FABCON
DESIGN & ENGINEERING (PVT) LTD.

BI-DRUM (BWB)

DESIGN & ENGINEEING

BI-DRUM BAGASSE FIRED **BOILERS**

BI-Drum Bagasse FIRED WATER TUBE (BWB)

Construction:

The boiler is provided with a rigid frame of steam drum and evaporator tubes supported on water drum. The construction is made such that tubes can freely expand to avoid any loadings due to temperature differences. The boiler and other parts will be all supported on a civil structure.

The steam drum is large sized in order to ensure enough hold up time for upset cases in boiler feed water control. The steam purity is guaranteed by a pre-separation of the water steam mixture in the rigid roof frame and by a special baffle and demister arrangement in the steam drum. The super heater coils are supported in the top frame of the boiler. All heating surfaces are easily accessible through inspection doors.

At super heater inlet long, retractable soot blower is installed. The evaporator and flue gas air preheaters are provided with standard rotatable soot blowers. The economizer above dust arrestor is provided with additional soot blowers.

The flue gas air preheater is installed between the boiler and the economizer. The air is flowing through the tubes is split in 2 sections. The lower section is for heating up the air to 200°C which needs to be fed to the dumping grate. The upper section is for heating up the over firing air which shall be injected in the furnace.

COMBUSTION AND FUEL:

The furnace is sized for a residence time of 2 seconds and furnace tubes are supported with refractory. (Option for membrane wall furnace is also available). All the heating surfaces are provided with sufficient spaces in between the tubes and ensured in its position to minimize the fouling and avoid any blocking.
The dumping grate is the standard supply with the boiler, however different combustion grate like pinhole grate, travelling grate and reciprocating grate can be accommodated in design.

AIR SYSTEM AND ASH SYSTEM

The combustion air is supplied by forced draft air fan. The furnace is controlled at vacuum pressure in top of furnace by Induced draft fan. Fuel after burning drops into the hopper at the bottom of grate. Ash accumulates on sliding gate. Remaining parts of ash called “fly ash” are filtered by the cyclone type dust filter and fall into hoppers of dust collector.

Control:

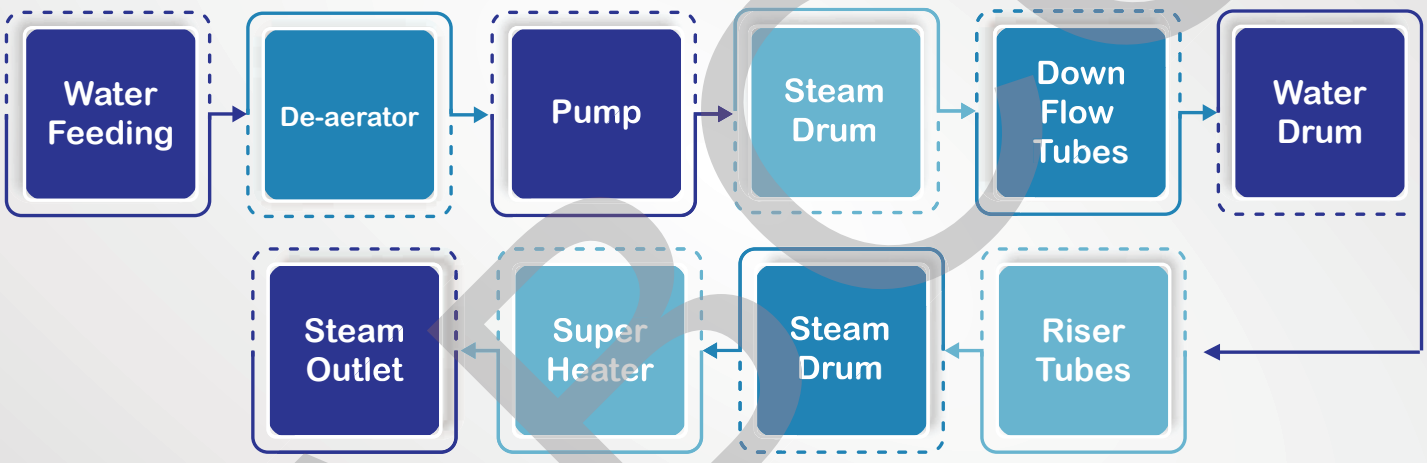
Our boiler is fitted with all necessary field instruments and control components supplied in form of control loops as mentioned below:

Three element drum level control (loop # 1): Three-element drum-level control is suited for handling variable feedwater pressure or multiple boilers with multiple feedwater pumps. The three elements in this system handle level, steam and feedwater flow.

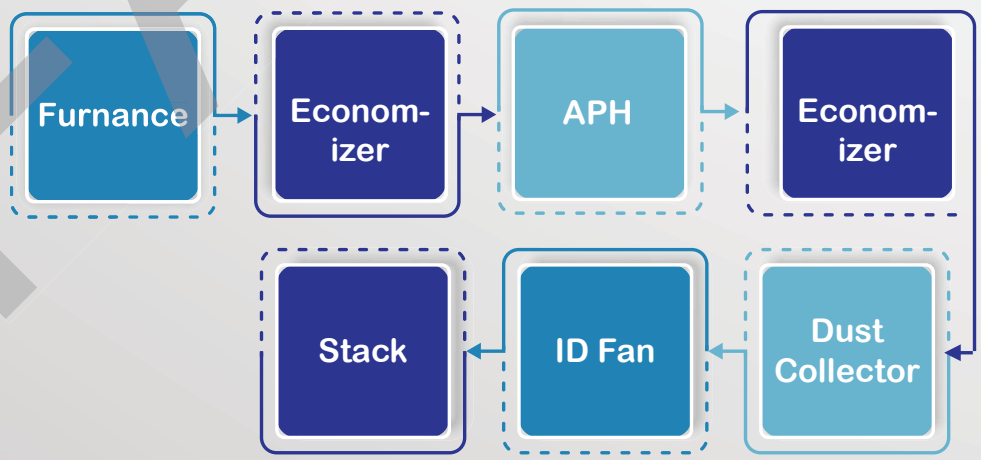
Steam pressure control (loop # 2): Modulating control improves boiler operation by monitoring the steam line to produce a continuous control signal that determines the fuel input.

Furnace- draft- control (loop # 3): Modulating control improves boiler operation by monitoring the furnace draft and produce a continuous control signal that determines the ID fan speed.

Water Scheme



Fuel Gas Scheme



Boiler Modules

Module / Parameter			BWSB/40-2.5	BWSB/50-2.5	BWSB/60-2.5	BWSB/80-2.5	BWSB/100-2.5	BWSB/120-2.5	BWSB/140-2.5
Rated capacity		**t/h**	**40**	**50**	**60**	**80**	**100**	**120**	**140**
Operation pressure		Mpa	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Steam temperature		C	350	350	350	350	350	350	350
Water-inlet temperature		C	105	105	105	105	105	105	105
Heating efficiency		%	82	82	82	82	82	82	82
Heating Area	Furnace	m^2	290	351	385	520	645	774	910
	Body	m^2	900	1125	1300	1860	2350	2820	3500
	Economizer	m^2	180	200	250	300	350	390	425
	Super heater	m^2	98	120	150	220	270	324	400
	Air Pre-Heater	m^2	1180	1470	1650	2100	2600	3120	3820
Area of Grate		m^2	23	24.5	26.25	39	46	56	65
Bagasse (LHV 1,750kcal/kg)		kg/h	17,200	21,500	25,800	34,400	43,000	51,600	60,200
Water supply	Capacity	m3/hr	47	58	70	93	116	139	162
	Motor power	kw	90	110	132	160	200	250	315
Force Draft Fan	Capacity	m3/h	58,667	73,333	100,800	131,940	156,000	187,200	252,000
	Motor power	kw	75	90	132	160	200	2 x 132	2 x 160
Over Firing Fan	Capacity	m3/h	24,000	30,000	36,000	54,000	72,000	86,400	60,000
	Motor power	kw	30	37	37	55	75	2 x 45	2 x 55
Spreader Fan	Capacity	m3/h	6,600	7,500	8,400	9,900	11,400	13,200	15,000
	Motor power	kw	37	37	45	45	55	55	2 x 45
Induced Draft Fan	Capacity	m3/h	162,667	203,333	261,000	348,000	435,000	522,000	696,000
	Motor power	kw	160	200	250	315	400	2 x 250	2 x 310

* Custom design for boiler capacity ranges from 20tph to 200tph at pressure ranges from 15 barg to 52 barg can be made by in-house.

Main Part Supply

Pre-Fabricated boiler panels delivered with

- Fuel Feeders
- Evaporator
- Insulator Layer
- Air Pre-heater
- Draft Fans
- BFW Pumps
- BFW Pumps
- Furnace Wall
- Super Heater
- Dumping Stoker
- Platform
- Inducing Fan
- Control Valves
- De-Aerator
- Steam Drum
- Down Commers
- Peeping Door
- Dust Collector
- Rotary Valves
- Safety Valves
- Air Ducts
- Water Drum
- Supporting Frames
- Economizer
- Soot Blowers
- Control Cabinet
- Mechanical Valves
- Flue Gas Ducts
- Steam Distribution header
- Stack

Advantages:

- Designed as per ASME code
- Site assembled module
- Economical civil works cost
- Cost efficient due to compact size
- Easy maintenance
- Membrane wall option available
- Ecologically efficient (Minimum NO_x and CO_2 emissions)
- High quality steam generation because of larger steam disintegrating area.
- Quick response of boiler for sudden steam demand because of larger thermal storage.
- Less refractory cost because of membrane walls, water cooled furnace.
- Useful for low pressure and medium pressure co-generation.

Suitable Module for:

- Chemical plants
- Sugar Industry
- Paper and Board Industry
- Co generation Power Plants

Get in Touch With Us:

www.fabconengg.com
info@fabconengg.com
+92 423 529 7123 22
+92 423 529 7121
227, Sundar Industrial Estate
Sundar Raiwind Road, Lahore.