CONCEPTUAL MODEL OF INFORMATION SYSTEM OF THERMAL SUPPLY ANALYSIS

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Nowadays the cost of energy sources in the budget structure of local government makes a very significant part. It is caused by the fact that the level of consumption of primary energy sources such as natural gas is growing/remains high. Only a few heat generating enterprises completely switched to alternative kinds of fuels. Therefore, the problem of efficient use of budget funds appointed to the needs of the objects of budget sphere in thermal energy, is currently extremely acute. In the period of energy crisis in Ukraine, due to the scarcity of resources and their high cost, has ceased to be rare cases where a budget institutions unexpectedly stop working due to non-payment of energy bills or the duration of their work is reduced to a minimum due to the inability of the institution to pay completely for the consumed energy. Sometimes, on the contrary, a significant overuse of thermal energy during periods of the heating season with a sufficiently high ambient temperatures is observed. Thus the monitoring problem of thermal energy consumption for the purpose of its rational use is currently relevant. The implementation of accounting and analysis information system of heat consumption will allow to provide the regulation of the required quantity. This will allow to maintain the adequate microclimate in the heating rooms and to avoid a situation of overuse of heating energy consumption, that is the first step of energy saving.

The majority of communal institutions understand in the simple way the consumption accounting of thermal, electric and other forms of energy, reducing it to the equipment of power supply systems of buildings by special accounting devices. Actually, the installation of special devices is only the first step towards the establishment of a complete accounting of energy. As for the qualitative consumption monitoring of intake it is necessary to organize periodic collection of data from accounting devices, to ensure validation of the devices indices correctness, to solve the problem of accumulation and preservation of these data. As accounting is used for the effective financial management of the organization, the energy accounting is an integral part of monitoring and control of energy consumption of each institution. The use and distribution of diverse information arrays when conducting an energy audit encourages the creation of new automation systems for collecting, organizing, and further analysis of monitoring data of thermal energy consumption. The first task in heating monitoring data processing is the creation of a conceptual model of the database subject area which will store the monitoring data of the energy audit objects status, data of the external environment status, various regulatory indicators, which are the input data for the analysis of the heating provision of buildings.

In recent years, the energy saving was realized by changing the structure of the economy, that is, the reduction of energy-consuming industries and transport. Currently the structure factor as a component of the energy saving potential is exhausted, therefore, to maintain the current rate of decline in energy intensity of GDP (4-6% annually) urgently is needed to include the technological factor of the energy saving potential and to increase the level of scientific support for the implementation of energy saving programs through the introduction of modern information technologies. Nowadays widespread practice of energy saving by administrative methods in the conditions of monitoring absence of energy-consuming services quality generally leads to a deterioration in the terms of institutions functioning, growing of employees dissatisfaction of unsuitable working conditions and significant reduction in quality of services.

The primary task of energy saving is to conduct high quality energy accounting. Under the energy accounting is understod the survey of enterprises, organizations, individual houses and separate industries on their initiative with the objective of identifying opportunities for savings in energy consumption and assist the company in implementing the savings in practice by introducing energy efficiency mechanisms and with the aim to implement in the enterprise (in the building) the energy management system. The need to conduct an energy audit is laid down in the Law of Ukraine "On energy saving".

The analysis of approaches to heat consumption monitoring of municipal institutions objects is made. The implementation technology of thermal supply analysis information system is defined, web hosting is selected, which contains the web system of thermal supply analysis. In order to develop the information system are chosen as the basis the selected content management system "Joomla", and the PHP language. As the database is used MySQL.

The overall architecture of the information system analysis ofheating supply is built, the circle of system users is defined, the algorithm of calculation of parameters of monitoring of heating supply is created. The conducted systematic analysis of the subject area allows to construct a conceptual model of a database information system for the analysis of heating supply, defining the basic entities and the relationships between them. The web-system of heating consumption monitoring, which consists of authorization modules, entering and edition of data, calculation of the parameters of monitoring and creation of graphs is developed. Further research is aimed at the development of analysis system of the quality of heating supply and creation of rules for its regulation.

The article is devoted to the development of the conceptual model of the analysis of buildings heating supply process and description of the logical structure of the database.

Keywords - conceptual model, data base, information system, heating supply