consume less, save more

UseIncreasing energy efficiency through reduced energy consumption is easier than you might think. If you believe energy efficiency can only be achieved through major heating equipment upgrades or building renovations, think again! In fact, you can begin saving energy today, by following a few simple tips.

Consult this mini guide to learn about basic energy-saving facts and discover ways to save energy.

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life in blue

THE ARCHITECTURAL SHELL

The architectural shell consists of the roof, floor, walls, windows and doors – that is, everything that separates the inside of your building from the outside. The shell has several purposes:

- → It protects the interior from the climatic elements;
- → It lets sunlight enter (through the windows);
- → In some cases, it renews air through (windows) and natural infiltration.

That is why the quality of the architectural shell can significantly influence the amount of energy you consume through:

- → heating in the winter;
- → air conditioning in the summer;
- → ventilation.

Improving the architectural shell can substantially reduce energy demand. Air infiltration or leaks through the shell are sometimes the origin of humidity damage in your building.

There are two main causes of heat dispersion through the shell of a building:

- → Heat transfer (by convection, conduction, radiation or infiltration);
- → Infiltration and leaks. Air leaks attributable to infiltration and exfiltration occur when interior air pressure differs from the outside pressure. This is due to three factors: the chimney effect, wind and mechanical ventilation.

There are two ways to save energy by modifying the building shell:

- → Increase air-tightness;
- → Insulate.

Check the walls, floors, ceilings, doors and windows for any air leak or infiltration that might result in heat loss. Several measures may be taken to eliminate such unwanted leaks or infiltration.

Insulation

Although it is generally unprofitable to reinsulate an existing building, major renovation can provide a good opportunity to enhance the insulation. Poorly insulated but accessible roof spaces are one example.

Caulking and weatherstripping joints

Inspect the condition of the weatherstripping in all openings, as it may deteriorate with time. It's also important to check the air-tightness

SPACE HEATING

Heating and ventilation systems should not consume more energy than that required to compensate for heat gains and losses of the building, while maintaining the temperature at a comfortable level. Heating systems should supply fresh air and allow air to circulate at a temperature, degree of cleanliness and humidity rate that promote good health and comfort for the occupants. These systems must also evacuate stuffy air, while minimizing the amount of useful heat and humidity expelled in the evacuated air.

Heating systems generate savings by decreasing the amount of energy used for air displacement and conditioning (by conditioning we mean heating, conditioning, humidification, dehumidification and cleaning). Air displacement must be minimized owing to the energy required to propel air through ducts, registers, coils, filters, louvers, diffusers and grates.

Provide regular preventive maintenance

Annual maintenance of your heating equipment is strongly recommended to ensure both its proper functioning and efficiency. Well maintained heating equipment reduces energy consumption and increases its service life. Note that such maintenance should be carried out by qualified technicians.

Don't forget to have the exhaust shaft checked occasionally both inside and outside for any sign of deterioration due to condensation or corrosion.

Reduce heating times

Install timers to reduce or switch off the heating when your building is unoccupied.

Heating loads

To conserve heat, make sure to close curtains, louvers and blinds at night and when the building is unoccupied. Open them during the day to take full advantage of sunlight.

Install destratification (ceiling) fans

Cold air and warm air have different densities above ground, and if they are not mechanically mixed, by whatever means, they will produce stratification (different layers of temperature). The highest temperature is found at the top, namely near the ceiling. This is most pronounced in places with high ceilings. In cases where this is undesirable, installing destratification fans may be an economical solution to redistribute hot air. The minimum clearance for this type of machine is 8 ft. or 2.43 m.

Adjust the temperature

Survey your employees and customers to determine their desired comfort temperatures. You may discover that some spaces are maintained at a hotter temperature than necessary. A slight decrease in the temperature setting can generate huge savings. Setting the temperature to 178° C (62.68° F) for a vacant building and 208° C (688° F) for an occupied building can reduce annual consumption of natural gas. It may be economical to vary the interior setting temperatures according to the following criteria: activities of occupants in various locations, time of year, humidity rate, amount of sunlight, interior air speeds, temperature zones conducive to comfort.

between door or window frames and the building, since this is generally where the greatest infiltration of cold air occurs. Caulking can eliminate infiltration.

Strip curtains

Strip curtains are made of transparent plastic or rubber strips. They should be installed wherever there is heavy traffic to and from areas with different temperatures (e.g. storeroom and garage). Installing strip curtains can help decrease the climate transfer between the two areas.

Storm windows and storm doors

Storm windows and doors are specially designed to increase the heat resistance of a window or door and to decrease infiltration. Quite often, adding them can be more economical than changing the existing windows or doors.

Window liners

Adding a layer of selective plastic film to your windowpane will significantly block infrared rays from passing through the window, thereby preventing heat from entering or exiting through radiation. Installed on ordinary glass, selective film can nearly double the resistance of single-glazed windows. You can thus avoid the high cost of changing single-glazed windows to double-glazed windows.

Garage doors

To minimize heat transfer when opening garage doors, you can install mechanisms that open and close doors more quickly, thus reducing transfer time to a minimum. Garage doors are generally made of ultralight panels, allow them to be quickly opened and closed. If the doors must remain open for unloading, strip curtains or sealing pads can be installed between the vehicle and the building to decrease air transfers.

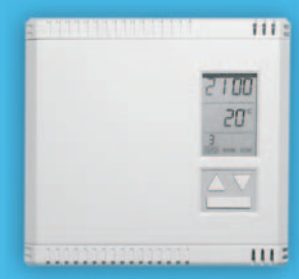
Bear these factors in mind when determining the setting temperature in different rooms. Remember that occupants will accept an interior temperature that is slightly higher than what you'd expect in hot weather, while the opposite is true in winter.

Install programmable thermostats

These devices offer better control over both heating periods and temperature settings. You can save by programming them differently for weekends and weekdays, when the building is occupied and unoccupied during the day.

A drop of 18° C (1.88° F) over a 24-hour period can reduce your heating costs by up to 5%, while a decrease of 38° C (1.88° F) over an 8-hour period can reduce them by up to 6%.

Source: Agence de l'efficacité énergétique.



Eliminate obstacles

If you have a forced-air supply system, remove any obstacles in conduits, registers and cold air return registers so that the air can circulate freely throughout the network.

Look for hot spots

If you have a hydronic heating system (i.e. that uses hot water), look for hot points on the boiler wall and hot water distribution pipe, as they indicate insulation gaps. Remember, if it's too hot to the touch, you're losing a lot of heat. Also, check pumps and valves to detect any water leakage.

Replace your heating appliances with more efficient equipment

If you're thinking of changing your space heating equipment, ask your contractor about the energy efficiency of these appliances. Efficiency is generally expressed in terms of annual fuel utilization efficiency (AFUE) for furnaces, and in terms of combustion efficiency for boilers. The higher the energy output rating, the more efficient the machine and the less energy it consumes.

WATER HEATING

Locate and plug all leaks in hot service water pipes

Insulate

Insulate hot water pipes, especially those that run through unheated areas. Use insulating tape, or foam, plastic or fiberglass tubes which, when slit, fit snugly around the pipe and can even be permanently glued.

Lower the hot water temperature

Lower the temperature of the boiler thermostat to 608° C (1 408° F).

Reduce the flow

Install flow restrictors and efficient showerheads to reduce hot water consumption.

For an 11-minute shower without a flow restrictor, you consume an average of 125 litres (27.4 gallons) of water. A flow restrictor can significantly reduce consumption to 77 litres (16.9 gallons), equal to savings of about 48 litres (10.6 gallons) per shower.

Source : Agence de l'efficacité énergétique.

Replace your service water heaters with more efficient equipment

If you're thinking of changing your hot water heaters, ask your contractor about the energy efficiency of the new appliances. For water heaters, this efficiency is generally expressed in terms of energy factor (EF). The higher the energy output rating, the more efficient the apparatus is and the less energy it consumes.

Adopt a regular maintenance program for your equipment

Have your water heater drained once a year. This will eliminate deposits at the bottom of the tank, allowing you to save on the cost of equipment replacement and repairs, as well as energy consumption.

There is no need to drain the entire tank. Run the drainage water into a recipient until it is clear and free of all deposits.

CONSUME LESS, SAVE MORE

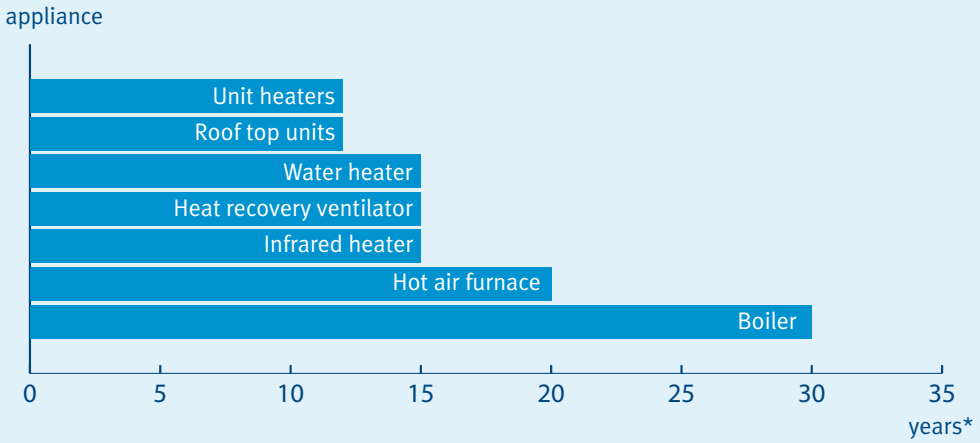
Reduce your energy consumption, opt for our energy efficiency programs. Apart from “simple tips” to reduce your energy consumption, you can save even more if you plan on replacing your appliances with highly efficient natural gas appliances when you renovate. In fact, the older your appliances get, the less efficient they become. By knowing the life expectancy of your appliances (see the next page), you can determine if the time has come for you to think about replacing your heating equipment. You should know that through its energy efficiency programs, Gaz Métropolitain offers a financial contribution for certain appliances (water heater, hot-air furnace and boiler) to offset the price difference between purchasing a basic model or a high efficiency appliance.

For more information about our energy efficiency programs, contact us at 1 800 567-1313 or consult our Web site www.gazmetro.com.

SERVICE LIFE OF APPLIANCES

If your heating equipment has been in use for several years, it may be technologically “behind” and therefore lacking in efficiency. If you plan to change equipment, consult a Gaz Métro Authorized Partner or your Gaz Métro representative, who can tell you about the latest, high-efficiency equipment.

For your information, here is the average service life of different appliances.



*Average service life of appliance under normal use and maintenance conditions.

LEXICON

AFUE (Annual Fuel Utilization Efficiency)

Indicator of the efficiency with which a boiler or furnace heats a dwelling (expressed as a percentage).

Chimney effect

Cold air entering the lower level of a building by infiltration, heating and rising naturally to the higher level, and then exiting by exfiltration.

Compact fluorescent

Fluorescent lamp, including the fluorescent tube and the ballast.

Conduction

The mechanism by which heat transfers through physical contact. Heat moves from the hottest part of glazing toward the coldest part. Conduction takes place not only through solid materials (glazing and frames), but also through air spaces between the glazing. The quantity of heat transmitted through the materials due to temperature differences is called thermal resistance (R). The higher the R value, the greater the resistance.

Convection

Air movement within a fluid medium. Heat is transferred when air molecules move physically from one place to another.

Domestic hot water

Water used for consumption or hygiene.

Flow restrictor

Metal ring pierced with a hole whose diameter is smaller than that of the water supply pipe, thereby reducing the water flow at the faucet outlet. This measure is not recommended if the water pressure in your area is not very strong.

Infiltration

Heat transfer through cracks and openings. Infiltration allows cold air to penetrate indoors and hot air to escape outdoors. Infiltration is caused by wind and a difference in air pressure.

Mechanical ventilation

Means all appliances that mechanically create a movement of air such as bathroom and ceiling fans, and kitchen fans and dryers. Mechanical ventilation notably serves to balance the amount of air entering and leaving a building.

Radiation

Transfer of heat from hotter to colder objects. Objects heated by the sun’s rays become sources of radiant heat, which is blocked by most windows.

Inner door and inner window

A second door or window installed temporarily or permanently above an existing door or window. The addition of a storm window to a single-glazed window can increase heat resistance by 55%. A wooden storm door reduces by 24% to 48% a wooden door’s loss of heat by conduction.

Source: Agence de l’efficacité énergétique

Weatherstripping

A material providing air-tightness at the meeting point of two surfaces, at least one of which is mobile, such as a door or window. Weatherstripping materials can be nailed, screwed or glued.