



# HEAT EXCHANGE AND TRANSFER, INC.

## Thermal Fluid Systems and Electric Process Heaters



### **Q: WHY PURCHASE A HOT OIL SYSTEM FROM HEAT?**

### **A: BECAUSE HEAT DELIVERS THE BEST VALUE FOR SAFETY AND PERFORMANCE.**

A properly designed hot oil system can provide many years of safe, reliable service. But, an improper design can present both a fire and safety hazard for personnel. The existence of these hazards has resulted in the development of a wide range of codes and standards covering the design and installation of hot oil systems. These codes and standards are now requirements of most local building codes, insurance companies and thermal fluid manufacturers.

**Don't be fooled into thinking that all hot oil systems are designed to give you the safety and performance you would expect...** In fact, most low priced hot oil systems are designed specifically to reduce the cost of the system at the expense of safety and performance. Would you knowingly install a hot oil system that does not meet national and local codes? Would you want to expose your company to additional liability by installing a hot oil system that does not meet the requirements of the fluid manufacturer or your insurance company?

### **Educate yourself and make an informed purchasing decision!**

Check with your local codes and your insurance provider. Also, get advise from your fluid supplier, most have design guides available. The following are codes and standards that will most likely apply to the installation of a new hot oil system:

NFPA 30 – Flammable and Combustible liquids code - which requires that hot oil piping be constructed in accordance with ANSI B31 code for pressure piping.

OSHA Standard 1910.106 – Flammable and Combustible liquids

ANSI B31 – Power Piping Code – which requires a welded piping system for hot oil.

ASME – Boiler & Pressure vessel code – Applies to all vessels operating at over 15 psig.

Most local codes will require that hot oil piping be insulated for personnel protection. With an insulation thickness based on external jacket temperatures that do not exceed 125°F for heat conductive metal jackets, or 140°F for non-heat conductive jackets.

NFPA 70 - National Electric Code

NFPA 79 - Electrical Standard for Industrial Machinery

FM Global – Property Loss Prevention Data Sheets #'s: 7-99 & 7-88

This or similar standards will normally be required by your insurance provider. Some key features of this standard include: Welded piping systems per ANSI B31, flanged connections with spiral wound gaskets, ASME vessels and tanks, non-wicking foamglass pipe insulation, no use of copper, bronze or cast iron in piping, as well as a wide range of required safety and control interlocks and alarms.



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All HEAT, Inc. hot oil systems have the following features and benefits:

### PIPING SYSTEM FEATURES:

Welded construction, Seamless schedule 40 & extra heavy piping, socket and butt weld fittings, raised face flanges, spiral wound gaskets, high strength studs and nuts, forged steel valves, pneumatic, hydrostatic and hot functional leak tests of piping.

### INSULATION FEATURES:

Use of non-wicking cellular glass insulation on heater chamber and all internal piping, jacketing with aluminum or liquid proof mastic.

### EXPANSION TANK FEATURES:

Located at the highest point of system, designed as a pressure vessel, oversized venting, air bleed vent, liquid level gauge, nitrogen blanketed based on fluid vapor pressure, ASME stamped as required by code.

### HEATER FEATURES:

Stainless steel heater elements. Heat flux density from 8 to 20 w/sq.in. based on fluid film temperature, flow baffles to increase velocity over elements, chamber designed as a pressure vessel, high limit sensor on element sheath, ASME stamped as required by code.

### PUMP FEATURES:

Centrifugal pump with air or water cooled mechanical seals, TEFC motors, flanged connections, flow and head pressure based on application requirements.

### CONTROLS FEATURES:

NEMA rated enclosures, main power disconnect, branch circuit protection, SCR power control, high limit safety controller, digital temperature controller, appropriate conduits to each component, fused control voltage transformer, built to NEC.

### OPTIONAL COOLER FEATURES:

Parallel cooling circuit, ASME shell & tube heat exchanger, 3 way diverting control valve, stainless steel U tubes welded to the tube sheet

### HOT FUNCTIONAL TEST:

Prior to shipment, hot oil systems are oil filled and operational tested at the system's design temperature. The customer is invited to witness this factory test.

### BENEFITS:

Meet material requirements of ANSI B31 piping code, no leaks from threaded piping, reduce risk of fire hazards, reduced need for maintenance, meet requirements of insurance providers, ensure material compatibility with heat transfer fluids.

### BENEFITS:

Increase energy efficiency, reduce energy cost, eliminate risk of spontaneous auto-oxidation fire associated with oil wicking type insulations, meet insurance requirements, meet personnel protection safety codes.

### BENEFITS:

Reduce thermal oxidation of fluid, facilitates system fill, venting and start-up, meet codes and insurance requirements, reduced maintenance, increase fluid life, meet requirements of thermal fluid manufacturers.

### BENEFITS:

Increase life of heater, eliminate thermal oxidation of fluid, meet codes and insurance requirements, reduced maintenance, increase fluid life, meet requirements of thermal fluid manufacturers.

### BENEFITS:

Reduced risk of over pressure condition, increased fluid life, reduced maintenance, meets requirements of fluid manufacturers.

### BENEFITS:

Increased energy efficiency, better temperature control, increased heater life, increased fluid life, meet codes and insurance requirements, reduced maintenance, meet requirements of fluid manufacturers.

### BENEFITS:

Eliminate thermal shock, better temperature control, longer equipment life, increased safety, meet codes and insurance requirements, reduced maintenance.

### BENEFITS:

Ensures functionality of all components and controls, eliminates potential start-up problems. Opportunity for customer inspection and training