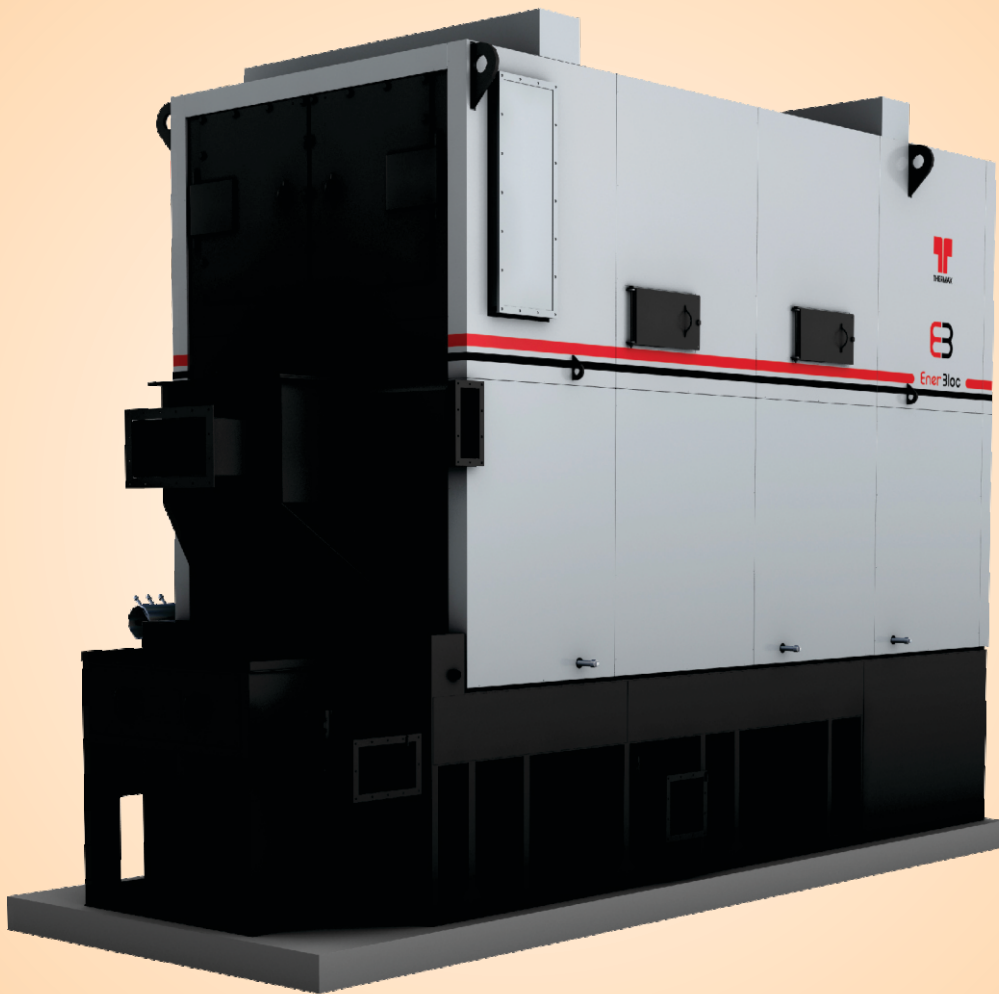


ENERBLOC[®]

A Compact , Modular, Multi fuel
Thermic Fluid Heater



Capacity Range
1.5 to 3 MKcal/hr

Temperature
280 / 300°C

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.

ENERBLOC - Thermic Fluid Heater

Thermax pioneered the concept of Thermic Fluid Heating in India way back in 70s with unprecedented Thermopac™. Today, Thermax - Thermopac is 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

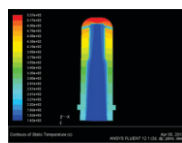
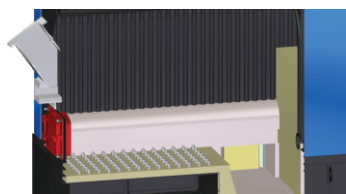
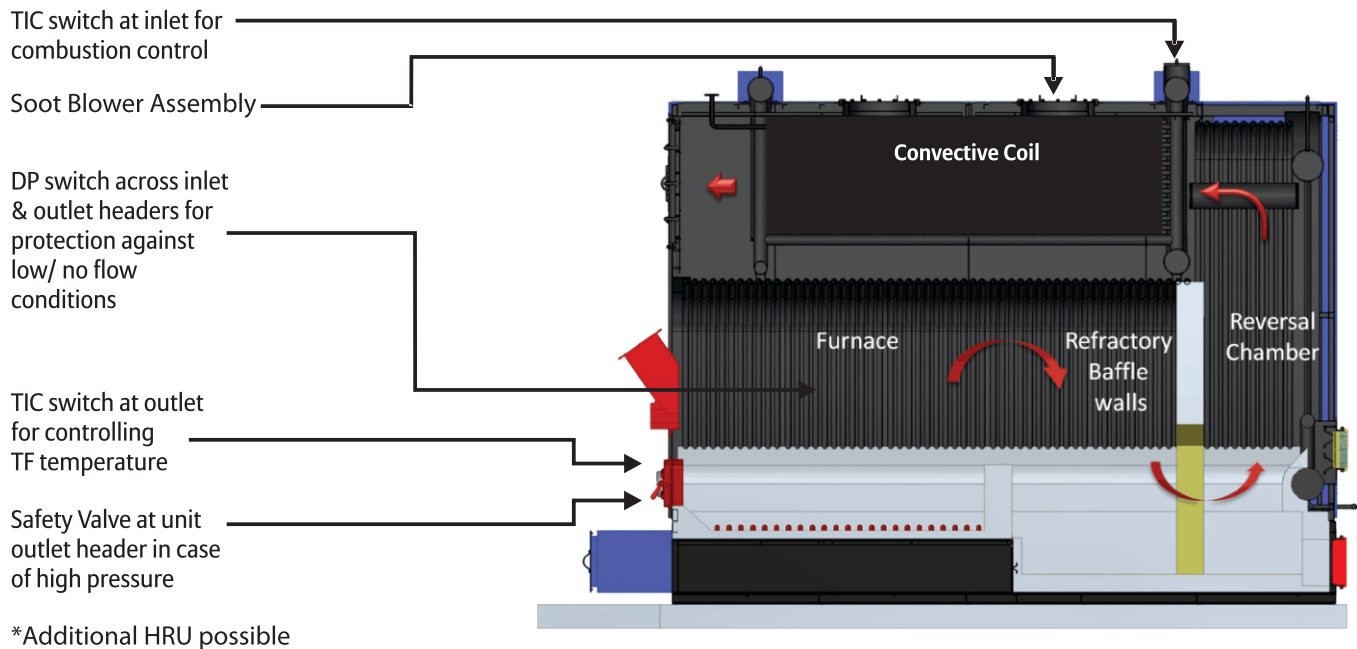
- Factory Assembled Modules
- Easy Ash Removal
- Ease Of Maintenance
- Soot Blowing For Auto Cleaning
- Combustor With Fuel Flexibility
- Ergonomic Design
- World Class Aesthetics
- Perfect Solution For Your Energy Need
- 60% Refractory Saving compared to conventional heater
- 25% Footprint Reduction Compared to conventional heater
- 50% Height Reduction Compared To conventional heater

Design Comparison

“Enerbloc’s convective coil design enhances product performance on multiple parameters. To understand the difference between this designs and conventional designs on different parameters a quick comparison is given below. The table spells out the niche benefits of Enerbloc and what makes it ultimate choice.”

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	★ ★ ★	★ ★ ★	★ ★ ★ ★ ★

Enerbloc - Relay Based System



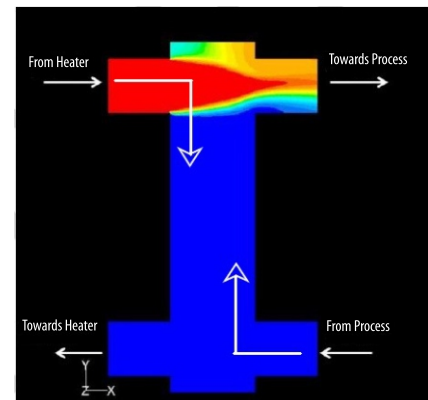
Bubbling Bed

- 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

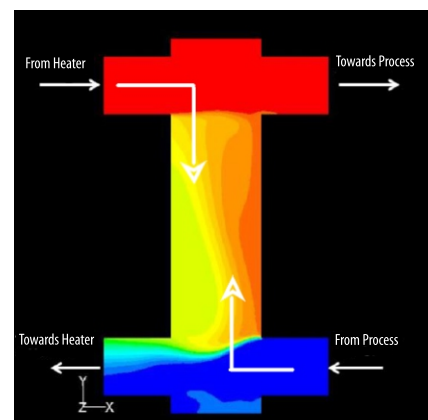
Thermoclutch – Balancing Energies

Different processes need different flow & Temperature rise during heating, whereas Thermal Oil Heaters are constant flow – Constant temperature gain designs. To overcome this mismatch without changing heater designs or designing it for specific requirements, Thermax introduces Thermoclutch Technology.

- Primary circuit having TF Heater working on constant flow & temperature difference resulting in better performance & optimised TF pump size
- Thermoclutch decouples Primary circuit and process side (secondary side) & its load fluctuations.
- Separate TF pumps for secondary circuit which can be fitted with VFD to modulate & offer saving while working as per load demands/ fluctuations/ On-offs.
- Flexibility of adding multiple lines / application.
- Manual interventions not required.
- Lower customisation & engg work for high flow system -bypass control system is not reqd
- Secondary side TF pump can be offered with VFD helping reduced power consumption



Primary Flow < Secondary Flow



Primary Flow > Secondary Flow

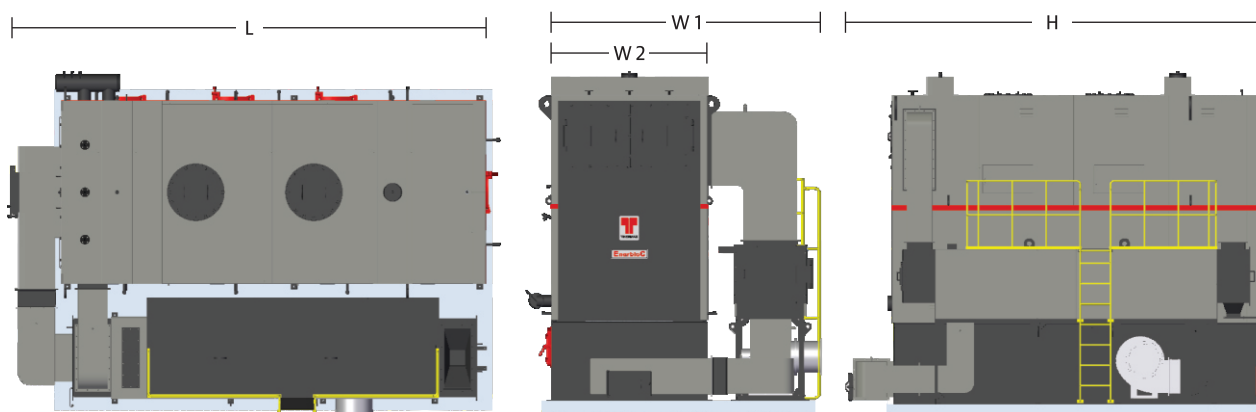
Technical Specifications - Bubbling Bed Combustor

Description	Units	CT-15	CT-20	CT-25	CT-30
Heater Performance					
Capacity	kcal/hr	1500000	2000000	2500000	3000000
Max. T.F. Outlet Temperature (Std.)	°C	280	280	280	280
Thermic Fluid Flow rate	m ³ /hr	105	140	175	210
Available circuit pressure	mlc	25	25	25	25
Efficiency on NCV basis - with APH	As per BS 845 - Part 1 (on NCV Basis)				
Imported Coal	%	82	82	82	82
Pet Coke (with recirculation- Manual)	%	76	76	76	76
Rice Husk	%	79	79	79	79
Woodchips	%	80	80	80	80
T.F. temperature rise					
	°C	29	29	29	29
Overall Dimensions with APH					
Length (With Screw Feeder)	mm	6250	7025	6970	7200
Width	mm	4900	5150	5355	5600
Height	mm	4135	4355	4631	4785
Connected Load					
Connected Load With Cyclomax & APH	kW	62.97	72.17	95.17	105.67
Chimney top diameter (recommended with APH)	mm	600	700	750	850

Notes :

- A) Domestic Standard Units - KSB make T.F. Pump
 B) Recommended thermic fluid suitable upto 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, consult with H.O / Division.
 D) Performance criteria : The output and other performance parameters of the Thermopac specified in this offer hold good only if fuels of the following specifications are charged to the Thermopac. Any variation in the specifications of fuel will alter the performance parameters.
 E) For higher capacity, contact HO.

General Arrangement - Bubbling Bed Grate



THERMAX

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Thermax Business Portfolio

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