Schorder/ Honeywell /Elster/ Madas	
27	Gas Shut off Valve	Asco / Electro Gas/ Dungs / Krom Schorder/ Madas / Elster	
28	Recorder	Chino/ Yokogawa/ Eurotherm/ Honeywell	
29	Gas flow-meter	Kent/ Elster/ Krom Schorder/ ABB/ Rockwin /Foxboro/Honeywell	
30	Modulating Motor	Honeywell/ Electroprofessional	
31	Thermocouple	Eleind/Waaree/Rajput/Temcon/Tempsens	

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