

HEATING DIVISION



COMBLOCTM

**The future of packaged multi-fuel fired steam boilers.
Ultra Compact. High Performance.**

Capacity Range:
1500 to 10000 kg/hr

Standard Design Pressure:
10.54 & 17.5 kg/cm² (g)

Improving your business is our business

Thermax offers products, systems and solutions in energy and environment engineering to industrial and commercial establishments around the world. Its business expertise cover heating, cooling, waste water recovery, captive power, water treatment & recycling, air pollution control & waste management and chemicals.

Thermax brings extensive experience to the customers industrial applications through technology partnerships and strategic alliances.

Operating from its Head office in Pune Thermax has 11 state of art manufacturing facilities (7 in India, 4 in overseas). It has sales & service network spread over India, SE Asia, Middle East, Africa, Russia UK and the US.

Cooling & Heating - Heating Division

We offer widest range of options covering combustion of various solid, liquid and gaseous fuels, heat recovery from gas turbine/ engine exhaust, waste heat recovery and fired heaters for various industrial processes and applications.



**INTEGRAL
FURNACE BOILER**



**CONVENTIONAL
HYBRID BOILER**

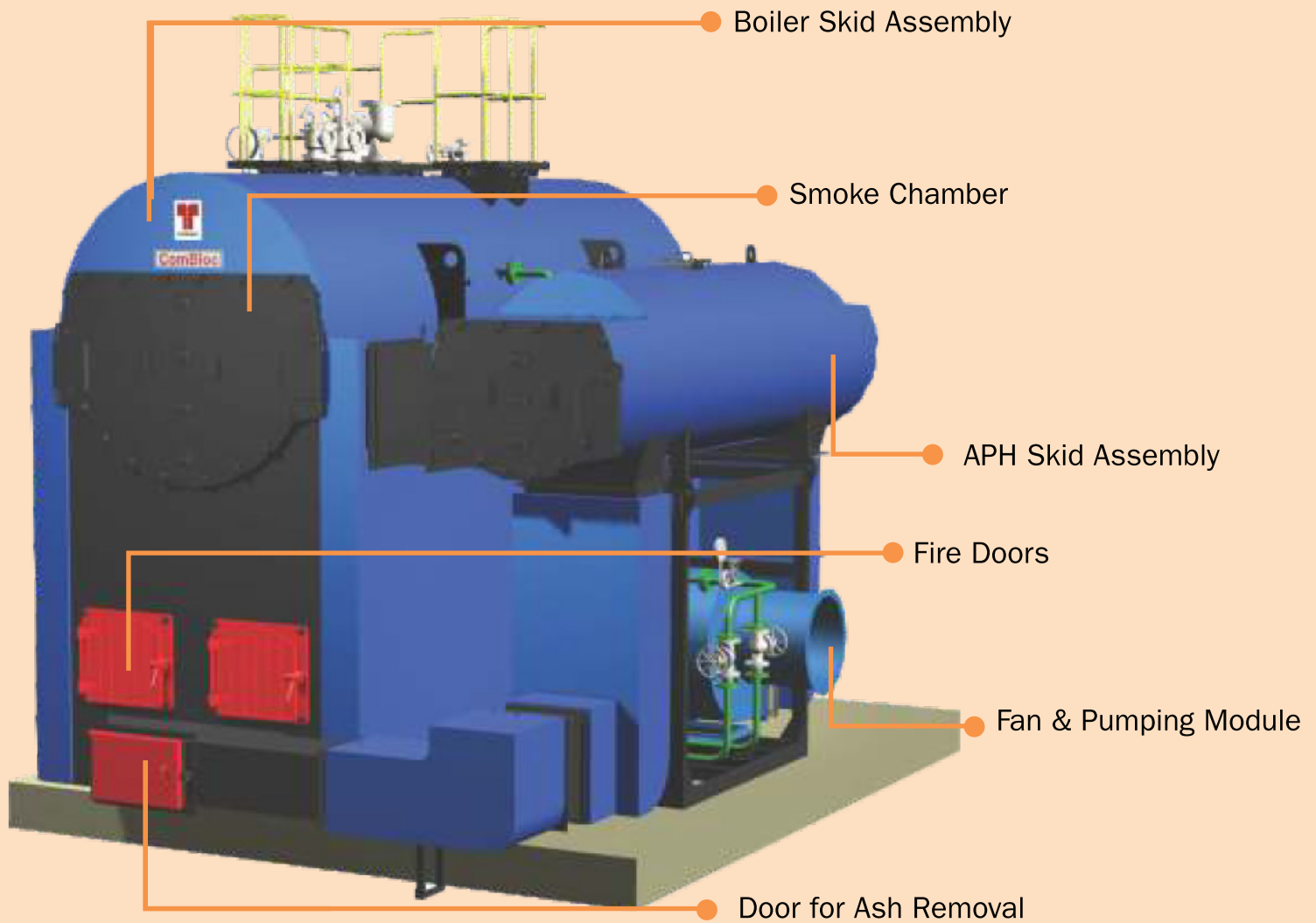


Genesis

So far, the two major options for a solid fuel fired steam boiler were the Integrated Furnace Boiler and the conventional Hybrid Boiler. This meant that the choice boiled down to the reduced site work and better response to load of the Integrated Furnace Boiler, versus the promise of higher efficiency and fuel flexibility of the conventional Hybrid Boiler. What remained unexplored was the ideal solution - the best of both these designs packed into one boiler.

But not any more. Because Combloc, the newest offering from the Thermax stable, is an amalgam of the best of these two designs and represents the future of packaged, multi-fuel fired steam boilers. This robust product is a highly compact, efficient, plug and play packaged boiler, designed to meet your steam requirements today and tomorrow.

ComBloc



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

Ultra Compact

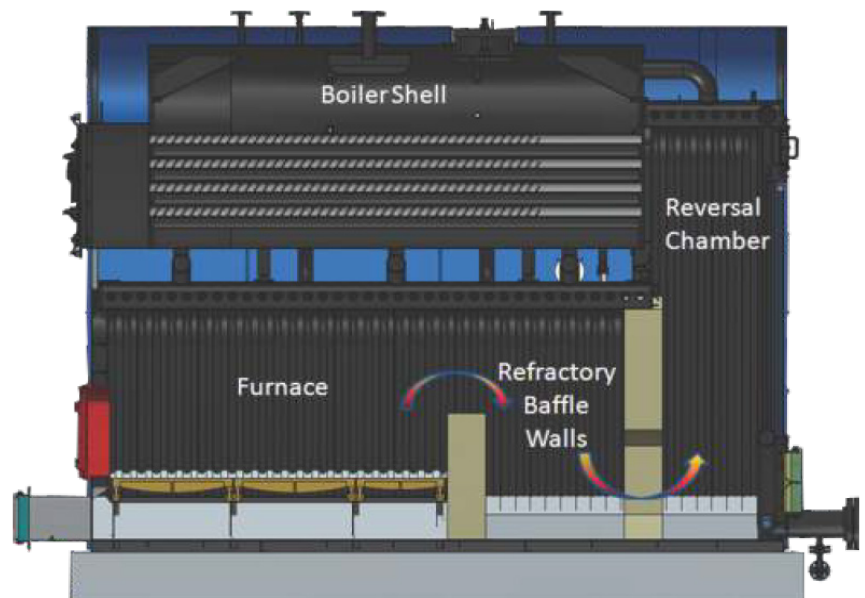
Multi Fuel

Packaged

Pre-insulated

High Performance

Best Aesthetics



How it compares

	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

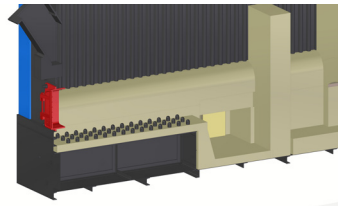
Bubbling Bed

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



Rice Husk 83% η

Imported Coal 85% η

Woodchips 84% η

Pellets 84% η

Petcoke 80% η

Horizontal Reciprocating Grate

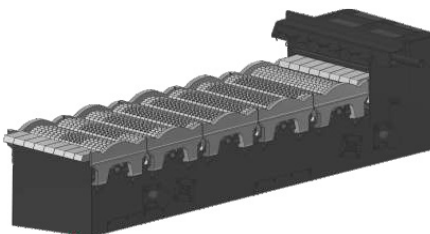
Specially designed horizontal reciprocating grate with technology licensed from Lambion Energy Solutions GmbH, Germany

Progressive combustion with well defined combustion zones

Innovative arrangement of castings on the grate and two distinct zones for air supply for complete combustion

Automated ash removal

Multiple feeding systems for higher fuel flexibility



Imported Coal 84% η

Briquettes 85% η

Woodchips 85% η

Ricehusk 84% η

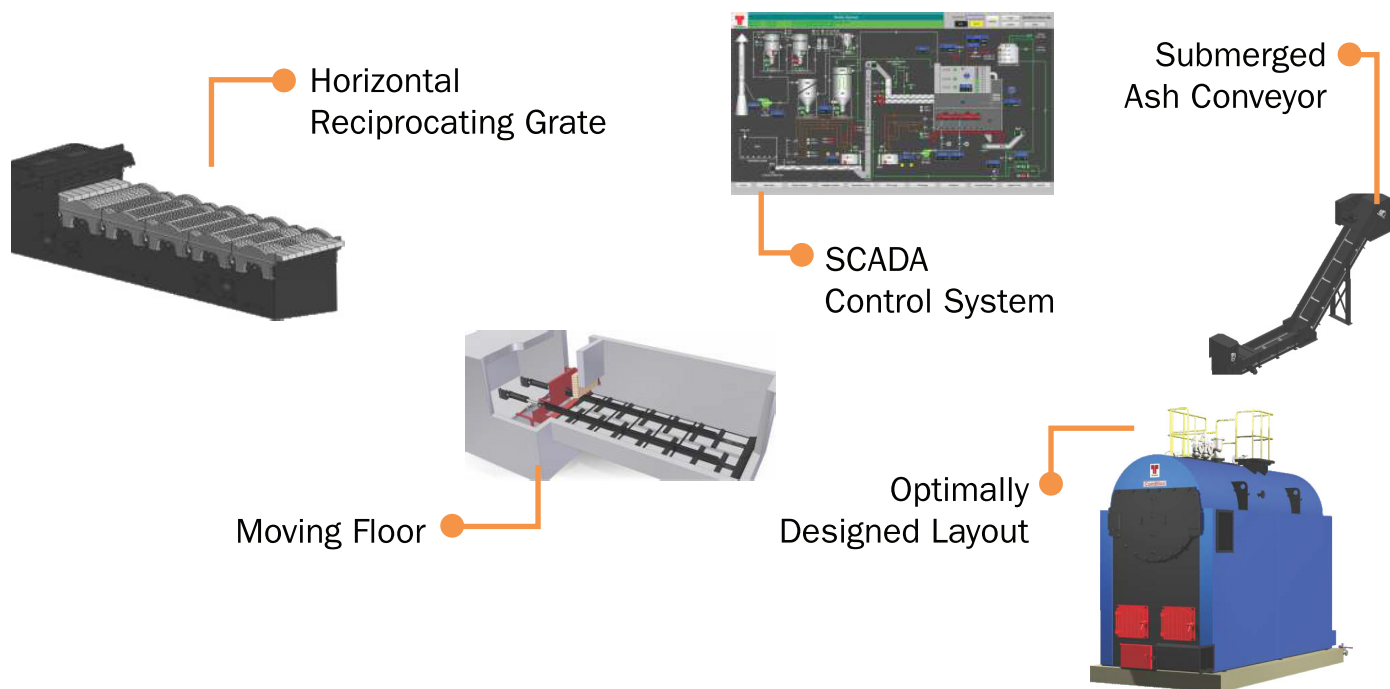
Pellets 86% η

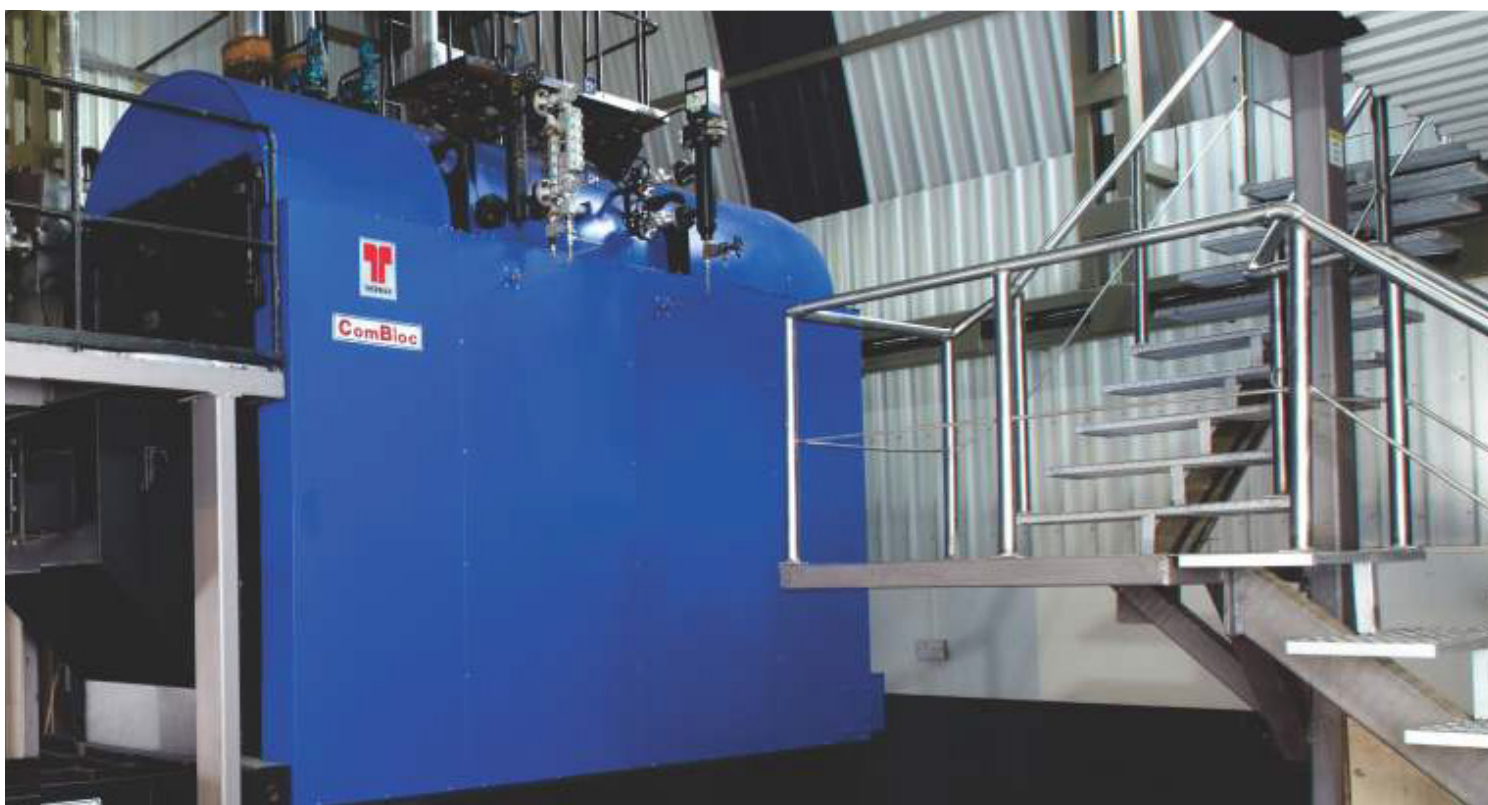
ComBloc - Fully Automatic Steam Plant



ComBloc

Fully Automatic Steam Plant - Features





Technical Specifications

Description	Unit	CB 15	CB 20	CB 30	CB 40	CB 50	CB 60	CB 80	CB 100
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	8000	10000
Out let steam condition									
Design Pressure (SVLOP)	kg/cm² (g)	10.54 / 17.5							
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	9.75	9.80
Width (W)	m	3.52	3.70	4.10	4.31	4.60	4.80	6.40	7.00
Height (H)	m	4.43	4.56	4.70	4.85	5.12	5.25	7.00	7.20
Dry Weight - Boiler skid assembly	kg	8750	9790	11980	14100	17120	18975	NA	NA
Horizontal Reciprocating Grate									
Length (L)	m	8.50	8.50	8.85	9.20	9.50	9.60	7.0	7.0
Width (W)	m	3.52	3.70	4.10	4.31	4.60	4.80	3.0	3.4
Height (H)	m	5.60	5.70	5.90	6.00	6.30	6.40	1.6	1.8
Dry Weight - Boiler skid assembly with Combustor	kg	13250	14990	17780	20600	24320	26775	30000	33600
Dry weight - HRU skid assembly	kg	1570	1720	1980	2430	2820	3055	6500	7000
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	NA	NA
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	NA	NA
Horizontal Reciprocating Grate	kW	17.0 / 18.0	20.0 / 21.0	22.5 / 25.0	28.0 / 30.5	32.5 / 36.0	38.0 / 41.5	54.5 / 64.0	70.5 / 80
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	NA	NA
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	NA	NA
Horizontal Reciprocating Grate	kW	19.0 / 20.0	23.5 / 24.0	30.0 / 32.5	35.5 / 38.0	44.0 / 48.0	46.0 / 49.5	61.5 / 71.0	78.5 / 88

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, Petcoke 8060kcal/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.

Five decades of delivering energy-environment solutions for sustainable growth worldwide



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Thermax Business Portfolio

- Heating
- Cooling
- Power Generation
- Air Pollution Control
- Chemicals
- Water & Wastewater Solutions
- Solar
- Specialised Services

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