

MECHANICAL SPECIFICATION

SECTION 23 84 13.23

DIRECT STEAM INJECTION HUMIDIFIERS

1 GENERAL

1.1 DESCRIPTION

- A. Provide connection-ready SIH Direct Steam humidifiers for fully automated and intrinsically safe injection of mineral-free and pure steam into air ducts 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 or pneumatic diagrams.

1.4 QUALITY ASSURANCE

- A. Direct steam humidifiers must be constructed of top quality materials, fully tested prior to shipment from the factory.

2 PRODUCTS

2.1 Direct Steam Injection Humidifiers: Humidifiers shall accept pressure steam from any steam source, and condition it by removing excess condensate, allowing only "dry" steam to be discharged into the air ducts.

A. Steam/Condensate Separator

- 1. {OPTION} SIH20 / 40 - VA: All stainless steel, strainer, centrifugal steam/condensate separator and condensate ball float drain trap, thermal condensate trap all stainless steel. All stainless steel construction and components shall be suitable for use in medical centers, laboratories, and clean rooms. System shall be separable for cleaning and easy replacement.
- 2. {OPTION} SIH20 / 40 - CI: strainer, centrifugal steam/condensate separator and thermal condensate trap stainless steel. Condensate ball float drain trap, cast iron. System shall be separable for cleaning and easy replacement.
- 3. Steam/Condensate separator shall have a start-up safety feature that prevents operation of the system prior to reaching a specified temperature sufficient to prevent wet steam discharge and condensate carryover to the air ducts.

B. Steam Control Valve

- 1. Provide a tight-sealing steam control valve, tested according to (DIN EN 1349), IEC 60534-4, metal-to-metal seating class IV or metallically ground for even higher requirements class IV S1
Leakage class IV = completely tight sealing down to 0,0001%
Leakage class IV S1 = completely tight sealing down to 0,000005%.
- 2. The characteristic curve shall allow particularly fine control at the lower levels and fast adaptation to high moisture requirement in the upper control ranges.
- 3. {OPTION} Valve for SIH20 / 40 - VA: valve completely stainless steel
{OPTION} Valve for SIH20 / 40 - CI: valve body in cast iron, components in contact with steam built in stainless steel

- C. Steam Control Valve Actuator
 - 1. Electric: Provide electrical motor valve actuator powered by 20 Vac for safety and able to accept a 0-10 Vdc or 4-20 mA dc modulating signal for full control from 0 to 100% of capacity. The actuator must be fail-safe, returning the valve to the closed position on loss of control signal or electric power.
- D. Duct Steam Distributors (Lances)
 - 1. Provide all stainless steel duct steam distributors with small duct "footprint" for rapid distribution of saturated steam, minimal pressure drop, and minimal heating of the duct air.
 - 2. Duct steam distributors shall have silent steam exit nozzles that take the steam from the driest area of the steam distributor for short absorption distances.
 - 3. Duct steam distributors shall have an internal pre-heat system for rapid start-up and to insure dry steam with no condensate, and minimal loss of heat to the duct air.
 - 4. Duct steam distributors shall have a vibration-damped holder and floating mount system.
- E. Steam/Condensate Traps
 - 1. {OPTION} SIH20 / 40 - VA: All stainless steel, Condensate ball float drain trap, thermal condensate trap all stainless steel. System shall be separable for cleaning and easy replacement.
 - 2. {OPTION} SIH20 / 40 - CI: Condensate ball float drain trap, cast iron. thermal condensate trap stainless steel (screw connections galvanized) System shall be separable for cleaning and easy replacement.
- F. General Design
 - 1. Reduced condensate due to preheating piping
 - 2. Two available versions for economical adaptation to project requirements
 - 3.
- G. Optional features that may be specified on the plans
 - 1. Pressure gauge R 1/2", stainless steel, range 0-90 psi (0-6 bar).
 - 2. shut-off valve, manually
 - 3. Mounting elbow 90°
 - 4. Control signal 4-20 mA
 - 5. Conversion from grey cast iron to stainless steel components is possible
 - 6. flange connection for connection to the on-site steam network
- H. Equipment
 - 1. Humidifiers shall be SIH Direct Steam humidifiers as manufactured by HygroMatik GmbH. (www.HygroMatik.com)
- I. 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 steam supply and comply fully with all local steam codes.