

Cooling & Heating



THERMOPAC ULTRA

Highest efficiency solid fuels
thermal oil higher

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 covers heating, cooling, waste heat recovery, captive power, water treatment & recycling, air pollution control & waste management and performance chemicals. Thermax brings to customers extensive experience in industrial applications, and expertise through technology partnerships and strategic alliances.

Operating from its headquarters in Pune (Western India), Thermax has built an international sales & service network spread over South East Asia, Middle East, Africa, Russia, UK and the US. It has a full fledged manufacturing set up that is certified for ISO 9001:2000, ISO 14001 and safety management according to OSHAS (ISO 18000).

In **process heat**, Thermax offers a wide range of steam boilers, thermal oil heaters and hot water generators. It has expertise in a wide range of fuels - oil, gas, solid and agro-waste/ biomass. Supporting a broad array of industries in generating, transferring and conserving heat across a host of applications, Thermax process heat products and systems are exported to North and South America, South East Asia, Middle East, Africa, Europe, CIS, Australia, Antarctica and SAARC.

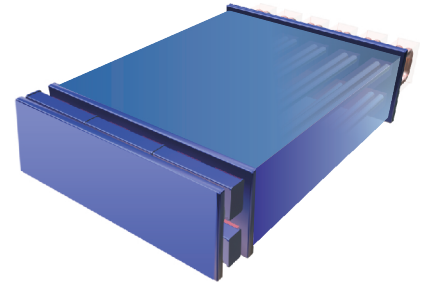
Thermax presents Thermopac-Ultra: the most efficient solid fuel thermal oil heater yet. The incorporation of a technology breakthrough, in the form of '*inbed heat recovery*', makes this thermal oil heater simply outstanding in its class.

The heat recovery thus achieved brings phenomenal advantages to users in the form of:

- Highest efficiency - 80 %
- Decrease in power consumption - by 40%
- Reduced footprint area - by 25%
- Multi-fuel capability

Highest efficiency - 80 %

Thermopac Ultra uses cooling coils in the combustor to extract heat and maintain bed temperature. This heat is then transferred to the thermic fluid in a state-of-the-art heat exchanger. This boosts efficiency to an outstanding 80%.



The fluidised bed advantage

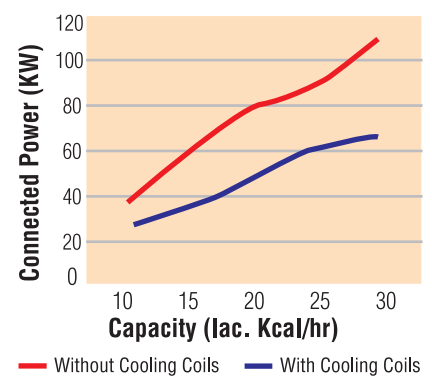
Automatic, mechanised fuel feeding ensures consistent performance in the form of temperature and heat output. Also, the high turbulence of the bed facilitates quicker responses to changes in demand.



Lowest power cost

Heat extraction from the combustor, by the cooling coils, reduces excess air requirement for combustion and bed temperature control.

This reduced air requirement leads to lesser handling of air which, in turn, provides the advantage of reduced power consumption.

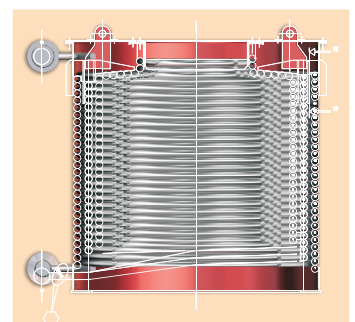


Composite coil design

The coil has the unique advantage of a combined radiant and convective coil with online soot blower.

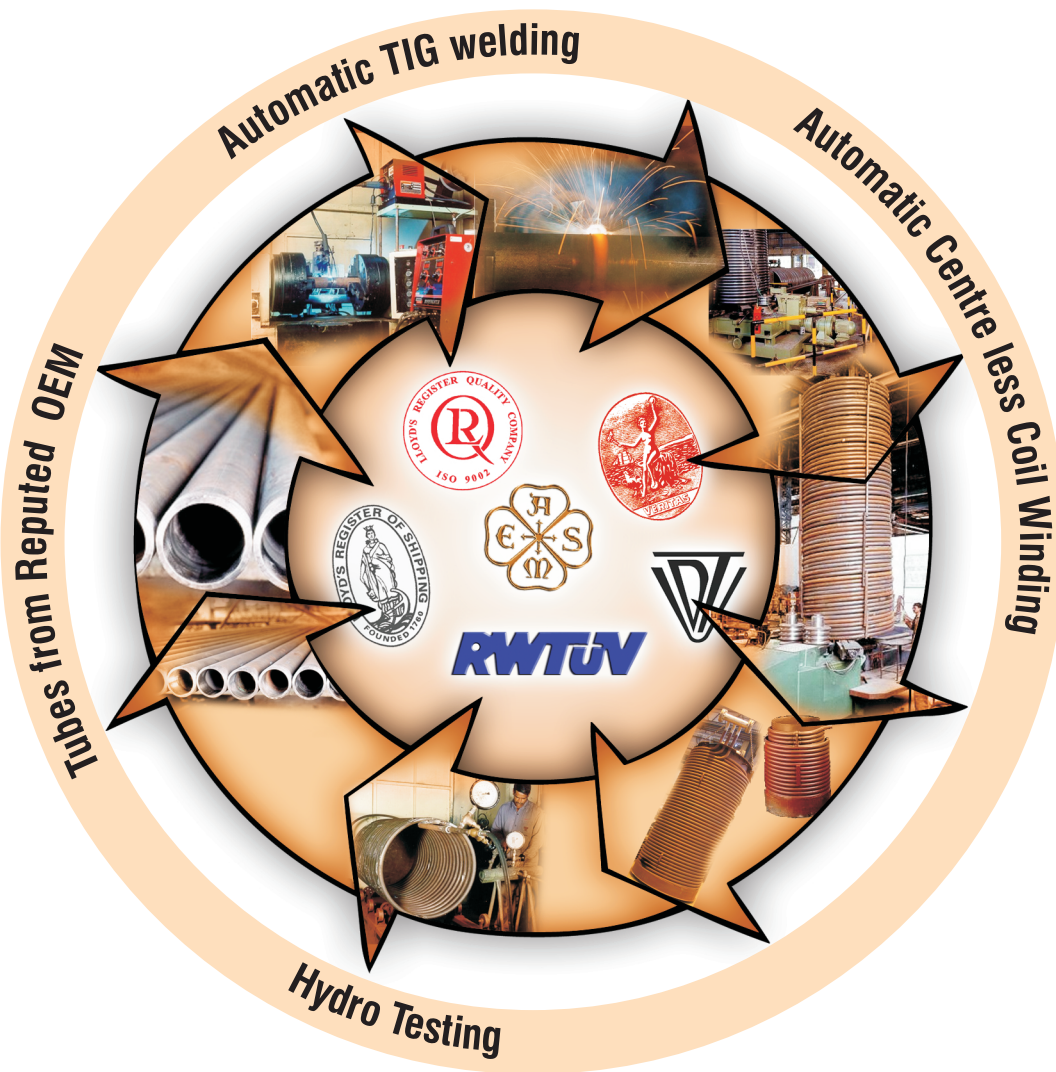
It is of single pass design, with a forced circulation, parallel flow on the thermic fluid side.

This leads to the advantage of lesser coil choking and a reduced footprint.



Quality through manufacturing excellence

Thermax uses high quality standards and best manufacturing practices which are recognised by international agencies like ASME, TUV, Lloyd's etc



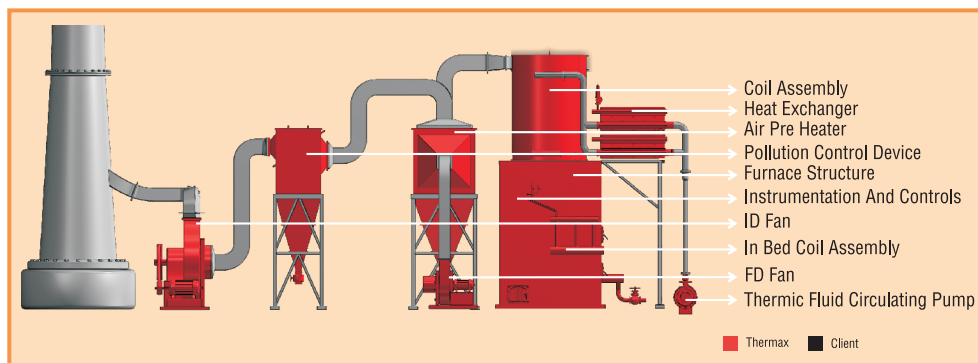
Operating cost advantage

	Thermopac Ultra FBC	Thermal Oil Heater Conventional FBC	Thermal Oil Heater Manual Fired
Heat Output	20,00,000 Kcal/ hr.	20,00,000 Kcal/ hr.	20,00,000 Kcal/ hr.
Thermal Efficiency - Coal	80%	73%	74%
Fuel Consumption coal (3500 Kcal/kg GCV)	714 kg/hr.	783 kg/hr.	772 kg/hr.
Annual Fuel cost	113.1 Lac (Rs.)	125.28 Lac (Rs.)	122.26 Lac (Rs.)
Connected Power	48.7 KW	78.4 KW	43.1 KW
Annual Power Cost	11.57 Lac (Rs.)	18.82 Lac (Rs.)	10.24 Lac (Rs.)
Man Power Required (2 shift operation)	2 Operators, 2 Fireman, 4 Casuals	2 Operators, 2 Fireman, 4 Casuals	2 Operators, 4 Fireman, 8 Casuals
Annual Man Power Cost	2.4 Lac (Rs.)	2.4 Lac (Rs.)	4.08 Lac (Rs.)
Total Operating Cost	127.28 Lac (Rs.)	146.5. Lac (Rs.)	136.58 Lac (Rs.)
Net Competitive Advantage Operating Cost		19.22 Lac (Rs.)	9.3 Lac (Rs.)

ASSUMPTIONS

No. of hours of operation per day	- 16
No. of days per year	- 330
Cost of coal	- Rs. 3.00/kg
Cost of power	- Rs. 4.50/kw
Operator's monthly salary	- Rs. 5,000
Fireman's monthly Salary	- Rs. 3,000
Casual labour monthly Salary	- Rs. 2,000

Scope of supply



Technical specifications

DESCRIPTION	UNITS	VTIF-10	VTIF-15	VTIF-20	VTIF25	VTIF-30
Heater Performance						
Heat Load	kcal/hr	10,00,000	15,00,000	20,00,000	25,00,000	30,00,000
Maximum outlet temperature (Thermic Fluid)	°C	280	280	280	280	280
Thermal Oil Flow	m3/hr	60	90	120	150	180
Circuit pressure	mlc	25	25	25	25	25
Efficiency*						
Coal	%	80	80	80	80	80
Husk	%	79	79	79	79	79
Imported coal	%	81	81	81	81	81
Thermic Fluid Temp. Rise	°C	34	34	34	34	34
Fuel consumption**						
Coal	kg/hr	357	536	714	893	1071
Husk	kg/hr	396	593	791	989	1187
Imported Coal	kg/hr	190	285	380	475	570
Connected Load						
Husk/ Coal (with MDC***)	kw	28.5	37.7	48.7	59.7	67.1
Imported Coal (with MDC)	kw	35.5	46.5	57.5	74.1	81.4
Husk/ Coal (with Cyclomax)	kw	32.2	45.0	56.1	67.1	74.4
Imported Coal (with Cyclomax)	kw	39.2	53.9	64.9	81.4	88.8



Note : * As per BS 845 Part 1 method. **Fuel consumption is based on net calorific value (NCV) of coal: 3,500 Kcal/ kg, husk: 3,200 Kcal/ kg and imported coal: 6,500 Kcal/kg. ***Mechanical Dust Collector

Other Thermopac Ultra models available as customised options

In view of our constant endeavour to improve the quality of our products, we reserve the right to alter or change specifications without prior notice. All photographs shown in this publication are representative in purpose, and to be used for reference only. For actual details and specifications, please refer to Thermox offer document.



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