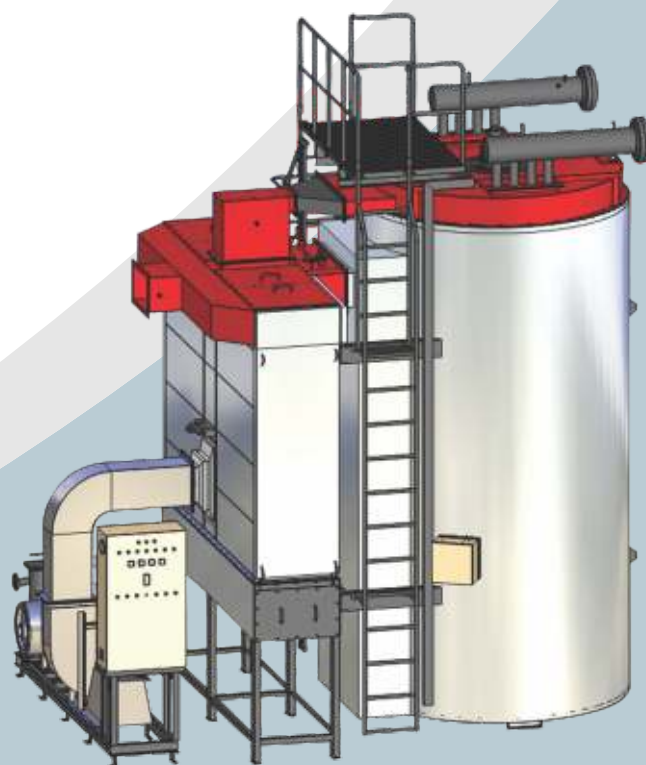




Thermopac-TPDi



Thermopac Excel-TPD

THERMOPACTM

Oil / Gas Fired Thermic Fluid Heater



THERMOPAC - TPDi with Integral APH

The reliable and efficient system for high process temperatures at low operating pressure



Thermic fluid heating has replaced electric and steam heating in industries globally. Thermax pioneered the concept in India way back in 1971 with its Thermopac. For decades now, Thermopacs are recognised everywhere as superior heat sources and productivity enhancers.

Product offering

- Fuel - Heavy Oil, Light Oil and Gas
- Capacity - 0.4 to 2.5 million kcal/ hr
- Operating temperature- 280°C

Product highlights

- Automatic control for maintaining predetermined thermic fluid temperature
- High system efficiency - 87%
- Centrifugal pump ensures uniform circulation, thus preventing overheating of thermic fluid
- Suitable up to 300°C (bulk oil temperature) with system and equipment modifications
- Internal APH (between two jackets) ensures unit surface temperature below 55°C

Options available

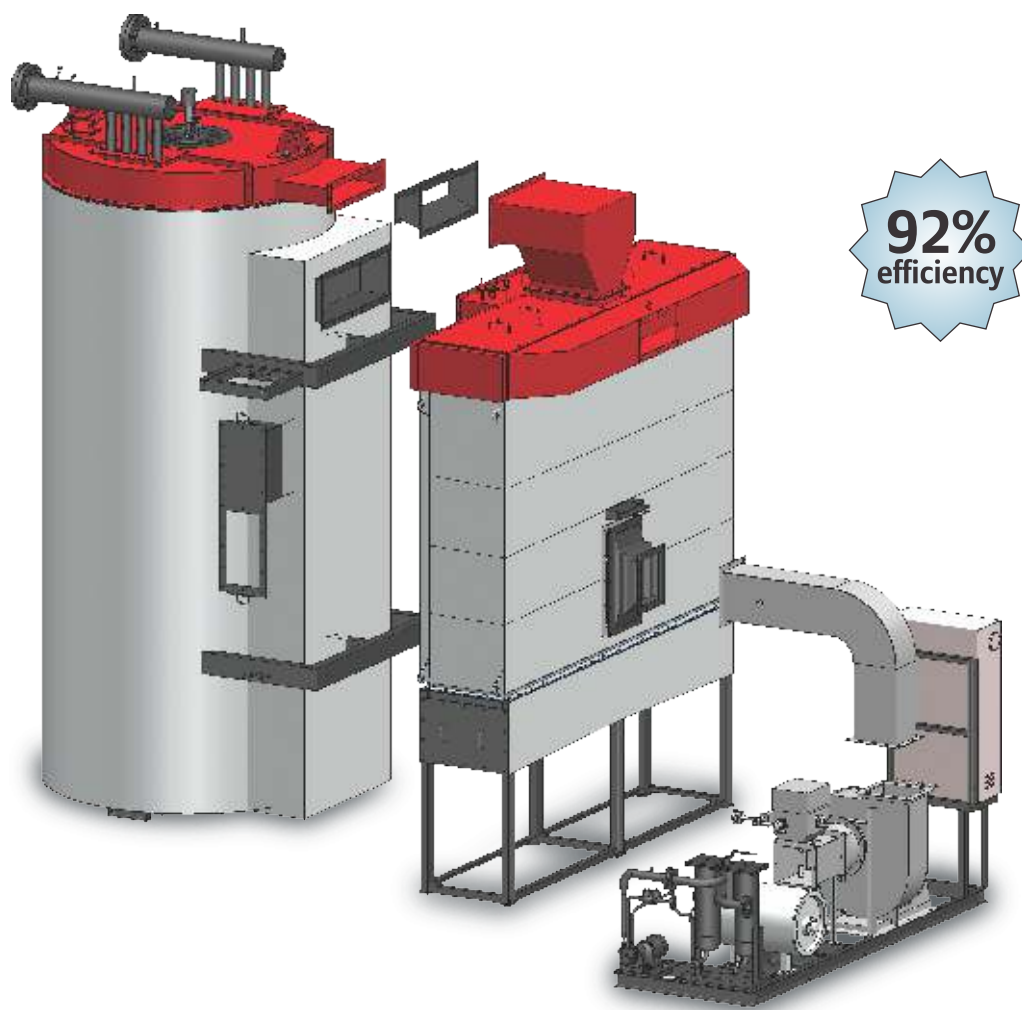
- Horizontal orientation
- Separate deaerators and common expansion tank for multiple unit installations
- High temperature options up to 380°C
- Complete heater house and accessories on turnkey basis

Controls and safeties

- Low thermic fluid flow cut-off
- High thermic fluid outlet temperature cut-off
- Precise thermic fluid temperature control
- Low level cut-off in deaerator tank
- High stack temperature cut-off
- Safety valve for protection against high pressure

THERMOPAC EXCEL - TPD

The assurance of the highest efficiency in its class



Options available

- Horizontal Orientation
- Separate deaerators and common expansion tank for multiple unit installations
- High temperature options up to 380°C
- Complete heater house and accessories on turnkey basis

Product offering

- Fuel - Light Oil, Heavy Oil & Gas
- Capacity - 1 to 2.5 million kcal/hr
- Operating Temperature - 280 °C

Product highlights

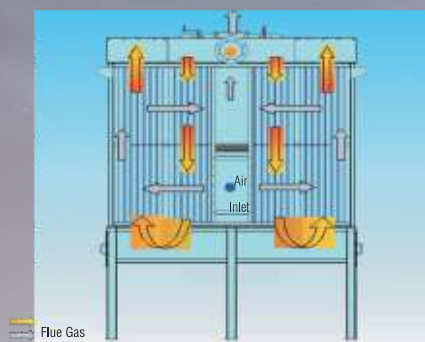
- Specially designed and patented air preheater
- Combination of cross and parallel flow arrangement of air and flue gas circuit
- Modular design of the unit ensures quick assembly and compact layout
- Designed and verified by modern tools like CFD and FEA

Save ₹ 1 crore on operating costs

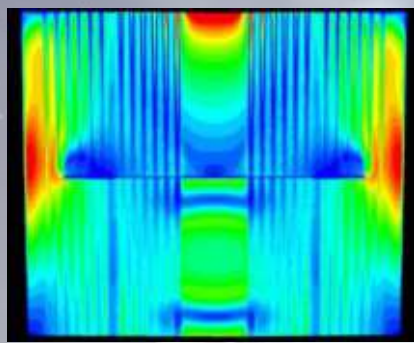
Description	Unit	TPDi		TPD	
		(Integral APH)		(External APH)	
Total Heat Load	kcal/hr	2500000			
Fuel		FO	NG	FO	NG
NCV of fuel	kcal/kg / kcal/Nm ³	9650	8500	9650	8500
Thermal Efficiency*	%	87	86.5	92	91.5
Operating hours	hrs/ annum	4800	4800	4800	4800
Fuel consumption	kg/hr / Nm ³ /hr	298	340	281	321

*Efficiency considered on NCV Basis

Air Pre-heater



APH - air and flue gas circuit



CFD Analysis

Thermopac Excel TPD comes with a non-corrosive air pre-heater with a hybrid cross and counter flow design that has been validated with extensive CFD analysis.

- Air is introduced in the intermediate flue gas zone which maximizes heat recovery and reduces stack temperature
- Diverter damper in flue gas line facilitates online cleaning of the APH and use of only one module while the other is under cleaning
- Modular APH helps to maintain efficiency even under part load conditions
- No risk of dew point corrosion as the configuration ensures optimum metal temperatures

THERMOPAC - TPCM

Product offering

- Fuel - Heavy Oil, Natural Gas & LPG
- Capacity - 0.1 to 0.2 million kcal/hr
- Operating temperature - 280 °C

Product highlights

- Aptly designed for mid size temperature and very low heating requirements
- Imported monobloc burner
- Ideal for the packaging, colour printing, pharmaceutical and leather industries
- Compact and reliable

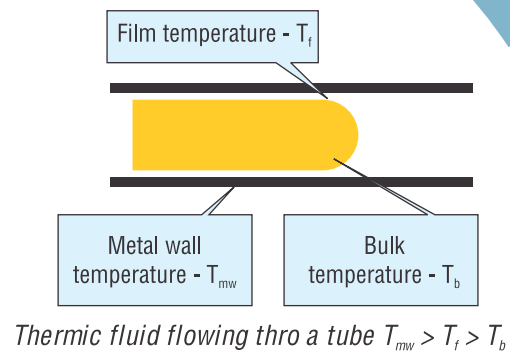


Technical specifications - TPCM series

Description	Unit	TPCM-01	TPCM-02
Capacity	kcal/hr	100,000	200,000
Maximum Outlet temperature	°C	280°C/300°C (Optional)	
Thermic Fluid Flow rate	m³/hr	5	10
Thermic fluid temperature rise	°C	42	42
Firing System			
Type		Monobloc	
Burner Light Up		By High Voltage Spark	
Unit efficiency		As per BS 845- Part I (NCV Basis)	
HSD	%	87	
Natural Gas/LPG	%	86.5	
Fuel Consumption			
HSD	kg/hr	11	22
Natural Gas	Nm³/hr	14	28
LPG	Nm³/hr	5	9
Total Connected Load			
HSD	kW	2.9	2.9
N.Gas/LPG	kW	2.9	2.9
Overall Dimensions & Weight			
L x W x H	m	0.9 x 1.5 x 2.3	1.03 x 1.6 x 2.5
Dry Weight	kg	1200	1500
Chimney Top Diameter	mm	150	200

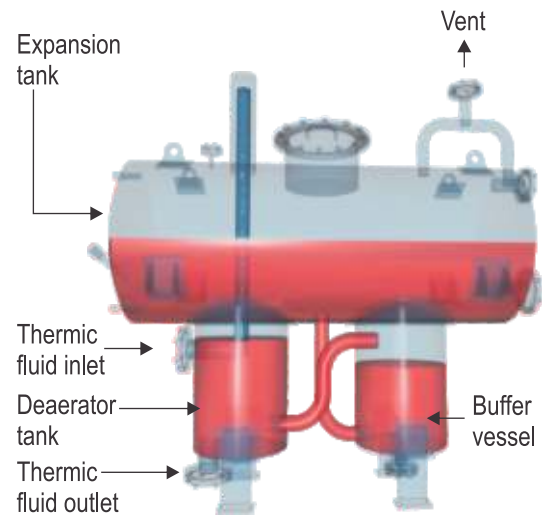
Engineered for reliability

- Designed according to DIN 4754, to ensure longer life of heater and thermic fluid
- Adequate furnace volume and heat transfer surface ensure higher thermal efficiency
- Pre-wired and pre-assembled for quick and easy installation

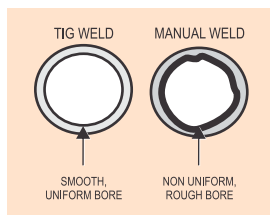
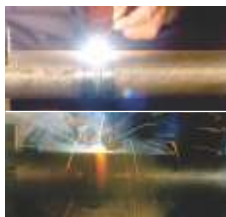


Compact Deaerator-cum-Expansion Tank

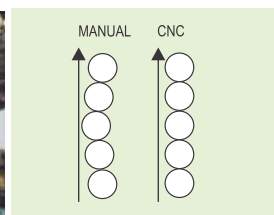
- Requiring less space, it comes with a buffer vessel to prevent cooling of hot oil coming from the process
- The tangential thermic fluid entry in the deaerator ensures optimal deaeration



Manufacturing excellence

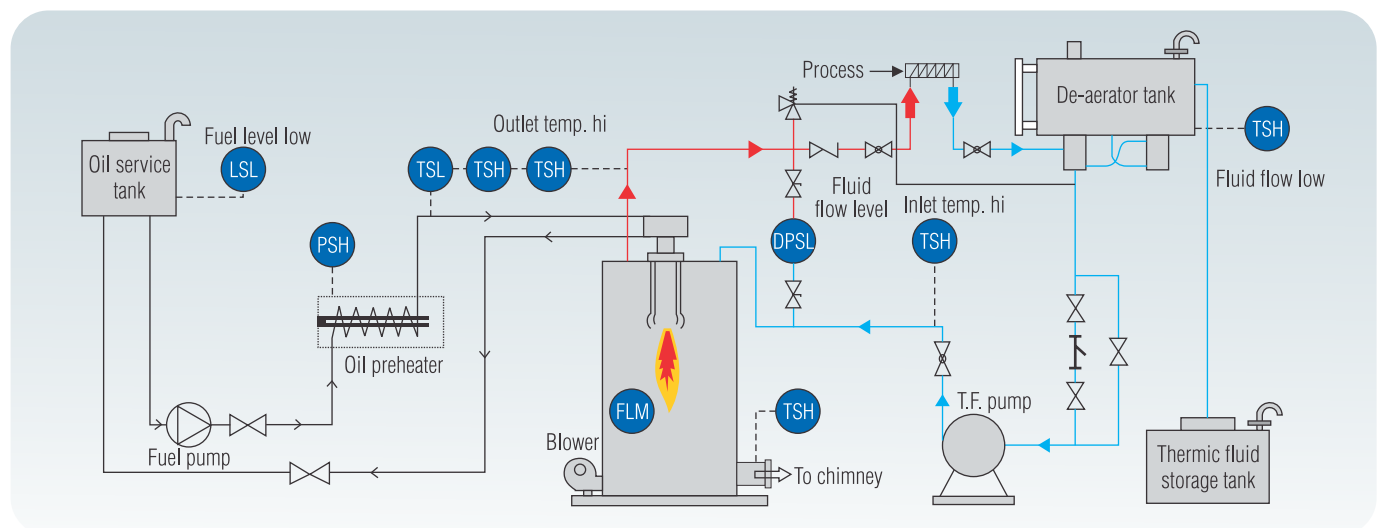


Fully automated tube to tube TIG Welding Machine enables smooth uniform bore



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

Typical P & I diagram for thermic fluid heating system



Technical specifications - TPDi series

Description	Unit	TPDi-04	TPDi-06	TPDi-10	TPDi-15	TPDi-20	TPDi-25
Capacity	kcal/hr	400,000	600,000	1,000,000	1,500,000	2,000,000	2,500,000
Maximum Outlet temperature	°C	280°C/300°C(Optional)					
Thermic Fluid flow rate	m³/hr	24	36	60	90	120	150
Thermic fluid temperature rise	°C	33	42	35	35	35	35
Firing System							
Type		Pressure Jet					
Burner Light Up		By High Voltage Spark					
Unit efficiency		As per BS 845- Part I (NCV Basis)					
HSD/LDO/FO	%	87					
Natural Gas/LPG	%	86.5					
Fuel Consumption							
HSD	kg/hr	44	66	109	164	219	274
LDO	kg/hr	45	68	113	169	225	282
FO	kg/hr	48	71	119	179	238	298
Natural Gas	Nm³/hr	55	83	138	208	277	346
LPG	Nm³/hr	19	28	47	71	94	118
Total Connected Load							
HSD/LDO	kW	8.0	10.5	17	20	29	33
FO	kW	11.0	16.5	26	32.5	44	51
N.Gas/LPG	kW	8.0	10.5	16	19.5	28	30.5
Overall Dimensions & Weight							
L x W x H	m	1.9 x 2.62 x 3.16	1.9 x 2.66 x 3.56	3.3 x 2.66 x 4.39	3.58 x 3.11 x 5.20	3.8 x 3.22 x 5.81	4.6 x 3.48 x 6
Dry Weight	kg	2100	2260	3600	5500	6900	8600
Chimney Top Diameter	mm	250	275	450	550	600	675

Technical specifications - TPD series

Description	Unit	TPD-10	TPD-15	TPD-20	TPD-25
Capacity	kcal/hr	1000000	1500000	2000000	2500000
Maximum Outlet temperature	°C	280°C/300°C(Optional)			
Thermic fluid flow rate	m³/hr	60	90	120	150
Thermic Fluid temperature rise	°C	35			
Firing System					
Type		Pressure Jet			
Unit efficiency		As per BS 845- Part I (NCV Basis)			
HSD / LDO / FO	%	92			
Natural Gas / LPG	%	91			
Fuel Consumption					
HSD	kg/hr	103.5	155.3	207.0	258.8
LDO	kg/hr	106.6	159.8	213.1	266.4
FO	kg/hr	112.6	169.0	225.3	281.6
Natural Gas	Nm³/hr	129.3	193.9	258.6	323.2
LPG	Nm³/hr	44.1	66.1	88.1	110.2
Total Connected Load					
HSD / LDO	kW	16.0	22.0	28.0	36.0
FO	kW	25.0	34.5	43.0	54.0
N.Gas / LPG	kW	15.5	21.0	26.5	33.5
Overall Dimensions & Weight					
L x W x H	m	4.2 x 3.0 x 4.4	4.6 x 3.4 x 5.0	4.8 x 3.6 x 5.7	5.25 x 3.6 x 5.85
Dry Weight	kg	4000	5400	6600	9300
Chimney Top Diameter	mm	450	550	600	675

Note: Efficiency calculated based on NCV of Diesel of 10500 kcal/kg, LPG as 24940 kcal/Nm³, Natural Gas as 8500 kcal/Nm³ and Furnace Oil as 9650 kcal/kg. Above mentioned weight and dimensions may vary with actuals. Please refer to offer document for more details.



THERMAX LIMITED

Heating SBU, C&H Division

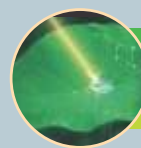
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