Top Biomass Boiler Manufacturer Guide Evaluating ZOZEN's Chain-Grate & Reciprocating-Grate Designs

Wuxi, Jiangsu Sheng Jan 3, 2026 (Issuewire.com) - Choosing a **Top Biomass Boiler Manufacturer** has become a strategic decision for plants that want to cut fuel costs and carbon emissions without compromising production stability. Biomass fuels such as wood chips, rice husk and agricultural residues are attractive, but their variable moisture and particle size place high demands on boiler design. This guide looks at how ZOZEN, a modern boiler producer based in Wuxi, China, has

developed chain-grate and reciprocating-grate biomass boilers and what these designs reveal about selecting the right supplier. More information on its portfolio is available at: https://en.zozen.com/.

Biomass Boilers in the Low-Carbon Transition

Across many industries, biomass boilers are being adopted to replace or complement coal and heavy-oil systems, providing renewable heat and helping companies meet tightening environmental policies. ZOZEN positions its biomass-fired boilers as efficient, low-emission solutions for industrial customers, and works to utilize waste biomass such as wood chips, straw, palm shells, mesocarp fiber and rice husk as fuel. In doing so, it supports customers seeking near-zero net CO_2 emissions while maintaining reliable steam and heat supply.

When plant owners search phrases like "**Top 10 Manufacturers Of Biomass Boiler In The World**", they are ultimately looking for suppliers that can convert difficult, non-standard biomass into dependable energy. Examining ZOZEN's chain-grate and reciprocating-grate designs offers a practical framework for evaluating any **Best Biomass Boiler Supplier**.

ZOZEN in Brief: Industrial Boiler Specialist with Biomass Focus

ZOZEN is described in its corporate introduction as one of the best modern boiler manufacturers in China. The company operates in Wuxi with approximately 150 thousand square meters of production area and is equipped with advanced fabrication lines and testing facilities. It has passed the ISO9001:2015 quality management system and obtained ASME "S" and "U" stamps for pressure vessel manufacturing, which are important indicators of product quality and process control.

Its product scope covers gas- and oil-fired boilers, coal-fired units, biomass-fired boilers and thermal oil heaters, serving sectors from chemical and textile to food, pharmaceuticals and heating. On the biomass side, ZOZEN cooperates with Shanghai Jiao Tong University to develop boilers that burn a wide range of waste biomass, emphasizing combustion efficiency and optimized furnace structures. This combination of manufacturing scale, certification and research capability underpins its positioning as a **Global Leading Biomass Boiler Manufacturer**.

Chain-Grate Biomass Boilers: SZL Series, DZL Series and YLW Series

How Chain Grates Work

In a chain-grate boiler, a moving metal grate slowly transports fuel through the furnace. Biomass is fed at one end, dries and ignites gradually and then completes combustion before ash is discharged automatically. ZOZEN's technical documentation explains that chain-grate biomass boilers provide mechanized fuel feeding, steady combustion, automatic ash removal and convenient air distribution control through multiple independent air chambers.

For customers, this design delivers relatively stable output and reduces manual workload, which is vital when biomass quality fluctuates by season or supplier.

SZL Series Chain-Grate Biomass Boilers

The SZL series is ZOZEN's flagship water-tube chain-grate biomass boiler. It uses a horizontal double-drum layout, with the upper module forming the main heating surface and the lower part integrating the chain-grate combustion system. According to product data, SZL series chain-grate biomass boilers are

shop-assembled, enabling faster and easier installation on site.

Heat efficiency values published for SZL models exceed 83 percent, and for larger capacities such as 12 to 35 t/h the specified efficiency is above 86 percent, supported by optimized heating surface layout and combustion air organization. ZOZEN also highlights that it has addressed common biomass-boiler problems such as furnace arch damage, furnace door burnout and backfire in the hopper, which helps extend service life and reduce unplanned shutdowns.

DZL Tri-Drum Ash-Free Biomass Steam Boilers

Beyond SZL models, ZOZEN has independently developed the third-generation DZL series biomass steam boiler. The boiler features an upper/lower modular assembly that simplifies transport and on-site installation. Its tall-furnace design, optimized flue-gas routing and targeted ash-cleaning layout significantly reduce ash build-up on the convection heating surfaces, extending clean-cycle intervals and keeping steam output stable during long continuous runs—ideal for plants that require 24/7, low-maintenance steam supply.

YLW Series Biomass Horizontal Thermal Oil Boilers

For processes that require high-temperature heat transfer oil rather than steam, ZOZEN offers the **YLW series biomass horizontal thermal oil boilers**. These are square-coil, horizontal chain-grate assembled boilers in which the grate and boiler body are delivered as separate modules for convenient installation.

The YLW series typically provides thermal capacities of roughly **2.8–29 MW**, with rated outlet oil temperatures up to about **310°C** at a working pressure of around **0.8-1.0 MPa**. The horizontal layout and square coil tube design help ensure uniform oil flow and temperature distribution, while the chain-grate combustion system, combined with mechanical fuel feeding, ventilation and slag removal, supports efficient combustion of biomass pellets, wood chips, agricultural residues and other solid fuels. This makes YLW units well-suited to industries such as chemicals, building materials, composites and plastics where stable, high-temperature heat is critical.

Industry Applications for Chain Grates

Real-world cases illustrate how these chain-grate designs are used. In the rubber industry, **General Rubber (Thailand) Co., Ltd.** selected a **40 t/h DZL series horizontal biomass steam boiler** from ZOZEN for its tire manufacturing base in Thailand. The boiler provides steam for vulcanization, drying, curing and other key production processes, while using biomass as the main fuel to significantly reduce carbon emissions and operating costs. Project information indicates a thermal efficiency of about **87.5%**, supporting both energy savings and environmental performance over the long term.

ZOZEN has also supplied **YLW series 10-million-kcal biomass thermal oil boilers** to overseas customers such as Bestway's Vietnam plant. At this factory, multiple production lines—including PVC processing with demanding temperature requirements around 230°C—depend on a stable, high-temperature heat source. ZOZEN's customized YLW biomass system delivers precise temperature control and continuous heat supply for hot-pressing, lamination, drying and shaping steps, while utilizing biomass fuel to cut fossil energy consumption and support the customer's sustainability strategy.

Reciprocating-Grate Biomass Boilers: DZW Series and Beyond

Design Features of DZW Reciprocating-Grate Boilers

Reciprocating grates address one of the main challenges of biomass combustion: high moisture content and uneven particle size. By dividing the grate into movable sections that push and stir the fuel bed, they enhance mixing, drying and burnout.

ZOZEN's DZW series biomass-fired reciprocating-grate steam boiler is designed specifically for such conditions. Product information indicates that the grate includes separate air chambers suitable for high-moisture fuels, with dense water-cooled walls providing large radiative areas. The published thermal efficiency is greater than 86.7 percent, and the boiler incorporates high-temperature-resistant grate bars to improve durability. Ash handling, slag discharge and fuel feeding are all automated through an advanced control system, which simplifies operation and maintenance.

In its application notes, ZOZEN emphasizes that reciprocating-grate boilers deliver a wide load range and sufficient combustion, making them suitable for industries where steam demand fluctuates during the day and fuel quality is inconsistent.

Industry Applications for Reciprocating Grates

Recent projects show how these boilers perform in different sectors. In central heating, Anshan Park District in China selected a 15-ton DZW series reciprocating-grate biomass steam boiler to cut carbon emissions while maintaining reliable heat supply for industrial users.

In the palm-oil sector, **AEN Palm Oil Processing (Pvt) Ltd.** in Sri Lanka adopted a **15 t/h DZW series tri-drum biomass-fired steam boiler**, using palm fiber residues as the main fuel. The third-generation biomass-fired boiler design, with its tri-drum water-tube structure and reciprocating grate, addresses the low ash-melting-point characteristics of palm fiber that easily cause coking. By optimizing furnace structure, air distribution and grate motion, the boiler helps control slagging and coking while enabling long-term, continuous operation without frequent shutdowns for cleaning. This configuration turns production waste into a stable steam source for key palm oil processes such as cooking and refining, supporting the customer's green development strategy.

ZOZEN has also supplied **25-ton and 15-ton reciprocating-grate biomass boilers** to textile mills in Pakistan, helping them secure stable steam for dyeing and finishing processes while improving fuel utilization. These projects show how reciprocating-grate designs expand fuel flexibility and enable plants to turn low-grade biomass into dependable heat, which is exactly what many buyers expect from a Top Biomass Boiler Manufacturer.

ZOZEN as a Reference for Biomass Boiler Selection

Looking at these technologies and cases, several evaluation criteria emerge for anyone assessing a **Top Biomass Boiler Manufacturer** or comparing candidates often listed when searching for "Top 10 Manufacturers Of Biomass Boiler In The World". Fuel adaptability and combustion efficiency are crucial. ZOZEN's collaboration with universities and its portfolio—from chain-grate SZL and DZL boilers to DZW reciprocating-grate units and biomass thermal oil heaters—aim to handle a wide spectrum of fuels while maintaining high published efficiencies above 83–88 percent for key models.

Engineering depth and customization are equally important. The company designs furnace arches, air distribution and heating surfaces to match specific fuels and industry needs, whether for food processing, paper, plastics, textiles or wood processing. Case studies show tailored capacity, grate type and system layout rather than one-size-fits-all offerings, which is a typical trait of a Best Biomass Boiler Supplier. Manufacturing quality and certification also underpin long-term reliability: ZOZEN's use of CNC cutting, automated production lines and international certifications such as ISO9001 and ASME stamps provide objective evidence of its capabilities.

Finally, lifecycle service and system thinking are essential factors when judging whether a company is a genuinely **Global Leading Biomass Boiler Manufacturer**. ZOZEN not only produces boilers but also designs complete biomass-fired boiler systems and offers installation guidance and operator training through professional after-sales teams.

For plant managers evaluating biomass boiler investments, ZOZEN's chain-grate and reciprocating-grate designs provide a useful reference for what to expect from modern suppliers. Chain-grate SZL and DZL boilers show how to achieve stable, efficient combustion of standardized biomass at various scales, while DZW reciprocating-grate boilers demonstrate how more advanced grates can unlock the value of high-moisture, irregular fuels. When combined with large-scale manufacturing, international certifications and a record of tailored projects, these technologies explain why ZOZEN is frequently considered alongside other major players when buyers shortlist a **Top Biomass Boiler Manufacturer**.

For detailed technical data, case studies and solution proposals, the full product and solutions portfolio is available at https://en.zozen.com/, where potential customers can further evaluate whether ZOZEN fits their expectations for a **Top Biomass Boiler Manufacturer**, **Best Biomass Boiler Supplier** and long-term partner in sustainable heat.

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