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Energy reserve forming as the instrument of innovation development of enterprise

Abstract: *Nowadays the market conditions force enterprises for active innovation activity and development. One of the ways of such activity is providing effective energy policy to reach the best results and market positions. Such perspectives can be realized by creating proper energy reserve to provide smooth and effective functioning of the enterprise. The article is devoted to determining different aspect of enterprise's energy providing and energy reserve forming.*

Keywords: *energy using, energy saving, energy intake, energy reserve, resource, potential, innovation, effectiveness*

The most popular area of innovation activity, as before, is the introduction of new products or, in other words, innovative products. However, various aspects relating to food safety, point to evidence that product innovations are useless without updating other types of innovation.

Among a number of innovations related to the development of Ukraine and the food industry we should pay attention to innovations in technology, based on the best experience and science that increase the efficiency of production or product quality. This is especially true for technical and environmental innovation.

Technical and environmental innovations are focused on solving a problem of proper resource using and saving. It can help in reducing companies' costs and find alternative ways to consumers' needs satisfaction.

Using of appropriate resources lays the foundation for providing the necessary nutritional value of foods and serves a guarantee that the product of the enterprise's activity will be duly implemented in variable market conditions. The resource component significantly shapes the competitiveness of products that has a direct impact on the enterprise's competitiveness and, as a consequence, on the efficiency of its activity.

It should be noted that the question with a purely technical nature currently remain key, particularly in the energy supply of enterprises activity, namely, the power equipment condition and readiness, scheduled time of its repair or replacement, its matching to the standards and nature of the enterprise's activity etc.

At the same time, directly question of finding energy sources and creating conditions for sensible energy use in enterprises are frequently overlooked. Therefore, in terms of contemporary, increasing of the efficiency of enterprises' activity due to the

increasing energy use efficiency in the conduct of business acts one of the ways of introducing the innovative activities in enterprises.

Thus, it is defined a desired direction of enterprises' activity in modern terms, based on the involvement of resource and energy saving technologies. It indicates the necessity of focusing the attention on the role and need of using alternative renewable energy sources. Using both of these components may help businesses to achieve stable functioning and avoid the imbalance of resources and costs.

Recently, in the world it can be seen increasing interest in finding, developing and implementing this kind of sources and technologies, that caused by the formation of a proper legal framework, particularly in the international sphere, by which there are fixed as regulations (requirements) on the area of energy resources and energy sources, as regulations that create a favorable investment and business climate in this area.

The problem of enterprise's energy providing management is complex as it deals with various aspects of its activity, and especially with the financial condition and financial stability of the company, based on which it can be generally made a conclusion about the effectiveness and appropriateness of activity.

The characteristic elements of enterprise's energy providing management, as well as any other management, are planning of the energy supply, its organization, motivation and control. It has to find a clear reflection in the overall policy of the company. Such components of the general company's policy as a marketing policy, technical, personnel, financial and others are desperately needed in terms of innovative development of enterprises, especially in view to the need of considering the production capacity of the enterprise, planning activities of technical upgrading, of forming qualified personnel and, in particular, issues of regulation the compliance of budget during the implementation of innovations, determination of maximum allowable additional costs for implementation or making decisions to curtail funding.

All these elements are essential for the implementation of energy-effective policy of the company, which is based on the concept of lean-management. Its observance involves the formation of a balanced development all of the company's systems. In a result of this it is achieved the minimizing costs and maximizing benefits.

One of the prerequisites of the effective enterprise development is searching for ways to reduce costs of the company and, consequently, to open opportunities for variation in the prices of final product and improving profitability of production.

Among a number of acceptable approaches to reduce costs of the company it should be considered an ability of reducing consumption of fuel and energy resources. As shown by studies, the energy component plays a significant functional and providing role in industrial and economic activity. It often constitutes a considerable size in the cost structure of the product. Consequently, the question of assess and ensuring the energy potential of the company arises. In the process, it is necessary to create

possibilities of timely identification, forming and implementation of the energy potential of the company.

The term “potential” in “Economic Encyclopedia” describes as the available resources of the economic entity, its optimal structure and ability to provide its rational use to achieve enterprise’s goals [1].

American scientist I. Ansoff [2] noted that the potential for the company may be considered in different aspects. By the “input aspect” enterprise’s potential includes raw materials, financial, human resources and information. By the “output aspect” it composes from produced products and services tested in terms of potential profitability and from a set of rules of social behavior, compliance of which allows an organization to consistently achieve their goals.

In modern conditions the innovative factor plays a leading role by ensuring prerequisites for the efficient use of all resources, without exception, and realizing the potential of the enterprise. These prerequisites occur due to a change of paradigm beliefs, qualitatively new approaches to the interpretation of terms and techniques, discovering new characteristics and functions of the materials of the business activity and so on.

An important result of energy management is a prospect of forming an energy reserve by obtaining intermediate saves of energy resources during the enterprise’s activity.

In our opinion, company’s energy reserve should be understood as the existing or expected fund of usable energy, which is formed by reducing energy use in the production process (or in the process of economic activity), due to technical and technological changes or due to the energy generation potential of the company, and which allows the enterprise to save (hold) the desired level of efficiency of economic activity with changing the resource balance of the company.

The energy generation potential (EGP) should be understood as the existing or expected (probable) appearance of assets (machinery, tools, equipment) oriented on production (generation) energy of different nature (thermal, electrical, mechanical, etc.), including during the implementation of specific processes of industrial and economic activity and because of technical and technological features of production.

Thus, it can be noted the formation of additional benefits in the form of obtaining the additional potential and stability.

Simplified calculation of energy reserve, within a centralized power supply (for example, the national electricity network) can be calculated by finding the difference between energy intake and energy use.

It’s a result of proper energy and resource policies and enterprise activity from the one side. From another side, the effectiveness of enterprise activity and energy effectiveness are formed by such energy reserve.

Also, we should pay attention to changes at resource flows' system in the way of providing maximum of enterprise's effectiveness.

Considering the question of introduction and forming of energy reserve at the enterprises we faced up with a need of its valuation.

The determination of energy potential of the enterprise is the first step of a process. This step can be realized by the identification energy costs and losses algorithm. Such algorithm gives an opportunity to completely on time valuation of available energy reserves that appears during energy production (generation), moving and using.

Thus, the valuation of energy reserve should be provided by two ways:

- 1) from the energy reserve forming position;
- 2) from the energy reserve using position.

Herewith, it needs to be understood that during valuation of energy reserve from the forming position we should count the way of energy using and energy reserve using relatively. In the other words, it needs to recognize an enterprise energy using system and availabilities of further corrections of this system by energy reserve as the primary task.

The valuation of energy reserve from the energy reserve using position based on defining and valuation of energy reserve availability (potential) to provide smooth and effective enterprise's functioning during the longest period of time with maximum reducing of energy intake (economy of energy resources).

Such conclusion forms by understanding that the correlation of used energy quantity to the parameter of equipment is the base for calculating energy intensity of such equipment. So, because of the equipment's energy intensity makes direct impact into the enterprise's energy intensity, the time of equipment's work and the quantity of consumed energy becomes the key factors.

At this way the valuation of total work-time (energy output) of each energy saving equipment or energy resource that could be involved to production process to provide smooth and effective work of enterprise's technic and equipment is an indicator of valuating energy reserve in time factor.

From the other side, under energy reserve valuating and determining its potential should to count a technic component. This component is oriented on direct determining of energy amount that contained at the energy reserve at every moment of time with an ability of its using for the upcoming needs.

It means that present energy reserve capacity should accord to the up-to-date level of enterprise's technic equipping and should be comparable with energy using amount. This will help to provide proper level of functionality during acceptable period of time.

To our mind, the calculating of total energy intensity of equipment is advisably provided with taking into account the work specific of each unique equipment. For

example, we should pay attention to calculating energy intensity of fully charged equipment and the energy intensity of no-load of the same equipment.

Besides that, the calculating and determining of energy reserve capacity should consider the lean-concept. It means that energy reserve forming should count all types of energy losses. As a particular example, it needs to be count the losses on organization of energy (energy resource) moving and the losses of energy (energy resource) moving as it is. That is why the energy reserve can be evaluated by the potential.

The perspective energy reserve capacity should be based on the algorithm of calculating present energy reserve capacity with the count of potential enterprise's availabilities to increase production, to involve new technologies and technics, and changes at energy using amount in accordance.

Thus, to our mind, there are acceptable further affirmations:

1. If the potential of energy reserve capacity is less than enterprise's energy capacity, it means that we have a need of energy reserve accumulating to provide smoothly enterprise's functioning and to reduce a number of the risks.
2. If the potential of energy reserve capacity is equal to the enterprise's energy capacity, it means that the energy reserve capacity is proper to enterprise's needs. Such situation can be characterized as self-serving condition.
3. If the potential of energy reserve capacity is more than enterprise's energy capacity, it means that we have ability to output energy to additional projects or to the other consumers.

The result of on time fully identification algorithm implementation is an ability to create huge energy potential of enterprise.

The creating of energy potential of enterprise includes a number of procedures and arrangements. They are based on innovation approach. It allows to create additional energy product (resource) and to use it as the energy component to provide industrial and business activity, including the process of its implementation. Such availability is provided by innovative approaches in the ways of energy using and energy generation.

The indicators of system's (enterprise's) energy capacity and energy reserve potential are basic in energy reserve forming. Energy reserve forming can be provided as by external sources, as by enterprise itself.

The main principle of energy reserve forming is to create of energy resource stock in the any available form for further using in the terms that allow to enterprise to provide an effective activity. Such activity provides on the base on time, materials and other recourses saving. It becomes available as the result of on time detailed analysis and forecasting of prospective enterprise's and environmental conditions, in particular the conditions of fuel-energy resources market and market of goods produced by this enterprise.

Energy reserve forming also can be represented by summarizing of energy potentials that arise owing to use of energy-intensive raw materials appropriated for further transformation into energy, involving of equipment's and mechanisms useful effect to produce additional energy, alternative power resources involving and using cogeneration equipment.

The fact is that energy accumulation from different sources varies by time, because of each resource has its own time for transformation into appropriate type of energy for enterprise.

The energy potential realizing is a final step of a process. This step should provide primary task of reducing enterprise's costs in the industrial and business activity. On the other hand this step should create all necessary conditions for proper energy providing of each element of production process in upcoming periods. It includes proper energy providing in unstable environment and unpredictable situations that can cause brakes in energy supply.

Resuming aforesaid, the implementation of the identification energy costs and losses algorithm and executing of the valuating and providing enterprise's energy potential process come up the key elements of effective enterprise's activity forming at the energy effectiveness principles.

Besides, the required term and consequence at the same time of effective enterprise's activity forming due to energy potential is using of up-to-date system of valuating indicators that should count different aspects of enterprise's activity, such as valuation of energy using, valuation of energy saving, food security providing and environmental protection.

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