



Submittal

Trane U.S. Inc.

Engineer: Allied Engineering

Date: July 26, 2013

Prepared For:
Riverside Mechanical Inc
27 Rebecca Way
Falmouth, ME 04105 U.S.A.

Job Name:
Casco Bay Terminal Building

Customer P.O. Number:
20155-4350-1

Trane Job Number:
A223251

Specification Section:
237200

Trane is pleased to provide the enclosed submittal for your review and approval.

Qty	Product	Tag(s)
1	Renewaire Energy Recovery Unit	ERU-1

Jeff Charette
Trane U.S. Inc. dba Trane
860 Spring Street, Unit 1
Westbrook, ME 04092
Phone: (207) 239-3401
Fax: (207) 828-1511

The attached information describes the equipment we propose to furnish for this project, and is submitted for your approval.

Tag Data - Heat Recovery Unit (Qty: 1)

Item	Tag(s)	Qty	Model Number
A1	ERU-1	1	HE1XINV

Product Data - Heat Recovery Unit**Item: A1 Qty: 1 Tag(s): ERU-1**

Renewaire Indoor Fixed Plate Enthalpic Energy Recovery Unit
208v/3ph
2" MERV 8 pleated filters
Painted Unit - white
2 year whole unit parts warranty
10 year core parts warranty



Unit Report

Project Name:	Casco Bay Ferry Terminal	Project Engineer:	Allied Engineering
Project Address:	56 Commercial Street Portland ME 04101	Firm/Company Name:	Riverside Mechanical
Weather Data Location:	Portland, United States	Prepared By:	Jeff Charette
Project General Description:		Phone Number:	207-239-3401
		Fax Number:	207-828-1511
		Email Address:	jcharette@trane.com

Tag/Mark/Designation	ERU-1	
Location		
Area Served	Waiting Area	
Manufacturer	RenewAire	
Model #	HE1XINV	
Core	G5 = J	
Fresh Air Supply (FA)		
CFM	850	
External Static Pressure (in W.C.)	0.60	
Filter Rating (MERV)	MERV-8	
Exhaust Air (EA)		
CFM	850	
External Static Pressure (in W.C.)	0.60	
Filter Rating (MERV)	MERV-8	
Performance Data	Winter	Summer
Room Exhaust Air		
Dry Bulb (F)	70.0	75.0
Relative Humidity (%)	35	52
Wet Bulb (F)	54.4	63.0
Outside Air		
Dry Bulb (F)	-4.0	88.0
Relative Humidity (%)	59	44
Wet Bulb (F)	-5.0	71.0
Supply Air		
Dry Bulb (F)	46.8	79.1
Relative Humidity (%)	42	54
Wet Bulb (F)	38.0	66.9
Sensible Original Load (BTU/h)	67,932	11,934
Sensible Heat Recovered (BTU/h)	46,643	8,194
Sensible Load Remaining (BTU/h)	21,289	3,740
Latent Original Load (BTU/h)	20,759	11,645
Latent Heat Recovered (BTU/h)	9,977	4,530
Latent Load Remaining (BTU/h)	10,782	7,115
Total Original Load (BTU/h)	88,691	23,579
Total Heat Recovered (BTU/h)	56,620	12,724
Total Load Remaining (BTU/h)	32,071	10,855
Sensible Recovery Effectiveness (% of Load Reduction)	69	69
Latent Recovery Effectiveness (% of Load Reduction)	48	39
Total Recovery Effectiveness (% of Load Reduction)	64	54
Unit Electrical Data		
V/P/H	208-230/60/3	
Supply Air Motor HP	0.75 (w/o ECM)	
Supply Air Motor FLA	1.7-2.3	
Exhaust Air Motor HP	0.75 (w/o ECM)	
Exhaust Air Motor FLA	1.7-2.3	
MCA (Amps)	5.2	
MOPD (Amps)	15	
Unit Physical Data		
Length (in)	20-5/8	
Width (in)	40-3/8	
Height (in)	49-1/8	
Weight (lbs)	211	

Guide Specifications for RenewAire HE1XIN Indoor Energy Recovery Ventilators

Part I - General

A. Product Specification

1. Energy Recovery Ventilator (ERV) shall be a packaged unit as manufactured by RenewAire and shall transfer both heat and humidity using static plate core technology.

B. Quality Assurance

1. The energy recovery cores used in these products shall be third party Certified by AHRI under its Standard 1060 for Energy Recovery Ventilators. AHRI 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 AHRI Certified will not be accepted.
2. 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.
3. Unit shall be Listed under UL 1812 Standard for Ducted Air to Air Heat Exchangers. Some exceptions to UL Listing may apply.
4. The ERV core shall be warranted to be free of manufacturing defects and to retain its functional characteristics, under circumstances of normal use, for a period of ten years from the date of purchase. The balance-of-unit shall be warranted to be free of manufacturing defects and to retain its functional characteristics, under circumstances of normal use, for a period of two years from the date of purchase.

Part II – Performance

A. Energy Transfer

The ERV shall be capable of transferring both sensible and latent energy between airstreams. 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.

B. Passive Frost Control

The ERV core shall perform without condensing or frosting under normal operating conditions (defined as outside temperatures above -10°F and inside relative humidity below 40%). Occasional more extreme conditions shall not affect the usual function, performance or durability of the core. No condensate drains will be allowed.

C. Continuous Ventilation

Unit shall have the capacity to operate continuously without the need for bypass, recirculation, pre-heaters or defrost cycles under normal operating conditions.

D. Positive Airstream Separation

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 travel at all times in separate passages, and airstreams shall not mix.

E. Laminar Flow

Airflow through the ERV core shall be laminar over the products entire operating airflow range, avoiding deposition of particulates on the interior of the energy exchange plate material.

Part III – Product

A. Construction

1. The energy recovery component shall be of fixed-plate cross-flow construction, with no moving parts.

2. No condensate drain pans or drains shall be allowed and unit shall be capable of operating in both winter and summer conditions without generating condensate.
3. The unit case shall be constructed of G90 galvanized, 20-gauge steel, with lapped corners and zinc plated screw fasteners.
4. Access doors shall provide easy access to blowers, ERV cores, and filters. Doors shall have an airtight compression seal using closed cell foam gaskets. Pressure taps, with captive plugs, shall be provided allowing cross-core pressure measurement allowing for accurate airflow measurement.
5. Case walls and doors shall be insulated with 1 inch, 4 pound density, foil/scrim faced, high-density fiberglass board insulation, providing a cleanable surface and eliminating the possibility of exposing the fresh air to glass fibers, and with minimum R-value of 4.3 (hr·ft²·°F/BTU).
6. The ERV cores shall be protected by a MERV-8 rated, 2" nominal, pleated, disposable filter in both airstreams.
7. Unit shall have single-point power connection and a single-point 24 VAC contactor control connection.
8. Blowers shall be quiet running, forward curve type and be either direct drive.
9. Direct drive models shall be EISA-compliant for energy efficiency with open drip proof design and integral thermal protection.
10. The unit electrical box shall include a factory installed, non-fused disconnect switch and a 24 VAC, Class II transformer/relay package.
11. The ERV shall be provided "inverter-ready" allowing for applications of inverters supplied and installed by others.

Part IV – Installation

A. Unit Location

1. Locate and orient unit to provide the shortest and most straight duct connections. Provide service clearances as indicated on the plans. Locate units distant from sound critical occupancies.
2. Provide a poured concrete equipment pad for all floor mounted units. The pad thickness and floor plan dimensions to be determined based on the unit selected, and site structural considerations.
3. Provide a structurally suitable support for the base of any wall mounted or hung units.

B. Vibration Isolation

1. Provide rubber or spring type isolators appropriately sized for corner weights of the specific unit.
2. Provide flexible duct connections at unit duct flanges.

C. Duct Design

1. All ductwork shall be designed, constructed, supported and sealed in accordance with SMACNA HVAC Duct Construction Standards and pressure classifications.
2. At a minimum all duct runs to the outdoors shall be thermally insulated at levels appropriate to the local climate. A continuous vapor barrier shall also be provided on warm surface of the insulation.

D. Sound Control

1. To control sound radiated from the unit:
 - a. Provide acoustic treatment in mechanical room walls and ceilings.
2. To control sound associated with the two blower outlets:
 - a. Provide straight, gradual transition ductwork for a minimum of 2-1/2 duct diameters downstream from the blower outlet for air velocities of less than 2,500 feet per minute.
 - b. Provide continuous acoustic insulation treatment of the duct until after the first elbow or tee.

- c. Provide engineered sound attenuation ductwork to meet noise criteria (NC) requirements.

E. Test and Balancing

1. Test and Balancing may not begin until 100% of the installation is complete and fully functional.
2. Follow National Comfort Institute (NCI) air test and balance procedures specific to Heat Recovery Ventilator Balancing Procedure including standard reports to the owner's representative.

HE1XINV



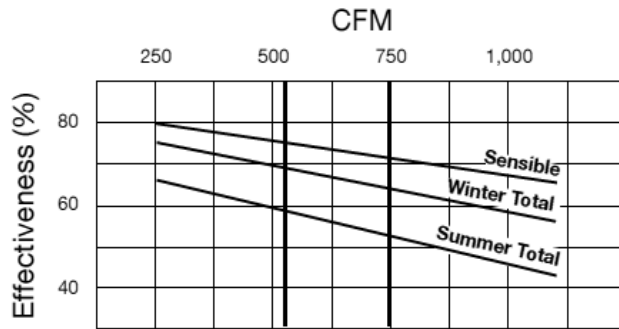
Indoor Unit



Specifications

Ventilation Type: Static Plate, Heat and Humidity Transfer					
Typical Airflow Range: 250-925 CFM					
AHRI 1060 Certified Core: One L125-00					
Airflow Rating Points (for AHRI): 750 CFM and 563 CFM					
Number Motors: Two direct drive blower/motor packages					
V	HZ	Phase	FLA (per motor)	Min. Cir. Amps	Max. Overcurrent Protection Device
115	60	Single	9.0	20.3	25
208-230	60	Single	4.5	10.1	15
277	60	Single	3.9	8.8	15
208-230	60	Three	1.7-2.3	5.2	15
460	60	Three	1.15	2.6	15
Standard Features: Non-fused Disconnect 24 VAC Transformer/Relay Package					
Filters: Two total, MERV 8, 2" pleated, 20" x 20" nominal size					
Weight: 211 lbs (unit), 300 lbs (shipping weight, on pallet)					
Shipping Dimensions: 62" L x 48" W x 55" H					
Options: ECM Motor – Two, 115V or 208-230V 0.75 hp (Single Phase) Fused Disconnect Double Wall Construction Motorized isolation dampers, OA, EA or both airstreams Factory mounted Filter Alarms (2) Independent Blower Control					
Accessories: Wall Caps Back Draft Dampers					

G5 Performance



*At AHRI 1060 standard conditions
(See certified data on page 73 for core components.)

Airflow Performance

Motor HP Phase	External Static Pressure (Inches Water Column)						
	0.0	0.25	0.5	0.75	0.9	1.25	1.5
0.75 Single Phase	970 CFM 1,490 Watts	925 CFM 1,375 Watts	860 CFM 1,270 Watts	795 CFM 1,160 Watts	750 CFM 1,090 Watts	635 CFM 950 Watts	480 CFM 825 Watts
0.75 Three Phase	970 CFM 1,246 Watts	925 CFM 1,158 Watts	860 CFM 1,039 Watts	795 CFM 928 Watts	750 CFM 856 Watts	635 CFM 691 Watts	480 CFM 509 Watts

Note: Watts is for the entire unit (two motors).

HE1XINV Unit Dimensions

EA: Exhaust Air to outdoors
 OA: Outdoor Air intake
 RA: Room Air to be exhausted
 FA: Fresh Air to inside

