Interpretation IC 170-2013-12 of
ANSI/ASHRAE/ASHE Standard 170-2013
Ventilation of Health Care Facilities

Date Approved: January 31, 2017

Request from: Raul Simonetti, CAREL Industries SpA, Via dell'Industria, 11, Brugine, Italy 35020.

Reference: This request for interpretation refers to the requirements in ANSI/ASHRAE/ASHE Standard 170-2013, Addendum m, Section 6.6, regarding humidifiers.

Background: Addendum "m" modifies Section 6.6 of Standard 170-2013 to allow for "adiabatic high pressure water atomizing humidifiers".

Centrifugal humidifiers use a high-speed disk that slings water to its rim, where it is thrown onto plates or a comb to produce a fine mist. The mist is introduced to the airstream, where it is evaporated. (Reference to Section S22 of 2016 HVAC Systems and Equipment).

An adiabatic water atomizing humidifier is considered "high-pressure" if the humidifier increases the outlet water pressure above its inlet water pressure. Alternatively, what is the outlet water pressure threshold above which the humidifier is considered a "high-pressure humidifier"?

The new Section 6.6.3 "Adiabatic Atomizing Humidifier Requirements", introduced by addendum m specifies that "b. Treated humidifier water shall be continuously circulated from the source, to the humidifier valves. …"

Ultrasonic atomizers use a piezoelectric transducer submerged in demineralized water. The transducer converts a high-frequency mechanical electric signal into a high-frequency oscillation. A momentary vacuum is created during the negative oscillation, causing the water to cavitate into vapor at low pressure. The positive oscillation produces a high-compression wave that drives the water particle from the surface to be quickly absorbed into the airstream (reference to Section S22 of 2016 HVAC Systems and Equipment).

Interpretation No. 1: Additional fluids (e.g., compressed air) may be mixed with water to atomize it.

Question No.1: Is this interpretation correct?

Answer No.1: No

Comments No.1: Compressed-air nozzle humidifiers are not acceptable per the standard.

Interpretation No. 2: Centrifugal atomizers may be used in ventilation systems of Health Care Facilities because they produce fog by throwing water at a high impact velocity against plates or a comb: when the water hits the plates/comb its velocity converts into high pressure which breaks the water into tiny droplets, thus generating the humidification fog.

Question No.2: Is this interpretation correct?

Answer No.2: No

Comments No.2: Centrifugal atomizer humidifiers are not acceptable per the standard.

Interpretation No. 3: An adiabatic water atomizing humidifier is considered "high-pressure" if the humidifier increases the outlet water pressure above its inlet water pressure.

Question No.3: Is this interpretation correct?

Answer No.3: No

Comments No.3: The term "high pressure" means the water pressure is increased to a point that the atomized water particles size is between 10-40 microns in diameter.

Interpretation No. 4: In Section 6.6.3 of Addendum m "continuously circulated" shall be understood as "unidirectionally flowed", i.e. looping back of non-atomized water from the valves to the source shall not be allowed.

Question No.4: Is this interpretation correct?

Answer No.4: No

Interpretation No. 5: Ultrasonic atomizers may be used in ventilation systems of Health Care Facilities because they produce fog by means of high-compression waves generated by transducers acting on the water they are in contact with.

Question No.5: Is this interpretation correct?

Answer No.5: No

Comments No.5: Ultrasonic humidifiers are not acceptable per the standard.