

HYBRID PACKAGE TYPE

# STEAM BOILER

Economical Solution for  
Co-generation in Medium  
Size Process Industry

# Product Introduction

Fabcon manufactures CHP Hybrid boiler series to fulfill the requirement of medium pressure steam ranging from 100psi – 400psi. (7.03-28.12 kg/cm<sup>2</sup>) for process plants. This is a state-of-the-art, ground breaking and easy solution for the generation of high quality saturated and superheated steam.

This kind of boiler is very suitable for co-generation in the medium sized industries using steam and electricity.

This type of boiler can be fitted with different combustion systems suitable for burning of coal, rice husk, bagasse, corn cobs etc. This boiler can also be used to burn the mixture of different in separate operations.

Boiler with steam capacity between 4~30tph is consisted of steam drum, upper part (heating furnace) and lower part (combustion equipment). The former part of the boiler proper is arranged a water-cooled membrane wall supported by buckstays, the upper part of it is connected to steam drum. The high temperature flue gases after combustion shall pass through the evaporator tube banks and afterwards shall be introduced to economizer, dust collector and exhausted from stack in the end.

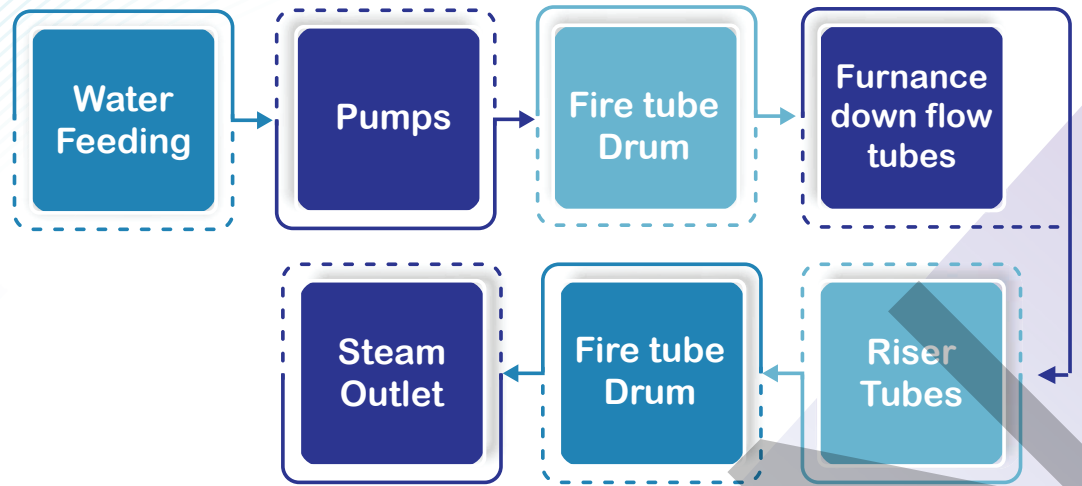
The continuous ash discharge enhances productivity by permitting operations without any shut-downs for grate cleaning.

This type of boiler can be fitted with the following type of combustion grates.

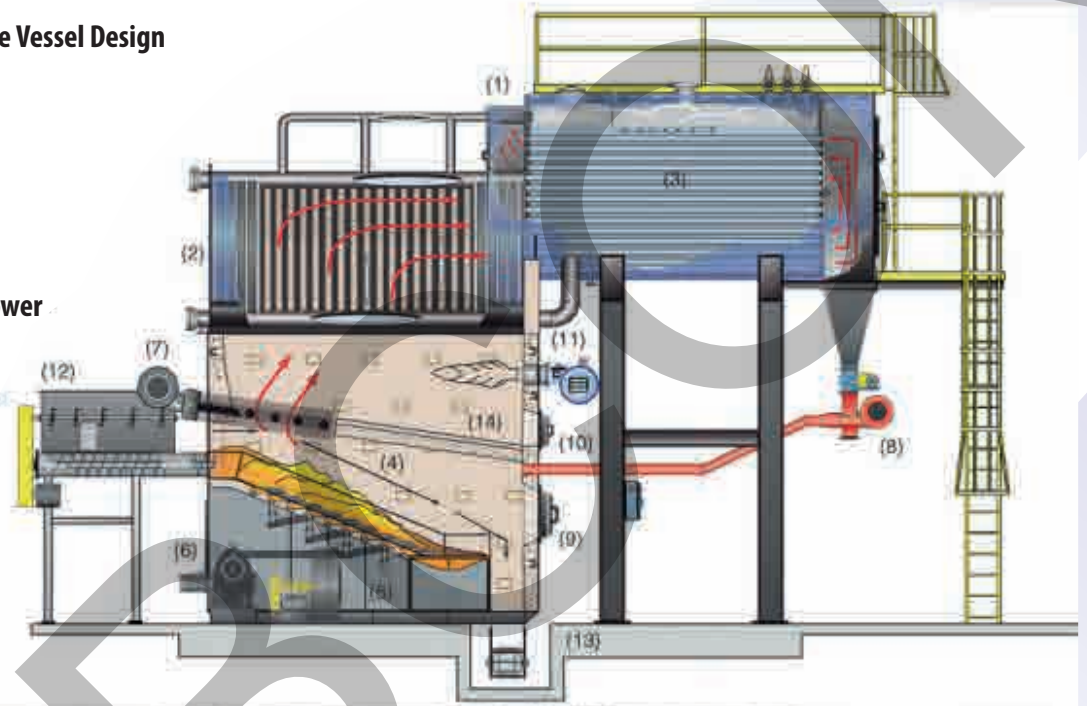
- **Stoker Type** moving grates for combustion of variety of coals.
- **Dumping type stoker grates** for combustion of bagasse.
- **Reciprocating, air-cooled step grates** for combustion of multiple biomass fuels.

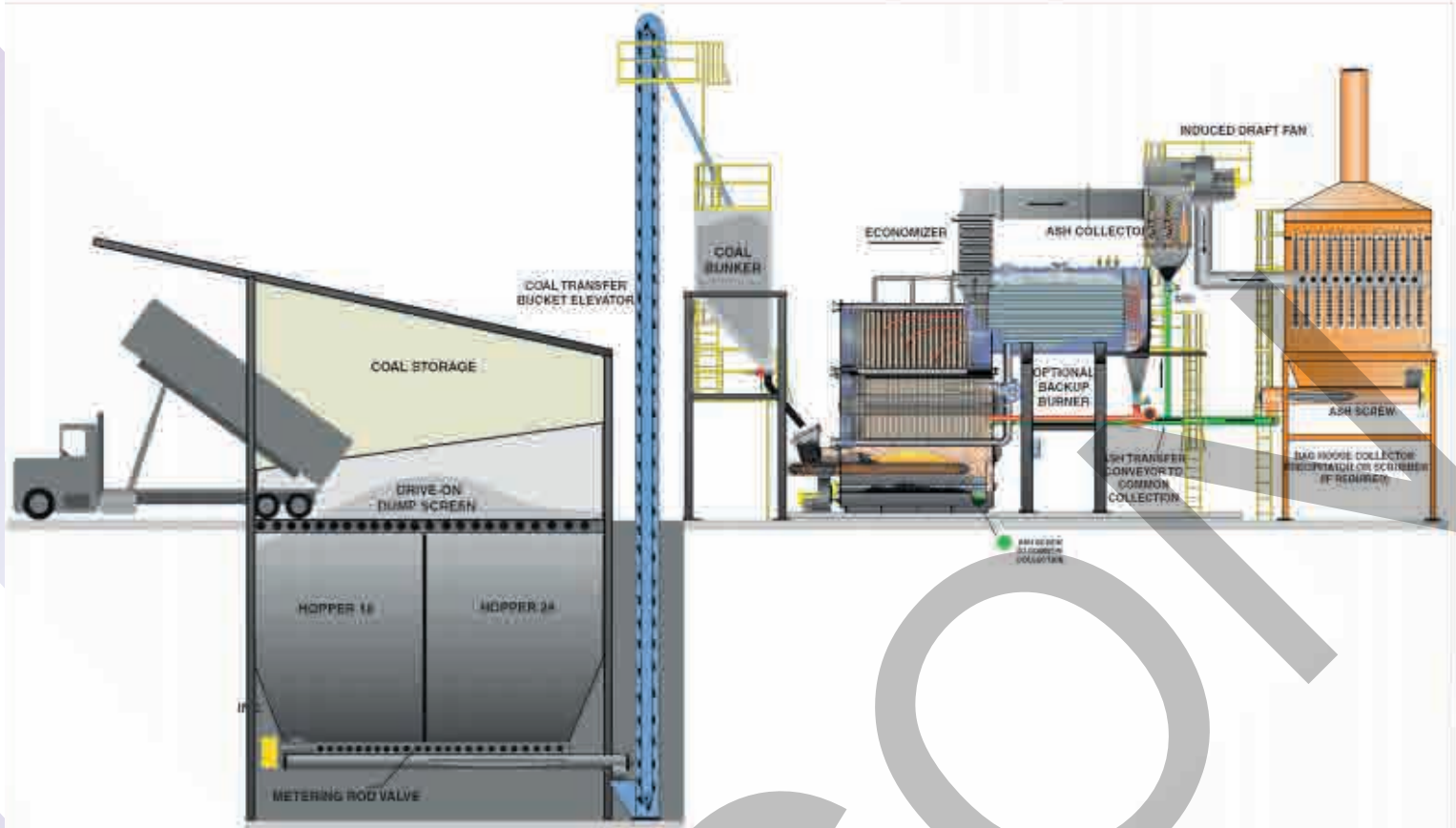


# WATER SCHEME



- 1 Hybrid" Firetube/Watertube Vessel Design
- 2 Watertube Section
- 3 Fitetube Section
- 4 Reciprocating Fire Grates
- 5 Under Fire Air Fan
- 6 Reciprocating Drive
- 7 Over Fire Fan/Dampers
- 8 Carry-Over Reinjection Blower
- 9 Fire Door
- 10 Ash Clean Out Door
- 11 Optional Back Up Burner
- 12 Fuel Metering Bin
- 13 Ash Removal Conveyor
- 14 Refreactory Arch





## Boiler Module

Module / Parameter		BHPB/4-1.25	BHPB/6-1.25	BHPB/8-1.25	BHPB/10-1.25	BHPB/15-1.25	BHPB/20-1.25	BHPB/25-1.25	BHPB/30-1.25
<b>Rated capacity</b>	<b>t/h</b>	<b>4</b>	<b>6</b>	<b>8</b>	<b>10</b>	<b>15</b>	<b>20</b>	<b>25</b>	<b>30</b>
Operation pressure	Mpa	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
Steam temperature	C	194	194	194	194	194	194	194	194
Water-inlet temperature	C	105	105	105	105	105	105	105	105
Heating efficiency	%	85	85	85	85	85	85	85	85
Heating Area	Furnace	m <sup>2</sup>	42	53	60	72	88	115	170
	Body	m <sup>2</sup>	110	152	190	215	251	310	443
	Economizer	m <sup>2</sup>	86	118	138	158	198	253	385
	Air Pre-Heater	m <sup>2</sup>	92.4	138.6	184.8	231	346.5	462	746
Area of Grate	m <sup>2</sup>	7	9	12	15	20	24	28	31
Steam valve diameter	mm	PN1.6	PN1.6	PN1.6	PN1.6	PN1.6	PN1.6	PN1.6	PN1.6
		DN125	DN125	DN150	DN150	DN200	DN200	DN200	DN250
Water inflow valve diameter	mm	PN1.6	PN1.6	PN1.6	PN1.6	PN1.6	PN1.6	PN1.6	PN1.6
		DN50	DN50	DN50	DN50	DN65	DN65	DN65	DN80
Cornstover (LHV 2,600kcal/kg)	kg/h	1,180	1,770	2,360	2,950	4,425	5,900	7,375	8,850
Corncob (LHV 3,350kcal/kg)	kg/h	920	1,380	1,840	2,300	3,450	4,600	5,750	6,900
Rice Husk (LHV 3,000kcal/kg)	kg/h	1,020	1,530	2,040	2,550	3,825	5,100	6,375	7,650
Bagasse (LHV 1,750kcal/kg)	kg/h	1,720	2,580	3,440	4,300	6,450	8,600	10,750	12,900
Boiler Assembly Size	m	13.0×4.0×10.0	15.0×4.0×10.0	16.0×4.0×10.0	15.0×5.0×10.0	16.0×6.0×10.0	19.0×6.0×10.0	22.0×6.0×10.0	25.0×6.0×10.0
Water supply	Capacity	m3/hr	5.5	7.5	9	12	18	25	35
	Motor power	kw	7.5	10	15	18.5	22	30	45
Force Draft Fan	Capacity	m3/h	80	110	137	175	252	340	530
	Pressure	Pa	1,900	1,900	1,900	1,900	1,900	1,900	1,900
	Motor power	kw	7.5	10	10	15	15	20	37
Over Firing Fan	Capacity	m3/h	37	50	72	95	162	212	322
	Pressure	Pa	6,800	6,800	6,800	6,800	6,800	6,800	6,800
	Motor power	kw	12	15	20	25	37	45	70
Recirculation Fan	Capacity	m3/h	37	50	68	84	155	210	285
	Pressure	Pa	1,500	1,500	1,500	1,500	1,500	1,500	1,500
	Motor power	kw	4	4	4	5	5	7.5	10
Induced Draft Fan	Capacity	m3/h	210	270	360	450	750	1,000	1,450
	Pressure	Pa	2,600	2,600	2,600	2,600	2,600	2,600	2,600
	Motor power	kw	22	25	37	45	55	75	110

# Main Part Supply

"Ready constructed Boiler when delivered with"

Coal Bunker  
Coal Feeder  
Chain Grate  
Furnance Wall  
Steam Drum  
Economizer  
Air Heater  
Dust Collector  
Slag Conveyer  
Ash Conveyer  
Wet Scrubber

Stack  
Feed Water Pumps  
Forced Draft Fan  
Induced Draft Fan  
Platforms and Ladders  
Safety and Control Valves  
Instrumentation  
PLC Panel  
MCC Panel  
Essential Spares





### Advantages:

- Designed as per ASME code
- Workshop assembled module
- Economical civil works cost
- Ecologically efficient (Minimum NO<sub>x</sub> and CO<sub>2</sub> 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 co-generation
- Cost efficient due to compact size
- Easy maintenance
- Membrane wall option available

### Suitable Module for:

- Textile processing
- Dairy and Milk Industry
- Tobacco Industry
- Food and beverages
- Leather Industry
- Chemical plants
- Paper and Board Industry

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