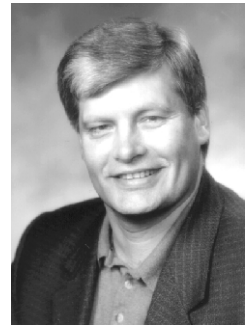




Home comfort news
for the customers of
Atlas Air ClimateCare
and Atlas Robinson

An Engineer's Opinion

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Editorial

By Roger Grochmal, P. Eng.,
President

To Air is Human

When I was about eight years old, my father told us we were moving away from Vancouver to a small town across the inlet. "It will be great," he told us, "We'll live by a mountain and have the fresh smell of the sea every time we open our windows." This sounded pretty good to us, but I doubt we would have gone along with it so easily had we realized that our new home in the town of loco—an acronym for the Imperial Oil Company—would be downwind from a refinery. Of course the town reeked of oil, and the smell inevitably found its way into our loosely constructed home where it mixed with already stale air.

Today, most homes are built pretty tightly, and indoor air pollution can build up to very unhealthy levels as a result. Simply opening more windows isn't the answer: our house in loco was a classic example of an indoor air problem that went from bad to worse with the addition of dirty outdoor air. Granted, most of us don't live next to an oil refinery, but there are plenty of other things in the air outside—pollen and mold spores to name two—that can make life

uncomfortable for many people, particularly if they suffer from allergies or asthma.

The most effective way to solve this problem is well-designed mechanical ventilation in conjunction with appropriate air filters. In fact, the Canadian Lung Association maintains that adequate ventilation is essential for healthy indoor living. Ventilation is poorly understood, so in this issue of *An Engineer's Opinion*, we tell you all about it. You'll find out what kinds of ventilation are available, how you know you need ventilation, and how to go about solving an air quality problem.

After many years of working with customers to solve air quality problems, I've come to believe that a heat-recovery ventilator (HRV) relieves more air pollution than any other single air-cleaning product. A similar device, called an energy-recovery ventilator (ERV), not only saves heat in the winter, it also helps keep out humidity in the summer. I've chosen an ERV for my new home, which will be ready to move into later this spring. To find out more about HRVs and ERVs, read on. And as always, if you have questions, please call.



Roger Grochmal



ATLAS AIR
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70
YEARS

About An Engineer's Opinion

An Engineer's Opinion is published to assist homeowners in creating the healthiest, most comfortable environment in their homes at the most reasonable cost. If you have questions, criticism, or input, we want to hear them. Please call me personally at (905) 279-3440 or e-mail me at rgrochmal@atlasair.ca.

A Step-by-step Guide to Better Indoor Air Quality

A few years ago, some friends in Ottawa called us because they had bought a new house with a persistent moldy smell, and the first fall they were in their new home, the windows ran with water. Our friends felt discouraged because they didn't know how to begin solving the problem. They are not alone: many of our customers want better indoor air quality but aren't sure what they should do first, especially if they can't afford to do everything right away. The following is a guide based on the advice we gave our friends, who now report fresh indoor air.



Windows that 'weep' with moisture are one sign that you have excess humidity. An HRV or ERV helps keep humidity within an ideal range, which in turn helps control biological contaminants such as mold, bacteria, and dust mites.

Step One: Upgrade your furnace filter

The standard fibreglass filter that comes with any furnace only provides minimal protection for the working parts of the furnace. We recommend a medium-efficiency 4" pleated filter, which should be changed twice per year. This will keep the furnace clean, as well as filter out dust and other large particles.

Step 2: Add a heat-recovery ventilator (HRV)

This is by far the single-best way to remedy most air quality problems (for a comparison with other devices, see the chart, below). An HRV exchanges the entire volume of air in your home several times per day with outdoor air. About 70% of the heat from this outgoing air is recovered and transferred to incoming air from outside, which passes through a filter cartridge before it is circulated to the rest of the house. The HRV works by diluting the concentration of unwanted contaminants in the air, which can become very high, especially in the winter and summer when most people keep their windows

closed for heating or air conditioning. An energy-recovery ventilator (ERV) works the same way, but has the added feature of a moisture barrier in its core. This helps keep out unwanted humidity in the summer, and keeps in some humidity during the dry months of winter.

Step Three: Put a dehumidifier in the basement

Most biological contaminants (mold, dust mites, etc.) thrive in damp conditions. The Canadian Lung Association advises running a dehumidifier in the basement during the spring and fall, when the air conditioner isn't running but the air is still fairly humid.

Step Four: Add extra air cleaning, if needed

Incoming air from an HRV or ERV can be routed through a turbulent-flow precipitator (TFP) or HEPA filter for extra cleaning. A carbon canister can be added to a HEPA filter to absorb more airborne chemicals, and an ultraviolet (UV) light can be added to kill molds and germs.

Products that Can Help with Indoor Air Pollution

>> **An HRV helps alleviate just about everything**

	Large Particles ^A	Small Particles ^B	Chemicals	Carbon Monoxide/ Carbon Dioxide	Humidity
HRV/ERV	X	X	X	X	X
Air Conditioner					X
Media Furnace Filter	X				
TFP or HEPA Filter	X	X			
Ultraviolet Light ^C	X	X	X		
Dehumidifier					X

^ALarge particles are greater than 10 microns. Examples: dust, pollen, mold spores.

^BSmall particles are between 0.3 and 10 microns. Examples: pet dander, dust mite feces.

^CUltraviolet light will treat biological particles and volatile organic compounds (e.g., formaldehyde), but will not remove dust.



Tip: To get the most out of your HRV or ERV, clean the filters once or twice a year, and make sure that the air exhaust and intake vents are kept clean and unobstructed.

Test Your I(A)Q

How much do you know about indoor air quality?

(See the answers on the back page of this newsletter)

1. Which of the following pollutants are usually found in higher concentration indoors than outdoors?

- (A) Radon
- (B) Ozone
- (C) Dust particulates
- (D) Formaldehyde and other volatile organic compounds (VOCs)
- (E) Carbon Monoxide

2. What is the best way to prevent problems with mold?

- (A) Install a good furnace filter
- (B) Keep all surfaces dry
- (C) Use a HEPA vacuum cleaner regularly
- (D) Use fungicide cleaners on all surfaces

3. Many people are allergic to dust mites, which can also aggravate asthma. What is the best way to control the population of dust mites in your home?

- (A) Vacuum carpets twice a week
- (B) Install an ultraviolet (UV) air cleaner
- (C) Keep the indoor relative humidity level below 55%

4. What is the best way to keep relative indoor humidity at a reasonable level during the non-heating season?

- (A) Run your furnace fan continuously
- (B) Run your air conditioner
- (C) Keep all windows on the top level of your home slightly open
- (D) Run a dehumidifier in the basement

5. How much air does the average person breathe each day?

- (A) 250 litres
- (B) 14,000 litres
- (C) 3,000 litres
- (D) 30,000 litres

6. How many different odours can the average person detect?

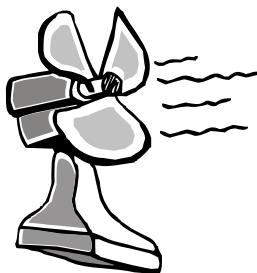
- (A) 300
- (B) 20
- (C) 4,000
- (D) 50,000



7. Many people are allergic to cat dander. How long can dander float in the air before it settles?

- (A) Minutes
- (B) Hours
- (C) Days
- (D) Weeks

Using Local Ventilation



Tip: If you have an HRV, ERV, or an air cleaning product such as a pleated media filter in your furnace, you'll need to run your furnace fan continuously. If you are in the market for a new furnace, consider one with a DC motor, as this costs much less per month to operate than a traditional AC furnace fan.

Local ventilators, such as kitchen range hoods or bathroom exhaust fans, aren't a substitute for an HRV or ERV. They can only ventilate a small area, and when you use them, you lose all of the heat in the air you're exhausting. Nevertheless, local ventilation can really help keep humidity, odours, and even some chemical contamination in check.

One useful way to ventilate an area without losing too much heat is to install a simple, inexpensive mechanical timer, which you can buy at the hardware store. Set the timer for 20 minutes or so when you take a shower. That way, the humidity will be exhausted and you don't have to worry about remembering to turn the fan off.

When you do any kind of renovation, particularly in the kitchen, it's a good idea to

ensure that the exhaust fan is sized properly for the room. In particular, we've noticed that many people are installing commercial-grade kitchen exhaust fans that can exhaust air at a rate that is anywhere from 600 to 2,000 cubic feet/minute. This is too strong, and will empty too much of your home's air in a very short time, creating a negative pressure in your home. The concern is that combustion appliances, such as fireplaces, some furnaces, and water heaters may not operate properly, and may even backdraft dangerous combustion gases into your home.

Before you purchase a new exhaust fan, check the manufacturer's specifications to ensure that the fan is the right size for its intended purpose.

Test Your I(A)Q: The Answers



Did You Know?
Women are much better at detecting and identifying odours than men are.

1. A, D, and E. All of these are typically found in higher concentrations inside than outside the house. In the U.S., a study by the Environmental Protection Agency found levels of volatile organic compounds (VOCs) were 10 times higher indoors than outdoors, even in areas with significant sources of outdoor pollutants (such as an oil refinery).

2. B. Mold will grow when a surface is damp or wet for prolonged periods. The best way to prevent mold from growing is to keep surfaces dry, and to quickly dry any surface that does get wet, especially drywall, wood, and textiles.

3. C. Dust mites require humidity to thrive, otherwise they dry out and die. Bathroom and kitchen exhaust fans can be used to reduce moisture at its source. An HRV or ERV will help remove excess humidity throughout the entire house.

4. D. A dehumidifier will help keep humidity in check during the spring and fall, when the air is moist but the air conditioning isn't running.

5. B. The average person breathes approximately 10 litres of air every minute, or 14,000 litres per day.

6. C. The human nose can distinguish over 4,000 odours. Women are much better at detecting and correctly identifying odours than men are. In fact, a recent study showed that women in their reproductive years become

progressively better at odour detection with increased exposure to a particular odour, whereas men showed no improvement in odour detection.

7. C. Cat dander can float in the air for days, thereby increasing the exposure time for the occupants of the house. The smaller the particle, the longer it will stay in the air. Candle soot is made up of particles that are small enough to stay suspended in the air for weeks.

Save Your Breath with these Air-Freshening Tips

- As much as possible, eliminate contaminants at their source. For example, use your bathroom exhaust fan to eliminate moisture from showers.
- Clean up mold as soon as you notice any sign of it (such as offensive odors, stains on furniture, etc.).
- Professionally maintain your home's combustion appliances, as these can give off particles and dangerous gases, such as carbon monoxide, if they're not properly maintained.
- Avoid using air fresheners and scented candles. Instead of trying to mask an odour, find its source and reduce it there.
- Chemicals stored inside an attached garage often infiltrate the house, so store chemicals such as pesticides, solvents, and fuel oil in closed containers or cabinets.



Buy a VänEE HRV or ERV and we will pay the GST!

Offer expires March 31, 2004.



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