



# ThermoTips

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### **Thermon HeetSheet® Tank Heating/Cooling Units**

#### **How are HeetSheet units constructed?**

HeetSheet units are surface plate-type heating units made up of two sheets of 20 or 26 gauge 304 stainless steel conforming to ASTM-A240, that are positioned face to face and continuously seam-welded together with an outer border to define the fluid holding portion. Interrupted seam welds are arranged within the border to provide a waffle like pattern. The unit is then hydraulically inflated to provide a passageway for steam or other heat transfer fluids. Although they are light and pliable, HeetSheet units can withstand relatively high pressures and temperatures. They are rolled to fit the outside wall of a tank that must be heated or cooled. The units are equipped at the factory with flexible tubing inlet and outlet connections. A special non-hardening heat transfer compound is factory applied on the surface that will be in contact with the tank wall.

#### **How do HeetSheet units work?**

When a HeetSheet unit is fastened to a tank wall, the factory installed heat transfer compound having a coefficient of expansion greater than the material of construction of the HeetSheet unit, expands to fill any air pockets that may exist between the tank wall and the unit. The expanding Non-hardening heat transfer compound eliminates all air pockets and creates an uninterrupted thermal path between the heating fluid and the product being heated.

#### **What is the efficiency of HeetSheet units?**

Heat is transferred to the tank wall at a rate of 114 to 227 W/m<sup>2</sup> K (20 to 40 Btu/hr-°F-ft<sup>2</sup>) compared with typical externally installed plate-type tank heating coils that deliver heat at a rate of approximately 17 to 28 w/m<sup>2</sup> K. For this reason, 2 to 3 times more surface area is generally required for these external plate-type-heating coils than for HeetSheet units in order to maintain the same process temperature for a given installation.

#### **How are HeetSheet® units safer than other tank heating methods?**

HeetSheet units are applied to the external wall of a tank; therefore, no danger of cross contamination between the process fluid and the steam exists, as is the case with internal steam heating coils or a jacketed tank. Further, with HeetSheet units, there is no danger of developing hot spots that could "cake" or cause degradation of the material in the tank

that frequently occurs with internal tank heating coils. The special mastic type heat transfer compound conducts heat directly into the tank wall. The highly conductive metallic wall of the tank then transfers the heat around the periphery of the tank in a relatively uniform fashion when the tank is covered with thermal insulation.

### **Why are HeetSheet units more economical than other external plate-type- heating coils?**

The fast and simple installation of HeetSheet units makes them more economical than other external plate-type-heating coils. HeetSheet units weigh only about 9.8 k/m<sup>2</sup> (2 lb/ft<sup>2</sup>) compared to a weight of approximately 39.2 k/m<sup>2</sup> (8 lb/ft<sup>2</sup>) for a typical external plate-type-heating coil. These heavy coils require lifting equipment for handling, and difficult mounting techniques are necessary which results in higher labor cost. Two workers can easily install a HeetSheet unit of the largest size. Simplified banding methods, factory applied heat transfer compound and the requirement for fewer square meters (square feet) of HeetSheet surface area, combine to permit the installation of HeetSheet units in minutes compared to hours for other methods.

### **Where are HeetSheet units typically installed?**

HeetSheet units can be economically utilized on most process plant equipment requiring heating, cooling, or temperature maintenance. They may be used in a wide variety of applications where other types of internal or external plate heating coils are used. Typical installations include temperature maintenance for storage tanks handling products such as: Caustic soda, phthalic anhydride, soap, paraffin, syrup, sulfur, asphaltic materials, naphthalene, malic anhydride and food products.

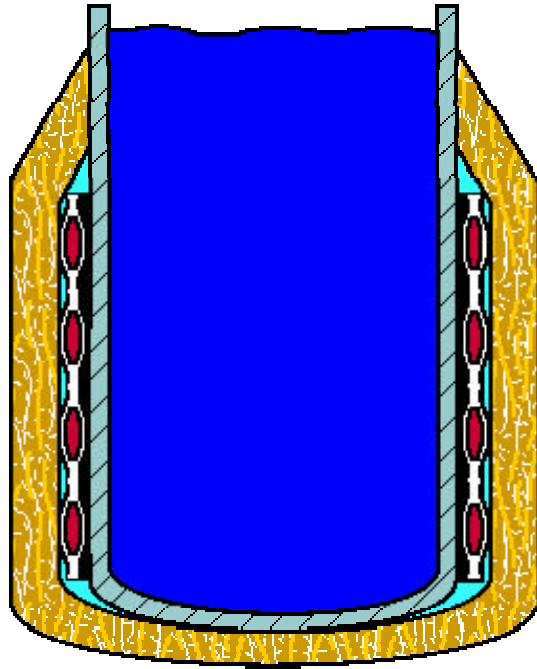
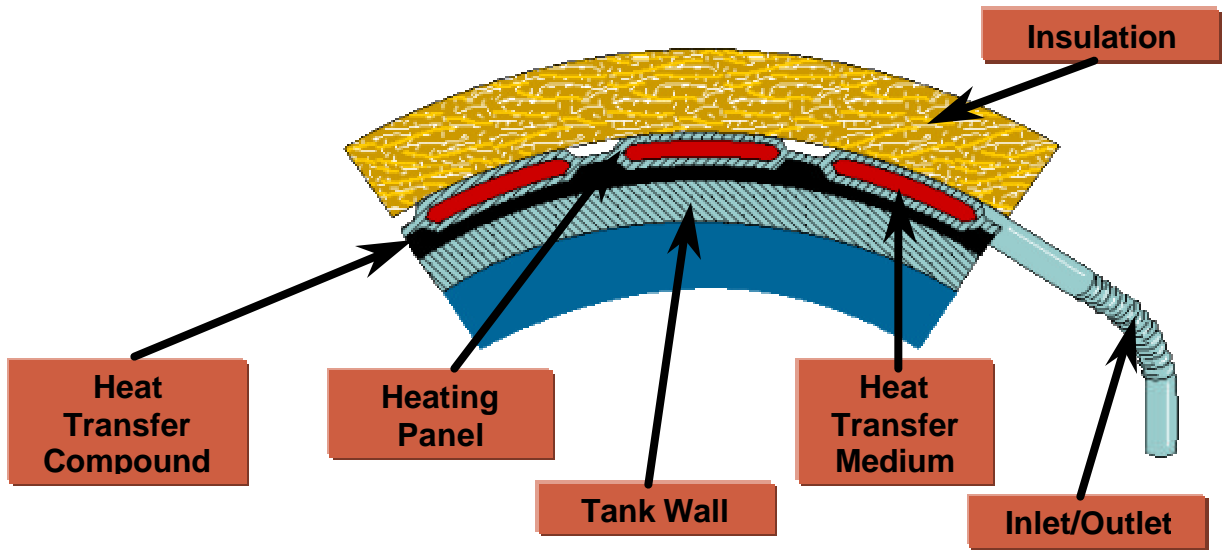
### **What are the temperature and pressure ratings for HeetSheet units?**

HeetSheet units are rated for use with 10.34 bar g (150 psig) steam pressure at temperatures of 186°C (366°F) when used with NH (Non-hardening) heat transfer compound. Higher pressures with correspondingly higher temperatures may be used if the NH material is not employed. These units may be installed on flat as well as curved surfaces. Product temperatures to 177°C (350°F) can be maintained in tanks, vats, or other types of vessels. HeetSheet units cannot be rolled to fit cone shaped or a dish shaped heads but they can be fabricated with ports for passage of valves, nozzles, and other fittings. In many instances, HeetSheet units are installed on the curved surface of a tank and tubing is shaped in a simple plywood jig for installation on the cone or dish shaped heads. Heat transfer compounds are then applied to the tubing providing a highly efficient heating surface for the cone or dished head.

### **What are the sizes for HeetSheet units?**

HeetSheet units are available in standard external dimensions of 0.61 m (2 ft) in width and lengths of 0.61 m (2 ft); 1.22 m (4 ft); and 2.44 m (8 ft). Special lengths of 0.91 m (3 ft) and 1.83 m (6 ft) are available upon request, as are special widths of 0.3 m (1 ft).

# HeatSheet Installation Cross-sections



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