EV450 & HE SERIES ERVs
COMMERCIAL ENERGY RECOVERY VENTILATORS

- Packaged static-plate total energy recovery ventilator
- 200-7,950 CFM
- TEFC premium efficiency motors for HE2X-HE8X and EC-motor option for EV450, HE1X and HE1.5X
- Options and accessories: bypass economizer, integrated programmable controls, VFDs, double wall, Class 1 low-leakage dampers, MERV 13 filters

VENTILATION SOLUTIONS FOR EVERY APPLICATION
Deficient Indoor Air Quality is a Threat

As buildings get tighter to seal weather out, they seal in contaminants, causing deficient indoor air quality (IAQ). Typical contaminants include off-gassing from carpeting, furniture and building materials, excess humidity and mild and mold, odors, cooking and cleaning fumes, CO₂, hair and fibers, to name a few.

Deficient IAQ is a threat since it can harm occupant health and cognitive function, damage structures and hurt the bottom line. It’s especially concerning since people spend about 90% of their time indoors, and indoor air can be two to five times—and up to 100 times—more polluted than outdoor air. The EPA ranks indoor air pollution as a top-five health risk.¹

ADVERSE EFFECTS OF DEFICIENT IAQ

**HEALTH PROBLEMS**

Deficient IAQ can cause allergies, headaches, coughs, asthma, skin irritations and breathing difficulties, as well as cancer, liver disease, kidney damage and nervous-system failure.

**COGNITIVE IMPAIRMENT**

Harvard and Berkeley Lab found that CO₂—a constituent of exhaled breath—negatively impacts thinking and decision-making at levels commonly found indoors.²

**REDUCED PRODUCTIVITY**

Berkeley Lab found that deficient IAQ can cost $200 billion in debilitated worker performance and $58 billion in lost sick time.³

ASHRAE BUILDING CODES & STANDARDS

With the goal of building sustainably and creating healthy environments for all, the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) has written several standards and guidelines. By enhancing IAQ and saving energy, RenewAire technologies provide the means to meet and exceed all ASHRAE standards and guidelines. Following these parameters leads to greener structures and healthier occupants.

- **ASHRAE Standard 62.1:** "Ventilation for Acceptable Indoor Air Quality" is the recognized standard for designing ventilation systems to achieve acceptable IAQ. ERVs play a key role by creating cleaner and healthier indoor air while optimizing energy efficiency.
- **ASHRAE Standard 90.1:** "Energy Standard for Buildings Except Low-Rise Residential Buildings" is a benchmark for commercial building energy codes in the U.S. and across the world. ERVs are required in several instances based on climate zone and percent of outdoor air at full design airflow rate.

RENEWAIRE VENTILATION SOLUTIONS IMPROVE HEALTH & WELLNESS

- **Increased and balanced ventilation,** which is the most effective way to realize cleaner and healthier indoor air. With enough controlled fresh and filtered outdoor air coming in to replace equal parts of stale indoor air via balanced design, IAQ will be enhanced.
- **The solution to pollution is dilution achieved via ventilation,** which is the most effective way to realize cleaner and healthier indoor air. With enough controlled fresh and filtered outdoor air coming in to replace equal parts of stale indoor air via balanced design, IAQ will be enhanced.
- **This can be done energy-efficiently, cost-effectively and sustainably with RenewAire’s energy recovery ventilation solutions, which reuse otherwise-wasted total energy from the exhaust airstream to condition incoming outdoor air.** The results are improved IAQ, greater ventilation efficiency and major energy cost savings.

RENEWAIRE CORE TECHNOLOGY

**CERTIFICATION**

- Certified by the Air Conditioning, Heating and Refrigeration Institute (AHRI) for an industry-leading, low-to-zero Exhaust Air Transfer Ratio (EATR) at typical static pressure differentials
- Superior core flammability performance; passes UL-723 and UL-1812

**MAINTENANCE**

- RenewAire cores are easy to clean without removing them from the unit, and they never require washing

**INNOVATIVE CONSTRUCTION**

- Core exchanger material is cellulosic-based and doesn’t contain or use halogenated flame retardants or PVC’s
- Manufactured with a galvanized steel frame

**RELIABILITY**

- An industry-leading 10-year structural and performance warranty for the static-plate core, two-year warranty for commercial products and five-year warranty for residential products

**EXCEPTIONAL PERFORMANCE**

- Moderates heat and humidity via total energy recovery to maintain a comfortable indoor environment
- No need for frost protection or condensate pans
- Laminar airflow ensures that particulates do not accumulate in the core

**REDUCED COSTS**

- Optimized energy efficiency via core energy transfer decreases ventilation energy requirements, which can result in smaller air conditioning and heating needs

RENEWAIRE ERVs TEMPER THE AIR

Our ERVs moderate the extremes of outdoor supply-air temperature and humidity year-round, providing a sustainable ventilation solution for every climate.

- **IN SUMMER, THE WARM, HUMID OUTSIDE AIR IS PRECOOLED AND DEHUMIDIFIED BY THE OUTGOING COOL INTERIOR AIR**
- **IN WINTER, THE COLD, DRY OUTSIDE AIR IS PREHEATED AND HUMIDIFIED BY THE OUTGOING WARM INTERIOR AIR**

¹ "Why Indoor Air Quality is Important to Schools," United States Environmental Protection Agency (EPA), https://www.epa.gov/iaq-schools/why-indoor-air-quality-important-schools.

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doows/2015/10/26/3714853/co2-hampers-human-thinking.


doows/2015/10/26/3714853/co2-hampers-human-thinking.
A CLOSER LOOK

EV450 & HE SERIES
Numerous application possibilities exist with the flexible and innovative EV450 and HE Series commercial ERVs. These self-contained packaged ERVs can be used as a stand-alone unit or in concert with other HVAC equipment, and they have a wide CFM range. In addition, the ERVs are highly configurable and offer an extensive list of available options while optimizing energy efficiency and cost savings.

A Closer Look

EB2XINH

RenewAire in Action

RENEWAIRE ERVs’ FISCAL BENEFITS

Compared to conventional equipment, a RenewAire HE2XINH ERV (at 1,500 CFM in Minnesota with gas heat) will result in:

- **INCREASED CASH FLOW:** RenewAire ERVs lower HVAC energy costs by up to 65%. The HE2XINH ERV can save $2,656 annually on energy costs for the life of the unit.
- **SHORT PAYBACK:** Competitive pricing and sizable HVAC energy savings mean a short payback. The HE2XINH ERV’s payback can be only 1.75 years.
- **MAXIMIZED NPV:** RenewAire ERVs generate tremendous value. At an additional investment of $4,639, the HE2XINH ERV’s Net Present Value (NPV) is $31,371 over 15 years.
- **HIGHER IRR:** Applying RenewAire ERV technology boosts returns. The Internal Rate of Return (IRR) of the HE2XINH ERV is an incredible 59%!

*All data pertains to a RenewAire HE2XINH ERV when compared to conventional exhaust equipment at 1,500 CFM of OA in Minnesota using DX cooling and gas heat. Future energy costs calculated based on current energy costs.

GREEN BUILDING TRENDS

Trends in high-performance green buildings up the ante with stricter standards. Their guidelines not only place an emphasis on energy reduction, but also call for increased ventilation that aims to improve health, wellness, IAQ and indoor environmental quality (IEQ). Sustainable design initiatives like ASHRAE Standard 189.1, LEED® certification, the 2030 Challenge, the Living Building Challenge and the WELL Building Standard have grown in popularity among architects, contractors and building owners alike.

Our ventilation technologies create healthier and more comfortable indoor environments while optimizing energy efficiency by reusing otherwise-wasted total energy from exhaust air. The results are exceptional IAQ, IEQ and energy savings are critical components to earning the distinction of being a “high-performance green building.”
## EV450 & HE MODELS AT A GLANCE

<table>
<thead>
<tr>
<th>EV450</th>
<th>HE1X</th>
<th>HE1.5X</th>
<th>HE2X</th>
<th>HE3X</th>
<th>HE4X</th>
<th>HE6X</th>
<th>HE8X</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Airflow Range</strong></td>
<td>200-540 CFM</td>
<td>250-1,100 CFM</td>
<td>375-1,575 CFM</td>
<td>500-2,200 CFM</td>
<td>750-3,300 CFM</td>
<td>1,000-4,400 CFM</td>
<td>1,500-6,500 CFM</td>
</tr>
<tr>
<td><strong>Supply/Exhaust Blower</strong></td>
<td>Forward-curved centrifugal</td>
<td>Forward-curved centrifugal</td>
<td>Backward-curved impeller</td>
<td>Forward-curved centrifugal</td>
<td>Forward-curved centrifugal</td>
<td>Forward-curved centrifugal</td>
<td>Backward incline</td>
</tr>
<tr>
<td><strong>Supply/Exhaust Fan Type</strong></td>
<td>Direct-drive</td>
<td>Direct-drive</td>
<td>Direct-drive</td>
<td>Direct-drive</td>
<td>Direct-drive</td>
<td>Direct-drive</td>
<td>Direct-drive</td>
</tr>
<tr>
<td><strong>Supply/Exhaust Fan Speed Control</strong></td>
<td>ECM/SSSC</td>
<td>ECM/SSSC/VFD (optional on RT)</td>
<td>ECM/VFD (optional on RT)</td>
<td>VFD</td>
<td>VFD</td>
<td>VFD</td>
<td>VFD</td>
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<tr>
<td><strong>Supply/Exhaust Fan Vibration Isolation</strong></td>
<td>Rubber grommets</td>
<td>Rubber grommets</td>
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<td>Rubber grommets</td>
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</tr>
<tr>
<td><strong>Supply/Exhaust Fan Motor Voltage at 60 Hz</strong></td>
<td>120V 1P</td>
<td>120V 1P</td>
<td>120V 1P</td>
<td>277V 1P</td>
<td>277V 1P</td>
<td>277V 1P</td>
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<tr>
<td></td>
<td>460V 3P</td>
<td>460V 3P</td>
<td>460V 3P</td>
<td>575V 3P</td>
<td>575V 3P</td>
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<tr>
<td></td>
<td>ECM 1P</td>
<td>ECM 1P</td>
<td>ECM 1P</td>
<td>VFD</td>
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<tr>
<td><strong>Unit ESP</strong></td>
<td>0-1.25 in. w.g.</td>
<td>0-1.50 in. w.g.</td>
<td>0-1.50 in. w.g.</td>
<td>0-1.50 in. w.g.</td>
<td>0-1.50 in. w.g.</td>
<td>0-1.50 in. w.g.</td>
<td>0-1.50 in. w.g.</td>
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<tr>
<td><strong>Optional Communications</strong></td>
<td>BACnet, Modbus RTU or TCP</td>
<td>BACnet, Modbus RTU or TCP</td>
<td>BACnet, Modbus RTU or TCP</td>
<td>BACnet, Modbus RTU or TCP</td>
<td>BACnet, Modbus RTU or TCP</td>
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<td>BACnet, Modbus RTU or TCP</td>
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</tbody>
</table>
**SELECTING A UNIT**

**APPLICATION STRATEGIES**

**AER SUPPLIED TO INTAKES OF TERMINAL UNITS**

- Variable refrigerant flow/volume
- Fan coils
- Active chilled beam

**DIRECT-TO-ZONE WITH TERMINAL UNITS**

- Variable refrigerant flow/volume
- Fan coils
- Heat pumps
- Chilled beam
- Radiant floor heating & cooling
- Packaged terminal air conditioning

**SUPPLY AIR TO MIXING BOXES FOR INDOOR TERMINAL UNITS OR ROOFTOPS**

- Variable refrigerant flow/volume
- Fan coils
- Chilled beam

**DIRECT-TO-ZONE WITH ROOFTOP OR ALTERNATIVELY TO MIXING BOX OF ROOFTOP UNITS** (See dotted line)

**AIRFLOW ORIENTATIONS**

**INDOOR**

- INH
- INH
- INV

**OUTDOOR**

- RT
- RTF
- RTH
- RTR

**OUTDOOR DIRECT CONNECT**

- RTC

**MAINTENANCE IS SIMPLE**

Disposable filters should be checked and replaced as needed. Additionally, once a year, vacuum the four core faces using a soft brush. The RenewAire core does not need to be washed as particulates do not accumulate in the core.
EC MOTOR PERFORMANCE
OPERATING RANGES

Note: Airflow performance includes effect of clean, standard filter supplied with unit.

- = Actual tested sample points

• = Actual tested sample points

Note: Airflow performance includes effect of clean, standard filter supplied with unit.
EXPAND FUNCTIONALITY

ACCESSORIES

FILTERS

- 2" MERV 8, 13 Filters

HEATERS

- RH Series Electric Duct Heater 1kW, 2kW, 3kW, 4kW (for indoor units only)
- EK Series Electric Duct Heater (for indoor units only)
- GH Series Indirect Gas-Fired Duct Furnace

CONTROLS

- CO2 Sensor Wall Mount
- IAQ Sensor Wall Mount
- CO2 Sensor Duct Mount
- IAQ Sensor Duct Mount
- Temperature Sensor Duct Mount
- BACnet Factory Activation
- Occupancy Sensor Ceiling Mount
- Occupancy Sensor Wall Mount
- Duct Static Pressure Sensor Wall/Duct Mount without Display
- Duct Static Pressure Sensor Wall/Duct Mount with Display
- Smoke Detector Duct Mount
- Remote Display Handheld or Wall Mount

WALL VENTS AND DAMPERS

- Digital Time Clock Wall Mount
- Digital Time Clock Exterior Enclosure
- Louvered Wall Vent, 10" Round Duct Connection, 12" x 12"
- Hooded Wall Vent 10" & 12" Galvanized, Paintable Galvanneal
- Backdraft Damper 8", 10" & 12"
- Automatic Balancing Damper 4", 5" & 6"

ENGINEERED COMBO CURBS