

## Top 10 Energy Savings Tips

We have helped dozens of organisations achieve energy savings. It seems that time and time again the same energy saving measures are possible. Here are 10 of the most common saving opportunities we find:

### 1. Remove excess lamps

Many buildings around New Zealand are over-lit. Generally, the lamps are efficient, but too many lights are installed. 500 lux is the required illuminance level for many applications (in particular office work), but often we find lighting levels over 1000 lux. Often it is possible to simply remove some of the lamps, particularly if the installed fittings have multiple lamps. This will save the energy used by the lamp as well as the ballast. This generally requires no capital cost, and also decreases maintenance costs.

### 2. Use occupancy sensors

There is little point in providing a 'serviced' environment if there is no one there to appreciate it. Occupancy sensors are mainly used to control lighting, but can also be used to control air-conditioning temperature set points or even for controlling when lazer® hot water units operate. Occupancy sensors are great in rooms which have a high energy load but do not get used often.

### 3. Stop simultaneous heating and cooling

In buildings where both heating and cooling is supplied it is very important to ensure that the temperature set points are well controlled. If the heating is set to operate when the temperature drops below 22°C but the cooling is set to operate when the temperature goes above 21°C, then both the heating and the cooling plant will be running almost all the time. Good control of temperature set points is very important, particularly in buildings with split-system air-conditioners and / or thermostats controlled by the users.

### 4. Minimise excess ventilation

Buildings with mechanical ventilation often supply far too much fresh air. People require a minimum of about 10 litres per second of fresh air. Alternatively, the carbon dioxide concentration can be used to measure air quality. Outside air in New Zealand is generally about 450 parts per million and indoor air can get up to 1000 ppm before it starts getting stuffy. However, many buildings have measured concentrations of only 500 or 600 ppm. Reducing the amount of supply air will still

provide a sufficient ventilation rate, but the fan power will be reduced and any heating or cooling demands will also be reduced.

## **5. Improve night 'switch-off' regime**

It is common sense, but getting building users (and cleaners and security staff) to be more vigilant with turning off lights at night will make significant savings. It is impossible to get everyone to turn off their computers overnight, but at least the monitors can be set to automatically go into sleep mode rather than using a screen saver.

## **6. Insulate hot (and cold) surfaces**

The benefits of using insulation for walls, roofs and ceilings are well known. The same principles apply to any item of equipment with hot or cold water or air inside, such as hot water pipes, chilled water pipes, hot water cylinders, drying rooms, freezers etc. Sometimes sections of hot water or steam pipes, for example, have no insulation at all and are over 100°C. Sometimes the insulation that is installed may slump or be falling off so additional insulation is needed.

## **7. Install time switches on HVAC plant**

In most cases, when all the building users have gone home overnight, there is no need to continue operating the heating, ventilation and air-conditioning plant. Often air-conditioners and supply and extract fans run all night unnecessarily. When time switches are used, the schedules are often poorly planned. For example, boilers may be scheduled to run from 4:00 am until 9:00 pm, when the building is only occupied from 8:00 am to 5:00 pm.

## **8. Stop over-cooling computers**

It is a myth that computers need to be kept so cool. Often computer rooms, and more specifically server rooms, are kept at temperatures as low as 15°C. Computers can operate at temperatures up to 50°C. What is important is that there is sufficient air flow to ensure that there are no pockets of extreme heat around individual machines. A more efficient solution is to use far less cooling and install a fan.

## **9. Use localised HVAC plant where appropriate**

Using central boilers, chillers and fans is an efficient method of providing comfortable conditions in buildings. It is particularly good if it is a large building (or several buildings) which has similar heating, ventilation and air-conditioning requirements throughout. However, it can be problematic if one-off demands can call on the central plant. For example, one function room in the building may be in use after-hours, which could force the main supply air fans and boilers and/or chillers to

continue running to supply that one room, while the rest of the building is shut down. In this situation a localised air-conditioner would be a much more efficient solution.

## **10. Use water-efficient showerheads**

Organisations which have a large number of showers, such as motels, hostels or recreational facilities use a lot of energy generating hot water. Many showerheads deliver about 20 litres/minute (some as much as 40 litres/minute) of hot water. A water efficient showerhead uses about 8 litres/minute. This can save a huge amount in water heating (and water). NB: A water-efficient showerhead does not mean the water pressure is lower, it just delivers less water. These often provide a better shower experience, as well as saving energy and water.

