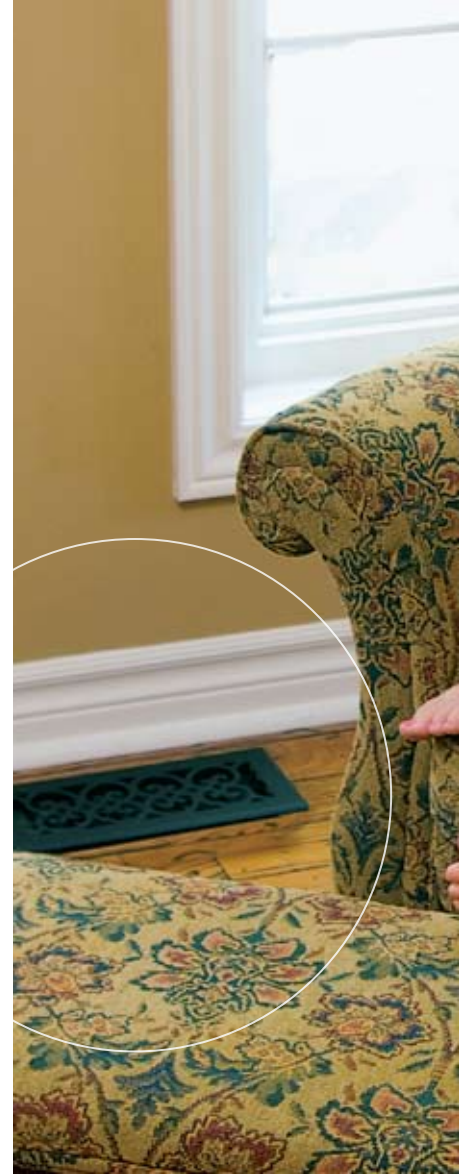




Canada says goodbye to  
mid-efficiency furnaces

By Allan Britnell

# Changing the Comfort Zone



By the end of 2009, the manufacturing of mid-efficiency furnaces will be phased out in Canada as homeowners today want both comfort and energy efficiency. In fact the Ontario Government already requires all newly-built homes to have high-efficiency furnaces installed.

Home heating can account for more than half of your household's total annual energy use. Last year's bitterly cold winter reminded us of that. By choosing a replacement furnace wisely, you can reduce the amount of energy used and the cost of your natural gas bill. But to pick the right furnace, you need to know some lingo.

The key to understanding natural gas furnaces is Annual Fuel Utilization Efficiency (AFUE). It tells you how efficiently a furnace consumes the fuel it runs on. A typical mid-efficiency furnace has an AFUE rating between 78 and 84 per cent, and an older conventional furnace may rate as low as 60 per cent. On the lower end of the spectrum, that means that more than a third of the gas used by the furnace is wasted. The most energy-efficient models have an AFUE rating of 90 per cent or higher and come with the ENERGY STAR® logo on them. While upgrading to a high-efficiency model will cost more than a mid-efficiency furnace upfront, the fuel savings over the furnace's 15 to 20-year lifespan will pay the difference back several times over, as heating your home with a high-efficiency natural gas furnace will save you about \$1,700 a year compared to oil and propane, and approximately \$780 a year compared to electric baseboard heating\*.



“A high-efficiency natural gas furnace will save you about \$1,700 a year compared to oil\*”

## Technological advantages

There are a number of technological advantages that high-efficiency furnaces have over their mid-efficiency cousins. When shopping around you'll come across the term 'condensing' gas furnaces. These models extract and reuse exhaust gas heat from the primary combustion chamber through a secondary heat exchanger.

Brooke MacLaren of Carrier ([carrier.com](http://carrier.com)) says consumers moving to high-efficiency furnaces will notice a big difference in energy costs and available features. Carrier is introducing an entry-level, single-stage, variable-speed furnace with an AFUE of 93 per cent this fall. For the ultimate natural gas furnace, MacLaren likes Carrier's 58MVC multipoise modulating gas furnace. "It's a multi-stage furnace with built in comfort features, and has an AFUE of 95 per cent," says MacLaren.

What's the advantage of a multi-stage furnace? "Most people think a furnace should be off more than it's on," says Trane's Ian McTeer ([trane.com](http://trane.com)). "But the reality is that every time a furnace shuts off it has what we call a 'stand-by loss.' When the furnace comes on again it has to heat the heat exchanger and ductwork

all over again. It's actually better to have it running longer than it is to have it turning on and off."

To capitalize on this, manufacturers developed two-stage furnaces that operate at a low level of heat in the shoulder seasons and mid-winter thaws, and only crank up to full capacity on the colder days. But now the bar has been raised. Trane's XC95 line of furnaces has three stages of heat: low, medium and high. "This furnace is capable of a more fine-tuned operating cycle," says McTeer, and helps it achieve an impressive 95 per cent AFUE. Similarly, your furnace's circulating fan will also benefit from variable-speed operation. By running continuously at lower speeds, an Electronically Commutating Motor (ECM) actually uses less electricity and has a longer lifespan than a standard furnace motor.

## Give your furnace a break

Unfortunately, even the latest and greatest furnace can only do so much. A drafty, under-insulated home is akin to sending your children out to play in the snow without hats and their jackets unzipped.

Luckily, many heat-saving measures are relatively simple, low-cost do-it-yourself projects. The new [uniongas.com](http://uniongas.com) has a how-to video for weatherizing your home.

As we all learned in school, heat rises and, with an under-insulated attic, the heat will rise out of your house. This too can be easily fixed by adding batts of fibreglass or mineral wool insulation on top of the existing layer of insulation. Professionally-installed measures include installing new thermal-sealed, energy-efficient windows and doors, or adding insulation into hollow wall cavities. A new product for wall insulation is a non-expanding cavity fill foam called RetroFoam™ ([retrofoam.ca](http://retrofoam.ca)), which is injected either from inside or outside the home into areas with poor insulation. Paul Weigel of Enerliv says RetroFoam is a water-based product with no fumes or emissions that dries to a solid similar to Styrofoam and can be installed in any type of older home. He adds, "There's no mess and because this product begins as a fluid we can inject it through very small holes and even fill around existing insulation or the air leaks around outlets or windows. We can achieve an R-value equivalent to new homes." Enerliv estimates that RetroFoam insulation can lower energy use in a typical older home by about 20 to 40 per cent.

The expense of both do-it-yourself and major energy-efficiency renovations can be somewhat offset by the federal government's ecoENERGY rebate program. After an initial home energy audit, you have 18 months to complete any or all of the recommended improvements in order to qualify for a maximum rebate of \$5,000 per home, not to mention the estimated heating energy savings of \$700 to \$2,000 per year. Visit Natural Resources Canada's Office of Energy Efficiency website ([oee.nrcan.gc.ca](http://oee.nrcan.gc.ca)) for more information about the program and a list of qualified inspectors.

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\*Based on a standard 1,500 ft<sup>2</sup>, single-story home in the Union Gas service area and fuel rates of \$0.4762/m<sup>3</sup> for natural gas, \$1.2537/litre for oil, \$0.9430/litre for propane and \$0.0938/kWh for electricity.





# Beef-up your Furnace for Better Results

Beyond sealing leaks to keep the heat inside your home, there's more you can do to save energy and improve your indoor air quality. Here, Tom Breen of Honeywell ([honeywell.com](http://honeywell.com)), tells us how.

## Programmable thermostats

ENERGY STAR® programmable thermostats allow you to set a temperature schedule, so the heat and air conditioning will be turned down at night or when the house is vacant. According to Natural Resources Canada ([nrcan.gc.ca](http://nrcan.gc.ca)), as a general rule, you can save two per cent on your heating bill for every 1 C you turn down the thermostat. Union Gas offers a \$15 rebate for programmable thermostats at [uniongas.com/rebates](http://uniongas.com/rebates)



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## Furnace tune-up

Just like a car, your furnace needs periodic maintenance to ensure it runs efficiently.

“We’ve always recommended at least one annual furnace maintenance. If you have an air-conditioner and you time it right in a shoulder season (spring or fall) you can have both of them done at once,” says McTeer.

To find a qualified technician, visit the website for the Heating, Refrigeration and Air Conditioning Contractors of Canada ([hrac.ca](http://hrac.ca)) for a list of certified contractors across the country.

Sears Canada ([sears.ca](http://sears.ca)), for one, offers a 10-point service and inspection that covers everything from testing the thermostat and inspecting the ventilation system for obstructions to adjusting belts and lubricating moving parts.

“One of the most important steps is to perform a CO<sub>2</sub> - level test to make sure there’s no carbon monoxide leaking out of the system,” says Peter May of Sears Canada.

One bit of maintenance every homeowner should be on top of is replacing furnace filters. “The filter is really an important key to the whole thing,” says McTeer. “The higher the quality of filter you use, the more dirt it’s going to trap, which is going to keep the interior parts of the furnace cleaner. And that means the system is going to run at its highest level of efficiency longer.”

Consult your owners’ manual or ask the technician during the annual inspection what type of filter you should use and how often to replace it. 🔧

## UV air treatment

You’ve likely heard of ultraviolet for treating drinking water, but did you know the technology is also used to kill certain bacteria and mould spores passing through your furnace? “It looks like a light saber,” says Breen. “It’s a simple upgrade that is mounted onto the duct work. You can feel the difference in the air quality.”

## Air cleaners

“Every furnace has a filter that’s capable of picking up clumps of cat hair, but nothing smaller,” says Breen. “The smaller airborne particles float around your house and some wind up in your lungs. You become a filter of sorts.” Electronic air cleaners are the most effective filtration device. As air passes through your heating system, approximately 98 per cent of airborne particles, like smog and mould spores, are zapped with an electric charge and then collected together.

## Humidification

Not only is a properly humidified home more comfortable, it holds heat better. And that, says Breen, is better for your health and your gas bill. Breen describes the latest technology, steam humidification, which is installed in your home’s central heating and cooling system, as looking like “the head of a parking meter.” The unit boils water and injects it into the ducts where it’s dispersed throughout the house as raw steam in the desired range of 35 to 40 per cent humidity.

Visit [yourhome.honeywell.com](http://yourhome.honeywell.com) for more information on the above accessories. 🔧

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