

The influence of the dielectric electrode system on the frequency of partial discharges in the treatment chamber of liquids

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Modern development of agricultural production requires the use of advanced technologies that can provide maximum efficiency, process automation, high production and environmental cleanliness.

As an important component water use in agricultural manufacturing and processing industry. Therefore, the research and development of methods and means of electrophysical water treatment with a view to its use in the fields of agricultural production to improve performance is a key issue.

One of the perspective directions of development of electrotechnologies is the use of high electric fields of interaction of dispersed materials which carry electrical charge.

In this paper offered the method of water treatment in strong electric fields. With this type of treatment water is influenced by the electric field of high voltage and physical processes that accompany these phenomena (the formation of ozone).

Ozone is the main factor of water disinfection, which generate under the influence of a strong electric field in the air gap between the electrode and the water surface. To increase the concentration of ozone should increase the frequency of partial discharges in the air gap. So was proposed installation for processing liquid and liquid products, construction of which included an additional dielectric electrode system, electrodes which are centers of appearance additional partial discharges.

Installing has a voltage regulator, which connected with primary winding of the high voltage transformer. His secondary outputs connected to cascade voltage multiplier, whose output is connected to the top plate electrode, which is placed in the chamber for the treatment liquid, which made of dielectric material. There is dielectric electrode system in the camera. Power supply is from the AC 50 Hz.

During conducting research in the chamber for treatment of liquid is poured tap water. The thickness of the layer of water was equal 15 mm, and 32 mm layer of air. The frequency of partial discharges measured by electronically oscilloscope from a resistor, which turned consistently in a circle neutral wire.

The proposed dielectric electrode system made of plastic cylinders with a diameter of 6 mm and a height of 45 mm.

Introduction to the camera electrode dielectric system makes it possible to increase the frequency of partial discharges many times over.

To investigate the dependence of the frequency of partial discharges varied number of dielectric electrodes. Analysis of studies have shown that an increase in the number of dielectric frequency partial discharge electrodes increases significantly.

A result of researches found that the dielectric electrode system gives an opportunity to increase the frequency of partial discharges in the air gap, thereby increasing the concentration of ozone. With the increase in dielectric electrode inserts system frequency discharges increases.