



# ENERBLOC<sup>®</sup>

## COMPACT THERMOPAC

Revolutionary Thermic Fluid heater

**Capacity Range**

1.5 to 3 MKcal/hr

**Temperature**

280/300degC

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.

C & H 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.

ENERBLOC - next generation thermic fluid heater

Thermax pioneered the concept of Thermic Fluid heating in India way back in 70s with unprecedented Thermopac™. Today, Thermax - Thermopac is a brand name recognized in different industrial applications. In order to keep pace with changing industrial expectations, Thermax is developing next generations of Thermic Fluid heaters through revolutionary & innovative designs. Thermax now unveils the next era in Thermic Fluid heating technology packed with advanced technology, performance, reliability & fuel flexibility.

Salient features

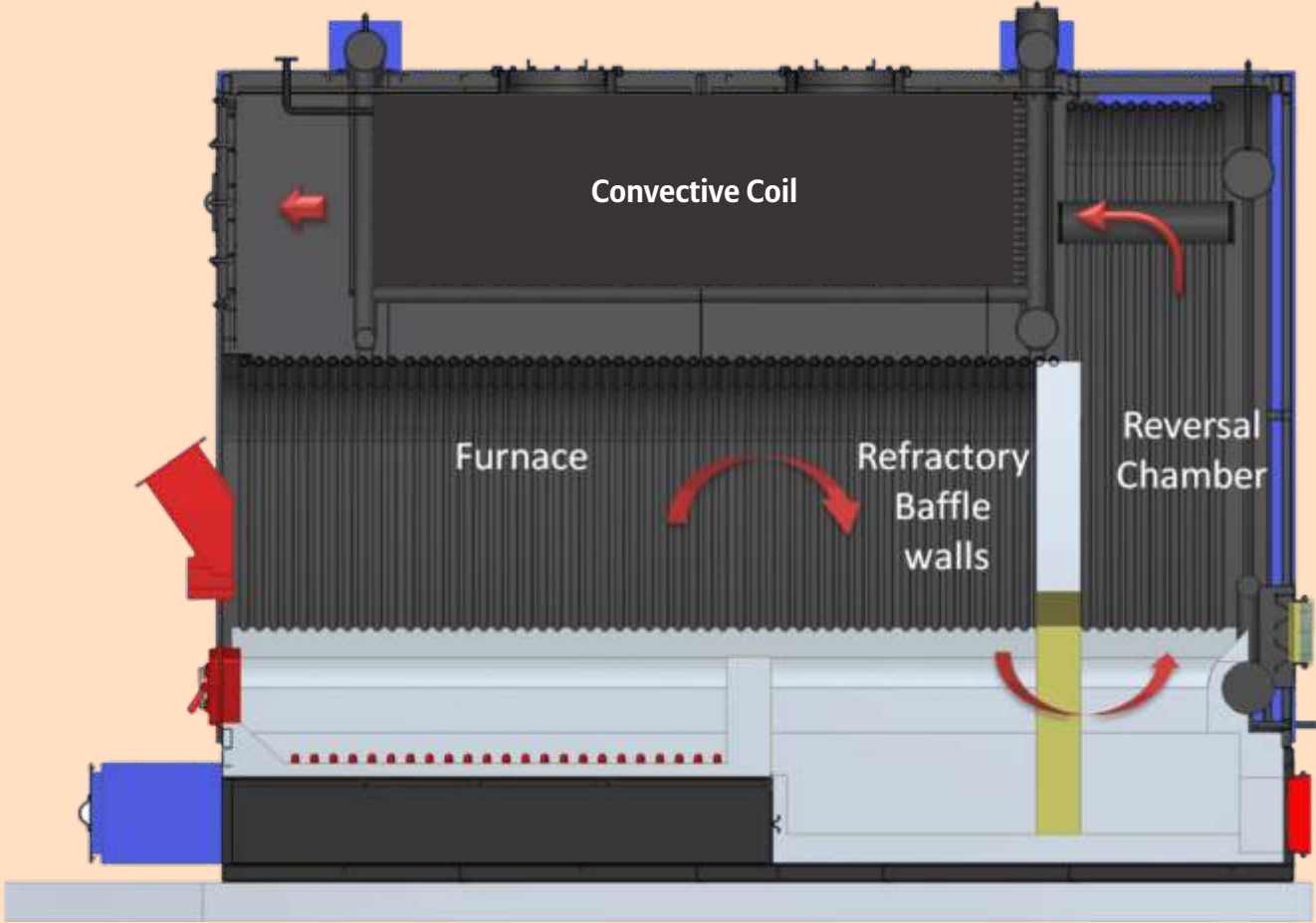
- Factory assembled modules
- Easy ash removal
- Ease of maintenance
- Soot blowing for auto cleaning
- Combustor with fuel flexibility
- Ergonomic design
- World class aesthetics
- Perfect solution for your energy needs
- 60% refractory saving compared to conventional heater
- 25% footprint reduction compared to conventional heater
- 50% height reduction compared to conventional heater

Patent Application No CT: 4200/MUM/2015

Design Application No 274708



Product internals



How it compares

Parameters	Double Coil Design	IBH Design	ENERBLOC
Efficiency	★ ★	★ ★ ★	★ ★ ★ ★ ★
Combustion Volume	★ ★ ★	★ ★ ★	★ ★ ★ ★ ★
Residence Time	★ ★ ★	★ ★ ★	★ ★ ★ ★ ★
Radiation Losses	★ ★ ★	★ ★ ★	★ ★ ★ ★ ★
Lesser Footprint Area	★ ★	★ ★	★ ★ ★ ★ ★
Less Ducting & refractory	★ ★	★ ★	★ ★ ★ ★ ★
Modular Construction	★ ★	★ ★	★ ★ ★ ★ ★
Better Aesthetics	★ ★	★ ★	★ ★ ★ ★ ★
Fuel Flexibility	★ ★	★ ★ ★	★ ★ ★ ★ ★
Heater Uptime	★ ★ ★	★ ★ ★	★ ★ ★ ★ ★
Emission	★ ★ ★	★ ★ ★	★ ★ ★ ★ ★
Refractory Maintenance	★ ★ ★	★ ★ ★	★ ★ ★ ★ ★

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



Grate bars



Biomass Briquette



Imported Coal



Indian Coal



Wood logs

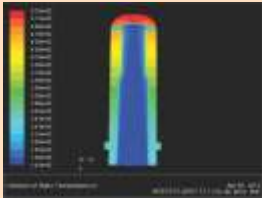


Lignite

Description	Units	CT 15	CT 20	CT 25	CT 30
<b>Heater Performance</b>					
Capacity	kcal/hr	1500000	2000000	2500000	3000000
Max T. F. Outlet Temperature (Std.)	°C	280	280	280	280
Thermic Fluid Flow Rate	m³/hr	90	120	150	180
Available Circuit Rate	mlc	26	26	23	30
<b>Efficiency on NCV basis with APH-(without APH)</b>					
As per BS 845 - Part 1 (on NCV Basis)					
Imported Coal	%	78(70)	78(70)	78(70)	78(70)
Indian Coal	%	78(70)	78(70)	78(70)	78(70)
Wood logs	%	79(69)	79(69)	79(69)	79(69)
Lignite	%	76(68)	76(68)	76(68)	76(68)
Biomass Briquettes	%	78(70)	78(70)	78(70)	78(70)
T. F. Temperature Rise	°C	34	34	34	34
Length (With Screw Feeder)	mm	5600	6225	6300	6550
Width: W1 ( With APH)/ W2(w/o APH)	mm	3900(3500)	4200(3700)	4400(4000)	4800(4150)
Height	mm	3750	4630	4950	5075
<b>Connected Load</b>					
Connected Load With Cyclomax/ Bagfilter & with APH	kW	39.37	49.87	59.87	74.87
Connected Load With Cyclomax/ Bagfilter & without APH	kW	39.37	56.07	63.07	80.87
Chimney top diameter (recommended with APH)	mm	500	600	700	750
Chimney top diameter (recommended without APH)	mm	750	850	950	1000

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



Temperature Profile



Bubbling Bed Nozzle



Imported Coal



Petcoke



Rice Husk

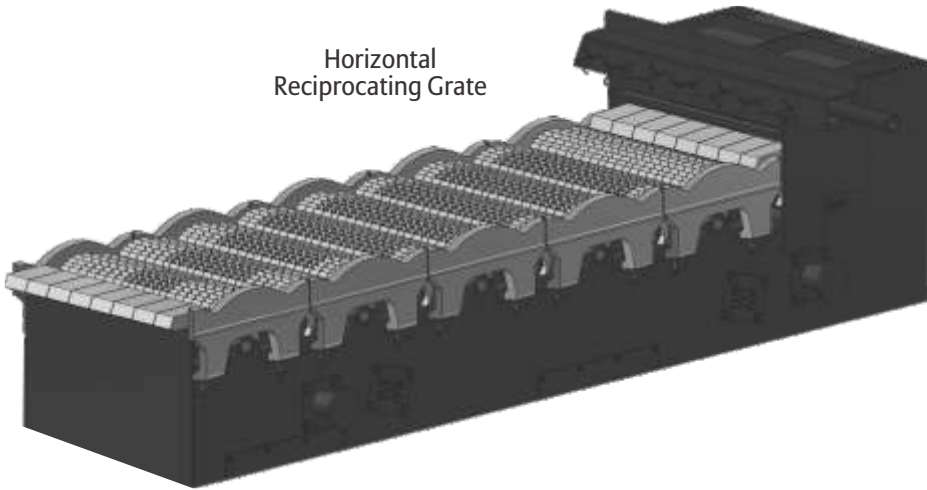


Wood chips

Description	Units	CT 15	CT 20	CT 25	CT 30
<b>Heater Performance</b>					
Capacity	kcal/hr	1500000	2000000	2500000	3000000
Max T. F. Outlet Temperature (Std.)	°C	280	280	280	280
Thermic Fluid Flow Rate	m³/hr	90	120	150	180
Available Circuit Rate	mlc	26	26	23	30
<b>Efficiency on NCV basis - with APH (without APH)</b>					
As per BS 845 - Part 1 (on NCV Basis)					
Imported Coal	%	79(72)	79(72)	79(72)	79(72)
Pet Coke	%	76(79)	76(79)	76(79)	76(79)
Rice Husk	%	79(73)	79(73)	79(73)	79(73)
Wood Chips	%	80(73)	80(73)	80(73)	80(73)
T. F. Temperature Rise	°C	34	34	34	34
<b>Overall Dimensions with APH</b>					
Length (L)	mm	6200	6900	6900	7100
Width: W1 ( With APH)/W2(w/o APH)	mm	4800(4450)	5050(4600)	5400(4800)	5500(4850)
Height (H)	mm	3950	4175	4450	4600
<b>Connected Load</b>					
Connected Load With Cyclomax & APH (Without APH)	kW	46.47(49.97)	60.47(68.47)	68.47(75.47)	86.97(94.97)
Connected Load With Cyclomax & APH (without APH) (For Rice Husk only)	kW	47.97(51.47)	61.97(69.97)	69.97(76.97)	88.47(96.47)
Chimney top diameter (recommended with APH)	mm	600	700	750	850
Chimney top diameter (recommended without APH)	mm	700	800	900	850

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
- Fully automatic steam plant with fuel and ash handling systems (optional)



Horizontal Reciprocating Grate



Imported Coal



Biomass Briquette



Wood chips



Rice Husk



Biomass pellets



Indian Coal

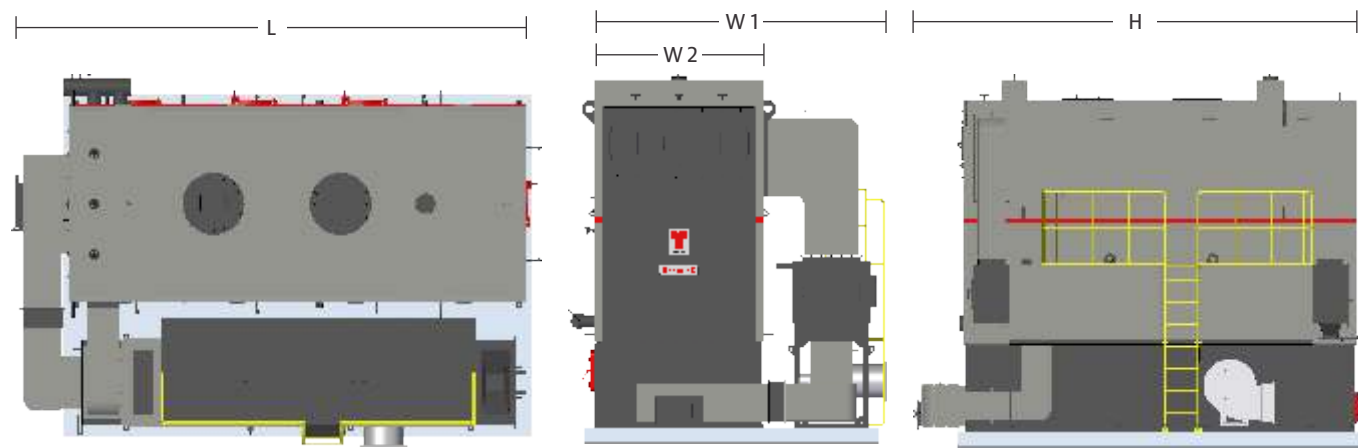
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<b>Heater Performance</b>					
Capacity	kcal/hr	1500000	2000000	2500000	3000000
Max T. F. Outlet Temperature (Std.)	°C	280	280	280	280
Thermic Fluid Flow Rate	m³/hr	90	120	150	180
Available Circuit Rate	mlc	26	26	23	30
<b>Efficiency on NCV basis- with APH</b>					
As per BS 845 - Part 1 (on NCV Basis)					
Imported Coal	%	82	82	82	82
Biomass Briquette	%	83	83	83	83
Woodchips	%	83	83	83	83
Biomass pellets	%	84	84	84	84
Rice Husk	%	82	82	82	82
Indian Coal	%	80	80	80	80
T.F. temperature rise	°C	34	34	34	34
<b>Overall Dimensions with APH</b>					
Length (L)	mm	8850	9550	9500	9700
Width	mm	3900	4200	4500	4800
Height	mm	4425	4650	4975	5150
<b>Connected Load</b>					
with Cyclomax	kW	40.3	52.3	58.1	75.9
Chimney top diameter (recommended)	mm	600	700	750	800

Note:

a) Domestic Standard Units - KSB make T.F. Pump, b) Recommended thermic fluid suitable up to 300°C Bulk temperature is Shell make Heat Transfer Oil S2. For higher temperatures Synthetic oil is recommended, c) For selection of Bag Filter & it's Material of Construction shall be done by proposal tea, d) Performance criteria: The output and other performance parameters of the Thermopac specified in this offer hold good only if fuels of the specifications mentioned in the offer are charged to the Thermopac. Any variation in the specifications of fuel will alter the performance parameters.



## General arrangement - Stationary Grate, Bubbling Bed, Horizontal Reciprocating Grate



## Enerbloc – Relay Based System

TIC switch at inlet for combustion control

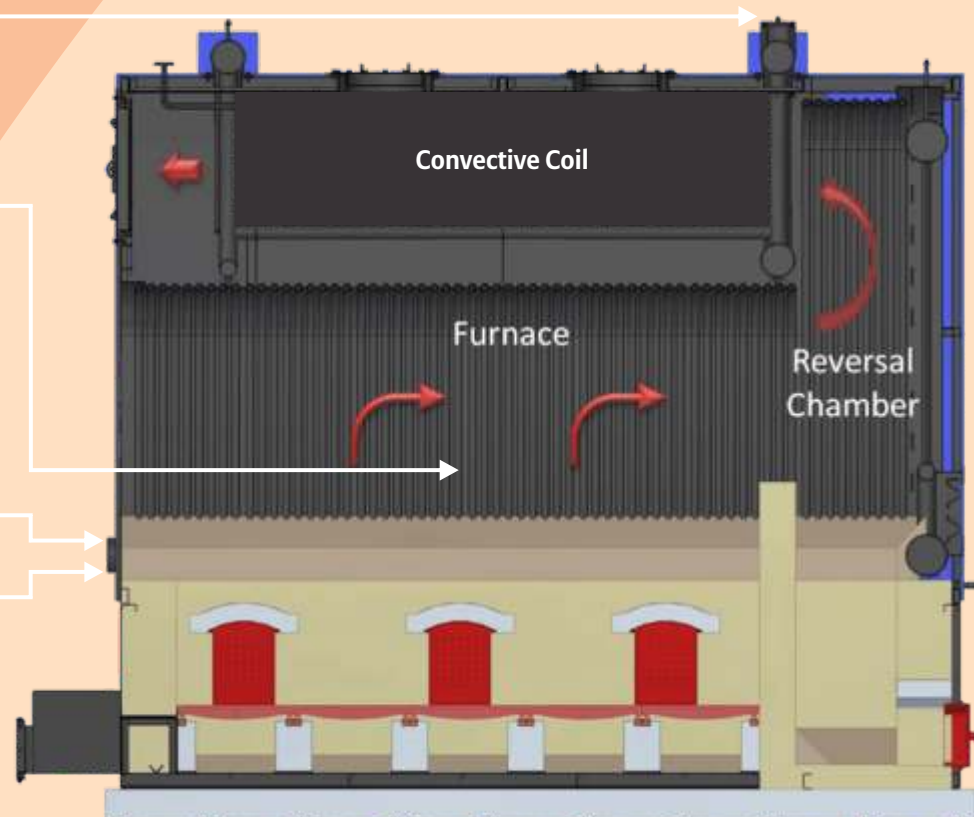
DP switch across inlet & outlet headers for protection against low/ no flow conditions

TIC switch at outlet for controlling TF temperature

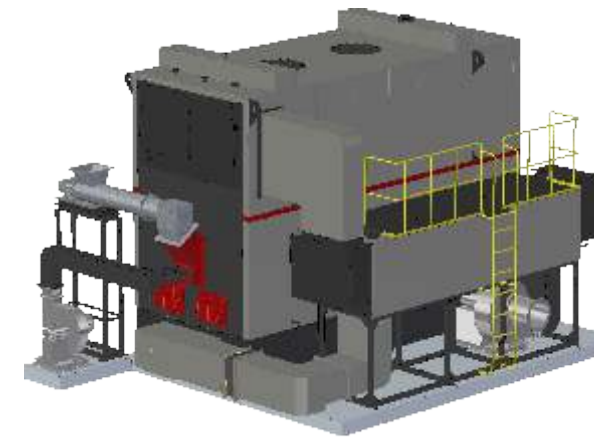
Safety Valve at unit outlet header in case of high pressure

Levels Switch at expansion tank

Orifice Plate Assembly for flow measurement (Optional)



## Enerbloc - Smart Controller

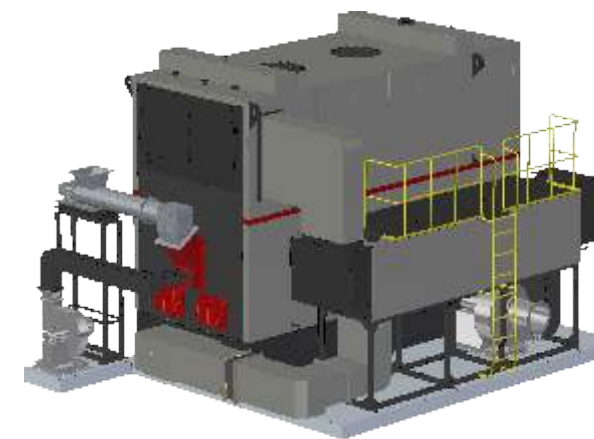


Optional for CT-SG & CT-BB



- Controller with HMI touch screen with 65K TFT Display
- Remote monitoring & controlling via Web Gate using PC browser/ Smart Devices
- Embedded Communication ports (USB port, Serial link port, Ethernet port & CAN Open)
- Data logging & Access control for data
- On Screen alarms and acknowledgements
- Remote debugging & troubleshooting
- Remote modification of control logic
- Real-time curves and trend curves with log

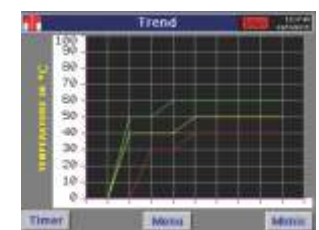
## Enerbloc - Smart + Controller



Optional for CT-SG & CT-BB, Default for CT-RG



- Online Efficiency monitoring with Indirect method
- Combustion Control to regulate fuel feeding & combustion air
- Draft Control to maintain furnace draft with Draft Transmitter & VFD for ID Fan
- SMS Alerts during Safety Interlock warning
- Control & Modification through Smart Phones/ Digital devices
- Real-time curves and trend curves with log
- Remote diagnostic reporting & trouble shooting
- Remote modification of control logic



## 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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