

TAISHAN GROUP

Biomass Boilers



POWERING THE WORLD WITH INNOVATIVE ENERGY SOLUTIONS

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Company Introduction

1978

Independent Factory

1978 Named as "Taian City Boiler Factory."

1994

Joint-Stock System Reform

1994 Joint-stock company renamed as "Taishan Group Co., Ltd.,

2002

Merging And Reorganization, Privatization Transformation

2002 Core enterprise transformed to privatization.

2010

Expanded Operation

2006 Held Shandong Luneng Mount.Tai Electric Equipment Co., Ltd. 2010 Registered Weihai Shidao Heavy Industry Co., Ltd.

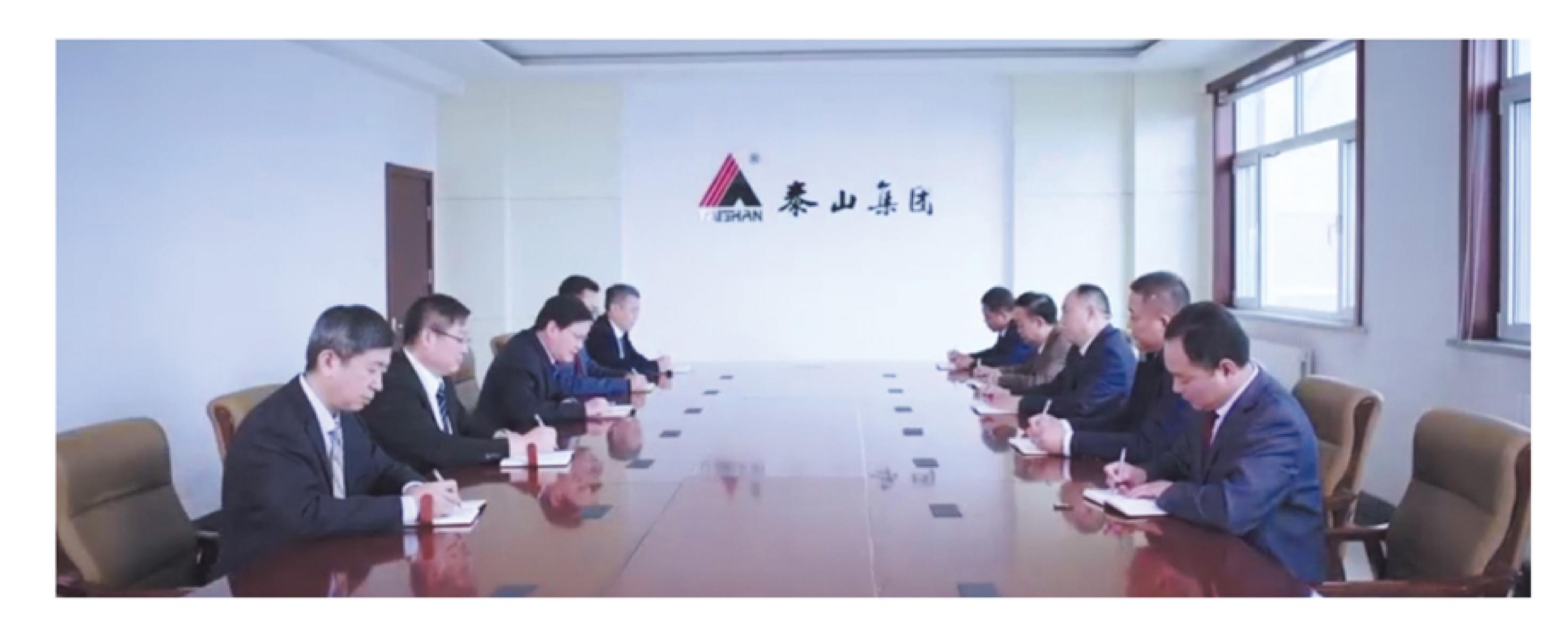
2017

Industrial Chain Extension

2017 Acquired Shandong Yineng Engineering Design Co., Ltd.
2020 Registered Taishan Combustion Control (Taian) Co., Ltd.
2023 Registered New Grid (Shandong) Energy Equipment Technology Co., Ltd.

TAISHAN GROUP

Since 1978



Founded in 1978, TaiShan Group has nearly 50 years of experience and know-how in combustion technology. With excellent performance and fabulous quality, TaiShan Group has become a well-known leading coal, biomass and waste to energy solution provider.

TaiShan Group's manufacturing facilities span over 378,000 square meters, with an annual turnover of over 500 million USD. Our design team comprises over 50 senior engineers and 80 chief designers. In the past decade, we have completed over 25 EPC projects and 500 boilers overseas. We are dedicated to delivering high-quality boilers and A-Z services, and have a professional engineering, fabrication, QC, erection, and aftersales team to ensure best customer experience.



BIOMASS BOILERS

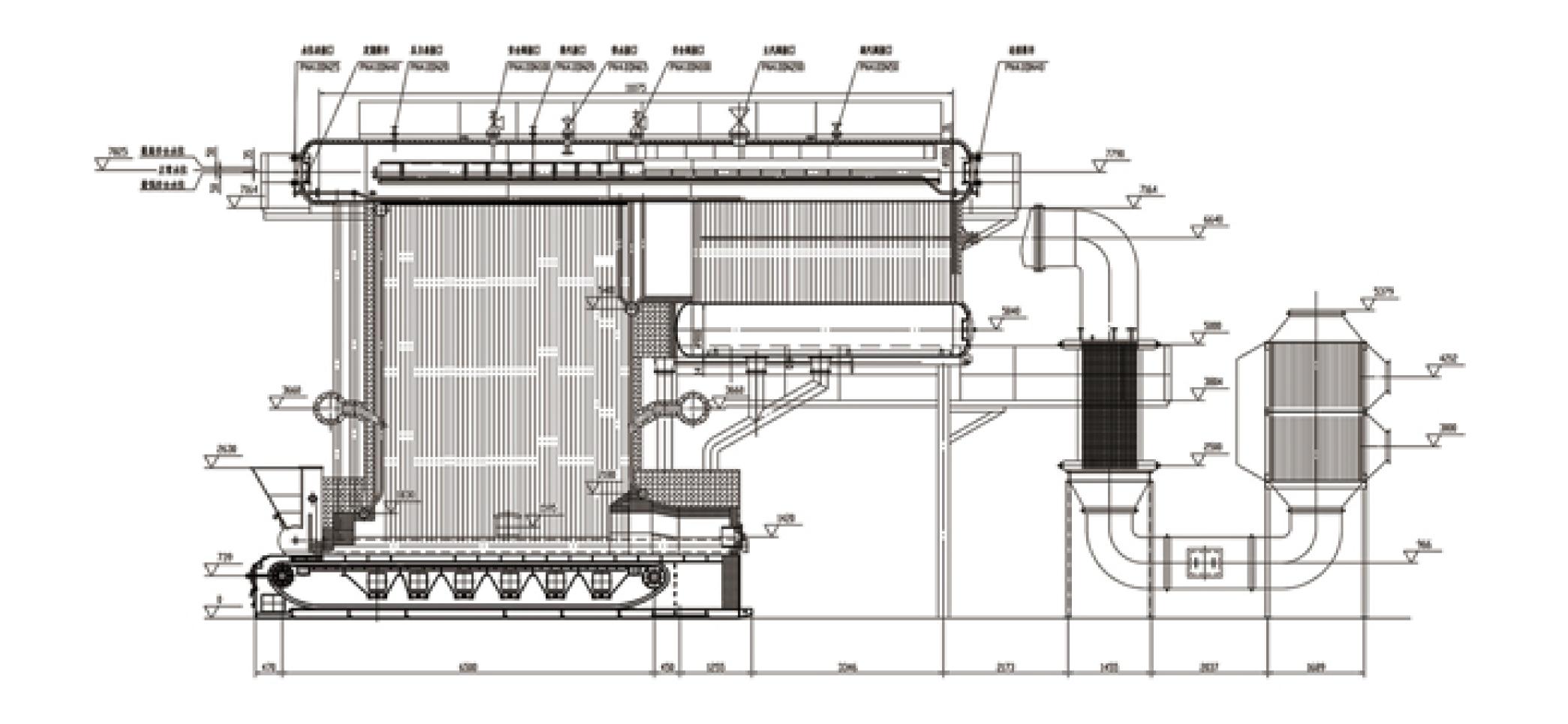
Biomass boilers are fully automatic industrial boiler system which deliver natural biomass or pellets to match the heat demand of the biomass fired boiler. Generally, biomass boilers share the similar structure with coal fired boilers. Yet due to the lower heating value, the biomass fuel consumption is more than coal consumption when generating certain amount of steam. Therefore, biomass boilers have higher and larger furnace to ensure the sufficient combustion of biomass fuel as well as full load operation compared with coal fired boiler.

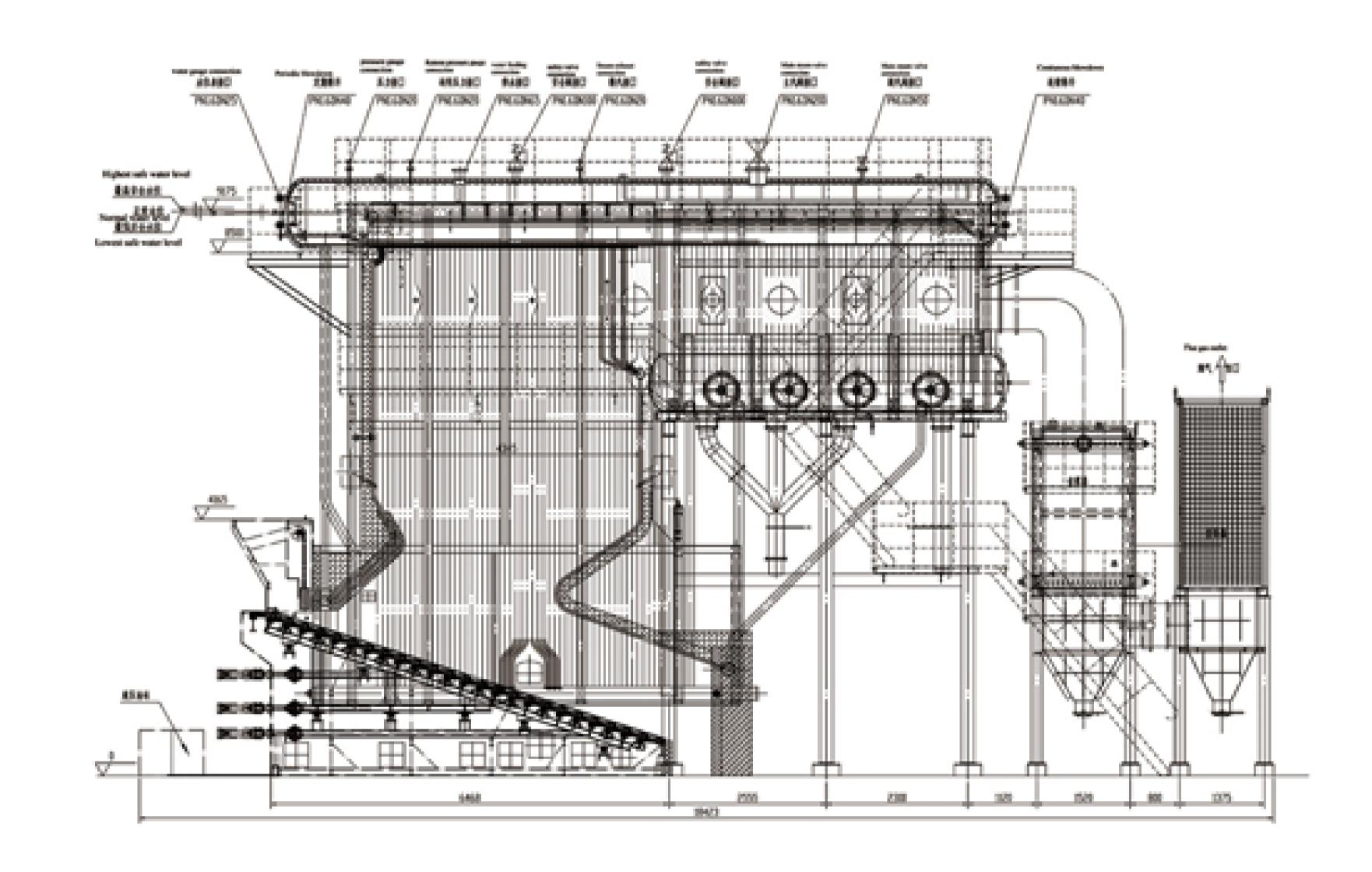
Biomass and bio-fuel like crop straw, wood chip, sawdust, peanut shell, corn cob, rice straw, rice husk, straw bran, tree branches and leaves, hay and compressed pellet can provide clear and renewable energy solutions for large companies or power plant. The combustion rate is 84%~92%, and the rest 8%~16% of ash can be recycled, so the "straw-fuel-fertilizer" circulation can be realized.

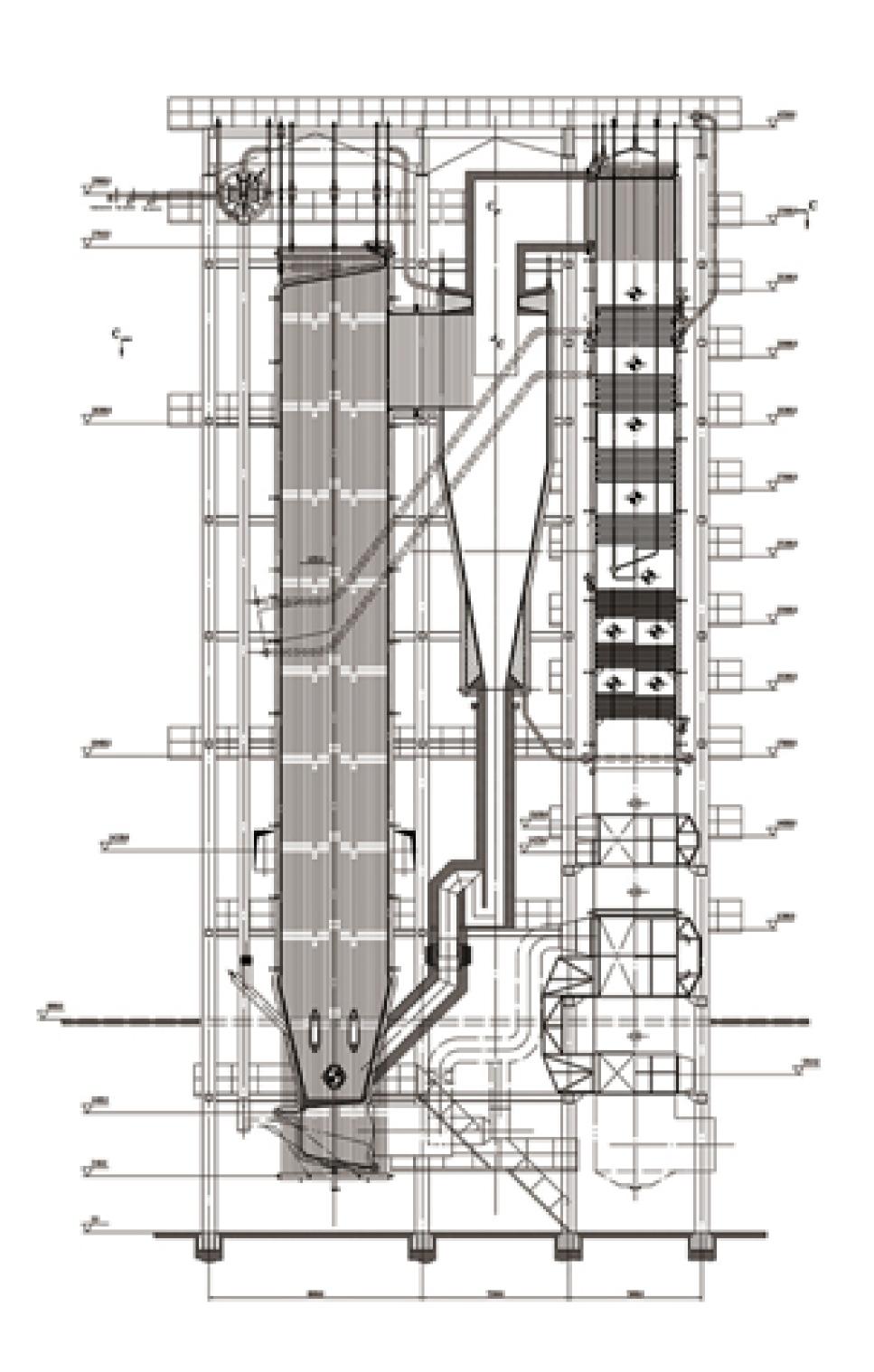
Biomass Fuel Type



Classification of Biomass Boiler







Chain-Grate Boilers

Main Features:

Suitable for burning biomass pellets and wood chips.

Typical Application:

Commonly used in applications where these fuels are prevalent.

Reciprocating Grate Boilers

Main Features:

Suitable for fuels with high moisture content, low combustion efficiency, and difficult ignition.

Typical Application:

Ideal for scenarios where fuel agitation and tumbling are beneficial for combustion.

Circulating Fluidized Bed Boilers

Main Features:

Operate at high temperatures and pressures. Thermal efficiency exceeding 90%, 7-8% higher than reciprocating grate boilers.

Typical Application:

Appropriate for applications demanding high thermal efficiency. Require a larger initial investment and specialized expertise.

Chain Grate Biomass Boiler



SZI

Capacity: 4-75 t/h

Working pressure: 1.0 MPa /1.25 MPa / 1.6 MPa / 2.5 MPa

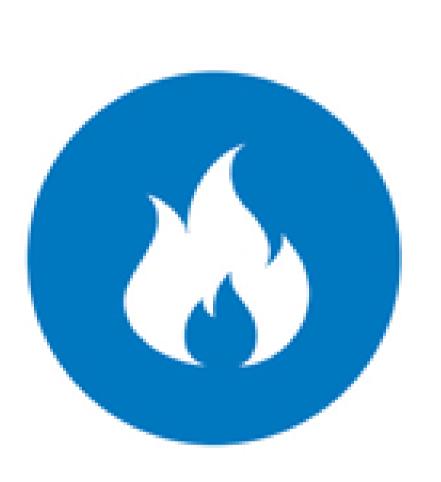
Operating temperature: 183°C / 193°C / 204°C / 226°C

Suitable fuel:

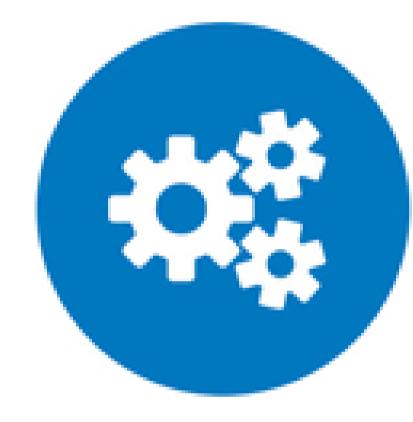
Biomass molding particles, wood chips, palm shells, wood pellet, etc

Application Industry:

Heating, chemical industry, food, tobacco, textile, printing and dyeing, feed, medicine, building materials, wine, rubber, hospital



The structure is compact, easy to operate, and cost-effective with a pleasant appearance.



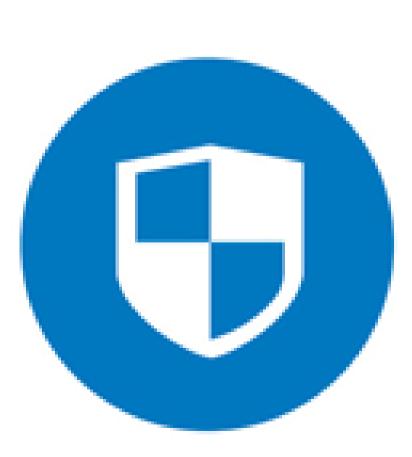
It operates smoothly, quickly reaches desired temperatures and pressures, and accommodates various fuels.



Safety measures include interlock protection for water supply, feeding, grate operation, and more, along with automatic controls.



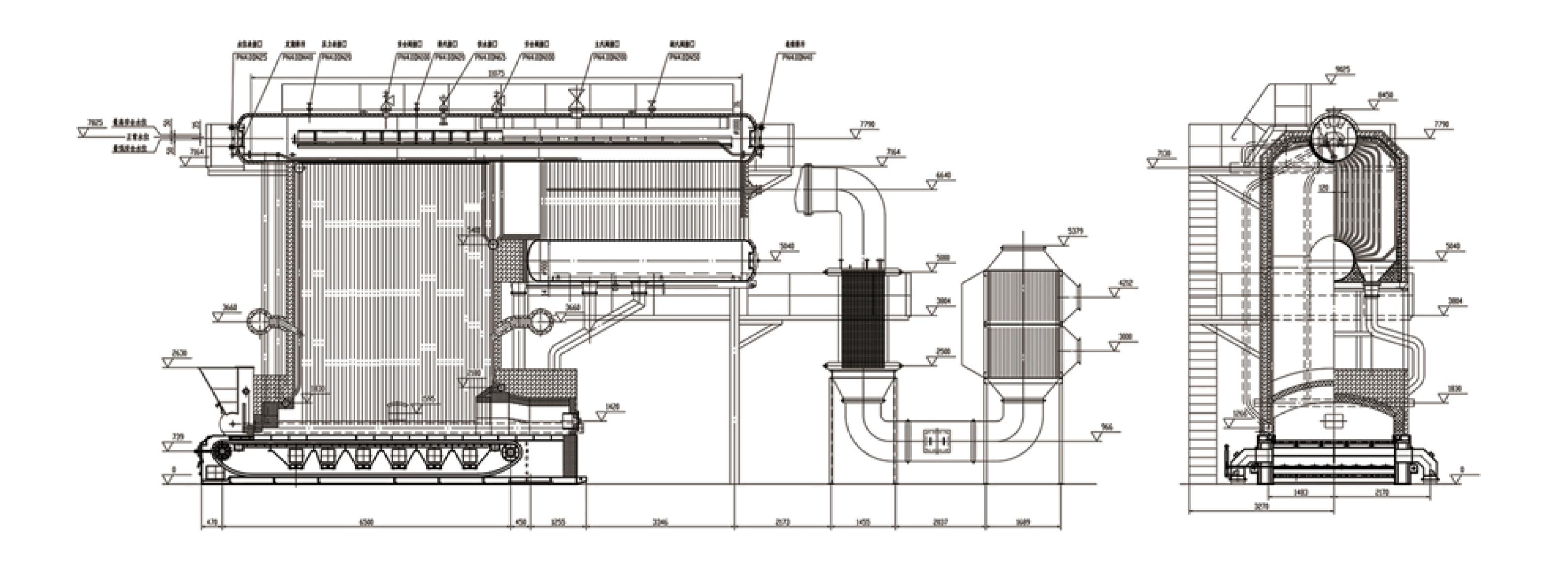
A well-designed arch enhances combustion, and the chain grate allows for a wide speed range.



Efficient heating surface layout ensures reasonable flue gas temperatures, high thermal efficiency, and capacity for overload.



The furnace is optimized for burning biomass fuels, reducing fly ash loss and improving radiant heating.



Technical Data of SZL Biomass Steam Boiler									
Model	Rated Evaporation Capacity (t/h)	Rated Steam Pressure (MPa)	Feed Water Temperature (°C)	Rated Steam Temperature (°C) Radiation Heating Area (m²)		Convection Heating Area (m²)	Convection Heating Area (m²)	Active Grate Area (m²)	
SZL4-1.25-SS	4	1.25	20	193	11.7	101	33.1	4.7	
SZL6-1.25-SS	6	1.25	105	193	18.7	121	104.64	7.64	
SZL6-1.6-SS	6	1.6	105	204	18.7	121	104.64	7.64	
SZL6-2.5-SS	6	2.5	105	226	18.7	121	104.64	7.64	
SZL8-1.25-SS	8	1.25	105	193	29.2	204.1	191	8.27	
SZL8-1.6-SS	8	1.6	105	204	29.2	204.1	191	8.27	
SZL8-2.5-SS	8	2.5	105	226	29.2	204.1	191	8.27	
SZL10-1.25-SS	10	1.25	105	193	46.3	219	246	10	
SZL10-1.6-SS	10	1.6	105	204	46.3	219	246	10	
SZL10-2.5-SS	10	2.5	105	226	46.3	219	246	10	
SZL15-1.25-SS	15	1.25	105	193	48.8	241	283	13.5	
SZL15-1.6-SS	15	1.6	105	204	48.8	241	283	13.5	
SZL15-2.5-SS	15	2.5	105	226	48.8	241	283	13.5	
SZL20-1.25-SS	20	1.25	105	193	65.6	286	326	18.9	
SZL20-1.6-SS	20	1.6	105	204	65.6	286	326	18.9	
SZL20-2.5-SS	20	2.5	105	226	65.6	286	326	18.9	
Remark	Design thermal efficiency is 82%.								

Chain Grate Biomass Boiler



DHL

Capacity: 6-90 t/h

Working pressure:

1.25 MPa / 1.6 MPa / 2.5 MPa/3.82MPa/5.29MPa/9.8MPa

Operating temperature:

193℃ / 204℃ / 226℃/ 450℃/ 485℃/ 540℃

Suitable fuel:

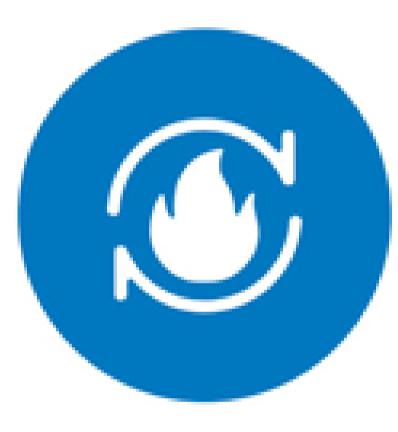
Biomass molding particles, wood chips, palm shells, wood pellet, etc

Application Industry:

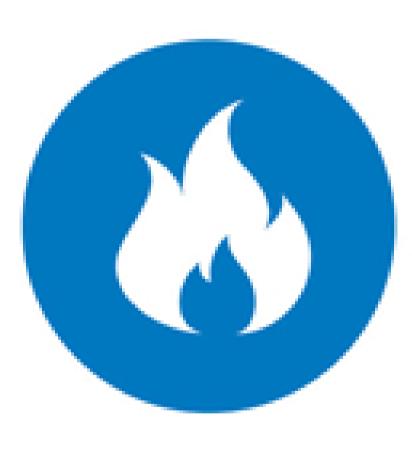
Heating, chemical industry, food, tobacco, textile, printing and dyeing, feed, medicine, building materials, wine, rubber, hospital



"W" shape flue gas flushing direction in the convection tube, effectively overcoming the ash deposition; increase the convection heating area to ensure sufficient output.



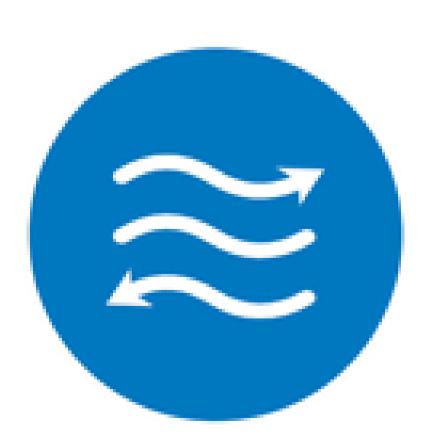
Three-story furnace wall ensures good insulation effect, effectively reduce the heat loss.



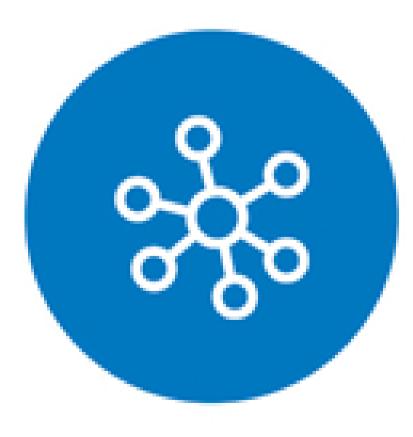
Small flake chain grate features little leakage, high manufacturing precision, sufficient fuel combustion, and simple maintenance and replacement.



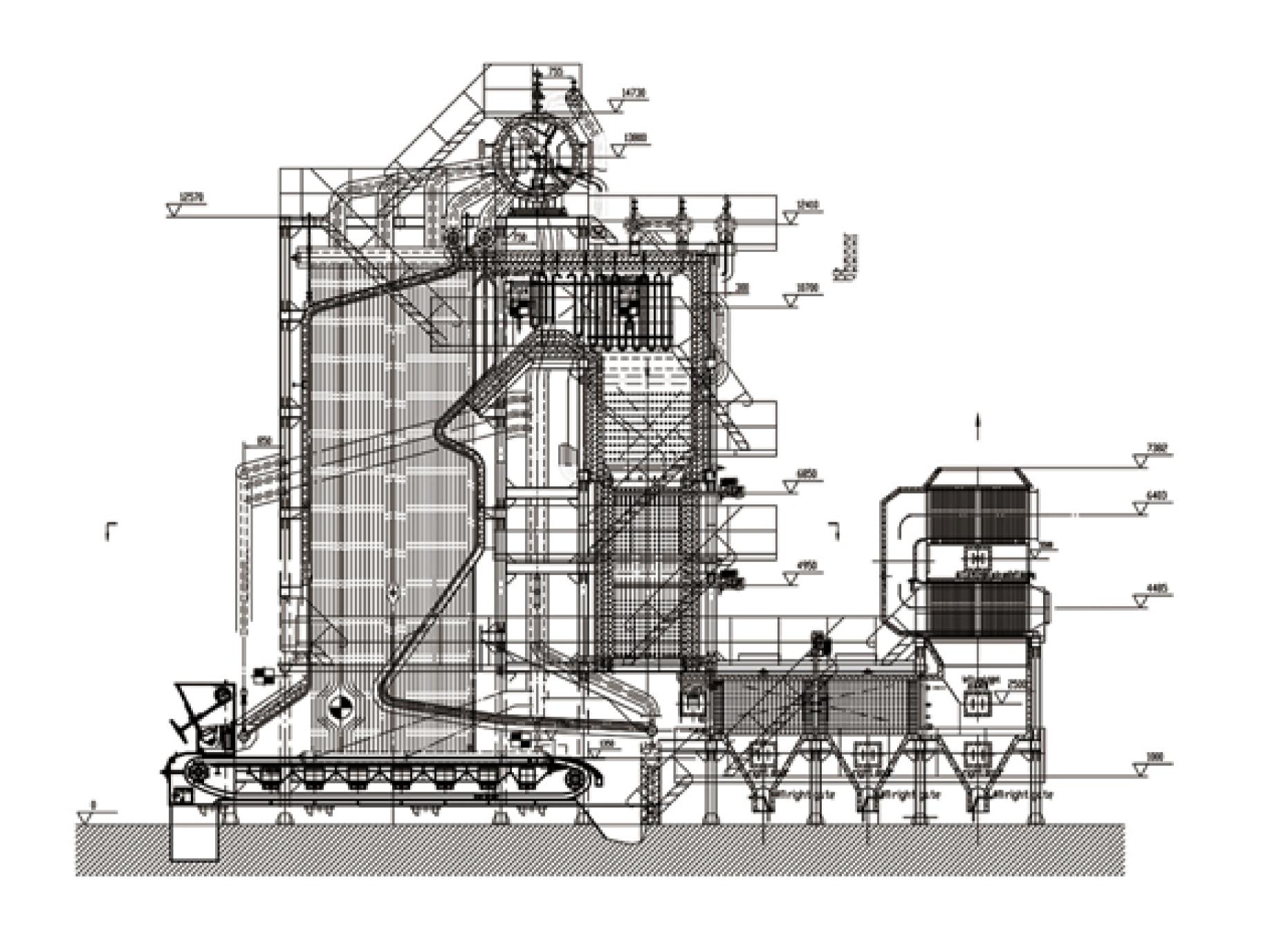
Independent air chamber ensures reasonable air distribution, improves operational stability.

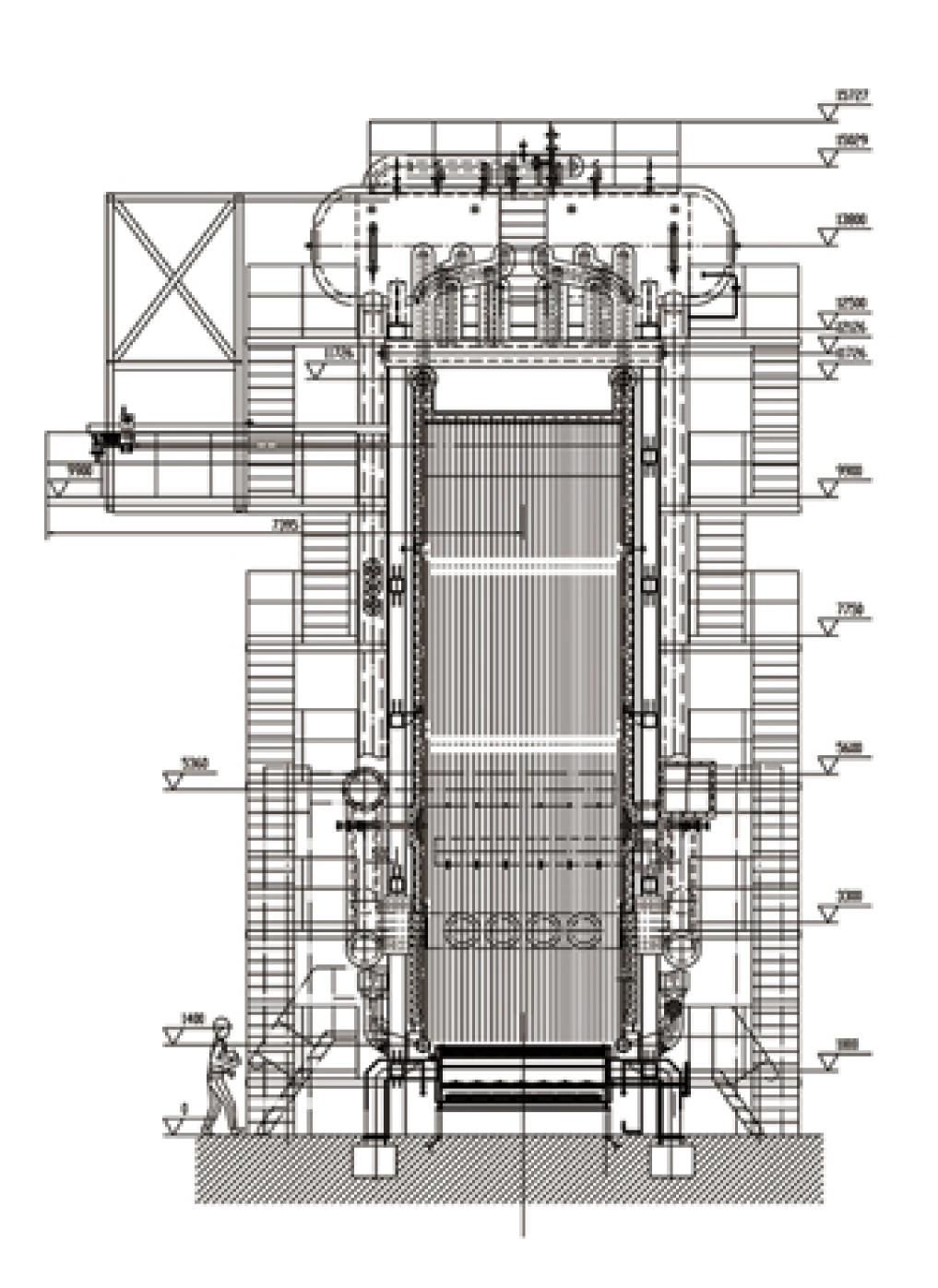


Optimized design of front and rear furnace arch; reflective ignition type front arch is conducive to fuel ignition.



High heat transfer efficiency and small flue gas flow resistance solve low-temperature corrosion of economizer.





Technical Data of DHL Biomass Steam Boiler Rated Steam | Feed Water | Rated Steam | Radiation Convection Economizer Air Preheater Pressure Temperature Temperature Heating Area Heating Area Heating Area Heating Area Grate Area 8.5 163.5 110.4 105 400 14.8 DHL6-2.5-400-SW 12 272 94.4 DHL10-2.5-400-SW 236 18 105 400 62.65 230.3 156.35 DHL15-2.5-400-SW 268 70.08 22.5 400 DHL20-2.5/400-SW 3.82 105 450 135.3 653.3 273.8 374.9 34.5 DHL35-3.82/450-SW DHL40-5.29/480-SW 40 139.3 5.29 480 862.2 253.8 374.9 40.2 DHL45-5.29/480-SW 540 309.7 68.4 9.8 105 911.7 639.7 1327.7 DHL75-9.8/540-SW

Design thermal efficiency is 82%.

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Remark

Reciprocating Grate Biomass Boiler



SZW

Capacity: 4-75 t/h

Working pressure: 1.0 MPa /1.25 MPa / 1.6 MPa / 2.5 MPa

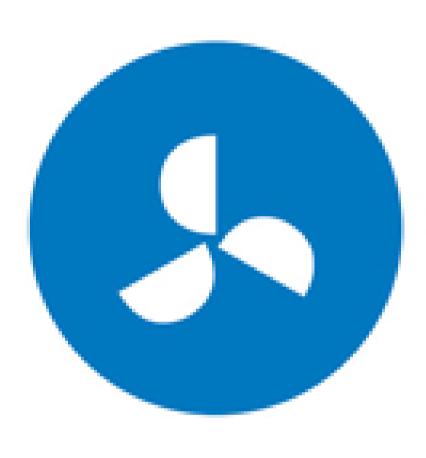
Operating temperature: 183°C / 193°C / 204°C / 226°C

Suitable fuel:

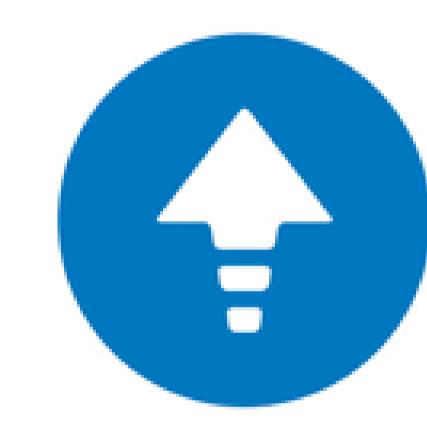
Biomass molding particles, wood chips, palm shells, wood pellet, EFB, etc

Application Industry:

Heating, chemical industry, food, tobacco, textile, printing and dyeing, feed, medicine, building materials, wine, rubber, hospital



Increase the combustion share of middle furnace, set secondary air, reduce the overall temperature of the furnace.



Raise the furnace, increase a large section burn-out chamber, reduce the outlet flue speed, reduce the fly ashamount.



Large angle low-speed reciprocating grate to extend the fuel stay time in the furnace, and is conducive to downward movement of fly ash.



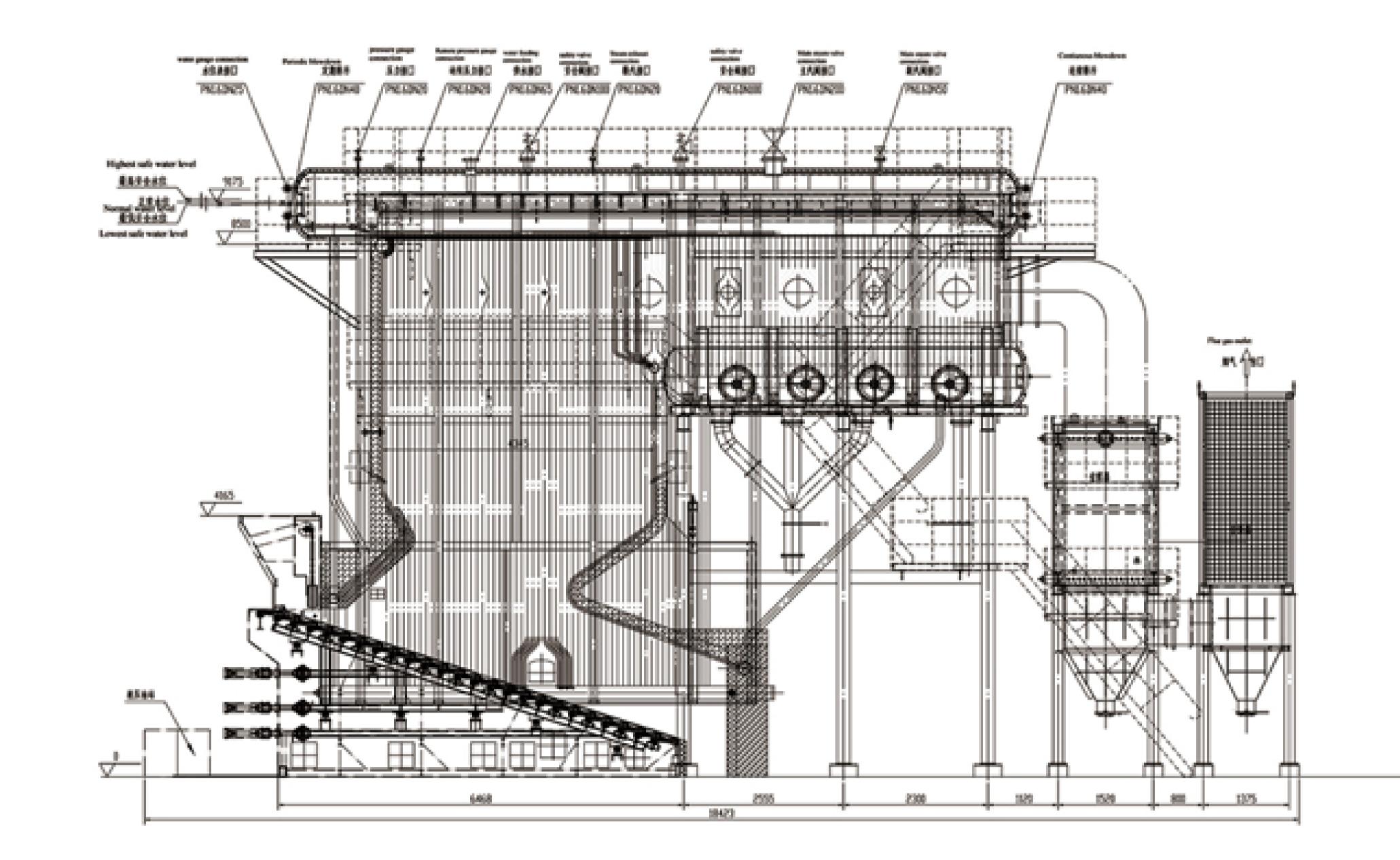
Water-cooled short front arch reduce the temperature before the furnace; adjust the primary air and second air amount before the furnace to control the ignition point.

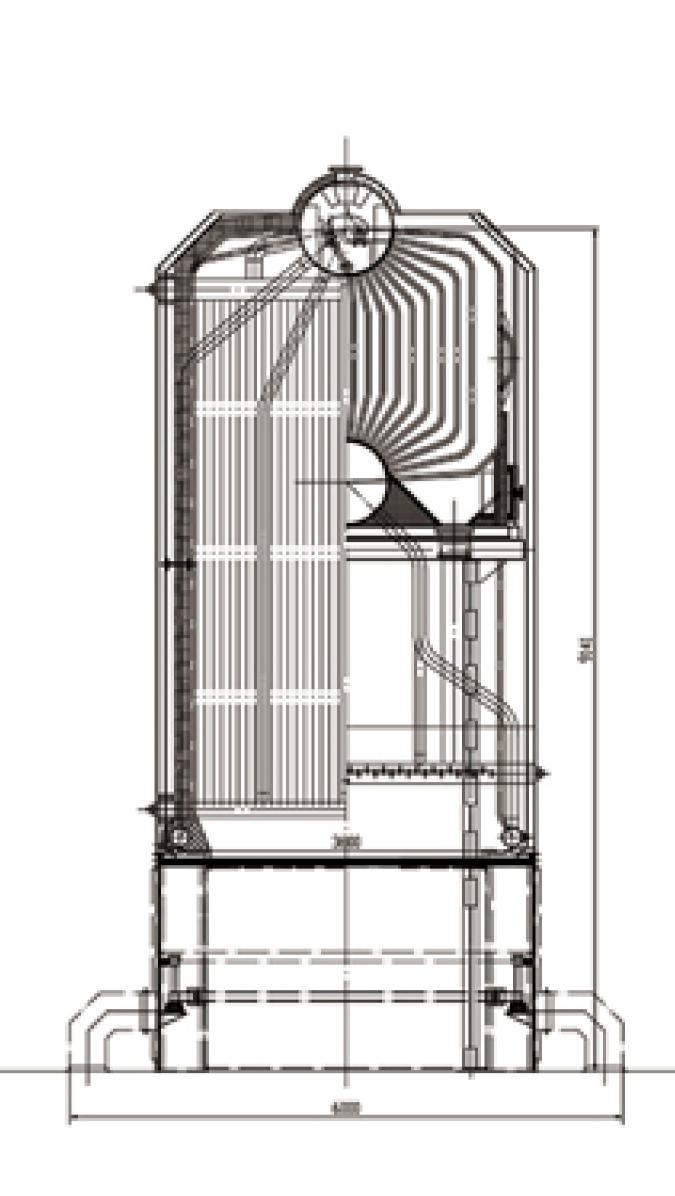


The slow movement of grate makes the fuel gradually moved backward, increase the stay time of the fuel in the furnace.



Convection heating surface is in the medium temperature and speed to reduce wear.





Technical Data of SZW Biomass Steam Boiler									
Model	Rated Evaporation Capacity (t/h)	Rated Steam Pressure (MPa)	Feed Water Temperature (°C)	Rated Steam Temperature (°C)	Radiation Heating Area (m²)	Convection Heating Area (m²)	Economizer Heating Area (m²)	Active Grate Area (m²)	
SZW4-1.6-SW	4	1.6	20	204	11.7	101	33.1	4.7	
SZW6-1.25-SW	6	1.25	105	193	18.7	121	104.64	7.64	
SZW6-1.6-SW	6	1.6	105	204	18.7	121	104.64	7.64	
SZW6-2.5-SW	6	2.5	105	226	18.7	121	104.64	7.64	
SZW8-1.25-SW	8	1.25	105	193	29.2	204.1	191	8.27	
SZW8-1.6-SW	8	1.6	105	204	29.2	204.1	191	8.27	
SZW8-2.5-SW	8	2.5	105	226	29.2	204.1	191	8.27	
SZW10-1.25-SW	10	1.25	105	193	46.3	219	246	10	
SZW10-1.6-SW	10	1.6	105	204	46.3	219	246	10	
SZW10-2.5-SW	10	2.5	105	226	46.3	219	246	10	
SZW15-1.25-SW	15	1.25	105	193	48.8	241	283	13.5	
SZW15-1.6-SW	15	1.6	105	204	48.8	241	283	13.5	
SZW15-2.5-SW	15	2.5	105	226	48.8	241	283	13.5	
SZW20-1.25-SW	20	1.25	105	193	65.6	286	326	18.9	
SZW20-1.6-SW	20	1.6	105	204	65.6	286	326	18.9	
SZW20-2.5-SW	20	2.5	105	226	65.6	286	326	18.9	
Remark	Design thermal efficiency is 82%.								

Reciprocating Grate Biomass Boiler



DHW

Capacity: 6-90 t/h

Working pressure:

1.25 MPa / 1.6 MPa / 2.5 MPa/3.82MPa/5.29MPa/9.8MPa

Operating temperature:

193℃ / 204℃ / 226℃/ 450℃/ 485℃/ 540℃

Suitable fuel:

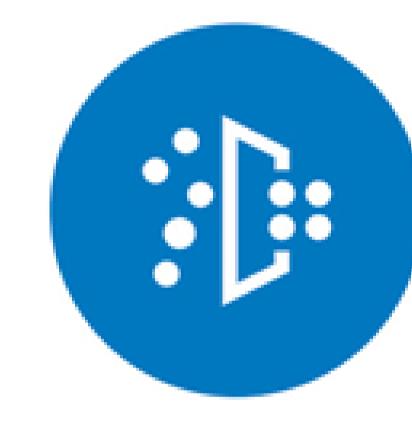
Biomass molding particles, wood chips, palm shells, wood pellet, EFB, etc

Application Industry:

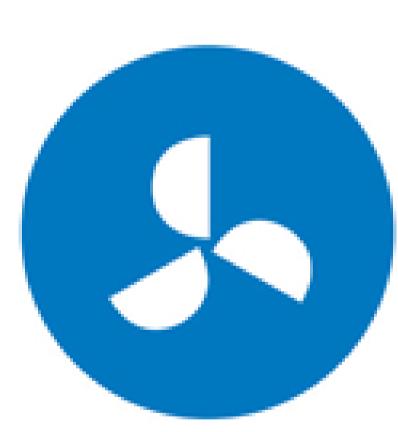
Heating, chemical industry, food, tobacco, textile, printing and dyeing, feed, medicine, building materials, wine, rubber, hospital



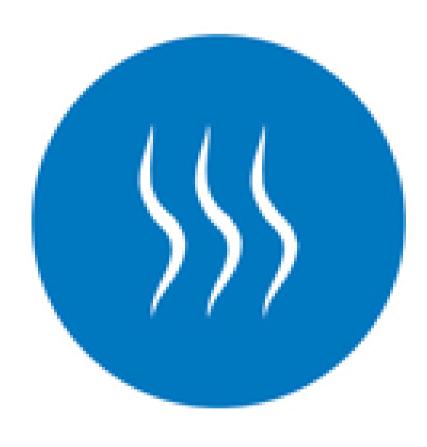
Since biomass fuel is apt to slagging, reciprocating grate's ceaseless movement avoids slagging.



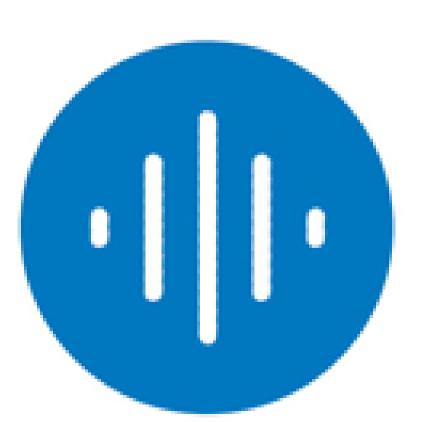
Biomass fuel features small density and small ash particle, which is apt to flow with the flue gas, so we design high furnace and small flow velocity.



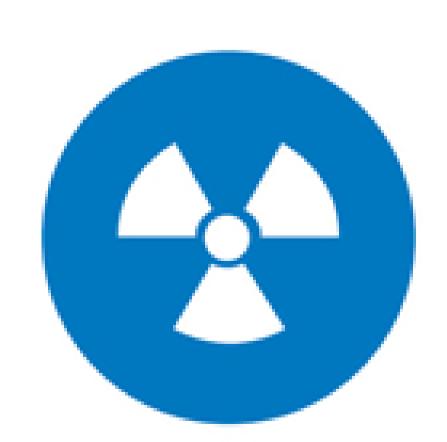
Secondary air ensures that the fuel's standing time in the furnace makes the fuel burn out in the furnace.



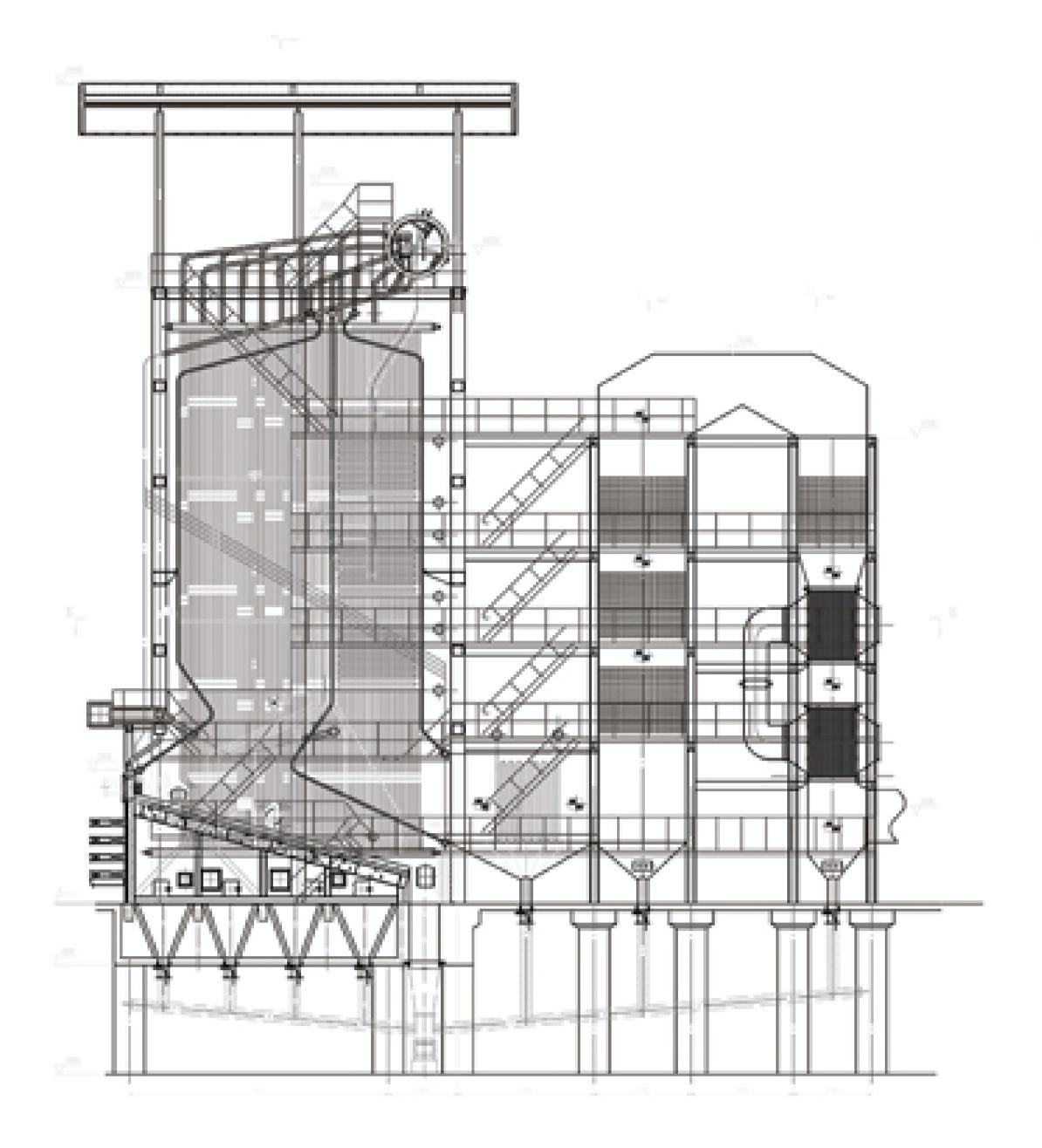
The arch is used to strengthen the mixture of airflow in the furnace and organize the thermal radiation and hot flue gas flow in the furnace.

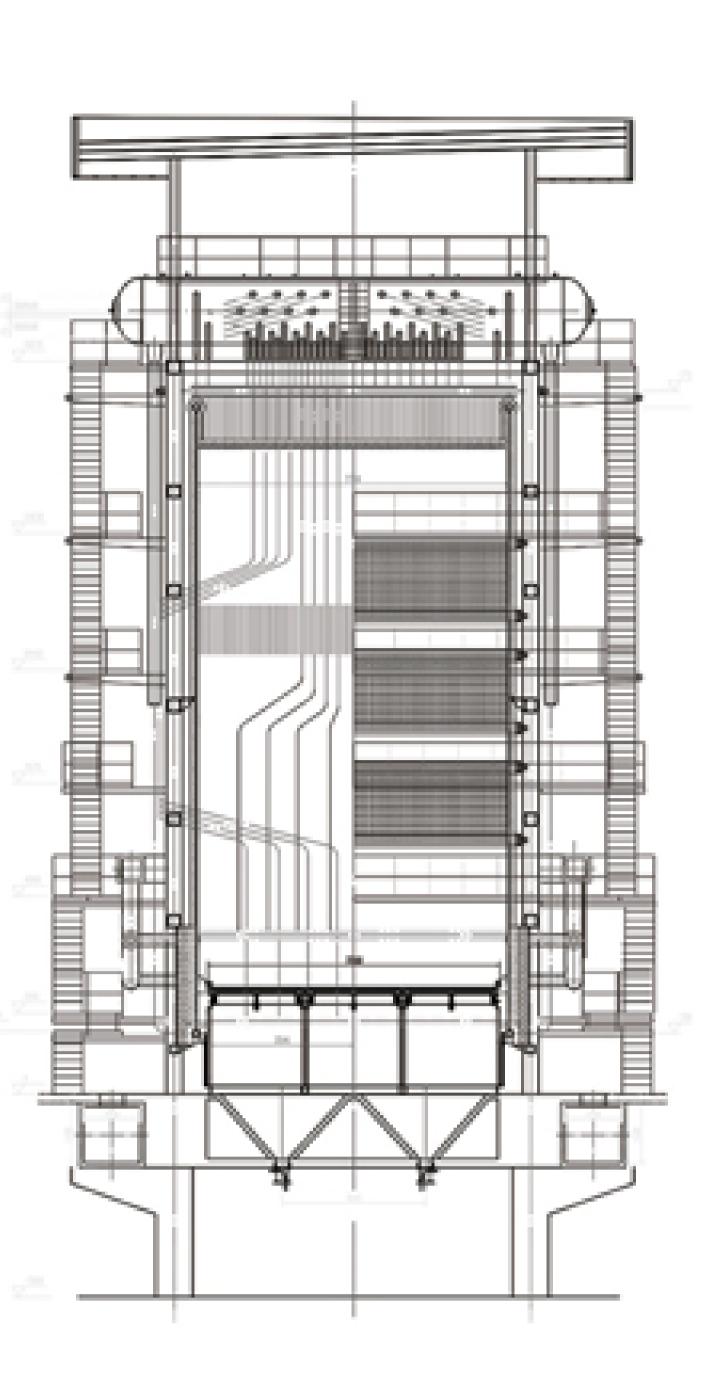


To avoid soot formation, the pitch of convection heating surface shall be in-line arrangement.



The convection bank has steam soot blower, which may remove the soot, and cleaning door is equipped.





Technical Data of DHW Biomass Steam Boiler

Model	Rated Evaporation Capacity (t/h)	Rated Steam Pressure (MPa)		Rated Steam Temperature (°C)	Radiation Heating Area (m²)	Convection Heating Area (m²)		Air Preheater Heating Area (m²)	ACTIVE GRATE	Flue Gas Temperature (°C)
DHW15-2.5-400-SW	15	2.5	105	400	132.7	131.3	265.8	122.6	15.2	158
DHW30-4.1-385-SW	30	4.1	105	385	168.5	150.9	731.8	678.3	23.8	141
DHW35-3.82-450-SW	35	3.82	105	450	152	306.4	630	693.3	31.4	160
DHW38-3.5-320-SW	38	3.5	105	320	238.6	623.6	470.8	833.5	41.8	160
DHW40-5.0-360-SW	40	5	105	360	267.8	796.4	1024.5	591	43.6	156
DHW50-6.7-485-SW	50	6.7	105	485	368	847.5	951.1	1384	58.4	150

Remark Design thermal efficiency is 82%.

CFB Biomass Boiler



CFB

Capacity: 6-90 t/h

Working pressure:

1.25 MPa / 1.6 MPa / 2.5 MPa/3.82MPa/5.29MPa/9.8MPa

Operating temperature:

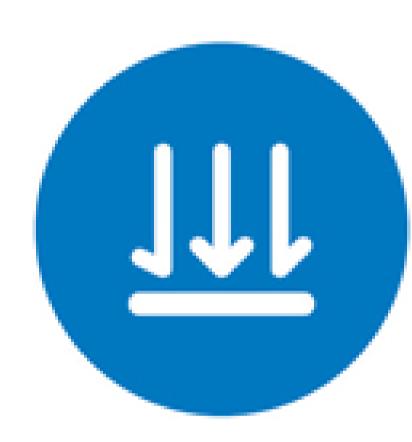
193℃ / 204℃ / 226℃/ 450℃/ 485℃/ 540℃

Suitable fuel:

Biomass molding particles, wood chips, palm shells, wood pellet, EFB, etc

Application Industry:

Heating, chemical industry, food, tobacco, textile, printing and dyeing, feed, medicine, building materials, wine, rubber, hospital



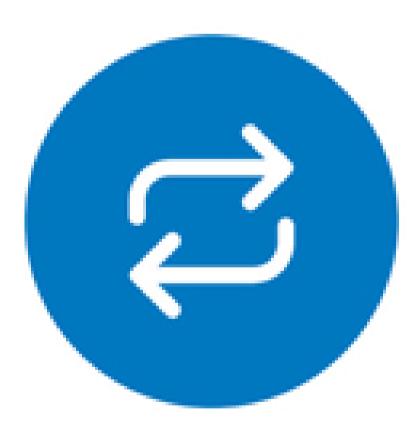
Smaller air leakage coefficient reduces flue gas amount and resistance, a corresponding reduction in ID fan power consumption.



Low bed pressure technology reduces the material layer height, fluidization height, wind chamber pressure, and primary air power consumption.



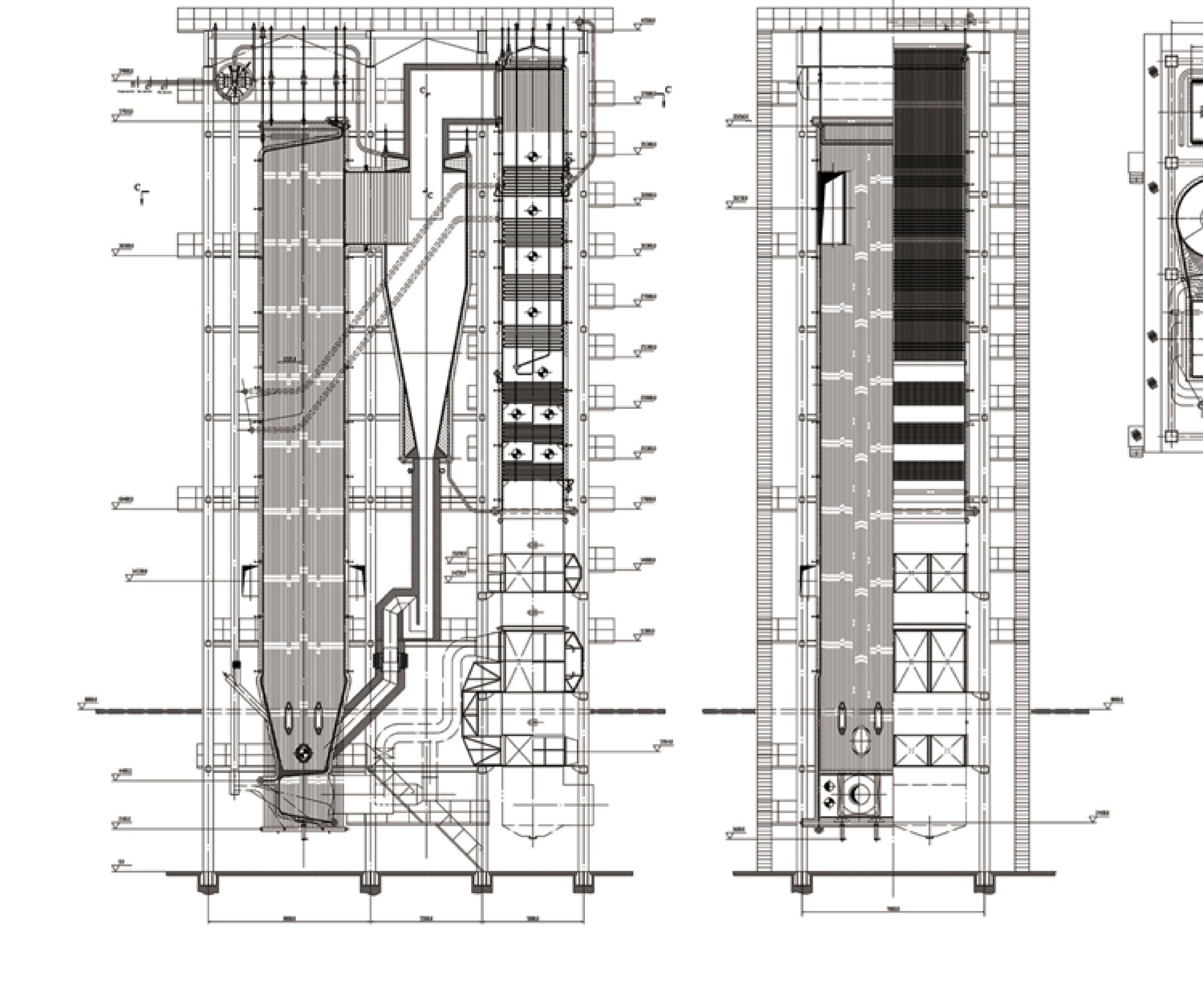
Low bed temperature technology (low-temperature combustion) control the flue gas temperature, grade air supply, reduce NOX amount.



Larger heating surface ensures the boiler output and meets the 110% load requirements.



High temperature cyclone separation circulating combustion system; furnace chamber and wind chamber are connected by membrane water wall.



Technical Data of CFB Biomass Steam Boiler									
Model	Rated Evaporation Capacity (t/h)	Rated Steam Pressure (MPa)	Feed Water Temperature (°C)	Rated Steam Temperature (°C)	Fuel Consumption (kg/h)	Primary Air Fan	Secondary Air Fan	Induced Air Fan	
TG35-3.82-SW	35	3.82	150	450	8680	Q=30911m³/h P=14007Pa	Q=25533m³/h P=8855Pa	Q=107863m³/h P=5200Pa	
TG75-3.82-SW	75	3.82	150	450	18400	Q=52500m³/h P=15007Pa	Q=34000m³/h P=9850Pa	Q=200000m³/h P=5500Pa	
TG75-5.29-SW	75	5.29	150	485	18800	Q=52500m³/h P=15007Pa	Q=34000m³/h P=9850Pa	Q=200000m³/h P=5500Pa	
TG75-9.8-SW	75	9.8	215	540	19100	Q=52500m³/h P=15007Pa	Q=34000m³/h P=9850Pa	Q=200000m³/h P=5500Pa	
TGI30-3.82-SW	130	3.82	150	450	29380	Q=91100m³/h P=16294Pa	Q=59000m³/h P=9850Pa	Q=2×152000m³/h P=5500Pa	
TGI30-5.29-SW	130	5.29	150	485	29410	Q=91100m³/h P=16294Pa	Q=59000m³/h P=9850Pa	Q=2×152000m³/h P=5500Pa	
TG130-9.8-SW	130	9.8	215	540	29500	Q=91100m³/h P=16294Pa	Q=59000m³/h P=9850Pa	Q=2×152000m³/h P=5500Pa	
Remark	Design thermal efficiency is 82%.								

Our Partner

Taishan Group is one of the earliest professional manufacturers involved in biomass boiler industry, which has been precipitated by technology for more than 20 years. Taishan Group has made proud achievements in the research, development, design, manufacture and operation of biomass boilers.

As of 2022, Taishan Group has sold more than 30 boilers to Thailand, Uruguay, Vietnam, Malaysia, India and other countries and regions all over the world. It effectively reduces the dependence on fossil fuels, reduces greenhouse gas emissions, and promotes the development of renewable energy and the transformation of the global energy structure.































PARTNER



Palm Shell Boiler EPC Project

30th 4.1MPa ASME

THAI BEVERAGE

Thai Beverage, better known as Thai Bev, is Thailand's largest and one of Southeast Asia's leading beverage companies, with distilleries in Thailand, UK, and China. With their expansion, they need a self-built beer factory. We supplied 2 sets 30TPH spent grain boiler and one set 9MW backpressure steam turbine and generator. This is our first EPC project overseas.

SCHNECK

SCHNECK is prestigious for processing and production of sausage and meat products in Uruguay. We supplied one set 4t/h HFO boiler and one set 4t/h wood chip boiler, of which one set is working and another set is standby.

Wood chip steam boiler EPC



ACECOOK VIETNAM JSC

Acecook Vietnam Joint Stock Company is Vietnam's top instant noodle manufacturer. We supplied one set 15TPH, 7 sets 20TPH, and 2 sets 30TPH anthracite fired boilers.

Rice husk steam boiler



THACHANA PALM OIL CO..LTD

Thachana Palm Oil is a crude palm oil extraction company producing crude palm oil, dried palm kernels, and electricity, we supplied a 38TPH palm fib er boiler.

Palm fiber steam boiler





Palm Fiber Steam Boiler

35th 2.5MPaGB

LAM SOON PTE.LD

Lam Soon is a well-known brand in Southeast Asia, recognized for its high-quality products and strong brand management skills. It is acknowledged as a leading player in the Fast Moving Consumer Goods (FMCG) industry. We provided a 35t/h palm fiber steam boiler to their company in Thailand, which utilizes the palm fiber leftover from palm oil extraction to generate steam.

ZHONGSHAN UNITED HONGXING PAPER MILLE

Zhongshan United Hongxing Paper Mill, a major packaging paper manufacturer, now operates a more efficient 30t/h biomass boiler, cutting emissions and enhancing combustion compared to the previous setup. The annual production capacity is 400,000 tons.

Biomass steam boiler



XINGTAI SHUANGJIE THERMAL POWER CO., LTD.

Xingtai Shuangjie Thermal Power Co., Ltd. is a prominent local heat and power company. We supplied them with a 75t/h biomass power plant boiler. This boiler produces the steam not only for the generation of electricity, but also for the process production heating.

Biomass power plant boiler



WEIXIAN AOSEN NEW ENERGY CO., LTD

Weixian Aosen New Energy Co., Ltd. is primarily engaged in the promotion of new energy technologies, natural gas sales, and electricity retailing. In 2021, we supplied them with a 170t/h biomass power plant boiler. This boiler generates steam by burning biomass fuel, driving generators to produce electricity and providing clean energy to the power grid.

Biomass power plant boiler





CUSTOMER EVALUATION

LAM SOON PTE.LD

TAISHAN boiler has demonstrated outstanding performance and has fully met our needs at our facility in Thailand. It efficiently utilizes the palm fiber leftover from palm oil extraction to produce high-quality steam, supplying the necessary heat for our production processes. Moreover, the boiler's reliability and efficiency have given us a significant advantage in our operations.

THAI

TAISHAN Boiler has left a profound impression on us. It's hard to believe that this is their first overseas EPC project. Taishan Boiler has conquered us with its excellent technology and professional service. We are very grateful for the professional technical support and high-quality after-sales service provided by Taishan, which has allowed us to use this boiler with greater confidence.

ACECOOK VIETNAM JSC

Our company has had numerous collaborations with Taishan, and looking back at our past partnerships, Taishan Boiler has consistently performed exceptionally well in terms of product quality, service attitude, and technical support. This time, the rice husk steam boiler they produced for us has significantly reduced our operational costs and improved efficiency.

Xingtai Shuangjie Thermal Power Co., Ltd.

TAISHAN Boiler was a brand with long history and good reputation, we were satisfied with the cooperation. The after-sales services were considerate. Also, the safety performance of the boiler was good, the automatic control system and interlocks guaranteed the safety operation.

