



**Facts About  
Energy Recovery  
Ventilators**

*And How They  
Can Improve Your  
Home's Indoor  
Air Quality*

## **“Should You Be Concerned About Indoor Air Quality?”**

“All of us face a variety of risks to our health as we go about our day-to-day lives. Driving, flying, engaging in recreational activities, and being exposed to environmental pollutants all pose varying degrees of risk.”

“Some risks are simply unavoidable. Some we choose to accept because to do otherwise would restrict our ability to lead our lives the way we want. And some are risks we might decide to avoid if we had the opportunity to make informed choices.”

“In the last several years, a growing body of scientific evidence has indicated that the air within homes and other buildings can be more seriously polluted than the outdoor air in even the largest and most industrialized cities. Other research indicates that people spend approximately 90 percent of their time indoors. Thus, for most people, the risks to health may be greater due to exposure to air pollution indoors than outdoors.”

“In addition, people who may be exposed to indoor air pollutants for the longest periods of time are often those most susceptible to the adverse effects of indoor air pollution. Such groups include the young, the elderly, and the chronically ill, especially those suffering from respiratory or cardiovascular disease.”

## **“Why a booklet on indoor air?”**

“The levels of pollutants from individual sources may not pose a significant risk to health by themselves. But most homes have more than one source that contributes to indoor air pollution. There can be a serious risk from the cumulative effects of these sources. Fortunately, however, there are steps that most households can take both to reduce the risk from existing sources and to prevent new problems from occurring.”

**SOURCE:** U.S. Environmental Protection Agency (EPA) and U.S. Consumer Product Safety Commission (CPSC); *The Inside Story - A Guide To Indoor Air Quality*.

## Energy Recovery Ventilators

Energy recovery ventilators have been designed and developed to address indoor air quality problems. These units are increasing in popularity. A number of states now require mechanical ventilation. Energy recovery ventilators can be installed in the home and connected to the existing heating or cooling ductwork or can be installed independent of the heating or cooling system.

An energy recovery ventilator continuously exhausts stale, polluted indoor air, and replaces it with fresh outdoor air. At the same time, energy from the indoor air (warm air in winter, cool air in summer) is extracted and transferred to the fresh incoming air so there is very little energy loss. Thus the energy recovery ventilator is continuously providing fresh, healthful air with minimal energy loss. Energy recovery ventilators improve or eliminate excess moisture problems found in some homes, particularly “tight,” well insulated homes with high internal moisture sources due to lifestyle and/or number of occupants. Some advanced units also transfer some moisture from the exhaust air to the fresh air.

The purpose of this booklet is to further acquaint you with this concept so you’ll be better able to understand all the benefits derived from having an energy recovery ventilator in your home.

## **Common Questions Asked About Energy Recovery Ventilators**

### **1. How does an energy recovery ventilator function?**

Fresh air is continuously brought into the home by the system and a like amount of stale indoor air is exhausted at the same time; in other words, the air is being exchanged. However, the hot or cold energy (depending on the season) is extracted from the indoor air before it's exhausted and transferred to the incoming air, so that there is little energy lost.

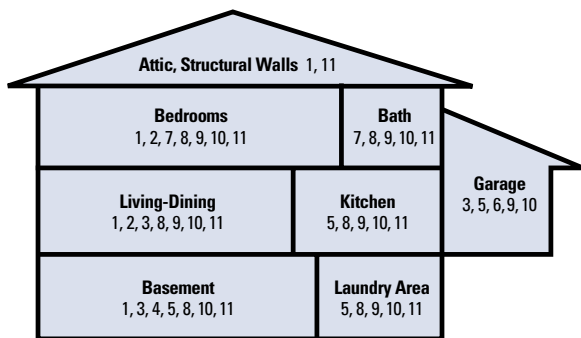
### **2. Is a special type of heating or cooling system necessary in order to use an energy recovery ventilator?**

No, an energy recovery ventilator can be utilized with any forced air system equipped with a blower and duct system. It can also be used with non-forced air systems as an independent unit.

### **3. How long have energy recovery ventilators been on the market?**

Of any significance, since about 1982 in the United States. Initially, energy recovery ventilators were used primarily for removing excess moisture in homes, but further studies of "tight homes" showing the high level of air pollutants in homes have made these units more popular.

## SOURCES OF POLLUTION IN A HOME



- 1 Formaldehyde from furniture, building materials
- 2 Off-gassing from carpets/ upholstery/ drapery
- 3 Carbon monoxide from fireplaces, furnaces, autos
- 4 Radon gas
- 5 Chemicals from pesticides, cleaning supplies
- 6 Gasoline vapors
- 7 Chemicals from personal care products
- 8 Cigarette, cigar smoke
- 9 Odors from cooking, garbage, human activities, etc.
- 10 Pet odors
- 11 Excess moisture

### 4. What is the main benefit of an energy recovery ventilator?

It continuously supplies fresh air to provide a healthy indoor environment by reducing odors and/or the level of indoor pollutants, such as radon, formaldehyde, tobacco smoke, nitrogen dioxides, carbon monoxide, and pesticides.

### 5. Can I use an energy recovery ventilator throughout the year?

Yes, and if you have air conditioning, you can keep your home closed and operate the energy recovery ventilator constantly and efficiently, producing a safe, fresh, secure environment.

## **6. How often is it necessary to service an energy recovery ventilator?**

Usually about every six months and the simple procedures are fully described on the instructions provided with each unit. These maintenance procedures can be completed by you or your contractor, if you desire. Each type varies in the level of maintenance required, but most require the following general maintenance activities:

- Clean filters and/or replace filters as necessary. Clean energy transfer core according to owner's manual.
- Check the fresh air intake vent and clean as necessary. Some units require additional maintenance tasks, such as changing belts, servicing rotary wheels, and degreasing.
- If unit is equipped with a drain line, then it should be cleaned regularly according to the owner's manual.

## **7. Who installs energy recovery ventilators?**

Your local heating and air conditioning contractor can properly size and install them.

## **8. Can an energy recovery ventilator be installed in an existing home, as well as a new home?**

Yes, it can be installed in any home and become an integral part of the heating and air conditioning system. Your heating and air conditioning contractor can furnish specific details for your home.

## **9. Will an energy recovery ventilator help reduce radon and odors in the home?**

Yes, although it's difficult to quote specific efficiencies for each type of pollutant. The mere fact that stale indoor air is constantly being replaced by fresh outside air is your assurance that this is taking place.

## **10. What is the average installed price of an energy recovery ventilator?**

Generally between \$1,500 and \$2,500, depending on the model, complexity of the individual installation, and the size of the home.

## **11. How can I be sure that the unit will handle my entire home, and when properly installed will be in accordance with the ASHRAE\* Standard #62-99 for home ventilation?**

You should contact a reputable heating and air conditioning contractor and make sure they recommend a brand from a reputable manufacturer that includes published warranty and performance information, as well as being UL listed. Be sure your contractor selects a unit with adequate capacity so that the unit, when properly installed with your existing heating and/or cooling system, will comply with this standard. Make sure it meets all applicable codes.

## **12. How large is a typical energy recovery ventilator?**

Approximately the size of one large room air conditioner. Some are larger and a few are smaller.

\* American Society of Heating, Refrigerating and Air-Conditioning Engineers.

### **13. Where is the unit installed?**

Usually adjacent to or near the heating or cooling system on the basement ceiling or wall, or if in parts of the country where basements are not common, in a utility area like a laundry room or garage. Some types of energy recovery ventilators must be installed in areas of the home that are kept above 32°F. Certain types are positioned on the floor near the heating or cooling system equipment.

### **14. What is the electrical cost to operate an energy recovery ventilator?**

Basically, the fan energy cost for any type of continuous mechanical whole house ventilation will be approximately the same. Operating 24 hours a day, 365 days per year at a rate of 120 cubic feet per minute air flow, the annual electrical fan operating cost for a typical unit will be about \$77 (assuming electrical rate of \$0.08/kwh).

However, the electrical cost for energy recovery ventilators with heater type defrost units will cost more. This cost will vary depending on the geographic location and how often the temperature drops below the frost point for the type of unit used.



## **15. Will an energy recovery ventilator help reduce my energy bills?**

Yes, relative to other forms of ventilation units, energy recovery ventilators will reduce your energy costs. However, comparing no ventilation to fresh air ventilation, ventilation does increase total energy consumption. But, to receive a constant supply of fresh healthful air for your family is a great benefit for so little cost. With energy recovery units, such as a heat recovery ventilator or energy recovery ventilator, better quality units recover up to 80% of the energy from the exhausted (stale) air.

## **16. Do all energy recovery ventilators transfer both dry (sensible) heat and “latent” heat, meaning moisture vapor? (A unit that transfers both is called an enthalpy energy recovery ventilator.)**

No, many energy recovery ventilators do not recover both forms of energy. Enthalpy energy recovery ventilators also transfer moisture vapor. These units are best, having significantly higher energy recovery ability in both heating and cooling applications. The advantages of an enthalpy energy recovery ventilator are as follows:

- An enthalpy energy recovery ventilator can reduce the dehumidification load during the cooling season and reduce humidification load during the heating season.
- If you are planning to install a new air conditioner, an enthalpy energy recovery ventilator may allow you to use a lower capacity unit.

## **17. Are energy recovery ventilators becoming more popular?**

With the increasing concern regarding indoor air quality, many building code governing bodies are requiring whole house ventilation through national, state, and local ventilation codes. Some of these new codes will also require energy recovery. At least ten states now have codes that address new ventilation requirements and more are expected.

## **18. How do you know that an energy recovery ventilator will perform as stated or advertised?**

There are three ways to be assured that the claims made by a manufacturer are credible:

- Rely on the professional expertise of your heating and cooling contractor who lives in your local community and needs to protect their reputation in order to stay in business.
- Select a brand that is manufactured by a well known company or company that manufactures another recognized brand or brands of products. Since energy recovery ventilators are a fairly new concept, no brand has become truly established.
- Select energy recovery ventilators based on independent testing results like those from Underwriters Laboratories, Inc. (UL) or other respected independent testing facilities.

## **19. Will the moisture recovery feature of an energy recovery ventilator eliminate the need for a separate humidifier?**

No, all energy recovery ventilators will dry the air in a home and added humidification will be needed during the heating season. In heating climates, a quality whole house humidifier will be needed unless you have excess moisture problems. Heating the air dries it below desirable humidity levels. While humidity needs vary in each home, depending on a number of factors, generally, most homes will need additional humidification. Studies in Canada and the U.S. show that in homes where energy recovery ventilators are used, added humidification was needed.





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**Automatic Humidifiers**

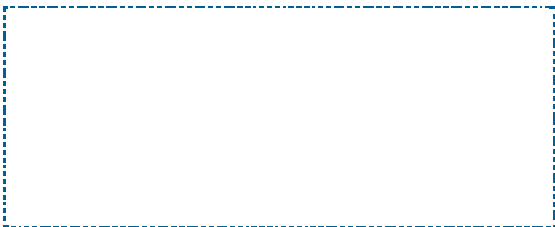
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