

SMART ERV ***Energy Recovery Ventilator***



Build It Tight / Ventilate It Right!



SMART *air & energy solutions*

- SMART products include Indoor Air Quality (IAQ) and Energy efficiency products
- Primarily targeting the residential market
- Products include:
 - UV Lights for **clean** air 
 - Energy Recovery Ventilators for **fresh** air 
 - Zoning systems for **efficient** temperature control 

A SMART Approach to Green Products!

<http://www.smartairandenergy.com/>

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Why Buy the SMART ERV?

- Exchange stale indoor air for **fresh** outdoor air
 - With today's tightly sealed, well insulated homes, the air inside your home can be 2-5 times more polluted than the air outside
 - ERV or HRV removes germs, dust allergens and other airborne impurities that can build up overtime
- ERV's temper the air and regulate humidity

ERV's work in all seasons

- Reduces temperature & humidity of fresh air brought into the home (warm climates)
- Increases temperature & humidity of fresh air brought into the home (cold climates)
 - HRV's only increase the temperature
 - HRV's do not regulate humidity

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Why Buy the SMART ERV?

- SMART ERV's Patented Energy Recovery Wheel
 - Highest **efficiency** on the market
 - Up to 80% of total enthalpy (energy – temp & humidity)
 - Better than competitors using paper cores & wheels
 - Polymeric wheel design, does not lose efficiency
- More standard features than the competition
 - One size fits all homes
 - 2 Variable Speed Fans
 - Built in Frost control for use in cold climates
 - Built in Economizer. Air-side economizers can save energy in buildings by using cool outside air as a means of cooling the indoor space. Also called *free cooling*. Economizers can reduce energy costs the moderate parts of the year (Spring/Fall).

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Who Should Use it?

- Anyone who wants fresh air
 - Today's air-tight homes provide excellent energy efficiency. However, the better insulation restricts air exchange, trapping humidity, stale air and various pollutants released by building materials
 - Excess moisture should be considered a pollutant. It encourages the growth of mold, mildew and other organisms, which can cause health concerns like allergies and asthma
 - Pollutants created within the home may include chemical cleaners, cigarette smoke, cold/flu, pets, new furniture
 - Anyone having breathing difficulties
 - Appliances that use inside air like ceiling or bathroom fans, range hoods, wood burning fireplaces, clothes dryers, furnaces, water heaters

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How do you get fresh outdoor air?

- Open a Window
- Passive Ductwork

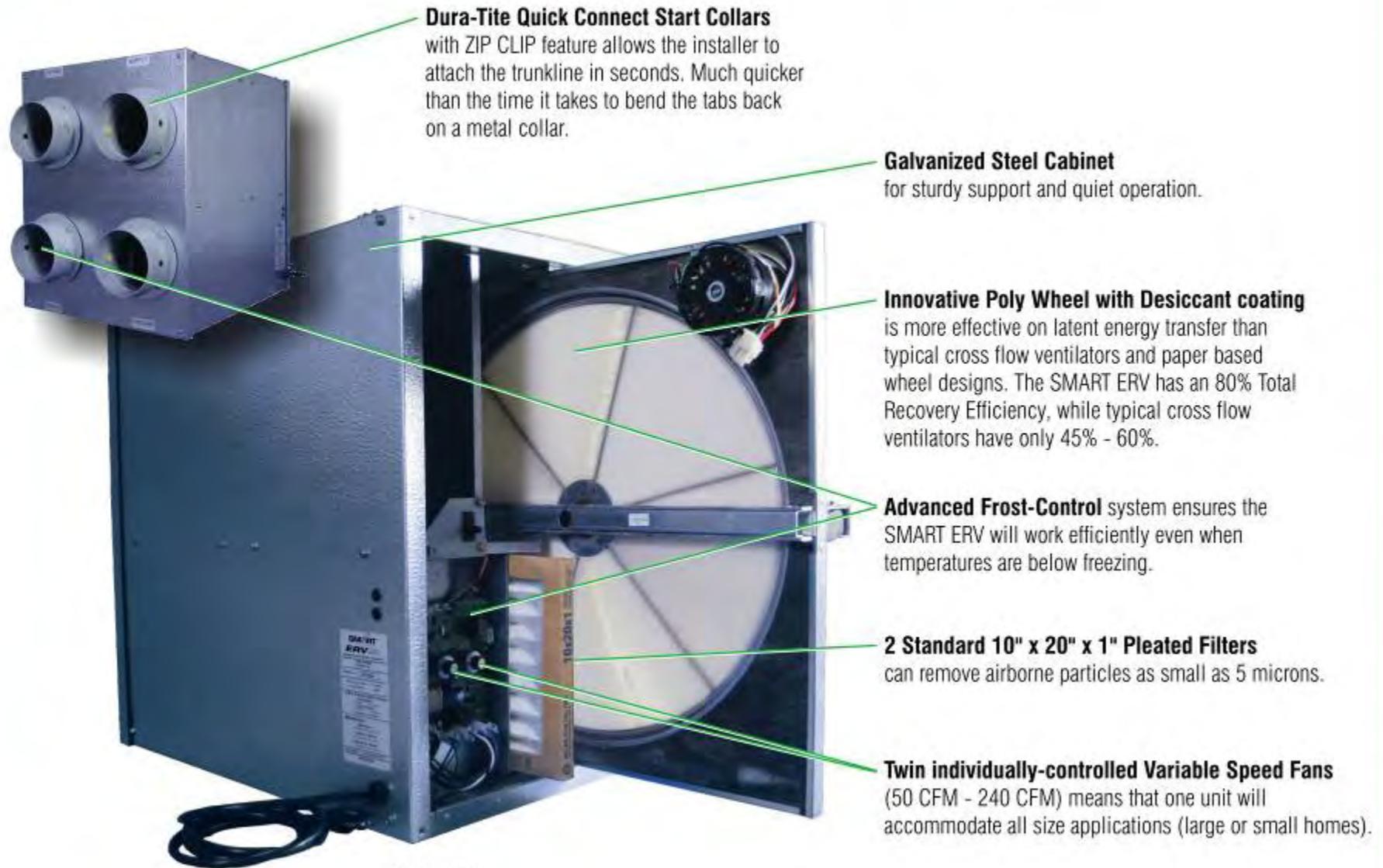
These methods require excessive use of the HVAC system to regulate the indoor environment

- ERV is the **SMART**est way since it preconditions the intake air

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SMART ERV Features and Benefits



Dura-Tite Quick Connect Start Collars with ZIP CLIP feature allows the installer to attach the trunkline in seconds. Much quicker than the time it takes to bend the tabs back on a metal collar.

Galvanized Steel Cabinet for sturdy support and quiet operation.

Innovative Poly Wheel with Desiccant coating is more effective on latent energy transfer than typical cross flow ventilators and paper based wheel designs. The SMART ERV has an 80% Total Recovery Efficiency, while typical cross flow ventilators have only 45% - 60%.

Advanced Frost-Control system ensures the SMART ERV will work efficiently even when temperatures are below freezing.

2 Standard 10" x 20" x 1" Pleated Filters can remove airborne particles as small as 5 microns.

Twin individually-controlled Variable Speed Fans (50 CFM - 240 CFM) means that one unit will accommodate all size applications (large or small homes).

Warranty:
5 year on Wheel and 1 year on all other parts.

Optional Wall Mounted Remote

- Adjust air volume relative to household occasion
- Dirty Filter indicator
- Economizer lock-out mode

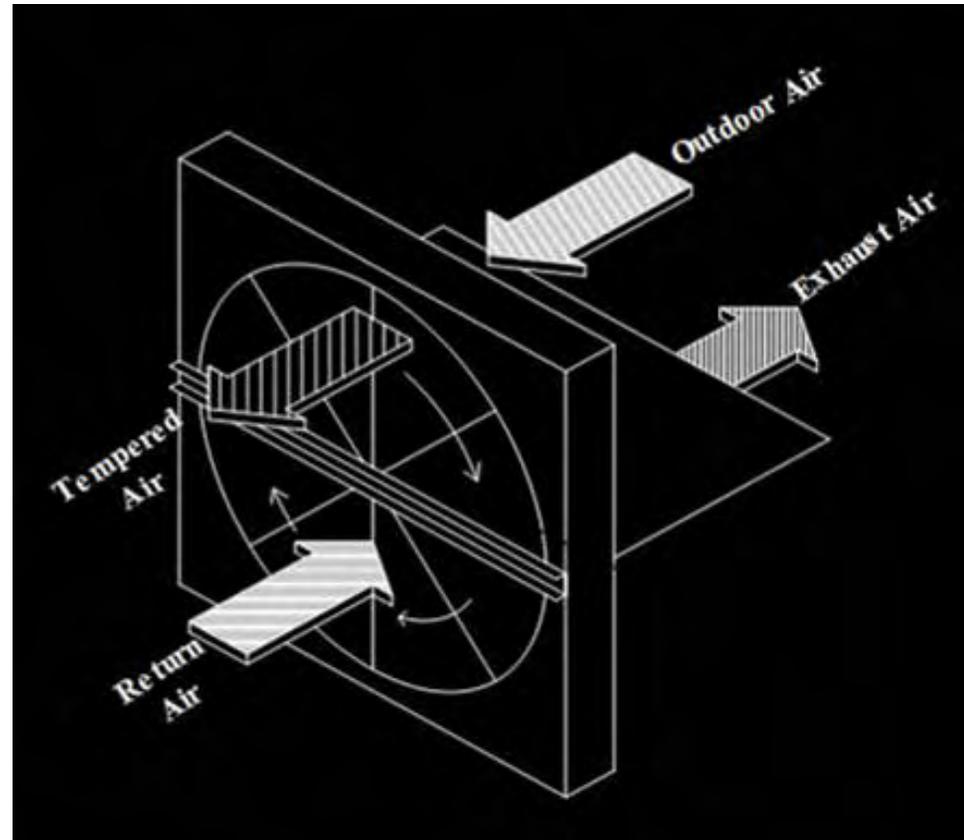


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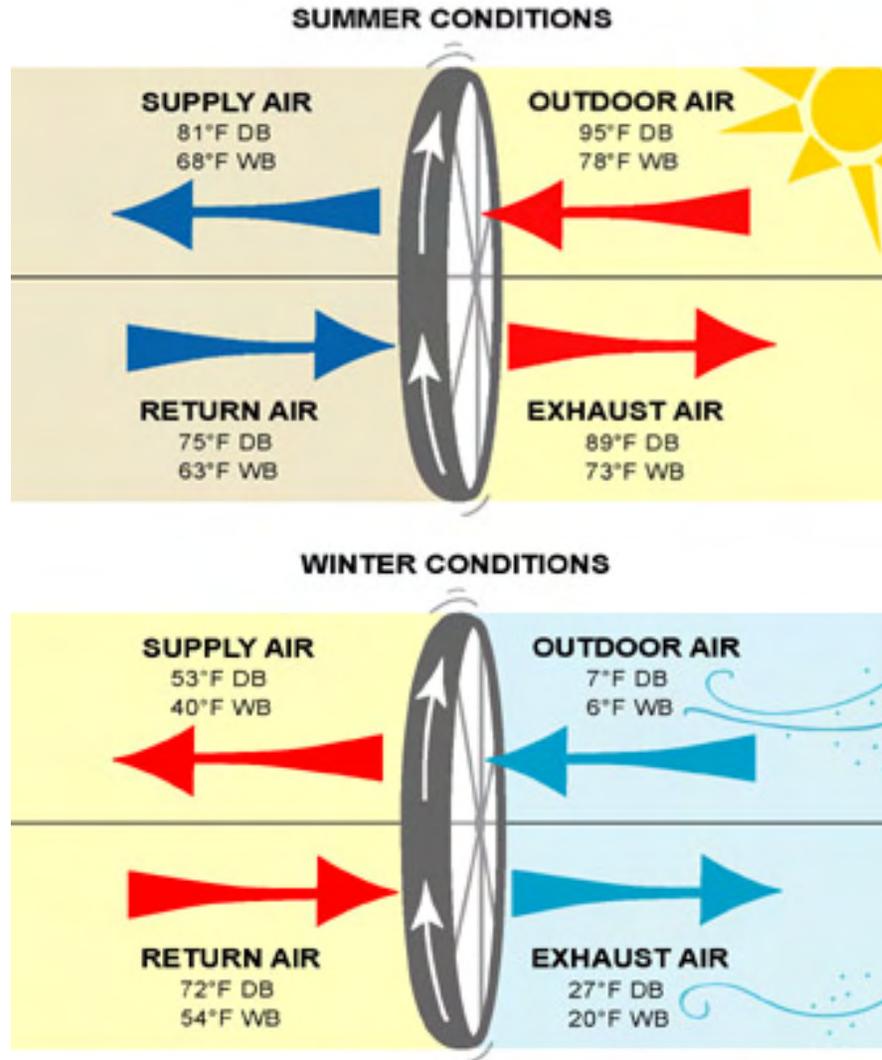
How does the SMART ERV work?

- Wheel rotates between the indoor and outdoor air streams – [commercial design](#)
- Indoor air temperature and humidity is absorbed onto the Desiccant Wheel
- Mixing air streams allows the outdoor air to be pre-heated or pre-cooled as it crosses the wheel
- Incoming outdoor air humidity is lowered or raised as it crosses the wheel



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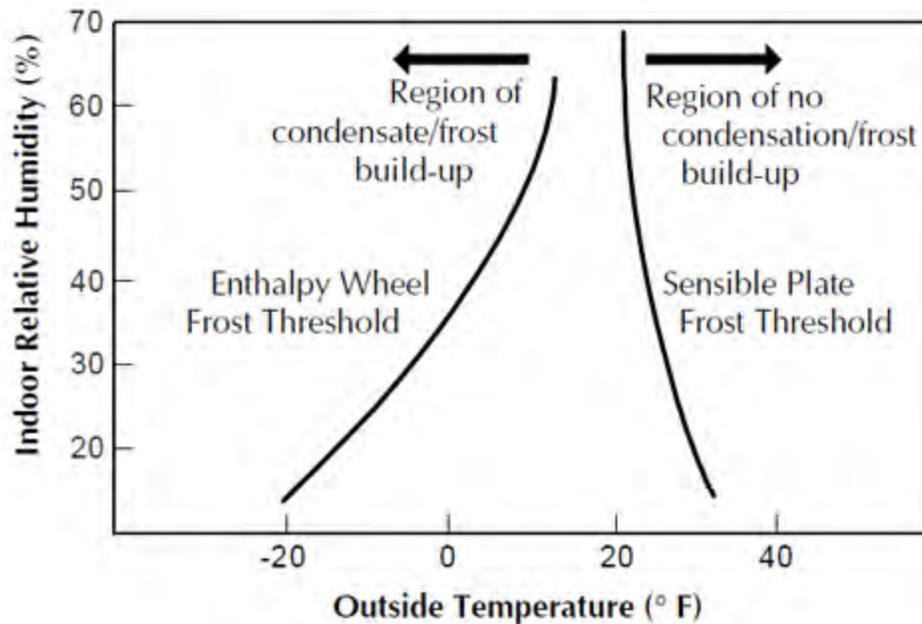
How does the SMART ERV work?



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Cold Climates: Frost Build-Up

- Polymer Wheel vs Plate Design
 - Inherently lower frost threshold by 20-30 deg
 - Wheel design drastically reduces potential of frost
 - No condensate
 - moisture transfer in vapor phase



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Cold Climates: How is Frost Build-Up Controlled?

- Frost control is achieved using two methods
 - The unit is factory set to reduce intake airflow by decreasing blower speed until air leaving the wheel has risen back above set point
 - This method is recommended because it avoids depressurization in the home
 - Installer can set unit to shut off Intake blower when temp drops below set point. Exhaust continues to run until discharge temp has risen back above set point
 - Depressurization may happen and make-up air may be needed from another source

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How does it compare to others?

<u>MANUFACTURER / UNIT</u>	<u>HEATING EFF</u>	<u>COOLING EFF</u>
SMART ERV	71% S @ 240 CFM 80% S @ 50 CFM	69% T @ 240 CFM
RenewAire EV130	77% S @ 63CFM	51% T @ 63CFM
RenewAire EV200	79% S @ 63CFM	59% T @ 63CFM
RenewAire EV300	64% S @ 251CFM	31% T @ 252CFM
BROAN Guardian Plus	60% S @ 105 CFM	43% T @ 105CFM
Honeywell ER150	79% S @ 110 CFM	TBA
Honeywell ER200	79% S @ 110 CFM	TBA
Fantech SHR2004	69% S @ 162 CFM	16% T @ 79CFM
NuTech 200ERV	67% S	55% T
NuTech 200ERVD	67% S	55% T
Venmar AVS Solo 1.5	69% S @ 66 CFM	
Venmar AVS Solo 1.9	64% S @ 178 CFM	
Venmar AVS Solo 2.0	53% S @ 182 CFM	69% T @ 117CFM

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Specifications

AIRFLOW:	240 - 50 CFM
HEAT EXCHANGER:	POLYMERIC ENTHALPY WHEEL WITH SILICA BASED DESSICANT
ELECTRICAL:	120 VAC, 60 Hz, 6.0 AMP, 280 W Max
HIGH VOLTAGE FUSE:	6.0AMP 250V AGA SLOW BLOW
EFFECTIVENESS:	71% ENTHALPY @ 240 CFM 80% ENTHALPY @ 50 CFM
DIMENSIONS:	24 5/8"L x 25 1/4"H x 19 3/4"W
SHIPPING WEIGHT:	100 LBS
MOUNTING:	HORIZONTAL OR VERTICAL
INSTALLATION:	STAND ALONE or SHARED DUCTWORK
DUCTING:	6" FLEX DUCT
CERTIFICATION:	ARI CERTIFIED COMPONENT ETL Certified per UL 1812 and CAN/CSE C349.00

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Installation Notes

- Installation by qualified HVAC contractors recommended
 - Using conventional ductwork, tools and materials
- Typically installed in unconditioned area:
 - Attic, crawlspace, storage area, furnace room
- Additional ductwork components may be required
 - Vent Kit (VK-SW) is available for sidewall terminations
 - Kit includes:
 - 6"x25' R4.2 Flex
 - Sidewall Intake Hood
 - Sidewall Exhaust Hood
 - 4 Tie Straps

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Installation Options

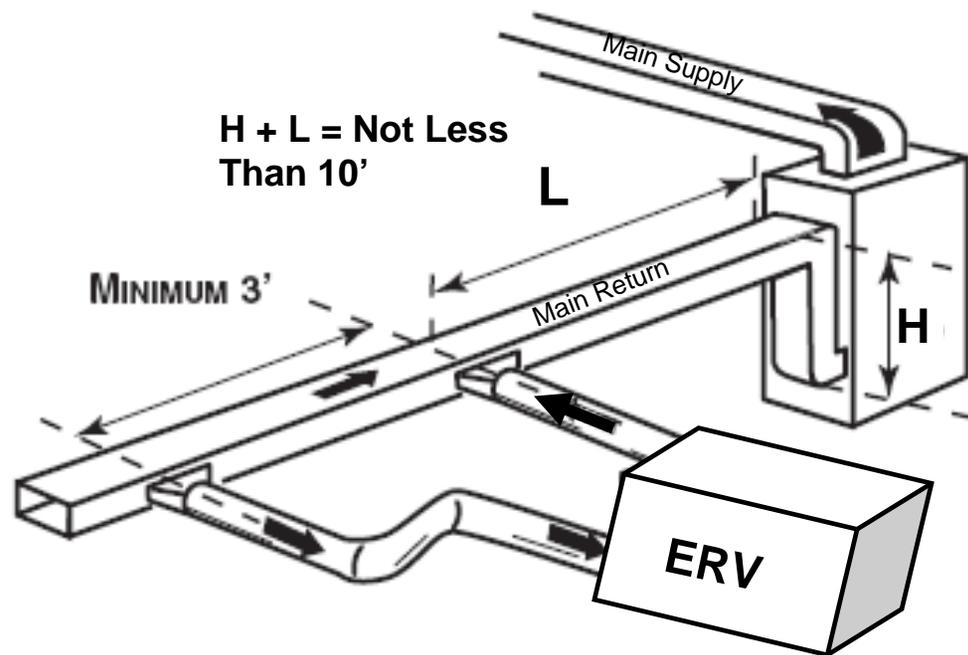
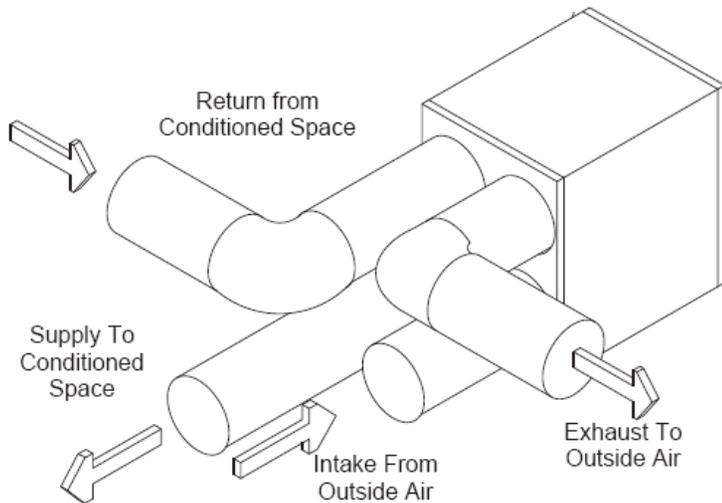
- **Shared Ductwork** (most common)
 - This method uses the existing HVAC duct system.
 - Both the supply and return ducts from the SMART ERV unit are attached to the return air duct of the HVAC system.
 - It is preferred to keep 3 feet between the two connections in the HVAC duct with the fresh supply line closest (min 10' of duct away) to the blower wheel of the HVAC equipment.
 - SMART ERV and HVAC equipment thermostat **MUST** be wired to run together (interlocked), so the fresh air is pushed through the ductwork by the HVAC fan.

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Installation Options

- Shared Ductwork (most common)



Note: it is permissible to duct the fresh air into the supply side of the air handler (min 18" away from blower and using a wye fitting). The stale exhaust air should still be pulled from the return duct or stand alone return air grille(s).

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Installation Options

- **Stand Alone Ductwork**

- This method is used in homes that do not have or accessible limitations to forced air ductwork.
 - Areas such as kitchen, bathroom and laundry should have return air grilles, while living areas such as family rooms and bedrooms should have supply grilles.
 - Route ductwork keeping in mind the ERV cfm performance curve.
 - Face velocity and cfm on dedicated ERV supply and return grilles can be very low compared to conventional hvac systems.
 - With this type of application, the optional wall mounted control (E240CU) can signal the SMART ERV unit to operate.
 - Other 24V switches/stats can be used

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Sizing/Air Volume

- Energy recovery ventilators
 - For continuous indoor air quality ventilation, an energy recovery ventilator should provide 0.35 air changes per hour.
 - Total volume (sq footage x ceiling height)
 - Rule of thumb is 5 CFM per 100 square feet of floor area.
- **Total area of home**
 - **1,000 square feet - 50 CFM or more**
 - **2,000 square feet - 100 CFM or more**
 - **3,000 square feet - 150 CFM or more**
 - **4,000 square feet – 200 CFM or more**
 - **5,000 square feet - 250 CFM or more**
 - More to be desired due to indoor air contaminants such as pets, smoke, sick family, cleaning, new flooring/furniture, parties, etc
 - Local codes may require different rates
 - State of MN requires all new construction to have a fresh air exchange

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Installation Procedure

1. Mount unit in desired location
2. Route & install ductwork
 - Supply & exhaust for stand alone or shared duct
3. Install optional wall mounted control unit or other 24V activating stat/switch
4. Energize unit
 - As stand alone or synchronized with air handler
5. Adjust airflow ventilation rates
 - Separate control knobs for supply & exhaust fans
 - Duct instrumentation (by others) to determine flow
 - Flow table in instructions

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Key Benefits

- Unique Poly Wheel
 - Produces up to 240 CFM of fresh air into the home and up to 80% efficiency
 - Proven **commercial** design in a residential package
- 2 variable speed fans
 - One each for intake/exhaust
 - Adjusted for homes up to 5,000 square feet
- Very low Frost threshold for cold climates
 - Automatic when you do need it
- Lower maintenance
 - Opposing air streams keep dry dirt & dust off of wheel

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Cost & Availability

- MSRP:
 - E240 = \$2,000
 - E240CU:RES-1 = \$450
 - VK-SW = \$80
- Ordered thru wholesale distribution
- Units are in stock:
 - Huntsville, AL
 - Dallas, TX

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SMART Contractor Rebate Program

- VISA Gift Card
- \$50 on ERV
- NOW AVAILABLE

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some clean green!**

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Green Products



**Earn a Visa
Gift Card
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Energy Products!**



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Offer expires March 31, 2010
Subject to change without notice.

Qualifying Products



UV Lights



Residential
Zoning



Energy
Recovery
Ventilator

Note: Consumables (filters and UV lamps) are not eligible for this promotion

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