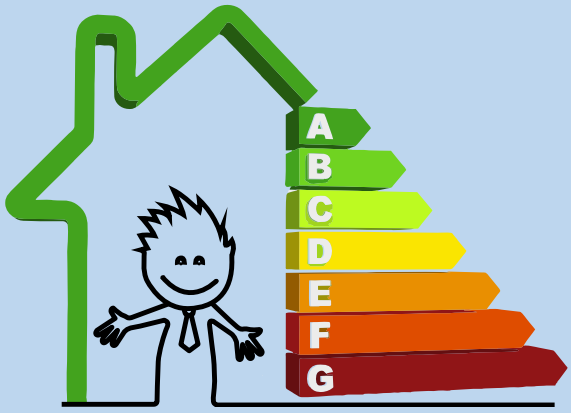
Energy audit

How to independently estimate energy consumption?

The basic analysis of energy use in a household can be carried out by any user. The easiest way to estimate energy consumption is to use information contained in electricity, heat, gas or other fuel bills. Therefore, they must not be thrown away, but all invoices should be collected in one place and stored. In the bill, you can find energy consumption values (most often expressed in kilowatt-hours [kWh] or gigajoules [GJ]) for the settlement period. Another good way is to monitor the energy meters.

Having knowledge about the amount of energy consumed, it is worth considering what makes up this value. Electric energy consumption depends mainly on the quality of appliances in the household and the way they are used. To reduce electricity bills, it is worth considering replacing the least efficient devices. In estimating the efficiency of devices, labels on their energy efficiency classes as well as their status and age may help. In the first place, it is worth replacing devices with low energy class, the oldest ones and those often failing. In the case of heat, the technical condition of the building has the greatest impact on energy consumption, e.g. the quality of thermal insulation, tightness of windows, heat source parameters and installations distributing heat to individual rooms. In addition, the way of using heat sources and heating installations as well as the habits of residents are important.



How much energy do the individual devices consume?

All energy-consuming devices should contain information about the power (usually expressed in Watts [W]) or the amount of energy needed for their operation placed on the device itself or in the information attached to it (on the packaging, in the instructions, etc.). Having information about the power needed to power the device, we can estimate its energy consumption in the following way:

$$\frac{power\ [W] * use\ time\ [h]}{1000} = energy\ used\ [kWh]$$

Analyzing the energy consumption of individual devices, it is worth noting that it depends on several factors, including: operating mode (e.g. programs in the dishwasher, oven temperature control or speed of the dryer), technical condition and method of use. Therefore, the self-calculated values should serve as an indicator of energy consumption and not as actual consumption. To estimate the energy savings that can be achieved and thus reduce the bill, information about the energy efficiency class placed on the device's label is helpful. However, this is not the only important factor, it is also important to choose the device that is most suited to your needs. Too big refrigerator or a dishwasher consume unnecessarily more energy than appliances well-suited to the real needs of a specific household.

The basic analysis of energy consumption can be carried out independently, however - when deciding to implement a full energy audit, for example to be able to apply for funding - it is worth asking professional auditors. The quality and subsequent possibility of using the advice included in the audit depends on its reliable conduct, which is why - just as in the selection of the contractor - it is worth paying attention to the certificates held by the auditors.

What is an energy audit?

The necessary action leading to the energy optimization of the building is to conduct an energy audit of the facility. The audit is a study containing an analysis of energy consumption, technical and construction data of the building structure, energy performance of the building, as well as optimization steps leading to improvement of the energy efficiency of the building. The characteristics carried out as part of the audit cover all housing components, installations and equipment in buildings related to energy consumption.

What is the purpose of the energy audit?

The main goals of the energy audit are: checking the compliance of the existing building with the assumptions and legal requirements, assessing the building in terms of energy, economics and environmental impact, rationalization of energy consumption, and suggesting ways to improve energy, economic and environmental indicators after conducting an appropriate energy and financial analysis. The implementation of the proposed modernizations results in a reduced demand for heat and electricity in the building, which affects energy and economic savings for the tenants of the facilities.

Energy audit is the basis for applying for co-financing the investments from national funds, EU funds, environmental funds and structural programs, such as the Infrastructure and Environment Operational Program or Regional Operational Programs in provinces.

In addition to energy savings, an important advantage of carrying out an investment is a significant increase in the comfort of living in the home. The improvement may be influenced by factors such as: improvement of the building's tightness (applied layers of insulation and new windows) and installation of ventilation to improve the air quality in the house, installation of a new heat source and heaters for better and easier regulation of indoor temperature.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 754051