

# FLUID HEAT TRANSFER SYSTEMS

## EM SERIES

### SPECIFICATIONS

- Temperatures to 350°F and higher
- Steam heated
- Centrifugal pump
- 150 lb. flanged construction
- NEMA 12, 4 or 7
- Heating capacities to 10 million BTU/Hr

### DESCRIPTION

The EM series of heat transfer systems is designed for closed loop temperature control of common heat transfer fluids utilizing existing plant steam as the heat source. The EM is a completely packaged system and is usually designed for a maximum temperature of 350°F based on 150 lb. steam supply. However, systems can be designed for higher or lower temperatures based on available steam supply. Standard units consist of: steam heat exchanger, proportional steam control valve, steam trap, relief valve, vacuum breaker, centrifugal circulation pump, system isolation valves, strainer, thermal expansion tank (shipped separately) and a complete control center all mounted on a drip proof base. Units are furnished completely wired, piped, insulated, and factory tested prior to shipment. The EM is available with a wide range of options, including systems designed for complex heating and cooling operations.

### APPLICATIONS

- |            |           |              |                |
|------------|-----------|--------------|----------------|
| • REACTORS | • PLATENS | • EXTRUDERS  | • LINE TRACING |
| • KETTLES  | • MOLDS   | • TANKS      | • ROLLS        |
| • DRYERS   | • DIES    | • EXCHANGERS | • PRESSES      |



### FEATURES

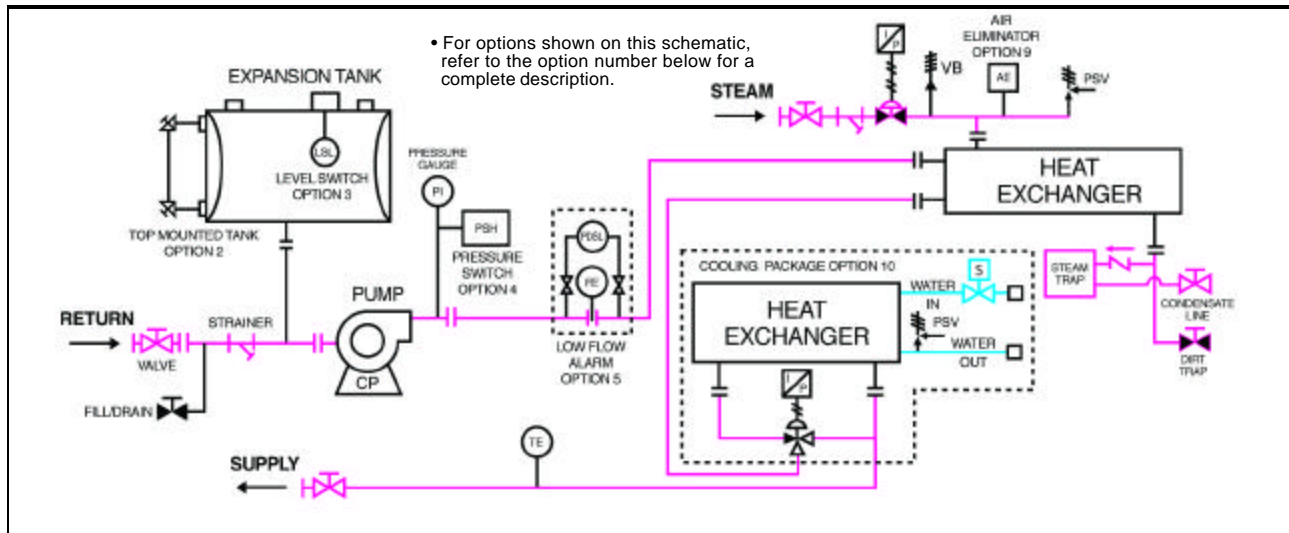
- Utilizes plant steam as heat source
- Insulation of internal piping
- Drip proof base
- Mechanical seal on pump
- Expansion tank open to the atmosphere
- Heat input controlled by proportional steam valve
- Steam condensate piping includes trap, blow-down dirt trap and check valve



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## TYPICAL PIPING &amp; INSTRUMENT DIAGRAM



EM systems are custom designed and built to order. Designs are based on BTU/HR heat load, operating temperature, flow rate required, and available steam supply. The above diagram is typical and contains most of the commonly used components. The centrifugal pump is equipped with a mechanical seal and TEFC motor. Mechanical components include strainers, steam trap, relief valve, check valve, dirt

trap, vacuum breakers, pressure gauges and supply/ return shut off valves. The steam to liquid heat exchanger is constructed with stainless steel tubes and a carbon steel shell and can be ASME Code stamped for the proper pressure and temperature ratings. Many options are available. The more popular ones are listed below.

## OPTIONS AND CUSTOM DESIGNS

- 1. SIDE ENCLOSURES** with sheet metal panels (not shown on diagram) which are removable for access.
- 2. TOP MOUNTED EXPANSION TANK** is installed on top of the system frame when remote mounting is undesirable. Note: Refer to Service Manual SM-100 for additional information needed for reliable operation.
- 3. LOW LEVEL FLUID ALARM** is mounted in the expansion tank, automatically shuts the system down and turns an alarm light "ON", if the expansion tank fluid drops below the desired level.
- 4. HIGH PRESSURE ALARM** automatically shuts the system down and turns an alarm light "ON", if the system's pressure rises above the desired level.
- 5. HEAT TRANSFER FLUID LOW FLOW ALARM** automatically turns the heater "OFF" and turns an alarm light "ON" if the heat transfer fluid flow drops below the alarm limit.
- 6. HAZARDOUS AREA DESIGNS** are available using a cast NEMA-7 enclosure or with an air purge, which is normally less expensive. X purge is used in Division 1 areas. Z purge is used in Division 2 areas. (Not shown on diagram)
- 7. ASME DESIGN & STAMP** – The heat exchanger and expansion tank can be built in accordance with requirements of the ASME Boiler and Pressure Vessel Code. (Not shown on diagram)
- 8. MODEL PFS-1 PORTABLE PUMPING AND FILTERING OIL SYSTEM** is a compact, self contained, portable unit. It is equipped with high efficiency, high capacity disposable elements capable of removing both particulate contaminants and water from oils. Maximum fluid temperature is 200° F. Request Bulletin SO-1. (Not shown on diagram)
- 9. AIR ELIMINATOR** removes air automatically from the steam line.
- 10. COOLING** can be used to lower the temperature at the end of the production run, or to remove excess heat generated by friction or an exothermic reaction.
- 11. CUSTOM DESIGNS** for special applications are available.