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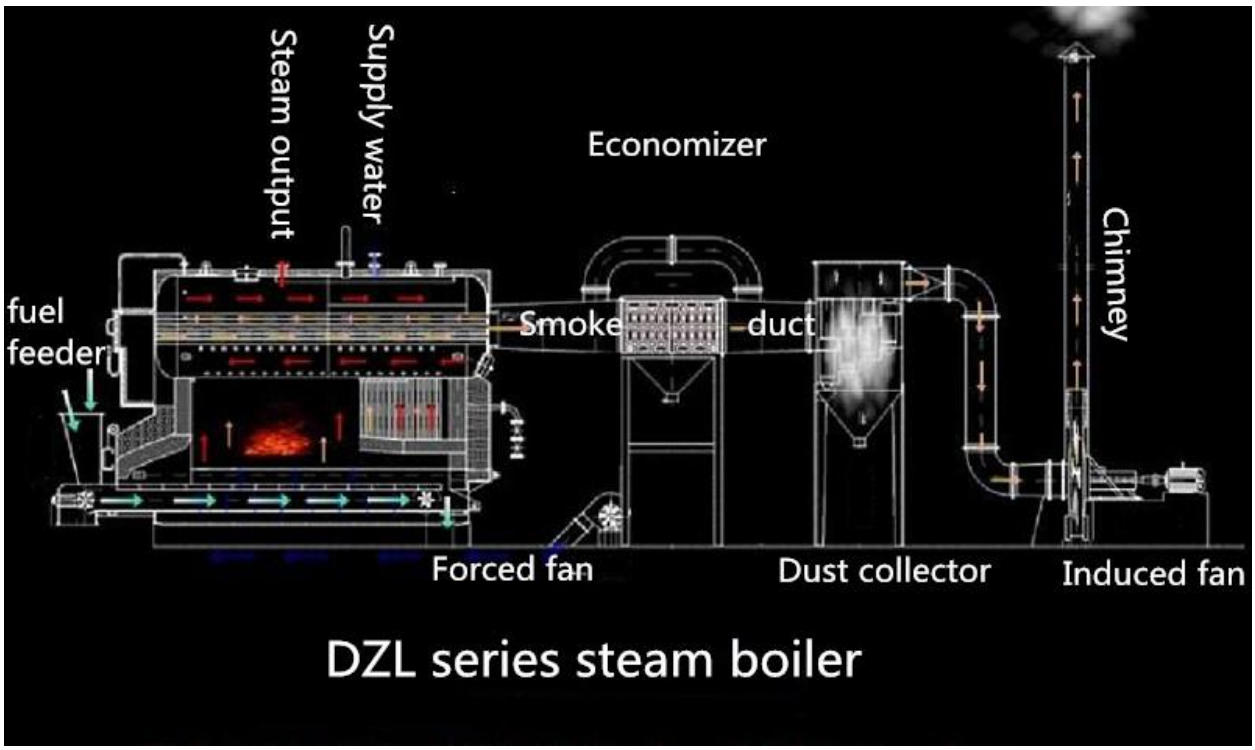
DZL Series Coal Fired Steam Boiler System Introduction

Overview

The new water-fire tube boiler is a water-fire tube shell boiler with a design of upright furnace, two-wing flue,smoke three-pass,threaded smoke tube.The threaded smoke tube is with unique heat transfer technology.The boiler drum and the water-cooled walls on both sides form the radiant heating surface of the furnace. Combustion equipment adopts light chain grate;Electrical control realizes step-less speed regulation of grate,limit parameter alarm and interlock protection.

Boiler System Composition

It consists of boiler main body,control system and auxiliary equipment.



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Boiler Main Body Technical Features

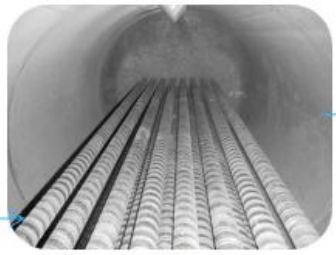
★Spirally corrugated tube:strengthen heat transfer,Save steel, aim at avoiding dust deposition, improving flexibility to reduce heat stress of pipeline seam, preventing pipeline cracking.

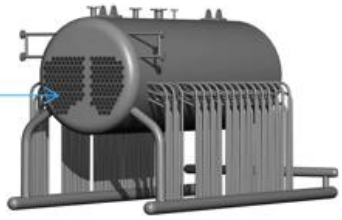
★Two-wing Flue:Increase the flow path of smoke to improve the boiler efficiency,reduce heat load of boiler bottom.

★Arched tube plate:Improve flexibility to reduce seam heat stress of pipe end ,cancel tension brace piece; simplify the structure

★Large-sized down pipe:Improve speed of water in water-cooled wall tube

spirally corrugated tube





Two-wing flue

Arched tube plate

Large-sized down pipe

★Independent self support and New arch:self support;,strengthen combustion, strong coal adaptability, so as to compact structure and improve combustion efficiency.

★Smoke separation room:separate the smoke by inertia,reduce original emission concentration of smoke. first-level Ringelman emittance is first-level.

★Grating type Steam and water separation device:separate steam and water more effectively to ensure the quality of steam and let steam humidity lower than 3%.

★Front and rear furnace door for watching fire:enable to watch the burning state from front and rear,aim at watching the burning state at any time.

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★Customized furnace arch: the furnace arch designed depends on the type of fuel to meet the request of customer.

Chain grate

Chain grate is the most widely used mechanical combustion equipment in industrial boiler and its combustion mode is moving fire bed combustion.the chain grate weight is light.Material of grate bar could be selected from normal cast iron,high temperature resistance cast iron and high temperature resistance alloy according to different requirements.

★chain belt type grate stoker: achieve automatic combustion

★block porous grate bars and Multiple duct distribute wind design:

Simple structure, well-distributed wind structure, no ash leakage, fully burning

★seals design at the two sides of grate:

Prevent coal from falling and thermal insulation to ensure the grate structure not to be burned out, and fuel be fully burned




Economizer or air preheater is equipped according to customer requirement.

Coal Fired Steam Boiler Control System.

According to the customer's demand for steam capacity,temperature,pressure \fuel and equipment configuration,the steam boiler control system is developed and designed to achieve the purpose of monitoring the parameters and status of the boiler,and realize the intelligent of boiler control.

How to Control Different Types of Boilers

The method of controlling a boiler system depends on the exact design.

For example:

Commercial boilers can be controlled through on/off cycle, high-fire/low-fire, or modulating

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control systems.

Automatic on/off controls switch boiler on or off based on heat demand.

High-fire/low-fire controls alter the level of the burners—which provide the heat input—to maintain a specific working pressure based on steam demand.

Modulating controls improve boiler efficiency by monitoring and automatically altering fuel input according to the load demand.

Multiple boiler systems can be connected together for greater functionality. Controlling this type of system is much the same as a single-boiler system; it can be controlled with automatic on/off cycle, high-fire/low-fire, or modulating controls.

Modular boilers accommodate a wide range of loads by connecting several boilers together. Each of the boilers turns on when needed and turns off when it is not. For example, if the load exceeds the capacity of a single boiler, an additional one turns on to take up the excess hot water or steam demands.

The Core Control Mode of the steam boiler system:MCU control(Microcontroller unit),

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Integrated controller (All-in-one PLC,not programmable),PLC control(programmable),PLC+PC control,DCS control.

1).Main Control:liquid level control of boiler,water tank and oil tank;steam pressure control;boiler system pressure control;temperature control,etc.Manual/automatic control of burners, pump valves and other equipment,master and backup switching.Water pump start and delay shutdown, water pump running status detection and burner interlock.

2).Anti-freezing Functions:Make the boiler run safely and stably at night when unattended, and make the system work in an energy-saving state to prevent the pipeline from freezing.

3).Self-inspection Functions of the control system: continuous inspection.To alarm and interlock protection when abnormal.

4).It collects,records,saves and manages important information and data function.

The Remote Instrument Valves used in the Control System Include: temperature sensor,liquid level gauge,pressure transmitter,pressure controllers,flow meters,electric regulators etc.

Auxiliary Equipment Features

1)Combustion System equipment

DZL series coal-fired steam boiler combustion system according to the fuel characteristics of the boiler, steam capacity, equipped with combustion system equipment, Which can realize automatic combustion, automatic slag removal function. coal feeder, chain grate, air distribution equipment,coal hopper in front of furnace,grate speed reducer,slag removal equipment, ID fan etc.

The fuel by the coal feeder into the coal bucket, the bottom coal and grate contact, after the rotation of the grate speed reducer toiling grate movement, coupled with the air distribution of the forced fan, so that the fuel continuously to the furnace transport for full combustion, and finally after the slag remover to clean out the coal cinder.

● Coal bucket： The coal bucket is a container for the temporary storage of fuel, which is equipped with a locking or stripping device to cut off the fuel from the furnace and prevent the flame from coming back into the bucket.

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● Grate speed reducer:it can adjust the chain grate movement speed according to different fuel properties.

●FD fan:It is used to provide the main combustion air under the boiler grate, and the air volume can be adjusted by adjusting the damper or regulating the speed.

● Slag remover： timely removal of ash after combustion, so that the follow-up can continue to be fully burned

2)Water Treatment Device Technical Features

- Flow type metering, automatic recoil
- New cloth structure, uniform water distribution and stable water quality
- Resin tank made of glass fiber reinforced plastic, resistant to acid, alkali and salt, high strength and stable quality
- .Equipped with high quality resin and has a service life of more than 5 years
- .The whole set of equipment uses tap water to dispense water without pump boosting, saving energy.

Feedwater Pump Features

- Compact structure and space saving
- Stainless steel,acid and corrosion resistant
- Blue spray, elegant look
- China's well-known brands, well quality
- Dual configuration, mutual backup

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Economizer Features

- Casting iron material，Wear resistant and durable
- Pressure-bearing structure，safe and reliable
- Bypass design，convenient for check and repair

Ceramic multi-tube dust collector

When the dust-containing gas enters the gas distribution chamber of the ceramic multi-tube dust collector from the total intake pipe, and then enters the annular gap between the ceramic cyclone body and the baffle, the baffle changes the gas from a linear motion to a circular motion, and the rotary airflow The vast majority of the cyclone body spirals downward from the cylinder and flows toward the cone. The dust-containing gas generates centrifugal force during the rotation process, and the dust particles with a density greater than that of the gas are smashed toward the wall of the cylinder. When the dust particles come into contact with the wall of the cylinder, the inertia force is lost and the momentum of the inlet velocity and the downward gravity fall down the wall toward the ash discharge port and enter the total ash hopper. When the rotating external swirling airflow reaches the lower end of the cone, the spiraling flow (purge gas) continues from the bottom to the top in the direction of the cyclone axis due to the contraction of the cone, and the ceramic cyclone exhaust pipe passes through the ceramic cyclone exhaust pipe. Enter the exhaust chamber and discharge from the total exhaust port.

ID fan:Exhaust the flue gas of the boiler and maintain the negative pressure of the boiler.

Steam Header Features
Remark:customizable

- Pressure container, national inspection, quality stability
- Output can be customized according to customer's requirement.

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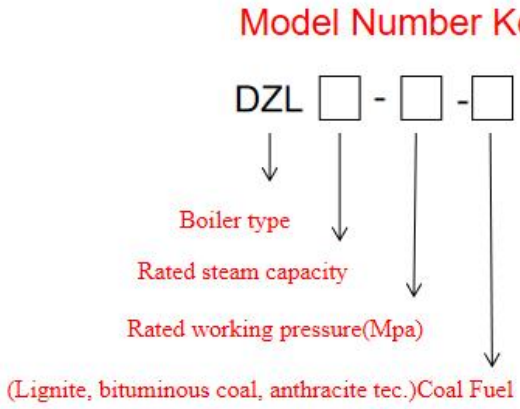
- Factory configuration does not contain relevant valves

Parameter of DZL Series Coal Fired Steam Boiler



Example:DZL4.0-1.25-AII=DZL series steam boiler,Rated steam capacity 4t/h,rated working pressure 1.25Mpa(12.5bar),Fuel AII;AII means Class II bituminous coal

WII:Class II anthracite
WIII:Class III anthracite
AI:Class I bituminous coal

AII:Class II bituminous coal
AIII:Class III bituminous coal
H:lignite
P:lean coal
Different coals have different combustion characteristics, we will design different boiler bodies according to the characteristics of coal, in order to achieve the purpose of full combustion of fuel

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Model	★DZL1-0.7-AII DZL1-1.0-AII	★DZL2-1.0-AII DZL2-1.25-AII DZL2-1.57-AII DZL2-2.45-AII	★DZL4-1.25-AII DZL4-1.57-AII DZL4-2.45-AII	★DZL6-1.25-AII DZL6-1.60-AII	★DZL10-1.25-AII DZL10-1.60-AII	DZL15-1.25-AII DZL20-1.60-AII	DZL20-1.25-AII DZL20-1.60-AII
Rated steam capacity(t/h)	1	2	4	6	10	15	20
Rated working pressure(Bar)	7/10	10/12.5/15.7/24.5	12.5/15.7/24.5	12.5/16	12.5/16	12.5/16	12.5/16
Rated steam temperature(℃)	170/184	184/194/204/225	194/204/225	194/205	194/205	194/205	194/205
Feed water temperature(℃)	20	20	20	20	60	60	60
Boiler Main Body Heating Area(m²)	32.4	59.3	89.16	126.7	251	380.8	470.7
Economizer Heating Area(m²)	12.51	28.16	38.5	78.5	174.4	174.4	377.6
Grate effective area(m²)	2.05	3.7	5.3	8.32	12	17.38	21
Fuel-Coal type	All	All	All	All	All	All	All
Fuel consumption(kg/h)	151	302	600	888	1447	2170	2894
Thermal efficiency(%)	79	79	79	79	79	79	81.45
Max Transportation Weight(t)	13	22	25	23	29	20	23

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Max boiler shipping size:L×W×H(m)	5.2x2.0x2.9	5.7x2.5x3.5	6.3x2.6x3.6	7.3x3.2x3.6	7.2x3.3x3.6	8.8x3.7x3.7	9.7x3.4x3.7
Overall size after installation:L×W×H(m)	6.0x3.5x4.1	6.0x3.9x5.0	7.2x4.0x4.9	8.0x5.1x6.0	8.2x6.0x6.5	10.2x6.7x8.6	13.5x7.4x8.7
ID fan	Y132S2-2	Y160M-4B3	Y180L-4B3	Y225S-4B3	Y250M-4	Y280S-4	Y315S-4
FD fan	Y90L-2	Y100L-2	Y132S1-2	Y132M-4	Y100L-6	Y180L-4	Y200L-4
Feed water pump	1W2.4-10.5	GC-5x5	GC-5x7	DG6-25x7	DG12-25x7	DG25-30x5	DG25-30x6
Grate speed reducer	ZW-766A	GL-5P	GL-5P	GL-10P	GL-16P	GL-20P	GL-20P
Slag remover	CZX-3.1	CZX-3.1	CZX-3.1	CZX-4.0	CZX-4.6	MG13-15T	MG13-20T
dust collector	XTD-1	XTD-2	XTD-4	XTD-6	XTD-10	XTD-15	XTD-20
Note: Parameter is for reference only, if any changes should follow the factory technical data.							

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Delivery Documents about Equipment

1.Boiler room design drawing
2.Boiler foundation drawing
3.Boiler body drawing
4.Boiler control system technical data
5.Boiler layout drawing
6.Valves& instruments drawing
7. Strength calculation data sheet
8. Certificate of Quality
9. Quality and Safety Inspection Certificates
10. Installation and operation instructions