

Saving energy

Use of good practices

In the improved utilization of natural resources (and not only energy), research and technological innovation, national and local energy policies, and especially culture and behaviour of the population, will surely have a fundamental role.

A reduction and correct management of waste, an appropriate use of electrical appliances, an intelligent management of household lighting and of heating in offices and apartments, use of public transport instead of one's own car, all these are actions that, if put to use by all of us on a daily basis, will lead to a decrease in the waste of energy, an increase in the performance of the overall energy system and especially a "saving" in terms of natural resources, the environment and also of money.

Each one of us, therefore, can strive to save the present energy sources, by using innovative technologies, but also adopting small improvements in our daily life. To do one's best to realize a sustainable development however does not mean giving up what one has, but rather to avoid wasting.

What you can do

Our small daily actions can contribute to energy saving, and these include some ways to behave with regard to the use of "household energy", i.e. the energy used for heating and electricity. It is pointed out that energy for domestic use absorbs more than 18% of the national energy requirements and is responsible for approximately 27% of the polluting emissions. We can try to save up to 50% of the household energy that we utilize.

Each of the electrical appliances in our homes uses energy. It is important to read the energy efficiency label when buying an item and prefer the appliances that have a lower energy consumption. We must always make sure that the models that we are being offered are high efficiency products and they must bear the IMQ (the Italian Quality Control board) mark or another European mark or guarantee. Furthermore, if the electrical appliance is strong and repairable, it will last longer and costs for its disposal will be avoided. To improve the efficiency of an energy system means: -

- for heating in the homes, to decrease the amount of energy required to heat one square metre;
- for the refrigerator, to decrease the amount of electricity utilized in one day;
- for the gas oven, to decrease the energy required for its operation for a whole day;
- for the air conditioner, to decrease the amount of electric energy utilized in one day.

Here below, a series of actions are listed, that will help to save energy in the homes without having to renounce comfort and wellbeing.

Electric current

A considerable amount can be saved in electric energy if users are well-informed and their behaviour reflects their awareness, and by adopting the so-called "good practices", such as:

- do not leave the lights on in rooms that are not occupied;
- choose chandeliers with less bulbs (for an equal amount of lighting produced, chandeliers or lamps with a number of bulbs consume more energy than those with one light bulb only);

- position the refrigerator or the freezer in well ventilated places, far away from sources of heat;
- regulate the thermostat of the refrigerator or of the freezer at an intermediate temperature (the colder positions require a useless increase in the consumption of energy 10-15%);
- for washing machines, wherever possible use low temperature washing cycles;
- for TV sets, video recorders and electronic equipment in general, avoid leaving these units in the stand-by mode.

By adopting these simple rules, which do not involve any monetary investments, it is possible to obtain significant energy saving, amounting to about 10-20%.

Significant saving of energy can also be obtained by replacing standard equipment with high-efficiency equipment (in the Western Countries electrical appliances utilize almost 50% of the total electric energy produced). It is possible to intervene both on the lighting and on the electrical appliances.

With regard to lighting, by replacing incandescent light bulbs with low energy consumption light bulbs (a light bulb is more efficient than another when it consumes less energy in order to obtain the same amount of lighting) energy consumption for lighting decreases 80% (in Italy 13.5% of electric energy is used for lighting in homes, and good conduct in energy consumption can lead to a significant decrease in this amount).

With regard to electrical appliances, high efficiency models are available on the market since a long time. In the shops, refrigerators, freezers, washing machines and dishwashers are provided with an energy efficiency labels. These labels that have become compulsory following an EEC directive, define seven classes of energy efficiency, from A (low energy consumption) to G (high energy consumption). High efficiency electrical appliances can consume up to one third of the electric energy consumed by the electrical appliances in the lower range. State of the art models (refrigerators, washing machines, dish washers) allow an overall saving of 74% of consumed energy.

Saving energy when washing clothes

Washing machines consume about 25% of the electric energy for domestic use and every year they produce polluting emissions that have been calculated to be 7 million tons of carbon dioxide, 65,000 tons of sulphur dioxide and 20,000 tons of nitrogen oxides.

There are models equipped with a double water intake (hot water and cold water, depending on the selected programme) that allow greater savings, while the "wash & dry" models use a lot of energy.

Some practical suggestions:

- choose models which have a half-load programme, and a thermostat that can be regulated
- clean the filter and the detergent dispenser drawer using anti-scaling agents (e.g. sodium bicarbonate)
- avoid using the prewash setting and select low temperatures (30-60°C)
- prefer washing in the evening and night because the power plants are used less intensely and can provide energy without any power overload.

Saving energy in the kitchen

The dishwasher

For a washing-cycle at 65°C, a dishwasher consumes an average of 20-30 grams of detergent, 1.5-2 kWh and it produces about 1 kilogramme of carbon dioxide.

Remember not to position this electrical appliance near the refrigerator and make sure there is a BIO button so that it can be used with detergents that do not contain phosphorus (a very polluting agent).

Some practical suggestions:

- clean the filter and the small holes of the rotating arms;
- regularly fill salt in the salt compartment so that the anti-scaling device continues to work efficiently;
- use rapid or economical low-temperature (max. 50°C) washing cycles;
- do not select the hot-air drying option, save 45% of the energy of a complete cycle by opening the dishwasher door and letting the dishes dry on their own, that represents about 5% of the electric energy for domestic use.

The refrigerator

The refrigerator is the electrical appliance that remains constantly on and that uses more electricity than all the other appliances. It is important that we choose a refrigerator that has the capacity and the technical characteristics that are suited to the real needs of the family unit (e.g. 100-150 litres for one person, 220-280 litres for two people). We must not forget that till not long ago, all the refrigerators contained gases in their cooling circuits that are responsible for the depletion of the ozone layer.

The refrigerator must be positioned far from sources of heat (dishwasher, oven, cooking range, radiators) and at least 10 centimetres away from the wall in order to guarantee ventilation that is necessary for the cooling coil. The dust must be cleaned periodically from the cooling coil, in order to guarantee a good cooling performance.

Some practical suggestions:

- periodically check the seal of the rubber refrigerator door gaskets;
- defrost the freezer when the layer of ice is more than 5 millimetres, because electricity consumption can increase up to 30%;
- regulate the thermostat according to the room temperature;
- do not put hot food or uncovered liquids in the refrigerator, because this causes an increase in the layer of ice on the sides;
- avoid filling the refrigerator excessively so that the air can circulate freely;

The oven

Currently technology guarantees excellent cooking performance and remarkable energy saving with gas ovens,

compared to electric ovens. Self-ventilated models provide a more rapid and uniform heating.

Some practical suggestions :

- use all the oven shelves;
- avoid opening the oven when it is cooking;
- the oven can be turned off a little before the end of the cooking process, leaving the food to continue cooking inside the oven.

Saving energy in the rest of the house

The air conditioner

In order to protect our health it is good to keep the filters clean. These can accumulate harmful substances such as bacteria and dusts. Furthermore it is advisable not to set the temperature at a level that is very different from the temperature outside, because it is equally harmful for us, and it is very costly from the point of view of energy. In fact it would be better to use fans or dehumidifiers, and favour cooling the house by keeping the windows open at night and allowing the air to circulate.

The iron

Lighter irons, with steam, and an anti-scale device and 1200 watt power are sufficient for domestic use. Remember to regulate the temperature according to the type of material to be ironed.

Today there is an extra instrument to inform users/consumers and push them towards energy saving, the energy efficiency label which, as required by the law, must be attached to all household electrical appliances. The label also has information regarding the energy consumption of the unit and the related energy efficiency class, which ranges from the letter A, where energy consumption is lower to G where it is higher. From today, therefore, saving energy is increasingly easy.

TV

The television set is an electronic unit that is turned on for many hours a day, as in the case of computers. We must remember to turn these units off when we do not use them and, as soon as possible, we should activate the energy saving functions and turn off the monitor in case of interruptions of over 10 minutes. Radios and portable recorders, watches, cameras and cell phones are generally operated with batteries. Batteries are a dangerous waste and are difficult to eliminate, as a consequence use rechargeable alkaline or lithium batteries, and remove them from the unit when not utilized. However we must pay attention at the time of purchasing items - some torches, watches and calculators use solar energy.

Stand-by

Stand-by systems are a true waste of energy, for instance 15W are required to make a compact disk play, and 11W are consumed just to keep the CD player turned on!

Most modern electrical appliances (TV, video recorders, computers, microwave ovens, etc.), when not in use can be left in the stand-by or sleep mode, which is usually noticeable because of the small lights that remain turned on, on the equipment. For example the television remains in stand-by when it is turned off using the remote control and not the on-off switch. In this mode, consumption of electric energy is reduced, but it is not turned off after the unit has been utilized actively. Even electrical appliances that are not operating continue to consume minimum quantities of electric energy if they are connected to the electric main; consumption is totally stopped only when the plug is removed from the socket connected to the main or, in case the equipment is plugged into a multiple electrical outlet, when the switch is turned off. Overall, electric energy consumption in the stand-by mode is not negligible, if you always remember to turn off electrical appliances when they are not in use, you will easily save about 8% of your annual consumption of electric energy.

How to eliminate any waste of energy in the electrical appliances when they are not in use?

Purchase a multiple electrical outlet and connect your electrical appliances to it. By turning the switch off, you will completely cut off the electricity consumption of the appliances. Also remember to disconnect all battery chargers when they are not in use.

Lighting

The European Union has ruled to gradually banish all incandescent bulbs (which regards the production of new bulbs) with the following schedule:

- from September 2009, the production of 100 W incandescent light bulbs or more, and all the bulbs with frosted or opal glass is prohibited;
- from September 2010 the production of 75 W incandescent light bulbs is prohibited;
- from September 2011 the production of 60 W incandescent light bulbs is prohibited;
- from September 2012 the production of incandescent light bulbs of all powers is prohibited;

Exception is made for incandescent light bulbs made for specific purposes (e.g. refrigerators, ovens, etc.). A 100 watt (W) incandescent light bulb produces the same amount of light as a 20W compact fluorescent bulb; this means that the two bulbs emit a similar luminous flux (measured in lumens, lm). The lumen/watt ratio indicates the lighting efficiency of a light source. While 100W incandescent light bulbs are characterized by a modest lighting efficiency (14 lm/W), because about 80% of the electric energy is transformed into heat and only the remaining 20% into light, 20W CFLs have a much higher lighting efficiency (60 lm/W).

The more efficient operating mechanism leads to a decrease of up to 80% in the consumption of electric energy for an equal luminous flux. Low consumption light bulbs cost slightly more, but their average life span is remarkably longer than the traditional light bulbs (10,000 hours vs. 1,000 hours of the incandescent light bulb).

Replacing the incandescent light bulbs can be a great advantage, the higher cost for purchasing the same is however recovered in a very short amount of time.

Other initiatives:

- Turn off the lights if they are no longer needed;
- Regularly clean the lighting equipment : the dust, greasy smoke and vapours of the kitchen can decrease the amount of emitted light up to 20%.

The heating system

With regard to the heating system of houses, the conditions of a beautiful day in spring should be created, 20 degrees centigrade, humidity about 50% and good circulation of air:

- only slightly heat the rooms that are not used at all, or which are used rarely;

- during the day, keep the temperature at 20 degrees centigrade, at night 16 degrees centigrade (1 degree less is equal to 5-7% savings) and however respect the limit set as maximum temperature inside the house and the period of the season in which the heating systems can be turned on, which are both regulated by the different Town Councils;
- in the evenings, close the shutters or lower the shades and close the curtains, unless these also cover the radiators;
- during the day do not prevent the sun's rays from shining through the windows;
- do not cover the radiators with furniture, curtains or other objects (40% of the energy is wasted);
- always place a board made of isolating material between the wall and the radiator;
- ventilate the rooms shortly but thoroughly, open the windows for a few minutes only, two or three times a day;
- apply sealing materials on the windows wherever the cold draft comes through the windows;
- isolate the attic;
- use isolating materials to cover the pipes that bring hot water from the boiler to the radiators;
- mount thermostatic valves on the radiators to control the flow of hot water depending on the temperature that is recorded in the room;
- check the boiler at least once a year and at the time of purchasing a new heating system, choose the highest efficiency boiler (by improving the performance, 10% of fuel can be saved per year);
- if the heating system needs to be changed, prefer systems that use renewable energy sources (biomasses) or assimilated systems (cogeneration and district heating), or methane gas;
- in apartment buildings with central heating systems, install a system to account for the heat utilized by each apartment. In this way it will be possible to share the expenses among the various users, in proportion to the amount utilized by each.