

CONSUMPTION MANAGEMENT OF FUEL AND ENERGY RESOURCES - THE BASIS OF ENERGY EFFICIENCY

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Abstract

This article analyzes the effective management model developed on the basis of devices that reduce risks that may occur with incorrect forecasting of fuel and energy complex consumption. This model takes into account the number of enterprises as well as the top indicators.

Keywords

fuel and energy complex, energy efficiency, energy saving, management.

Аннотация

В данной работе анализируется эффективная модель управления, разработанная на основе устройств, снижающих риски, которые могут возникнуть при некорректном прогнозировании потребления топливно-энергетического комплекса. Эта модель учитывает количество предприятий, а также высокие показатели.

Ключевые слова

топливно-энергетический комплекс, энергоэффективность, энергосбережение, управление.

Energy is the basis of material and non-material production of any country or region. Energy is a set of interconnected and interconnected industries of extraction and consumption of fuel raw materials, production and distribution of electricity. So, the fuel and energy complex consists of a complex of interconnected branches of the fuel and electric power industry. The more energy a country or region produces and consumes, the more products it produces and the higher the level of economic development. The raw materials for energy are fuel (oil, gas, coal, peat, oil shale, wood, uranium) and hydro resources (river and sea runoff, buoyancy energy). At present, solar energy, wind energy and the internal heat of the earth are considered as energy raw materials in connection with the development of non-traditional

methods of obtaining energy. Fuel resources are the main source of energy production for all sectors of the national economy. But with the development of science and technology, the importance of one or another source of energy in the national economy is changing. [1] One of the main difficulties in managing the fuel and energy complex of a modern enterprise is non-optimal calculation and consumption rates. An important reason for the low efficiency of managing the fuel and energy complex is the lack of a system for making managerial decisions on its efficient use. The process of managing the fuel and energy resources of an enterprise includes the following steps:

- Monitoring of the time required for the supply or manufacture of FER
- Planning the amount of energy consumed, including a forecast of the possible consumption of fuel and energy resources
 - *Planning the amount of energy consumed, including a forecast of the possible consumption of fuel and energy resources*
 - *Monitoring of real costs for the purchase of fuel and energy resources*

The management of the fuel and energy complex of the enterprise is aimed at creating a fuel and energy balance that continuously provides consumers with energy. The process of managing the fuel and energy resources of an enterprise (Fig. 1) is a multi-stage system that includes the stages of planning, forecasting and controlling interrelated parameters. [2]

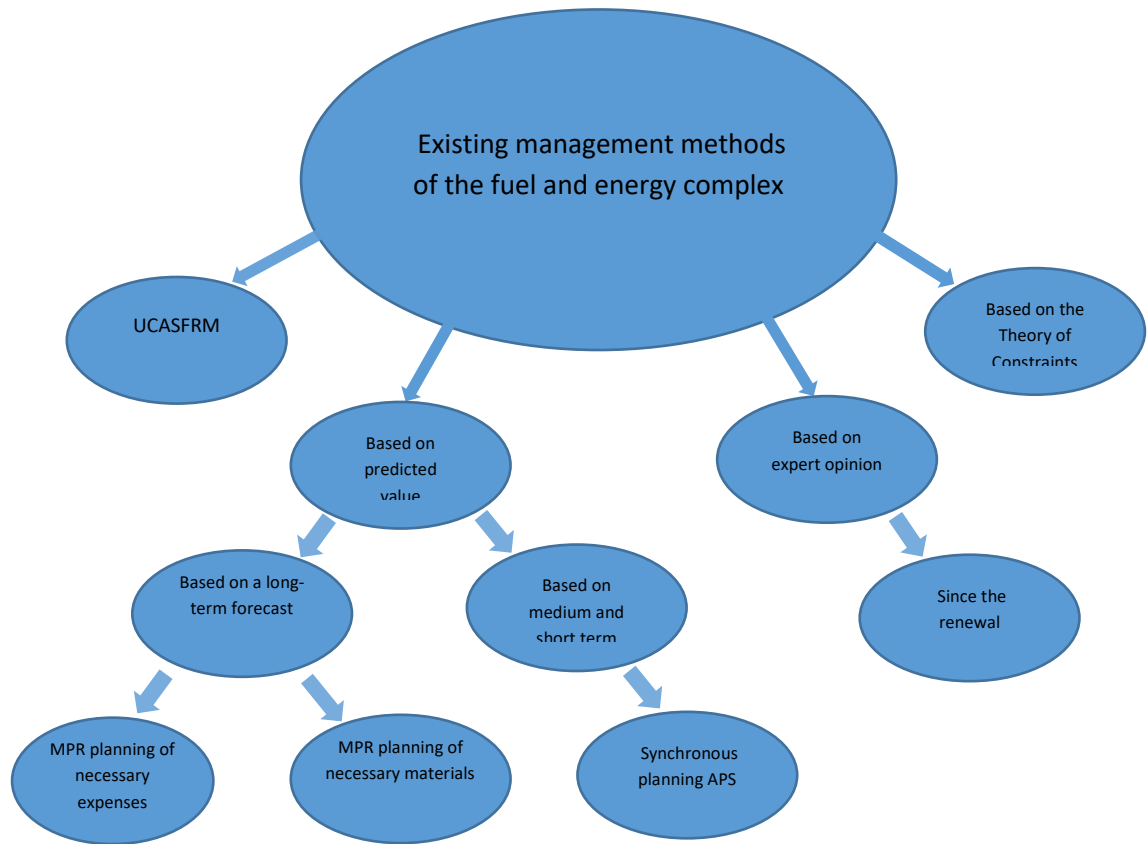


Fig. 1. Classification of existing methods of managing the fuel and energy complex of an enterprise

The existing methods of managing an enterprise in the fuel and energy complex can be divided into two groups: traditional management methods and other classifications based on artificial intelligence.

Methods based on classical theory

- Formation of the fuel and energy balance based on methods using rank analysis, description of the rank distribution: $W(r) = \frac{W_1}{r^2}$

- Formation of the fuel and energy balance based on interval forecasting methods. These methods are based on the construction of confidence intervals of predictive values

Methods formed on the basis of artificial intelligence

- Formation of the fuel and energy balance based on artificial neural networks, which are a set of elementary neuron-like information converters-neurons connected to each other by information exchange channels for their joint work.

- Formation of the fuel and energy balance based on fuzzy logic methods, allowing to take into account the inaccuracy and incompleteness of the initial data.

[5]

An analysis of traditional methods of managing the fuel and energy complex of an enterprise shows that at present the formation of the fuel and energy balance is carried out on the basis of expert opinion, predictive values and the theory of constraints. Despite all this, the order of formation based on predictive values is more advanced.[3-4]

There are a number of shortcomings in the existing methods of forming the fuel and energy balance of an enterprise. These include the impossibility of taking into account short-term changes in the process, as well as the availability of large amounts of statistical data, information characterizing the state of the object, or the issuance of orders based on competent experts and their conclusions. These methods do not have the ability to model and evaluate different options or predict different types of enterprise energy resources. Taking into account all the shortcomings of the existing methods of managing the fuel and energy complex of an enterprise, a fuzzy-logical control model associated with methods and algorithms was analyzed. According to the results of the analysis, taking into account the pricing policy for electricity, the average profit of the proposed model production is 2-4% of the operating costs for the purchase of electricity, and it can be concluded that energy efficiency has been achieved.

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