INFLUENCE OF ELECTRICAL ENERGY QUALITY ON TECHNOLOGICAL PROCESSES IN PLANT GROWING

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

The influence of power quality in processes in plant have been conducted. In VIESH such studies have been conducted 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 electrified main processes in plant growing.

Materials and methods of research. Today more than half of the electricity consumed in electric drives fixed installations, third -in electrical heating installations, lighting -for the rest in household appliances.

In crop electrified installations used for pre-processing and post-harvest grain, greenhouse plants, vegetable and fruktoshovyschah.

Reducing the quality of electrical energy will affect both the operation of electrical equipment and the technological process in which it is involved.

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. Post-harvest and processing presowing grain. In machines and units for postharvest processing of grain consuming electricity mainly electric, so reducing the impact of power quality in this case will have the same character as for induction motors.

By reducing the voltage at the terminals of the motor with the same power consumption increases current, which causes overheating and insulation aging and growing losses in the network .. Reducing the voltage by 10 % reduces the service life of motors 2 times. When the voltage decreases significantly reducing the time and the angular velocity of the engine, it is possible to "transfer" "or stop and as a result, overheating and failure. Reduction motor angular velocity leads to a decrease in productivity machines.

When the voltage is increased reactive power consumption, increasing the current engine temperature, aging and wear isolation. Raising the voltage to a 1% increase reactive power consumption by 3%.

Given the significant saturation units and sets of electric motors, power quality overall impact of their work is essential in terms of equipment performance and reliability of its work. For wet grain failure in the power supply can also lead to direct losses due to downgrading of grain due to its warming.

The process of pre-treatment of the grain is not very limited in terms of performance. This technological process used motors less power and more manual labor, so the impact of power quality in the manufacturing process can be reduced to a minimum.

Production processes in buildings protected ground. The main process that mechanized and electrified in greenhouses is preparation and laying of soil in the greenhouse, presowing soil cultivation, care of plants, and create the necessary microclimate regime of mineral nutrition and more.

Changing the quality of electric energy in this case would significantly affect the efficiency of both electrical and greenhouses in general. This is due to the fact that in greenhouses used a large number of asynchronous electric drives, electrical

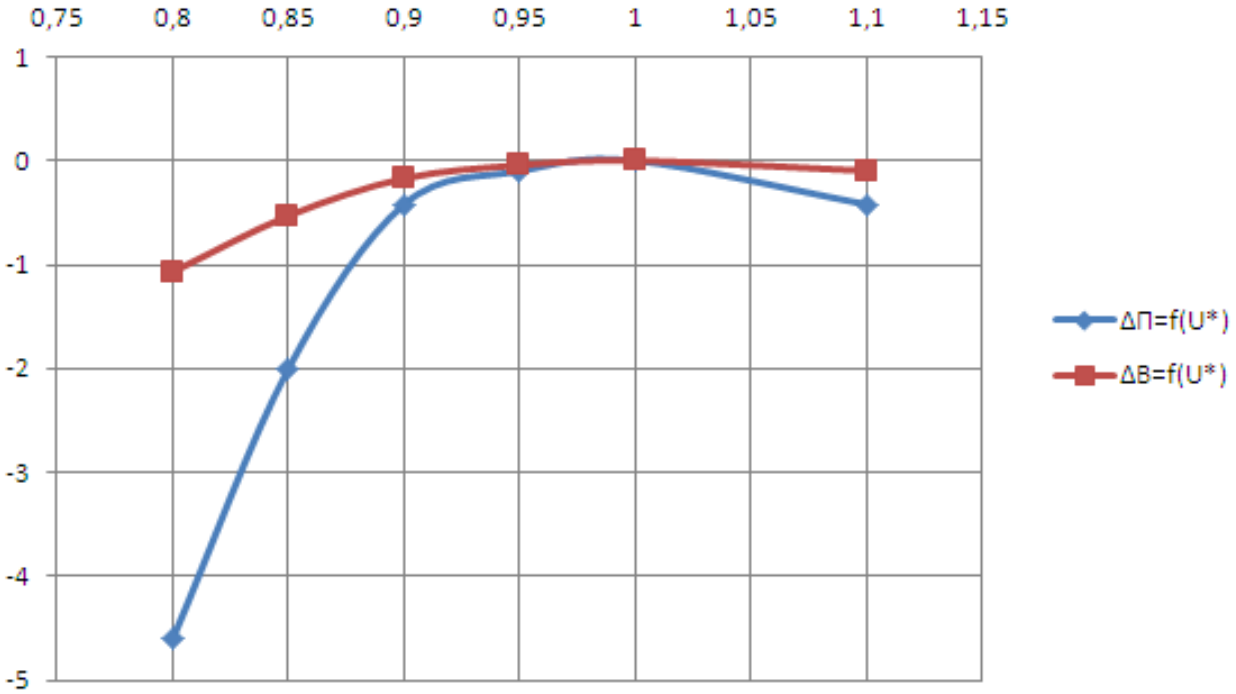
heating, lighting and Irradiation installations, energy performance and the reliability of which depends on the quality of electricity.

Fluctuations in voltage leads to a change of microclimate regime and mineral nutrition of plants in the greenhouse. Therefore, decreasing the efficiency of the whole technological system that leads to disruption of metabolic processes in plants, reducing their productivity and, consequently, to inefficient use of electricity.

Storing potatoes, vegetables and fruit. In the vegetable and fruktoshovyschah used electric cars for loading and unloading, ventilation systems and related automatic control them. Changing these modes of electric systems leads to abnormalities of microclimate in storage, violations of storage conditions, weight and quality.

Significant break in the power supply can lead to loss of production and cause significant damage.

The resulting changes depending on yield of vegetable crops in greenhouses and winter vegetables in storage losses rejecting voltage installations in artificial microclimate shown in the figure.



Dependencies changes yield of vegetables (ΔP) in winter greenhouses and vegetable losses during storage (ΔV) rejecting voltage

Conclusion

Established that at lower voltage 20 % yield of vegetable greenhouses in winter while decreasing by 4.6 % and the loss of potatoes in potato growing by 1.1 %. When the voltage of technological losses smaller than at its depression. The current frequency deviation current network does not lead to significant technological losses (they do not exceed 0.2 %).