

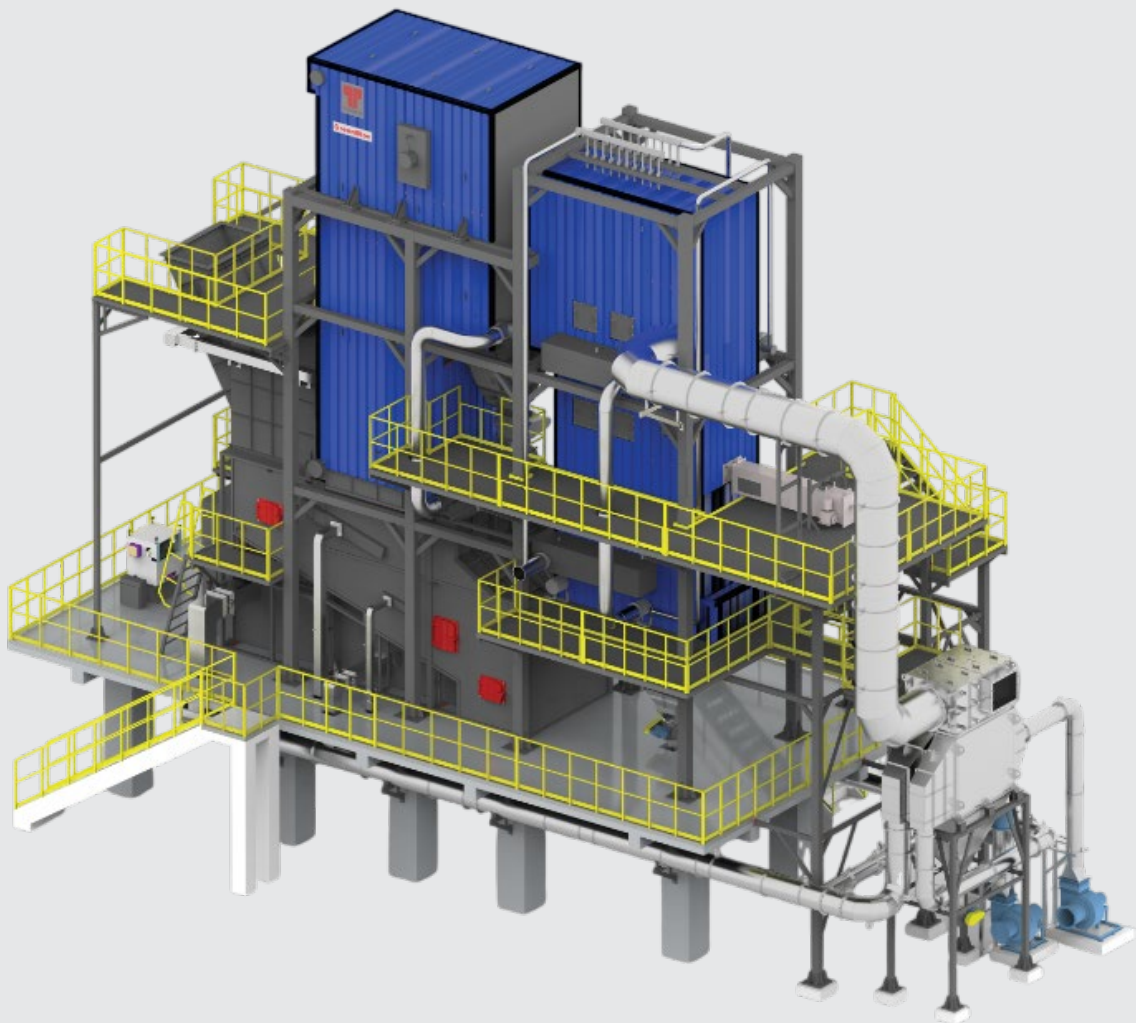


Process Heat Solutions



GreenBloc

Thermic Fluid Heating Solution
for Universal Biomass Fuels.



Conserving Resources, Preserving the Future.

Thermax is a leading conglomerate in the energy and environment space and a trusted partner in energy transition. Thermax's extensive portfolio includes clean air, clean energy, clean water and chemical solutions. Backed by its longstanding industry partnerships across multiple sectors, Thermax has cultivated strong expertise in audit, consulting, execution, and maintenance coupled with digital solutions, ensuring a unified energy-management experience. Leveraging its distinctive engineering capabilities, Thermax converts costs to profits while protecting the environment – a win-win for the industry and society at large.

Unlocking the Power of Raw Biomass for Sustainable Energy

As the world seeks to balance economic growth with environmental sustainability, renewable energy solutions are essential. Biomass is a key lever in the ongoing energy transition, offering a sustainable means of reducing emissions and converting waste into valuable energy.

However, raw biomass fuels present challenges such as low bulk density and calorific value compared to fossil fuels, requiring larger volumes and making transportation, storage

and handling difficult. Using biomass in its natural form, without converting it into briquettes, avoids energy-intensive briquetting processes.

For small to medium capacity boilers and heaters, variations in size, moisture content and availability make combustion less predictable. This highlights the need for specialised technologies that can efficiently handle diverse raw biomass while ensuring clean and reliable energy.

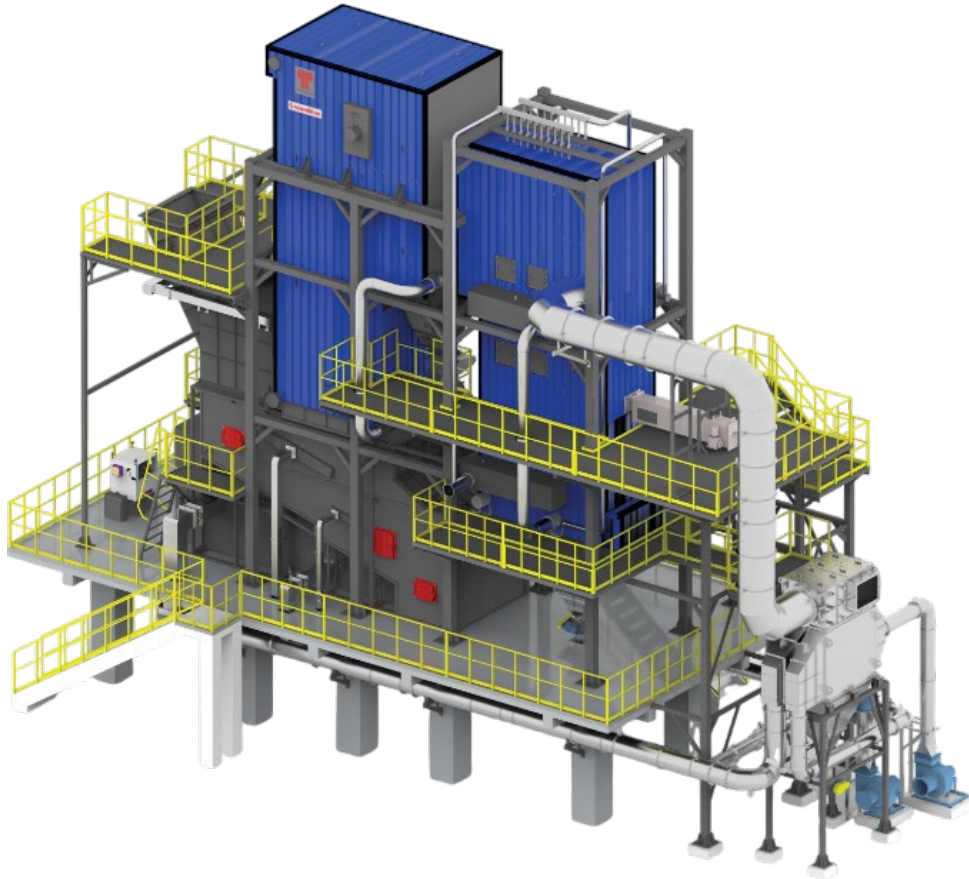


GreenBloc

GreenBloc thermal oil heater featuring a novel Universal BioGrate combustor, offers multi-fuel flexibility and fully automatic, hassle-free operation.

It is specifically designed for efficiently burning various low-density, low-calorific-value biomass in their raw form,

GreenBloc provides a cost-effective and environmentally friendly approach to converting agricultural waste into useful energy. This robust product is modular, offered with pre-engineered layouts and balance of plant components, reducing site activities and installation time.



Features



Combustion technology for efficiently handling biomass combustion challenges, especially those of voluminous and low bulk density biomass



Multi-fuel flexibility, capable of burning low-grade biomass in its raw form, resulting in significant fuel savings



Unique heat exchanger design to ensure high uptime, even with fouling fuels



Silent combustion to reduce carryover and ensure lower emission



Fully automatic operation for minimal manual intervention



Fuel feeding mechanism designed to ensure hassle-free and safe fuel feeding



Pre-engineered BOP designed for ergonomic, aesthetic & safe installation

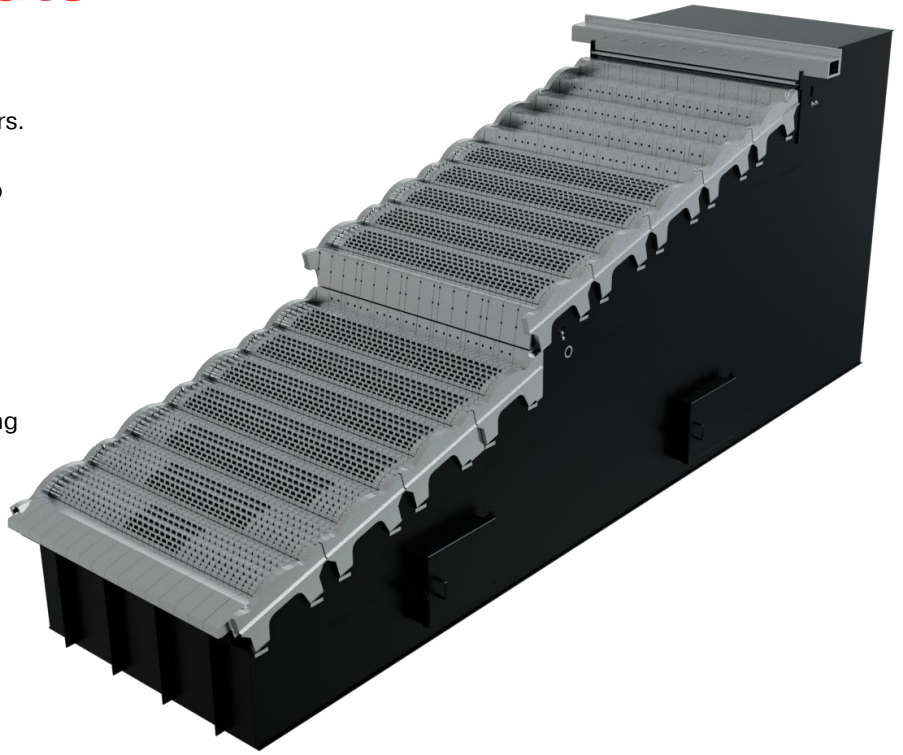


Robust construction and modular layout, reduces installation time

Universal BioGrate

The Universal BioGrate is an innovative technology specifically designed for small to medium-sized boilers and thermic fluid heaters. Leveraging advancements in reciprocating grate technology, it enhances fuel flexibility to efficiently handle extremely low-bulk-density, fibrous biomass.

By harnessing the energy stored in diverse biomasses in their natural forms, the Universal BioGrate offers a cost-effective and environmentally friendly solution for converting agricultural waste into valuable energy.



Features



Independent control of grate speed and air with multi-trolley design to ensure effective combustion in different zones



Complete combustion is assured by controlling fuel layer thickness using variable speed of grate



Sharp steps between trolleys to improve the intermixing of fuel and combustion on grate



Special arrangement using multiple casting design with a combination of sharp edged block grate bar, full nozzle & no nozzle casting, improves mobility of fuel & maximise combustion



Special secondary air arrangement to increase turbulence in furnace/freeboard area

Benefits



Ability to efficiently burn low calorific value and voluminous fuels



Accommodate low-grade fuel in "As Is" condition leading to significant fuel savings



Improved combustion efficiency



Silent combustion to reduce carryover and ensure lower emission

Key Components – Features and Benefits

Fuel Feeding Mechanism

Incorporates the double-flap mechanism and refractory-lined angular feeding chute to allow a smooth entry of fuel into the furnace. The Innovative de-volatilisation chamber accelerates the release of volatile matter for effective utilisation of the grate.

- Liberally sized chute with optimal inclination accommodates voluminous and non-uniform fuel to help prevent chocking
- Separate space for release & burning of volatile ensures effective utilisation of the grate and improves safety
- Double-flap mechanism ensures modulation of fuel as per process needs and ensuring safety



Membranes Panel Assembly

Ensures complete combustion, effective radiative heat transfer as well ash separation.

*Radiant single helical coil is provided in place of MPA up to 30 lac kcal/hr capacities

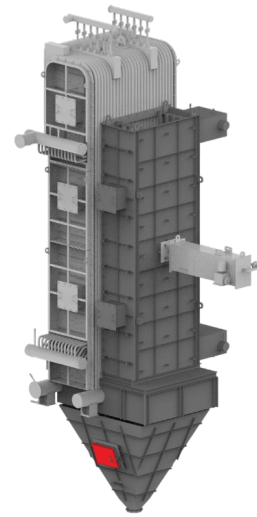
- Liberally sized tall furnace for high residence & low FOT ensures higher efficiency, lower fouling & slagging
- Tubes and fins design helps in giving liberal furnace volume
- All side MPA for significant reduction in refractory ensures reduced maintenance and site work
- Ash settling chamber & removal screw ensures effective ash separation & better uptime



The two-Stage Convective Heat Exchanger

The two-stage convective heat exchanger comes with a serpentine coil design that has an additional heat transfer area to ensure efficiency and reliability, even under fouling conditions.

- The innovative serpentine design maximises heat transfer area while maintaining a compact footprint
- The short retractable soot blower mechanism enables automatic cleaning, minimises compressed air usage, and prevents soot buildup



Air Pre-Heater

Air pre-heater, especially for high moisture fuels enhances combustion, resulting in higher heat transfer rates and reduced fuel consumption

- A counter cross-flow two-pass design enhances heat transfer, while the inclusion of an RAV for the ash hopper ensures continuous ash discharge

Thermowiz™

Experience the power of technology with advanced electrical system for monitoring, controlling, and protection of equipment.

- Touch screen graphical interface provides comfort for operation
- Embedded ports on Ethernet, Serial and CAN Open protocols for data transmission
- Real time trends and data logging downloadable on USB drive
- Program modifications via USB drive enable rectifications, minimising downtime, and hassle



THERMAX EDGE™ Live

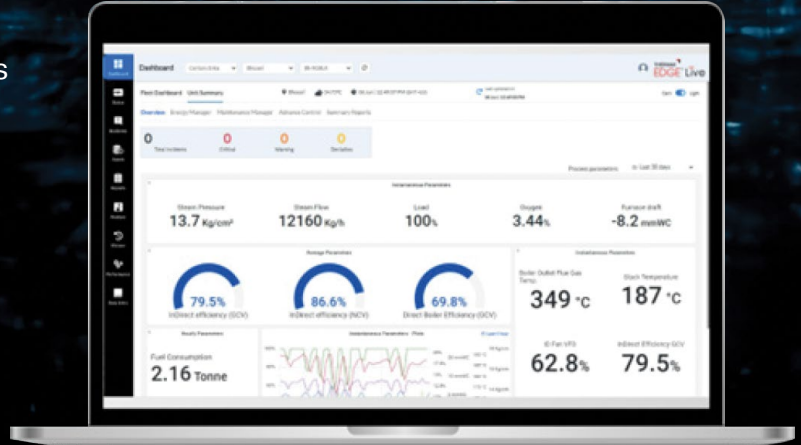
GreenBloc comes enabled with EDGE™ Live, an intelligent IIoT solution with ensured data security that enables

Features

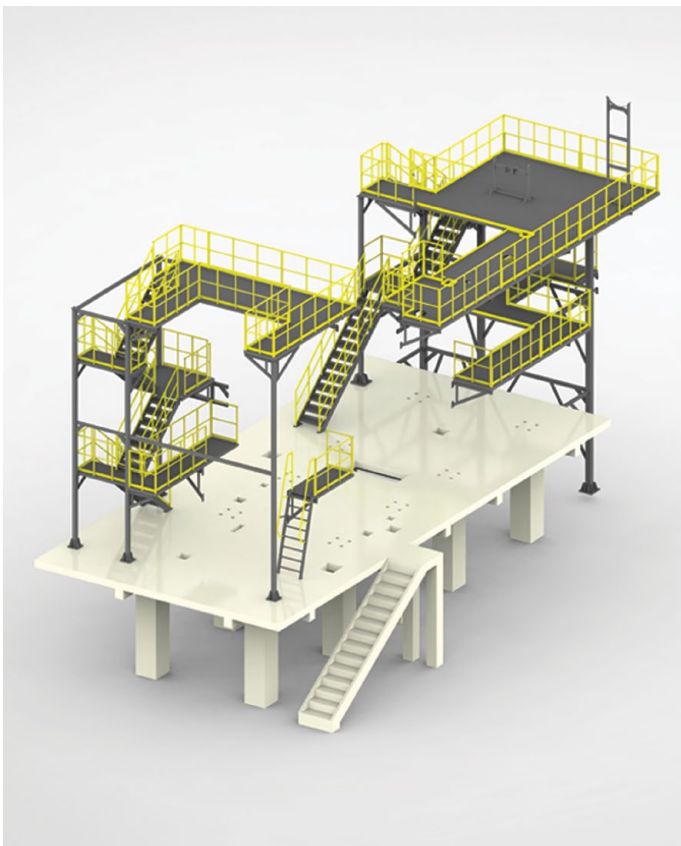
- Efficiency monitoring and diagnostics
- Data-driven preventive maintenance scheduling
- Remote monitoring of all critical parameters

Benefits

- Lower fuel bills
- Low life cycle cost & lower downtime
- Seamless communication

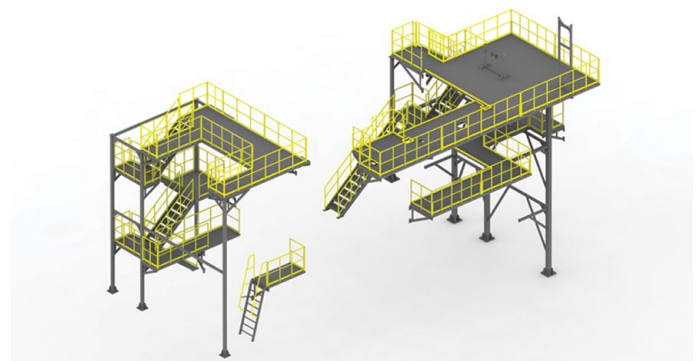


Pre-engineered Balance of Plant Components

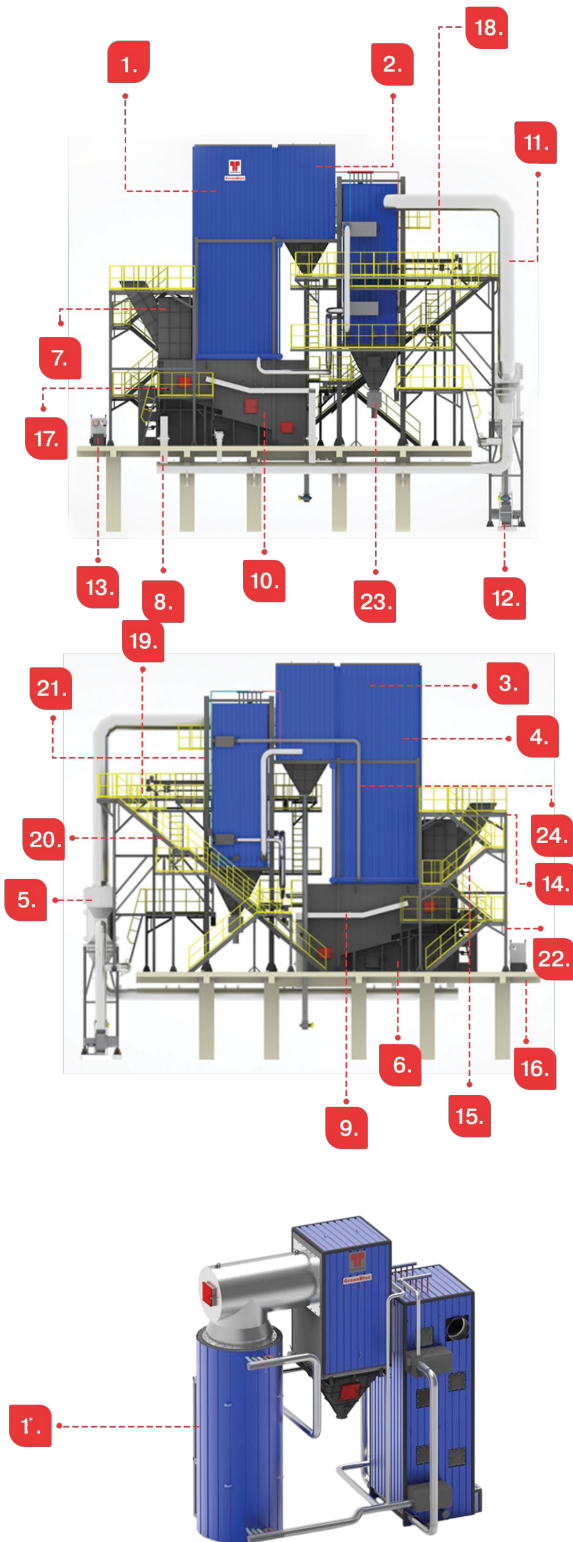


Design & execution of balance of plant equipment play a major role in user experience. A well engineered plant compliments product performance with enhanced safety, ergonomics, and aesthetics.

- The “Pre-engineered Balance of Plant and Ducting” design supports facility operations with an optimised layout that enhances efficiency and ergonomics, ensuring safe, easy operation, and maintenance
- Single point supply for product and associated accessories reduces hassles of co-ordinating
- Smart layouts ensure compact footprints



Heater Components



- 1 Radiant MPA*
- 2 Ash settling MPA with hopper & RAV
- 3 First pass convective coil assembly
- 4 Second pass convective coil assembly
- 5 Air Pre-Heater
- 6 Universal BioGrate
- 7 Drop chute
- 8 Primary air ducting
- 9 Secondary air ducting
- 10 Furnace structure
- 11 Flue gas ducting up to APH
- 12 FD fan
- 13 Hydraulic power pack
- 14 Operating platform for Drop chute access
- 15 Approach ladder for drop chute access platform
- 16 Civil platform
- 17 Operating platform with ladder for Grate
- 18 Short Retractable Soot Blower for convective heat exchanger
- 19 Operating platform for SRSB and unit instruments
- 20 Approach staircase for operating platform
- 21 Support structure for the pressure part
- 22 Support structure for operating platforms and ladder
- 23 RAV for convective heat exchanger hopper
- 24 Thermic fluid connecting piping between pressure part

Note:

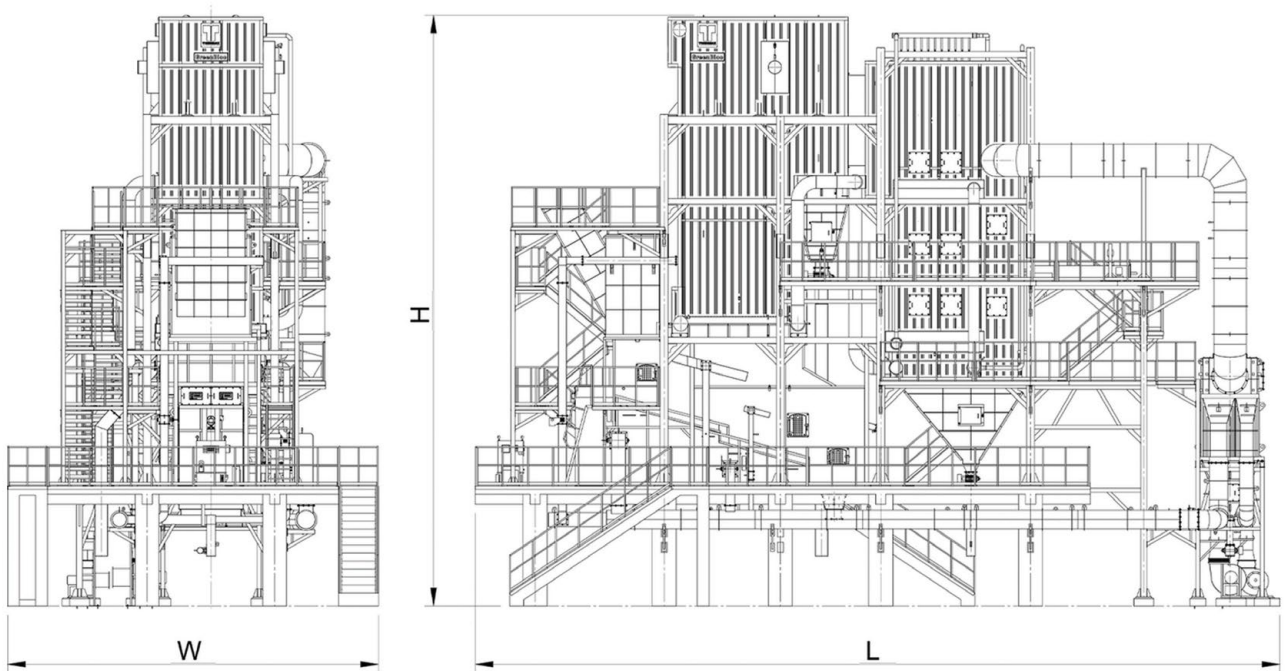
* Radiant heat exchanger upto 30 lac kcal/hr is in coil construction.

Technical Specifications

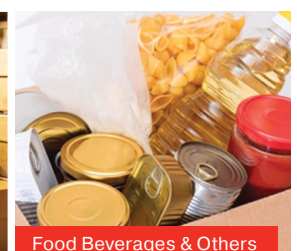
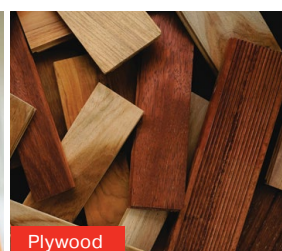
DESCRIPTION	UNIT	GB25	GB30	GB40	GB50	GB60
Heater Performance						
Capacity	kcal/hr	2500000	3000000	4000000	5000000	6000000
Max. T. F. Outlet Temperature	°C	300				
T. F. Temperature Rise	°C	25				
Efficiency as per BS 845 - Part 1						
Paddy straw	%	81				
Maize stalk		83.5				
Sugarcane trash		82.5				
Mustard stalk		83				
Palm fibre		82				
Soya stalk		83				
Total connected Load with Cyclomax and Bagfilter in parallel	kw	107.2	128.9	174.4	230.4	272.6
Overall Dimensions						
Length	mm	17800	18350	20200	20950	22450
Width		8800	8800	9300	9900	10100
Height		14550	15400	14800	14800	14850

Note:

All features and specifications are for indicative purpose.



Major Applications



Conserving Resources,
Preserving the Future.



Air Pollution
Control



Boiler and
Heater



Build-Own
-Operate



Chemical



Cooling



Projects and
Energy
Solutions



Process
Heating



Renewable
Energy



Water and Waste
Solutions

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This brochure presents only some of our products and we reserve the right to amend any product details without notice.
The photographs used in the brochure are indicative and may not match the actual plant

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