

ENERGY EFFICIENCY IN ENTERPRISES

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Анотація:

У цій статті розглядаються проблеми та перспективи державного механізму фінансової підтримки та стимулювання енергоефективної модернізації українських підприємств.

Ключові слова: енергоефективність, енергозбереження, енергоаудит.

Abstract:

This article deals with the problems and perspectives of state mechanism of financial support and stimulation of energy efficient modernization of Ukrainian enterprises.

Key words: energy efficient, energy conservation, energy audit.

Industry is one of the most energy intensive sectors of the economy. Currently, it accounts for almost 33% of final energy consumption. At the same time, this sector has a large potential for energy saving. According to the National Energy Efficiency Action Plan - 2020, the use of energy in this area in Ukraine should be reduced by 3.2%, which is 25% of the total expected reduction of energy consumption.

Energy conservation is the effort made to reduce the consumption of energy by using less of an energy service. This can be achieved either by using energy more efficiently (using less energy for a constant service) or by reducing the amount of service used (for example, by driving less). Energy conservation is a part of the concept of eco-sufficiency. Energy conservation reduces the need for energy services and can result in increased environmental quality, national security, personal financial security and higher savings.[1] It is at the top of the sustainable energy hierarchy.[2] It also lowers energy costs by preventing future resource depletion.[3]

Energy can be conserved by reducing wastage and losses, improving efficiency through technological upgrades and improved operation and maintenance. On a global level energy use can also be reduced by the stabilisation of population growth.

Energy can only be transformed from one form to other, such as heat energy to motive power in cars, or kinetic energy of water flow to electricity in hydroelectric power plants. However machines are required to transform energy from one form to other.

One of the primary ways to improve energy conservation in buildings is to perform an energy audit.

An energy audit is an inspection survey an analysis of energy flows, for energy conservation in a building, process or system to reduce the amount of energy input into the system without negatively affecting the output(s). In commercial and industrial real estate, an energy audit is the first step in identifying opportunities to reduce energy expense and carbon footprints.

The principle of energy audit is that when the object of study is an occupied building then reducing energy consumption while maintaining or improving human comfort, health and safety are of primary concern. Beyond simply identifying the sources of energy use, an energy audit seeks to prioritize the energy uses according to the greatest to least cost effective opportunities for energy savings.

When looking to the existing audit methodologies developed in IEA EBC Annex 11, it appears that the main issues of an audit process are:

- the analysis of building and utility data, including study of the installed equipment and analysis of energy bills;
- the survey of the real operating conditions;
- the understanding of the building behaviour and of the interactions with weather, occupancy and operating schedules;
- the selection and the evaluation of energy conservation measures;
- the estimation of energy saving potential;
- the identification of customer concerns and needs.

Increasingly in the last several decades, industrial energy audits have exploded as the demand to lower increasingly expensive energy costs and move towards a sustainable future have made energy audits greatly

important. Their importance is magnified since energy spending is a major expense to industrial companies (energy spending accounts for ~ 10% of the average manufacturer's expenses). This growing trend should only continue as energy costs continue to rise.

While the overall concept is similar to a home or residential energy audit, industrial energy audits require a different skillset. Weatherproofing and insulating a house are the main focus of residential energy audits. For industrial applications, it is the HVAC, lighting, and production equipment that use the most energy, and hence are the primary focus of energy audits.

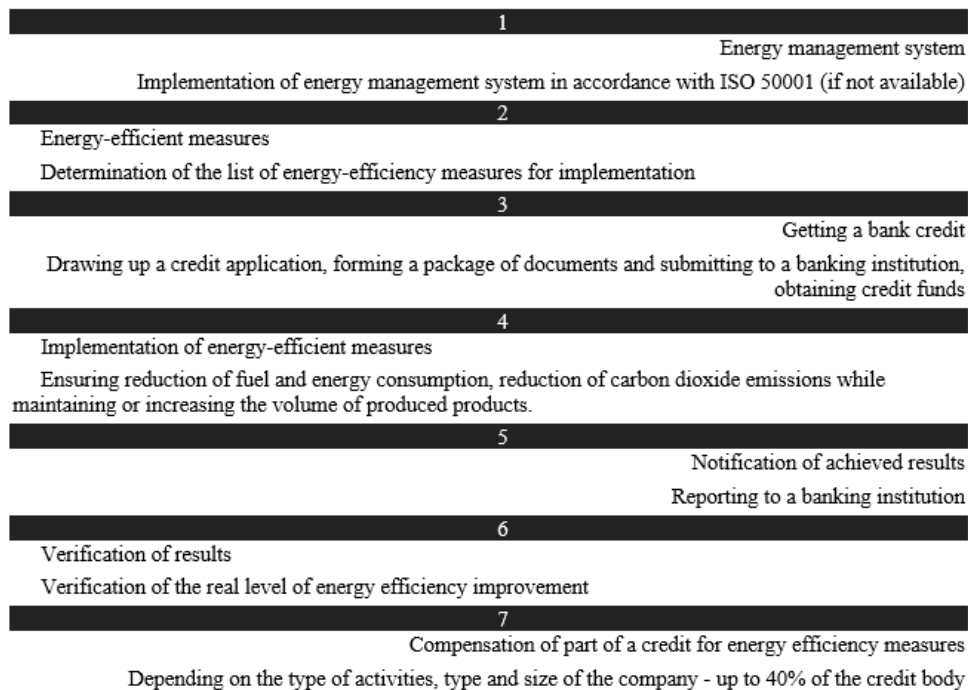


Figure 1 - An algorithm for obtaining state financial assistance by enterprises

There are many motivations to improve energy efficiency. Reducing energy use decreases energy costs and may result in a financial cost saving to consumers if the energy savings offset any additional costs of implementing an energy-efficient technology. Reducing energy use is also seen as a solution to the problem of reducing greenhouse gas emissions. Another important solution is to remove government-led energy subsidies that promote high energy consumption and inefficient energy use in more than half of the countries in the world.

СПИСОК ВИКОРИСТАНОЇ ЛІТЕРАТУРИ

1. Patrick Leslie, Joshua Pearce, Rob Harrap, Sylvie Daniel, "The application of smartphone technology to economic and environmental analysis of building energy conservation strategies", *International Journal of Sustainable Energy* 31(5), pp. 295-311 (2012)
2. "BPI Certifications - Certifications for Skilled, Advanced Home Energy, Entry Level Practitioner, and Multi-Family Building professionals"
3. "Top 5 reasons to be energy efficient". Alliance to Save Energy (ASE). 20 July 2012. Retrieved 2016-06-14.

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