UPA Thermal
BOILERS

ADVANCING BIOMASS ENERGY: SUSTAINABLE BOILER SOLUTIONS FOR INDUSTRY

UPA THERMAL

Wuxi UPA Thermal Equipment Co,.Ltd.

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2025/06/25 EDITION

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Company Introduction

20000 m^2
Company Area

100+
Number of Employees

50+
Invention Patent

Wuxi UPA Thermal is a leading manufacturer of high-efficiency biomass boiler systems, committed to accelerating the global transition to carbon-neutral industrial and commercial heating.

Since Year 1991, we have engineered cutting-edge thermal solutions that harness renewable biomass resources, empowering businesses to achieve energy independence while significantly reducing environmental impact.

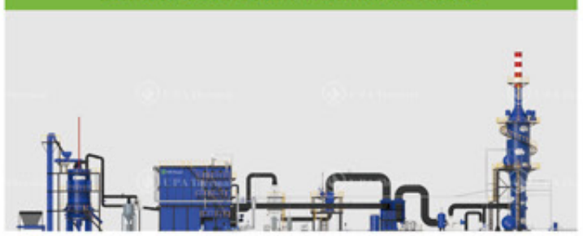
Our Mission

To drive the decarbonization of industrial energy through innovative, reliable, and economically viable biomass technologies—turning waste intovalue and advancing a circular economy.



Biomass Gasification Steam Boiler

Biomass Gasification Thermal Oil Heater



Biomass-fired Chain Grate Steam Boiler

Biomass-fired Chain Grate Thermal Oil Heater

Biomass-fired Reciprocating Grate Steam Boiler

Biomass-fired Reciprocating Grate Thermal Oil Heater

01

02

Partnering with Nature: Utilizing Biomass Resources

Biomass Energy

Biomass is a renewable, carbon neutral energy source.

Biomass energy currently just meet 10% of the world's energy consumption demand.

By 2050, biomass energy will become an important energy source, with its share of demand rising to 30%

Renewable: Derives from constantly replenished sources like plants and waste.

Climate Action: Significantly cuts net greenhouse gas emissions by replacing fossils fuels and curbing potent me thane from waste.

Reliable Power: Offers dispatchable baseload electricity (unlike intermittent wind/solar), enhancing grid stability.

Waste Solution: Converts agricultural residues, organic waste, etc. into valuable energy, reducing landfill pressure.

Versatility: Produces diverse energy (biofuels, biogas, heat, power), easily integrated into existing infrastructure (turbines, vehicles, gas grids).

Energy Security: Boosts independence by utilizing widely available local biomass resources, reducing reliance on imported fossil fuels.

EFB (Empty fruit bunches)

Coconut shell

Wood pellets

Palm fiber

Rice husk

Biomass briquettes

Wood chip

Corn cobs

Sawdust

Bagasse

C&D Wood

Waste Wood

Our Customers

Food Industry

蒙牛 · 甘源 GANYUAN · 雀巢 Nestlé

Medicine Industry

DSM · 特一药业 TEYI PHARMACEUTICAL · 西灵鸟

Papermaking Industry

P&G · TOPSUN 维盛 ·

Cereals and Animal Husbandry

中粮 COFCO · 正大集团 CP GROUP · 新希望集团 NEW HOPE GROUP

Wood-processing Industry

SUNYARD 世友地板 · Nature 大自然地板 · 碧桂园 GARDEN

Waterproof Materials Industry

XS 新三亚科技 · 蜀羊防水 SHUYANG WATERPROOF · 宇虹

Road Pavement Industry

中国交建 · AMMANN · MARINI FAYAT GROUP

Asphalt Industry

HUATE · SINOTRANS · 新天鹭

Dyeing and Textiles Industry

Ashford MILLS · 索菲亚 · lawrance

Chemical Fiber Industry

TONGKUN · DUPONT ·

Petroleum Industry

中国石油 · 中国石化 SINOPEC · Shell

Chemistry Industry

阳煤集团 · 陕西煤业化工集团公司 · ASKPCB 奥士康

Global Suppliers

无锡锡能锅炉集团 WUXI XINENG BOILER GROUP · Schneider Electric

CIB UNIGAS · REITZ GROUP

CNP 南方泵业 · 天康集团

格兰富 GRUNDFOS · spirax sarco

SIEMENS · Ecoflam

Endress+Hauser People for Process Automation · VENTMECA INDUSTRIAL FANS

YOKOGAWA 横河デジタル株式会社 · SKF

NORD DRIVESYSTEMS · ABB · SEW EURODRIVE

Project Display

Biomass Gasification Steam Boiler

Case: Biomass Gasification Steam Boiler 10 Tons/H

Emissions are far below international standards
NO_x≤50mg/Nm³
SO_2≤35mg/Nm³
Particle≤10mg/Nm³ Oxygen content reference value: 9%

① Belt Conveyor
② Gasifier
③ Tar Water Collector
④ Biomass Gasification Steam Boiler
⑤ SCR Denitrification Reactor
⑥ High-Temperature Economizer
⑦ Low-Temperature Economizer
⑧ Desulfurization Wet ESP Chimney Integrated Tower
⑨ Soft Water Tank
⑩ High-position Thermal Spray Deaerator
⑪ Soft Water Tank
⑫ Water Softener
⑬ Gas Tank
⑭ Air Compressor
⑮ Refrigerated Air Dryer
⑯ Continuous Blowdown Expansion Tank
⑰ Periodic Blowdown Expansion Tank
⑱ Urea Mixing Tank
⑲ Metering Pump Set
⑳ Steam Distributor
㉑ Chemical Dosing Unit

Biomass Gasification Steam Boiler 10 Tons/H

Key Features

Rated evaporation capacity: 8t/h-35t/h

Thermal power: 5MW-25MW

Rated working pressure: 1.25/1.6/2.5MPa

Rated working temperature: 193/204/226°C

Feed water temperature: 104°C

Design efficiency: ≥91%

Structural Characteristics & Performance Advantages

Wide Fuel Compatibility

Compatible with wood chips, olive husks, rice husks, industrial wood waste, and other types of solid biomass.

Low Emissions

NO_x, SO_2 and particleare far below the most stringent standards.

Extremely High Thermal Efficiency

The unique structural designand material usage ensure high thermal efficiency.

Advanced Control System

Fully automatic precision control of temperature and pressure for safety.

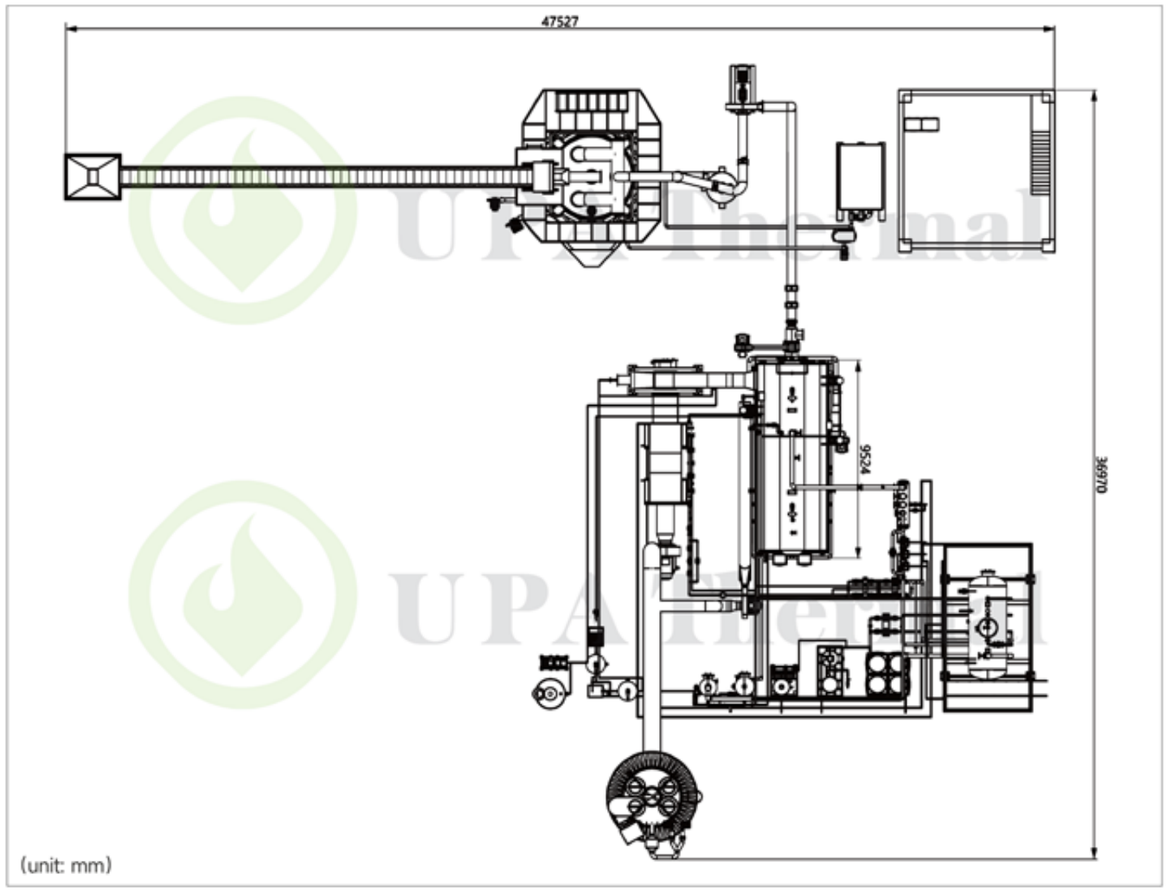
Convenient Inspection and Maintenance

The unique structural design facilitates internal inspection and maintenance.

Assembly Structure Saves Installation Time and Cost

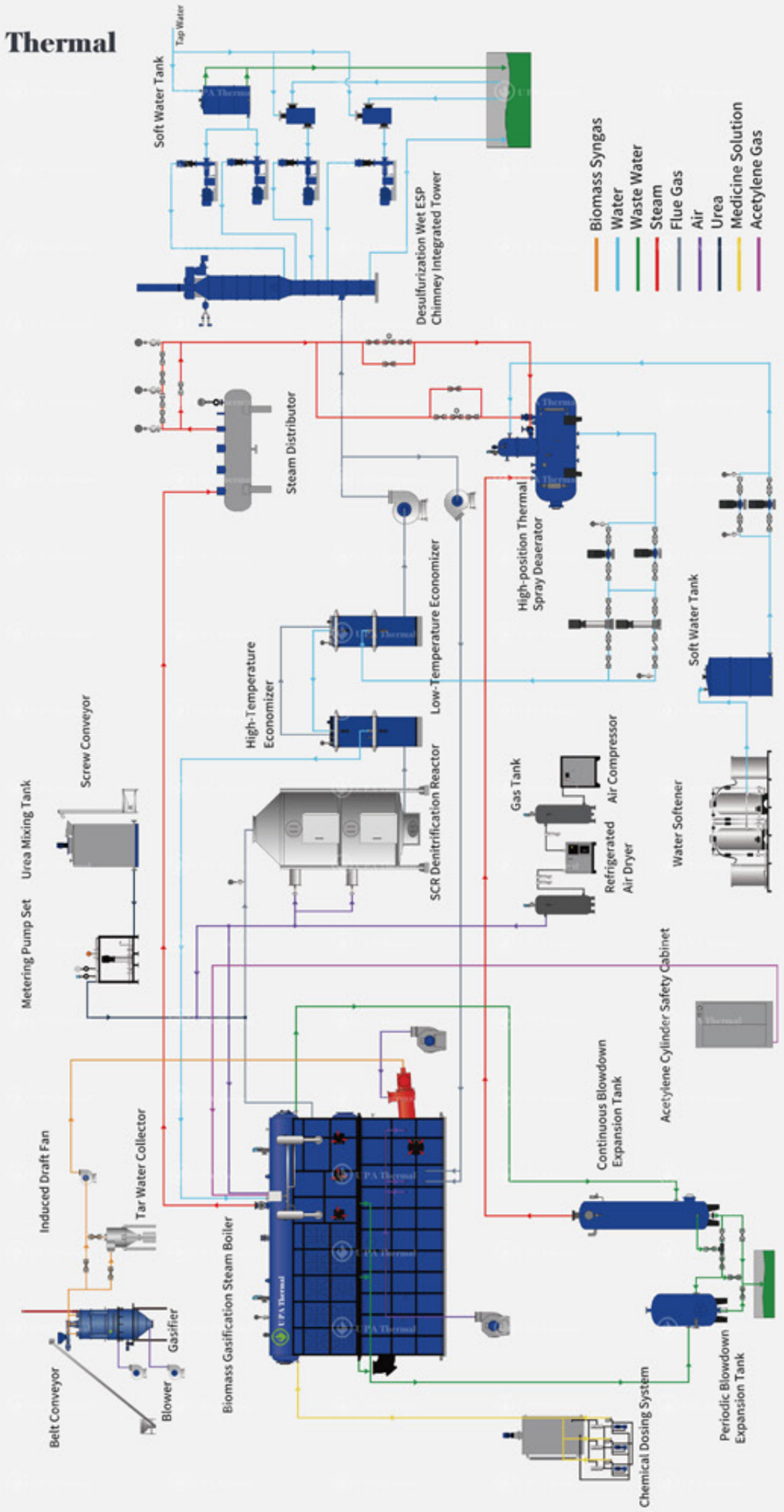
The boiler adopts a modular structure, which is convenient for installation and short installation period.

Equipment Layout



(unit: mm)

Biomass Gasification Steam Boiler 10 Tons/H Flow Chart



Detailed Parameters

Model		SZS8	SZS10	SZS15	SZS20	SZS25	SZS35
Rated evaporation capacity (t/h)		8	10	15	20	25	35
Thermal power (MW)		5.6	7	10.5	14	18	25
Rated working pressure (MPa)		1.25/1.6/2.5					
Rated working temperature (°C)		193/204/226					
Feed water temperature (°C)		104					
Design efficiency (%)		≥91%					
Boiler water volume (m^3)		14.2	15	21	24	25	35
Heat exchange area	Main body (m^2)	283	308	415	616	695	753
	Energizer (m^2)	264	408	650	915	1145	1258
Applicable fuel		Biomass gas					
Burner type		Negative pressure combustion					
Main steam diameter (mm)		DN150	DN150	DN200	DN200	DN250	DN300
Feed water diameter (mm)		DN50	DN50	DN65	DN80	DN80	DN80
Main body drain (mm)		DN50	DN50	DN50	DN50	DN50	DN50
Safety valve diameter (mm)		65+80	2×80	80+100	2×100	2×125	125+150

Case Showcase

Biomass-fired Chain Grate Steam Boiler

Emissions are far below international standards
NO_x≤50mg/Nm³
SO_2≤35mg/Nm³
Particle≤10mg/Nm³ Oxygen content reference value: 9%

Case: Biomass-fired Chain Grate Steam Boiler 20 Tons/H

1. Bucket Elevator
2. Silo
3. Biomass-fired Chain Grate Steam Boiler
4. Cyclone
5. SCR Denitrification Reactor
6. High-Temperature Economizer
7. Low-Temperature Economizer
8. Dry Desulfurization Tower
9. Lime Silo
10. High Temperature Collector
11. Chimney
12. High-position Thermal Spray Deaerator
13. Soft Water Tank
14. Water Softener
15. Continuous Blowdown Expansion Tank
16. Periodic Blowdown Expansion Tank
17. Urea Mixing Tank
18. Metering Pump Set
19. Gas Tank
20. Refrigerated Air Dryer
21. Air Compressor
22. Chemical Dosing System
23. Steam Distributor

Biomass-fired Chain Grate Steam Boiler 20 Tons/H

Key Features

Rated evaporation capacity: 8t/h-35t/h

Thermal power: 5MW-25MW

Rated working pressure: 1.25/1.6/2.5MPa

Rated working temperature: 193/204/226°C

Feed water temperature: 104°C

Design efficiency: ≥88%

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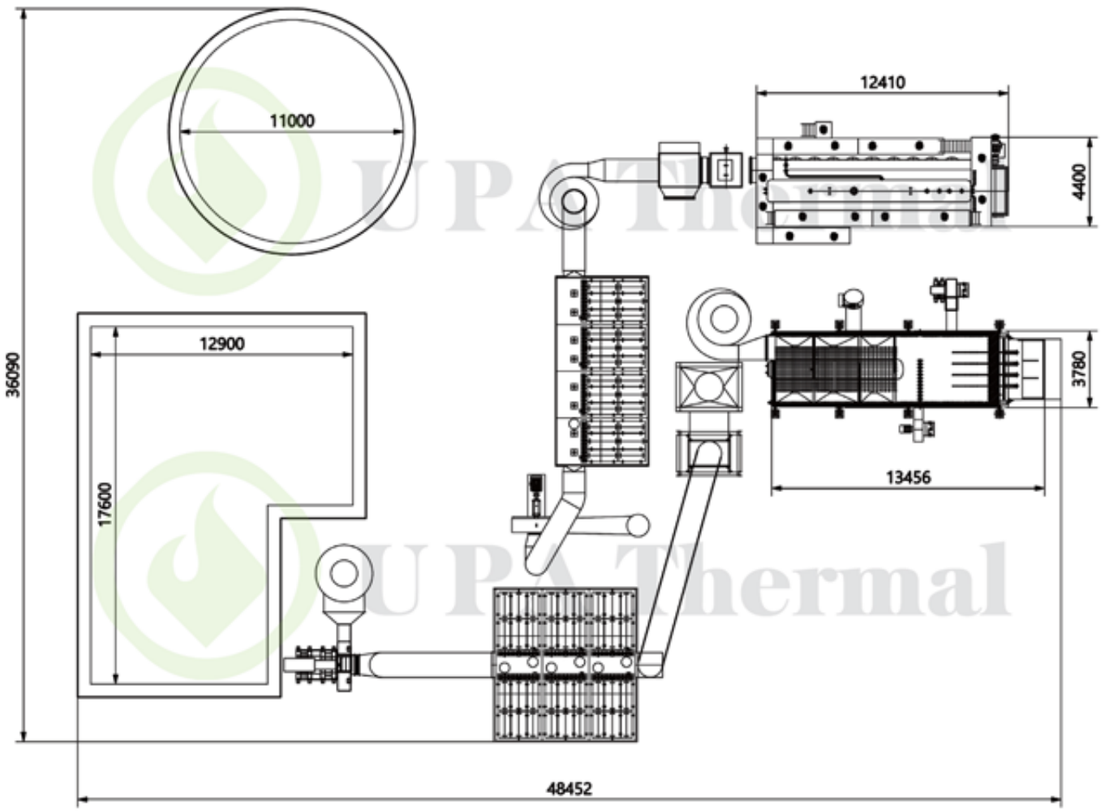
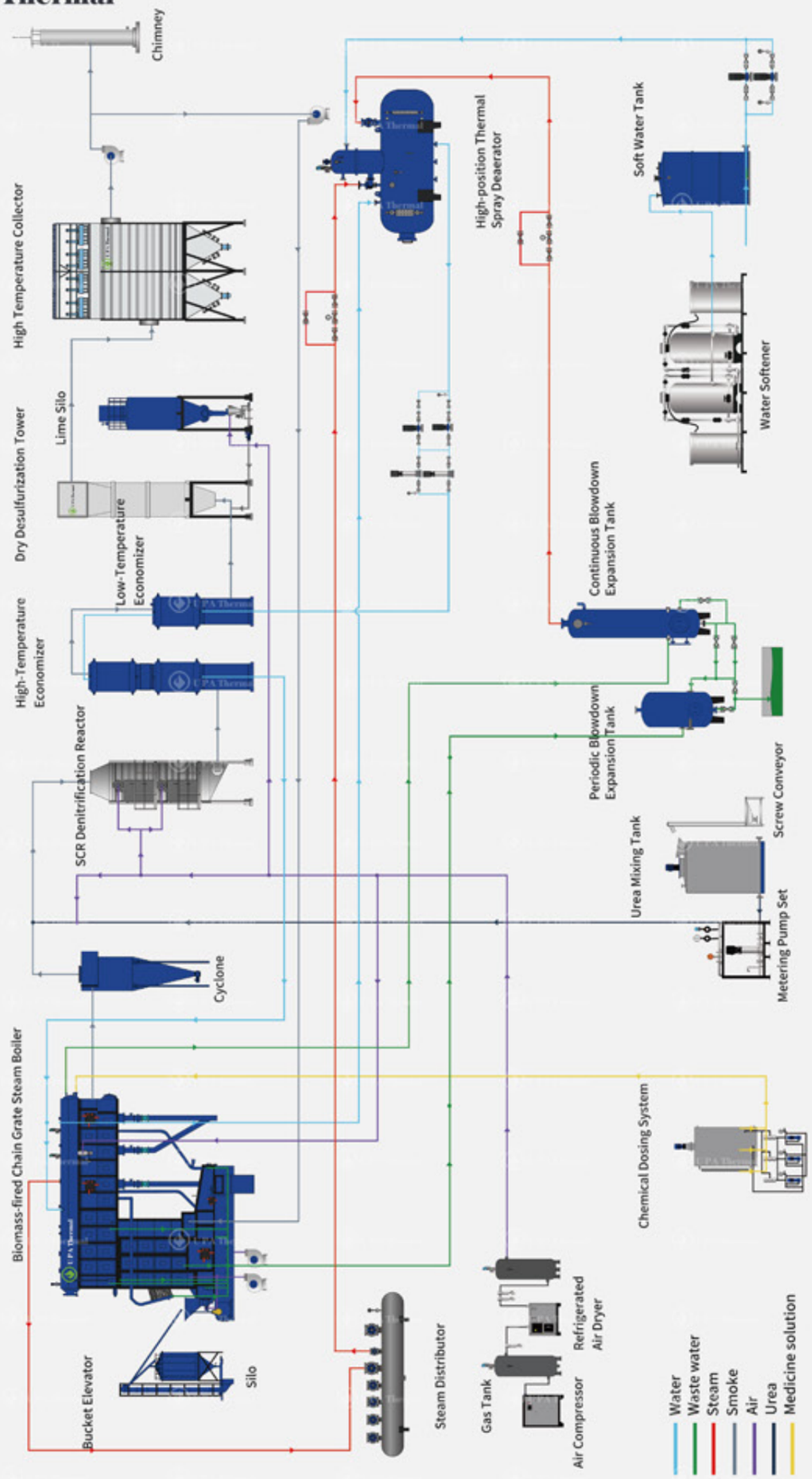


Biomass-fired Chain Grate Steam Boiler 20 Tons/H Fow Chart



Detailed Parameters

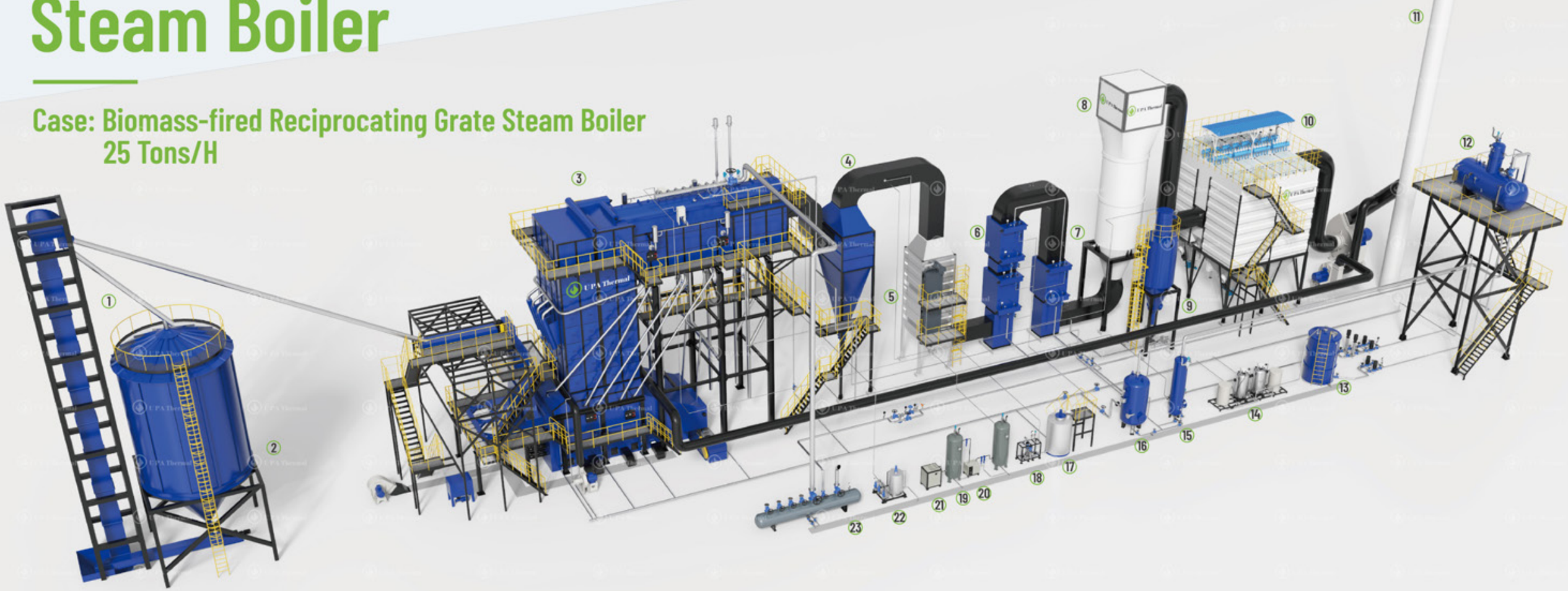
Model		SZL8	SZL10	SZL15	SZL20	SZL25	SZL35
Rated evaporation capacity (t/h)		8	10	15	20	25	35
Thermal power (MW)		5.6	7	10.5	14	18	25
Rated working pressure (MPa)		1.25/1.6/2.5					
Rated working temperature (°C)		193/204/226					
Feed water temperature (°C)		104					
Design efficiency (%)		≥88%					
Boiler water volume (m^3)		13.5	13.5	18	23	28	35
Heat exchange area	Main body (m^2)	278	287	392	490	688	739
	Energizer (m^2)	240	310	353	540	1521	826
Applicable fuel		Biomass (forestry type), low calorific value 2300-4000Kcal/h, moisture 10-50%, Appearance: equivalent diameter 30-50mm (length less than 100mm)					
Burner type		Negative pressure combustion					
Main steam diameter (mm)		DN150	DN150	DN200	DN200	DN250	DN300
Feed water diameter (mm)		DN50	DN50	DN65	DN80	DN80	DN80
Main body drain (mm)		DN50	DN50	DN50	DN50	DN50	DN50
Safety valve diameter (mm)		65+80	2×80	80+100	2×100	2×125	125+150

Case Showcase

Biomass-fired Reciprocating Grate Steam Boiler

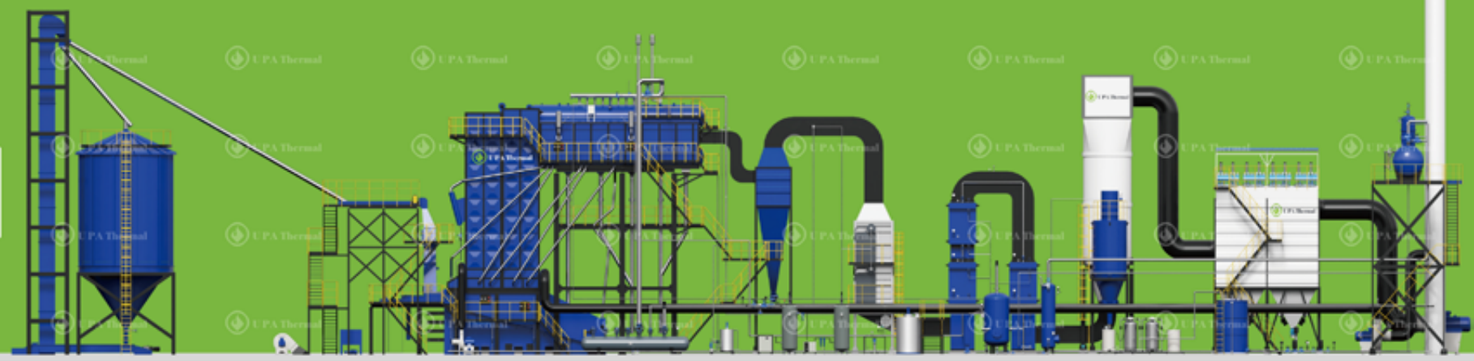
Emissions are far below international standards
NO_X≤50mg/Nm³
SO_2≤35mg/Nm³
Particle≤10mg/Nm³ Oxygen content reference value: 9%

Case: Biomass-fired Reciprocating Grate Steam Boiler 25 Tons/H



① Bucket Elevator
② Silo
③ Biomass-fired Reciprocating Grate Steam Boiler
④ Cyclone
⑤ SCR Denitrification Reactor
⑥ High-Temperature Economizer
⑦ Low-Temperature Economizer
⑧ Dry Desulfurization Tower
⑨ Lime Silo
⑩ High Temperature Collector
⑪ Chimney
⑫ High-position Thermal Spray Deaerator
⑬ Soft Water Tank
⑭ Water Softener
⑮ Continuous Blowdown Expansion Tank
⑯ Periodic Blowdown Expansion Tank
⑰ Urea Mixing Tank
⑱ Metering Pump Set
⑲ Gas Tank
⑳ Refrigerated Air Dryer
㉑ Air Compressor
㉒ Chemical Dosing System
㉓ Steam Distributor

Biomass-fired Reciprocating Grate Steam Boiler 25 Tons/H



Key Features

Rated evaporation capacity: 8t/h-35t/h

Thermal power: 5MW-25MW

Rated working pressure: 1.25/1.6/2.5MPa

Rated working temperature: 193/204/226°C

Feed water temperature: 104°C

Design efficiency: ≥88%

Structural Characteristics & Performance Advantages

Wide Fuel Compatibility

Compatible with wood chips, olive husks, rice husks, industrial wood waste, and other types of solid biomass.

Low Emissions

NO_X, SO_2 and particleare far below the most stringent standards.

Extremely High Thermal Efficiency

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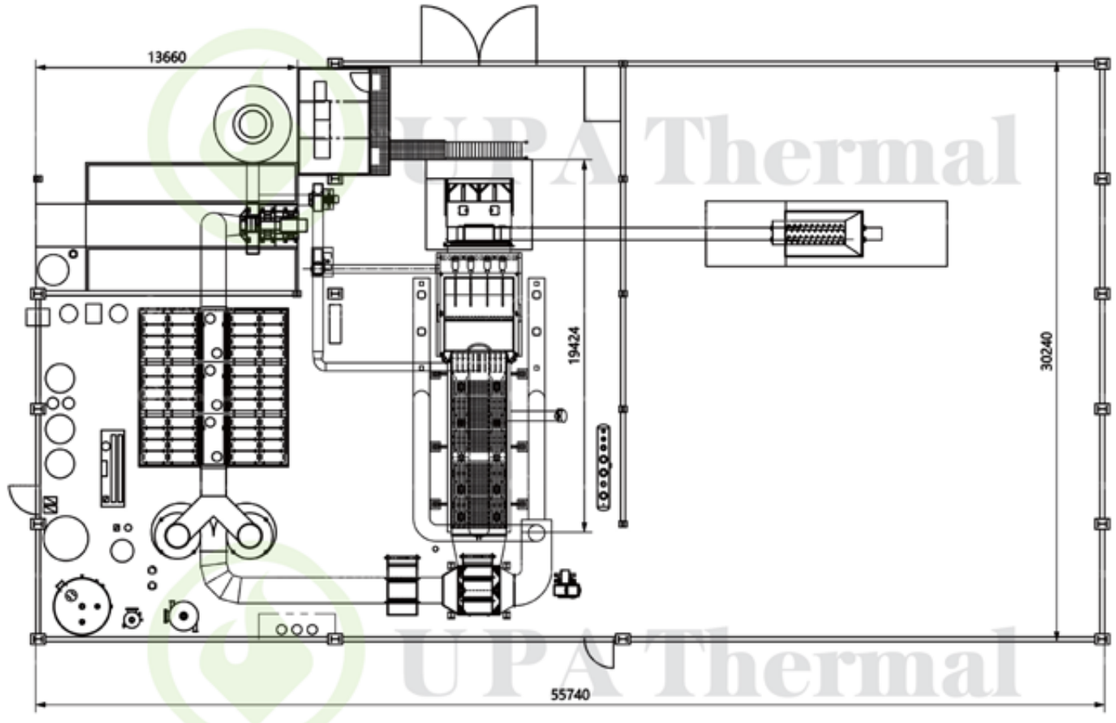
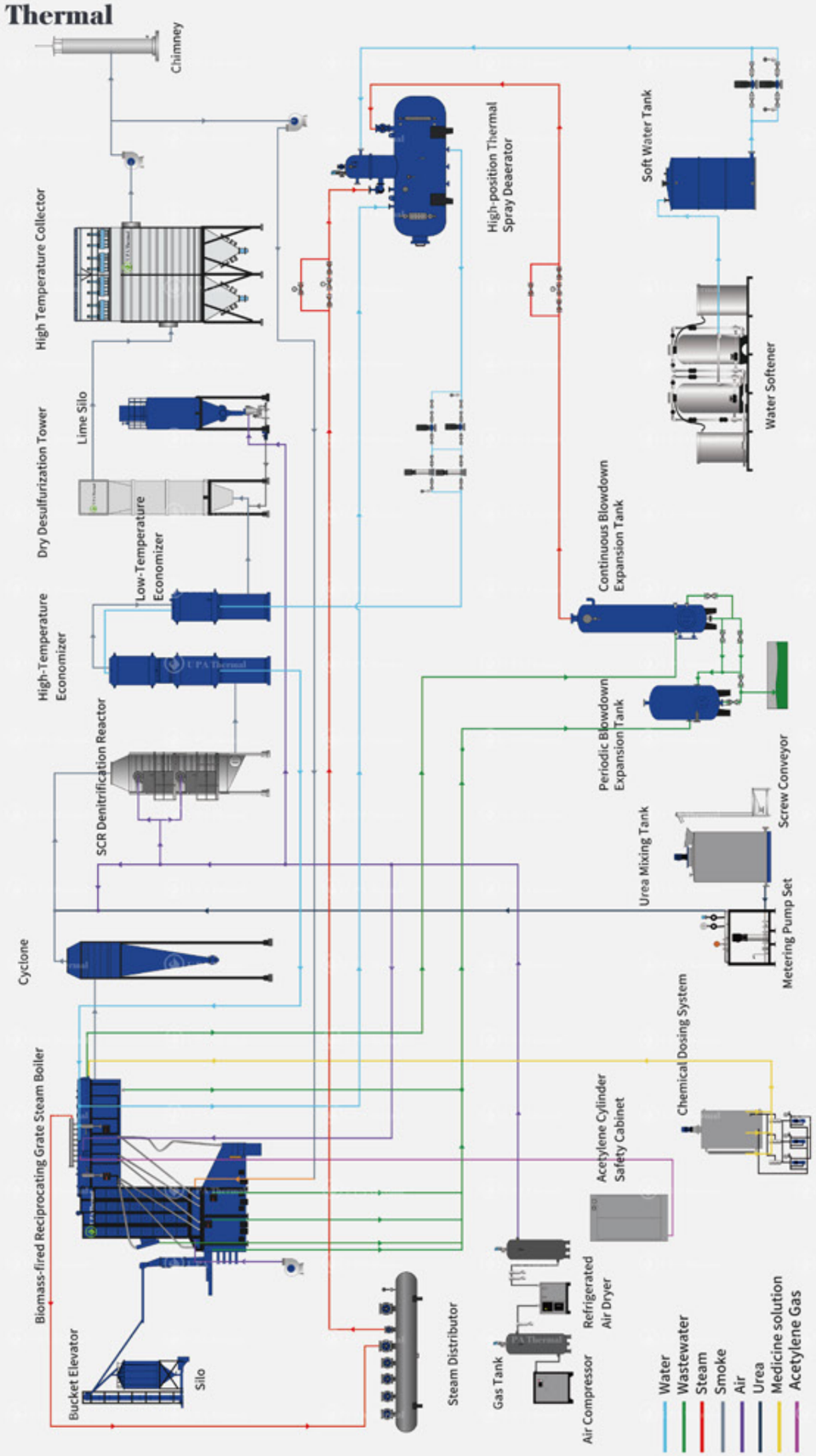
Equipment Layout



(unit: mm)

Biomass-fired Reciprocating Grate Steam Boiler 25 Tons/H Fow Chart



Detailed Parameters

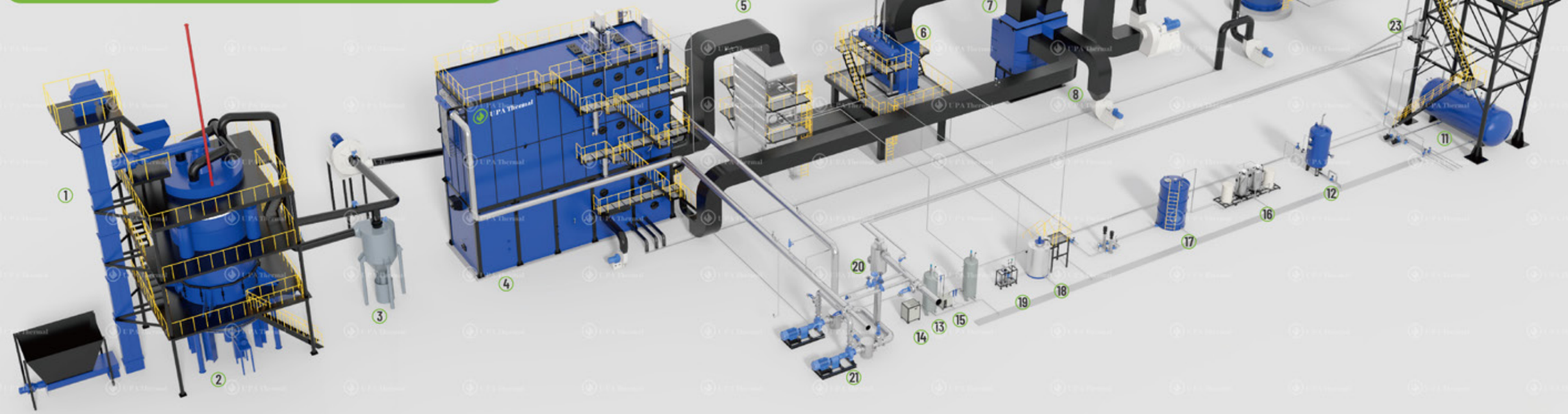
Model		SZL8	SZL10	SZL15	SZL20	SZL25	SZL35
Rated evaporation capacity (t/h)		8	10	15	20	25	35
Thermal power (MW)		5.6	7	10.5	14	18	25
Rated working pressure (MPa)		1.25/1.6/2.5					
Rated working temperature (°C)		193/204/226					
Feed water temperature (°C)		104					
Design efficiency (%)		≥88%					
Boiler water volume (m^3)		13.5	13.5	18	23	28	35
Heat exchange area	Main body (m^2)	278	287	392	490	688	739
	Energizer (m^2)	240	310	353	540	1521	826
Applicable fuel		Biomass (forestry type), low calorific value 2300-4000Kcal/h, moisture 10-50%, Appearance: equivalent diameter 30-50mm (length less than 100mm)					
Burner type		Negative pressure combustion					
Main steam diameter (mm)		DN150	DN150	DN200	DN200	DN250	DN300
Feed water diameter (mm)		DN50	DN50	DN65	DN80	DN80	DN80
Main body drain (mm)		DN50	DN50	DN50	DN50	DN50	DN50
Safety valve diameter (mm)		65+80	2×80	80+100	2×100	2×125	125+150

Case Showcase

Biomass Gasification Thermal Oil Heater

Case: Biomass Gasification Thermal Oil Heater 16 Million Kcal/H

Emissions are far below international standards
NO_x≤50mg/Nm³
SO_2≤35mg/Nm³
Particle≤10mg/Nm³ Oxygen content reference value: 9%



① Belt Conveyor
② Gasifier
③ Tar Water Collector
④ Biomass Gasification Thermal Oil Heater
⑤ SCR Denitrification Reactor
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⑦ High-Temperature Economizer
⑧ Low-Temperature Economizer
⑨ Desulfurization Wet ESP Chimney Integrated Tower
⑩ Expansion Tank
⑪ Oil Storage Tank
⑫ Periodic Blowdown Expansion Tank
⑬ Gas Tank
⑭ Air Compressor
⑮ Refrigerated Air Dryer
⑯ Water Softener
⑰ Soft Water Tank
⑱ Urea Mixing Tank
⑲ Metering Pump Set
⑳ Oil-Gas Separator
㉑ Circulating Oil Pump
㉒ Soft Water Tank
㉓ Buffer Tank

Biomass Gasification Thermal Oil Heater 16 Million Kcal/H

Key Features

Heating capacity × 10^4 : 350Kcal/h-2200Kcal/h

Thermal power: 4MW-26MW

Design pressure: 1.1 MPa

Maximum operating temperature: 320°C

Medium circulation volume: 260-1300m^3/h

Design efficiency: 85%-88%

Structural Characteristics & Performance Advantages

Wide Fuel Compatibility

Compatible with wood chips, olive husks, rice husks, industrial wood waste, and other types of solid biomass.

Low Emissions

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Extremely High Thermal Efficiency

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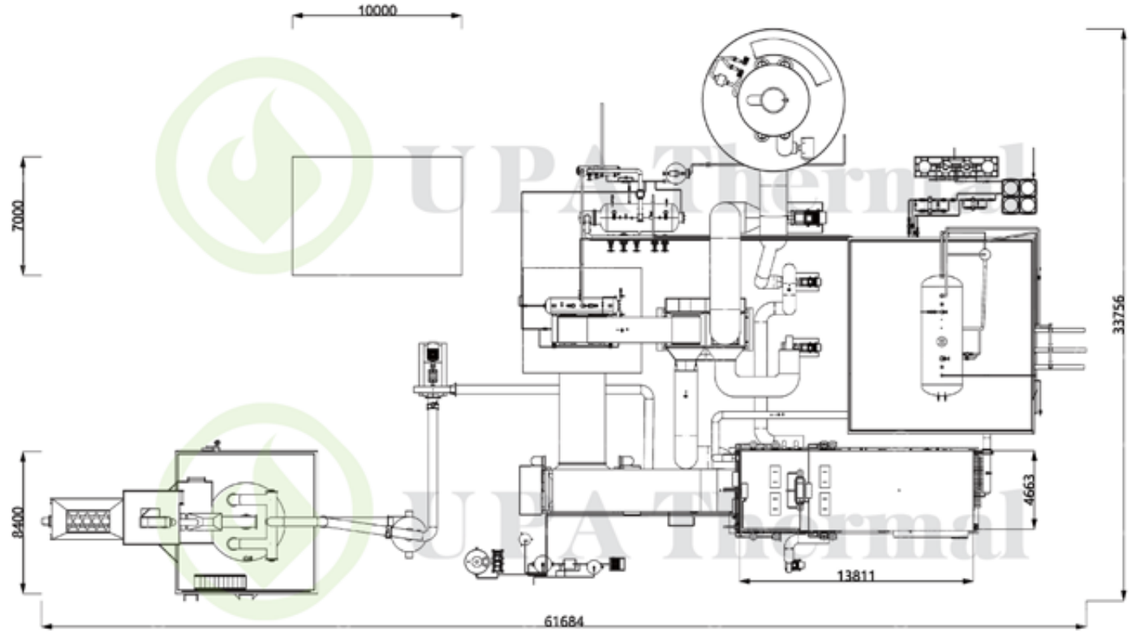
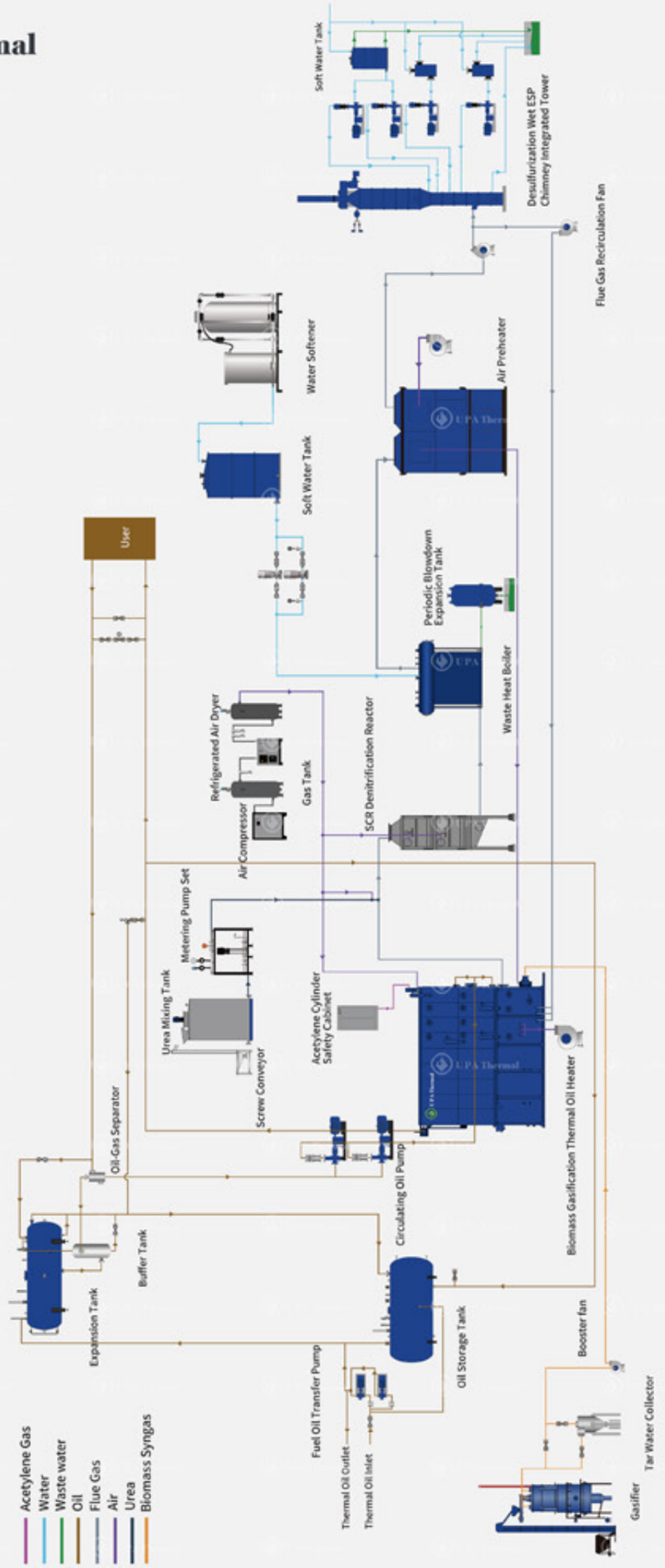
Equipment Layout



(unit: mm)

Biomass Gasification Thermal Oil Heater 16 Million Kcal/H Fow Chart



Detailed Parameters

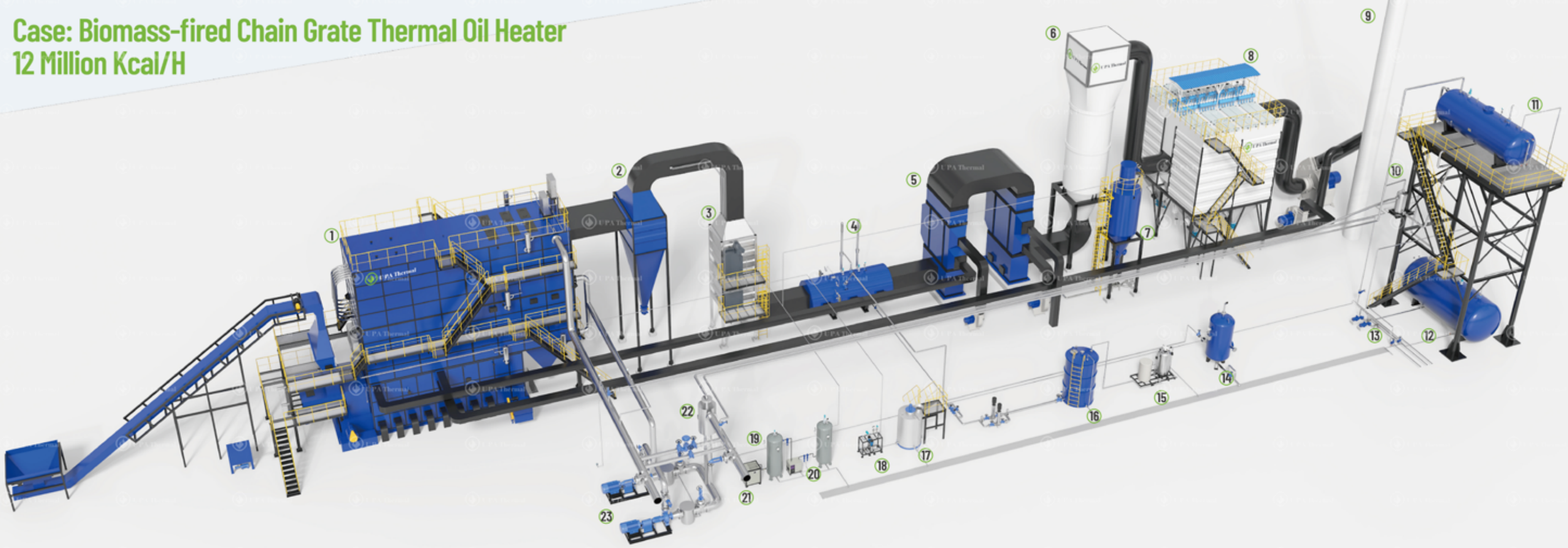
Model	YLW-4100SII	YLW-7000SII	YLW-10500SII	YLW-14000SII	YLW-19000SII	YLW-25000SII
Heating capacity × 10^4 (Kcal/h)	350	600	900	1200	1600	2200
Thermal power (MW)	4.1	7	10.5	14	19	25
Design pressure (MPa)	1.1					
Maximum operating temperature (°C)	320					
Medium circulation volume (m^3/h)	260	520	800	1000	1000	1300
Design efficiency (%)	85.5	88	88	88	88	88
Main pipe diameter (mm)	DN200	DN300	DN350	DN400	DN400	2×DN400
Applicable fuel	Biomass gas, low calorific value 1280Kcal/h					
Burner type	Negative pressure combustion					

Case Showcase

Biomass-fired Chain Grate Thermal Oil Heater

Emissions are far below international standards
NO_x≤50mg/Nm³
SO_2≤35mg/Nm³
Particle≤10mg/Nm³ Oxygen content reference value: 9%

Case: Biomass-fired Chain Grate Thermal Oil Heater 12 Million Kcal/H



① Biomass-fired Chain Grate Thermal Oil Heater
② Cyclone
③ SCR Denitrification Reactor
④ Waste Heat Boiler
⑤ Air Preheater
⑥ Dry Desulfurization Tower
⑦ Lime Silo
⑧ High Temperature Collector
⑨ Chimney
⑩ Buffer Tank
⑪ Expansion Tank
⑫ Oil Storage Tank
⑬ Fuel Oil Transfer Pump
⑭ Periodic Blowdown Expansion Tank
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⑯ Soft Water Tank
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⑱ Metering Pump Set
⑲ Gas Tank
⑳ Air Compressor
㉑ Refrigerated Air Dryer
㉒ Oil-Gas Separator
㉓ Circulating Oil Pump

Biomass-fired Chain Grate Thermal Oil Heater 12 Million Kcal/H

Key Features

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Thermal power: 4MW-26MW

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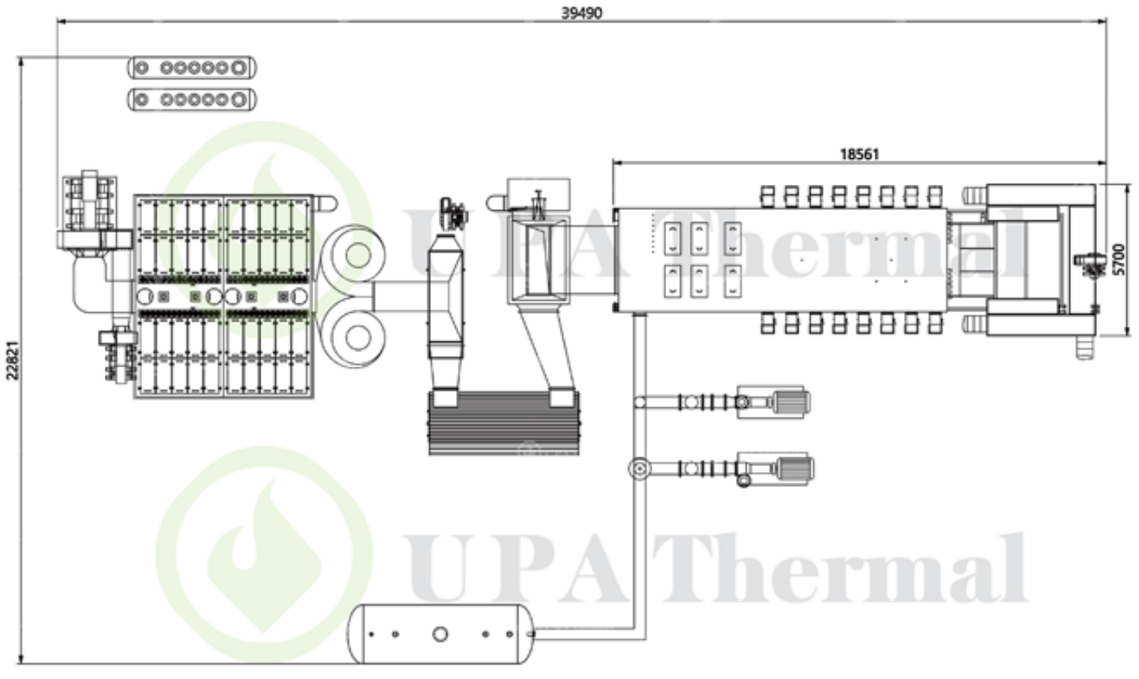
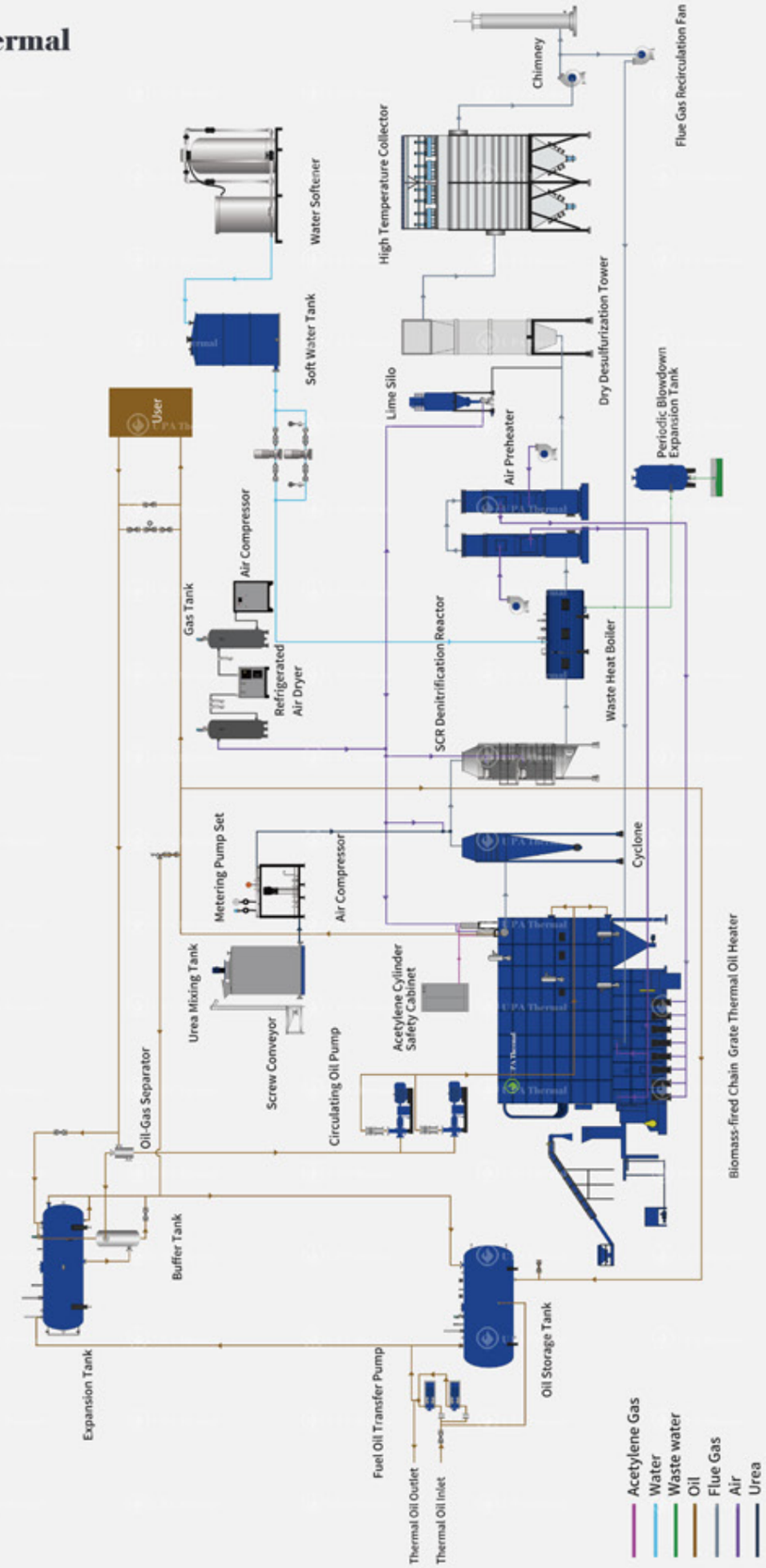


(unit: mm)

Biomass-fired Chain Grate Thermal Oil Heater 12 Million Kcal/H Fow Chart



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Maximum operating temperature (°C)	320					
Medium circulation volume (m^3/h)	260	520	800	1000	1000	1300
Design efficiency (%)	85.5	88	88	88	88	88
Main pipe diameter (mm)	DN200	DN300	DN350	DN400	DN400	2×DN400
Applicable fuel	Biomass (forestry type), low calorific value 2300-4000Kcal/h, moisture 10-50%, Appearance: equivalent diameter 30-50mm (length less than 100mm)					
Burner type	Negative pressure combustion					

Case Showcase

Biomass-fired Reciprocating Grate Thermal Oil Heater

Emissions are far below international standards
NO_X≤50mg/Nm³
SO_2≤35mg/Nm³
Particle≤10mg/Nm³ Oxygen content reference value: 9%

Case: Biomass-fired Reciprocating Grate Thermal Oil Heater 9 Million Kcal/H

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2. Cyclone
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4. Waste Heat Boiler
5. Air Preheater
6. Dry Desulfurization Tower
7. Lime Silo
8. High Temperature Collector
9. Chimney
10. Buffer Tank
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12. Oil Storage Tank
13. Fuel Oil Transfer Pump
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15. Water Softener
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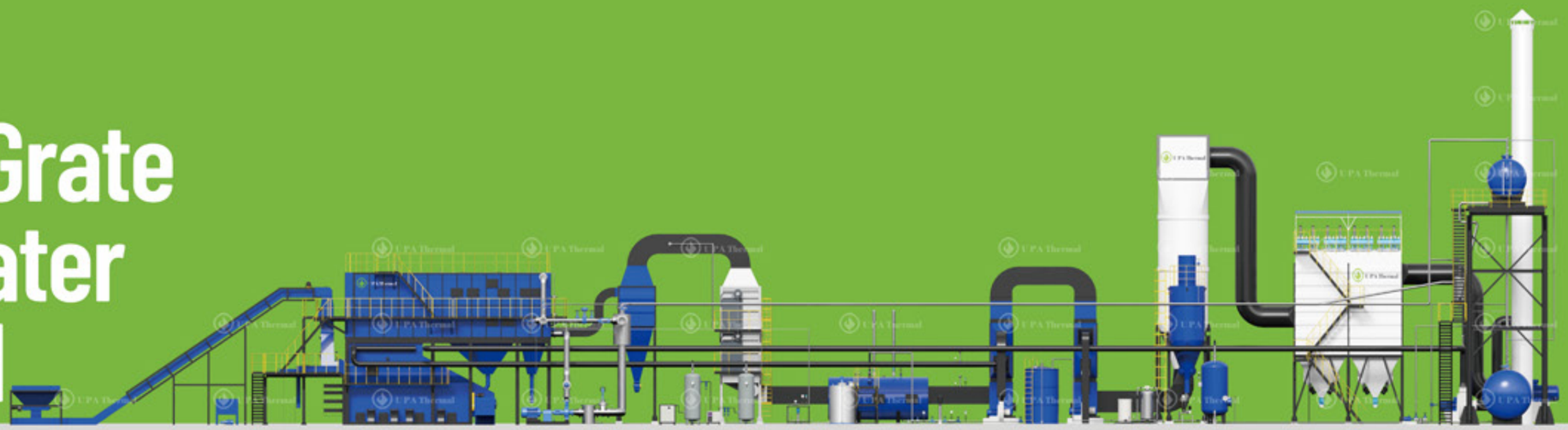
22. Oil-Gas Separator
23. Circulating Oil Pump

Biomass-fired Reciprocating Grate Thermal Oil Heater 9 Million Kcal/H



Key Features

Heating capacity × 10^4 : 350Kcal/h-2200Kcal/h

Thermal power: 4MW-26MW

Design pressure: 1.1 MPa

Maximum operating temperature: 320°C

Medium circulation volume: 260-1300m^3/h

Design efficiency: 85%-88%

Structural Characteristics & Performance Advantages

Wide Fuel Compatibility

Compatible with wood chips, olive husks, rice husks, industrial wood waste, and other types of solid biomass.

Low Emissions

NO_X, SO_2 and particleare far below the most stringent standards.

Extremely High Thermal Efficiency

The unique structural designand material usage ensure high thermal efficiency.

Advanced Control System

Fully automatic precision control of temperature and pressure for safety.

Convenient Inspection and Maintenance

The unique structural design facilitates internal inspection and maintenance.

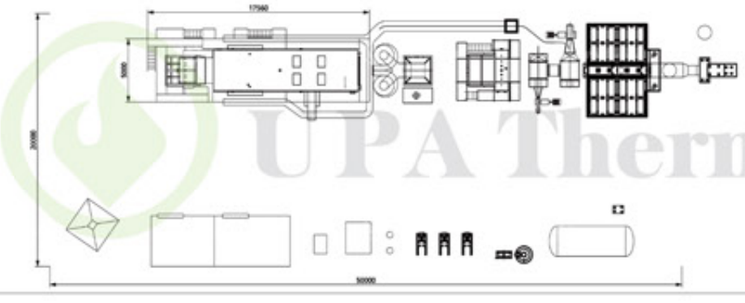
Assembly Structure Saves Installation Time and Cost

The boiler adopts a modular structure, which is convenient for installation and short installation period.

Detailed Parameters

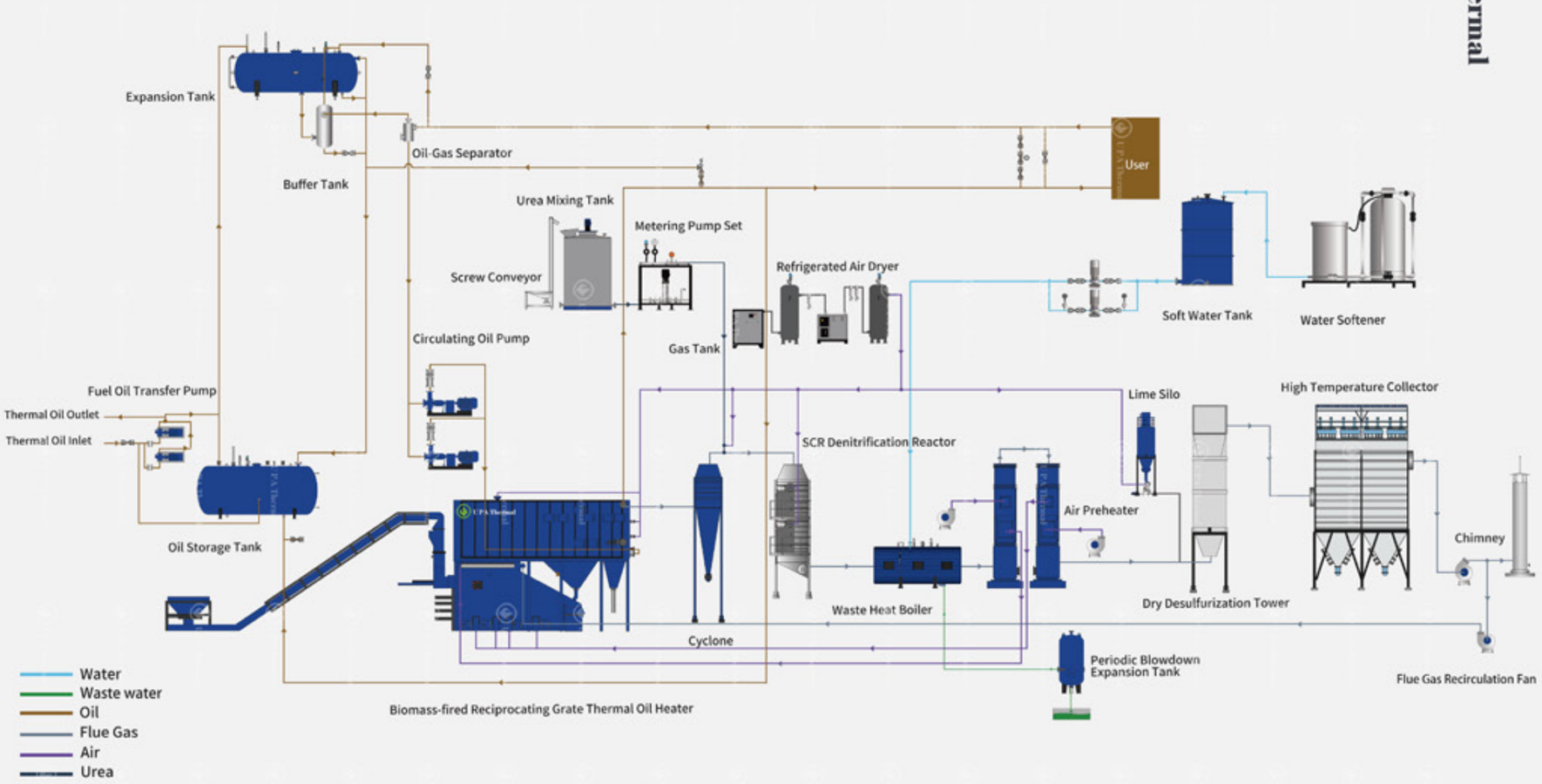
Model	YLW-4100SII	YLW-7000SII	YLW-10500SII	YLW-14000SII	YLW-19000SII	YLW-25000SII
Heating capacity × 10^4 (Kcal/h)	350	600	900	1200	1600	2200
Thermal power (MW)	4.1	7	10.5	14	19	25
Design pressure (MPa)	1.1					
Maximum operating temperature (°C)	320					
Medium circulation volume (m^3/h)	260	520	800	1000	1000	1300
Design efficiency (%)	85.5	88	88	88	88	88
Main pipe diameter (mm)	DN200	DN300	DN350	DN400	DN400	2×DN400
Applicable fuel	Biomass (forestry type), low calorific value 2300-4000Kcal/h, moisture 10-50%, Appearance: equivalent diameter 30-50mm (length less than 100mm)					
Burner type	Negative pressure combustion					

Equipment Layout



(unit: mm)

Biomass-fired Reciprocating Grate Thermal Oil Heater 9 Million Kcal/H Fow Chart



3D Renderings