9/18/2007 KWP

Heater Specifications:

- The heater elements shall be rated for 480 volt, 3 Phase electrical power
- The heater shall be designed to continuously deliver 520 kilowatts power to a gaseous nitrogen flow
- Electrical enclosure which houses the heater element terminals shall be NEMA 4
- A thermocouple shall be attached to one of the heated elements, located inside the pressure shell, with the wire routed out through a feedthrough located on the heater's main flange
- The heated elements shall have a watt density of approximately 8 watts/square inch
- The sheath on the heated elements shall be rated for continuous operations at a surface temperature of 1600 deg F or greater.
- The heater shall be designed for continuous operation while flowing gaseous nitrogen at 150 psig, with gas inlet temperature of 500 deg F, and gas outlet temperature of 850 deg F, at a flowrate of 3.1 lb/s.
- The pressure shell shall be designed, constructed, inspected, tested, and stamped in accordance with ASME Section VIII Boiler and Pressure Vessel code certified for a gas outlet temperature of 850 deg F at 320 psig or greater
- The pressure shell shall be made of 304, 304L, 316, or 316L stainless steel
- The pressure shell shall have 6" nominal pipe size gas inlet and outlet flanges. These flanges shall have raised face, gasket groove seal areas. They shall be ANSI Class 300# or greater, as required to meet the above pressure/temperature ratings.
- The heater shall have proper internal baffling to distribute flow to heater elements for nitrogen at flows ranging from 2 to 4.5 lb/s while at pressures ranging from 80 to 230 psig.
- The heater elements shall be supported, inside the pressure shell to prevent them from touching one another
- The pressure shell shall be insulated and covered with a protective metal covering, suited for locating outside
- The pressure shell shall have a support/mounting system designed to orient the heater vertically, with the gas inlet near the top, gas outlet near the bottom, and the electrical connections near the top. This support/mounting system should be designed to allow the heater to be anchored to a concrete slab using anchor bolts. The mounting system may be painted carbon steel.