



COMBLOC™

Ultra Compact, High Performance



Capacity Range

1.5 to 6 TPH

Standard Design Pressure

10.54 & 17.50 kg/cm² (g)

Heating Business

Improving your business is our business

Thermax is an engineering major providing sustainable solutions in the areas of energy and environment. Spanning over 86 countries, clients make use of Thermax's business-to-business solutions for heating, cooling, power and cogeneration plants; waste heat recovery units; systems for water & wastewater management and air pollution control; performance improving chemicals.

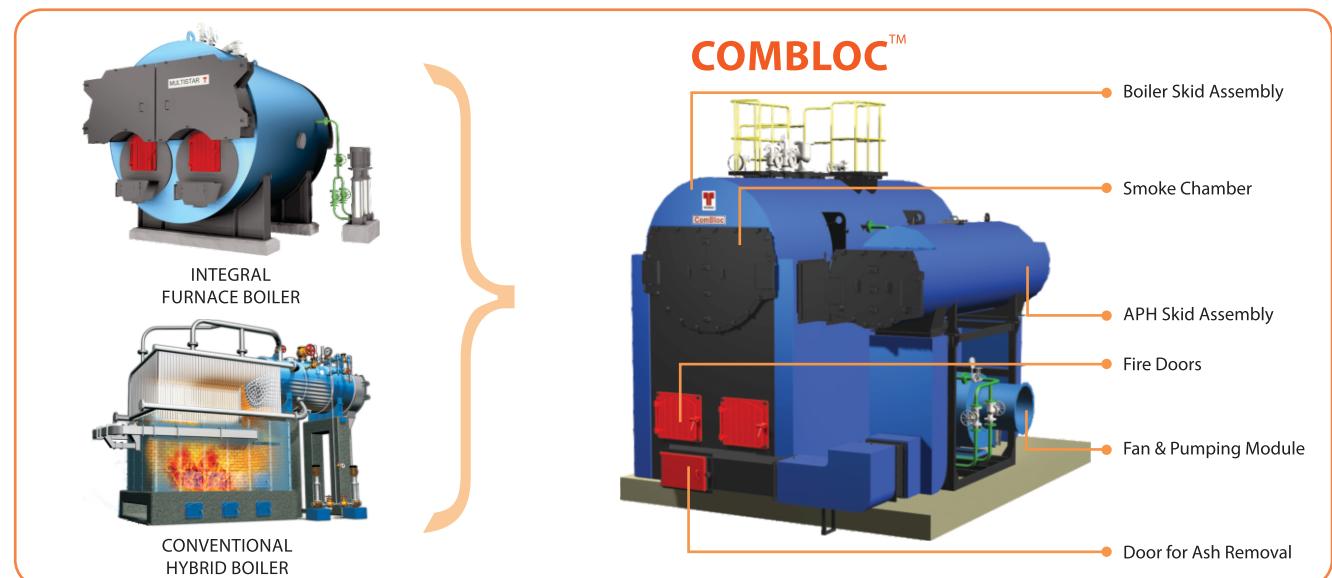
Thermax's operations are supported by ongoing Research & Development, tie-ups with global technology majors, an international sales & service network spread over 27 countries and state-of-the-art manufacturing facilities in 14 locations including India, Indonesia, China, Poland, Denmark and Germany.

As a part of Thermax, Heating business - a strategic business unit offers packaged boilers, thermal oil heaters, waste heat recovery boilers, hot water and air generators. These are available in modular construction as a standard package configuration or a custom design for specific requirements. Innovated by a strong R&D that focuses on customer applications, we offer a range of heating systems designed to combust wide range of solid, oil & gas fuels including biomass and heavy liquid fuels. Heating SBU helps small and medium firms & fortune 500 companies to reduce energy cost with a worldwide presence of oil & gas based systems in Middle East and Europe, biomass and solid fuel fired equipment in South East Asia and Africa.

Genesis

For decades the two major options for a solid fuel-fired steam boiler were the integrated furnace boiler and the conventional hybrid boiler. This led to a difficult choice between reduced site work yet better response to load of the integrated furnace boiler or the promise of high efficiency & fuel flexibility of the conventional Hybrid boiler. There was a need of an ideal solution which will support the best of both the designs packaged into one boiler - Thermax made this reality with Combloc which is an amalgam of the best of these two designs. It represents the future of packaged boilers. A multi fuel-fired steam boiler which is robust, compact and efficient.

A Plug & Play packaged boiler designed to meet your steam requirements.



Unique Design Features

Compact, skid mounted and modular construction - up to 40% reduction in foot print

Pre-insulated and factory assembled - up to 80% reduction in site work

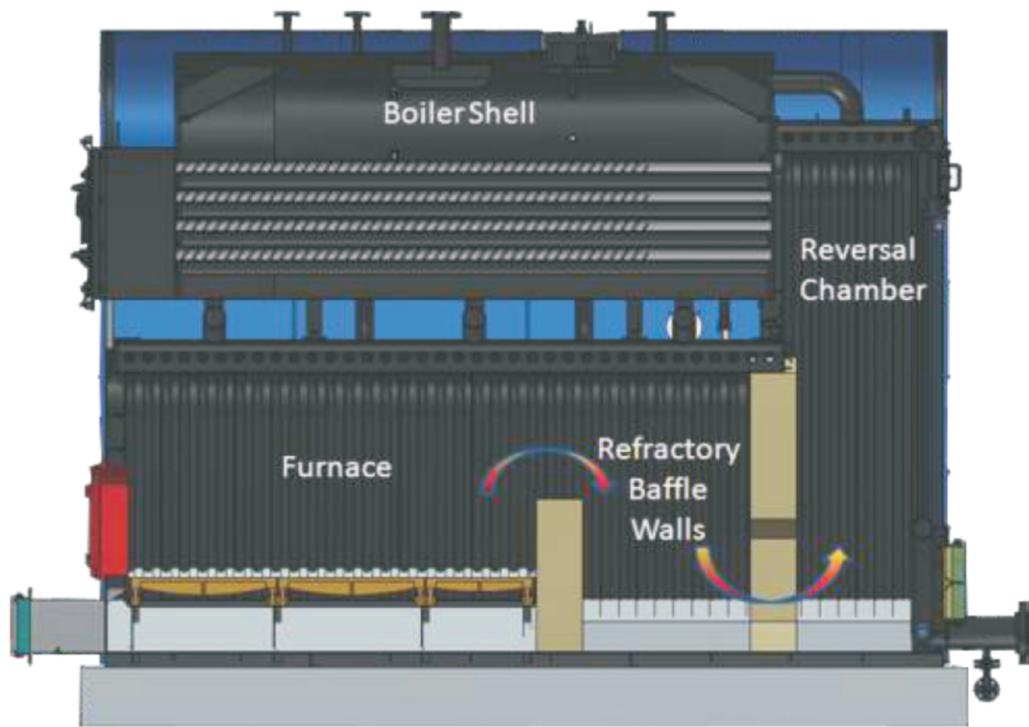
Flexibility of fuels (Biomass / Fossil) and combustors

Quick startup and better response to load fluctuations

Multi-pass hybrid construction with high combustion volume - better efficiency

Easy ash removal and better accessibility for maintenance

The Internal Arrangement



Design Comparison

Parameters	Integral Furnace Boiler	Conventional Hybrid Boiler	ComBloc
Efficiency			
Steam to Fuel Ratio	★ ★ ★	★ ★ ★ ★	★ ★ ★ ★ ★
Combustion Volume	★ ★	★ ★ ★ ★	★ ★ ★ ★ ★
Residence time	★ ★	★ ★ ★ ★	★ ★ ★ ★ ★
Less air ingress & radiation losses	★ ★ ★ ★ ★	★ ★	★ ★ ★ ★ ★
Construction / Erection of Boiler			
Lesser foot print	★ ★ ★ ★	★	★ ★ ★ ★ ★
Less Ducting & refractory	★ ★ ★ ★ ★	★ ★	★ ★ ★ ★ ★
Lower Boiler House height	★ ★ ★ ★ ★	★	★ ★ ★ ★
Better Boiler Aesthetics	★ ★ ★	★ ★	★ ★ ★ ★ ★
Modular Construction	★ ★ ★	★	★ ★ ★ ★ ★
Flexibility of combustors	★	★ ★	★ ★ ★ ★ ★
Operation and Maintenance			
Fuel Flexibility	★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★
Start up time	★ ★ ★	★ ★ ★	★ ★ ★ ★ ★
Refractory Maintenance	★ ★ ★ ★	★	★ ★ ★ ★
Emission	★ ★	★ ★ ★	★ ★ ★ ★

COMBLOC™ with different combustors

Stationary Grate

- Robust triplex grate combustor for high reliability
- Higher grate area with better combustion volume
- Large fire doors for easy fuel charging
- Better accessibility to boiler internals



Fuel and Efficiency

- Indian Coal 83% η
- Woodlogs 83% η
- Briquettes 82% η

Bubbling Bed

- Automatic fuel feeding
- Unique nozzle design using CFD
- Refractory baffle walls to ensure less carryover of fuel
- Turbulent combustion and high furnace volume ensure combustion efficiency



Fuel and Efficiency

- Rice Husk 83% η
- Imported Coal 85% η
- Woodchips 84% η
- Pellets 84% η
- Petcoke 80% η

Technical Specifications

Description	Unit	CB 15	CB 20	CB 30	CB 40	CB 50	CB 60	
Boiler type		Horizontal Multitubular Shell Type Smoke Tube With Water Wall Furnace						
Max steam output (F & A 100°C)	kg/hr	1500	2000	3000	4000	5000	6000	
Out let steam condition								
Design Pressure (SVLOP)	kg/cm ² (g)	10.54 / 17.50						
Temperature	°C	185 / 208						
Dryness		98%						
Overall Size of the Boiler with HRU								
Stationary Grate / Bubbling Bed								
Length (L)	m	5.20	5.20	5.65	6.10	6.40	6.40	
Width (W)	m	3.52	3.70	4.10	4.31	4.60	4.80	
Height (H)	m	4.43	4.56	4.70	4.85	5.12	5.25	
Dry Weight - Boiler skid assembly	kg	8750	9790	11980	14100	17120	18975	
Electrical connected load with MDC								
Stationary Grate	kW	12.5 / 13.0	15.5 / 16.0	18.0 / 20.5	23.5 / 26.0	28.0 / 31.5	33.0 / 37.0	
Bubbling Bed	kW	19.0 / 20.0	23.0 / 23.5	27.0 / 29.5	37.0 / 39.5	41.5 / 45.0	48.5 / 52.0	
Electrical connected load with Cyclomax / Bag Filter								
Stationary Grate	kW	14.0 / 15.0	18.5 / 19.5	25.5 / 28.0	31.0 / 33.5	39.5 / 43.0	41.0 / 45.0	
Bubbling Bed	kW	21.0 / 21.5	26.0 / 27.0	34.5 / 37.0	44.5 / 47.0	53.0 / 56.5	56.5 / 60.0	

Note : Design code-IBR. Efficiency is calculated based on NCV of Paddy Husk as 2900 kcal/kg. Imported coal as 5570 kcal/kg weight, Indian coal as 4290 kcal/kg, Biomass briquette as 3600 kcal/kg, Wood chips as 2950 kcal/kg & Biomass Pellets as 4300 kcal/kg. Above mentioned dimensions and specifications may vary with actuals. Please refer to offer document for more details.



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Thermax Business Portfolio

- Heating
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- Water and Wastewater Solutions
- Solar
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