

SINGLE DRUM WATER TUBE (BFBC BOILER)

Series of

BIOMASS | COAL FIRED BOILERS



PRODUCT INTRO

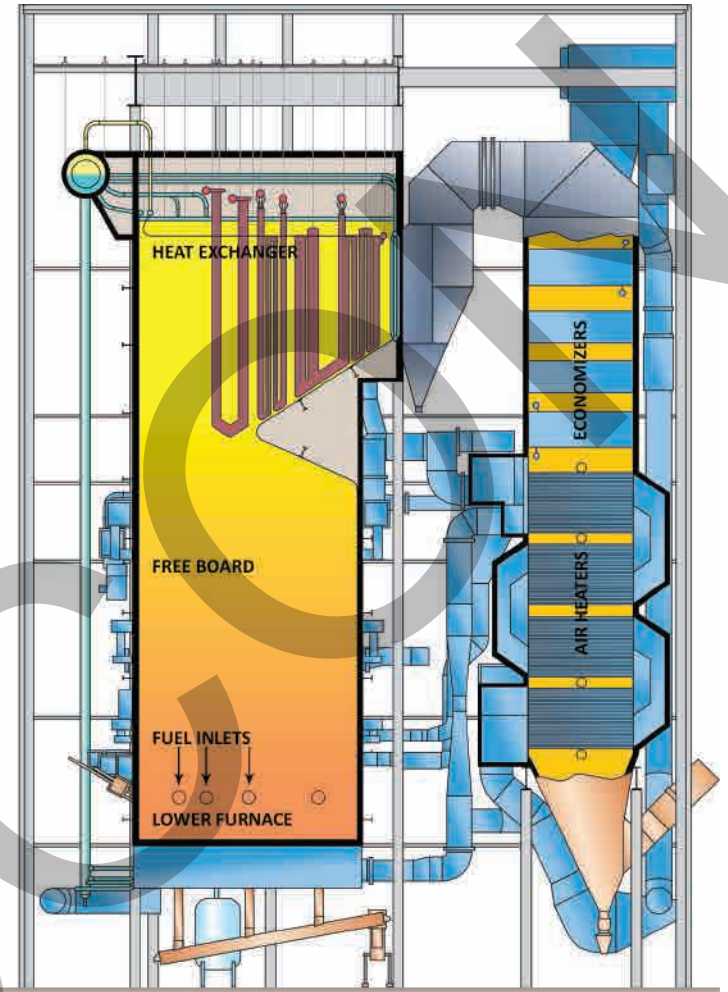
Fabcon manufactures biomass and coal fired boiler series to fulfill the requirement of steam and power in the industry. The furnace is specially designed to utilize the various fuel, which is coal, woody biomass like waste wood/construction waste, and industrial waste such as the tire derived fuel.

CONSTRUCTION

The “heavy duty” boiler is provided with a membrane wall construction which is water cooled and fully gastight. Those membrane walls are stiffened with buck-stays (beams) to bear the flue gas pressure in case of sudden increase and to avoid any vibrations. The boiler is a bottom supported natural circulating boiler with single drum and consisting of a rigid water-cooled frame for supporting the heating surfaces and steam drum.

COMBUSTION

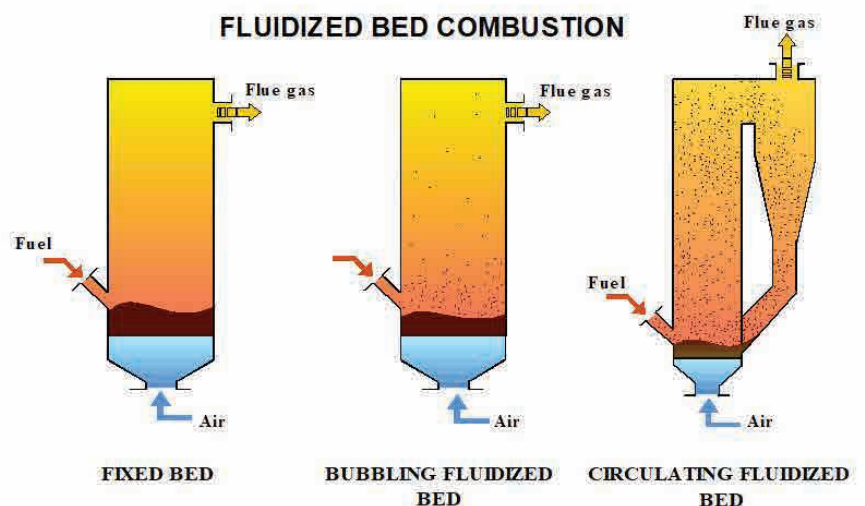
The furnace is large-sized for a residence time of 3 seconds and furnace outlet temperature of 800~900 °C. Further large-sized over-firing nozzles are installed in the side wall to mix the air with the unburned gasses and particles and to improve the efficiency and to minimize the fouling of the tube banks. All heating surfaces are horizontally arranged and supported in the water-cooled structure of the boiler and in the uncooled casings at cold end of boiler. They are provided with sufficient spaces in between the tubes and ensured in its position to minimize the fouling and avoid any blocking.



FLUIDIZED BED SYSTEM

The bed is fluidized by means of an arrangement of nozzles at the bottom of the furnace which create turbulence that enhance the mixing of the fuel, increasing the boiler efficiency.

Creates by converting unburned carbons remaining to usable energy. The bed is usually formed by sand and with a small amount of fuel. Solids fluidization occurs when a gaseous stream (primary air) passes through a bed of solid particles at enough velocity (above the minimum fluidization velocity) to overcome the particles gravity force.



ASSEMBLY AT SITE

The boiler has fast site assembly water tube structure. The membrane panels, heating surface coils and pre-fabricated steam drums are very fast in erection.

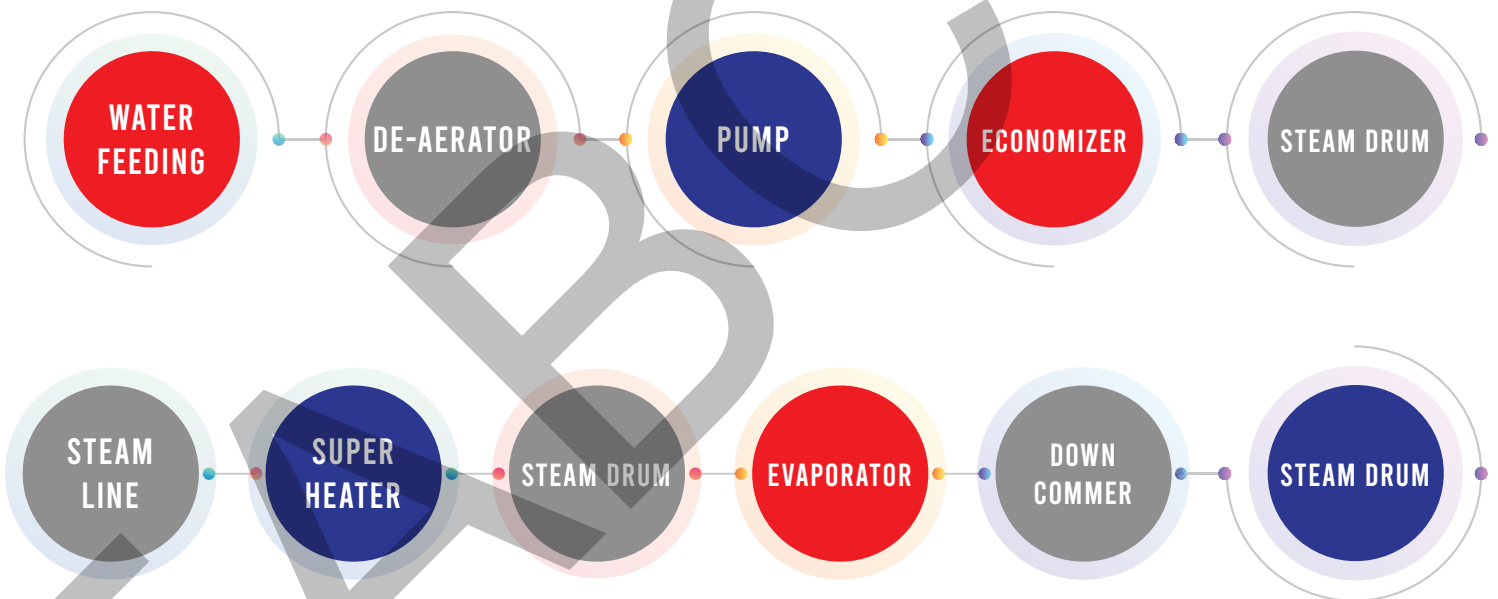
CONTROL

The BFBC boiler combustion control is maintained through PLC/DCS control system. Through robust control system the boiler operation becomes more flexible and better efficiency of combustion is achieved. This saves fuel and operational cost.

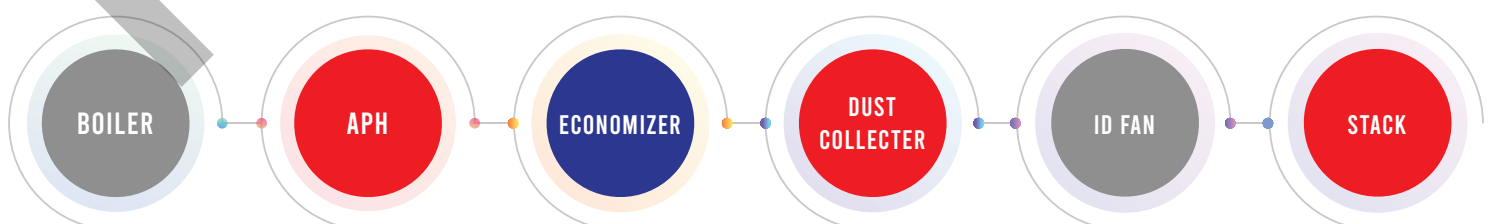
Our design offers safe, extremely efficient, reliable, high quality power boiler built for the long term and ease of maintenance. Every boiler part is tested and is required to meet the highest standards with extremely low energy consumption.



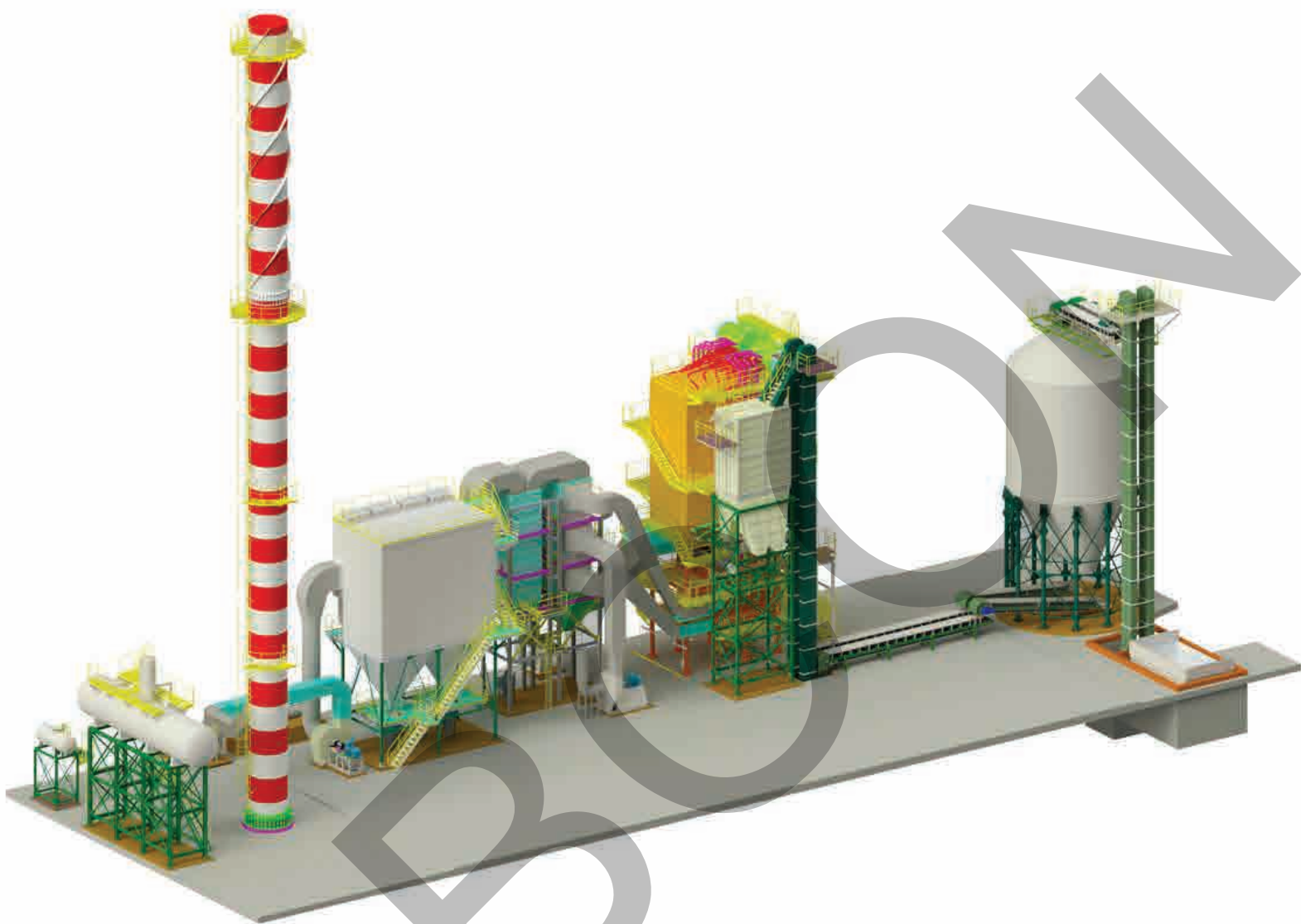
WATER SCHEME



FLUE GAS SCHEME



BOILER MODULES



Module / Parameter		BFBC/40-6.5	BFBC/50-6.5	BFBC/60-6.5	BFBC/80-6.5	BFBC/100-6.5	BFBC/120-6.5	BFBC/140-6.5	BFBC/160-6.5
Rated capacity	t/h	40	50	60	80	100	120	140	160
Operation pressure	Mpa	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Steam temperature	°C	485	485	485	485	485	485	485	485
Water-inlet temperature	°C	105	105	105	105	105	105	105	105
Heating efficiency	%	86	86	86	86	86	86	86	86
Area of Bed	m ²	16.38	21.2	26.4	32.5	39	46	53	62
Fuel (LHV 6000kcal/kg)	kg/h	4,880	6,100	7,200	9,600	11,800	14,160	16,240	18,560
Water supply	Capacity	m ³ /hr	47	58	70	93	116	139	185
	Motor power	kw	160	250	350	400	500	600	850
Force Draft Fan	Capacity	m ³ /h	56,400	66,000	59,400	78,000	99,000	119,400	144,000
	Motor power	kw	55	70	55	90	132	2 x 90	2 x 132
Recirculation Fan	Capacity	m ³ /h	9,600	12,000	8,400	9,900	11,400	13,200	15,000
	Motor power	kw	37	37	45	45	55	55	75
Induced Draft Fan	Capacity	m ³ /h	135,000	144,000	181,200	240,600	288,000	348,000	504,000
	Motor power	kw	132	200	250	350	400	2 x 200	2 x 275

* Custom design for boiler capacity ranges from 20tph to 200tph at pressure ranges from 15 barg to 125 barg can be made by in-house.

MAIN PART SUPPLY

Pre-Fabricated boiler panels delivered with;

Coal/limestone crushing system

Membrane wall panels

Down-commers evaporator

De-Super heater

De-aerator with tank

Economizer

Platform, ladders and stairs

Dust collector

Forced draft fans

Rotary valves

PLC control system

BFW pumps

Safety valves

Insulation layer

Pipe fittings

Air/flue gas ducts

Coal/lime stone conveying and feeding system

Steam drum

Super heater

Supporting frames and structure

BFBC nozzles

Air pre-heater

Steam distribution header

Soot blowers

Induced draft fans

Variable speed drives

Instrumentation

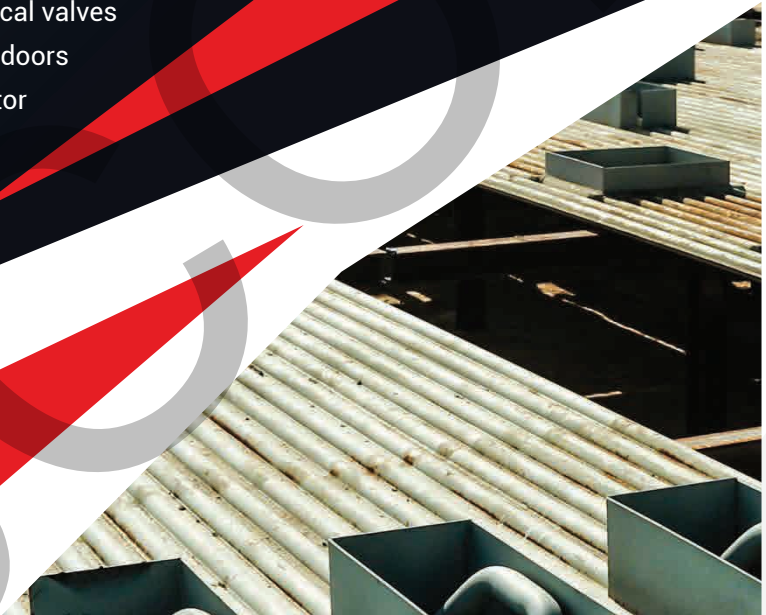
Control valves

Mechanical valves

Peeping doors

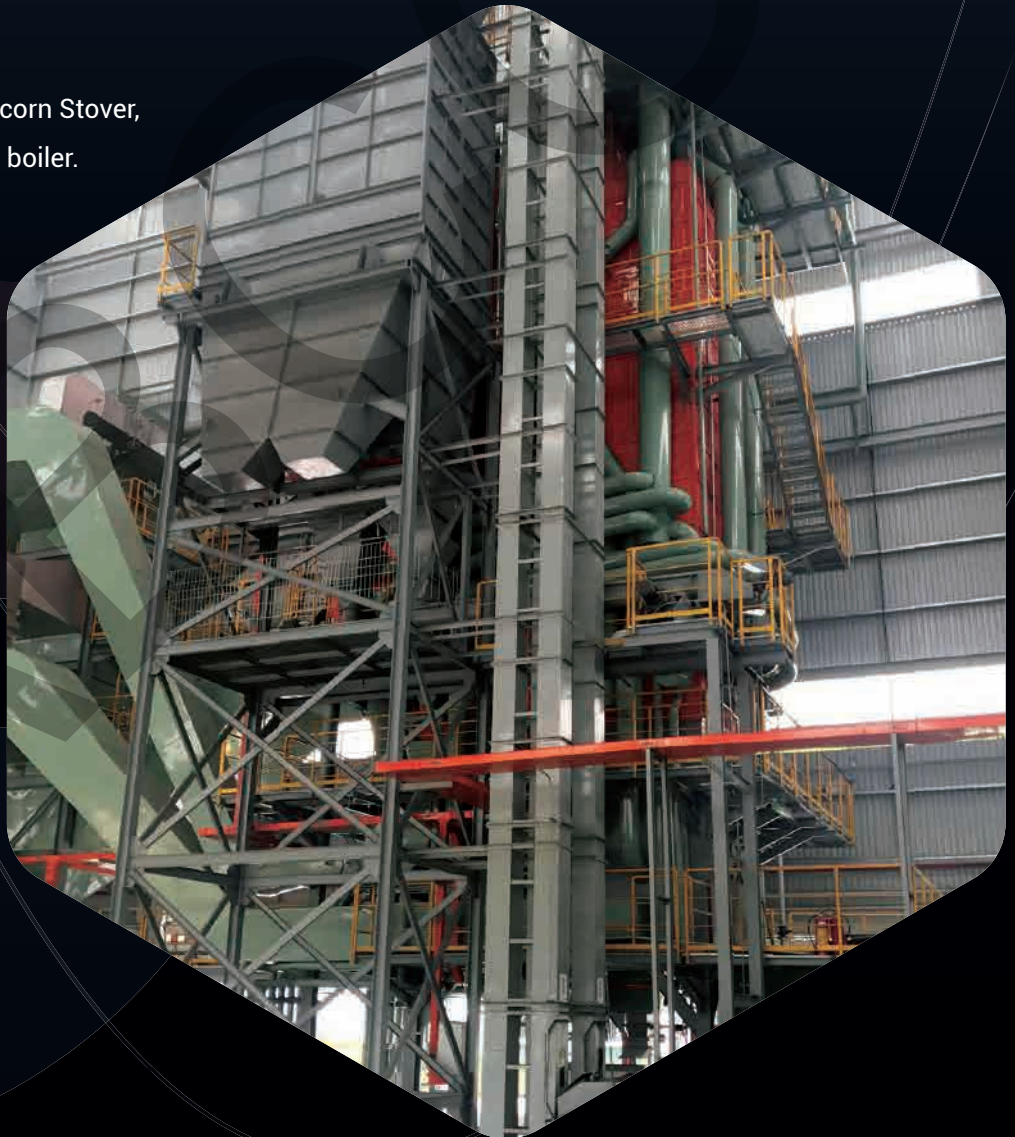
De-aerator

Stack



ADVANTAGES:

- **Design:** Designed as per international codes and standards
- **Cost Efficient:** Cost efficient solution due to low investment cost, minimum installation time at site and good efficiency
- **Easy Delivery:** Boiler parts are pre-fabricated and shipped as modular units ensuring on time delivery and easy assembly at site
- **Ecologically Effective:** Environment friendly due to low NO_x and CO_2 emissions
- **Residue:** The residues consist of the original mineral matter, most of which does not melt at the combustion temperatures. Carbon-in-ash levels are higher in FBC residues than in those from PCC.
- **Easy to Maintain:** Maintenance and inspection of boiler is simple and less costly due to easy access through manhole and inspection hole and membrane wall reduces maintenance workload due to refractory.
- **Advantages over conventional stoker:**
several types of biomass (like bagasse, corn Stover, corn cob) and coal can be fired in BFBC boiler.



**Get in Touch
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