



EPD - BANGALORE

**Purchase Specification For
1 Ton Gas Fired Boiler****SPECIFICATION NO.
EP-WEX-GFB/2013-14****Technical specification for 1 Ton Gas Fired Boiler**

<u>DESCRIPTION</u>			
1	Boiler should be Horizontal, shell type fully packaged 3-pass smoke tube, fully wet back, automatically controlled, with mono-bloc gas burner capable of firing LPG / Natural gas, Skid mounted		
2	Boiler should be complete with all mountings, accessories, controls etc.,		
3	Boiler construction should be in accordance with the latest revision of Indian Boiler Regulations 1950, Act 1923 applicable. All materials used should be approved and tested as per relevant existing codes. All the welded joints should be as per code requirement		
4	Boiler should be designed and constructed to generate steam at efficiency of 89 +/- 1% on net calorific value (NCV) basis. Efficiency should be demonstrated as per standard BS - 845 part 1 indirect method.		
<u>TECHNICAL SPECIFICATION</u>			
1	Design Code/Approval		IBR
2	Capacity [steam output F&A 100°C]	kg/h	MINIMUM 1000
3	Design Pressure [Safety valve set pressure]	kg/cm ² (g)	10.54
4	Fuel		NG/LPG
5	NCV of fuel considered -NG	kcal/NM ³	8500
6	NCV of fuel considered -LPG	kcal/kg	11000
7	Thermal Efficiency on NCV basis[%]		89 +/- 1%
8	Fuel consumption at maximum output - NG	Nm ³ /h	Bidder to quote
9	Fuel consumption at maximum output - LPG	kg/h	Bidder to quote
10	Fuel supply rate - pressure and flow rate	m bar & kg/hr	Bidder to quote
11	Electric Supply	AC, 3Phase, 415+/-5%V, 50+/-3% HZ, 4 Wire System	
12	Feed water pump motor	kw	Bidder to quote
13	Combustion air fan motor	kw	Bidder to quote
14	Heating surface area - Boiler -	M ²	Bidder to quote
15	Length	mm	Bidder to quote



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16	Width	mm	Bidder to quote
17	Height	mm	Bidder to quote
18	Approx. Dry weight	Kgs	Bidder to quote
19	Flooded weight	Kgs	Bidder to quote
20	Burner turn down time	Seconds	Bidder to quote
21	Safety valve (inlet/Outlet) size	mm	Bidder to quote
22	Quantity of safety valves - 2nos	Nos	Bidder to quote
23	Main stop valve size	NB	Bidder to quote
24	Blow down valve size	NB	Bidder to quote
25	Auxiliary valve size	NB	Bidder to quote
26	Water level gauge - Twin column type, size	NB	Bidder to quote
27	Flue gas outlet flange - dimensions	mm	Recommended
28	Flue gas duct dia	mm	Recommended
29	Feed water pump type/make vertical multistage stainless steel centrifugal pump		Bidder to quote
30	Feed water pump head	meter WC	Bidder to quote
31	Feed water flow	LPH	Bidder to quote
32	Total connected load	kw	Bidder to quote
33	Chimney height. (It is proposed to use existing chimney of dimension dia 0.4 meter and height 10 meter)	meter	Bidder to confirm suitability
34	Insulation on boiler		By supplier
35	Control cabling from control panel to boiler mounting instruments		By supplier
36	Power cabling from control panel to all drive motors for boiler		By supplier
37	Cable tray for above cabling		By supplier



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38	Structural supports for cabling tray		By supplier
39	Type of foundation		To be mentioned
40	Foundation for feed water pump		To be mentioned

Prefferd Make of bought out components

1	Burner - Mono-bloc	Riello / Ecoflam / Nuway / Weishaupt / Saacke	To be mentioned
2	Feed water pump	Wilo / Grundfoss / KSB / Salmson	To be mentioned
3	Blower	Burner Manufacturer's standard	To be mentioned
4	Sequence controller	Burner Manufacturer's standard	To be mentioned
5	Photocell	Burner Manufacturer's standard	To be mentioned
6	Mobrey Level controller	Malhotra	To be mentioned
7	Pressure gauges	Forbes Marshall / Fiebeg	To be mentioned
8	Electrical switch gears	Siemens / L&T / ABB / Schneider	To be mentioned
9	Cables	Polycab / Finolex	To be mentioned
10	MCB	Siemens / L&T	To be mentioned
11	Pressure switches	Indfoss	To be mentioned
12	Water Level indicator	Teleflo / Tectrol / Leader	To be mentioned
13	Main steam stop valve & Mobrey Isolation valve	Forbes Marshall / Uniklinger / BDK / Leader	To be mentioned
14	Steam and Water valves	Forbes Marshall / Uniklinger / BDK / Leader	To be mentioned
15	Safety valve	Fainger Lesser / Sempell / Leader	To be mentioned



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16	Blow down valve	Levcon / Leader	To be mentioned
17	Non Return valve	Spirax Marshall / Leader	To be mentioned
18	Fusible plugs		To be mentioned

SCOPE OF SUPPLY

1	Gas fired package boiler complete with all accessories as specified such as fuel system, FD fan, boiler mountings, motors, starters, etc. Foundation bolts for all items to be supplied	By supplier
2	Two no.s feed water pump of adequate capacity and rating complete with motor, stators etc.,	By supplier
3	Gas Train to regulate the Gas Pressure from 2 bar to 100-150 mbar.	By supplier
4	Details of instrumentation to be provided in technical offer	By supplier
5	Inter connecting piping, fittings etc.,	By supplier
6	Inter connected power & control wiring and instrument tubing etc.,	By supplier
7	Items required for installation, commissioning & start up of boiler	By supplier
8	Accessories -List to be provided	To be mentioned
9	Mountings & Fittings - List to be provided	To be mentioned
10	Drawings and Test certificates - After placement of P.O. and at the time of commissioning conformation to be provided.	To be mentioned

SERVICES

1	Supervision of Erection & Commissioning.	By supplier
2	IBR Approval of boiler upto provisional firing order.	By supplier
3	All IBR formalities at site and its registration and expenses involved thereof. To be quoted separately.	By supplier



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1	The boiler should be guaranteed for trouble free operation for a period of 1 year from the date of handing over.	By supplier
2	Performance guarantee runs should be conducted as per BS 845 part1 -1987 indirect test method after one month of continuous trouble free operation	By supplier
3	Any defect due to faulty material / bad workmanship should be rectified free of cost to the entire satisfaction of the purchaser.	By supplier

CONTROLS AND SAFETIES

			To be mentioned
1	Pressure switch	2 or 3 nos	For firing positions of burner
2	Photo resistant cell	1no	Flame failure and audio visual alarm
3	Sequence controller	1no	To control sequence of firing, pre-purging, etc.,
4	Modulating mechanism	1no	Stepped / three stage modulation
5	Low gas pressure switch	1no	To trip burner with audio visual alarm
6	Water level controller	2nos	To regulate feed water pump operation and trip burner in case of low level with audio visual alarm

SAFETY INTERLOCKS

	Unsafe condition	Instrument	Action
1	High water level	Level controller no.1	Feed pump trip
2	Low water level	Level controller no.1	Alarm & burner shut down
3	Extra low water level	Level controller no.2 (Overriding controller)	Alarm & lock-out
4	Flame failure	Photo cell	Alarm & burner trip
5	Boiler high pressure	Safety valves - Twin type	Lift & discharge

ADDITIONAL SAFETY FEATURES

1	Fusible plugs	2nos	To Discharge high temperature
2	Peep hole for monitoring flame - front and back side	2nos	To view
3	Explosion door	1 or 2 nos	To Discharge high pressure gas



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INSTRUMENTATION

1	Water level controllers	2nos	For feed water operation and low water level alarm
2	Over-ride controller	1no	for lock-out under extra low water level alarm
3	Steam pressure gauge with cock	1no	For display of boiler steam pressure
4	Water level gauge assembly	2nos	For display of water level in the boiler
5	Switch gears, relays, connectors	1set	For individual controls of equipment through control panel
6	Audio / visual alarm	1set	In case of unsafe operation for lock-out under extreme conditions
7	Pressure and temp. gauge with thermostat	1set	For burner operation
8	Control panel	1no	For housing above instruments and switch gears
9	Steam to fuel ratio monitoring system	1no	To monitor and display the boiler efficiency on-line, using necessary meters, instrumentation and hardware

BATTERY LIMITS -SUGGESTED

1	Feed water: Inlet of feed water pump
2	Steam: Outlet of main steam stop valve
3	Steam: Outlet flange of steam safety valve
4	Fuel: Inlet of gas train
5	Flue gas: Inlet of chimney
6	Electrical power: Inlet of control panel

EXCLUSIONS - TOBE INDICATED



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Qualification criterion:

Sl.No	BHEL Standard Terms & Conditions	Supplier's confirmation Yes / No	If Yes , Documentary Evidence provided for Compliance
1	<i>The vendor shall be an Original Equipment Manufacturer (OEM).Dealers have to submit authorization certificate from OEM</i>		
2	<i>The vendor shall have qualified personnel, their own adequate manufacturing / integrating and testing facilities for the equipment offered.</i>		
3	<i>The vendor shall have proven track record for manufacturing, supplying and successful commissioning of IBR boilers , in the last 2 years</i>		
4	<i>The vendor shall submit audited balance sheet or tax returns or profit loss account for the last 3 years</i>		