

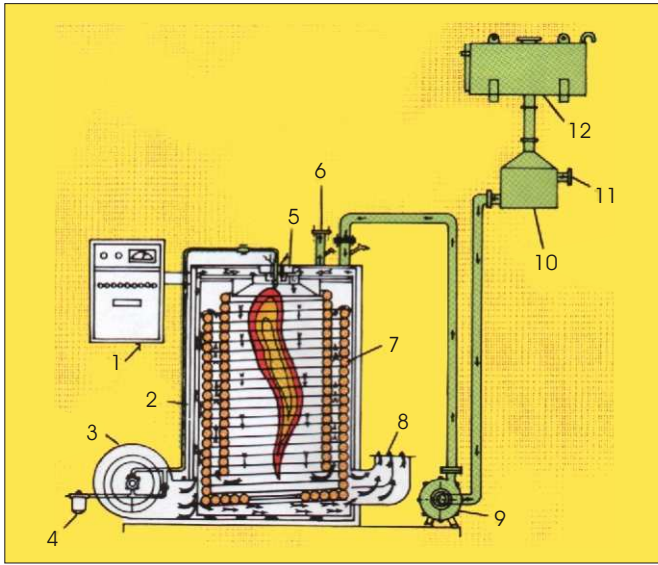
FLOWTHERM

THE MOST ECONOMICAL, EFFICIENT AND
SAFE INDUSTRIAL HEATING SYSTEM



SAVE !

**BOTH ON THE CAPITAL AND
OPERATIONAL COST.**



- 1 - CONTROL PANEL
- 2 - INSULATED OUTER SHELL
- 3 - BLOWER FULE PUMP UNIT
- 4 - FULE OIL FILTER
- 5 - BURNER
- 6 - OUTLET TO PROCESS
- 7 - HEATING COIL
- 8 - EXHAUST
- 9 - CIRCULATION PUMP
- 10 - DEAERATOR TANK
- 11 - FROM PROCESS
- 12 - EXEPANSION TANK.

OPERATIONAL ECONOMY OVER STEAM HEATING

THERMIC FLUID HEATING					STEAM HEATING					
Thermic Fluid MODEL	Equipment Steam Boiler Model (Kg. / Hr.)	Fuel Oil Consumption (Kg./Hr.)	Electricity Consumption (KWH)	Total Operating cost per Hr. (Rs.)	Fuel Oil Consumption (KWH)	Electricity Consumption (KWH)	Total Operating Cost per Hr. (Rs.)	Saving per hour (RS.)	Saving per Year (RS.)	
TFO : 100	204.50	11.00	2.98	209.05	16.36	1.50	296.25	87.20	4,18,560.00	
TFO : 200	409.00	22.00	6.34	420.00	32.72	1.50	585.00	165.00	7,92,000.00	
TFO : 300	613.50	33.00	8.58	625.35	49.08	2.25	877.51	252.16	12,10,368.00	
TFO : 400	818.00	44.00	10.07	826.95	65.44	2.50	1167.52	340.57	16,36,736.00	
*TFO : 600	1227.00	72.00	16.63	1227.95	98.16	10.50	1613.24	385.29	18,49,392.00	
*TFO : 1000	2045.00	120.00	29.39	2054.95	163.60	15.00	2676.24	621.29	29,82,192.00	
*TFO : 1500	3067.50	180.00	45.58	3089.90	245.40	21.00	4006.86	916.96	44,01,408.00	

NOTE : (*F. O. Fired unit)

- (1) 16 Hours a day for 300 days per year - Rs. 17.65 per Kg.
- (2) Price of Light Diesel Oil - Rs. 15.90 per Kg.
- (3) Price of Furnace Oil - Rs. 5.00 per KWH
- (4) Price of Electricity

- (5) Equivalent steam requirement calculated on the basis of latent heat of 489 Kcal/Kg at 7 Kg/Cm2
- (6) 100 Kgs. Of steam requires 8 Kgs of fuel.

OPERATIONAL ECONOMY OVER ELECTRICAL HEATING

THERMIC FLUID HEATING				ELECTRIC HEATING			
Heat Output from Thermic Fluid Heater (Kcal/Hr.)	Fuel Oil Consumption (Kg. / Hr.)	Power Require by TFH (KWH)	Total Operating cost per. Hr. (Rs.)	Equivalent Electric Load (KWH)	+ Cost of Power per. Hr. (Rs.)	Saving per. Hour (Rs.)	# Saving per Year (Rs.)
1,00,000	11.00	2.98	209.05	118.52	592.60	383.55	18,41,040.00
2,00,000	22.00	6.34	420.00	238.15	1190.75	770.75	36,99,600.00
3,00,000	33.00	8.58	625.35	356.30	1781.50	1156.15	55,49,520.00
4,00,000	44.00	10.07	826.95	474.44	2372.20	1545.25	74,17,200.00
*6,00,000	72.00	16.63	1227.95	708.86	3544.30	2316.35	1,11,18,480.00
*10,00,000	120.00	29.39	2054.95	1181.43	5907.15	3852.20	1,84,90,560.00
*15,00,000	180.00	45.58	3089.90	1766.56	8832.80	5742.90	2,75,65,920.00

Cost of fuel oil : L.D.O. -Rs. 17.65 per Kg
 *F.O. -Rs. 15.90 per Kg.
 + Cost of Electric Power -Rs. 5.00 per KWH

16 Hours a day for 300 days per year
 Electric power required in thermic fluid heating is for operating:-
 (i) Blower motor (iii) Control circuit
 (ii) Circulating pump (iv) Furnace oil pre heater*

TECHNICAL SPECIFICATION OF FLOWTHERM

SR. NO.	MODEL	UNIT	TFO 100	TFO 200	TFO 300	TFO 400	TFO 600	TFO 1000	TFO 1500
1.	HEAT OUTPUT	KCAL/HR	1,00,000	2,00,000	3,00,000	4,00,000	6,00,000	10,00,000	15,00,000
2.	THERMIC FLUID CIRCULATION RATE	LIT/HR	12,000	18,000	24,000	30,000	36,000	60,000	80,000
3.	FUEL OIL CONSUMPTION	KGS/HR	11.00	22.00	33.00	44.00	66.00	110.00	165.00
4.	RETURN & OUTLET CONNECTION	M.M.	40	50	50	62.5	75	100	125
5.	FUEL OIL INLET DIA	M.M.	12	12	12	12	12	25	25
6.	EXPANSION TANK CAPACITY	LITRES	225	225	225	225	615	615	615
7.	FLUE GAS OUTLET DIA	M.M.	200	250	300	300	300	400	500
8.	BURNER MODULATION	-	ON-OFF	ON-OFF	ON-OFF	ON-OFF	ON-OFF	2-STAGE	2-STAGE

FLOWTHERM THERMIC FLUID HEATING SYSTEM

Flowtherm is a fully automatic 3 pass oil/gas fired packaged thermic fluid heater capable of supplying process heat upto 300* C at near atmospheric pressure. As the same oil is recirculated again and again between source and sink its thermal efficiency is as high as 88%. Steam heating has many advantages and disadvantages. but the following disadvantages predominate over the advantages. When temperature required for steam 150*C, corresponding pressure required for steam heating becomes too high for economical design of process equipments. For example, at 300*C temperature, pressure requirements will be around 90 kgs/cm² i.e. 1280 P.S.I. Such pressure requires costly user equipments, boilers and pipings, and other safety provisions including qualified boiler attendants.

Steam heating is associated with the problem of corrosion and scaling. Corrosion eats away your equipments and plants, while scaling reduces equipment life and erodes your profits by decreasing thermal efficiency. Maintenance and operation of water treatment plant is another headache. Thermic Fluid Heating System is adaptable to precise temperature control.

ENERGY MACHINE'S FLOWTHERM is outside the preview of the indian Boiler Regulation Act. No statutory inspection is required eliminating costly annual Shutdowns and procedural delays.

1. AUTOMATION :

Our flowtherm is completely auto-matic unit where the temperature and the combustion are automatically controlled. The burner is ON-OFF or modulating type with automatic ignition and photoelectric flame failure sensing device to safeguard the combustion operation. All electric and electronic components and its circuits are housed in a special control panel cabinet mounted on FLOWTHERM. The electronic temperature controller cum indicator is fitted on FLOWTHERM which indicates, monitors and controls the temperature of the system.

A differential pressure switch is provided to ensure the positive flow through the heating oil to safeguard the same against the over-heating of the coil. If there is no circulation of thermic fluid, it will stop the combustion and hence protect the heating coil from the overheating.

We also supply fully automatic oil or fired Hot Air Generators of . 1,00,000 kcals/hr. to 15,00,000 kcals/hr. capacities or bigger.

Applications: Food processing, Distilleries, Chemical Process industries, Rubber, Paper & Board, Plastic industries, Dairies, Hotels, Hospital, Timber Seasoning, Pharmaceuticals, Textiles, Fertilizer, Pesticides and any other process industries.

2. COMBUSTION SYSTEM :

In any heating system, where fuel is used for generating heat, what matters most is the combustion efficiency. Our FLOWTHERM is fitted with highly efficient, adjustable high pressure solid injection type burner operating at 150 PSIG and above. It consists of self-cleaning in line oil filter, high pressure fuel pump, blower with adjustable damper, solenoid valve, vortex chamber, ignition electrodes and spray nozzle. The specially designed burner head provides high combustion efficiency by thoroughly mixing atomised fuel oil and air. The combustion air is pre-heated by waste heat available from boiler shell which ensures better combustion and higher thermal efficiency.

3. GAS LOOP :

The combustion air, supplied by combustion blower, while passing through the annular passage formed between the intermediate shell and the inner shell recovers the heat conducted and radiated from the inner shell and the heated air then passes through the vortex generator, where it mixes with the atomised fuel oil spray. A mixture of oil mist and heated air is then ignited by high voltage sparking system. The hot gases first descend downward through the inner coil, again descend in the annular passage formed between the outer coil and the inner shell and then it is finally exhausted to the atmosphere via chimney.

4. THERMIC FLUID SYSTEM :

It consists of heating coils made up of high temperature ICR approved carbon steel boiler tubes, deaerator tank and expansion tank and insulated pipe grid which connects various user's equipment. The Thermic Fluid pump circulates the thermic fluid through the coil, where it receives heat liberated from the combustion. The heated oil passes through user equipments, where it gives away its heat and returns to the thermic fluid heater via deaerator tank, where the air and the vapour bubbles are removed. As the same oil is being recirculated again and again thermal efficiency of whole system is high.



Fuel Oil Data: L.D.O. (Light Diesel oil): Viscosity at 18 C upto 15 centistokes, Calorific value about 10,700 kcal/kg.

Furnace oil: Viscosity at 38 C upto 800 centistokes, Calorific value about 10,200 kcal/kg.

ALSO WE OFFER :

- Fully Automatic Oil Fired Steam Generator.
(Range 100 Kgs./hr. to 1000 Kgs./hr.)
- Fully Automatic Hot Air Generator both direct and indirect type.
(Range 20,000 Kcal/hr. to 20,00,000 Kcal/hr.)
- We also manufacture solid fuel fired equipments.

List of equipments manufactured by us

1. CHEMICAL PROCESS EQUIPMENTS

- a. Reaction Vessels.
- b. Storage Tanks & Vacuum Filters.
- c. Pressure & Vacuum Filters.
- d. Water Softening Plants.
- e. Distillation Units.
- f. Resin Plants.
- g. Any other chemical process equipments as per customer specification.

DEVELOPING & CONSULTING SERVICES :

2. HEAT TRANSFER EQUIPMENTS

- a. Steam Boilers (Gas, oil, wood or coal fired).
- b. Drying & Baking Ovens and Furnaces.
- c. Water Heaters.
- d. Hot Air Generators.
- e. Heat Exchngers.
- f. Direct Fired Reactors.
- g. Oil Heating & Pumping units.
- h. Fluid bed dryers.
- i. Spin Flash Dryers.
- j. Any other equipments as per customer's Specification.

GUARANTEE :

One year full value Guarantee against defects in workmanship and material under normal use and duty conditions specified in our warantee. We provide either free repairing or complete free replacement at our option. Customer would bear all the transport & incidental expenses both ways.



Quality Certification
Bureau Inc.

Accredited by
the Dutch Council
for Accreditation

ISO 9002 CERTIFIED



ENERGY

ENERGY MACHINE

C1, B/423, G.I.D.C.

IV th Phase

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