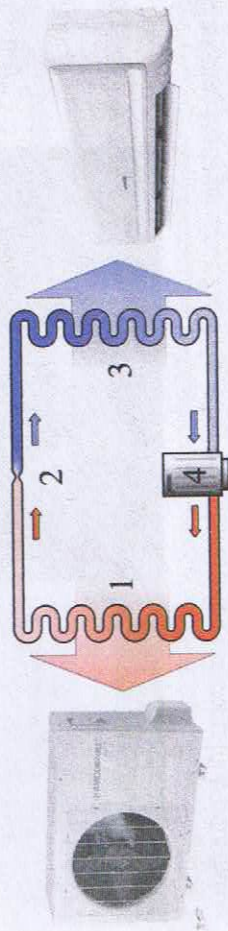


# AIR CONDITIONING IN YOUR BUSINESS



Improving energy efficiency is a central element of the Australian Federal Government's Clean Energy Future package because it can help businesses save money on their operating costs while also lowering Australia's greenhouse gas emissions.

As a result of the Federal Government's Commitment, the TCF Australia ONLINE ENERGY EFFICIENCY Training & Mentoring Project is able to offer an extensive range of specialist energy efficiency services to small businesses in the fashion, textile, clothing, footwear, leather (TCF) creative, and associated industries across Australia.

TCF Australia ONLINE ENERGY EFFICIENCY Training & Mentoring Project manager Carol Hanlon said, "Small businesses can register for FREE Online Training Webinars, ONLINE Energy Efficiency FREE 'ASK AN EXPERT' Forums and FREE mentoring to learn how they can save money via energy savings. For example, a lot of small businesses can implement energy efficiency opportunities in the area of air conditioning, just by understanding how air conditioning works."

Air Conditioning accounts for about 40% of the energy consumption in most businesses, accounts for about 70% of building owners' (common area) energy bills, and is the key contributor to peak demand charges (Source: Department of Resources, Energy and Tourism [www.ee.ret.gov.au](http://www.ee.ret.gov.au)).

## How air conditioning works:

1. A refrigerant gas is pumped through a heat exchanger outside. This allows heat to escape and the refrigerant to cool down and turn into a liquid.
  2. The refrigerant then flows through an expansion valve that lowers its pressure and temperature.
  3. A fan draws indoor air over the cold refrigerant, which cools the air.
  4. The now warmed refrigerant evaporates and flows into a compressor, which compresses it into a high-pressure, high temperature gas.
- One of the initiatives that businesses can undertake to save money in terms of their air conditioning usage is keeping system clean and well maintained. At least once per year,

owners should remove and clean the internal air filters, check that the external unit is clean and free of debris, and that there are no gaps and leaks in ducted systems. Air conditioning contractors can be engaged to conduct more involved maintenance work.

It is also important to try and reduce the amount of heat created indoors. That is, all electrical equipment generates heat, which works against air conditioners when they are cooling. For example, leaving a computer on overnight will generate about 1 kWh of heat, causing the air conditioner to run for a little longer in the morning.

TCF Australia ONLINE ENERGY EFFICIENCY Training & Mentoring Project manager Carol Hanlon said, "Switching off any unused equipment will save on cooling costs, as will relocating office equipment, refrigerators, vending machines, water coolers etc to rooms that are naturally cooled."

Every one-degree change in the air conditioner's set point will affect energy consumption by about 10%. To reduce energy costs the set-point temperature should be increased when cooling (summer) and decreased when heating (winter). Settings should be maintained around 24°C when cooling and around 20°C when heating.

Business owners can also use fans to reduce costs. A fan uses about 50 Watts whereas an air conditioning system for a small shop will use around 5,000 Watts. When the weather is mild, consider ceiling or portable fans instead of the air conditioner. Fans can also be used while the air conditioner is operating. They can help improve circulation of the cooled air, which will allow you to raise the thermostat setting without reducing the comfort levels of staff or customers.

It is recommended that businesses switch off air conditioning systems in low-usage areas or reduce airflow to these areas by installing zone switches or by closing the air vents (if ducted).

Timer switches can also be used to reduce consumption. For example, an air conditioner could be programmed to switch off at 5pm when people start to leave, rather than 6pm when the last person leaves. Also check if your

business is subject to higher tariffs during certain parts of the day – it makes sense to minimise usage during these periods.

Air leakage is a significant contributing factor to air conditioning usage and running costs. Seal off any air gaps to outside with door seals and weather stripping. Ensure that external or automatic doors are used in such a way to minimise the amount of time they are left open.

TCF Australia ONLINE ENERGY EFFICIENCY Training & Mentoring Project manager Carol Hanlon said, "Every square metre of direct sunlight that enters your building can add up to 1,000 Watts of additional heat load. This can cause internal areas to over heat and air conditioning systems to work much harder than necessary. Businesses can look into installing window tinting or external shading (such as louvers or trees) to block out direct sunlight. Solar tinting film and external shading can reduce heat gain through windows by up to 80%, which will reduce the need for air conditioning."

Insulation will reduce heat gain in summer and heat loss in winter, which will reduce the need for heating and cooling systems. Insulation around ducts will minimise heat leakage. Additionally, the energy star rating system now applies to most air conditioning systems ([www.energyrating.gov.au](http://www.energyrating.gov.au)). As a rule of thumb, inverter-style systems will use less energy as they respond more efficiently to temperature changes than regular models. Heat recovered from process equipment like oven flues, hot water systems, and exhausts can be re-used to heat offices and work areas where appropriate.

An energy audit can determine which of the ideas outlined above (and others) are suitable for your business. An energy audit report should clearly indicate which actions would be the most profitable for your business.

To find out more about the Energy Efficiency business advisory services offered, or register for services as part of this project please visit

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