



Sardhana Papers Pvt. Ltd.

Regd. Off. & Works :

Meerut Road,
SARDHANA-250 342 (Meerut)
+91 9319801326
+91 8191001926
E-mail : sardhanapapers@gmail.com
CIN No. : U21011UP1985PTC007097

Ref. No.

Date.....**26.03.2024**.....

To,
M/s Industrial Boilers Ltd.,
225-1/B,226,227,228,
Vapi Industrial Twonship,
G.I.D.C., Vapi-393195

Sub.: Purchase Order for High Pressure Boiler having Reciprocating Grate.

Dear Sir,

In reference to your offer No- IB/D/Q1140/24 dated 23.03.2024, we hereby confirm a purchase order for a High Pressure Boiler having Reciprocating Grate.

The Boiler is designed to operate with 100% RDF. However, the Steam pressure and Temperature will fluctuate depending on the RDF Quality:

We are also enclosing herewith a copy of offer.

**Thanking You
For Sardhana Papers Pvt Ltd**

(Auth. Signatory)



INDUSTRIAL BOILERS LTD.

79-80, Satkar,
Nehru Place,
New Delhi - 110 019
Tel : 26453194 / 95
Fax : +91 11 26453197
Email : rkjauhari@indboilers.com

Ref: IB/D/Q1140/24
Dt. : 23rd March. 2024.

Shri Sanjay Rasogi Ji,
M/s Sardhana Papers Pvt. Ltd.,
Sardhana

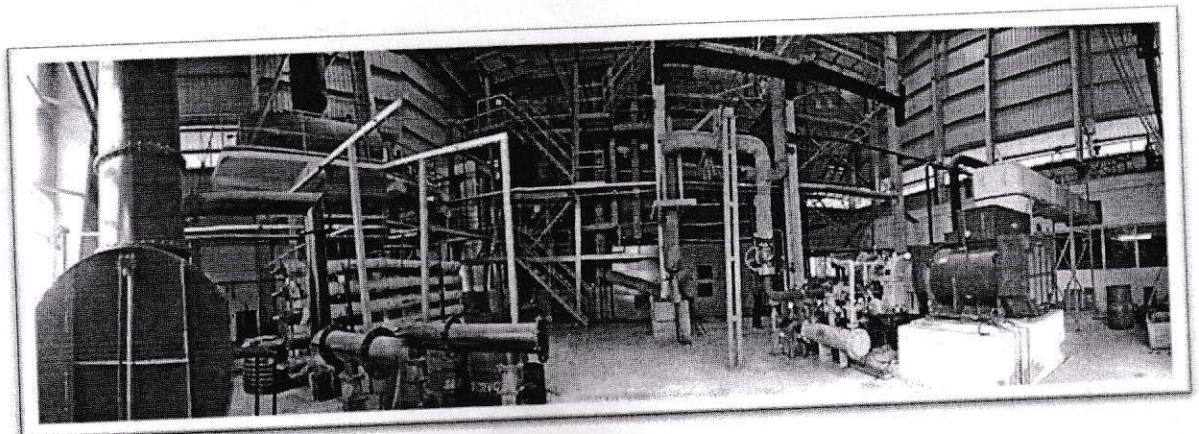
Dear Sir,
As desired by you please find attached herewith our offer for a High Pressure Boiler having Reciprocating Grate.

The Boiler is designed to operate with 100% RDF. However, the Steam pressure and Temperature will fluctuate depending on the RDF Quality.

Fuels: RDF / Parali / Cane Trash / Mustard Husk / Wood Chips / Rice Husk / Bagasse

While designing the system, we have assumed the following data:-

Boiler Capacity (From 120°C)	40000 Kg/hr (MCR)
Steam Temperature at Boiler Outlet	450°C On RDF
Super Heater Outlet Pressure	64 Kg/cm ²



For the purpose of Clarity and simplification our quotation is grouped separately as follows.

BOILER DATA

Design Data	Annexure - I
Scope of Supply.	Annexure - II
Exclusion	Annexure - III
Technical Specification	Annexure - IV

COMMERCIAL DATA

Techno Commercial Offer	Annexure - VII
General Terms & Conditions.	Annexure - VIII

We hope you will find this offer in line with your requirement. In case you require any further information please feel free to contact us.

Thanking you,

for **INDUSTRIAL BOILERS LTD.**

R K Jauhari
Vice President - Marketing
Mob:09350169002

**ANNEXURE - I
BOILER DESIGN DATA****Boiler parameters at Maximum Continuous Rating :-**

Steam flow at Superheater outlet	40000 kg/hr
Steam pressure at Superheater outlet	65 kg/cm ² (g)
Steam temp. at outlet	450 +/- 10°C
Feed water temp. at inlet to Economiser	120°C

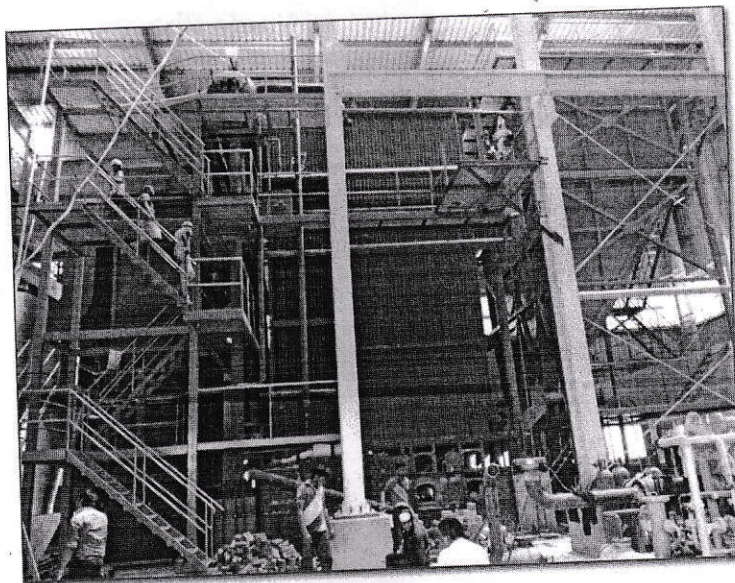
The Type of Boiler selected is :-

Location	Indoor
Type	Single Drum Water Tube
Combustion system	Reciprocating Grate
Draft system	Balanced draft
Support	Bottom supported on RCC construction.

Fuel Specifications

Fuels: RDF/Parali/Cane Trash/Mustard Husk/Wood Chips/Rice Husk/Bagasse

GCV	2250 - 3000 Kcal/Kg
Moisture	Bagasse - 40%
Ash and Impurities	< 6 %



Site Conditions :-

Ambient temp (for design)	40°C
Relative humidity (for design)	60%
Wind load	As per IS 875
Seismic coefficient	As per IS 1893

Codes & Standards :-

Pressure parts amendments.	As per IBR with its latest
Non pressure parts Practice.	As per our Standard Engineering
Boiler Thermal Efficiency	As per BS 845 Part I, Indirect method.
Radiation loss chart	As per standard ABMA radiation loss

Utility Requirements :-**Electrical Requirements for Motors**

Voltage	415 ± 6% V
Frequency	50 ± 3% Hz
Phase	3 phase, 4 wire

Electrical Requirements for Instrumentation and Panel

Voltage	230 V
Frequency	0 Hz
Phase	Single Phase

Instrument Air

Pressure	7.0 Kg/cm ² g
Quality	Dry, free from oil & dirt
Dew point temp.	- 15° C
Quantity	10 m ³ /hr

TOP FEATURES

Super High Efficiency Boiler

Low Thermal Inertia
Superfast Steamer

Fully welded design
No Expanded Tubes
No Leakage

Extra large Combustion zone
For complete burning of fuel

Choice of Fuel Combustion Systems
FBC, Brownian and Stoker

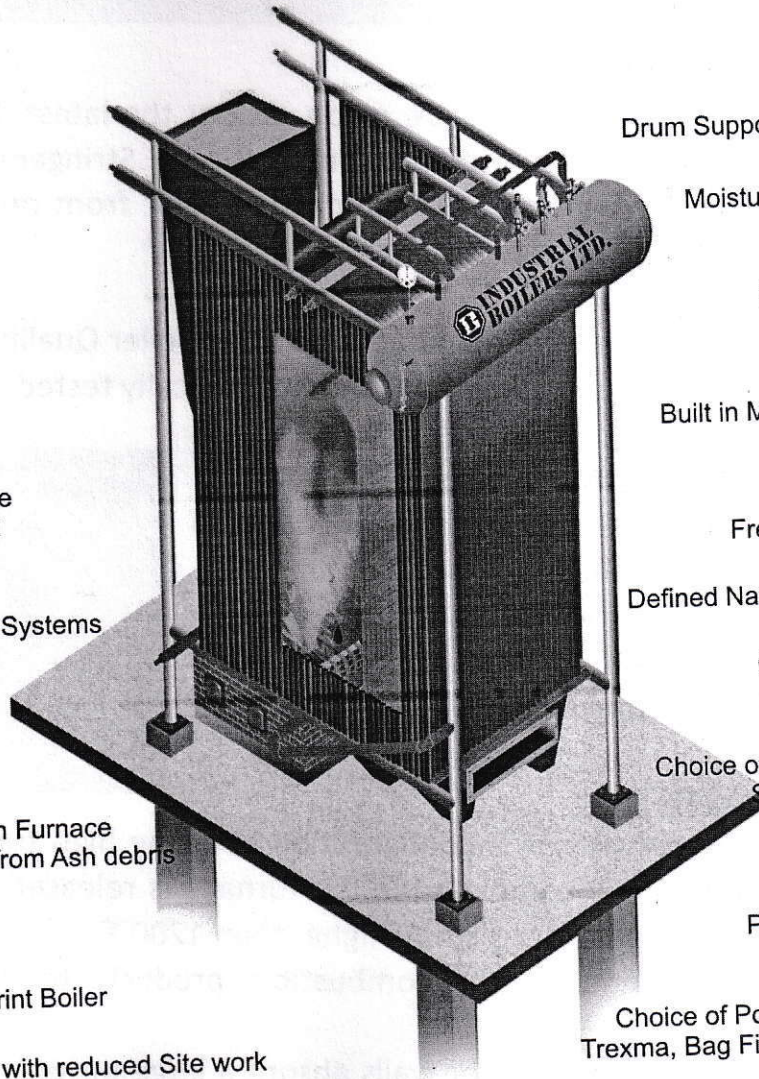
Bare Minimum Refractories

Ash settling Chamber within Furnace
Protects combustion zone from Ash debris

Floor Mounted Boiler

Space Saving, Low Foot Print Boiler

Factory assembled design with reduced Site work



Drum Supported on Downcomers

Moisture Separation Internal
within Drum

Defined Flue gas path
No Short Circuiting

Built in Multistage Superheater
with Attemporator

Freely expandable Boiler

Defined Natural Circulation Circuit

Choice of Feed Pumps
Centrifugal or Plunger

Choice of Boiler instrumentation
Standard, PLC, SCADA

Optional Air Preheater

Pressurised Economiser

Choice of Pollution Control Systems
Trexma, Bag Filter, Wet Scrubber, ESP

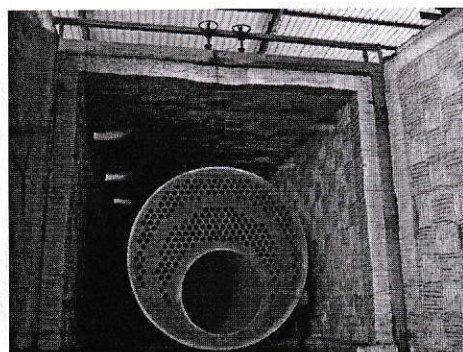
**ANNEXURE- II
SINGLE DRUM, WATER TUBE
SCOPE OF SUPPLY
MAGNUM**

CONSTRUCTION :

The Boilers offered by us are made as per the latest IBR Regulations and are of Class-I Fusion welded construction. Stringent quality control is observed at every stage of manufacture right from raw material stage to testing of Boiler prior to dispatch.

The pressure parts are manufactured from Boiler Quality Steel, fully welded construction, shell radiograph and hydraulically tested.

This drum is Stress Relieved and Heated Treated to 600 Deg C in a special Gas Fired furnace during the manufacturing stage. Headers are provided at the bottom alongwith down comers to form a natural water circulation circuit.



FLUE GAS PATHS :

The Boiler consists of a configuration enabling high turn down ratios. The combustion once completed in the furnace is released into the free board zone at a temperature slightly higher than 1200°C.

The furnace enables the combustible products to completely burn off completely.

Simultaneously, the water walls absorb a large proportion of the Radiation Energy.

The Hot gases then enter the Economiser where a major portion of the Convection heat is absorbed. On the Exit of the Economiser is a Heat Recovery Unit (Air Preheater)

Pollution Control equipment like Trexma Cyclones / ESP / Wet Scrubber / Bag Filter reduce the ash emission before the gases are ejected thru the ID fan and Chimney.

The Hot gases then reverse into the Superheater zone where the Primary and Secondary Superheaters bring down the flue gas temperature further before the gases move to the Convection Bank tubes.

STEAM DRUM :

The boiler consist of one Steam drum. This drum connects the various Heating Surface Sections within the Boiler. The drum incorporates a set of Drum Internals for separation of steam before their exit.

A Periodic Blow Down connection with an internal pipe is provided in the drum for removing the dissolved solids, mud and sludge during operation.

BOILER BANK TUBES :

Tubes of BS 3059 grade, Seamless, are used for the Boiler Bank. These consist of Water wall and Convection Bank.

SUPERHEATER TUBES :

The Superheater is divided into 2 stages.

In the primary stage, the tubes are of BS 3059 grade Pt.2.

The Secondary Stage incorporates Alloy Steel tubes of T- 22 materials.

The coils are joined and supported by Flexible elements permitting expansion in certain directions.

The Superheater is of Drainable type allowing longer life of the elements.

ECONOMISER BANK TUBES :

Tubes of BS 3059 grade, Seamless, are used for the Economizer Bank.

HEADERS, RISERS AND DOWNCOMERS :

These are made from extra thick Seamless pipes as per ASTM 106.

MOUNTINGS & FITTINGS ON THE STEAM DRUM :

One Air Vent Valve.

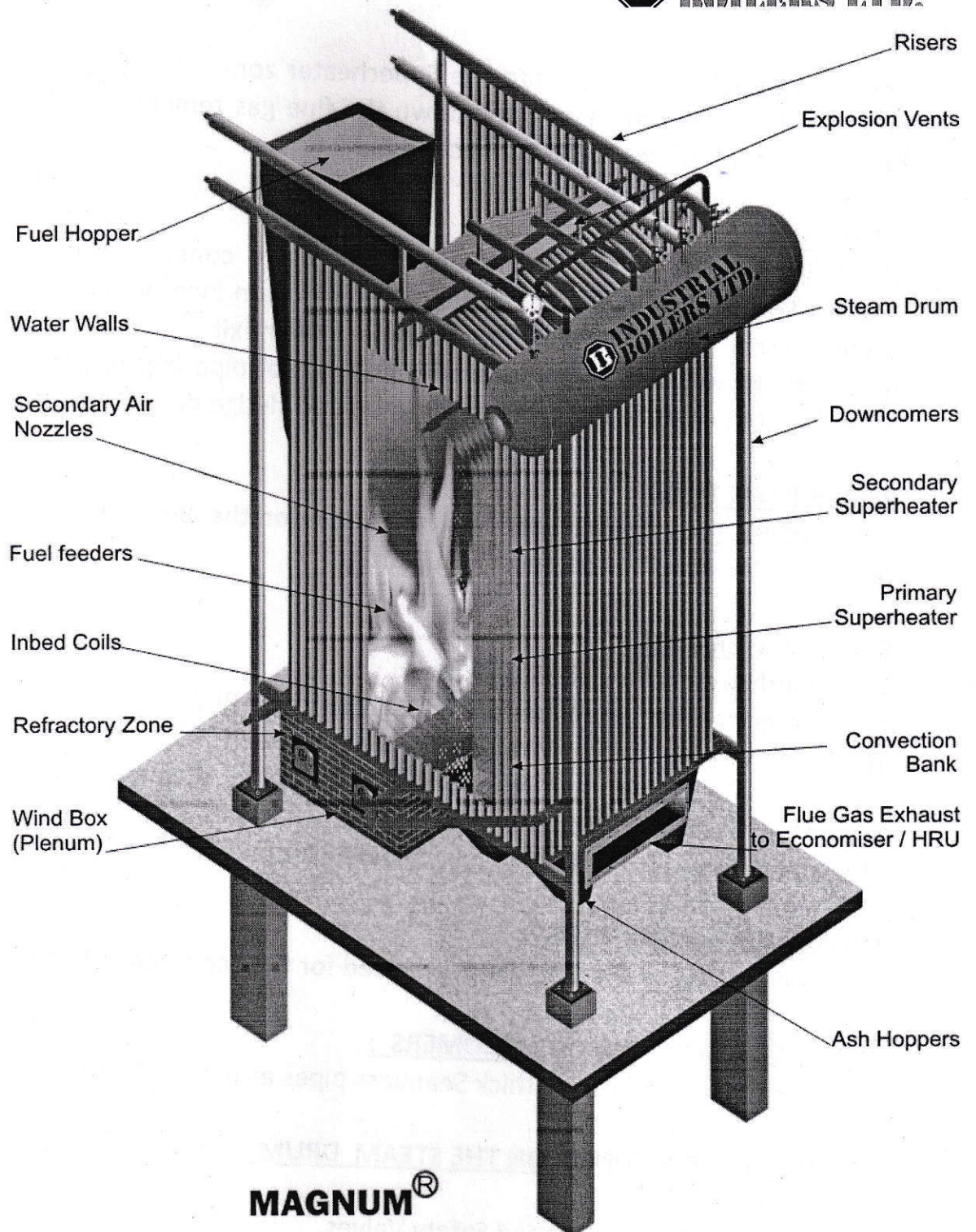
Two Single Post Spring Loaded Safety Valves.

Two Sets of Reflex Water Level Gauges.

One Pressure Gauge with Siphon and cock.

One Blowdown Valve.

One Feed and Check Valve.



MOUNTINGS & FITTINGS ON THE SUPERHEATER :

One Main Steam Stop Valve.
One Air Vent Valve.
One Single Post Spring Loaded Safety Valves.
One Pressure Gauge with Siphon and cock.
One Drain Valve.

MOUNTINGS & FITTINGS ON THE ECONOMISER :

One Feed and Check Valve.
One Air Vent Valve.
One Single Post Spring Loaded Safety Valve.
One Pressure Gauge with Siphon and cock.
One Drain Valve.

MOUNTINGS & FITTINGS CONNECTED ON THE WATER WALL HEADER :

Five Drain Valves.

FEED PUMPS :

Two numbers (One duty and One stand by) electrically driven Multistage Feed Pumps with motors will be provided. Make KSB

AUTOMATIC WATER LEVEL CONTROL :

Feed water regulating system to ensure correct water level in the Boiler. In case of extreme low water level an alarm is provided. The system consist of the following :

- A Three element level controller with a control valve to maintain the correct water level in the boiler drum.
- High & Low water level Annunciation system with an audio (Alarm) & visual indication is given.
- In case of extreme low water the boiler goes in a lock out condition and the an audio (Alarm) & visual indication is given.

FORCED DRAFT FAN WITH VFD :

Forced Draft Fan with drive motor will be provided.

INDUCED DRAFT FAN WITH VFD :

The Induced Draft Fan with drive motor will be provided.

CHEMICAL DOSING :

LP and HP dosing system will be provided.

The system is complete with necessary tank, motorised stirrer, dosing pumps and valves and fittings.

DEAERATOR :

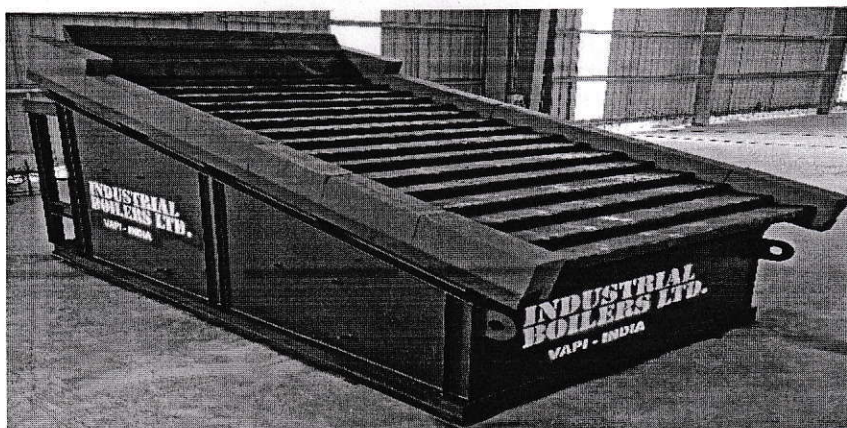
Deaerator Head and instrumentation will be provided. The scope includes controls for Temperature and Level. Deaerator tank is included in IBL Scope.

RECIPROCATING GRATE (COMBUSTION EQUIPMENT) :

3 Nos. Reciprocating Grate will be provided. The Grate will have individual Section and power cylinders to adjust the grate stroke and speed for the front, middle and rear. Furnace materials such as Heat Resistant Cast Iron Reciprocating Bars, Hydraulic Power Pack with Cylinders and Fire Doors and Ash Doors will be provided.



Considering the different variety and sizes of Fuel, the fuel is fed by the operation team directly onto a Conveyor. The fuel drops on to the Reciprocating Grate directly with specially designed Chutes. Excess Air is controlled accurately with Auto draft Control.



FURNACE APPROACH DOORS :

Fire Doors and Ash Doors will be provided. These doors will be of Cast Iron.

SAMPLE COOLERS

Four Nos. sample coolers for Boiler Water, Feed Water, Saturated Steam and Superheated steam.

AIR PRE HEATER

A Multi tubular Air Preheater having a cross flow of Air to flue gases is Provided.

SILENCER :

Three Silencers are provided for safety valves, Air vent will also be connected to one of these

POLLUTION CONTROL EQUIPMENT**PULSE JET BAG FILTER**

A Pulse Jet bag Filter will be provided.

The System consists of PTFE Impregnated Filter Bags, SS Cages with Aluminum Venturi Nozzle, Solenoid Valves, Sequence Controller. The Casing will be in MS Construction. Rotary Valves will be provided below the Bag Filter to remove the Ash.

DRY SCRUBBER

Dry Scrubber to mix the Hydrated Lime and Activated Carbon will be provided. A Rotary Valve below the Scrubber will remove the Chemical Mixed Ash from the Scrubber. Scrubber will be in MS Construction.

VENTURY DOSERS

2 Nos Venturi Dosers with PA Fan will be provided. These feeders will feed Hydrated Lime and Activated Carbon into the Flue Gases

CONTROL PANEL / MCC :

The panel consist of a sophisticated but user friendly circuit enabling the operator to run the boiler in automatic or manual mode as desired.

Various instruments and safety features are as detailed below:

In auto mode the boiler will operate all sequences automatically. The boiler can be also adjusted to start and stop automatically within a pressure range of 3 to 5 Kg/cm².

The Panel is lockable by a key to prevent unauthorised operation of the boiler. The MCC will be fixed (Non-Draw Out) type modular with single front and is suitable for indoor application. The cable entry will be from bottom. In the control panel Switches, Motors Starters, Indication Lamps, Control Fuses, Main Incoming Switch and Inter connecting wiring for the following is provided.

- F.D. Fan
- I. D. Fan
- Feed Pumps (2 Nos)
- Hydraulic Power Pack
- Rotary Airlock valves (6 Nos)
- Temperature indicators with selector switch.

Annunciation windows to show unhealthy operation for the following are provided:

- F.D. Fans Trip,
- I. D. Fan Trip,
- Power Pack
- Feed Pumps Trip,
- Drum Level Low

All motors of 10 HP and above will be provided with Microprocessor based Ammeter cum Relay. The features built into the device are :-

1. Over Current on any Phase
2. Under Current on any Phase
3. Phase Reversal
4. Unbalanced Current
5. Single Phasing Protection

OPTIONAL :**PLC PANEL**

A PLC based Boiler **Master Control System** can be provided at extra cost. The HMI interfaces with various Boiler parameters and Controls the boiler as well as indicates its performance.

The Following Loops are to be provided : -

PLC Based Control with Graphical User Interface Software

The following loops and Indications shall be covered :

Amongst the important Displays are :

1. Steam Flow
2. Totalised Steam Flow
3. Steam Pressure Control
4. Steam Temperature
5. Furnace Temperatures
6. Stack Temperature
7. Feed Water Temperature
8. Ambient Temp
9. Hot Air Temperature
10. 6 Two Element Drum Level Control
11. Feed Water Temp Control
12. Auto Draft Control by Controlling VFD on ID Fan

All field instruments required for Data acquisition for these displays will be provided by us



**ANNEXURE - III
EXCLUSIONS**

#	Water treatment plant, Feed water Tank.
#	All Feed Water Piping.
#	Main Chimney.
#	All Flue and Air Ducts.
#	Low Pressure Steam Pipe Line
#	High Pressure Steam Pipe Line
#	Steam Header for distribution of process steam
#	Blow down and Drain Piping from terminal Valves on the boiler.
#	Fuel Handling system – Conveyors, Elevator.
#	Ash Handling System with Silo
#	Refractory.
#	Insulation.
#	Structural Supports. Platform and Ladders.
#	Bunker, Ash Hoppers etc....
#	All Electrical cables.
#	Compressed Dry and Oil Free air Supply.
#	All Civil work and structural design work/Shed.
#	First fill of Lubricants and chemicals for boil out.
#	First fill and Flushing Oil for Turbine.
#	Painting at Site.
#	Condensate return system.
#	Pressure Reducing & Desuperheating Station.
#	IBR inspection / or any other Govt. inspection and registration at Site.
#	Erection of the Boiler and other accessories.
#	Hotel Accommodation for our Site Engineers.
#	All Taxes & Duties as applicable at the time of dispatch.
#	Any other item which is not specifically mentioned in the Offer.

ANNEXURE - IV
TECHNICAL SPECIFICATIONS OF MAGNUM BOILER
RECIPROCATING GRATE FIRED

Max. Continuous rating (MCR)	:	40,000 Kg/hr (From 120°C)
Type of Boiler	:	Single Drum
Model No.	:	MAGNUM - 400
Design Code	:	Indian Boiler Regulations
Design Pressure	:	75 Kg/cm ² g
Hydraulic Test Pressure	:	105 Kg/cm ² g
Feed water Temperature	:	120°C

Material Specifications :

Boiler Drum	:	ASTM 515/516 Gr 70
Headers	:	ASTM 106 Gr B Seamless
Boiler Tubes	:	BS 3059 Seamless
Superheater	:	BS 3059 and T-22 Seamless
Superheater	:	Special Material

F.D. Fan details : (For Reciprocating)

Type	:	Centrifugal Direct Drive
Motor	:	40 HP
CFM	:	20000
Pressure	:	225 mm
Qty.	:	3 Nos.

I.D. Fan details

Type	:	Centrifugal V- Belt Drive
Motor	:	300 HP
CFM	:	70000
Pressure	:	400 mm
Quantity	:	2 Nos.

Feed Pump details :

Type	:	Multistage
Flow	:	44 m ³ /hr
Head	:	80 Kg/cm ²
No. of pumps	:	2 Nos.

Velocity Profile :

Fluidised Bed	:	3 - 2 m/sec
Freeboard Zone	:	6 - 8 m/sec
Super Heater Bank	:	8 - 10 m/sec
Economizer Bank	:	8 - 10 m/sec
Gas Ducting	:	8 - 10 m/sec
Chimney	:	6 - 8 m/sec

Temperature Profile

Fluidised Bed	:	900 - 975°C
Furnace	:	1200 - 1400°C
After Economiser	:	160 - 180°C

MOUNTINGS & FITTINGS (STEAM DRUM) :

One Air Vent Valve.	:	25 mm
Two Single Post Safety Valves.	:	50 mm
Two Sets of Water level gauges.	:	20 mm
One Pressure gauge with siphon and cock.	:	15 mm
One Blow down valve.	:	40 mm
One Feed Stop valve.	:	100 mm
One Feed Check valve.	:	100 mm

MOUNTINGS & FITTINGS (SUPERHEATER) :

One Main Steam Stop Valve.	:	150 mm
One Air Vent Valve.	:	25 mm
One Single Post Safety Valve.	:	50 mm
One Pressure gauge with siphon and cock.	:	15 mm
One Blow down valve.	:	40 mm

MOUNTINGS & FITTINGS (ECONOMISER) :

One Air Vent Valve.	:	25 mm
One Single Post Safety Valve.	:	25 mm
One Pressure gauge with siphon and cock.	:	15 mm
One Blow down valve.	:	40 mm

MOUNTINGS & FITTINGS (WATER WALL HEADERS) :

Five Drain valves. : 25 mm

FEED WATER SPECIFICATIONS :

Deaerated and Demineralised water is recommended for the boiler.

Feed water should meet the following requirements.

Total Hardness mg/kg as CaCO_3	:	N.D.
pH value at 25°C	:	8.5 - 9.5
Dissolved Oxygen mg/kg as O_2	:	0.005 max
Iron, Copper and Nickel mg/kg	:	0.02 max
Oil Content	:	N.D.
TDS mg/kg	:	0.005 max

BOILER WATER SPECIFICATIONS :

Phosphates mg/kg as PO_4	:	15 - 30
Caustic Alkalinity mg/kg as CaCO_3	:	10 - 20
Silica mg/kg as SiO_2	:	5 max
Sodium Sulphate as Na_2SO_3	:	Not Recommended
Hydrazine mg/kg as N_2H_4	:	0.1 max
TDS mg/kg	:	200
Conductivity at 25°C $\mu\text{S/cm}$:	450

**ANNEXURE – VII
TECHNO COMMERCIAL OFFER**

DESCRIPTION	AMOUNT - Rs
Supply of One No. IBL, Water Tube, Single Drum, Model MAGNUM - 400 , Reciprocating Grate Fired Steam Boiler capable of generating 40000 Kg/hr of Steam (From 120°C) at the Outlet pressure 64 Kg/cm ² and Steam temperature of 450°C at Superheater outlet alongwith Air Pre Heater, Economiser, Reciprocating Grate and Fans.	FINAL PRICE Rs. 7,14,00,000/- Ex-Works Vapi.
PLC Based Control Panel	Included
Drives for ID & FD Fans	Included
Pollution Control System Consisting of Supply of Bag Filter with PTFE Impregnated Bags.	Rs. 2,01,00,000/- Ex-Works Vapi
Supervision of Erection	
Local Hotel, Conveyance and To and Fro Air Fare for all supervisors.	At actuals

Note :

Freight	-	Client Scope
Price Basis	-	Ex-works Vapi
Taxes & Duties	-	As applicable at the time of dispatch

for **INDUSTRIAL BOILERS LTD.**

MARKETING DIVISION

**ANNEXURE - VIII
GENERAL TERMS & CONDITIONS**

PRICE : The Prices quoted are Ex-works Vapi. Insurance, Freight, Taxes are extra. GST and Bank charges are also payable by you as applicable.

DELIVERY :

The delivery will be 5 - 6 months from the date of receipt of your technically and commercially clear order accompanied by necessary advance.

We are not responsible for any delay caused by extraneous circumstances or Acts of God beyond our control and cannot pay any damages or penalties on this account. The equipment ordered will be dispatched in lots. If required we can undertake the dispatch of the equipment on behalf of the buyer by road transport only to any destination given by the buyer on freight TO - PAY basis, on the clear understanding that we will not be liable for any damages whatsoever. The freight charges contracted by us on behalf of the buyer will be deemed as negotiated under the buyer's authority and therefore it shall be binding on the Buyer to make full payment.

WARRANTY :

Our products are warranted for a period of ONE YEAR from the date of dispatch, against any manufacturing defect or faulty workmanship reported in writing during the Warranty Period, The Warranty does not extend to consequential damages or losses. The Warranty is NULL & VOID if repairs and/or replacements are carried out without our consent in writing. It also does not cover bought-out items.

This warranty is not applicable if full payment has not been given to us.

CONFIDENTIALITY :

The client shall treat all quotations, drawings, data, technical information etc. received from Industrial Boilers Ltd. as strictly confidential and shall take all precautions necessary to prevent the unauthorised disclosure in part or parcel of any of the above mentioned, to any third party.

TERMS OF PAYMENT :

First 40% of the order value is payable as Advance with your firm order.

Second Advance 20% after 2 Month

The balance amount as per our Proforma Invoice, including all costs and levies, such as price increase if any, GST and Insurance charges etc. is payable before the materials are dispatched from our works.

Any delay in payment of advance will lead to delay in delivery of the equipment and we not be held liable to pay damages.

PLACE OF JURISDICTION

In the event of any dispute arising as a result of contracting to supply against this offer and quotation, the place of Jurisdiction will be Greater Bombay and no other place.

ARBITRATION

All disputes or differences whatsoever arising between the parties out of or relating to the construction, meaning and operation or effect of this contract or the breach thereof shall be settled by arbitration in accordance with the Rules of Arbitration of the Indian Council of Arbitration and the Award made in pursuance thereof shall be binding on both the parties.

All orders will only be accepted after the realisation after of the agreed advance which shall not be subject to any interest under any circumstances whatsoever. We however reserve the right to adjust such advance against any payments which might fall due because of delay in lifting of the ordered equipment or on account of incidental expenses incurred on buyer's behalf. An order placed with us cannot be canceled for any reason whatsoever without our consent in writing. Any cancellation of order without or consent will result in the forfeiture of Advance, without prejudice to our claim for compensation and other legal remedies.

Before effecting dispatch, your GST Registration Numbers both State and Central are to be intimated to us. It is to be clearly understood that for Inter State dispatches GST Declaration Form should be handed over to us at the time of taking delivery of the boiler. If you fail to do so, GST charges in full will be payable to us.

for **INDUSTRIAL BOILERS LTD.**

MARKETING DIVISION