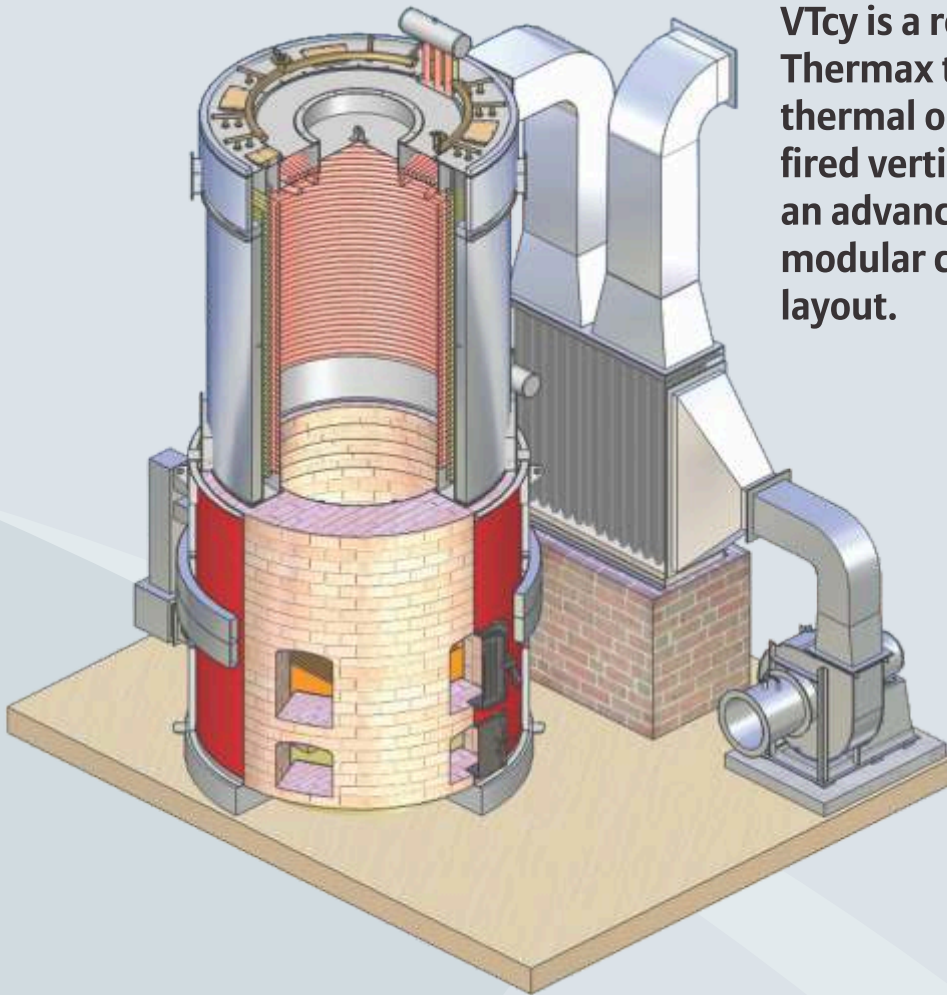


THERMOPAC VTcy

Solid Fuel Fired Vertical Thermal Oil Heater with Cyclonic Combustor





VTcy is a revolutionary product from Thermax that replaces conventional thermal oil heaters. It is a solid fuel fired vertical thermal oil heater, with an advanced cyclonic combustor, of modular construction and a compact layout.

Product offering

- Vertical closed loop thermal oil heater with cyclonic combustor
- Capacity - 1,00,000 to 20,00,000 kcal/hr
- Operating temperature - 280°C
- Fuel - Coal, wood and agro waste briquette

Options available

- Operating temperature - up to 300°C
- Complete heater house and accessories on turnkey basis
- Other fuels on request

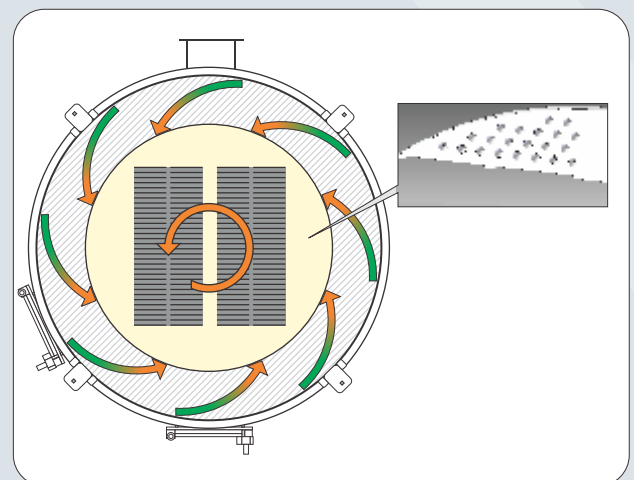
Product highlights

Circular furnace construction

- Provision for introduction of cycloidal air for complete combustion
- Heat and thus efficiency maintained for a prolonged period due to reduction in refractory damage
- No ingress of air through leakages, as furnace structure acts as a shell lined with refractory on the inside
- Compact design and layout of furnace with aligned primary and secondary ducting

Cycloidal air injection

- VTcy comes with the unique cycloidal air injection technology, where air is injected into the combustion zone in a cycloidal motion thus leading to higher residence time and lower excess air due to better turbulence levels
- Better combustion of volatiles in fuels is achieved, hence incomplete combustion losses are reduced
- Optimum combustion volume and better utilization of furnace aids in effective and complete combustion



Hybrid combustor design

In any combustor, spreading and distribution of fuel is not uniform. While it is densely injected/ loaded at the centre and spread thinner at the periphery, the temperature distribution is exactly reverse - the walls radiating at the periphery have higher temperatures. Special air distribution is required for effective air utilization which then leads to effective combustion. VTcy addresses all these aspects by means of a **specially designed hybrid grate layout**. Its special features are:

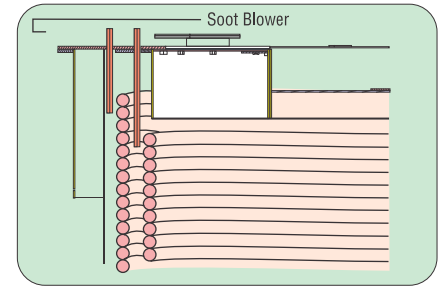
- A **fixed grate at the centre of the combustor**, which handles the densely spread fuel ensuring proper air ingress and complete combustion, by utilizing primary air from grate bars plus secondary air from the cycloidal air injection
- **Sectoral grate bar with tapered pin holes** at the peripheral section, which ensures that the precise quantity of required air reaches the periphery of the combustor, without disturbing radiating/peripheral heat zones

Maximised heat transfer

- In VTcy, both inner and outer surfaces of the radiant coil contribute to heat transfer unlike conventional thermal oil heaters, where only the inner surface of the radiant coil contributes to heat transfer
- Higher capacities of VTcy have roof coils which provide more heat transfer area and thermic fluid holdup
- Higher radiation surface counters fouling at convective coil and radiation losses are also effectively reduced due to less surface being exposed to air

Automatic cleaning

VTcy uses a soot blowing system to keep the tube surface clean and maintain uniform heat transfer. This reduces variation in efficiency when compared with the effect of manual cleaning in conventional thermal oil heaters.



Get more from less

VTcy is a thermal oil heater of modular construction and a small footprint, which comes with pre-insulated coil and sleek aesthetics. It has been designed and engineered for a host of benefits that also make it the most cost-effective and efficient thermic fluid heater in its class. It is so quick to install and have up and running, that it could even be compared with many plug and play, oil fired coil type units.

- **More effective heat transfer area than conventional heaters** - Ensures highly effective response to heat load. Also online soot blower operates when the blower stops, ensuring clean coil surfaces, good coefficient of heat transfer and better efficiency.
- **Specially designed air pre-heater** - Incorporates a cross flow design, which makes the direction of flue gas and air flows opposite and perpendicular to each other, thereby guaranteeing maximum heat transfer from flue gas to air.

- **Up to 30% reduction in insulation and cladding than conventional heaters** - Translates into huge savings in material, installation time and maintenance.
- **Up to 60 % reduction in refractory weight/ requirements** - Means savings in refractory material as well as of time required for installation.
- **Up to 65% reduction in foot print area** - Compact layout frees up expensive land for other uses.
- **Up to 70% reduction in civil construction for coil mounting** - Leads to savings in cement, steel and of time required for installation.
- **Overall reduction in height** - Without the hassle and additional expense of raising roof height, it means that there are no hidden costs.

How VTcy scores over the conventional Thermopac

Besides the obvious advantages stemming from its breakthrough design and construction enumerated above, the VTcy outscores the conventional Thermopac on several other counts:

- Matching (leveling) of convective and radiant coils eliminated
- Elimination of ash room below convective coil
- Elimination of connecting duct and its refractory

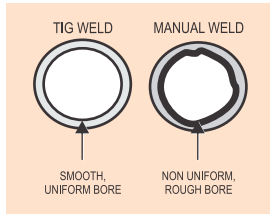


VTcy (Improved design)

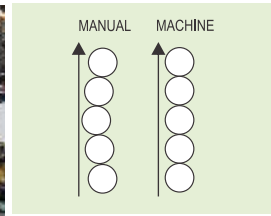


VT (Conventional design)

Manufacturing excellence



Fully automated tube to tube TIG Welding Machine enables smooth uniform bore



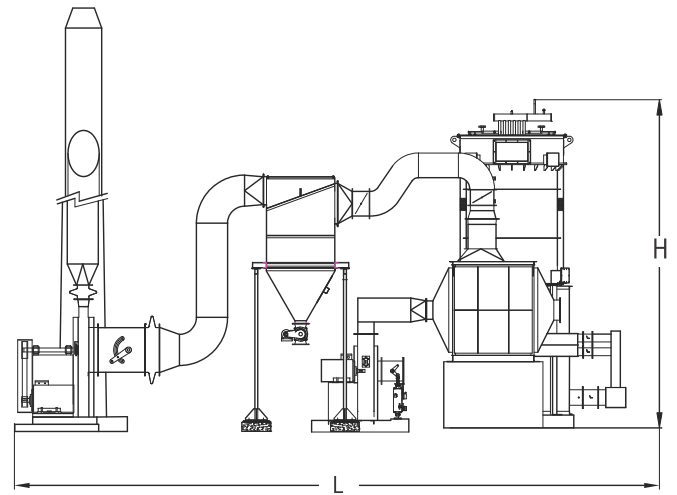
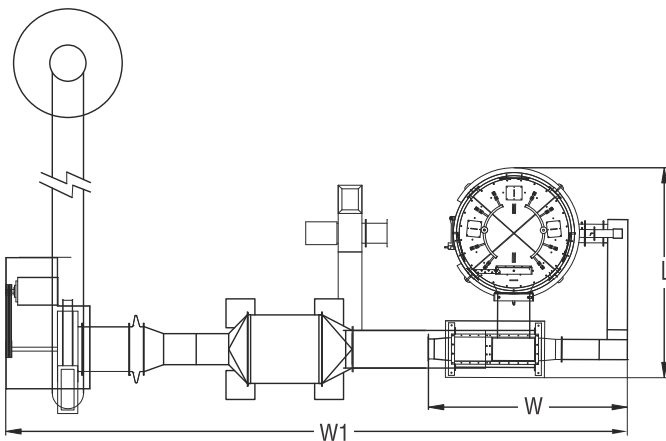
CNC coil winding machine ensures proper alignment, avoiding possibility of hot spots

Technical specifications

Description	Units	VTcy 01	VTcy 02	VTcy 04	VTcy 06	VTcy 10	VTcy 15	VTcy 20
Capacity	kcal / hr	100000	200000	400000	600000	1000000	1500000	2000000
Maximum Outlet Temperature	°C	280						
Thermic Fluid Flow Rate	m ³ / hr	7	10	24	36	60	90	120
Thermic Fluid Temperature Rise	°C	30	40	34	34	34	34	34
Efficiency		As per BS 845 Part 1 NCV Basis						
Wood	%	79.5						
Coal	%	80						
Briquette	%	79						
Fuel		Wood / Coal / Briquette						
Fuel Firing System		Manual Firing (Fixed Grate + Sectoral Pin Hole grates)						
Fuel Consumption								
Wood	kg / hr	43	85	171	256	426	640	853
Coal	kg / hr	29	58	116	174	291	436	581
Briquette	kg / hr	38	76	151	227	378	567	756
Connected Electrical Load								
Wood / Coal / Briquette	kW	4.25	8.85	9.95	15.65	20.95	32.25	41.25
Dimensions & Weight								
Length	mm	2800	3100	3300	3500	3700	4300	5300
Width	mm	1600	1700	2800	3300	3700	4200	4200
Height	mm	4200	4900	5400	5400	5700	6500	7500
W1	m	5.7	6.0	7.9	8.6	9.8	10.5	11.3
Chimney Top Diameter	mm	180	250	310	350	500	660	700
Dry Weight	kg	1685	2135	3215	4040	5970	8475	14470

Note: Design Standard-IBR. Efficiency is calculated based on NCV of Husk as 2916 kcal/kg, Coal as 4300 kcal/kg, Husk Briquette as 3350 kcal/kg and Wood as 2950 kcal/kg. Units suitable for 300°C bulk oil temperature are also available. Above mentioned weight and dimensions may vary with actuals. Please refer to offer document for more details.

General arrangement



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