

## **MECHANICAL SPECIFICATION**

### **SECTION 23 84 13.29**

### **HEATER ELEMENT STEAM HUMIDIFIERS**

#### **1 GENERAL**

##### 1.1 DESCRIPTION

- A. Provide connection-ready StandardLine Heater steam humidifiers for fully automated and intrinsically safe production of mineral-free and pure steam in accordance with the Contract Documents.

##### 1.2 WORK INCLUDED

- A. Install steam humidifier as shown on plans and as per manufacturer's instructions.
- B. Install operating controls as shown on plans and as per manufacturer's instructions.

##### 1.3 SUBMITTALS

- A. Provide complete humidifier catalog data, including performance and all components provided.
- B. Provide power and control wiring diagrams.

##### 1.4 QUALITY ASSURANCE

- A. Provide UL or CSA Listed heater element steam humidifiers.

#### **2 PRODUCTS**

2.1 Self-Contained Steam Humidifiers: Humidifiers shall produce clean, sterile steam from standard tap water, softened water, or demineralized water by means of Incoloy heating elements immersed in water contained in a cleanable plastic cylinder and shall operate on any quality of water.

##### A. Steam Generator

- 1. Cleanable & reusable plastic steam cylinder which can be opened for cleaning and to replace internal components. Throwaway cylinders are not acceptable.
- 2. Incoloy heating elements designed to shed mineral for reduced maintenance, quickly cleanable or replaceable.

##### B. Water Feed / Drain System

- 1. Double check valve water feed system to prevent backflow while allowing pressure feed to the steam cylinder for greatly reduced maintenance.
- 2. Heavy-duty blow-down pump to reduce maintenance by grinding and pumping out mineral scale. Drain valves are not acceptable as they are easily jammed.
- 3. Integrated HyCool drain tempering system with 140°F maximum drain temperature.

##### C. Microprocessor Control

- 1. Highly-efficient control electronics for fastest possible steam production, optimum energy efficiency, low-maintenance operation, and comprehensive operational safety through continuous self-monitoring of the unit functions.
- 2. With automatic system tests including self-diagnoses to check all functions and components.

3. Selectable between sensor input with resident humidifier control (display of humidity and set point on humidifier), or control input for external control of humidifier.
  4. Selectable between On/Off, Proportional, or PI control.
  5. Highly accurate steam output control using high precision SSRs with control accuracy of  $\pm 1\%$ . Proportional controllability in the range of 5-100% of nominal output.
  6. SSRs and heating elements shall be individually thermally protected.
  7. Easy to read, lighted LCD display with 4 function keys and 10 symbols for displaying operating and service messages.
  8. 2 potential free remote signal relays, one of them freely programmable with 15 options.
  9. Selectable stand-by blow-down timer to prevent standing cylinder water according to VDI 6022.
  10. Selectable stand-by heating mode to keep the water warm for instant response to demand.
  11. Password protected field adjustment parameters to permit field adjustment of operation for difficult non-standard feed waters.
  12. Available EIA-485 serial interface card with ModBus RTU protocol. Available optional converter to BacNet MS/TP protocol.
  13. Separate inputs for voltage, current, and resistance signals.
  14. 0-10 Vdc analog output for simultaneous use of several devices.
  15. Programmable maintenance cycle timer/display.
  16. Timer controlled "dead leg" flushing to prevent stagnant water in the lines.
- D. General Design
1. Steam hose adapter for quick removal and reinstallation of the cylinder without tools.
  2. Easily accessible connection terminals for power and control.
  3. Removable cover for easy access to all components.
  4. Corrosion-resistant stainless-steel base/drain pan. Powder-coated steel enclosure.
- E. Steam Distribution
1. For Duct Injection: Provide stainless steel steam distribution manifolds sized for the duct dimensions, and having a duct mount plate, condensate return, and steam discharge holes designed for short evaporation without spitting.
  2. For Room Injection: Provide packaged room distribution units, consisting of a steam distribution manifold with condensate return, integral quiet cross-flow blowers, contained in a powder coated, corrosion resistant housing. Room distribution unit may be direct or remote mounted.
- F. Equipment
1. Humidifiers shall be StandardLine Heater steam humidifiers as manufactured by HygroMatik GmbH. ([www.HygroMatik.com](http://www.HygroMatik.com))
- G. Acceptable Manufacturers
1. HygroMatik GmbH.

### **3 EXECUTION**

- 3.1 Comply fully with the manufacturer's installation instructions.
- 3.2 Comply fully with all local, electrical, and applicable codes.
- 3.3 Connect to untreated domestic water supply.