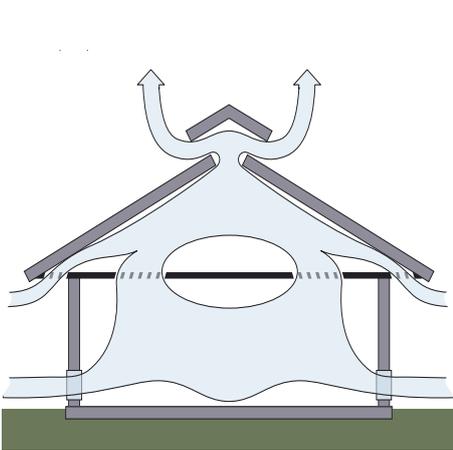


Heating, ventilation and air conditioning

EnergyWise
Heating, ventilation
and air conditioning



A heating, ventilation and air conditioning system (HVAC) is optimally designed to maintain and control air temperature, humidity and purity for those who work in closed spaces. It is more energy-efficient to maintain a whole-system approach to your HVAC system than to consider components separately.

The key to saving energy

The key to saving energy on heating, ventilation and air conditioning is to identify the best system for your needs.

Heating and cooling systems are major contributors to energy demand and costs. By keeping systems in good

working order, businesses can save between 20 and 70 percent of HVAC operating costs and enjoy more enjoyable working conditions.

A window into cost savings

If you're in premises with sealed windows, you're going to rely on your HVAC throughout the year. However, there are a number of ways energy consumption can be minimised:

- Reduce the heat load by turning off any unnecessary lights in the air-conditioned area.
- Install energy-efficient lights that produce less heat and save on energy costs.
- Ensure your office equipment is ENERGY STAR compliant.
- Reduce the amount of excess solar heat that enters the workspace by insulating ducts, pipes, and wall and roof spaces. This will reduce passive heat lost or gained and energy used, saving up to 40 percent of your heating and cooling costs.
- Ensure thermostats are located away from heat sources such as photocopiers, natural sunlight or space heaters.
- Clean or replace HVAC filters regularly.
- Control operation times so the HVAC is not running unnecessarily.

- Check economy cycles to ensure energy is not wasted by cooling or heating excessive outside air.
- Alter thermostat settings up and down by one degree in summer and winter respectively.
- Minimise heat gain from the sun by installing glazing/tinting or blinds on windows.
- Use a night purge to flush out excess heat from the building in the early hours of the morning.
- Plant local native vegetation to shade the northern side of the building south of Rockhampton. Further north, plantings may be required on both north and south sides.

How to improve your existing HVAC system

Review minimum air levels to ensure excessive outside air is not used as it can increase the amount of heating or cooling required.

Outside airflow rates should match those recommended based on floor area and occupancy levels. Control systems now make this possible because the ventilation rate can be varied with occupancy rates.

Minimum outdoor air supply is often set at 1L/sec/m³. This setting can be reduced where there is low occupancy or highly filtered air, but professional advice should be obtained.

Outside air economy cycles, also known as 'free cooling', can be used to reduce air conditioning needs by drawing outside air to cool an indoor space, when the outside air temperature is at or below the indoor temperature.

This cycle can also be used to control air quality by removing odours and carbon dioxide (CO₂). In order to enjoy these benefits, dampers used to control economy cycles must be well maintained.

Regular maintenance of HVAC systems can contribute to energy savings. For example, a dirty filter will mean more energy is needed to pump air across the coils. It is also important to check for leaks in air ducts, as recent studies have shown 10 to 30 percent of air in an average air conditioning system escapes from the ducts. To test for leaks, listen, inspect for damage, or brush soapy water across joints and watch for bubbles.

Install control systems to monitor the heating and cooling requirements of the building and to vary the operation of the HVAC system to maintain comfort. By raising your thermostat settings one to two degrees in warm weather, and lowering them in cooler weather, significant energy savings are possible while remaining comfortable.

Zone controls can also be installed at different sections in buildings that can withstand varying temperatures. It may be possible to divide air distribution into zones that will save on energy, as only those sections needing air conditioning will be cooled or heated.

CO₂ sensors monitor the CO₂ levels in the air from people exhaling. They can adjust air conditioning levels to match intake air volume to occupancy levels.

Installing a new HVAC system

Replacing air conditioners that are more than 10 years old with newer, more efficient models can save up to 40 percent on heating and cooling costs.

HVAC systems vary in scale and complexity from simple wall-mounted air conditioners, to large and complex central systems with boilers.

When buying a new system, look for the Coefficient of Performance (COP) rating. The higher the COP, the more energy-efficient the system is. For room and split-system air conditioners, look for the ENERGY STAR rating. The more stars, the more energy efficient the system is.

Before purchasing a new system ensure it will meet your needs. Buying an oversized air conditioner can result in higher capital and energy costs. It will also cycle on and off more frequently, reducing its efficiency. As a result, indoor temperatures will fluctuate more, the environment will not be as comfortable, and the compressor and electrical parts will wear out more rapidly.

To find out more about HVAC systems go to the Australian Institute of Refrigeration, Air conditioning and Heating (AIRAH) website at <http://www.airah.org.au>

For more information

- > visit www.epa.qld.gov.au
- > email ecobiz@epa.qld.gov.au
- > call (07) 3225 1999