

Specification

- 1) Supply a self-contained, microprocessor controlled steam to steam humidifier, Neptronic series SKS, as manufactured by N.E.P. Steam shall be generated by passing pressurized steam from an existing boiler through a 316 stainless steel heat exchanger submerge in water. Maximum capacities shall vary between 100 lb/hr (45 kg/hr) to 1,250 lb/hr (568 kg/hr) according to model with a supply steam pressure of 15psi (103.4kPa). The humidifier shall operate under normal or extreme water conditions including deionized or reverse osmosis water. The conductivity of the supply water shall have no bearing on the operation sequence.
- 2) To prevent dangerous operation of the heat exchanger in free air, the humidifier shall have level control which cannot be triggered by water foaming ("AFEC" system), therefore, conductive level probes or float system are not acceptable. The humidifier must have the ability to sense foam and take a corrective action by going into a drain cycle. For safe temperature operation, the humidifier must have an electronic temperature sensor inside the stainless steel evaporation chamber.
- 3) To enhance safety and minimize energy consumption, the humidifier shall vary the drain time periods according to variations in water conditions.
- 4) The 304 stainless steel evaporation chamber shall be enclosed within a steel powder painted cabinet with 1" (25mm) thick insulation ensure safe surface temperature proper protection against aggressive environment and energy conservation as well as fast response to humidity demand.
- 5) For safety and security reasons, all components, electrical wiring and plumbing connections will not be exposed and must be contained within the cabinet of the unit. The humidifier shall have two compartments, one mechanical containing the evaporation chamber, supply and drain valves and water connections. The second compartment shall house the electronic controls.
- 6) For consistent operation, the mass sensing water level probe shall be installed outboard the evaporation reservoir in a sight glass.
- 7) The evaporation chamber will be easily accessible from the unit. For servicing, the top of the evaporation chamber equipped with handles will be easily removable with no use of tools. After removal from the top section, scale trap trays located at the bottom of the evaporation chamber will become accessible for easy maintenance and scale removal.
- 8) The evaporation chamber shall have a safety overflow connection and a drain port which will be located on the side wall of the evaporation tank. This will minimize the risk of blockage caused by sediment build-up at the bottom of the tank.
- 9) Drainage of the evaporation chamber shall be by means of an electrical drain pump.
- 10) Internal drain water cooler to ensure drain water tempering to 140°F (60°C).

- 11) The supply water to the unit shall be controlled by a quiet solenoid valve. To conserve energy, any hot water skimming during normal FILL cycle is not acceptable.
- 12) The humidifier shall have a LIQUID CRYSTAL DISPLAY SCREEN (LCD) on the front panel of the unit. It will display current operating conditions. Power ON, steam production, filling, draining and fault signal will be displayed. A scroll mode will provide access to more details on operations conditions like %RH, current steam output and water level. The humidifier shall be programmable through the LCD screen and using UP/DOWN menu buttons to program %RH, set point, frequency of drain cycle, output span control, no demand shut off waiting period, service hour period warning signal and actual operation hours. After a preset number of hours (72hrs typical) of no demand, the humidifier will go into "End of Season" mode draining the unit in order to prevent bacteria growth inside the evaporation chamber. After a preset number of hours of operation, the LCD will display need for service and the fault warning LED will be ON. The LCD will also provide access to the control signal input.
- 13) Apart from the LCD, the front panel of the humidifier shall include indicator lights showing POWER, DRAIN, FAN, STEAM, FILL and FAULT.
- 14) The control modulating signal shall be 0-10VDC or 2-10 VDC or 4-20 mA to modulate 10% to 100% of the capacity. The maximum output (SPAN) can be minimized by using the electronic "LOCK ON" feature.
- 15) The steam distribution will be done by "Multi Steam" or "S.A.M." depending on the required absorption distance in the duct. Manifolds shall be stainless steel with brass eyelets.
- 16) The unit shall be CE and ETL listed as per UL998-Humidifier standard.
- 17) The unit shall be supplied with the appropriate proportional programmable controller.
- 18) Safety controls shall include high limit humidistat and pressure differential switch.
- 19) Compatible for immediate, or future, connection to BMS using BACnet (MS/TP) protocol without modification required.
- 20) For VAV applications, use a humidistat, a proportional high limit humidistat, a ON/OFF high-limit duct humidistat and a pressure differential switch.
- 21) Appropriate inspection of the installation and start-up will be done by the manufacturer's representative (72 hours advance notice).