



## PROBLEMS OF EFFECTIVE USE OF ELECTRICAL ENERGY IN AGRICULTURE AND WATER MANAGEMENT

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**Abstract:** During the transition to the market economy, factories for the processing of agricultural products are being established. New technologies and technical tools are widely used in breeding livestock and agricultural products, the number of microclimate-creating and auxiliary electrified devices in residential areas and the household sector is increasing.

**Key words:** Agricultural products, technology, equipment, energy, energy resource, capacity.

Processing enterprises of agricultural products grown in the process of transition to market economy are being established in developing countries. New technologies and technical tools are widely used in breeding livestock and agricultural products, the number of microclimate-creating and auxiliary electrified devices in residential areas and the household sector is increasing [1-2]. As a result, indicators of electricity consumption in rural areas are constantly increasing. In addition, today the cost of energy and energy resources in the world market is continuously increasing. So, we have 2 objective problems before us:

- on the one hand, the increase in energy consumption in agriculture and, at the same time, the energy capacity of manufactured products is increasing;
- on the other hand, the price of energy and energy resources is constantly increasing;

In order to find a solution to these problems, it is necessary to implement the development of organizational and technical measures related to the achievement of energy efficiency. To solve the problem, we need to evaluate the energy capacity of each technological process and look for ways to improve their energy. Currently, energy consumption in agricultural production is constantly increasing in all countries of the world [3-5]. According to available data, energy consumption in agriculture is increasing twice every 15 years. But this indicator is much higher than the increase in product volume. In the US, energy consumption has increased 10



times over the last few years, when the volume of agricultural products has doubled [6-9]. In industry, automation of production processes, wide use of new techniques and technologies are widely used in order to significantly reduce energy consumption for manufactured products.

However, it is not possible to achieve this in agriculture, and there are some objective and subjective reasons for this. In natural conditions, plants and animals spend part of the energy they receive (with fertilizers, fodder, etc.) to increase their biomass and reduce the negative impact of the environment. We use additional energy to increase the volume of products obtained in artificial conditions (greenhouse, barn, hen house, etc.). A microclimate is created in the rooms, mineral and organic fertilizers are given, higher quality fodder is given, etc. In addition, the processes of negative changes (mutation) in the offspring of plants and animals in artificial conditions lead to additional energy consumption in the production of the final product. In the US and European countries, 70% of the fuel and energy resources consumed in agricultural production are wasted, and only 30% is delivered to consumers as useful energy [10-13].

Today, the main problems in agricultural production are:

1. Intensive development of agriculture, changes in ecology, plants and animals, increasing energy consumption from year to year, require increasing the capacity of power stations.

2. Most of all developed energy and energy resources are wasted. Effective use of energy resources is one of the urgent problems of our time. There are 2 important points to note here. On the one hand, the economic effect that can be obtained, and on the other hand, the measures that can be used in practice, from the technical side, have been developed. In general, achieving efficient use of energy through the use of modern techniques and technologies and the development and implementation of other measures can be implemented in 3 stages: immediate, near future and long future. Present time. The result can be obtained in 1 year or sooner. For this, various organizational and technical measures are used in production. There is little or no capital expenditure. Near future. This period takes from 2 to 5 years and requires certain capital expenditures. The distant future. This period can be from 5 to 25 years. At this time, the enterprise can be completely reconstructed, new technologies and technical devices will be installed [14-16].

Depending on the conversion of electricity into other types of energy or its direct use in technological processes, agricultural electricity consumers can be divided into the following main groups: electromechanical, electric heating and



cooling, electric lighting and lighting, and electrotechnological (devices that directly use the heat effects of electricity in technological processes). The analysis of the economy of electricity consumers in agricultural development and water management systems differs from consumers in other sectors in the following aspects, and this, in turn, raises the problems of increasing the efficiency of electricity use in the complex processes of preparing a specific final product for each consumer, starting from the electricity supply system. requires a special methodological and practical approach to solving. Consumers in the agrarian sector (with the exception of large pumping stations in the water industry) mainly consist of medium and small energy devices and their scattered location requires consideration of the energy supply issue in terms of achieving energy efficiency of electrotechnological equipment in the energy supply system [17-20].

It stipulates the use of other types of energy sources along with electricity, that is, the formation of an alternative energy supply system. The fact that the industry's production mainly has seasonal movements requires a special approach to increase the operational efficiency of the electrotechnical equipment used in the implementation of processes and thereby achieve energy efficiency in the industry. We should take into account that in the following years, the consumption of electricity in the sector has decreased somewhat compared to 1990-1991, and at the same time, the increase in energy capacity in the production of agricultural products for one year has had an effect on the emergence of energy saving problems.

The situation that has arisen (on the surface) is associated with a number of objective and subjective reasons:

- the fact that large enterprises that produce products on an industrial basis in agriculture (livestock, poultry, piggery and other complexes) are today taken out of state control and turned into small farmers, and the mechanization and electrification of production in livestock, poultry and other production entities that are not so large from an economic point of view and that the level of automation has decreased;

- one of the reasons for the decrease in the efficiency of the use of electric energy is that the technical maintenance and operation of the existing electrotechnical equipment and energy devices in the field has not been formed until it meets the requirements of the market economy.

Many foreign techniques, including electrified devices and equipment, entering the agro-industrial sector, do not take into account the specific aspects of local products, the environmental conditions of the republic's agricultural production facilities, and the fact that their exploitation is not carried out at the required level,



leads to their low energy efficiency. As a result of the fact that most of the electrotechnical equipment used in pumping stations in the water management system, which are considered to be large consumers of electricity in our republic, have been working for a long time and their main energy indicators have decreased, the energy consumption is much higher than the specified amount. Unlike industry or other sectors of the economy, agricultural production processes in most cases take place in the form of interaction of energy with a living (biological) technological environment, and this, in turn, in these cases, energy requires consideration of cost-effectiveness in accordance with the criteria of maximum preservation of product quality indicators. In this regard, there are currently unexplored scientific and practical problems related to energy effects and biological changes in products [21-24]. As a result of scientific and technical development in industry and its application in the field (electrification of processes, automation), new techniques and technologies are considered an inevitable solution to reduce the amount of energy, but in agriculture such a strict relationship (positive result) is not always proven and sometimes leads to an increase in energy consumption. not without extimol. There are objective reasons for the occurrence of the above situation related to the specific aspects of agricultural production. In order to ensure the biological activity of plants and animals (livestock and other animals) under natural conditions, a part of the consumed energy (fertilizer, water, fodder, etc.) is used to increase its biomass and a part is used to cover the damage caused to the environment. And in artificial conditions (livestock buildings, greenhouses, fruit and vegetable storage warehouses, technological devices, etc.) additional energy consumption is required to increase the volume of the obtained product. Including microclimate creation, giving mineral and organic fertilizers to the earth and plants, preparation of high-calorie feeds, etc., increase the consumption of additional energy and resources. Another important reason is related to artificial breeding of agricultural products - prevention of mutation. All this leads to an increase in the consumption of energy and resources.

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