

**SECTION 15XXX**  
**HUMIDIFIERS**

**PART 1 - GENERAL**

**1.1 WORK INCLUDED**

- A. NORTEC RH2 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. Manufacturer: For each product specified, provide components by same manufacturer throughout.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authority having jurisdiction, and marked for intended use.
- C. Comply with ARI 640, "Standard for Commercial and Industrial Humidifiers."
- D. Products shall be supported with a warranty that ensures the product will be free from defects in materials and workmanship for a period of two years after shipment.
- E. Commissioning of a system or systems specified in this section is part of the construction process. Documentation and testing of these systems, as well as training of the Owner's operation and maintenance personnel, is required in cooperation with the Commissioning Authority. Project Closeout is dependent on successful completion of all commissioning procedures, documentation, and issue closure. Refer to Project Closeout, Section 01700, for substantial completion details. Refer to Section 01810, Commissioning, for detailed commissioning requirements.
- F. Products specified below are to be manufactured in an ISO 9001-2000 certified facility.

**1.3 SUBMITTALS**

- A. Submit product data under provisions of Section 15010. 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.

#### **1.4 EXTRA MATERIALS**

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

#### **1.5 REFERENCES**

- A. ANSI/NFPA 70 - National Electrical Code.

#### **1.6 COORDINATION**

- A. Coordinate location and installation of humidifiers in ducts and air-handling units. Revise locations and elevations to suit field conditions and to ensure proper humidifier operation.

XXXXX OR XXXXX

- A. Coordinate location and installation of humidifier in the space it serves with the electrical, mechanical, and plumbing contractors.

### **PART 2 - PRODUCTS**

#### **2.1 ELECTRODE STEAM HUMIDIFIER - RH2 DUCT 110-120/208-240V**

- A. NORTEC RH2 electrode steam generating system using regular type potable water supply source.
- B. Packaged unit, wall mounted, requiring steam nozzle[s], distributor[s] for mounting into AHU/duct[s] or remote blower pack for direct space humidification.
- C. Unit[s] to be complete with:
  - 1. Self-generating electrode type steam humidifier producing atmospheric steam inside a plastic cylinder without the use of immersion type electric heating elements.
  - 2. Disposable plastic steam cylinder with published life expectancy shall be constructed of UL Listed plastic with minimum 94HB safety rating and Zinc plated low carbon steel electrodes.
  - 3. Electrical connection to electrodes shall be plug type connector fusion molded on cylinder top. Screw down connectors may loosen and/or cause leaks overtime and therefore are not acceptable.
  - 4. Auto-Adaptive control system to optimize contained water conductivity, control automatic drain/flush cycles, minimizes energy waste and maximizes cylinder life.
  - 5. High water sensor to prevent over filling and detect water level in the unit.
  - 6. Full cylinder indication light to advise end of cylinder life.
  - 7. Output rated at 10.0 lbs/hr at 220-240V, 8.7 lbs/hr at 208V and 5.0 lbs/hr at 110-120V.
  - 8. Fill valve, drain valve and fill assembly with minimum 1 inch [25 mm] air gap.
  - 9. Flexible domestic cold water supply tube with fittings, drain hoses, and clamps.
  - 10. Fault indication lights.
  - 11. Drain water tempered by fill water to ensure drains do not exceed 140°F [60°C] during standard operation.
  - 12. Enclosed cabinet, flame retardant grade polycarbonate construction allows user full front access.
  - 13. Fully modulating output between 20% and 100% of rated capacity.
  - 14. Limited manual capacity adjustment of 20%.
  - 15. Two year limited warranty.
  - 16. Standard of acceptance NORTEC RH2 DUCT.
  - 17. Heater element technology humidifiers not acceptable.
  - 18. UL Listed.

D. Optional accessories:

1. Refer to options schedule.

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- A. Examine ducts, air-handling units, and conditions for compliance with requirements for installation tolerances and other conditions affecting performance.
- B. Examine roughing-in for piping systems to verify actual locations of piping connections before humidifier installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

#### **3.2 INSTALLATION**

- A. Install humidifiers and steam dispersion panels per manufacturers' instructions.
- B. Seal humidifier dispersion-tube duct penetrations with flange.
- C. Install with required clearance for service and maintenance.

#### **3.3 TESTING**

- A. System verification testing is part of the commissioning process. Verification testing shall be performed by the Contractor and witnessed and documented by the Commissioning Authority. Refer to section 01810, Commissioning, for system verification tests and commissioning requirements.

XXXXX OR XXXXX

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including piping and electrical connections. Report results in writing.
  1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
  2. Operational Test: After electrical circuitry has been energized, start units to confirm proper unit operation. Remove malfunctioning units, replace with new units, and retest.
  3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

#### **3.4 TRAINING**

- A. Training of the Owner's operation and maintenance personnel is required in cooperation with the Commissioning Authority. Provide competent, factory authorized personnel to provide instruction to operation and maintenance personnel concerning the location, operation, and troubleshooting of the installed systems. The instruction shall be scheduled in coordination with the Commissioning Authority after submission and approval of formal training plans. Refer to System Demonstrations, section 01670, for contractor training requirements. Refer to section 01810, Commissioning, for further contractor training requirements.

XXXXX OR XXXXX

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust,

operate, and maintain humidifiers.

1. Train Owner's maintenance personnel on procedures and schedules for starting and stopping, troubleshooting, servicing, and maintaining equipment and schedules.
2. Review data in maintenance manuals. Refer to Division 1 Section "Contract Closeout."
3. Review data in maintenance manuals. Refer to Division 1 Section "Operation and Maintenance Data."
4. Schedule training with Owner, through Architect, with at least seven days advance notice.

**END OF SECTION**