

## **ELECTRODE STEAM HUMIDIFICATION SYSTEM – NORTEC EL SERIES**

### **PART 1 - GENERAL**

#### 1.1 Work Included:

- a) Nortec EL Series electrode steam 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.

### **ELECTRODE STEAM HUMIDIFICATION SYSTEM - NORTEC MODEL NH-EL**

#### **PART 2 - PRODUCTS**

2.1 Provide Nortec EL electrode humidifier generating mineral-free, sterile steam from a potable water supply Packaged unit, wall mounted, atmospheric steam generation using an electrode steam cylinder[s]. Resistive element technology and boiler steam (pressure steam) technology not acceptable.

2.2 Unit[s] to be complete with:

- a) Touchscreen controller with standard building automation:
  - 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. Embedded web interface for easy configuration and remote monitoring from any computer with a web browser over a local area network (LAN) connection.
  - iv. USB interface for new software/feature upload and download of operational information.
  - v. 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 electrode cylinder technology:
  - i. Nortec cylinder optimized for humidifier capacity and supply voltage. Cylinder must have welded seam to ensure watertight and have high water sensor to prevent overfilling.

- ii. Durable powder coated steel cabinet with zero side clearance requirement for minimal footprint.
- iii. Insulating air gap between plumbing and electrical compartment for increased electronic reliability.
- iv. Standard internal drain water tempering to ensure maximum 140° F [60° C] drain water. External drain water cooler not acceptable.
- v. Integral fill cup with minimum 1-inch [25 mm] air gap to prevent back siphoning.
- vi. Full cylinder indication and pre-notification of automatic shutdown at end of cylinder life.
- vii. Automatic pulse feature to clean any obstruction from the drain solenoid valve if required.
- viii. Automatic off-season shut-down [after 3 days of "no call"] will completely drain the cylinder[s] and automatically restart on call for humidity. Adjustable on/off and time sequence. Provides extended cylinder life, while ensuring stagnant water does not remain in the system.

c) Nortec Auto-Adaptive Control water management:

- i. Advanced water management utilizing the patented Proportional plus Integral Auto-Adaptive Control system for optimal energy efficiency, water usage and cylinder life.
- ii. 98% thermal efficiency from startup until end of cylinder life.
- iii. Drains automatically optimized to water conditions to maximize cylinder and reduce water usage.
- iv. Modulating output between 20% and 100% of rated capacity.

### 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.