

THERMECON™

HOT OIL HEATERS FOR MARINE VESSELS

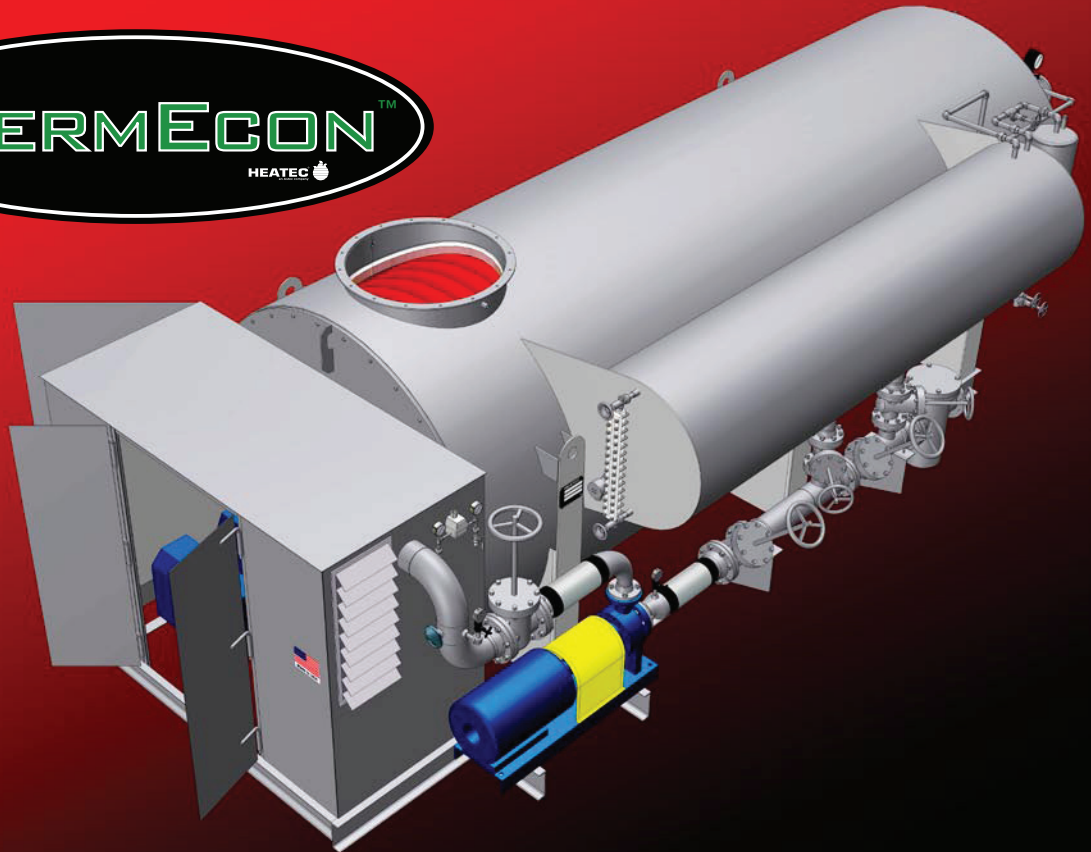


HEATEC®



THERMECON™

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THERMECON™ is the name of a new series of marine heaters from Heatec. They replace our previous HCM heaters and have new model designations.

These are thermal fluid heaters for heating cargo on barges and other workboats. Typical applications include heating asphalt, heavy fuel, sulphur or phosphates.

The new heaters have a number of improvements, including increased thermal efficiency. They now attain 87 percent efficiency without need for an optional heat exchanger. The name THERMECON™ emphasizes the improved fuel economy you can expect from these heaters.

The new heater is illustrated above and on the facing page. A table on the last page lists the new model designations and specifications. All are two-pass horizontal heaters and especially suited for installation above deck on barges.

The heater's helical coil now has more surface area. This lowers the flux rate

to increase the life of the coil and the thermal fluid.

New features also include a large enclosure to house the electrical control panel, the burner and burner controls. It is optional.

Reducing Fuel Costs

A hallmark of our new heater is high thermal efficiency. This conserves fuel to greatly reduce operating costs. These heaters approach the theoretical limits of thermal efficiency possible in fired 2-pass heaters. Their efficiencies are typically 87 percent LHV, depending upon fluid outlet temperature, fuel and options.

Note the impact that thermal efficiency has on fuel usage. Consider a barge that requires 8 million Btu/hour to maintain the temperature of its cargo. Assume it has a heater with a thermal efficiency of 80 percent. If that heater operates only 50 percent of the time, it will burn 330,159 gallons of No. 2 fuel over the course of a year. At \$3.90

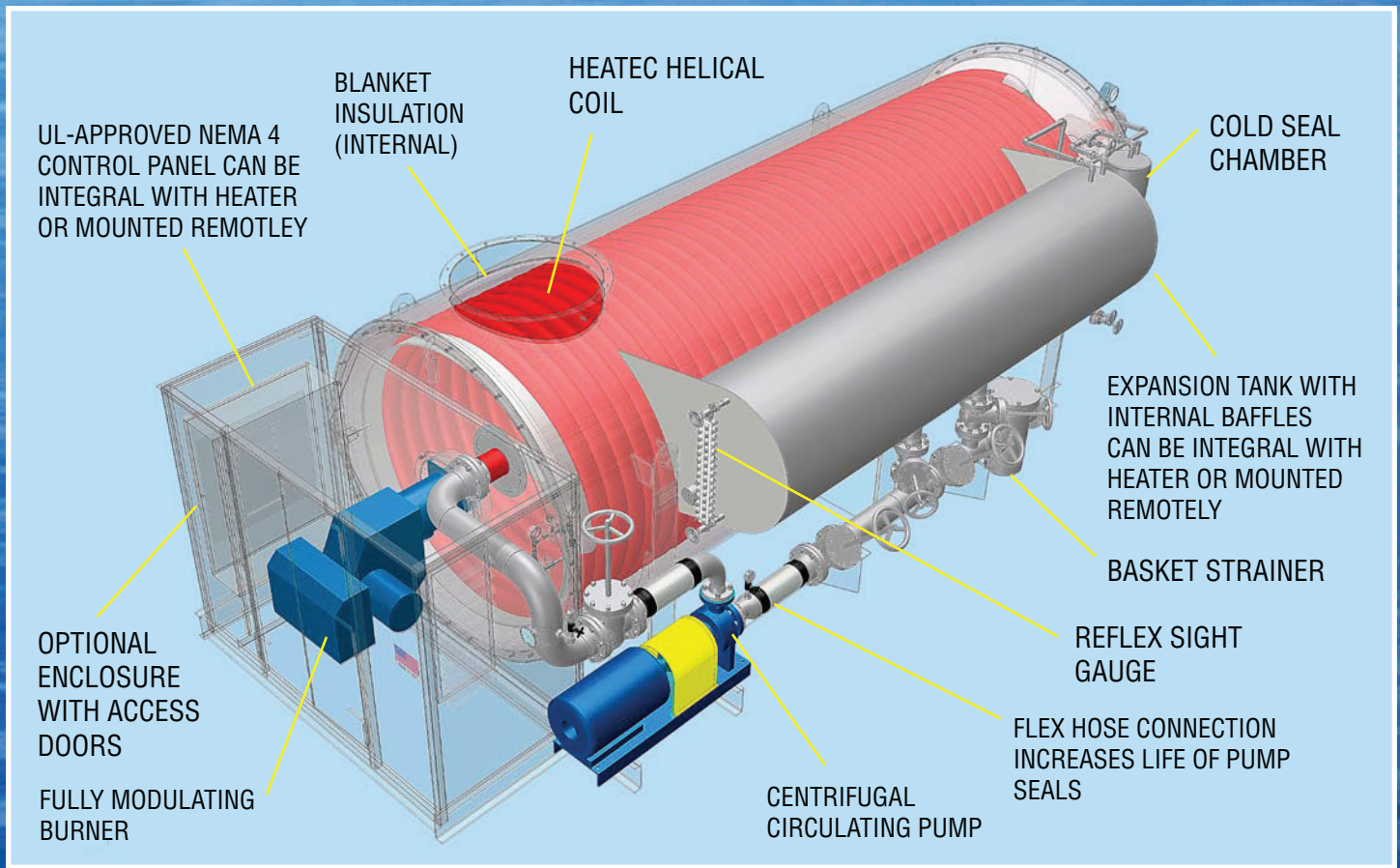
a gallon that amounts to \$1,287,619/year!

Our heater operating at 87 percent thermal efficiency could reduce that fuel usage from 330,159 gallons to 303,594 gallons. That would cut usage by 26,565 gallons and save you \$103,604 dollars a year. And remember, this is for a single barge.

You may want to find out if your present heater is operating at a thermal efficiency of less than 87 percent. To do that simply measure the temperature of its exhaust stack. Then use the chart shown on the right to find its net thermal efficiency.

Design and Construction

These heaters are designed for optimum performance and long life. Their helical coils have large heat transfer surface areas, which provide much lower heat flux rates than coils found in other heaters. Coil diameter and length are sized to virtually eliminate flame impingement and provide optimum



flame pattern. Pipe diameter for the coil is sized for an ideal fluid velocity of 6 to 13 feet per second.

The heaters use centrifugal pumps to circulate the thermal fluid. These pumps have mechanical seals. They are air cooled, eliminating the need for liquid cooling.

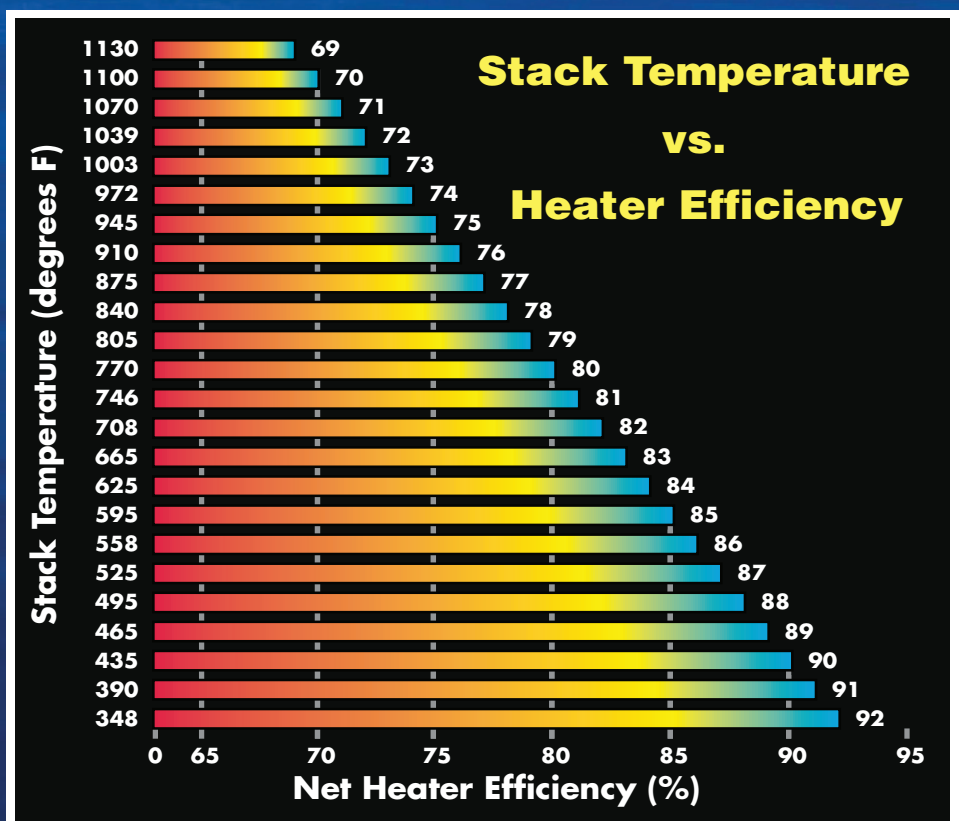
Helical Coil

The heaters are designed around a helical coil that we produce in our own shop. All of our helical coils meet ASME code. ***The coil in our THERMECON heater carries a 5-year warranty.***

Our helical coil has a life expectancy much longer than its 5-year warranty. This is extremely important where gaining access for replacement is a major undertaking. So, longer coil life saves much more than just the cost of a coil.

Rugged and Compact

These heaters are designed to withstand the stresses produced by the



constant pounding and vibration in normal maritime operation. Moreover, they can take the punishment produced

in ocean storms with 30 foot waves. These heaters can also be configured to fit extremely limited space.

Specifications for popular sizes

Basic Model	Btu/hour (million)	Horizontal Heater			Flow Rate gpm	Coil Surface sq feet	Net Weight (pounds)
		Length	Width	Height			
HCM 3.0	3	14' 6"	5' 8"	4' 8"	225	430	9,400
HCM 4.0	4	18' 5"	7' 1"	5' 10"	300	576	14,109
HCM 6.0	6	24' 8"	9' 5"	7' 8"	425	877	19,964
HCM 8.0	8	26' 3"	10' 3"	8' 3"	600	1,148	26,817
HCM 10.0	10	27' 9"	10' 9"	8' 6"	725	1,433	32,375
HCM 12.0	12	34' 3"	11' 9"	9' 4"	900	1,758	40,521

Smaller and larger (up to 20 million Btu/hr) heaters are also available. Heights shown include expansion tank and pump, but do not include the stack. The height of the stack varies according to the vessel.

Fuels

These heaters operate on diesel fuel, the universal choice for marine use. They can be designed to use other fuel oils, including heavy fuel oil.

Controls

Our electrical controls meet NEC and UL requirements. All controls are prewired.

The heater automatically maintains the operating temperature set by the operator. Accuracy is within a half percent of the set temperature. The heater maintains thermal fluid temperature at the heater's outlet up to 399 degrees F (depending on variables).

The heater has numerous safety features to ensure it always operates within prescribed limits. It will shut down automatically if an abnormal operating condition develops.

Control Panels

NEMA 4 control panels protect against windblown dust and rain, splashing water and hose-directed water. UL approved. All wires and terminals are labeled for easy identification of circuits. A laminated circuit diagram is furnished.

Protective coatings

Equipment longevity is achieved by using special protective coatings on all surfaces subject to rust and corrosion. Exterior surfaces are seal-welded,

sand-blasted, coated with zinc primer, then sprayed with special corrosion-resistant paint designed for marine use.

Maintenance

The heaters are easy to maintain. Components are easy to reach. Electrical controls, motors, and pumps are readily available from our large stock of parts. Heatec maintains a 4,000 square foot parts warehouse staffed by a full-time, in-house parts department. We can usually provide one-day shipment.

Startup and warranty

Our in-house service department offers startup and warranty services worldwide. The heaters have a one-year limited warranty. **The coil has a 5-year warranty.**

Other marine heaters

Heatec can also provide marine heaters in vertical configurations. Outputs range from 1 to 20 million Btu per hour. They are available in 2-pass designs, as well as 3-pass designs. All can be customized to meet your specific needs.

Coast Guard Specs

All Heatec marine heaters meet U.S. Coast Guard specifications. They are certified by ABS (American Bureau of Shipping) when requested by the customer.



Heatec 10-million Btu/hour heater installed below-deck on an asphalt barge. The barge holds 44,000 barrels of liquid asphalt and regularly travels the Great Lakes.



Asphalt Commander. Three Heatec vertical heaters, directly behind the pilot house, maintain the tanker's cargo of 8 million gallons of liquid asphalt at 280 degrees F. Heatec designed, built and installed the heaters when the ship was converted from a U.S. Navy fuel tanker. The heaters provide 15 million Btu/hour each and heat thermal fluid circulating through 22 miles of piping in 14 compartments



Heatec 2-million Btu/hour heater installed above-deck on a phosphate barge.

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