

## **RESISTIVE ELEMENT STEAM HUMIDIFICATION SYSTEM – NORTEC RS SERIES**

### **PART 1 - GENERAL**

#### 1.1 Work Included:

- a. Nortec RS Series resistive element humidifier[s] as indicated on drawing[s] and as indicated on schedule[s].
- b. Complete and operable humidification system [which meets applicable building codes]
- c. Equipment start-up and project inspection by qualified factory trained representative.

#### 1.2 Quality Assurance:

- a. Certifications, C-UL US Listed.
- b. ISO 9001-2008.
- c. ANSI/NFPA 70 - National Electrical Code.
- d. ARI 640, "Standard for Commercial and Industrial Humidifiers.
- e. ASHRAE SSPC 135 BACnet

#### 1.3 Related Sections:

- a. 23 Mechanical General
- b. 23[ ] Piping Installation
- c. 23[ ] Control System

#### 1.4 Submittals:

- a. Submit product data under provisions of Section 23. Include product description, model, dimensions, component sizes, rough-in requirements, service sizes, and finishes. Include rated capacities, operating weights, furnished specialties, and accessories.
- b. Submit manufacturer's installation instructions.
- c. Submit operation and maintenance data.
- d. Submit coordination drawings. Detail fabrication and installation of humidifiers. Include piping details, plans, elevations, sections, details of components, and dispersion tubes. Detail humidifiers and adjacent equipment. Show support locations, type of support, weight on each support, and required clearances.
- e. Submit wiring diagrams including power, signal, and control wiring. Differentiate between manufacturer-installed and field-installed wiring.
- f. Submit minimum water quality requirements and water pressure requirements.

#### 1.5 Schedules:

- a. Refer to information contained in schedule[s] attached to this specification.
- b. Humidifiers to be of type, capacity, and arrangement as listed in schedule[s].
- c. Include accessories listed in schedule[s] and those accessories required for type of unit.

## **ELECTRIC STEAM HUMIDIFICATION SYSTEM - NORTEC MODEL RS**

### **PART 2 - PRODUCTS**

2.1 Provide Nortec RS resistive element humidifier generating mineral-free, sterile steam for use with potable, De-ionized (DI), or Reverse Osmosis (RO) water. Packaged unit, wall mounted, atmospheric steam generation using resistive heating element. Electrode technology and boiler steam (pressure steam) technology not acceptable.

#### 2.2 Unit[s] to be complete with:

- a. Touchscreen controller with standard building automation and Online connectivity:
  - i. Intuitive touchscreen control with color graphic user interface.
  - ii. Standard building automation communication protocols BACnet IP, BACnet MSTP (Slave) and Modbus. Additional hardware required for building automation communication not acceptable.

- iii. Standard Nortec Online connectivity for remote monitoring and factory diagnostic.
  - iv. Embedded web interface for easy configuration and remote monitoring from any computer with a web browser over a local area network (LAN) connection.
  - v. USB interface for new software/feature upload and download of operational information.
  - vi. Single or dual channel analog signal acceptance, supporting both demand and transducer control. Ability to control setpoint from humidifier control when using transducer controls.
- b. Packaged system with Nortec resistive element technology:
- i. Incoloy based resistive heating element for steam production.
  - ii. Modulating output between 4% and 100% of rated capacity.
  - iii. Control accuracy of up to +/- 1% RH using optional Solid State Relay control and high precision humidistat.
  - iv. Dual magnetic electronic float system, located outside of the boiling water to ensure accurate water level control and reduced maintenance. Systems using conductivity probes or floats located within hot reservoir are not acceptable.
  - v. Self-diagnostics during start-up of system to prevent unsafe operation of the unit[s]:
    - a. Fill valve check.
    - b. Float level check.
    - c. Drain pump check.
  - vi. Durable powder coated steel cabinet with zero side clearance requirement for minimal footprint.
  - vii. Insulating air gap between plumbing and electrical compartment for increased electronic reliability.
  - viii. Standard internal drain water tempering to ensure maximum 140°F [60°C] drain water. External drain water cooler not acceptable.
  - ix. Integral fill cup with minimum 1-inch [25 mm] air gap to prevent back siphoning.
  - x. Automatic off-season shut-down [after 3 days of "no call"] will completely drain the boiling tank[s] and automatically restart on call for humidity.
  - xi. Integral design allowing easy installation and access for servicing.

### 2.3 Optional Accessories

- a. Refer to 'Option schedule'

## **PART 3 - EXECUTION**

### 3.1 Installation:

- a. Install humidifiers per manufacturers' instructions.
- b. Install with required clearance for service and maintenance.

### 3.2 Accessories:

- a. Install accessories in accordance with manufacturer's recommendations.

### 3.3 Commissioning:

- a. Start-up of humidifier to be by factory trained technician.