

ООО «ТИ-СИСТЕМС» ИНЖИНИРИНГ И ПОСТАВКА ТЕХНОЛОГИЧЕСКОГО ОБОРУДОВАНИЯ
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WUXI ZOZEN BOILERS CO.,LTD



SINCE1988
齐庄中正 知行天下

Company Introduction



CAPITAL FOUND

127,000,000 CNY



Employee Number

385 enrolled employees

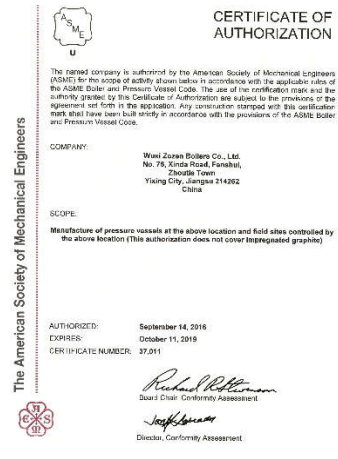
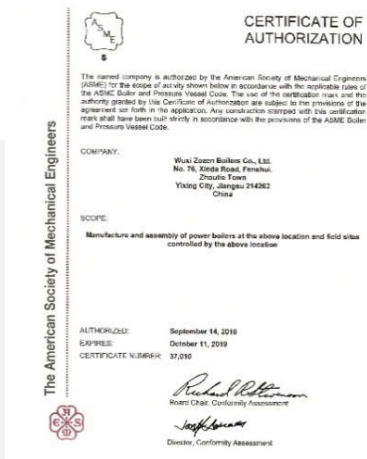


Sales Volume

2017 :1200 sets of boilers ,
which includes 1,200t/h
evaporation



Company Milestones



1988
 Set up
 Government built ZOZEN

1995
 Privatized
 Leading by Mr.Zhang, ZOZEN
 entered smooth developing period

2005
 Fast developing
 Increase investment and
 reinforce the management

2017
 Comprehensive
 improvement



The Main Business

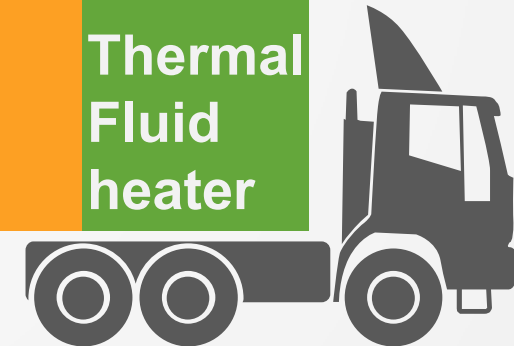


**Coal/biomass
Fired boiler**

**Gas fired
boiler**

**Fluid Bed
Boiler**

**Thermal
Fluid
heater**



Local Business Distribution



Overseas Business Distribution

We have been selling to more than 45 countries, we have more than 121 customers



加标题
录入上述
的综合描
述说明。

WNS

系列冷凝式燃气(油)锅炉

series condensing gas/oil fired boiler

概述:

WNS系列卧式内燃锅炉是我厂根据国内、外先进技术和经验设计而成的锅壳式三回程湿背燃油(气)锅炉。锅炉运行自动化,燃料经燃烧器雾化后,形成的火炬充满在全波形炉胆内,并通过炉胆壁传递辐射热,此为第一回程。燃烧产生的高温烟气在回燃室内汇聚,转向进入第二回程,即螺纹烟管管束区,经对流换热后,烟气温度逐渐降低后至前烟箱,并在此转向进入第三回程,即光管管束区,随后经后烟箱流入烟囱,最后排入大气。

该系列产品具有安全可靠、高效率、节能环保、维护方便、经久耐用、全自动智能控制等特点;均经特检院热能测试中心能效测试,各项性能指标均高于设计要求,已达到国内外先进水平。

INTRODUCTION:

WNS Series of horizontal internal combustion boiler is the boiler hull type horizontal tri-backhauling internal combustion boiler designed by our technical professionals according to the advanced technology from home and abroad combined with practical experiences. The boiler is fully automatic, the fuel after atomization by the burner forms the flame filling the whole waveform furnace, and via furnace wall to transfer the radiant heat, this is the first backhauling. The high temperature smog yields from combustion is concentrated in back combustion chamber and turns to the second backhauling, i.e., whole pipe bundle area; After heat exchange by convection, the smog temperature gradually lowers and goes into the front smog chest, and there turning to the third backhauling, i.e., bare pipe bundle area, and then passes through rear smog chest to chimney, and finally exhausts to the atmosphere.

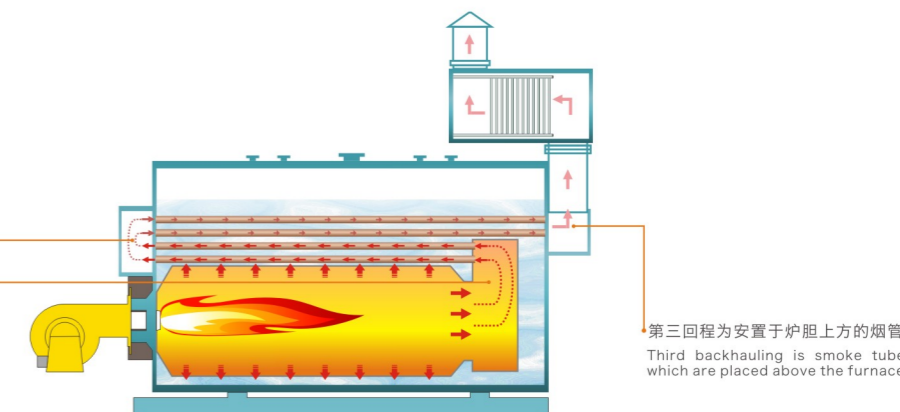
This series of products are safe, reliable, efficient, energy-saving environmental protection, maintenance convenient, durable, automatic intelligent control, etc.. All the performance indexes are higher than the design requirements, and have reached the advanced level of domestic and international.



结构示意图 STRUCTURE DIAGRAM

第二回程: 分置于炉胆两侧的螺纹烟管
Secondary backhauling is thread smoke tubes which are placed above the furnace.

第一回程: 波纹炉胆燃烧室通过炉胆壁传递辐射热
First backhauling is corrugated furnace combustion chamber



第三回程为安置于炉胆上方的烟管
Third backhauling is smoke tubes which are placed above the furnace

制造工艺特点

MANUFACTURING PROCESS FEATURES

锅炉制造工艺

- 钢板下料、圈圆、管板钻孔等关键加工工艺全采用先进的数控加工工艺，减少组装应力，延长锅炉使用寿命
- 前后烟箱面板采用数控等离子切割机切割，整齐美观

Boiler manufacturing process

- key processing technology like material preparation of steel tubes, circling, drilling of tube plate, etc are all adopt advanced CNC machining process to decrease the assemble stress and extend the boiler working life
- The front and rear smoke chamber panel adopts CNC plasma cutting machine to cut orderly and beautifully

锅炉焊接工艺

- 锅炉纵、环缝焊接均采用先进的埋弧自动焊工艺，保证焊接质量。所有纵、环焊缝均进行100%的射线探伤
- 烟管与管板的焊接采用先预胀，消除管与管板的间隙，再采用氩弧自动焊的焊接工艺。有效的消除应力，延长锅炉使用寿命

Boiler welding process

- The boiler vertical and circular seam adopts advanced unionmelt welding process to ensure the welding quality. All the vertical and circular seams will be done 100% radiographic inspection
- The weld of smoke tube and tube plate will be pre-expanded first to remove the gap between tube and tube plate. And then adopt argon arc automatic welding process. This may relief stress effectly and extend the boiler woking life

炉体保温

- 采用优质的硅酸铝纤维，再用耐火泥保温，炉体温度控制在45°以下，有效的控制热损失
- 前后烟箱用多层硅酸铝纤维充填，再用高温耐火泥保温，增加热阻，有效地减少了散热损失，提高热效率

Furnace insulation

- Adopt high-class aluminium silicate fibre. Use refractory mortar to keep the furnace temperature under 45° and control heat loss effectly
- Font and rear smoke chambers are filled with multilayers of aluminium silicate fibre and be insulated by high temperature refractory mortar. This may increase thermal resistance and decrease heat loss effectly to improve heat efficient

大容量

- 充足的蒸汽储藏空间和受热面，令锅炉能高效率地产生较高的热功率和高品质的蒸汽。

Sufficient storage

- Asufficient steam stoage and heating surface make the boiler to generate bigger thermal power and high quality steam output.

烟箱

- 烟箱门采用铰链结构，窗户式开启，便于检修、清查、清理。

Smoke chamber

- The smoke chamber door is hinge structure and open like window so that it is easy to maintain, detect and clean.

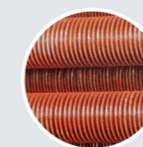
波纹炉胆

- 本系列锅炉采用全波纹炉胆
- 增强了烟气扰动，又有效的提高单位面积和单位体积的传热效果
- 增加了炉胆强度和弹性，在锅炉热膨胀过程中有效地保护受压元件，避免由于应力增加而破坏

Corrugated furnace

- This series boiler adopts whole corrugated furnace.
- Reinforce the disturbance of flue gas as well as improving the heat transfer effect of unit area and unit volume effectly.
- Increase the strength and elasticity of furnace. Prevent the pressure parts from being damaged because of the increase of stress effectly during the thermal expansion procedure.

烟道尾部增设冷凝器



- 加设冷凝器，利用锅炉尾部排出烟气中的余热，提高锅炉进水温度，降低排烟温度，使锅炉热效率提高到98%以上，从而节省运行成本；
- 冷凝器采用翅片管，增加受热面、提高传热效率，减小了体积；
- 翅片管采用ND钢或不锈钢材质，有效地解决了钢材的低温腐蚀。

Add condensator at the end of flue gas duct

- Add condensator. Use the waste heat of flue gas exhausted from the end of boiler to increase the water inlet temperature and decrease the exhaust gas temperature. This makes the boiler heat efficiency reach above 98% and save the operating cost;
- Condensator adopts finned tubes to increase heating area, heating transfer efficiency and decrease the volume;
- Finned tube adopts ND steel or stainless steel to avoid low temperature corrosion of steel.

全自动控制

- 全自动运行，燃烧、水位、温度及蒸汽压力均自动调节、自动保护。

Fully automatic control

- Fully automatic operation, combustion, water level, temperature and steam pressure are adjusted automatically and self protected.

螺纹烟管

- 制造工艺先进，采用流水线全自动旋压作业；
- 强化传热，提高锅炉热效率；
- 螺纹烟管为我公司多年研究的高效传热元件，经不断优化，在螺纹槽深与节距的选取上，达到满足流阻最低时，传热系数比普通烟管高1.2倍。

Thread smoke tube

- Advanced manufacturing process. Adopt assembly line automatic spinning work;
- Strengthen heat transfer to improve boiler heat efficiency;
- Thread smoke tube is efficient heat transfer component researched by our company for years. After constantly optimization, the selection of thread groove depth and pitch could reach the following result: when meeting the lowest flow resistance, heat transfer coefficient is 1.2 times higher than common smoke tube.




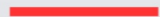


WNS系列冷凝式燃气(油)蒸汽锅炉流程图

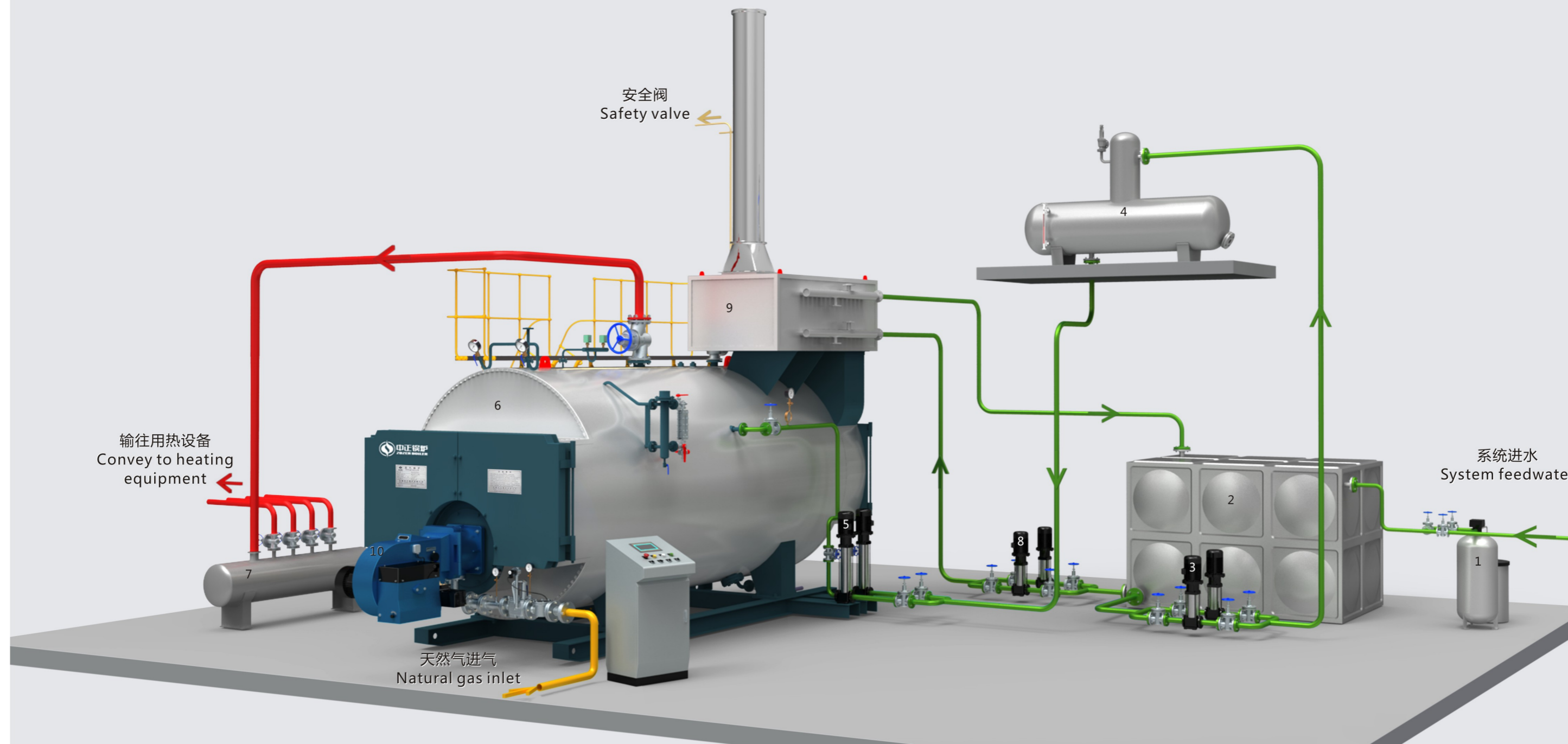
WNS SERIES CONDENSING GAS(OIL) FIRED STEAM BOILER FLOW CHART

主要设备 Main equipment

- | | | | |
|--------|----------------|---------|-------------------|
| 1. 软水器 | Softener | 6. 锅炉 | Boiler |
| 2. 水箱 | Water tank | 7. 分汽缸 | Steam distributor |
| 3. 除氧泵 | Deaerator pump | 8. 循环泵 | Circulating pump |
| 4. 除氧器 | Deaerator | 9. 冷凝器 | Condenser |
| 5. 给水泵 | Feedwater pump | 10. 燃烧器 | Burner |

图样列表 Main equipment

- | | | |
|---|---------|--------------------------|
|  | 水管道 | Water pipe |
|  | 蒸汽管道 | Steam pipe |
|  | 天然气管道 | Natural gas pipe |
|  | 安全阀放散管道 | Safety valve relief pipe |



SZS

系列冷凝式燃气(油)锅炉

series condensing gas/oil fired boiler

概述:

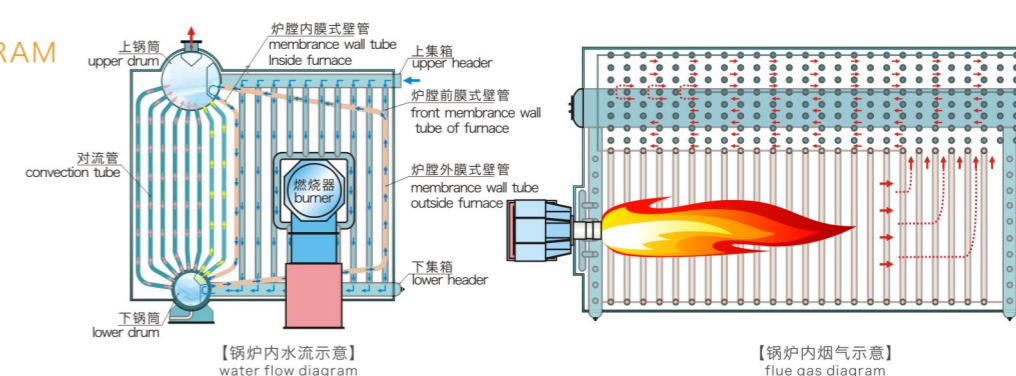
SZS系列锅炉本体为双锅筒、纵置式、室燃D型布置结构，右侧为炉膛，左侧为对流管束；通过下锅筒中间和两端的的活动支座固定在本体底盘上，并保证锅炉整体向两端膨胀。炉膛四周为窄间距管膜式水冷壁，炉膛左侧的膜式水冷壁将炉膛与对流管束完全密封隔开，对流管束区后部为拉稀的错列结构，前部为顺列结构，炉膛燃烧产生的烟气从炉膛尾部的出烟口进入燃烬室、对流管束区，然后从锅炉左侧前部转向进入螺旋翅片管节能器和冷凝器，最后进入烟道入烟囱排向大气。

INTRODUCTION:

SZS series boiler body is longitudinal 2-drum, D-type chamber combustion structure. The furnace is on right side and the convection tube bank is on left side. The body is fixed on the body chassis by flexible supports in the middle and two ends of the lower drum, and it can secure to let the whole boiler body to expand sideways. Surround furnace there are narrow space membrane cooling tube wall. It is totally sealed and separated between the membrane wall on furnace left side and the convection tube bank. The rear part of convection tube bank is a tube-reducing staggered structure, and the front part is aligned structure. The flue gas generated from furnace combustion flows from furnace rear outlet to the end of combustion chamber, convection tube bank area, and then turns from the front-left of furnace to the spiral finned tube energy saver, and finally flows into ducting and through chimney emits to atmosphere.



结构示意图
 STRUCTURE DIAGRAM



制造工艺特点

MANUFACTURING PROCESS FEATURES

锅炉制造工艺

- 钢板下料、圈圆、锅筒钻孔等关键加工工艺全采用先进的数控加工工艺，减少组装应力，延长锅炉使用寿命
- 烟道及锅炉烟气口处采用内保温措施，有效的降低了锅炉运行中的噪音
- 高温区对流管全部采用防颤紧固件，杜绝了对流管束管口的断裂问题。
- 观察孔内部采用成型高铝耐火材料和人孔盖密封装置，改变了用耐火砖砌筑而使此部位过热的问题。
- 炉膛和对流管束区之间每块膜式壁之间采用耐高温不锈钢Cr25Ni20，避免了用耐火材料经常断裂而造成高温烟气短路的故障。
- 对锅炉整体进行抛丸除锈，整体进行烤漆，确保锅炉外形美观并且具有良好的防腐性能。

Boiler manufacturing process

- The key processing technology like material preparation of steel tubes, circling, drilling of tube plate, etc are all adopt advanced CNC machining process to decrease the assemble stress and extend the boiler working life
- Interior thermal insulation is adopted to flue gas duct and flue gas port to reduce the noise during the boiler operation
- All convection tubes of high temperature area use vibrating-proof fastener to prevent the pipe orifice of convection tubes from fracturing
- The inside of observation hole uses moulding high-alumina refractory and manhole cover sealing device to solve the problem of overheating of this part by constructed with refractory bricks
- Every piece of membrane wall between furnace and convection tubes use high temperature resistance stainless steel Cr25Ni20. This avoid the breakdown of high temperature flue gas short circuit caused by using refractory material
- Impeller blasting and stoving varnish are done to boiler to make sure the boiler has good-looking appearance and anti-septic property

锅炉焊接工艺

- 锅炉纵、环缝焊接均采用先进的埋弧自动焊工艺，保证焊接质量，所有纵、环焊缝均进行100%的射线探伤。

Boiler welding process

- The boiler vertical and circular seam adopts advanced unionmelt welding process to ensure the welding quality. All the vertical and circular seams will be done 100% radiographic inspection

人孔、检查门

- 上下锅筒前后布置有人孔，锅炉后部布置有检查门，打开方便，利于用户检修和清理内外部。

Manholes&Check door

- The manholes are arranged at the two ends of upper and lower drums, and check door is set a rear part of boiler. These openings make users easy for entering inside doing maintenance and cleaning work; prevent vaporization;

可靠的水循环

- 锅炉本体高温区采用强制循环，保证各部分受热面能得到可靠的冷却并防止汽化。

Water circulation

- The boiler water circulation adopts enforced circulation to secure each heat absorbing part can get efficient cooling and prevent vaporization;

膜式结构

- 全膜式结构D型布置
- 上、下锅筒对流管束形成对流受热面，并保证锅炉整体向两端膨胀
- 燃烧室采用窄间距管膜式水冷壁，具有良好的气密性，减少热损失，提高锅炉热效率的作用
- 对流管束区后部为拉稀的错列结构，前部为顺列结构
- 锅炉本体的前后墙全部采用膜式结构，大大地提高了前后墙的使用寿命，确保使用寿命20年以上。
- 锅炉炉两侧膜式壁和锅筒间的密封全部采用梳形板，杜绝了以前用耐火混凝土密封导致冷凝水及燃气泄露的问题。

安全装置

- 锅炉布置有防爆门和火焰探测器，运行安全可靠

Safety devices

- There are explosion door and flame sensor in the boiler arrangement and so operation is safe and reliable;

燃烧室

- 由于燃烧室采用了全膜式水冷壁结构，且采用微正压燃烧，无串烟问题，运行环境无污染

Combustion chamber

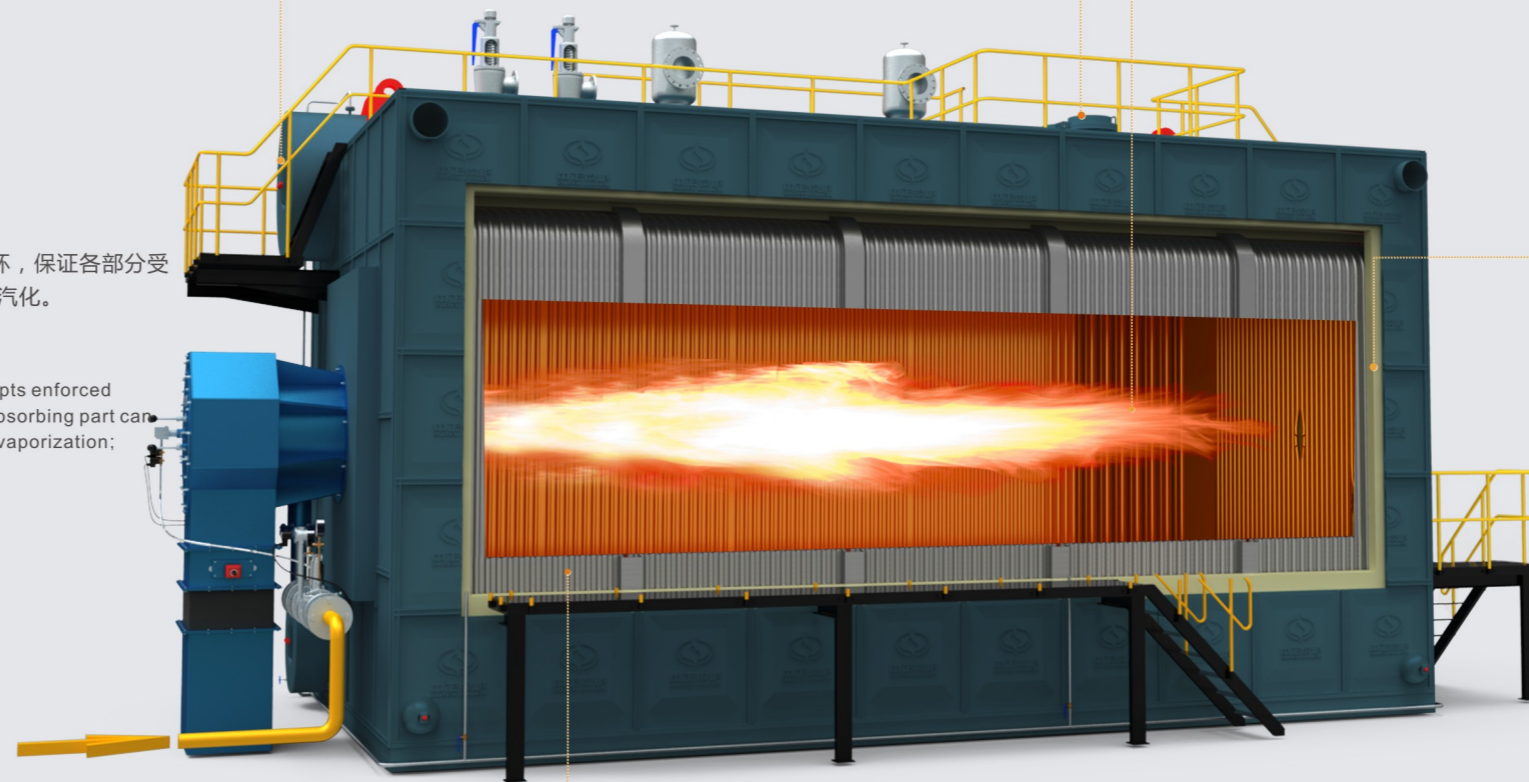
- Due to combustion chamber applying whole membrane water cooling structure, and adopted micro-positive pressure combustion, there is no smoke leakage, and there is no pollution in operation environment;

炉体保温

- 采用优质的硅酸铝纤维，再用耐火泥保温，炉体温度控制在45°以下，有效的控制热损失

Furnace insulation

- Adopt high-class aluminium silicate fibre. Use refractory mortar to keep the furnace temperature under 45° and control heat loss effeciently



Membrane type structure

- Whole membrane wall structure D-type arrangement
- Convection tubes of upper and lower drum form the convection heating surface and ensure the whole boiler expand towards the two ends
- The combustion chamber adopts narrow pitch membrane wall which has good gas tightness and reduce heat loss and improve boiler heat efficiency
- The rear part of convection tubes is rare shifted structure while the front part is sequence structure
- The front and rear walls of boiler body adopt membrane type structure which highly improve the working life of front and rear wall up to more than 20 years
- The sealing of both sides of membrane wall and drums adopt comb plate to avoid the reveal of condensate water and fuel gas caused by sealing with refractory concrete


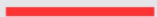


SZS系列冷凝式燃气(油)热水锅炉流程图

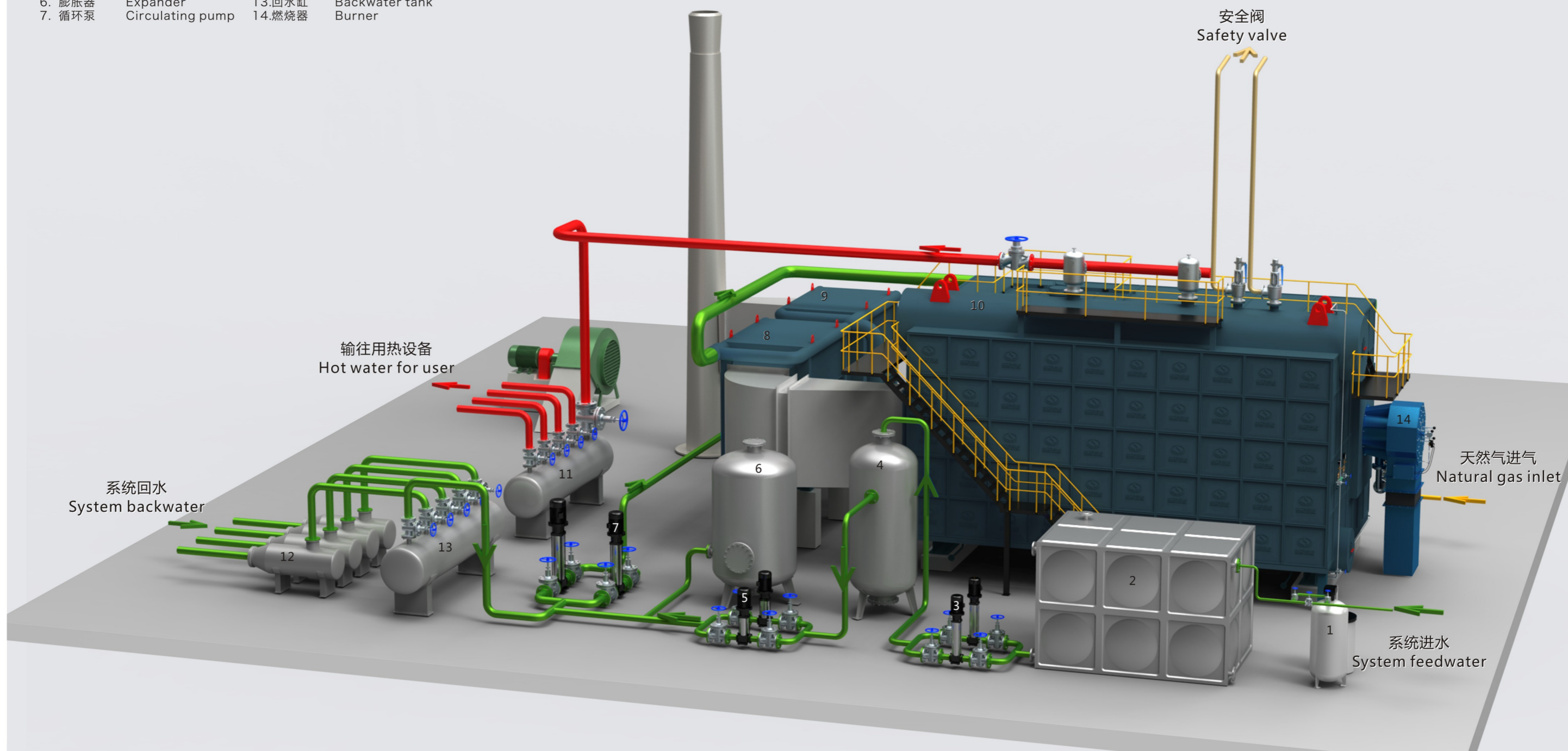
SZS SERIES CONDENSING GAS(OIL) FIRED HOT WATER BOILER FLOW CHART

主要设备 Main equipment

- | | | | |
|----------|------------------|---------|-------------------|
| 1. 软水器 | Softener | 8. 节能器 | Economizer |
| 2. 水箱 | Water tank | 9. 冷凝器 | Condenser |
| 3. 除氧泵 | Deaerator pump | 10. 锅炉 | Boiler |
| 4. 解吸除氧器 | Deaerator | 11. 分水缸 | Water distributor |
| 5. 补水泵 | Feedwater pump | 12. 除污器 | Dirt separator |
| 6. 膨胀器 | Expander | 13. 回水缸 | Backwater tank |
| 7. 循环泵 | Circulating pump | 14. 燃烧器 | Burner |

图样列表 Main equipment

- | | | |
|---|---------|--------------------------|
|  | 水管道 | Water pipe |
|  | 热水管道 | Hot water pipe |
|  | 天然气管道 | Natural gas pipe |
|  | 安全阀放散管道 | Safety valve relief pipe |



生物质锅炉

生物质燃料是采用木屑、秸秆等农业废弃物为原料，经过粉碎、烘干、挤压等工艺制成颗粒状的可直接燃烧的一种清洁燃料，可实现二氧化碳的零排放。

我公司与上海交通大学合作研发设计制造的生物质燃料锅炉系列产品，根据各种生物质锅炉燃料特性，燃烧速率，经过数值模拟，合理布置炉拱、炉墙、炉膛受热面，确保锅炉燃烧效率及设计蒸发量。燃烧高温区炉膛有合理的保护措施，有效防止结焦结渣的产生，保证锅炉设备正常运行。

合理布置一次风和二次风，在充分燃烧的同时，有效地降低NO_x的排放。在“十三五规划”中，加大了生物质能源的支持力度，所以生物质锅炉将得到更广泛的应用。

BIOMASS BOILER

Biomass fuel is a kind of clean fuel which is directly burned. It is adopted agricultural wastes like wood chip, straw as raw material. It is formed perlite fuel through the processing of grinding, drying and extrusion, etc. It could make no discharge of carbon dioxide.

Our company designed and manufactured the biomass fuel series boiler with Shanghai Jiaotong University. Arrange furnace arch, furnace wall, furnace heating surface reasonably according to various biomass fuel characteristics, combustion speed to ensure the boiler combustion efficiency and design evaporation. High temperature area furnace is set reasonable protection measure for combustion to avoid coking or lagging effectively.

Reasonably arrange initial air and secondary air to make combustion sufficiently and reduce the discharge of NO_x effectively. The 13th Five-year Plan increased the support of biomass energy. So the biomass boiler will be widely used.

DZL

系列生物质卧式蒸汽、热水锅炉

series biomass firing horizontal type steam & hot water boilers

概述:

DZL型系列快装锅炉是卧式三回程水火管链条炉排锅炉，燃用颗粒成型燃料。锅炉本体为单锅筒纵向布置，锅筒内布置螺纹烟管组成对流受热面，锅筒与两侧水冷壁组成炉膛辐射受热面。燃烧设备采用轻型链条炉排；整体快装形式出厂。电气控制实现炉排无级调速，极限参数报警及联锁保护。

该型锅炉的特点：结构紧凑，体积简便，基建投资省；加料、出渣机械化；锅炉出力足，效率高。是广大中、小型工矿企业生产用汽和人民群众生活取暖深受欢迎的供热设备。

INTRODUCTION:

DZL series of quick fitting boiler is the horizontal tri-returning water and fire pipes chain grating boiler, which uses granulated fuel. The boiler body is single drum type, portrait arranged; there are left and right 2 rows of fire pipe bundles inside boiler drum to form convection heat receiving surfaces. the boiler drum and water-cooled walls at both sides shape the furnace radiation heat receiving surfaces; the combustion equipment uses light chain grating; exit shop in whole machine & quick fitting type. The electric control realizes grating step free timing, the extreme parameter alarm and inter-lock protection.

Features of this series of boiler: compact structure, small volume; convenient installation, cheap in fundamental construction; mechanized fuel feeding and cinder removing; the output of the boiler is in sufficient and high efficiency. It is the well appreciated equipment for extensive steam supplying equipment for medium and small enterprises and public heating.



制造工艺特点

MANUFACTURING PROCESS FEATURES

锅炉制造工艺

- 钢板下料、圈圆、锅筒、管板钻孔等关键加工工艺全采用先进的数控加工，减少组装应力，延长锅炉使用寿命。
- 钢管切割，螺纹管压制，对流管加工均采用先进的数控工艺。
- 在国内率先采用拱形管板和螺纹烟管结构，增加热传导，彻底解决了后管板开裂的问题。
- 链条炉排面板，前后烟箱面板采用数控等离子切割机切割，整齐美观。

Boiler manufacturing process

- Key processing technology like material preparation and circling of steel plate, drilling of drum and tube plate, etc are all adopted advanced CNC machining process to decrease the assemble stress and extend the boiler working life.
- Steel tube cutting, threaded pipe pressing and convection tube processing are all adopted advanced CNC process.
- Firstly adopt arch tube plate and threaded fire tube structure at home to increase heat conduction to solve the problem of rear tube plate cracked.
- The chain grate panel, front and rear smoke chamber panel adopts CNC plasma cutting machine to cut orderly and beautifully.

锅炉焊接工艺

- 锅炉纵、环缝焊接均采用先进的埋弧自动焊工艺，保证焊接质量，所有纵、环焊缝均进行100%的射线探伤。
- 烟管与管板的焊接采用先预胀，消除管与管板的间隙，再采用氩弧自动焊的焊接工艺。有效的消除应力，延长锅炉使用寿命。
- 管座法兰焊接，采用机器人焊接。
- 链条炉排均为本厂制造，出厂前均试运转72小时，确保炉排的松紧度适中且不走偏。

Boiler welding process

- The boiler vertical and circular seam adopts advanced unionmelt welding process to ensure the welding quality. All the vertical and circular seams will be done 100% radiographic inspection.
- The weld of smoke tube and tube plate will be pre-expanded first to remove the gap between tube and tube plate. And then adopt argon arc automatic welding process. This may relief stress efficiently and extend the boiler working life.
- Tube flange weld adopts robot welding.
- Chain grate are all manufactured by ZOZEN and be test running for 72 hours before leaving the factory to make sure that the degree of tightness is moderate.

螺纹烟管

- 制造工艺先进，采用流水线全自动旋压作业。
- 强化传热，提高锅炉热效率。
- 螺纹烟管为我公司多年研究的高效传热元件，经不断优化，在螺纹槽深与节距的选取上，达到满足流阻最低时，传热系数比普通烟管高1.8倍。



Thread smoke tube

- Advanced manufacturing process. Adopt assembly line automatic spinning work.
- Strengthen heat transfer to improve boiler heat efficiency.
- Thread smoke tube is efficient heat transfer component researched by our company for years. After constantly optimization, the selection of thread groove depth and pitch could reach the following result: when meeting the lowest flow resistance, heat transfer coefficient is 1.8 times higher than common smoke tube.

二次进风

- 进行炉膛烟气扰动，保证挥发份完全燃烧。
- 风量占总风量30%左右，风速约为50m³/s。
- 独立二次风机，风量风压易控制和调整。

Secondary ail inlet

- Disturb the furnace flue gas to ensure the total combustion of volatile matters.
- Air volume makes up 30% of total air volume. The air speed is around 50m³/s.
- Air volume and air pressure of separate secondary fan are easy to be controlled and adjusted.

播料器

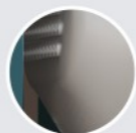
- 播料器，均匀给料，防止回火。

Sow Feeder

- Sow feeder feed fuel equally to avoid flashback.

拱形管板

- 彻底地改善了平管板人孔上方的高应力状态。
- 管板下方圆弧板边处外壁最大应力。
- 抗疲劳强度大大超过平管板。
- 为工业锅炉采用国际标准创造了条件。



Arch tube plate

- Thoroughly improve the high stress state on the flat tube plate manhole.
- Outer wall under tube plate and near round arch plate has maximum stress.
- Fatigue resistance largely exceeds flat tube plate.
- Create condition for industrial boiler adopting international standard.

弹簧全启式安全阀

- 当系统压力超过规定值时，安全阀自动打开泄压，从而保证系统不因压力过高而发生事故。

Spring full lift safety valve

- When the system pressure exceed rated value, safety valve will open decompression automatically to make sure that no accident will occur because of high system pressure.

极低水位电极(蒸汽锅炉)

- 有效防止极低水位在手动模式操作造成锅炉缺水事故，加强水位控制的安全保护。

Extreme low water electrode (steam boiler)

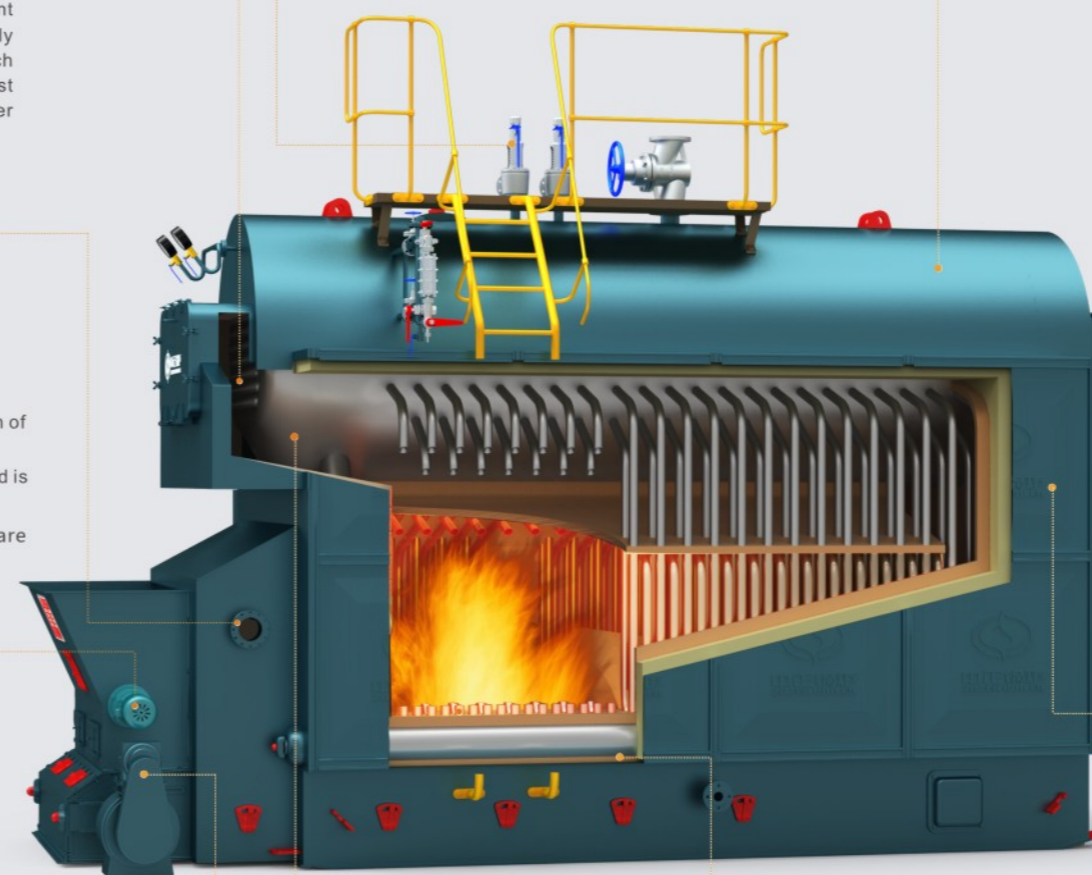
- Prevent boiler water shortage caused by extreme low water being operated in manual mode and reinforce the safety protection of water level control.

独特的水火管三回程设计

- 燃烧产生的高温烟气首先从尾部进入本体两侧的八字烟道，(此时为水管式)，烟气在管外流动。
- 经过八字烟道冷却的烟气再由前烟箱进入布置在锅筒内的螺纹烟管(此时为火管式)。
- 从后烟箱排出，这一设计从根本上解决了纯火管锅炉的管板开裂问题。

Unique water fire tube tri-backhaul design

- High temperature flue gas produced by firing enters into flue gas duct of boiler body two sides from tail part (this moment is water tube type). Flue gas flows at the outside of tube.
- Flue gas cooled by flue gas duct enters into thread smoke tube in drum through front smoke chamber (this moment is fire tube type).
- The design, exhausting from rear smoke chamber, fundamentally solves the problem of tube plate cracking.



调速箱

- 根据生物质燃烧速率，设计合理转速，确保燃料燃尽。

Speed Control Gear

- Design reasonable rotating speed according to the combustion speed of biomass to make sure the fuel burning out.

链条炉排

- 链条炉排层燃燃烧，科学的炉拱，合理的配风，颗粒燃料燃烧充分。

Chain grate

- Chain grate layer burning, scientific furnace, reasonable air distribution, full combustion of pellets fuel.

面板

- 冷轧压膜凹凸面板，强度大，美观大方。

Panel

- Cold rolling pressed film concave-convex panel has great strength and is beautiful.

人孔、检修门

- 合理的人孔和手孔布置，检修方便。炉膛设置了检修门，方便检修与保养。

Manhole, inspection door

- Reasonable arrangement of manhole and handhole make maintenance convenient. The inspection door set in furnace make it easy to overhaul and maintain.

SZL

系列生物质卧式蒸汽、热水锅炉

series biomass firing horizontal type steam & hot water boilers

概述:

SZL型系列锅炉是我公司技术人员根据国内、外先进技术和经验设计而成的卧式双锅筒纵置式链条炉排水管蒸汽和热水锅炉。该系列产品技术、性能、环保指标均达到国际先进水平，为锅炉行业的主导产品。

锅炉采用快装或组装结构。4~6t/h为快装水管结构，在厂内全部整装后出厂；6~35t/h由上下二大件组成，上部大件为受热面，下部大件为燃烧设备。锅炉本体的前端为四周布置的水冷壁上上部与锅筒连接下部与集箱连接组成燃烧室，以吸收炉膛辐射热，其后端在上下锅筒之间布置密集的对流管束，燃烧后的高温烟气经过二次回程横向冲刷对流受热面后引至单独布置的省煤器，最后进入除尘器经烟囱排出。20t/h组装水管锅炉由前炉膛、后炉膛、对流管束、省煤器及链条炉排组成，并分别装配成整体出厂。

本系列锅炉吸取快装锅炉的优点，结构紧凑、锅炉房为单层布置、现场安装方便、周期短、费用低、操作简便等优点。本系列蒸汽锅炉适用于工业及生活用汽，相应容量的热水炉适用于工业及民用采暖。

INTRODUCTION:

SZL series boiler is the horizontal dual cylinder arranged, chain grating, pipe steam and hot water boiler designed by our technical personnel according to advanced technology and experiences from home and abroad. The technology, performance and environmental protective index of this series of products reach the international advanced level, and this product is the mainstay one in boiler industry.

The boiler uses quick fitting or assembly structure. The 4~6t/h boiler is of quick fitting pipe structure, exit shop after completely assembled, the boiler of 6~35t/h is composed of 2 main components; The upper assembled components is the body heat accepting part, and the lower assembled component is of combustion equipment. The former part of the boiler body is arranged a water cooling wall, the upper part of it is connected to boiler cylinder, and its lower part is connected to collective chest, so as to form a combustion room and absorb the radiated heat from the furnace; its rear part is arranged with dense convection pipe bundle between upper and lower boiler cylinders; the high temperature smog after combustion shall stand for twice returning flushing transversely to the heat accepting surfaces, and shall be introduced to coal saver singly arranged, and flow into duster and exhausted from chimney in the end. The 20t/h assembled water pipe boiler is composed of front furnace, rear furnace, convection pipe bundle, coal saver and chain grating, and which are assembled in big components respectively for delivery.

This series of boiler absorbs the merits from quick fitting boiler, features compact in structure, the boiler's shop is of one storey arranged, convenient for site installation, short in construction period, cheap in cost, simple in operation and etc. This series of steam boiler is suitable for industrial and living steam consumption, the correspondent capacity hot water boiler is applied for industrial and civil heating purpose.



制造工艺特点

MANUFACTURING PROCESS FEATURES

锅炉制造工艺

- 钢板下料、圈圆、锅筒、管板钻孔等关键加工工艺全采用先进的数控加工，减少组装应力，延长锅炉使用寿命。
- 钢管切割、管端抛光、除锈、弯制，加工均采用先进的数控加工工艺。
- 自动化生产线。

Boiler manufacturing process

- Key processing technology like material preparation and circling of steel plate, drilling of drum and tube plate, etc are all adopted advanced CNC machining process to decrease the assemble stress and extend the boiler working life.
- Steel tube cutting, polishing, rust cleaning, bending and process of tube end are all adopted advanced CNC process.
- Automatic production line.

锅炉焊接工艺

- 锅炉纵、环缝，管子和锅筒内侧的焊接，管子和法兰焊接等重要部位的焊均采用埋弧自动焊，或气体保护焊等自动化焊接工艺，保证焊接质量。所有纵、环焊缝均进行100%的射线探伤。
- 管座法兰焊接，采用机器人焊接。
- 链条炉排面板，前后烟箱面板采用数控等离子切割机切割，整齐美观。
- 链条炉排均为本厂制造，出厂前均经过48小时冷态试运转，确保运行不跑偏。

Boiler welding process

- Weld of important parts like the boiler vertical and circular seam, weld of tube and drum inboard, weld of tube and flange, etc all adopt automatic welding process like unionmelt welding or gas shielded welding, etc to ensure the welding quality. All the vertical and circular seams will be done 100% radiographic inspection.
- Tube flange weld adopts robot welding.
- The chain grate panel, front and rear smoke chamber panel adopts CNC plasma cutting machine to cut orderly and beautifully.
- Chain grate are all manufactured by ZOZEN and be cold state test running for 48 hours before leaving the factory to make sure that the degree of tightness is moderate.

检修平台

- 检修平台安全可靠，布置合理，检修方便。
- 平台扶梯采用螺栓、螺母固定。
- 安装方便，不破坏底漆。

Overhaul platform

- Overhaul platform is safe and reliable, arranged reasonably and overhauled conveniently.
- Platform ladder will be fixed by bolt and nut.
- Safe and convenient and primer will not be damaged.

人孔、检修门

- 上下锅筒均设有人孔，打开方便，利于用户检修和清理。
- 炉膛设置了检修门、方便检修与保养。

Manhole, inspection door

- Manhole are set on upper and lower drum. Manhole opens conveniently and is good for overhaul and clean.
- Inspection door is set in furnace for convenient overhauling and maintenance.

播料器

- 播料器，均匀给料，防止回火。

Sow feeder

- Sow feeder feed fuel equally to avoid flashback.

调速箱

- 根据生物质燃烧速率，设计合理转速，确保燃料燃尽。

Speed control gear

- Design reasonable rotating speed according to the combustion speed of biomass to make sure the fuel burning out.

二次进风

- 进行炉膛烟气扰动，保证挥发完全燃烧。
- 风量占总风量30%左右，风速约为50m³/s。
- 独立二次风机，风量风压易控制和调整。

Secondary air inlet

- Disturb the furnace flue gas to ensure the total combustion of volatile matters.
- Air volume makes up 30% of total air volume. The air speed is around 50m³/s.
- Air volume and air pressure of separate secondary fan are easy to be controlled and adjusted.

弹簧全启式安全阀

- 安全阀的排放量都经过严格计算。
- 锅炉最大蒸发量当系统压力超过规定值时，安全阀自动打开泄压，从而保证系统不因压力过高而发生事故。

Spring full lift safety valve

- The safety valve discharge capacity is calculated strictly.
- When the system pressure exceed rated value, safety valve will open decompression automatically to make sure that no accident will occur because of high system pressure.

极低水位电极(蒸汽锅炉)

- 除国标规定的水位安全设置后，我们增加了极低水位电极保护，此电极和鼓、引风机联锁，确保锅炉运行时的水位安全。

Extreme low water electrode (steam boiler)

- Except the water level safety setting of international regulation, we add extreme low water level electrode protection. The electrode interlocks with FD fan and ID fan to make sure the water level is safe when boiler is operating.

面板

- 冷轧压模成凹凸面板，刚性好，强度大，美观大方。
- 采用自攻螺丝固定，无焊点。
- 外表经除锈后再涂防腐及面漆、底漆，美观大方。

Panel

- Cold rolling pressed film forms concave-convex panel which has great rigidity and strength and is beautiful.
- Fixed by self-tapping screw and there is no welding spot.
- After rust removed, the surface will be printed corrosion prevention and finishing coat and primer. It's beautiful.

独立风仓

- 根据不同吨位，炉排从前到后设置不同数量的独立风仓。
- 用户可以根据不同的燃烧情况合理分配给风，确保燃料的燃烧充分。

Independent air bin

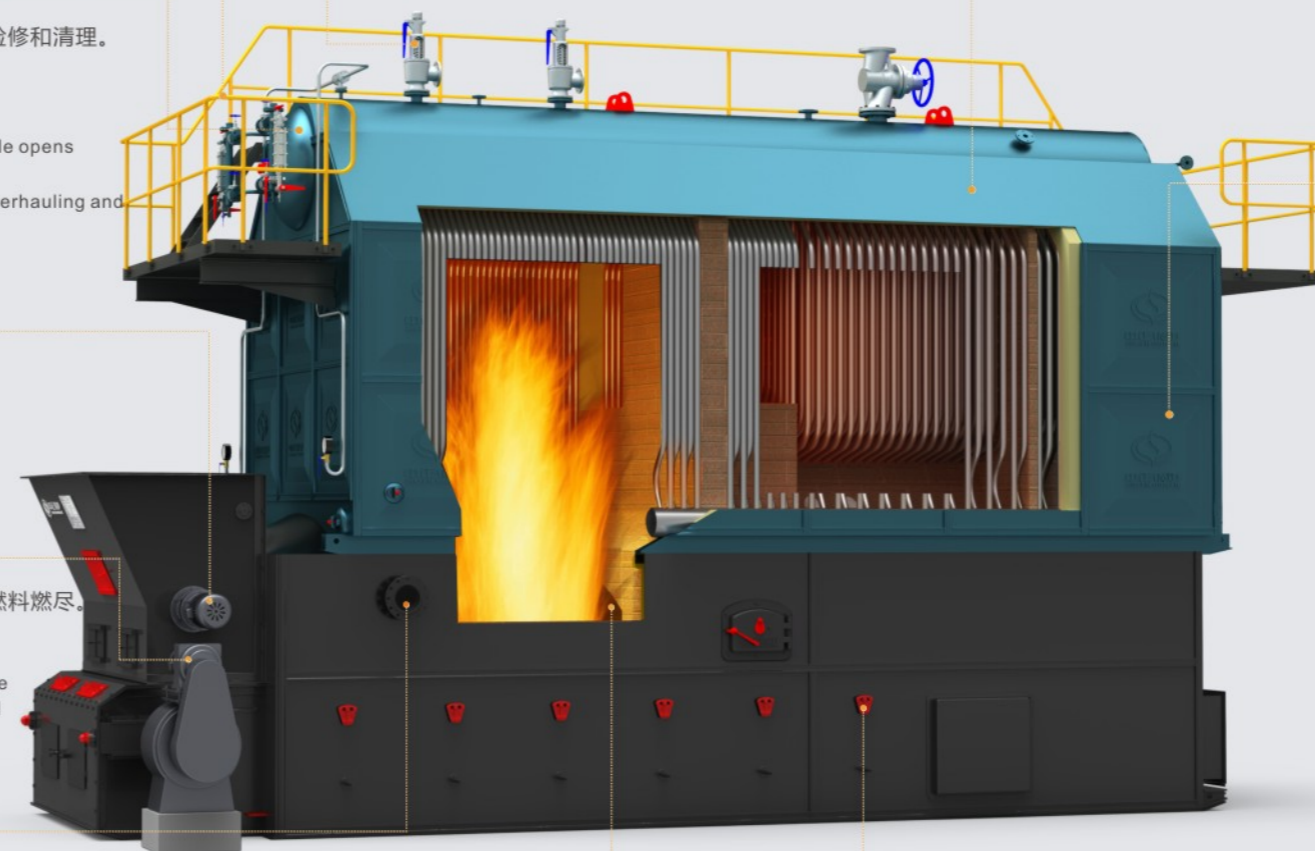
- Set different quantity of independent air bin from front to rear grate according to different capacity.
- Distribute air reasonably according to various fuel is totally fired combustion condition to make sure that the coal is totally fired.

链条炉排

- 链条炉排层燃燃烧，科学的炉拱，合理的配风，颗粒燃料燃烧充分。

Chain grate

- Chain grate layer burning, scientific furnace, reasonable air distribution, full combustion of pellets fuel.



SHL

系列生物质散装蒸汽、热水锅炉

series biomass firing bulk steam & hot water boilers

概述:

SHL型系列散装蒸汽/热水锅炉系双锅筒横向布置自然循环水管锅炉。横置上、下锅筒与水冷壁管形成竖井式炉膛，与对流管束集箱等组成锅炉本体。尾部设有省煤器、空气预热器；可在炉膛内设置过热器，燃烧设备为鳞片式炉排，无级调速控制，散装出厂，现场组装砌筑，烟气流程为多回程。

该型锅炉具有如下优特点：锅炉具有超出力能力。升温快，热效率高，占地小；炉排采用鳞片式炉排，运行可靠性极大提高；炉拱炉墙可采用浇筑方式。密封性能好，着火条件改善，环保节能，燃烧强烈；自动化程度高，运行平稳，安全可靠，使用寿命极高。

该型锅炉具有出力足，热效率高，安全可靠，消烟除尘好等特点。

INTRODUCTION:

SHL series of boiler is the bulk industrial boiler with dual boiler cylinders and transverse arranged, as well as the natural cycling water pipe boiler. The transverse upper and lower boiler cylinders and water cooling pipe walls together form the silo type furnace, together with convection pipe bundle and collection chest to form the boiler body frame. At the rear part, there is a coal saver air pre-heater; It is available to set up superheater inner furnace. The combustion equipment is squama grating, free timing control. Exit shop in bulk type for site assembly and construction. The smog flow is a type of multi-backhaul.

This type of boiler has the following characteristics: capable of over duty, quick in temperature rise, high in heat efficiency, less land keeping; Squama grating makes greatly enhanced reliability in performance, Furnace arch and wall can be built in casting way, good in block out performance. which betters ignition conditions, environment protective and energy saving, fierce combustion, high extent in automation, stable in performance sate and reliable, together with very long working life.

This type of boiler features are in sufficient output and high efficiency, safe and reliable, good in duster and de-smog and etc.



制造工艺特点

MANUFACTURING PROCESS FEATURES

锅炉制造工艺

- 钢板下料、圈圆、锅筒、管板钻孔等关键加工工艺全采用先进的数控加工，减少组装应力，延长锅炉使用寿命。
- 钢管切割，对流管加工均采用先进的数控工艺。
- 省煤器蛇形管加工由本公司的全自动蛇形管生产线完成。
- 更能保证质量和交货期。

Boiler manufacturing process

- Key processing technology like material preparation and circling of steel plate, drilling of drum and tube plate, etc are all adopted advanced CNC machining process to decrease the assemble stress and extend the boiler working life.
- Steel tube cutting and convection tube processing are all adopted advanced CNC process.
- The economizer coiled tube processing will be finished by automatic coiled tube production line of our company.
- Ensure the quality and delivery time.

锅炉焊接工艺

- 锅炉纵、环缝焊接均采用先进的埋弧自动焊工艺，保证焊接质量。所有纵、环焊缝均进行100%的射线探伤。
- 管座法兰焊接，采用机器人焊接。
- 链条炉排面板，前后烟箱面板采用数控等离子切割机切割，整齐美观。

Boiler welding process

- The boiler vertical and circular seam adopts advanced unionmelt welding process to ensure the welding quality. All the vertical and circular seams will be done 100% radiographic inspection.
- Tube flange weld adopts robot welding.
- The chain grate panel, front and rear smoke chamber panel adopts CNC plasma cutting machine to cut orderly and beautifully.

水循环

- 锅炉水循环采用全自然循环，各受热面均有相对独立的下降管供水，确保整体水循环的安全。

Water circulation

- Boiler water circulation adopts natural circulation. Each heating area has independent downcomer for water supply to make sure the whole water circulation is safe.

大炉膛设计

- 使烟气在炉膛内停留时间加长，使飞灰、可燃气体得到充分燃烧，提高锅炉热效率。
- 烟气在炉膛上升速度低，使其携带的飞灰量大大减少，降低锅炉原始排放浓度。

Large furnace design

- Make flue gas stay longer in furnace and make ash and combustible gas firing sufficiently to improve boiler heat efficiency.
- Decrease the flue gas rising speed in furnace to reduce the ash quantity and decrease boiler original emission concentration.

检修平台

- 平台、扶梯采用格栅板，保证了平台扶梯的强度及刚性。
- 合理的布局保证每一处操作，维修点都可方便到达。

Overhaul platform

- Platform and ladder adopt grating plate to ensure the strength and rigidity of platform ladder.
- Reasonable arrangement ensure all the operation and maintenance site are easy to reach.

播料器

- 播料器，均匀给料，防止回火。

Sow feeder

- Sow feeder feed fuel equally to avoid flashback.

调速箱

- 根据生物质燃烧速率，设计合理转速，确保燃料燃尽。

Speed control gear

- Design reasonable rotating speed according to the combustion speed of biomass to make sure the fuel burning out.

炉排/Grate

- 结构先进的配风系统、司炉人员可以根据燃烧情况，合理调节前后风量。
- 根据燃料的不同，我们设计了鳞片炉排、横梁炉排、往复炉排等多种型式进行选配。

- Advanced air distribution system. Stoker personnel could reasonably adjust front and rear air quantity according to coal quality and combustion condition.
- According to different fuel, we design various kinds of grate like flake grate, crossbeam grate, reciprocating grate, etc.

人孔、检修门

- 采用双锅筒布置，上下锅筒均设有人孔，方便用户检修和清理
- 检修门的设置可以保证维修人员到达炉膛尾部受热面等所有需要维护的位置

Manhole, inspection door

- Manhole are set on upper and lower drum. Manhole opens conveniently and is good for overhaul and clean
- Inspection door makes it convenient for user to overhaul and maintain tail heating area and furnace

对流受热面

- 设置多道折烟板，增加烟气流程并起到降尘的作用，有效防止飞灰进入省煤器，造成省煤器的堵塞
- 所有易积灰的部位都留有吹灰器接口，供用户选装各种形式的吹灰器

Convection heating area

- Set multiple bend smoke plate to increase flue gas flow and fall dust. This efficiently prevents ash from entering into economizer to block economizer
- Set soot blower reserved connector for user to select various types of soot blower (eg: steam soot blowing, shock wave soot blowing, etc)

蛇形管式省煤器

- 蛇形管式省煤器最大限度的吸收烟气温度，提高锅炉效率。

Coiled pipe type economizer

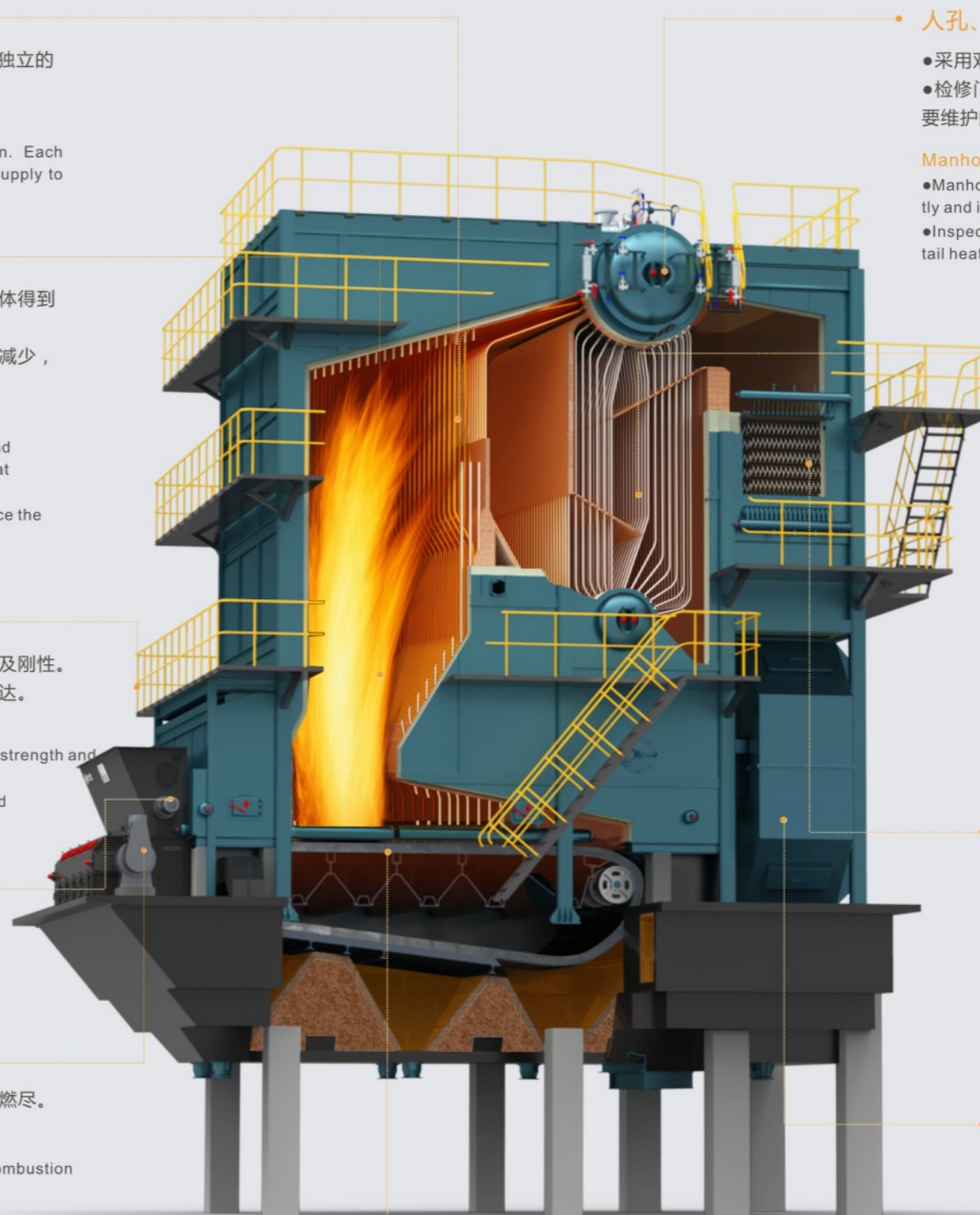
- Coiled pipe type economizer maximum absorbs flue gas temperature

空气预热器

- 空预器烟气进口侧均装有防磨套管，延长了空气预热器的使用寿命。
- 提高了炉膛进风温度，降低了排烟温度，提高了热效率。

Air preheater

- Steel tube type air preheater decreases the exhausted gas temperature, improve furnace inlet air temperature and boiler heat efficiency.



DZL

系列烟煤/无烟煤卧式蒸汽、热水锅炉 series bituminous coal/anthracite horizontal type steam & hot water boilers

概述:

DZL型系列快装锅炉是卧式三回程水火管链条炉排锅炉，燃用中质烟煤及无烟煤。锅炉本体为单锅筒纵向布置，锅筒内布置螺纹烟管组成对流受热面，锅筒与两侧水冷壁组成炉膛辐射受热面。燃烧设备采用轻型链条炉排；整体快装形式出厂。电气控制实现炉排无级调速，极限参数报警及联锁保护。

该型锅炉的特点：结构紧凑，体积简便，基建投资省；加煤、出渣机械化；锅炉出力足，效率高。是广大中、小型工矿企业生产用汽和人民群众生活取暖深受受欢迎的供热设备。

INTRODUCTION:

DZL series of quick fitting boiler is the horizontal tri-returning water and fire pipes chain grating boiler, which uses medium quality soft coal. The boiler body is single drum type, portrait arranged; there are left and right 2 rows of fire pipe bundles inside boiler drum to form convection heat receiving surfaces. the boiler drum and water-cooled walls at both sides shape the furnace radiation heat receiving surfaces; the combustion equipment uses light chain grating; exit shop in whole machine & quick fitting type. The electric control realizes grating step free timing, the extreme parameter alarm and inter-lock protection.

Features of this series of boiler: compact structure, small volume; convenient installation, cheap in fundamental construction; mechanized coal feeding and cinder removing; the output of the boiler is in sufficient and high efficiency. It is the well appreciated equipment for extensive steam supplying equipment for medium and small enterprises and public heating.



制造工艺特点

MANUFACTURING PROCESS FEATURES

锅炉制造工艺

- 钢板下料、圈圆、锅筒、管板钻孔等关键加工工艺全采用先进的数控加工，减少组装应力，延长锅炉使用寿命
- 钢管切割，螺纹管压制，对流管加工均采用先进的数控工艺
- 在国内率先采用拱形管板和螺纹烟管结构，增加热传导，彻底解决了后管板开裂的问题
- 链条炉排面板，前后烟箱面板采用数控等离子切割机切割，整齐美观

Boiler manufacturing process

- Key processing technology like material preparation and circling of steel plate, drilling of drum and tube plate, etc are all adopted advanced CNC machining process to decrease the assemble stress and extend the boiler working life
- Steel tube cutting, threaded pipe pressing and convection tube processing are all adopted advanced CNC process
- Firstly adopt arch tube plate and threaded fire tube structure at home to increase heat conduction to solve the problem of rear tube plate cracked
- The chain grate panel, front and rear smoke chamber panel adopts CNC plasma cutting machine to cut orderly and beautifully

锅炉焊接工艺

- 锅炉纵、环缝焊接均采用先进的埋弧自动焊工艺，保证焊接质量，所有纵、环焊缝均进行100%的射线探伤
- 烟管与管板的焊接采用先预胀，消除管与管板的间隙，再采用氩弧自动焊的焊接工艺。有效的消除应力，延长锅炉使用寿命
- 管座法兰焊接，采用机器人焊接
- 链条炉排均为本厂制造，出厂前均试运转72小时，确保炉排的松紧度适中且不走偏

Boiler welding process

- The boiler vertical and circular seam adopts advanced unionmelt welding process to ensure the welding quality. All the vertical and circular seams will be done 100% radiographic inspection
- The weld of smoke tube and tube plate will be pre-expanded first to remove the gap between tube and tube plate. And then adopt argon arc automatic welding process. This may relief stress efficiently and extend the boiler working life
- Tube flange weld adopts robot welding
- Chain grate are all manufactured by ZOZEN and be test running for 72 hours before leaving the factory to make sure that the degree of tightness is moderate

弹簧全启式安全阀

- 当系统压力超过规定值时,安全阀自动打开泄压,从而保证系统不因压力过高而发生事故。

Spring full lift safety valve

- When the system pressure exceed rated value, safety valve will open decompression automatically to make sure that no accident will occur because of high system pressure

螺纹烟管

- 制造工艺先进，采用流水线全自动旋压作业；
- 强化传热，提高锅炉热效率；
- 螺纹烟管为我公司多年研究的高效传热元件，经不断优化，在螺纹槽深与节距的选取上，达到满足流阻最低时，传热系数比普通烟管高1.8倍。

Thread smoke tube

- Advanced manufacturing process. Adopt assembly line automatic spinning work;
- Strengthen heat transfer to improve boiler heat efficiency;
- Thread smoke tube is efficient heat transfer component researched by our company for years. After constantly optimization, the selection of thread groove depth and pitch could reach the following result: when meeting the lowest flow resistance, heat transfer coefficient is 1.8 times higher than common smoke tube.

拱形管板

- 彻底地改善了平管板人孔上方的高应力状态
- 管板下方圆弧板边处外壁最大应力
- 抗疲劳强度大大超过平管板
- 为工业锅炉采用国际标准创造了条件

Arch tube plate

- Thoroughly improve the high stress state on the flat tube plate manhole
- Outer wall under tube plate and near round arch plate has maximum stress
- Fatigue resistance largely exceeds flat tube plate
- Create condition for industrial boiler adopting international standard

链条炉排

- 链条炉排层燃燃烧，科学的炉拱，适用煤种广，合理的配风，燃烧充分。

Chain grate

- Chain grate layer burning, scientific furnace, widely applied type of coal, reasonable air distribution, full combustion

极低水位电极(蒸汽锅炉)

- 有效防止极低水位在手动模式操作造成锅炉缺水事故，加强水位控制的安全保护

Extreme low water electrode (steam boiler)

- Prevent boiler water shortage caused by extreme low water being operated in manual mode and reinforce the safety protection of water level control

独特的水火管三回程设计

- 燃烧产生的高温烟气首先从尾部进入本体两侧的八字烟道，(此时为水管式)，烟气在管外流动。
- 经过八字烟道冷却的烟气再由前烟箱进入布置在锅筒内的螺纹烟管(此时为火管式)
- 从后烟箱排出，这一设计从根本上解决了纯火管锅炉的管板开裂问题

Unique water fire tube tri-backhaul design

- High temperature flue gas produced by firing enters into flue gas duct of boiler body two sides from tail part (this moment is water tube type). Flue gas flows at the outside of tube
- Flue gas cooled by flue gas duct enters into thread smoke tube in drum through front smoke chamber (this moment is fire tube type)
- The design, exhausting from rear smoke chamber, fundamentally solves the problem of tube plate cracking

面板

- 冷轧压膜凹凸面板，强度大，美观大方

Panel

- Cold rolling pressed film concave-convex panel has great strength and is beautiful

人孔、检修门

- 合理的人孔和手孔布置，检修方便。炉膛设置了检修门,方便检修与保养

Manhole, inspection door

- Reasonable arrangement of manhole and handhole make maintenance convenient. The inspection door set in furnace make it easy to overhaul and maintain



SZL

系列烟煤/无烟煤卧式蒸汽、热水锅炉

series bituminous coal/anthracite horizontal type steam & hot water boilers

概述:

SZL型系列锅炉是我公司技术人员根据国内、外先进技术和经验设计而成的卧式双锅筒纵置式链条炉排水管蒸汽和热水锅炉。该系列产品技术、性能、环保指标均达到国际先进水平，为锅炉行业的主导产品。

锅炉采用快装或组装结构。4~6t/h为快装水管结构，在厂内全部整装后出厂；6~35t/h由上下二大件组成，上部大件为受热面，下部大件为燃烧设备。锅炉本体的前端为四周布置的水冷壁上上部与锅筒连接下部与集箱连接组成燃烧室，以吸收炉膛辐射热，其后端在上下锅筒之间布置密集的对流管束，燃烧后的高温烟气经过二次回程横向冲刷对流受热面后引至单独布置的省煤器，最后进入除尘器经烟囱排出。20t/h组装水管锅炉由前炉膛、后炉膛、对流管束、省煤器及链条炉排组成，并分别装配成整体出厂。

本系列锅炉吸取快装锅炉的优点，结构紧凑、锅炉房为单层布置、现场安装方便、周期短、费用低、操作简便等优点。本系列蒸汽锅炉适用于工业及生活用汽，相应容量的热水炉适用于工业及民用采暖。

INTRODUCTION:

SZL series boiler is the horizontal dual cylinder arranged, chain grating, pipe steam and hot water boiler designed by our technical personnel according to advanced technology and experiences from home and abroad. The technology, performance and environmental protective index of this series of products reach the international advanced level, and this product is the mainstay one in boiler industry.

The boiler uses quick fitting or assembly structure. The 4~6t/h boiler is of quick fitting pipe structure, exit shop after completely assembled, the boiler of 6~35t/h is composed of 2 main components; The upper assembled components is the body heat accepting part, and the lower assembled component is of combustion equipment. The former part of the boiler body is arranged an water cooling wall, the upper part of it is connected to boiler cylinder, and its lower part is connected to collective chest, so as to form a combustion room and absorb the radiated heat from the furnace; its rear part is arranged with dense convection pipe bundle between upper and lower boiler cylinders; the high temperature smog after combustion shall stand for twice returning flushing transversely to the heat accepting surfaces, and shall be introduced to coal saver singly arranged, and flow into duster and exhausted from chimney in the end. The 20t/h assembled water pipe boiler is composed of front furnace, rear furnace, convection pipe bundle, coal saver and chain grating, and which are assembled in big components respectively for delivery.

This series of boiler absorbs the merits from quick fitting boiler, features compact in structure, the boiler's shop is of one storey arranged, convenient for site installation, short in construction period, cheap in cost, simple in operation and etc. This series of steam boiler is suitable for industrial and living steam consumption, the correspondent capacity hot water boiler is applied for industrial and civil heating purpose.



制造工艺特点

MANUFACTURING PROCESS FEATURES

锅炉制造工艺

- 钢板下料、圈圆、锅筒、管板钻孔等关键加工工艺全采用先进的数控加工，减少组装应力，延长锅炉使用寿命
- 钢管切割、管端抛光、除锈、弯制，加工均采用先进的数控加工工艺
- 自动化生产线

Boiler manufacturing process

- Key processing technology like material preparation and circling of steel plate, drilling of drum and tube plate, etc are all adopted advanced CNC machining process to decrease the assemble stress and extend the boiler working life
- Steel tube cutting, polishing, rust cleaning, bending and process of tube end are all adopted advanced CNC process
- Automatic production line

锅炉焊接工艺

- 锅炉纵、环缝，管子和锅筒内侧的焊接，管子和法兰焊接等重要部位的焊均采用埋弧自动焊，或气体保护焊等自动化焊接工艺，保证焊接质量。所有纵、环焊缝均进行100%的射线探伤
- 管座法兰焊接，采用机器人焊接
- 链条炉排面板，前后烟箱面板采用数控等离子切割机切割，整齐美观
- 链条炉排均为本厂制造，出厂前均经过48小时冷态试运转，确保运行不跑偏

Boiler welding process

- Weld of important parts like the boiler vertical and circular seam, weld of tube and drum inboard, weld of tube and flange, etc all adopt automatic welding process like unionmelt welding or gas shielded welding, etc to ensure the welding quality. All the vertical and circular seams will be done 100% radiographic inspection
- Tube flange weld adopts robot welding
- The chain grate panel, front and rear smoke chamber panel adopts CNC plasma cutting machine to cut orderly and beautifully
- Chain grate are all manufactured by ZOZEN and be cold state test running for 48 hours before leaving the factory to make sure that the degree of tightness is moderate

弹簧全启式安全阀

- 安全阀的排放量都经过严格计算；
- 锅炉最大蒸发量当系统压力超过规定值时，安全阀自动打开泄压，从而保证系统不因压力过高而发生事故。

Spring full lift safety valve

- The safety valve discharge capacity is calculated strictly
- When the system pressure exceed rated value, safety valve will open decompression automatically to make sure that no accident will occur because of high system pressure

检修平台

- 检修平台安全可靠，布置合理，检修方便；
- 平台扶梯采用螺栓、螺母固定；
- 安装方便，不破坏底漆。

Overhaul platform

- Overhaul platform is safe and reliable, arranged reasonably and overhauled conveniently
- Platform ladder will be fixed by bolt and nut
- Safe and convenient and primer will not be damaged

人孔、检修门

- 上下锅筒均设有人孔，打开方便，利于用户检修和清洗
- 炉膛设置了检修门、方便检修与保养

Manhole, inspection door

- Manhole are set on upper and lower drum. Manhole opens conveniently and is good for overhaul and clean
- Inspection door is set in furnace for convenient overhauling maintenance

独立风仓

- 根据不同吨位，炉排从前到后设置不同数量的独立风仓；
- 用户可以根据不同的煤质和燃烧情况合理分配给风，确保燃煤的燃尽。

Independent air bin

- Set different quantity of independent air bin from front to rear grate according to different capacity
- Distribute air reasonably according to various coal quality and combustion condition to make sure that the coal is totally fired

链条炉排

- 链条炉排层燃燃烧，科学的炉拱，适用煤种广，合理的配风，燃烧充分。

Chain grate

- Chain grate layer burning, scientific furnace, widely applied type of coal, reasonable air distribution, full combustion

极低水位电极(蒸汽锅炉)

- 除国标规定的水位安全设置后，我们增加了极低水位电极保护，此电极和鼓、引风机联锁，确保锅炉运行时的水位安全。

Extreme low water electrode (steam boiler)

- Except the water level safety setting of international regulation, we add extreme low water level electrode protection. The electrode interlocks with FD fan and ID fan to make sure the water level is safe when boiler is operating



面板

- 冷轧压模成形凹凸面板，刚性好，强度大，美观大方；
- 采用自攻螺丝固定，无焊点；
- 外表经除锈后再涂防腐及面漆、底漆，美观大方。

Panel

- Cold rolling pressed film forms concave-convex panel which has great rigidity and strength and is beautiful
- Fixed by self-tapping screw and there is no welding spot
- After rust removed, the surface will be printed corrosion prevention and finishing coat and primer. It's beautiful

SHX

系列循环流化床蒸汽、热水锅炉

series circulating fluidized bed steam & hot water boilers

概述:

SHX系列循环流化床锅炉，蒸发量为10~75t/h，蒸汽压力为1.25~2.5MPa，蒸汽温度为194~225℃。热水锅炉7~58MW，供水温度为130℃/150℃，回水温度为70℃/90℃，工作压力为1.0~1.6MPa。循环流化床燃烧（CFBC）技术作为一种新型成熟的高效低污染清洁煤技术，具有许多其它燃烧方式没有的优点。

- 循环流化床属于低温燃烧，因此氮氧化物排放远低于煤粉炉，仅为200ppm左右，并可实现燃烧过程中直接脱硫，脱硫效率高。且技术设备经济简单，其脱硫的初投资及运行费用远低于干燥粉炉加烟气脱硫（PC+FCD）。

- 燃料适应性广且燃烧效率高，特别适合于低热值劣质煤。

- 排出的灰渣活性好，易于实现综合利用，无二次灰渣污染。

- 负荷调节范围大，低负荷可降到满负荷的30%左右。

- 在我国目前环保要求日益严格。电厂负荷调节范围较大、煤种多变、原煤直接燃烧比例高、国民经济发展水平不平衡、燃煤与环保的矛盾日益突出的情况下，循环流化床锅炉已成首选的高效低污染的新型燃烧技术。

INTRODUCTION:

SHX CFB boiler: evaporation capacity 10-75t, with steam pressure of 1.25-2.5MPa and the steam temperature is saturated steam and superheated steam. Hot-water boiler 7-58MW, supplies 130℃/150℃ hot wat. Under pressure of 1.0-1.6MPa; the returning water temperature is 70℃/90℃. CFBC technology, being a new type and matured high efficient, low pollution & green technology, has a lot of merits, which can not be found in other combustion method.

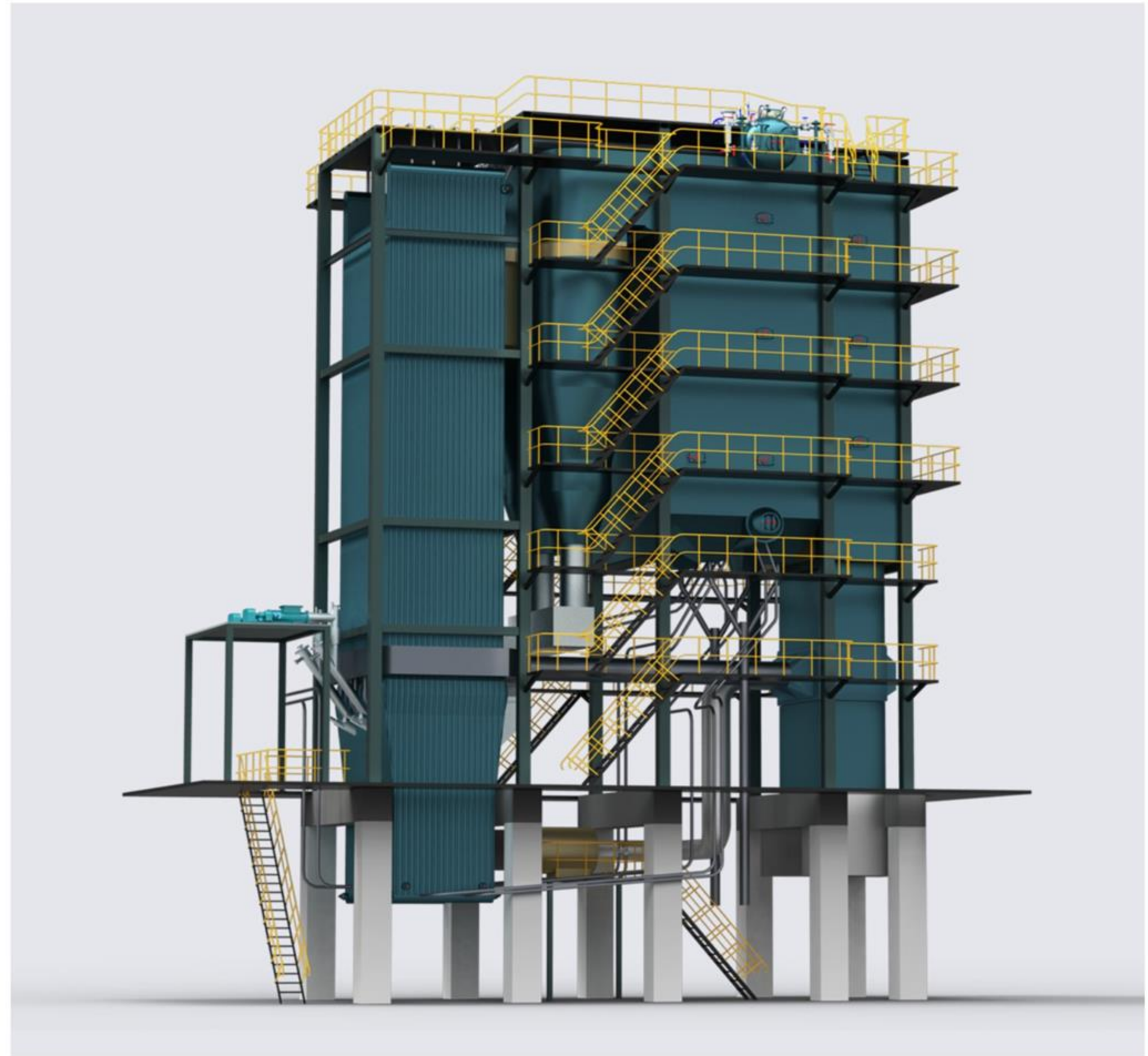
1. CFB belongs to low temperature combustion; therefore, the exhaustion of nitrogen oxide is far more fewer than from coal powder furnace, only 200ppm approximately; at the same time. It is feasible to actualize direct desulfurizing during combustion, The efficiency of desulfurization is high and the equipment is simple and cheap as well. The initial investment for desulfurization and performance cost is a far lower than that of PC+FCD.

2. Extensive fuel adaptability and high combustion efficient, especially suitable for low calorie inferior coal.

3. The exhausted cinder has better activeness, liable to actualize integrated utilization and free from pollution.

4. Wide range for road adjustment, low load may lower to 30% approximately of the rated load.

Currently, requirements for environment protection become stricter daily, and electricity load adjustment range for power plant becomes bigger, varieties of coal supply changeable, direct combustion of raw coal takes higher ratio, national economy develops unevenly in different level, the contradiction between environment protection and coal burning pops out daily more, CFB boiler has become a first choice for high efficiency and low pollution new combustion technology.



制造工艺特点

MANUFACTURING PROCESS FEATURES

锅炉制造工艺

- 钢板下料、圈圆、锅筒、管板钻孔等关键加工工艺全采用先进的数控加工，减少组装应力，延长锅炉使用寿命
- 钢管下料、抛光、除锈、弯制，均采用先进的数控加工工艺

Boiler manufacturing process

- Key processing technology like material preparation and circling of steel plate, drilling of drum and tube plate, etc are all adopted advanced CNC machining process to decrease the assemble stress and extend the boiler working life
- Steel tube preparation, polishing, rust cleaning and bending are all adopted advanced CNC process

锅炉焊接工艺

- 锅炉纵、环缝焊接均采用先进的光电跟踪埋弧自动焊工艺，改善人工操作环境，保证产品焊接质量。
- 管座法兰焊接，采用机器人焊接

Boiler welding process

- Boiler vertical and circular seam weld adopt advanced photoelectric tracking and union melt welding processing to improve the operating environment and ensure the welding quality
- Tube flange weld adopts robot welding

高温旋风分离器

- 高效、耐磨，分离效率≥98%，有效提高锅炉热效率的燃烧效率。

High temperature cyclone separator

- High efficiency and wear resistant. Separation efficiency ≥ 98% efficiently improve the combustion efficiency of boiler heat efficiency

大炉膛设计

- 大炉膛、低流速设计；让管技术的应用，降低冲刷磨损；
- 延长煤颗粒在炉膛内停留的时间，使煤得以充分燃烧。

Large furnace design

- Large furnace, lower flow speed design. Allow pipe technology decrease erosive wear
- Extend the stay time of coal particles in furnace to make coal fired sufficiently

钟罩式风帽

- 采用钟罩式风帽，在布风均匀的同时，避免物料反串到风室。

Bell jar type hood

- Adopt bell jar type hood to distribute air average and avoid fuel returning to wind chamber

点火方式

- 独特的风室设计，为用户提供了床上点火和床下点火两种方式的选择。

Ignition method

- Unique wind chamber design provides two methods for user: ignition on bed and ignition under bed

人孔、检修门

- 上下锅筒前后布置人孔，打开方便，利于用户检修和清理
- 检修门方便用户对尾部受热面和炉膛的检修与维护

Manhole, inspection door

- Manhole are set on upper and lower drum. Manhole opens conveniently and is good for overhaul and clean
- Inspection door makes it convenient for user to overhaul and maintain tail heating area and furnace

对流受热面

- 设置多道折烟板，增加烟气流程并起到降尘的作用，有效防止飞灰进入省煤器，造成省煤器的堵塞。
- 设置吹灰装置预留接口，供用户选择安装各种类型的吹灰器（如蒸汽吹灰，激波吹灰等）。

Convection heating area

- Set multiple bend smoke plate to increase flue gas flow and fall dust. This efficiently prevents ash from entering into economizer to block economizer
- Set soot blower reserved connector for user to select various types of soot blower (eg: steam soot blowing, shock wave soot blowing, etc)

蛇形管式省煤器

- 蛇形管式省煤器最大限度的吸收烟气温度，提高锅炉效率。

Coiled pipe type economizer

- Coiled pipe type economizer maximum absorbs flue gas temperature

空气预热器

- 钢管式空气预热器，降低排烟温度，提高炉膛进口风温，提高了锅炉整体热效率。

Air preheater

- Steel tube type air preheater decreases the exhausted gas temperature, improve furnace inlet air temperature and boiler heat efficiency



SHL

系列散装蒸汽、热水锅炉

series bulk steam & hot water boilers

概述:

SHL型系列散装蒸汽/热水锅炉系双锅筒横向布置自然循环燃煤水管锅炉。横置上、下锅筒与水冷壁管形成竖井式炉膛，与对流管束集箱等组成锅炉本体。尾部设有省煤器、空气预热器；如需可在炉膛内设置过热器，燃烧设备为鳞片式炉排，无级调速控制，散装出厂，现场组装砌筑，烟气流程为多回程。

该型锅炉具有如下优特点：锅炉具有超出力能力。升温快，热效率高，占地小；炉排采用鳞片式不漏煤炉排，运行可靠性极大提高，适用煤种广；炉拱炉墙可采用浇筑方式。密封性能好，着火条件改善，节能环保，燃烧强烈；自动化程度高，运行平稳，安全可靠，使用寿命极高。

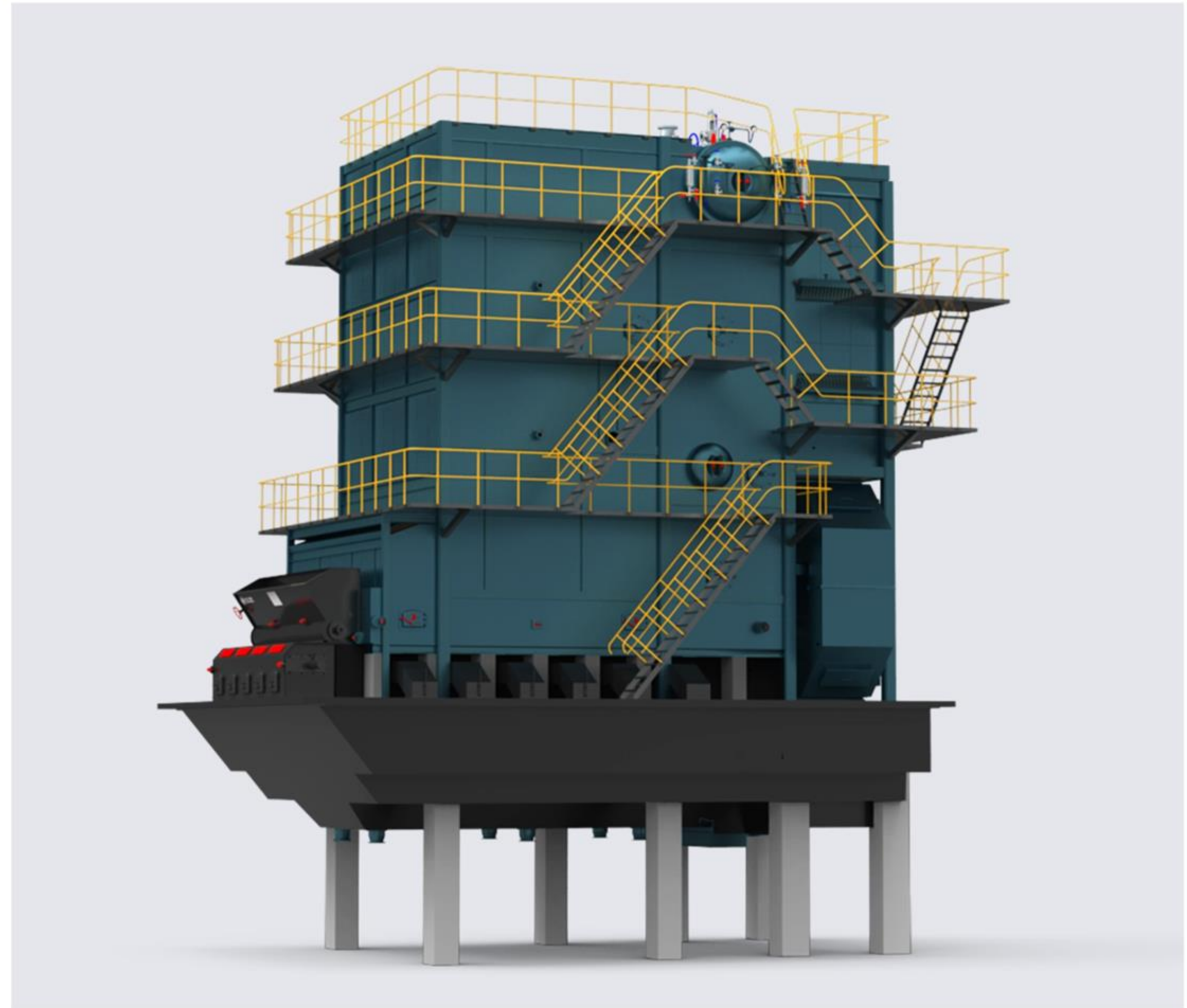
该型锅炉具有出力足，热效率高，煤种适应性强，安全可靠，消烟除尘好等特点。广泛应用于人民生活集中供热的领域。

INTRODUCTION:

SHL series of boiler is the bulk industrial boiler with dual boiler cylinders and transverse arranged, as well as the natural cycling coal combustion water pipe boiler. The transverse upper and lower boiler cylinders and water cooling pipe walls together form the silo type furnace, together with convection pipe bundle and collection chest to form the boiler body frame. At the rear part, there is a coal saver air pre-heater; and if necessary, it is available to set up superheater inner furnace. The combustion equipment is squama grating, free timing control. Exit shop in bulk type for site assembly and construction. The smog flow is a type of multi-backhaul.

This type of boiler has the following characteristics: capable of over duty.quick in temperature rise, high in heat efficiency, less land keeping; leak-free squama grating makes greatly enhanced reliability in performance suitable for extensive varieties of coal furnace arch and wall can be built in casting way, good in block out performance. which betters ignition conditions, environment protective and energy saving, fierce combustion, high extent in automation, stable in performance sate and reliable, together with very long working life.

This type of boiler features are in sufficient output and high efficiency. Excellent adaptability for varieties of coal, safe and reliable, good in duster and de-smog and etc. It is extensively applied in field of public living heating.



制造工艺特点

MANUFACTURING PROCESS FEATURES

锅炉制造工艺

- 钢板下料、圈圆、锅筒、管板钻孔等关键加工工艺全采用先进的数控加工，减少组装应力，延长锅炉使用寿命
- 钢管切割，对流管加工均采用先进的数控工艺

Boiler manufacturing process

- Key processing technology like material preparation and circling of steel plate, drilling of drum and tube plate, etc are all adopted advanced CNC machining process to decrease the assemble stress and extend the boiler working life
- Steel tube cutting and convection tube processing are all adopted advanced CNC process

锅炉焊接工艺

- 锅炉纵、环缝焊接均采用先进的埋弧自动焊工艺，保证焊接质量。所有纵、环焊缝均进行100%的射线探伤
- 管座法兰焊接，采用机器人焊接
- 链条炉排面板，前后烟箱面板采用数控等离子切割机切割，整齐美观

Boiler welding process

- The boiler vertical and circular seam adopts advanced unionmelt welding process to ensure the welding quality. All the vertical and circular seams will be done 100% radiographic inspection
- Tube flange weld adopts robot welding
- The chain grate panel, front and rear smoke chamber panel adopts CNC plasma cutting machine to cut orderly and beautifully

水循环

- 锅炉水循环采用全自然循环，各受热面均有相对独立的下降管供水，确保整体水循环的安全。

Water circulation

- Boiler water circulation adopts natural circulation. Each heating area has independent downcomer for water supply to make sure the whole water circulation is safe

大炉膛设计

- 使烟气在炉膛内停留时间加长，使飞灰、可燃气体得到充分燃烧，提高锅炉热效率
烟气在炉膛上升速度低，使其携带的飞灰量大大减少，降低锅炉原始排放浓度

Large furnace design

- Make flue gas stay longer in furnace and make ash and combustible gas firing sufficiently to improve boiler heat efficiency
Decrease the flue gas rising speed in furnace to reduce the ash quantity and decrease boiler original emission concentration

检修平台

- 平台、扶梯采用格栅板，保证了平台扶梯的强度及刚性。
- 合理的布局保证每一处操作，维修点都可方便到达。

Overhaul platform

- Platform and ladder adopt grating plate to ensure the strength and rigidity of platform ladder
- Reasonable arrangement ensure all the operation and maintenance site are easy to reach

炉排/Grate

- 结构先进的配风系统，司炉人员可以根据煤质、燃烧情况，合理调节前后风量。
- 根据煤种的不同，我们设计了鳞片炉排、横梁炉排、往复炉排等多种型式进行配选。

- Advanced air distribution system. Stoker personnel could reasonably adjust front and rear air quantity according to coal quality and combustion condition
- According to different coal, we design various kinds of grate like flake grate, crossbeam grate, reciprocating grate, etc

人孔、检修门

- 采用双锅筒布置，上下锅筒均设有人孔，方便用户检修和清理
- 检修门的设置可以保证维修人员到达炉膛尾部受热面等所有需要维护的位置

Manhole, inspection door

- Manhole are set on upper and lower drum. Manhole opens conveniently and is good for overhaul and clean
- Inspection door makes it convenient for user to overhaul and maintain tail heating area and furnace

对流受热面

- 设置多道折烟板，增加烟气流程并起到降尘的作用，有效防止飞灰进入省煤器，造成省煤器的堵塞
- 所有易积灰的部位都留有吹灰器接口，供用户选装各种形式的吹灰器

Convection heating area

- Set multiple bend smoke plate to increase flue gas flow and fall dust. This efficiently prevents ash from entering into economizer to block economizer
- Set soot blower reserved connector for user to select various types of soot blower (eg: steam soot blowing, shock wave soot blowing, etc)

蛇形管式省煤器

- 蛇形管式省煤器最大限度的吸收烟气温度，提高锅炉效率。

Coiled pipe type economizer

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空气预热器

- 空预器烟气进口侧均装有防磨套管，延长了空气预热器的使用寿命
- 提高了炉膛进风温度，降低了排烟温度，提高了热效率

Air preheater

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