

How is the energy used in households during the day?

Energy consumption during the day is related to our daily duties, but also to our habits. It is variable depending on the seasons and hour shift during summer and during winter, nevertheless the daily energy profile is characterized by low consumption during the night (sleep), increased energy consumption in the morning (preparing for school and work), a decrease in the afternoon hours (presence outside the home) and another increase in the afternoon (return from school and work, lunch, housework, rest).



Table of an average household electricity consumption made available by Innogy indicates that this value in households is 6.86 kWh per day, 208.76 kWh per month and 2 505.14 kWh per year.

However, energy consumption also varies depending on the size of the household. In the case of electricity, the most important is the number of household members and the type of electrical equipment. It is assumed that a 4-person household will consume from 1.5 kWh to approx. 3.5 kWh per da.

What is thermal comfort?

Thermal comfort can be described by means of several measurable parameters such as temperature, air velocity and humidity. However, its perception depends also on the subjective preferences of individuals. Many European countries have identified requirements and recommendations for upper and

lower limits of these parameters. Failure to do so may adversely affect the health of residents or building users, so it is important to ensure an appropriate level of these parameters. This can be achieved by improving the energy efficiency of buildings and changing the negative behaviors of people using them.

How to improve thermal comfort?

The control of basic thermal comfort parameters can be carried out with simple means. The temperature and air speed can be adjusted by adjusting the temperature on the heat source and the air velocity in the air conditioning units. The ventilation system is also able to control the air speed. Properly functioning ventilation has a significant impact on the level of thermal comfort, so do not blind ventilation ducts. Proper operation and regulation of heat and cold sources and improvement of the energy efficiency of buildings is the key to achieving the required parameters of thermal comfort.

Why ventilation is important?

Ventilation and proper airing of the rooms firstly ensure the supply of oxygen for breathing. In badly ventilated rooms, the presence of people is enough to strongly increase the level of carbon dioxide. The concentration of carbon dioxide is not so great to harm anybody, but it causes a drop in oxygen levels. Problems with the oxygenation of the body are manifested by fatigue, distraction and a feeling of shortness of breath.

Thanks to ventilation, the humidity in the rooms is also reduced: moisture first condenses only on the windows, and then on the walls. Mold spores appear on humid plaster that are dangerous to our health - they have carcinogenic properties. Ventilation also protects against carbon dioxide poisoning, which is why efficient ventilation is especially important in homes where old-style gas stoves or free-standing stoves, called belly-stoves, are used.

How to reduce energy consumption by using appropriate lighting?

Among the energy-efficient indoor lighting we can mention: energy-saving fluorescent lamps, halogen bulbs, compact fluorescent lamps and high-efficiency diodes (LED).

Energy-saving fluorescent lamp is characterized by high luminous efficiency and long durability - up to 15,000 hours of work, while a traditional bulb can work up to 1000 hours and its luminous efficiency is almost 4.5 times lower. Compact fluorescent lamps use 65 to 80% less energy than a traditional light bulb emitting the same luminous flux. Another example is energy-saving halogen lamps that can replace traditional light bulbs. They have twice as long durability and consume up to 30% less energy compared to traditional bulbs. Whereas high-efficiency diodes (LED lighting) achieve very high luminous efficiency and they are almost as efficient as energy-saving fluorescent lamps. Their durability ranges from 30,000 to 100,000 hours.



Behavior conducive to energy-efficient use of lighting

The energy saving resulting from the use of lighting is connected above all with the replacement of old bulbs with energy-saving ones.

The reduction of energy consumption will also be affected by switching off the light when it is not needed and using natural light. In addition, the effects will also bring regular cleaning of the lighting fixtures, which will make the lighting intensity constant. Contaminated luminaires can reduce the intensity by 20-50%

BULB	COMPACT FLUORESCENT
25W	5W
40W	8W
60W	12W
75W	15W
100W	20W
150W	35W

Another activity, not directly related to the lighting itself, but also affecting energy saving, is painting walls and ceilings in bright colors. This causes that more light is reflected, which in turn means that a smaller number of light sources are required in a given room. In addition, the light in the room, whose shades are kept in bright colors, is switched on much later than in the case of dark interiors

