AIRXCHANGE INC.
85 LONGWATER DRIVE | ROCKLAND, MA | 02370
781.871.4816
CONTACT_US@AIRXCHANGE.COM
WWW.AIRXCHANGE.COM

Constructions Specifications Institute (CSI) Division 23 Heating, Ventilation, and Air Conditioning (HVAC) specifications for subsection 70-75

PART 1 - GENERAL

A. General Requirements.

1. The energy recovery cassette shall incorporate a rotary wheel in a cassette frame complete with removable energy transfer media, seals, drive motor and drive belt.
2. Energy recovery wheel performance shall be AHRI 1060 certified and bear the AHRI certified label. Components that are independently tested or “rated in accordance with” shall not be acceptable. Manufacturer membership in AHRI is not an acceptable substitute. Certified components must be listed as active in the AHRI Directory. (www.ahridirectory.org)
3. The energy recovery cassette shall be an Underwriters Laboratory UR recognized component for fire and electrical safety and bear the UR symbol. Recognized components shall be listed in the UL directory. (http://database.ul.com)
4. The energy recovery cassette shall comply with NFPA 90A by virtue of UL standard 1812 and UL900 fire test for determination of flammability and smoke density.
5. The energy recovery cassette shall carry a 5-Year standard warranty on the entire cassette assembly (excluding the motor) from the date of shipment. Motors shall carry the manufacturers standard 18 month warranty from the date of manufacture.

PART 2 – PRODUCTS

A. Cassette Frame and Wheel Construction.

1. Cassette frame and structural components shall be constructed of G90 galvanized steel for corrosion resistance.
2. Wheel structure shall consist of a welded hub, spoke and continuous rolled rim assembly of stainless steel, and shall be self-supporting without energy transfer segments present.
3. Wheel structure shall be connected to the shaft by means of taper lock bushings.
4. Wheel bearings shall be permanently sealed and selected for a minimum 30 year L-10 life of 400,000 hours. Bearings requiring external grease fittings or periodic maintenance are not acceptable.
5. Standard cassette may be affixed within the cabinet in any orientation without the need for factory modification.

B. Energy Transfer Media.

1. Energy transfer media shall be constructed of a durable synthetic lightweight polymer.
2. Media shall be wound continuously with one flat and one structural layer in an ideal parallel plate geometry. Airflow across heat exchanger surface shall remain laminar.
3. Energy transfer media shall not exceed 3” in depth.
4. Energy transfer media shall be suitable for use in corrosive, marine or coastal environments without the need for additional coatings.
5. Sensible only energy transfer media shall be constructed in the same fashion as the enthalpy transfer media with the exception of the desiccant coating process required for enthalpy wheels.

C. Coatings and Desiccant.

1. Desiccant shall be either silica gel or molecular sieve and permanently bonded to the energy transfer media without the use of binders or adhesives, which may degrade desiccant performance. Desiccants not permanently bonded are not acceptable due to potential delamination or erosion of the desiccant from the energy transfer media.
2. Desiccant shall be non-migrating nor shall it dissolve or deliquesce in the presence of water or high humidity.

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3. Energy transfer media shall be capable of repeated washings without significant degradation of the desiccant bond as documented by an independent third party.

D. Removable Energy Transfer Segments.

1. Wheels 25" in diameter and greater shall be provided with removable energy transfer segments.
2. Segments shall be removable without the use of tools to facilitate maintenance and cleaning.

DI. Seals.

1. All diameter and perimeter seals shall be provided as part of the cassette assembly and shall be factory set.
2. Seals shall be non-contact nylon pile brush seal orientated in a labyrinth style configuration.
3. Diameter Seals shall be fully adjustable and easily accessible.
4. Perimeter seals shall be permanently mounted to the wheel rim and not require adjustment. Seals that mount to the frame are not acceptable.

DII. Drive System.

1. The wheel drive motor shall be an Underwriters Laboratory Recognized Component and shall be mounted in the cassette frame and supplied with a service connector or junction box.
2. Three phase motors shall be suitable for use in both standard and inverter rated applications.
3. Wheels 36” and smaller shall use a urethane stretch belt for wheel rim drive without the need for external tensioners.
4. Wheels 41” and larger, as well as 36" with 3-phase motors, shall use a urethane non-stretch belt with integral cord and constant tensioner.
5. Wheel drive system shall not require periodic adjustment.

DIII. Maintenance.

1. Energy recovery segments shall be cleanable outside of the cabinet with detergent or alkaline coil cleaner and water.
2. Energy transfer segments shall be capable of submersion in a cleaning solution. Submersion shall be capable of restoring latent performance to within AHRI certified performance limits.

DIV. Purge.

1. A mechanical purge shall be available as an optional accessory as to avoid excessive fan power.
2. When required the mechanical purge sector shall be factory installed and field adjustable.
3. Purge settings shall be calculated using AHRI certified data and adjusted per the wheel manufacturers selection software.
4. Purge shall be capable of limiting Exhaust Air Transfer Ratio (EATR) values to 0.4% through proper fan and purge adjustment.

DV. Options.

1. Double wall option shall be available to encapsulate all exposed insulation within the cassette frame.
2. Corrosion protection option shall consist of powder coating all exposed metals and inclusion of stainless steel bearings.
3. The powder coating shall have a minimum thickness of 2.0 mils and be rated for a 1,000 hour salt spray.

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