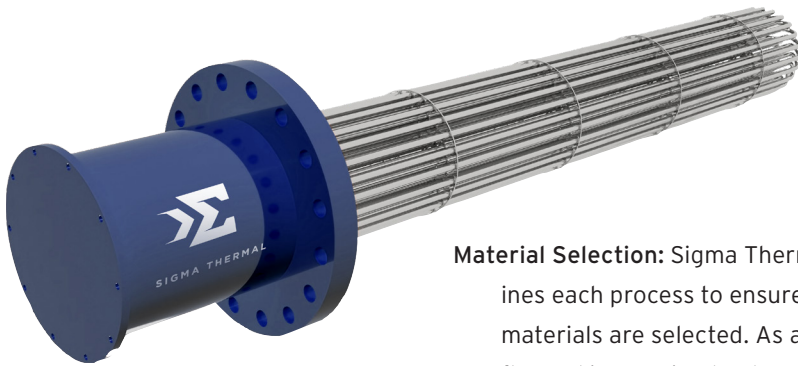




ELECTRIC PROCESS HEATERS

Immersion Heaters

An electric process heater offers the benefits of directly heating gases and liquids with electric tubular elements. Since the heat is generated by electricity, virtually all of the energy is consumed by the product being heated. As a result, the electric immersion is near 100% efficient. With standard elements constructed of Alloy 800, these heaters are designed to heat a variety of fluids and maintain corrosion resistance.



Electric Immersion Heater

Typical Applications

- » Asphalt
- » Glycol Reboiler
- » Freeze Protection
- » Tank Heating
- » Liquid Vaporizer
- » Condensate Stabilization
- » Viscosity Reduction
- » Amine Reboiler

Panel Materials

Carbon Steel, 304SS and 316SS

Panel Approvals

UL, cUL, CE, ATEX, IEC ex

Heater Approvals

UL, cUL, CSA, CE, ATEX, IEC ex

Material Selection: Sigma Thermal examines each process to ensure the proper materials are selected. As a standard, flanged immersion heater elements are constructed of Alloy 800. Typical flange materials include Carbon Steel and 300 Series Stainless Steels. For maximum corrosion protection, seamless or welded and drawn elements are offered. Nickel based flange and spacer materials are also available. For highly corrosive fluids, passivation of all wetted parts is recommended.

Watt Density Selection: Watt densities range from 2 to 60 watts per square inch (.3 to 9.3 watts per square centimeter). Choosing the correct watt density is essential to the life of the heater and the fluid. The fluid's ability to remove heat from the element will determine the proper watt density. Water removes heat from the elements very well, so a higher watt density is appropriate. Crude Oil and Molasses do not remove heat from the element well, so a much lower watt density is required.

Control Selection: Watt density and material selection is only part of the decision process. Properly selecting the control method is as critical as watt density and material selection.

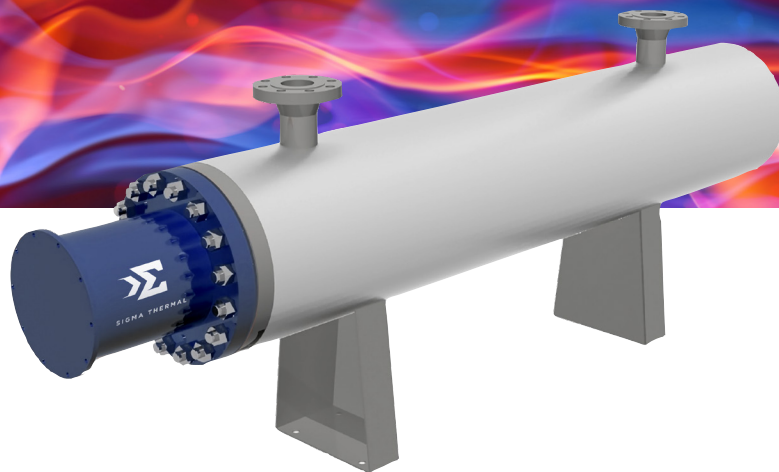
SCR: SCR control panels regulate the power to the heater, reducing the watt density of the element, resulting in a cooler running heater. This reduction in watt density will prolong the life of the heater and prevent fluid degradation when flows are reduced. SCR control is recommended on gas applications and single pass flowing liquids that require tight control.

Contactors (Off/On): Off/On control is well suited for tank applications. The immersion heater can be inserted directly into the tank or the fluid can be circulated in a closed loop. The most common applications are freeze protection and viscosity control. Since demand may vary, a stepper/sequencer is recommended to prevent rapid cycling of the contactors. The sequencer will power banks of elements as required for the demand, providing more precise control and lowering operating costs.



Circulation Heaters

An electric process circulation heater is used to flow a fluid directly over the heating elements. Heaters may be installed horizontal, vertical or even sloped for vaporizing liquids. These heaters can heat a variety of fluids from high temperature gas to hard to heat liquids. Each circulation heater is carefully selected for each specific process.



Electric Circulation Heater

Typical applications

- » High Temperature Air
- » Nitrogen Heating
- » Process Gas Heating
- » Fuel Gas Heating
- » Natural Gas Heating
- » Freeze Protection
- » Thermal Fluid
- » Water
- » Glycol

Mounting Options: Mounting options include saddles, skirts, mounting blocks, mounting lugs, legs, or base plate.

Nozzles: Multiple nozzles may be included as part of the heater. The inlet and outlet nozzles are placed so that the fluid is always flowing over the heated sections of the elements. Optional nozzles include vents, PSV connections, and drains. A temperature sensor may also be placed on the inlet nozzle, outlet nozzle, or both for process control. Temperature sensors include a thermowell that may be NPT, socket welded or flanged.

Skid Mounting: Let Sigma Thermal mount and pre-wire the heater and control panel on a common skid base. This is the perfect solution for the job where “plug and play” is desired. This is the easiest way to have your heater up and running in no time. Startup assistance is available.

Materials: Circulation heaters are available in a variety of materials, including carbon steel, low temp carbon steel, 300 series stainless steel and nickel based materials. Gaskets and bolting are selected based on process and design requirements.

Corrosion Protection: Corrosion protection includes coating per Sigma Thermal standard specification or customer specific specification.

Pumps: A pump can be added to any circulation heater. Whether pumping water, oil, or process liquid, let Sigma Thermal deliver the complete solution.

Ratings

- » Flange ratings from 150# to 2500#
- » Raised face and RTJ flanges
- » Clamp type connectors available
- » 3000# and 6000# NPT and socket weld

Approvals

- » ASME Section VIII Div 1
- » CRN
- » PED

Electric Skid Mounted Heater

