



ENERGIA WALK-THRU GUIDE

Energia is constantly working to reduce your energy costs. The aim of this walk-through guide is to give some quick tips on how to assess the energy efficiency of your site. This guide addresses key areas of energy usage and looks at the some telltale signs that your site may not be operating to its full energy efficiency potential.

How to use this guide

Simply attach this guide to your clipboard and start to walk around your site. Look at the sections that are applicable to your site. See how closely your answers reflect the best-case answers. Soon you will begin to get a picture of how efficient your plant is.

Lighting

Is the outside lighting left on all day?

Best Case: Outside lighting controls should be photosensitive (i.e. should only switch on when light levels are low).

Is lighting in peripheral areas (e.g. toilets and infrequently used corridors) left on constantly?

Best-case: Infrequently used areas should have lighting controlled by presence detectors.

Are light fittings cleaned regularly?

Best-case: Light fittings should be cleaned twice a year to make sure that dust or dirt is not reducing the light output.

Does the opportunity exist to make better use of daylight?

Best-case: Windows are clean and unobstructed by cabinets etc. with staff located close to the source of the natural light.

Are tungsten filament bulbs used about the site?

Best-case: Compact fluorescent bulbs use 75% less electricity than tungsten filament bulbs and last almost 8 times longer.

Are there twin tube fluorescent fittings used on the site?

Best-case: One of the tubes is removed and a mirrored reflector is installed to increase the effective output from a single tube.

Are high-pressure mercury fluorescent systems used where the lights are mounted high above floor level?

Best-case: SON/SOX discharge lighting costs less to run than high-pressure mercury fluorescent and should be installed especially in rooms where the lighting is on constantly.

Office Equipment

Are all office computers shut down at the end of each day?

Best-case: Switching off a computer at the end of each day can cut its energy consumption in half.

Are all computer monitors switched off during absences of 10 minutes or greater?

Best-case: If the computer is unattended for more than 10 minutes then the monitor should be turned off.

Are photocopiers switched to standby mode when they are not in use for long periods and are they shut down at end of every working day?

Best-case: Photocopiers can consume large amounts of energy while inactive; they are also central pieces of office equipment that could be used to highlight general efficiency issues.

Are timed plugs fitted to vending machines to make sure that they operate only during site hours?

Best-case: A vending machine that is left running continuously can cost about 600 a year to operate, so ensure that they are only powered up during site operating hours.

Are water boilers left running continuously?

Best-case: Water boilers should be switched off outside of main usage hours; jug kettles can be used to boil water during these periods.

Are all hand dryers automatically activated?

Best-case: Automatic hand dryers should be installed, as they do not operate unless they are actually needed.

Heating and Ventilation

Are all buildings on the site suitably insulated?

Best-case: A building that is not properly insulated leaks heat, when you consider that this is essentially the same as leaking money, it makes sense to carry out regular checks to ensure that insulation is not damaged.

Are buildings being heated above 19°C?

Best-case: The maximum recommended level for heating is 19°C; the cost of heating a building to 20°C can be almost 10% more than heating it to 19°C.

Can the level of heating in some areas be reduced?

Best-case: Warehouses and other areas where a high degree of physical activity takes place only need to be heated to between 10°C-16°C.

In rooms with high ceilings do fans prevent the air from settling into regions of varying temperatures (stratification)?

Best-case: In rooms with high ceilings, fans mounted near ceiling height circulate air and prevent all the warm air from rising to top.

Do members of staff open windows and doors when they are too hot?

Best-case: Staff should be encouraged to turn off their heating when they are too hot rather than opening windows and doors. In addition, thermostatic radiator valves are a relatively cheap way of preventing overheating in areas heated by radiators.

Do heating and ventilation switches match building occupation levels?

Best-case: Heating and ventilation switches should be set to allow them relax their control settings when the buildings are unoccupied especially during extended holiday periods etc.

Are heating controls set to ensure that they don't clash with air conditioning units where both are present?

Best-case: Huge amounts of money could potentially be wasted in any area where heating and air conditioning are operating simultaneously.

Motors

Are all motors turned off when they are not in use?

Best-case: Many motors are running constantly because they are integrated into larger systems, it is important to turn off all motors that are not in use such as those driving conveyor belts.

Are dampers used to control the flow of motors driven fans/turbines?

Best-case: Some control methods use dampers to regulate the flow of air from a fan driven by a motor. A reduction in the speed of the motor will lead to a large reduction in the amount of energy used (power is proportional to speed cubed).

Have motors been assessed to see if more efficient motors could replace them?

Best-case: Often the size of the motor is too large for the size of the load that it is driving, given that a motor can consume its capital cost in just 40 days of continuous operation then it is important to match loads with appropriately sized motors.

Are soft starters used when motors are being turned on?

Best-case: A soft starter will significantly reduce the amount of current that is drawn by a motor when it starts up; this increases the life of a motor and dramatically reduces the amount of energy used during start up.

Compressed Air

Is there a system for reporting compressed air leaks?

Best-case: There should be an explicit procedure in place to report and immediately repair any leaks that are noticed in the compressed air system.

Is there a regular leak test and repair program?

Best-case: The entire compressed air system should be regularly inspected and repaired when necessary.

Is unused compressed air pipework permanently isolated?

Best-case: If there is a section of pipework that services a now redundant piece of equipment, then that pipework should be isolated permanently.

Is compressed air generated at the minimum required pressure?

Best-case: The higher the pressure generated by the compressor, the more energy is required to do so, for this reason pressure should only ever be generated at the minimum required level.

Are compressors shut down when there is no demand?

Best-case: Every compressor has a large amount of waste associated with it. Given that only 5% of the energy used by any compressor is converted into pressure (the rest is lost as heat), then it should be shut down when it is not in use.

Where is the intake air drawn from?

Best-case: The intake air should be drawn from the coldest possible source, since it is cheaper to compress cold air. In many cases the intake air is drawn from outside.

When was the last time the air inlet filters were cleaned?

Best-case: The intake air filters should be cleaned once a month and replaced when damaged in any way, this reduces the amount of energy required to draw the air in.

Refrigeration

Is air entering the condenser from the coldest possible source?

Best-case: A cool source of air that enters the condenser unit is much more efficient than a warmer source of air, typically air fed to the condenser is drawn from outside the building.

Are there bubbles in the refrigerant sight glass?

Best-case: The refrigerant sight glass should not contain any bubbles as this is an indication that refrigerant is leaking. Leaking refrigerant has two major associated costs: replacement of refrigerant and increased power consumption.

Is the oil in the refrigerant sight glass at the correct level?

Best-case: Oil should be at the marked level in the glass sight (usually in the middle). A drop in oil level is another indication that refrigerant is leaking, while an oil-level that is too high can also reduce efficiency.

Is product stacked near the front of the evaporator?

Best-case: Obstructing the evaporator impedes the airflow, consequently the airflow is reduced and an unnecessary amount of power is consumed by the system. The evaporators should be unobstructed at all times.

Do the evaporators defrost properly?

Best-case: The evaporators should be defrosted before ice starts to cover the fins. An evaporator that is iced up causes a drop in evaporating temperature (a 1°C drop evaporating temperature can cause a 4% increase in operating costs).

Are there any heat sources in the cold store?

Best-case: All activity in a cold store should be kept to a minimum; the use of forklifts, lights and motors cause a rise in temperature. A rise in temperature means that more energy is consumed during refrigeration so all uses of machinery, which do not have to be performed in the cold store (e.g. charging of forklifts) should be carried out elsewhere.

Has ice formed on the floor and walls of the store?

Best-case: If ice has formed on the floor or on the walls, then it is an indication that air is entering the store and bringing moisture with it. This also indicates that cold air may be leaving the store causing more energy to be consumed.

Is the store kept at a level, which is colder than necessary?

Best-case: The temperature should only be as cold as required by the product, if the temperature is held below this level, then the operating costs of the system will rise significantly.

Where to go from here?

This guide may have given you some indications that you need to look more closely at energy efficiency. Start with the cases where your site does not correspond to the best-case scenario. Try to implement as many of the best-case practices on your site as you can. If you are unsure how to proceed with this then contact your key account manager or energy.efficiency@energia.ie for details of Energia's energy management services.