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500 Kg/hr. VERTICAL SEMI INDUSTRIAL BOILER WITH WOOD FIRED

ANEXURE-1:- BOILERS PHOTO WITH INTRODUCTION SIB-VX (VERTICAL SINGLE PASS WOOD FIRED)



PRODUCTS FEATURES.

This is single pass dry back smoke tube type vertical steam boilers.
Compact Skid mounted Pre-wired Pre-insulated Plug & Play unit: Compared to conventional boilers occupies very low foot print area
Advantage in S-IBR range: Relaxed norms. Eliminates need for certified boiler operators.
Compatible to condensate recovery: Accepts 100% condensate ensuring optimizing energy Utilization and Innovative steam separation mechanism. Simple and in expensive to install.



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OPERATING RANGE:

- Capacity : 100 kg/hr to 500 kg/hr.
- Pressure : 7.00 kg/cm²
- Firing fuels : coal/wood/gas/oil/Ele. Power.

ANEXURE-2:-COMMENT & CLARIFICATION

- 1) As desired by you we have offered one No. vertical, Smoke tube type, single pass dry Back boiler of 0.4 TPH (F & A 100° C), 7.00 Kg/cm² Steam pressure.
Capable of firing: - wood, lignite.
- 2) We have considered the fuel analysis with us and given in design data for Reference. If there is any change do let us know to design accordingly.
- 3) Please note that the design parameters for the equipments furnished in This Offer is Prediction only and does not constitute any guarantee. These may Change during project Execution without affecting the boilers Performance Parameters.

ANEXURE-3:- DESIGN DATA

Capacity F & A 100° C	400 kg / hr
MAIN SHELL	
Main Shell Diameter (OD)	835 mm
Total Height of Main Shell	1525 mm
Thickness of Main Shell Plate	10 mm Tube Type
Thickness of Tube Plate Man hole	16 mm
No. of Man hole	1 No
Size of Man Hole Frame	200 mm
Thickness of Man Hole Cover	16 mm
EXPANDED AND WELDED TUBES	
Size of Tube (OD)	63.5 mm
Thickness of Tube	3.66 mm
Total Length of 1 st Pass Tube	1524 mm
Tube 2 nd Pass	61 No
Full Water Area	485 Liter
H.T.A.	18.50 M ²
Great Area	0.8 M ²



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ANEXURE-4:-TECHNICAL DATA SHEET

Type of Boiler	Vertical Stationary DB Packge Type
Model	SIB-VX/400
Design Code	IBR 1950
Max Evap Cap & A. 100°C	400 Kg / hr
Inspecting Authority	CIB Gujarat State
Safety Valve Pressure	7.00 Kg / CM ²
Steam Condition	Dry Saturated
Thermal Efficiency (GCV)	70% + & -2
Flue GAS Temperture	220° C
Flue GAS Opening	200 mm
Water Pump	3-HP
Flow of Pump	1.0 M ³ /HR
Maximum Pressure of Pump	16 Kg / CM ²
I.D. Fan Air Flow	2-H.P.
Air Flow	2060 M ³ /mim
Air Pressure and Temperture	200 mm WG @ 250°C
Total Loading	5-HP
Fuel Counsumption on GCV	
Wood	96.42 Kg / hr
Lignite	102.85 Kg / hr
Overall Dimension	
Length	2000 mm
Width	1300 mm
Heigth	1500 mm



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ANEXURE-5:-WATER & FUEL QUALITY REQUIREMENT

Characteristics	Limit	Unit	Specification
Feed Water			
Total Hardness (as CaCO3)	Max	Mg / tr	5.0
PH Value			8.5 to 9.5
Dissolved Oxygen	Max	Mg / tr	0.02
Silica (as SiO2)	Max	Mg / tr	5.0
Boiler Water			
Total Hardness (of Filtered Sample) (as CaCO3)		Mg / tr	Not Detectable
Total Alkalinity (as CaCO3)	Max	Mg / tr	300
Casutic Alkalinity (as CaCO3)	Max	Mg / tr	150
Ph Value			11.0 to 12.0
Residual Sodium Sulphite (as Na2SO3)		Mg / tr	20 to 30
Residual Hydrazine (as N2N4)		Mg / tr	0.1 to 0.5
Phosphates (as PO4) (if added)		Mg / tr	15 to 30
Total Dissolved Solids	Max	Mg / tr	3500
Silica (as SiO2)		Mg / tr	15.0
Total alkalinity should preferably be about 20% of total dissolved salts.			
Shall not apply if reducing agents other than sodium sulphite are used.			
Recommended Fuel			
Fixed Carbon	More Than 35 %		
Voltile Content	Less Than 30 %		
ASH Content	Less Than 25 %		
Gross Calorific Value			
Wood	3200 Kcal / Kg		
Lignite	3000 Kcal / Kg		
Size of Solid Fuel			
10 mm to 40 mm	More Than 85 %		
3 mm to 12 mm	Less Than 10 %		
Less Than 3 mm	Less Than 5 %		



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ANEXURE-6 :-SCOPE OF WORK & SUPPLY

❖ Scope of Work

- Complete Engineering and preparation of all data, drawing, calculation etc. as required for boiler and its auxiliaries, which are under BBPL Scope of Supply.
- Co-ordination of inspection with Director of Boiler for Engineering and manufacturing of boilers certification at Gujarat State.

❖ Scope of Supply for Main Boiler

1) Boiler

- Main boiler shell with internal furnace and Stay tube.
- Plain grate fir bar fitted inside of furnace.
- Boilers Internal and external.

2) Feed Water Systems

- Boiler feed water pumps (1 No's) complete with Coupling, Base frame and Electric motor arrangements.

3) Draught Systems

- One No. I.D. Fan designed for 100% MCR with Suitable Electric Motor, V-belt, and Pulley.
- One No manually operated damper for I.D. Fan.

4) Valves & Mountings

- Main Steam Stop Valve : - 1 Nos.
- Air Vent Valve. : - 1 Nos.
- Angle Type Single Post Spring Loaded Safety Valve : - 2 Nos
- Gauge Glass Column with Protecting Goggles. : - 2 Nos
- Feed Check Valves in Feed Water Line. : - 1 Nos
- Blow Down Valve. : - 1 Nos
- Steam Pressure Indicator with Siphon. : - 1 Nos

5) Electric Control Panel

Every Control is pre-wired and undergoes and extensive functional test. Control Panel consists of isolator switch main fuses, for all motors contactors, timer volt meters, ammeter, indicating lamps, hooter, control voltage transformer, pressure switch, stack temperature controller, and audio visual alarm for abnormal working conditions are pre wired by means of cable duct wiring.



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ANEXURE-7 :-TERMINAL POINTS

Feed Water Line	Inlet of Feed Pump Outlet of Feed Pump
Inlet of Boiler Feed check Valve	
Steam	Outlet of Main Steam Stop Valve
Blow Down / Drains	Outlet of Respective Blow down Conection
Exhaust Steam / Air vent	Up to Safe Elevation above the Roof
Fuel	Inlet of Fuel in Firing Door
ASH	Outlet Flange of ASH Discharge Valve on Boiler and Dust Collector
Air & Flue GAS	Inlet / Outlet of Boiler MDC, ID Fan, Chimney etc.
Electrical LT Motors	Inlet & Outlet Terminals of Boilers Panel. Terminal Points of Individual Motor.



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ANEXURE-8: EXCLUSIONS

The following are EXCLUDED from this scope of supply:-

- 1) Main chimney, water tanks, water treatment plant.
- 2) Steam and feed water piping, drain and blow down connections.
- 3) Structure for equipments, platforms, ladders, complete air & flue gas ducting.
- 4) Control and power cables, earthing etc.
- 5) Civil work, red bricks, sand, cement required for boiler installation.
- 6) Refractory material, Furnace structure material etc.
- 7) All insulation / lagging wherever required.
- 8) Erection & commissioning of boiler and other equipments, Skilled & Unskilled labour, tools & tackles, Consumables like electrodes, gas etc.
- 9) Fuel storage bunker, Fuel / Ash conveyor / handling system.
- 10) IBR Inspection, registration and approval at site.
- 11) Insurance, Octroi, Unloading and Storage at site.
- 12) First fill of lubricants, chemical & final cleaning and painting at site.
- 13) Boarding and lodging of our staff at site.
- 14) Any other item not specifically mentioned in this offer.