

CONSERVING ENERGY

You'll be hard pressed to find an establishment where the owners are not looking at reducing their operating costs. With the World getting warmer and turning greener it's the ideal time to look at conserving energy.

As Energy is an increasingly- expensive resource, its one area in business that is worthy of your maximum attention. There are many reasons to conserve energy, including the feel good factor!

It's easy to get started and is it's also an area where you can start saving money straight away by introducing some low-cost improvements.

The Wexford Opera house has saved 16,000kWh per annum by adjusting external lights timer, fitting zone lighting sensors / switches and changing incandescent lamps in chorus rooms to more efficient CFLs. Now that's a lot of € saved!

Did you know that a computer monitor left on standby consumes €19 of electricity per year? Just multiply that by the number of employees using a computer and the €uros drop straight onto your bottom line!

It's also widely accepted that a systematic resource efficiency programme can save up to 1% of turnover!

Here are some top tips provided by the expert team in greenbusiness:

- Do you know how much energy you are using? Do you know how much it is costing your business? Checking your energy usage when the site is not being fully used (e.g. overnight or during shutdowns) is a good way of identifying some of the wastage, for example equipment, lighting and heating that has been left on.
- Do you encourage/train employees to switch off lights and equipment when they are not needed? On average, offices waste €6,000 each year by leaving equipment on over weekends and bank holidays.
- Is your workplace effectively "zoned" so that lights, heating and air-con can be controlled separately in different areas as required? If you have a large building, have you considered a proper Building Management System (BMS) to control everything in a pre-programmed way?
- Do you make sure that computers and printers/ copiers/ scanners have the standby energy-saving mode activated? Computers should be set by default to turn the monitor off after five minutes and go into full standby mode after 10 minutes. Even standby often uses over 20% of the full power consumption however, so switching off is best!
- Do you use A and A+ rated, energy efficient equipment? Do you look for these when replacing old equipment such as fridges, dishwashers etc.?

- Is equipment, such as printers, food and drink dispensers, water chillers, water-heating urns etc. on plug-in timers? Use plug timers so that they cannot be left on over-night and at weekends.
- Do you keep your windows and doors closed while the heating is on? If you don't you will be constantly losing heat from your building.
- Are your thermostats turned down to around 21°C in the office and 19°C in corridors and storerooms? Increasing temperatures by just one degree from these values will increase your heating costs by around 8%. Encourage staff to wear warmer clothes if they get a bit cold!
- Are your thermostats set in a suitable place, away from drafts and heat sources to give a representative temperature measurement? If not, your heating will not be controlled properly and you will use more energy.
- Do radiators have thermostatic radiator valves (TRVs) that are set at a sensible (middle, e.g. 3 out of 5) setting and not tampered with by staff? Is there adequate space left around radiators to allow them to dissipate heat effectively?
- Have you turned radiators down or off in areas that are little used? For example corridors and storerooms where staff may not spend much time?
- Are all ducts and pipes containing hot air and water extremely well-insulated throughout? Ducting will help prevent heat losses.
- Do you make the best of natural daylight to avoid switching lights on? Do you keep windows and skylights clean? Do you have photocells controlling lights in areas with good natural light?
- Have you replaced your lighting with low energy types? For example do you just use compact fluorescent lights (CFLs - the latest cold cathode types are best) and T8 (slimline) or even more efficient T5 super-slim fluorescent tubes?
- Do you have 50w halogen tungsten down-lighter spots? If so consider replacing these with more efficient mini-CFLs (e.g. in 'can' style reflectors), new GU10/MR16 style LEDs (light emitting diodes) or small metal halide spotlights.
- Have you considered fitting passive infra-red motion sensors (PIRs) to control lighting? Using these to control switching in areas that do not need light continuously, such as toilets, storerooms, meeting rooms etc. can save energy.
- Is equipment switched off when it is not in use? Do you know how much it is costing your business? Checking your energy usage when the site is not being fully used (e.g. overnight or during shutdowns) is a good way of identifying some of the wastage, for example equipment, lighting and heating that has been left on.
- Have you an overall master switch to turn the power off on non-essential equipment at night/weekends? It has been estimated that companies waste up to €6,000 per annum by not switching off equipment when they could.
- Do you have a preventative maintenance programme for equipment? Do you have preventative maintenance programmes for equipment such as motors, fans, conveyors and other process plant?
- Are the motors high efficiency models? Inefficient motors can add 5% to your energy bills. Did you know that idling motors can use up to 40% of the full-load power
- Do your motors (for example on conveyors, lifts, air extraction fans etc.) have variable speed drives (VSDs)? These allow motors to receive just the right amount of power to match the load they are under, hence reducing energy use.
- Does your organisation always repair old motors? Whilst cheaper in the short term, this can mean that a less efficient motor is being used and one that is often less reliable. VSD's can often be retrofitted to older motors to make them more efficient.
- Do you ensure that refrigeration and freezer units are set to the maximum temperature recommended? Every 1°C lower on the temperature can result in operating costs rising by 2 to 4%. Ensure that doors are kept closed whenever possible. It costs approximately €6 for every hour that a freezer door is left open.

- Is refrigeration equipment well ventilated? Ideally compressors and their radiators should vent outside or at least have good clearance around them. Overheating of equipment creates extra energy demand.
- Do you check for compressed air leaks? Checking for leaks can save 30% of the associated energy costs. You should also avoid dead-ends in your compressed air network as this reduces efficiency also.
- Have you checked the operating pressure of the compressed air system? A reduction of just 1 bar (15psi) will reduce operating costs by up to 7%.
- Have you looked at the alternatives to compressed air, such as physical clean down or washing? Compressed air can cost up to 50 cent per kWh compared with 5 cent for 'normal' electricity and hence is not an efficient way of cleaning down workbenches and floors!
- Have you installed power-factor correction equipment on your power supply if you have a PF rating of below 0.8? Some electrical current can work against useful supply, hence increasing costs. PFC equipment normally reduces energy consumption by around 5 to 8% where not previously fitted and usually pays back in 12 to 18 months.
- Are your boilers the latest highest efficiency (HE) condensing type (Class A)? These are typically 94% + efficient and far more economical than other boilers.
- Have you looked into the possibility of using combined heat and power (CHP) plant? To make this efficient requires a need for large amounts of heat as well as electricity, for example as in a hotel or hospital. Sometimes this heat can be used elsewhere - for example to heat a neighbouring factory or swimming pool.
- Does your organisation have large workshops or warehouses which are difficult to heat? Have you considered installing radiant heat tubes? These produce infrared radiant heat which is directed to where it is required using reflectors. The heat is able to pass through the air without heating it so that the staff feel the benefits directly.
- Are automatic and rapid-closing roller shutter doors fitted in workshops and warehouses? These avoid large doors being left open for long periods and hence the need for additional heating.
- Do you keep sky lights and windows clean to make the best use of natural daylight? The use of sky lights can help reduce lighting costs, especially in summer. In areas with sky lights and good window light, lighting circuits can be connected to ambient light sensors (photocells) which will switch the lights on only as light levels fall below an acceptable level.
- Do you make sure you use efficient lighting? Do you make sure you use efficient florescent (T8 or ideally super slim T5 types) or metal halide and sodium high intensity discharge (HID) lights in the factory/warehouse?
- Do you use any other types of lighting control other than simple on-off switches? For intermittently used areas (such as some parts of warehouses) lights could be connected to occupancy sensors (PIRs) to prevent lights being left on.
- For slow response lighting, e.g. metal halides in warehouses, timer controls are preferable. These ensure that lights aren't left on out of occupancy hours but remain on during working hours.
- For areas with lots of lighting, zoning should be provided. Then only the areas in use are lit rather than the whole building!
- For external security lights, photocell light sensors can be combined with PIRs. These can be used to switch lights on at night and only when movement is detected.

You can contact greenbusiness for more information and useful audit tools are available from the SEAI. (sustainable energy authority Ireland)