INFLUENCE OF ELECTRICAL ENERGY QUALITY ON TECHNOLOGICAL PROCESSES IN LIVESTOCK

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Deviations power quality parameters on normalized values is a violation of the normal course of technological processes, production of substandard products, increased morbidity and death of animals, reducing the useful life of electrical equipment, increased costs and energy losses and so on.

The influence of power quality in processes in cattle have been conducted in VIESH only for large livestock and poultry farms and complexes for electrical installations and that produced in the 70s of the last century and now almost does not apply. In addition, some dependence are not adequately reflect the real processes occurring in electric drives of agricultural machinery.

The purpose of research - to establish the impact of variations power quality parameters on major processes electrified livestock.

Materials and methods of research. Electrified main technological processes in the production of livestock and poultry is the preparation and distribution of feed; cleaning manure; creating proper microclimate, milking and processing milk, gathering eggs, incubation eggs and more.

Quality Score Impact on electricity production process will be determined by their impact on the electrical equipment used.

In dismissing the power quality indicators from the nominal value arising losses have two components: electromagnetic and technology. Electromagnetic component is determined by the loss of active power and change the life of electrical insulation. The technological component damage due to the influence of electric power quality performance processing plants and cost of production.

Results. In most distribution of feed used electric and thermal installation, which can significantly reduce labor costs per unit of livestock production.

Deviations power quality parameters leads to changes in modes of these consumers and disruption of feeding animals and qualitative characteristics of feed, which in turn causes a reduction in the productivity of animals. Breaks in feeding

particularly affect the growth of animals. The delay in feeding calves more than 12 hours leads to a loss in body weight by 3-5%; daily cease feeding - by 10%, and with the suspension watering - at 12-13%. In chickens cease feeding reduces the ability to lay eggs.

At the same time increasing the cost of electricity by electric operation modes that do not correspond to the nominal.

The asymmetry of voltage in the phases and especially a break in the power supply leads to the fact that the feed will not be timely prepared and distributed, and this in turn will reduce the productivity of livestock and poultry and losses in production. With significant power supply, possible emergency situations related to electric bus stops, while significant asymmetric load - fires resulting in overheating and breakdown of insulation.

Many studies identified the optimal thermal conditions in rooms for keeping farm animals. For animals there is optimum temperature at which there is minimal feed consumption per unit of performance.

Significant damage has blackouts when working ventilation systems. After 1.5 hours after removing the ventilation dangerous concentration of harmful gases cause poisoning of animals. This winter the main negative impact does the concentration of gases in the summer - fever.

Options microclimate in livestock and poultry premises provided sets of heating and ventilation equipment.

Change of power quality parameters will change the performance of electric heating and ventilation systems, as set microclimate parameters will not be sustained, will take place reduced productivity of livestock and poultry, increased morbidity and death of young animals.

Reduced voltage also leads to a reduction in electric heating power plants, the luminous flux of sources for possible off gas discharge lamps, which reduces the productivity of animals and, consequently, to inefficient use of electricity.

Deviations power quality parameters will affect the operation of irradiation facilities for piglets and calves.

Deviations power quality parameters affect the performance of water pumping systems. Research has established that the excitation supply decreases feed intake and animal performance. Thus, reducing the amount of water by 40% reduces the yield by 16%.

Timely implementation process manure and litter also affect the indoor environment parameters (especially gas composition), leading to a negative impact of deviations of parameters of power quality performance animals.

Deviations power quality parameters from nominal values (especially in the power supply interruption) significantly influence the processes of milking and processing milk. When milking bandwidth, increase the interval between them, switching to manual milking reduced milk yield, reduced its fat content. In full yield only restored in 7-8 days. At long intervals possible rejection cows. To reduce milk yield and stress resulting animals with power outages that occur during milking. When stopping the initial treatment (cooling) of milk it skysaye: skisanie milk at 25 oC starts after 6 hours.

As the temperature in the poultry house from 10 to 4 ° C egg laying is reduced by 13%. With further lowering the temperature dramatically decreases egg production. In this case, following an increase in temperature does not offer improved performance of poultry and egg production recovery.

In the event of equipment failure due harvesting eggs deterioration of power quality, especially in cellular batteries, it is necessary to perform this operation manually, which almost make difficult. So long breaks in the power supply can lead to damage to production, and taking into account the disruption of normal mode or breaks in other technological processes (feeding, watering, maintenance of microclimate, etc.) to reduce bird performance.

If you hold the bird (especially hens) violation of the essential light mode due to voltage deviation leads to reduced productivity of poultry.

The resulting changes depending on the performance of farm animals rejecting voltage installations in artificial microclimate shown in Fig. 1 and Figure 2.

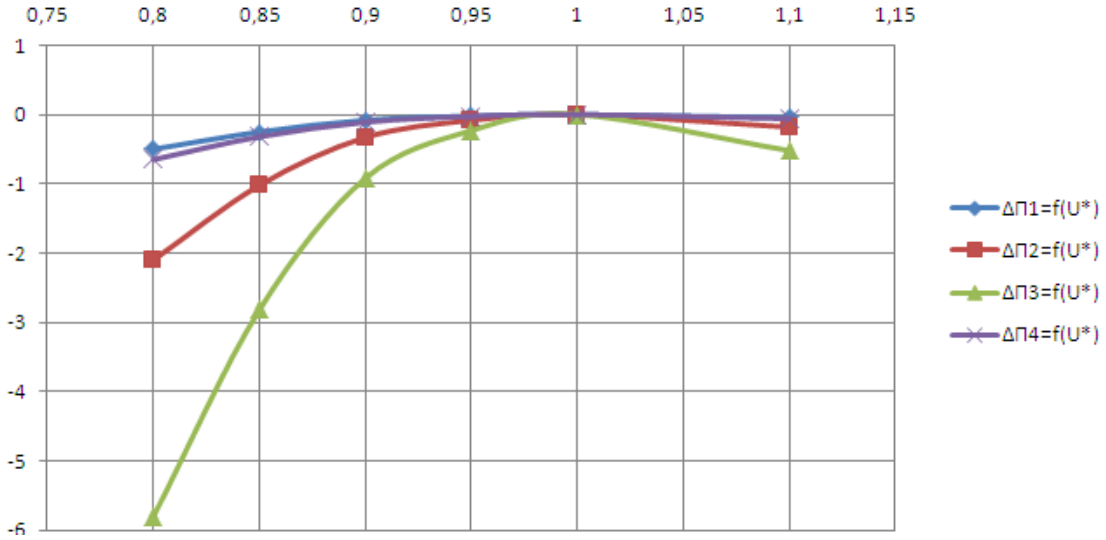

Fig. 1. Change the productivity of animals (ΔP) rejecting voltage installations in artificial microclimate:

1 - performance dairy cows; 2 - yaytsenoskist hens; 3 - daily gain of calves; 4 - daily gain of piglets

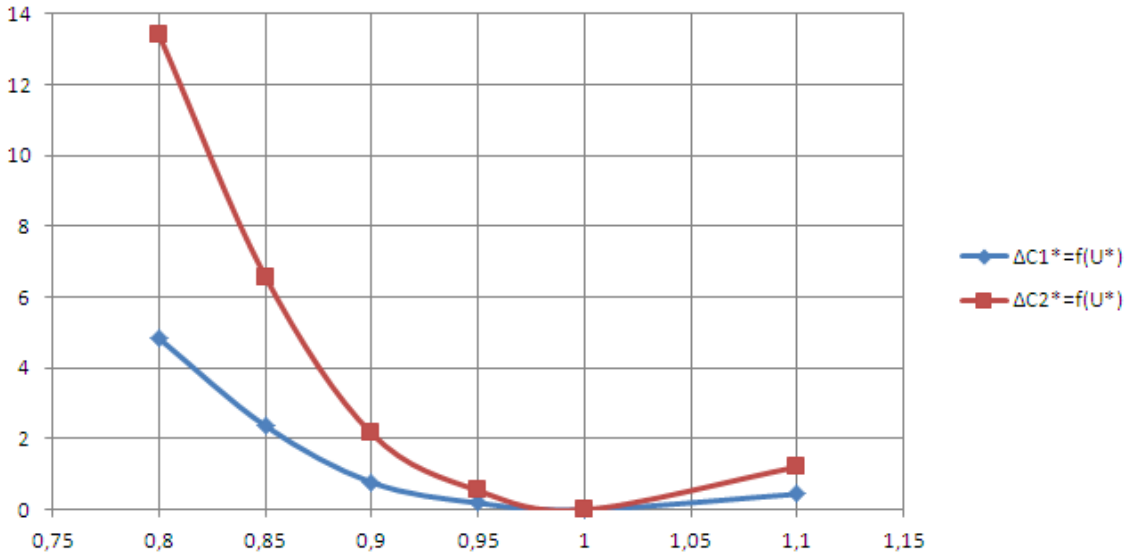

Fig.2. Changing feed intake (ΔS) animals rejecting voltage installations in artificial microclimate:

1 - pigs; 2 - Calves

Conclutions

Found that when a voltage reduction of 20% on the terminals of electric installations artificial microclimate weight gain of pigs decreased by 5.8 %, goats - by 2.1 %, milk yield of cows - by 0.5 %, yaytsenoskist hens - 0.65 % with increasing feed intake calves by 4.8 %, and pigs - by 13.4 %. When the voltage of

technological losses smaller than at its depression. The current frequency deviation of current network technology does not cause significant damage (they do not exceed 0.2 %).