

## **High Efficiency Steam-To-Liquid Heating Skid with Vertical Flooded Heat Exchanger Maxi-Therm MC Series Specification for Domestic Hot Water Applications**

Liquid is heated in the shell of a vertical heat exchanger designed to be flooded at around 20% at full load in order to have a condensate outlet temperature of 200°F or lower, eliminating energy losses due to flash steam. High pressure steam can be supplied to the skid; no pressure reducing station with safety relief valve vented to the roof required. Condensate can be lifted at the outlet of the skid if backpressure is lower than inlet steam pressure; no condensate pump required. The process is modulated using an electric (pneumatic available upon request) fail-safe control valve installed on the condensate outlet that exposes the necessary heating surface by flooding the heat exchanger proportionally to the instantaneous required load. The skid shall be hydrostatically tested prior to shipping. The control sequence shall be done by the control panel included that is pre-wired and tested. An outlet temperature setpoint stability of  $\pm 4^{\circ}\text{F}$  must be achieved.

The following components are included and pre-fabricated in the package :

- Vertical heat exchanger with straight tubes, constructed with all stainless steel 304 components except  $\frac{1}{2}$ " OD x 0.049" wall copper tubes, ASME stamped of 150 psig @375F (higher rating available upon request). Heat exchanger to have a removable bottom head to give access to the tubes for maintenance.
- Stabilizing pump with internals in bronze of XX HP, 115/1/60, pre-wired to the control panel, with SS316 check valve and isolation valve on the pump line
- Bi-metal thermometer at liquid inlet and outlet, thermowells included
- Modulating fail-safe electric control valve, control signal and power supply by the control panel
- Electric temperature sensor on liquid outlet pre-wired to the control panel
- Control panel, NEMA 4, pre-wired and tested
- Solenoid valve that dumps hot water to drain to allow cold feedwater to enter the heat exchanger if a high temperature setpoint is achieved (to avoid overheating if a drastic load reduction shall occur), pre-wired to the control panel
- F & T steam trap with flanged connections
- 100 mesh strainer with blowdown valve on the condensate outlet
- Liquid piping in stainless steel 304 SCH10S and condensate piping in carbon steel SCH80
- Heavy duty painted steel frame

The following components are also included but will be shipped loose for field installation:

- Over heat security shut-off valve on the steam side, high performance butterfly type with on-off electric actuator, to be wired to the control panel on jobsite by contractor
- Pressure gauge with coil siphon, isolation valve & pressure snubber for the steam side
- Pressure safety relief valve on the liquid side
- F & T steam trap to drain condensate and air on the steam inlet
- Inverted bucket steam trap as a drip trap
- Maxi-Therm condensate mixer with integrated check valve, required to enable a high pressure drip trap to discharge in a flooded low pressure condensate main without water hammer.

A one year guarantee on parts and performance is standard.

The start-up will be performed by the manufacturer or authorized representative.

The manufacturer shall have been in the vertical flooded heat exchanger package business for at least five (5) years.