SECTION III
Rev. 20171229

HVI TESTED/CERTIFIED

HEAT RECOVERY VENTILATORS AND ENERGY RECOVERY VENTILATORS (HRV/ERV)

DUCTED HEAT AND ENERGY RECOVERY VENTILATORS

NOTICE:

HVI Certification of these products is based on CAN/CSA C439, *Standard Laboratory Methods of Test for Rating the Performance of Heat/Energy-Recovery Ventilators*, as its test standard for measuring product performance for certification. Airflow rates for HRVs/ERVs are measured in accordance with ANSI/AMCA 210 *Laboratory Methods of Testing Fans for Aerodynamic Performance Rating*, as noted in CAN/CSA C439. Testing for these products has been conducted by an HVI-designated laboratory.

HVI-Certified product performance ratings for HRV/ERVs are available online at www.hvicertified.org or from the manufacturer. Companies whose products have been certified by HVI are required to affix appropriate HVI-Certified Labels to those products. The equipment tested to achieve Certification was supplied by the manufacturer and is representative of the designated model offered for sale. HVI-Certified products are subject to regular, random verification testing confirming the performance of production equipment. ASHRAE Handbook - Fundamentals (SI Edition) was used for conversion factors to convert cubic feet per minute to liters per second and inches water gage to Pascals.

This Certified data is intended for the ventilation designer, contractor and purchaser of HRV/ERV equipment. Government and utility programs may also refer to these Certified ratings with confidence. HVI-Certified equipment can be expected to provide indicated ventilation capacity and energy performance under specific indoor and outdoor air temperature and humidity conditions.
CONSULT THE EQUIPMENT SUPPLIER FOR PERFORMANCE AT CONDITIONS OTHER THAN THOSE DESCRIBED.

USE OF HVI LABEL

Companies whose products have been certified by HVI shall affix appropriate Labels to those products.

INTRODUCTION

Heat or energy recovery ventilators are mechanical ventilation systems used to provide substantially balanced ventilation by providing two separate air paths. It is the combination of an exhaust system and a supply system in a single packaged solution. The exhaust system removes air from the building and the supply system adds outdoor air into the building. All products in Section III of the HVI Certified Products Directory transfer heat (in the case of HRVs) or heat and humidity (in the case of ERVs) reclaiming energy otherwise wasted in an exhaust air stream and minimizing the cost associated with ventilation. The HRV/ERV products listed in the HVI Certified Products Directory have been evaluated for airflow performance as well as their effectiveness of transferring heat or energy.

VENTILATION PERFORMANCE TERMS

External Static Pressure: The total static pressure loss of the exhaust or supply system in the ductwork. In the case of the exhaust system, the total static pressure differential is the static pressure measured at point 4 minus the static pressure measured at point 3. The supply system total static pressure differential is the static pressure measured at point 2 minus the static pressure measured at point 1.

Gross Airflow: The measured airflow rate at points 2 and 3, which may contain cross-leakage between the supply and exhaust airstreams. These values are used for duct design.

Exhaust Air Transfer (EAT): The percent of exhaust air found in the supply airstream at the specified external total static pressure. Gross Airflow x (1-(EAT/100)) = Net Airflow.

Net Supply Airflow: The gross supply airflow reduced by measured cross-leakage (EAT). This is the actual amount of outdoor air delivered by the supply system of the unit and is used for sizing the equipment for the required ventilation rate.

Very Low Temperature Ventilation Reduction (VLTVR): The percent reduction in airflow rate of the supply and exhaust systems at the end of the 72-hour test compared with operation under non-frosting conditions. The final airflow rate is taken as the average of the last 60 hours of the test. This reduction in airflow results from frost and ice buildup in the exchanger and variation in mechanical ventilation during defrosting.

Very Low Temperature Airflow Imbalance (VLTAI): The percent of airflow imbalance of the Supply System Airflow compared to Exhaust System Airflow over the last 60 hours of the 72-hour test.

Latent Recovery/Moisture Transfer (LRMT): Moisture recovered divided by moisture exhausted and corrected for the effects of cross-leakage. LRMT = 0 indicates that moisture was not transferred (net of cross-leakage) from the exhaust airstream to the supply airstream. LRMT = 1 would indicate complete transfer of moisture. LRMT is provided for the Heating Season Performance and the Very Low Temperature Test as an indication of moisture handling characteristics, and may be used to evaluate the moisture transfer ability of the equipment in order to assess the humidification or dehumidification performance of the product at the specified test condition.

ENERGY PERFORMANCE TERMS

Values for energy performance are listed for various outdoor air temperature and humidity conditions at a specific net airflow selected by the manufacturer. It is important to recognize that for comparison of equipment, only values at equivalent outdoor air conditions and net airflow should be used.

Heating Season Performance: This is a mandatory test for HVI Certification at 0°C (+32°F) and 75% relative humidity for the outdoor air and at 22°C (71.6°F) and 40% relative humidity for the indoor air. This test represents the typical steady-state energy performance of the HRV/ERV. Performance is more comparable using this Heating Season Performance data due to the absence of frost formation.

Very Low Temperature Test: This is an optional test for HVI Certification. The Very Low Temperature Test is typically conducted at -25°C (-13°F) and at 22°C (71.6°F) and 40% relative humidity for the indoor air, although the manufacturer may chose to conduct this test at any outdoor temperature below freezing. The test duration is 72 hours. The Net Supply Airflow and all other energy performance values are calculated by using the averages of the last 60 hours of the test.

Cooling Season Performance: This is an optional test for HVI Certification. Outdoor air conditions are 35°C (95°F) at 50% relative humidity, indoor air conditions are 24°C (75°F) at 50% relative humidity. Total Recovery Efficiency (see below) is reported in place of Sensible Recovery Efficiency (see below) as the latter value is less relevant for cooling load applications.

Watts: The average power consumed during the specific test. DO NOT USE THIS VALUE TO DETERMINE REQUIRED ELECTRIC SERVICE. REFER TO THE ELECTRICAL RATING INFORMATION SUPPLIED BY THE MANUFACTURER.

Sensible Recovery Efficiency (SRE): The net sensible energy recovered by the supply airstream as adjusted by electric consumption, case heat loss or heat gain, air leakage, airflow mass imbalance between the two airstreams and the energy used for defrost (when running the Very Low Temperature Test), as a percent of the potential sensible energy that could be recovered plus the exhaust fan energy. This value is used to predict and compare Heating Season Performance of the HRV/ERV unit.

Adjusted Sensible Recovery Efficiency (ASRE): The net sensible energy recovered by the supply airstream as adjusted by case heat loss or heat gain, air leakage, airflow mass imbalance between the two airstreams and the energy used for defrost (when running the Very Low Temperature Test), as a percent of the potential sensible energy that could be recovered. This value should be used for energy modeling when wattage for air movement is separately accounted for in the energy model.

Total Recovery Efficiency (TRE): The net total energy (sensible plus latent, also called enthalpy) recovered by the supply airstream adjusted by electric consumption, case heat loss or heat gain, air leakage and airflow mass imbalance between the two airstreams, as a percent of the potential total energy that could be recovered plus the exhaust fan energy. This value is used to predict and compare Cooling Season Performance for the HRV/ERV unit.

Adjusted Total Recovery Efficiency (ATRE): The net total energy (sensible plus latent, also called enthalpy) recovered by the supply airstream adjusted by case heat loss or heat gain, air leakage and airflow mass imbalance between the two airstreams, as a percent of the potential total energy that could be recovered. This value is used to predict and compare Cooling Season Performance for the HRV/ERV unit. This value should be used for energy modeling when wattage for air movement is separately accounted for in the energy model.