



Providing solutions for biomass integrated thermal energy applications

BIOMASS GASIFICATION BURNER

Environment friendly、High Efficiency、Energy-saving

Pilot Brand of Biomass Energy www.greenvinci.com



达万喜节能 GreenVinci Biomass Energy

Greenvinci Biomass has adhered to the cooperate culture and management philosophy of being “steady,professional,honest and win-win” and won wide supports and praises from users and partners all over the world. In recent years, Dawanxi Group has increased its investment in the field of environmental protection and energy conservation in Greater China, and established "GreenVinci", "Dawanxi", "BioVinci" brands. Its enterprises include Foshan Greenvinci Biomass Machinery Co., Ltd., Hainan Dawanxi Bioenergy Co., Ltd., and Foshan Dawanxi Boiler Technology Co., Ltd. and many other companies. In order to meet the needs of international economic development and national industrial policies, Dawanxi has assembled a group of senior technicians of energy-saving, boiler and biomass gasification technology at home and abroad. It has made breakthroughs in the field of biomass energy application technology and research and development of supporting equipment. It was the first successful research and development in biomass gasifier field, new

multi-functional biomass gasification gas supply system and heating system, and declared national patents, obtained a number of national certificates and honorary certificates, formed a complete independent intellectual property system.

After years of development, Dawanxi Group has provided services to more than 1,000 users worldwide. We will continue to provide high-quality and efficient thermal equipment and integrated energy solutions for the majority of energy users.



Guangdong DaVinci Energy Saving Technology Co., Ltd.

A high-tech enterprise specializing in the development of energy, environmental protection and energy-saving technologies, integrating product research and development, manufacturing and sales. "Greenvinci energy research center" is the department of new energy application R&D and energy efficiency audit of the company. More than 5 research and development personnels are engaged in new energy application R&D. Providing customers with chain-type comprehensive energy-saving management services such as energy-using optimization, energy-saving project implementation, and energy & financial investment.

Foshan Greenvinci Biomass Machinery Co.,Ltd.

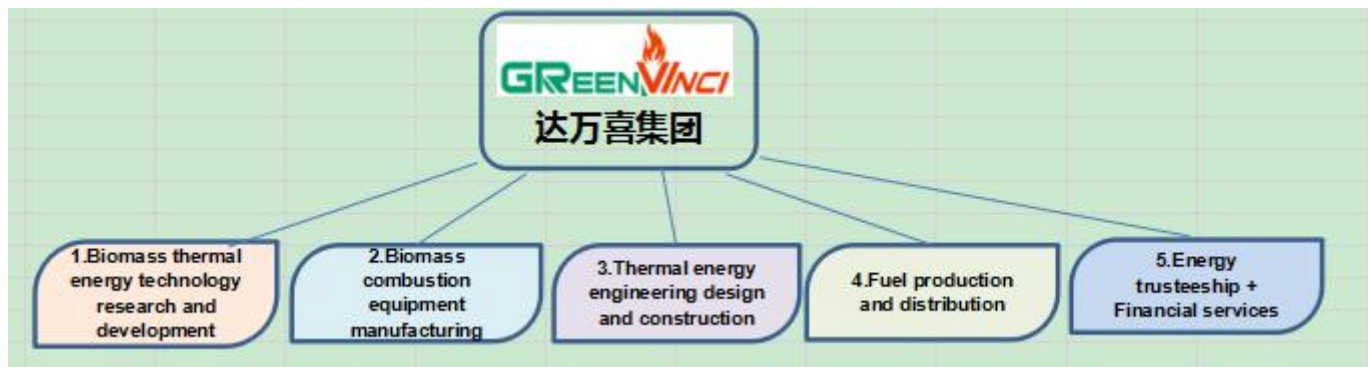
Founded in 2012, Foshan Greenvinci Biomass Machinery Co.,Ltd., is a manufacturer specialized in R&D and production of energy-saving equipment and biomass solid briquettes fuels under DaVinci. In 2016, it was named as a high-tech enterprise. The company has built production and processing bases for biomass pellet and wood chips in Foshan, Jiangmen, Zhanjiang, Hunan, Jiangxi, set up raw material storage bases in Huangfu Port, Guangzhou and Ningbo Port, Zhejiang, etc., imported biomass solid briquettes fuel and palm kernel shells from Vietnam, Malaysia, Thailand and Indonesia. At present, the main partners are located in more than 50 countries and regions around the world, including Israel, Singapore, Austria, Thailand, Malaysia, Vietnam, Indonesia, Russia, Ukraine, Egypt, China Guangdong, Hunan, Guangxi, Jiangxi, Zhejiang, Liaoning and other countries and area.

Hainan Greenvinci biological energy development Co. Ltd.

Focus on the development and production of Hainan biomass molding fuel and biomass wood chip fuel, and replacing the traditional energy combustion technology with biomass gasification combustion technology. Provide clean production, eco-friendly and economical energy-saving services for the main industries in the province: food and beverage processing, natural rubber production, betel nut processing, packaging and printing industry..

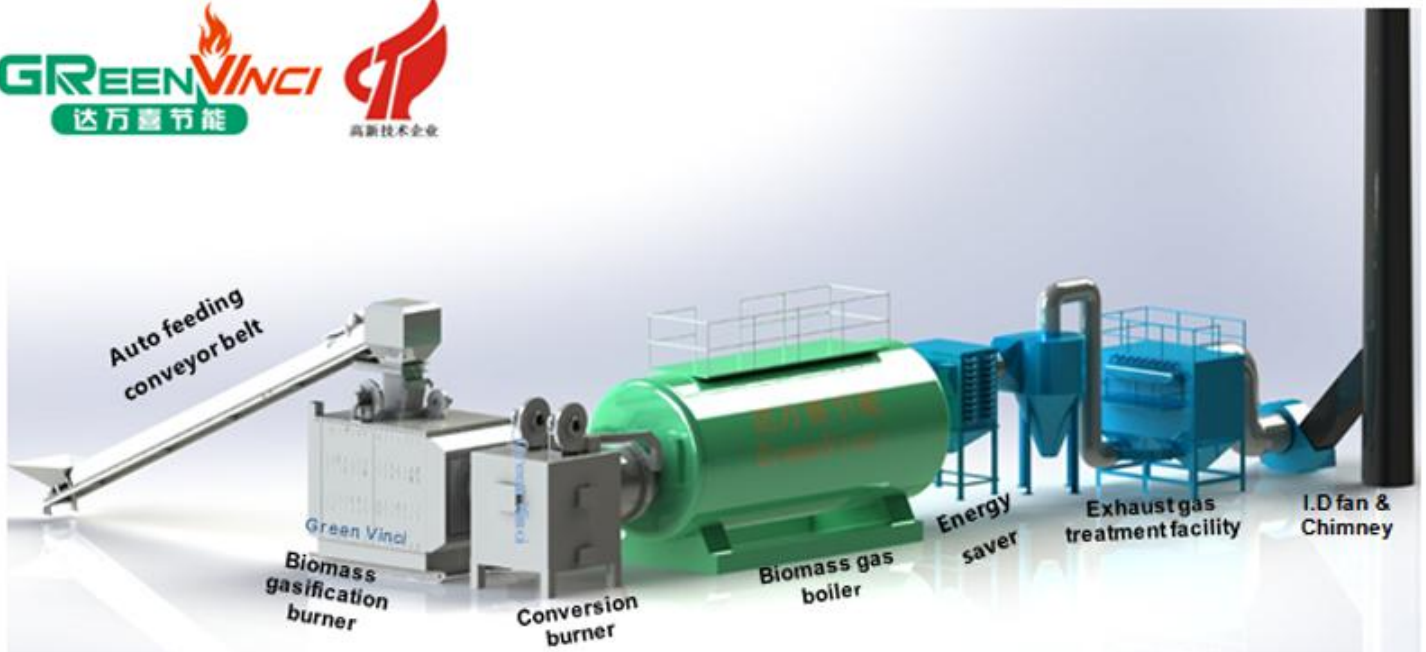
Foshan Greenvinci Boiler Technology Co., Ltd.

Focus on boiler's technology development, environmental protection boiler and environmental protection equipment sales, to provide domestic and foreign industrial users with disassembly and assembly of boilers, second-hand boiler trade, environmental protection dust removal and energy-saving equipment sales and other services.



Production introduction

“GV-G” 、 “GV-AG “ series biomass gasifier is a thermal energy equipment developed and matured by Foshan Greenvinci Biomass Machinery Co., Ltd. based on years of experience in thermal energy application and for various biomass fuel characteristics. With lots of advantages: apply to kinds of biomass fuels (Wood chips, pellets, briquettes, etc.),high level of automation(auto discharge,constant temperature and constant pressure), low ash of flame, stable operation, high thermal efficiency, convenient operation and maintenance, etc.it is the only biomass burning equipment in the market that can directly replace the diesel, gas burner . It meets the needs to save energy, reduce costs, and reduce emissions.High temperature pyrolysis gasifier has applied for inventions and practical patents for a number of innovative technologies independently developed, and won the honor of "Guangdong Province's high-tech products", which have been maturely applied to hundreds of boiler renovation and supporting projects.



Wide application of fuel, low cost of use : Wood chips, pellets.

High level of automation : Auto discharge, auto feeding, constant

Safe and stable operation: over-pressure, over-temperature,

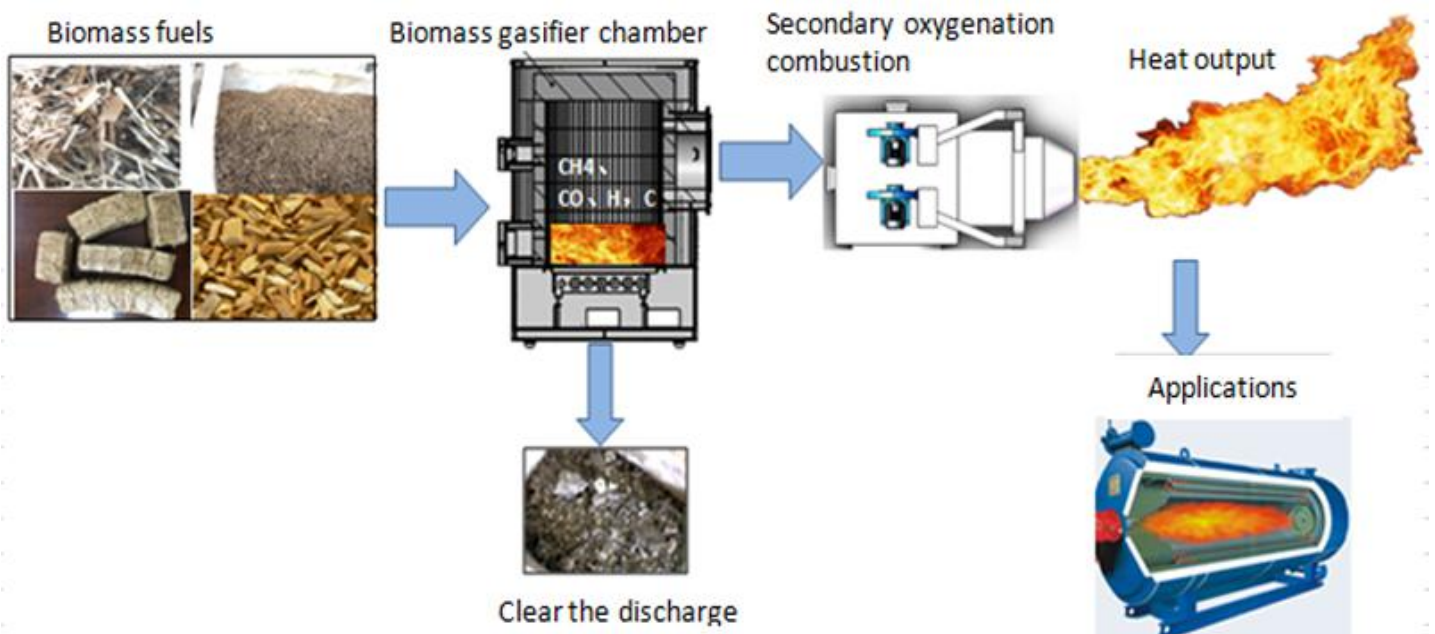
High thermal efficiency: no charcoal discharge, no pipeline

Emissions and environmental protection: low flame ash, low

Easy operation and maintenance: 1~2 operators can run 2~15

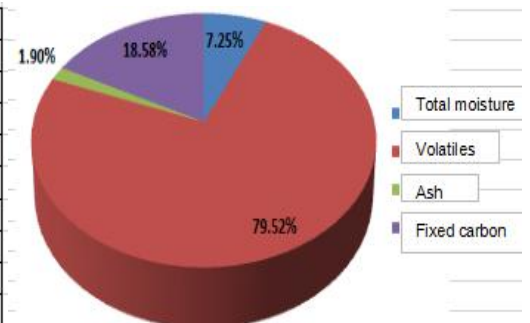
Operating principle

“High temperature pyrolysis gasification” is a process of the burning of combustible smoke, such as CH₄, CO, H₂, etc., by biomass fuel in a certain environment. The combustible material accounts for about 80% of the biomass fuel composition. A part of the combustible material is burned in the furnace, and the other part is fully combusted by the secondary oxygenation of the nozzle.



Composition of biomass fuel

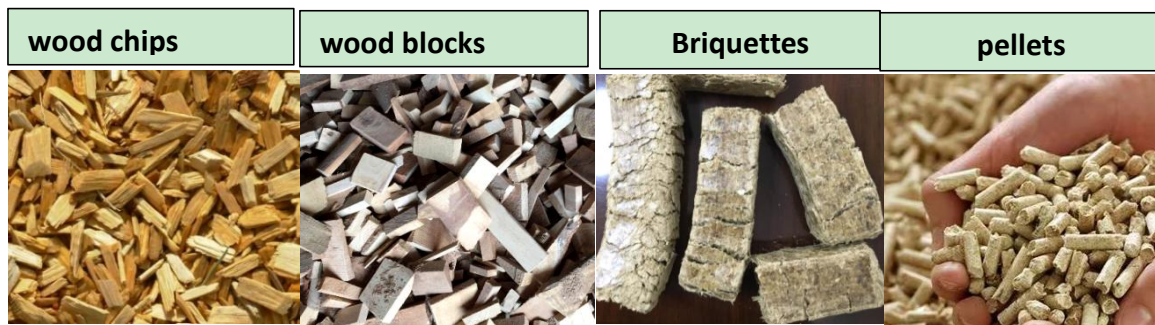
No.	Items	Results
1	High calorific value of dry base $Q_{gr,v,d}$	18.86 (MJ/kg) 4509(Kcal/g)
2	Net calorific value as received basis($Q_{net,v,ar}$)	16.8 (MJ/kg) 4018(Kcal/g)
3	Total moisture M_t	7.25 (%)
4	Sulfur content of dry base ($S_{t,d}$)	<0.01 (%)
5	Dry base volatiles (V_d)	79.52 (%)
6	Dry base ash(A_d)	1.9 (%)
7	The dry base fixes the carbon(FC_d)	18.58 (%)



Production feature

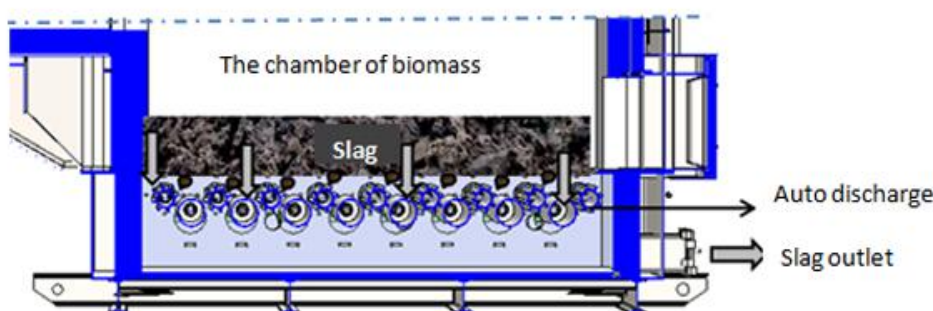
一、 Wide application of fuel, low cost of use:

The double-layer unloading sealing system that received the national patent as the forefront of research and development and can be applied to irregular shaped fuels such as wood chips and wooden blocks, and biomass briquettes and biomass particles. There is still a low-cost fuel supply in the case of coal ban, gas shortage and other fuels. Biomass fuel is easy to collect, low cost, and environmentally friendly. It is the fuel of choice for replacing traditional high-pollution and high-cost energy.



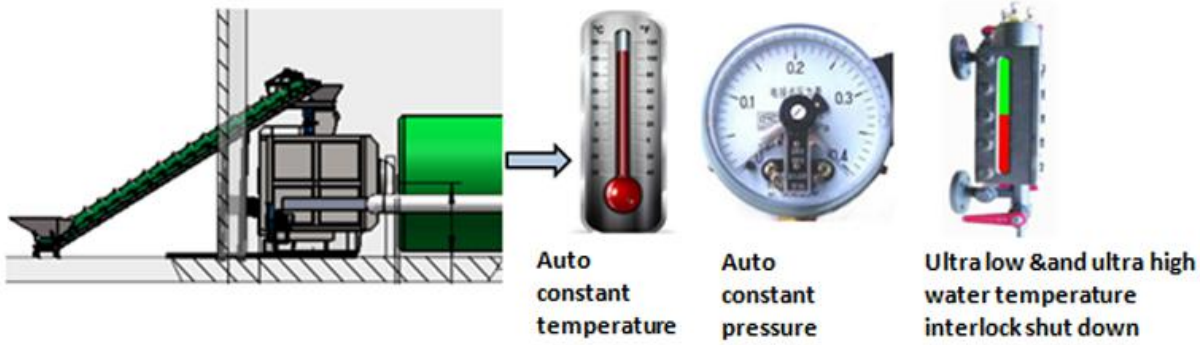
二、 High level of automation, stable operation, safe and reliable :

1. Automatic discharge (Optional) : According to the energy demand and fuel quality, the user can select the automatic slagging system to achieve continuous operation for 24 hours. During operation, there is no need to shut down to clean slag to ensure the stable production capacity .The general loose slag device can only scrape the ash on the grate but can not completely discharge and reduce the ash of the furnace, which will still affect the combustion effect.The slag discharging system independently developed by Greenvinci can really discharge the slag from the furnace continuously and improve the combustion efficiency to the greatest extent.



2. Automatic constant pressure and temperature control,Safety interlock guarantee:

The electric control cabinet can be connected with the pressure gauge of the boiler and the kiln, and the temperature meter to automatically control the pressure and temperature through multiple stages of fire. At the same time, it can be connected with the boiler control cabinet to realize over-pressure, ultra-low and ultra-high water level shutdown, then the safety guarantee is in place. At the same time, it can be transformed and accepted by the technical supervision bureau.



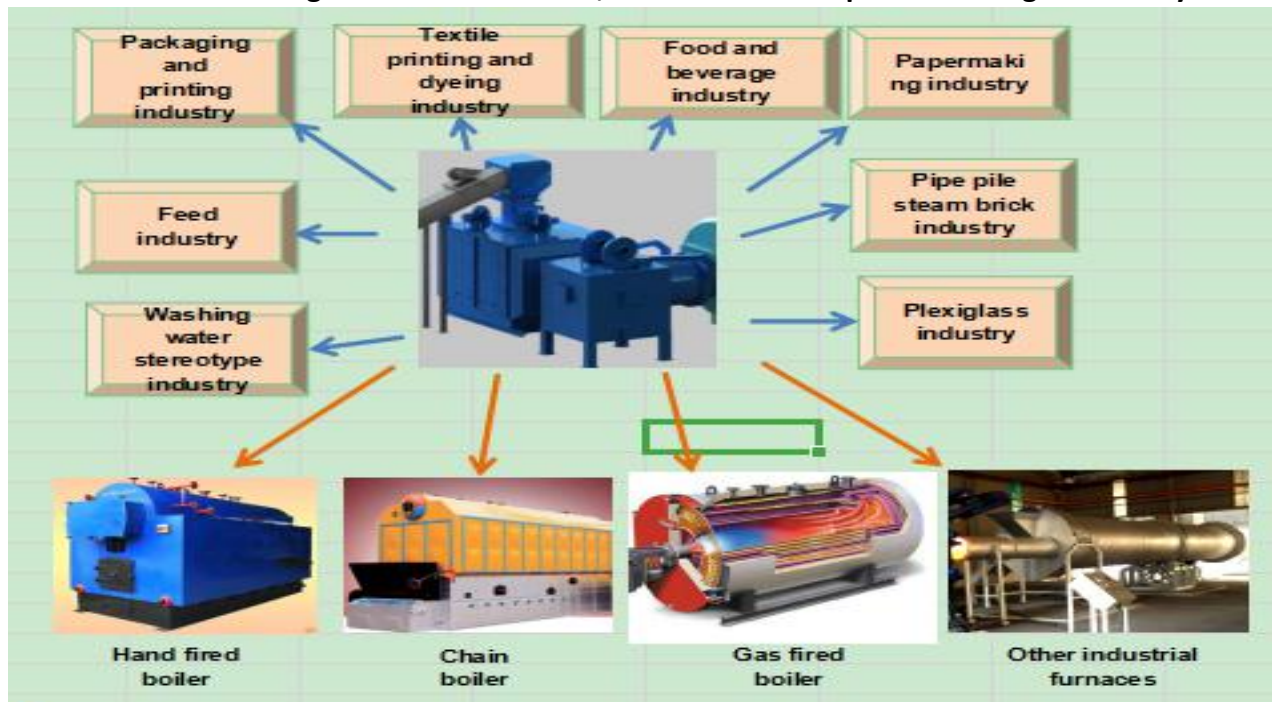
3. Intelligent control system: PLC variable frequency touch screen control, can be connected with boiler electric control cabinet, boiler induced draft fan, feeding conveyor belt, automatic slag connection parallel control.

4. Auto feeding: The conveyor belt is controlled with the electric control box to realize automatic feeding. Operators only need to ensure that there is biomass fuel in the silo, and the whole equipment will automatically control the feeding speed and fire power according to the temperature and pressure. The operation and labor intensity of operators is low, and each class needs only 1~2 operators.



三、 Wide applicability

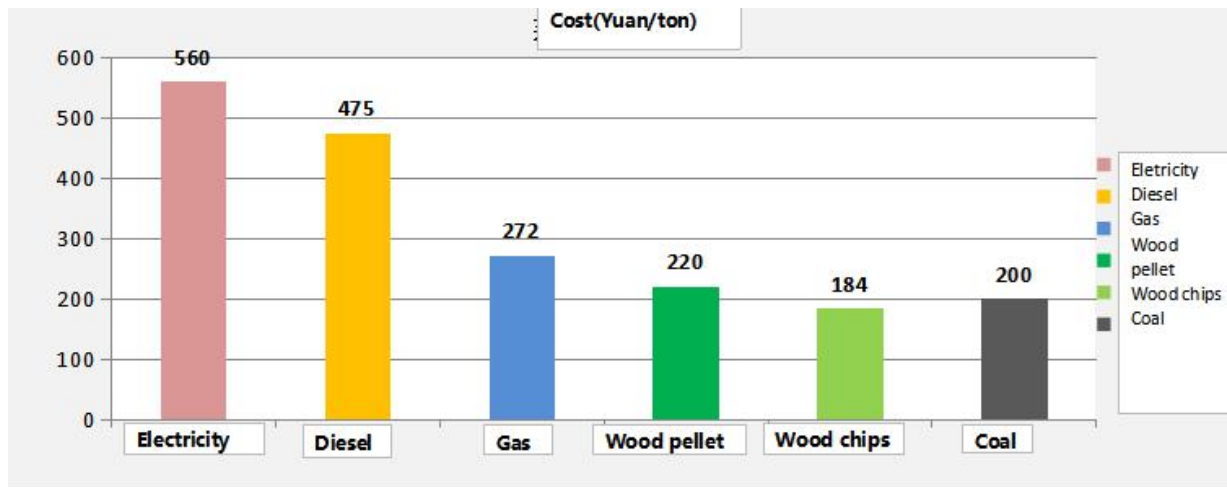
The biomass pyrolysis gasifier can be used in many heat energy demand industries. It can be transformed into in-use boilers and industrial kilns to replace the traditional highly polluting fuels and reduce the cost of transformation investment. At the same time, it can be used to install auxiliary boilers in new projects, which has the advantages of low investment, short installation period and high efficiency.



Economic benefit

Energy types	Unit	Fuel value (Kcal)	Unit price (RMB)	Energy Consumption	Cost (RMB/Ton)	Cost comparison
Electricity	kw	860	0.8	700	560	119%
Diesel	kg	10200	7.30	65	475	86%
Gas	m3	8500	3.40	80	272	Standard
Wood pellet	kg	4000	1.10	200	200	-22%
Wood chips	kg	3800	0.70	263	156	-39%
Coal	kg	5200	1.00	200	200	-22%

*Take the fuel cost of producing 1 ton of steam as an example, the actual cost will be different due to the different fuel price and boiler thermal efficiency in each place.



Environmental benefits

1. High temperature pyrolysis gasification combustion, lower emission of dust, CO, NOX and no black smoke, is a cost-effective alternative to highly polluting fuels.



Item	Biomass	Gas	Coal	Standard
Fuel value kcal/kg	4000	8500	5500	/
Sulphur content (%) \leq	≤ 0.2	≤ 0.1	1	/
SO ₂ (mg/m ³)	<15	/	300	30
NO _x (mg/m ³)	<200	30	300	200
Smoke dust mg/m ³	<30	0	40	30
Smoke blackness	0	0	1	≤ 1

2. Combined with modular nitrogen-reducing combustion technology, it will further reduce nitrogen oxide emissions and meet the increasingly stringent requirements of local governments for exhaust emissions. Nitrogen reduction combustion treatment module owns the advantages of high integration, high automation, low investment cost and less occupation.

Certificates & qualifications



High-tech products and technology patents



Our cases (partial)

1. 3.6 million kcal biomass gasifier was applied to Qingyuan Environmental Protection Company's 6-ton gas boiler (replace gas)



2. 7.2 million kcal Biomass gasifier was applied to Dongguan Food Factory's 12-ton gas boiler (replace gas)



3. 6 million kcal Biomass gasifier was applied to Hubei Pharmaceutical Factory's 10-ton gas boiler



4. 3.6 million kcal biomass gasifier connected to Hengyang glycerin production plant 3500kw thermal oil boiler



5. 3million kcal biomass gasifier connected to 5-ton vertical boiler in Thailand (replace firewood)



6. 3.6 million kcal biomass gasifier connected to Zhaoqing Xinqiao Food & Beverage Factory's 6-ton hand-fired boiler(replace coal)

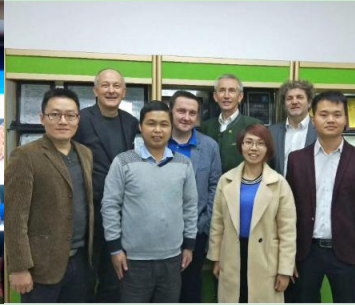


Company display

Our Manager spoke at the Asia Pacific Biomass Summit 2017 to introduce product



*Company's leaders conducted industry discussions with domestic and foreign



*Our company carried out in-depth exchanges with its domestic partners.



*Customers visited company to acceptance equipment



***Foreign customers visited the company and carried out technical communication.**



*Each International Biomass Energy Exhibition has attracted



*The company actively participates in the preparatory work of the Guangdong Biomass





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