

SECTION 15785 - AIR-TO-AIR ENERGY RECOVERY UNITS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Packaged energy recovery units.
- B. Related Sections include the following:
 - 1. Division 15 Section "Basic Mechanical Materials and Methods" for general motor requirements.
 - 2. Division 15 Section "HVAC Instrumentation and Controls" for control wiring and control devices connected to energy recovery units.

1.3 SUBMITTALS

- A. Product Data: Include rated capacities, furnished specialties, and accessories.
- B. Field quality-control test reports.

1.4 QUALITY ASSURANCE

- A. Product Options: Drawings indicate size, profiles, and dimensional requirements of air-to-air energy recovery units and are based on the specific system indicated. Refer to Division 1.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- C. ASHRAE Compliance: Capacity ratings for energy recovery devices shall comply with ASHRAE 84, "Method of Testing Air-to-Air Heat Exchangers."

1.5 COORDINATION

- A. Coordinate installation of equipment supports.

1.6 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. Filters: Furnish one set of each type of filter specified.

PART 2 - PRODUCTS

2.1 PACKAGED ENERGY RECOVERY UNITS

- A. Unit shall be a packaged static plate enthalpy-energy recovery ventilator as manufactured by RenewAire, or approved equal. The energy recovery cores used in these products shall be certified by ARI under its Standard 1060 for Energy Recovery Ventilators. ARI published certifications shall confirm manufacture's published performance for airflow, static pressure, temperature and total effectiveness, purge air (OACF) and exhaust air leakage (EATR). Products that are not currently ARI Certified will not be accepted.
- B. Manufacturer shall be able to provide evidence of independent testing of the core by Underwriters Laboratory (UL), verifying a maximum flame spread index (FSI) of 25 and a maximum smoke developed index (SDI) of 50 thereby meeting NFPA 90A and NFPA 90B requirements for materials in a compartment handling air intended for circulation through a duct system. The method of test shall be UL Standard 723.
- C. Unit shall be listed under UL 1812 Standard for Ducted Air to Air Heat Exchangers.
- D. Shall be capable of transferring both sensible and latent energy between air streams. Latent energy transfer shall be accomplished by direct water vapor transfer from one airstream to the other, without exposing transfer media in succeeding cycles directly to the exhaust air and then to the fresh air.
- E. Energy-transfer element shall perform without condensing or frosting under normal operating conditions (defined as outside temperatures above -10°F and inside relative humidity below 40%). Occasional extreme conditions shall not affect the usual function or performance of the element. No condensate drains will be allowed.
- F. Unit shall have the capacity to operate continuously without the need for bypass, recirculation, preheaters, or defrost cycles under normal operating conditions.
- G. Water vapor transfer shall be through molecular transport by hydroscopic resin and shall not be accomplished by "porous plate" mechanisms. Exhaust and fresh airstreams shall at all times travel in separate passages, and airstreams shall not mix.
- H. Airflow through the energy exchange element shall be laminar, avoiding deposition of particulates on the interior of the energy exchange plate material.
- I. Construction
 - 1. Fixed-plate energy-exchange element. Energy-exchange module shall be of fixed-plate cross-flow construction, with no moving parts. Rotary wheels are not acceptable.
 - 2. No condensate drain pans or drains shall be allowed and unit shall be capable of operating in winter and summer conditions without generating condensate.
 - 3. Case shall be constructed of galvanized, 20-gauge steel, with lapped corners, and gasketed, zinc plated screw fasteners.
 - 4. Unit shall have single-point power connection.
 - 5. Flange components shall be provided suitable for connection of ductwork.

6. Access door shall provide easy access to blowers, energy transfer elements, and filters. Panel shall be gasketed to provide air-tight seal.
7. Case walls and doors shall be of double-wall construction, insulated with 1" FSK high-density board insulation, eliminating the possibility of exposing the fresh air to glass fibers.
8. Energy-exchange element shall be protected (supply and exhaust air streams) by 30% efficient 2" nominal pleated, disposable filters.
9. Blower motors shall be thermally protected with automatic reset, or supplied with starters.
10. Belt drive units shall have adjustable sheaves to balance airflow rates.
11. Unit shall be weather proof for out door installation.

J. Configuration: duct connections as shown on the plans.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install per manufacturers recommendations.
- B. Install heat exchangers so supply and exhaust airstreams flow in directions as indicated by manufacturer.
- C. Install access doors in both supply and exhaust ducts, both upstream and downstream, for access to heat exchanger and other components requiring servicing.
- D. Install units with clearances for service and maintenance.
- E. Install new filters at completion of equipment installation and before testing, adjusting, and balancing.

3.2 CONNECTIONS

- A. Piping installation requirements are specified in other Division 15 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Install piping adjacent to machine to allow service and maintenance.
- C. Duct and fan installation requirements are specified in other Division 15 Sections. Drawings indicate general arrangement of ducts, fittings, and specialties.

3.3 FIELD QUALITY CONTROL

- 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. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
 2. Adjust seals and purge.

3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
 4. Set initial temperature and humidity set points.
 5. Set field-adjustable switches and circuit-breaker trip ranges as indicated.
- B. Remove malfunctioning units, replace with new units, and retest as specified above.

END OF SECTION 15785