## **MECHANICAL SPECIFICATION**

# SECTION 23 84 13 ELECTRODE STEAM HUMIDIFIERS

#### 1 GENERAL

1.1 DESCRIPTION

A. Provide connection-ready MiniSteam E steam humidifiers with integral room distribution unit 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.
- C. Manufacturer-specific mounting rail systems are not required.

#### 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 electrode steam humidifier.

#### 2 PRODUCTS

- 2.1 Self-Contained Steam Humidifiers: Humidifiers shall produce clean, sterile steam from standard tap water by means of stainless steel electrodes immersed in water contained in a cleanable plastic cylinder and shall operate on a wide range of water conductivities.
  - A. Steam Generator
    - 1. Cleanable and reusable plastic steam cylinder which can be opened for cleaning and to replace internal components. Throwaway cylinders are not acceptable.
    - 2. Solid plate stainless steel electrodes designed to shed mineral for reduced maintenance, quickly cleanable or replaceable without tools. Mesh electrodes designed to hold mineral are not acceptable.
  - 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 blowdown 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 (optional).
  - 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. Auto-adaptive operation that automatically adjusts unit operation according to water quality, with automatic system tests including self-diagnoses to check all functions and components.
- 3. Timer controlled "dead leg" flushing to prevent stagnant water in the lines.
- 4. Selectable between sensor input with resident humidifier control (display of humidity and set point on humidifier), or control input for external control of humidifier.
- 5. Selectable between On/Off, External, or PI control.
- 6. Easy to read, lighted LCD display with 4 function keys and 10 symbols for displaying operating and service messages.
- 7. 2 potential free remote signal relays, one of them freely programmable with 15 options.
- 8. Selectable stand-by blowdown timer to prevent standing cylinder water according to VDI 6022.
- 9. Selectable stand-by heating mode to keep the water warm for instant response to demand.
- 10. Password protected field adjustment parameters to permit field adjustment of operation for difficult non-standard feed waters.
- 11. Available EIA-485 serial interface card with ModBus RTU protocol.
- 12. Selectable operating modes: "energy-optimized" and "load-optimized".
- 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.
- D. Steam Distribution
  - 1. Humidifier to have integrated room distribution unit, integral quiet cross-flow blower, contained in a powder coated, corrosion resistant housing.
- E. General Design
  - 1. Easily accessible connection terminals for power and control.
  - 2. Removable cover for easy access to all components.
  - 3. Corrosion-resistant powder-coated stainless steel enclosure.
  - 4. Integral circuit breaker/disconnect.
- F. Optional features that may be specified on the plans
  - 1. SuperFlush cylinder rinsing system for decreased maintenance (not usable with HyCool).
  - 2. HyCool integrated drain tempering system with 140°F maximum drain temperature.
  - 3. Galvanized electrodes for optimized electrode life expectancy on high chloride water (check with factory before selecting this option).
- G. Equipment
  - 1. Humidifiers shall be MiniSteam electrode steam humidifiers as manufactured by HygroMatik GmbH. (<u>www.HygroMatik.com</u>)
- H. 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.