

Software Tools for Monitoring and Analysis of Energy Efficiency

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*Annotation*¹ – this article discusses usage of software tools for monitoring and analysis of energy efficiency.

Keywords – information collection and analysis, computer systems, energy management.

I. INTRODUCTION

The activity of modern organizations (companies) should be carried out in accordance to the International Concept of Sustainable Development, which Ukraine ratified in international forums. Such activities include execution of economic and social functions, production, services delivery and works execution, profit not at any cost but are subject to the sustainable development of bio and geosystems, environmental protection and public health.

II. RESEARCH RESULTS

Activities of organizations and enterprises should provide for effective use of all types of energy resources [1, p. 54-65], which currently used not quite reasonable. As for energy efficiency scientist V.V. Dokuchaev emphasized that our ignorance depletes land resource [1, p. 54]. Another known scientist S. Podolynsky scientifically substantiated that the cost is a measure of work energy, extra cost - is extra solar energy that mankind uses for its progress. Karl Marx agreed that the theory of Podolynsky logically justified, although it implied modifying and a revision of his "Capital".

The economic potential of enterprises provided their optimal activity involves continuous transformation of the structure, information relationships, resource components, information and functional interaction [2, p. 80-81]. Innovative direction of energy efficiency is the use of information and computer software for monitoring and energy efficiency analysis. One of the examples is Energyplan software.

Energyplan provides tracking energy consumption and costs, allowing to identify savings opportunities and determine the efficiency of energy use.

Using this program allows to set up monitoring of energy consumption, estimate the effectiveness of energy usage, check the correctness of energy bills, monitor compliance with energy limits, check comfort conditions in buildings.

User can easily spot locations where energy is used inefficiently and rate buildings to find out how to get maximum savings.

Software allows tracking all possible energy resources including: electricity, heat, gas, coal, steam, hot and cold water.

Energyplan includes numerous extensive reports to compare buildings energy usage with each other or with their historical inefficiently. Reports also help in monitoring providing detailed statistics over the collected data. Most valuable reports for energy efficiency analysis include:

- organizational units consumption summary (education, culture, public health);
- organizational units consumption comparison;
- organizations consumption summary;
- analysis of the dependence of the energy consumption volume on the weather conditions;
- buildings energy efficiency ranking;
- detailed resource consumption of all building.

Upon entering energy consumption information user can get the basic idea, if the resources was used efficiently, thus reaction time to emergency situations becomes much lower.

Energy management systems can be complex and often involve cooperation between large number of people. Within Energyplan administrator can limit access to information that users can see and define interactions they can perform.

For example administrator can restrict the ability of user to see buildings within one selected organization to which this person belongs. Administrators have the ability to grant or revoke any type of interaction with data.

III. CONCLUSION

Usage of information and computer technologies to improve energy efficiency and effective energy management provides significant economic benefit. Implementation of such technologies in Lviv city in 2006-2010 years provided savings of 1.2 million dollars [3].

Energyplan software is being used in 8 Ukrainian cities. The effectiveness of its application envisages further implementation expansion of the program in other Ukrainian cities.

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