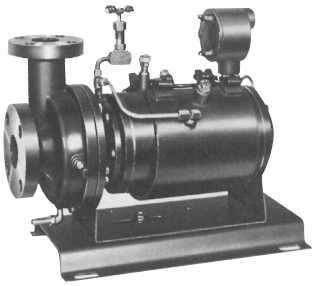
Oil Systems
Technical & Application Data

- **Heat Transfer Fluids and Oils to 750°F**
- **4 - 600 kW (14 - 2,047 Mbh) Multiple Zone and Special System Designs to 1,200 kW or More**
- **208 - 575V, 3 Phase, 60Hz**
- **Non-Pressurized (Atmospheric) and Pressurized Systems**
- **150 Lb and 300 Lb Carbon Steel Construction - All Primary Loop Hydraulic Piping Welded Schedule 40 Steel Pipe**
- **Long Life 0.475" Dia. Steel Sheath Elements Welded to Flanges for Easy Service**
- **Positive Displacement and Centrifugal Pumps — Wide Selection of Pump Manufacturers Available**
- **NEMA 1, 4 and 12 Electrical Enclosures - Explosion Resistant Class I, Group D, Div. 1 Available**
- **Integral Power Panels with Mechanical Contactors or Optional Electronic SCR Controls and Sequencers**
- **Broad Selection of Mechanical and Electronic Process Controls**
- **ASME Section VIII Certification (Standard on CLD, CLS and CHTV Systems)**
- **Complete Line of Expansion Tanks, Cooling Modules, Accessories and Options**

Options & Features

Special Pumps — Chromalox heat transfer systems can be built with an installed spare pump. The pump can be the same manufacturer as the standard or Chromalox will build the system using a pump from your preferred pump manufacturer. The types of pumps available include centrifugal (AVS type which conforms to ANSI standard B73.1), positive displacement, sealess (canned or magnetic drive) or turbine. Pump manufacturers include Allis-Chalmers, Aurora, Blackmer, Brown & Sharp, Burkes, Carver, Crane, Dean, Deming, Dickow, Dunham-Bush Fairbanks-Morris, Goulds, Haight, Ingersoll Rand, Kontro KSB, Peerless, Roper, SiHi, Sundyne, Vican, Viking, Weinman, Worthington.

Special Crane Chempump® can be operated at 750˚F, one of many optional types of pumps available.

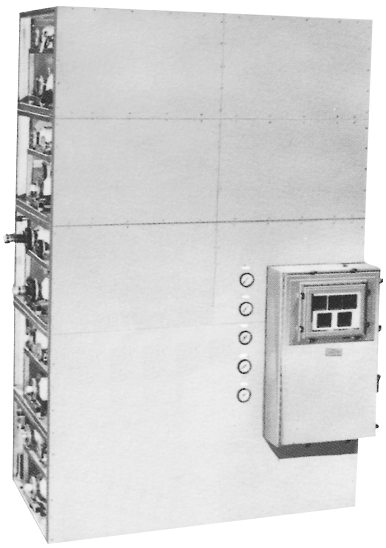


Standard and Special Heating and Cooling Systems — Many processes require cooling as well as heating. Examples are:

- The rapid cool down at the end of the process cycle for product handling
- Controlled cooling or tempering to maintain temperature due to an exothermic reaction.

Chromalox electric fluid heat transfer systems can be designed with a standard or special cooling cycle using the same heat transfer fluid. This can be accomplished either in an open (water system) or closed-loop cooling cycle by adding either a water-cooled, air- cooled or refrigerated heat exchanger in the piping loop. A system with mechanical refrigeration can be designed to operate between -20 and 750°F (-28 and 398°C).

Switching between the heating and cooling cycles can be set up for manual, semi-automatic or fully automatic operation. The method of switching can be as simple as manually turning valves or as sophisticated as a programmable controller linked to a computer or distributed process system (DPS).



Five zone ASME certified hot oil heat transfer system with remote controls emphasizes the expertise and capabilities of the Chromalox organization to meet the requirements of virtually any heat transfer application. The system has independent zones with a separate pump, motor, heater, heat exchanger and cooling module for each.

Lower Cost Construction — The major advantage of using heat transfer fluids instead of hot water or steam is the operating pressure at process temperature. Hot oil systems are preferred over hot water or steam for temperatures above 250°F to avoid the hazards and risks of the dangerously high pressures required to use high-temperature steam. There are many heat transfer fluids that operate to 650°F at atmospheric pressure. Other fluids operate to 750°F at less than 150 psig system pressures. Compare this to steam pressures and process temperatures in the following table.

Steam Temperature Vs. Pressure

Process Temperature (°F)	Steam Pressure (Psia)
406	250
467	500
510	750
545	1,000
572	1,250
596	1,500
635	2,000
652	2,250
695	3,000
707	3,250

Note — High system pressure means costly pressure retaining components. The low vapor pressures of heat transfer fluids simplify piping and vessel design and allow lower cost construction.