REQUIREMENTS FOR MATERIALS TO CREATE AN EFFECTIVE MODEL FILTERS FOR CLEANING WATER BY ELECTROHYDRODYNAMIC ANALOGY

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Water is the main source of life on earth and play a major role in human life. One of the largest consumer of water is agriculture, particularly livestock. Livestock water needs of tens of times greater than the needs of the population.

Most livestock enterprises are drinking water problems, such as poor organoleptic properties, hardness, microbial contamination, high pH, or various combinations of these factors [1].

Therefore, to purify water from various contaminants, it must be filtered through the filters. To develop effective filters for water purification from impurities requires experimental data study.

Studies hydraulic characteristics of filters for water treatment by direct measurements of pressures on the real samples into complex implementation. The method of electrodynamic analogies (EGDA) can greatly simplify research for calculation of hydraulic devices.

Today, using the method of electrodynamic analogies (EGDA) one of the main problems is the problem of finding material to create an effective model of filter for water purification in cattle-breeding complexes.

In this case, it is considered and applied flat pattern method EGDA. Traditional models of flat materials EGDA method are conductive paper, conductive cardboard, foil.

The model may consist of several parts, made of one or more kinds of materials. The data portion of the model may have different resistivity. Parts are connected using special conductive glue. Production of these materials in vitro model is time consuming and not always economically justified.

As part of this research has been analyzed on the selection of material to create a model of the filter method EGDA. As a result, requirements for materials to create an effective model method EGDA filter must meet the following criteria:

1. Material to be flat with a small thickness. Maximum thickness of the material is taken from the condition that at any point in the cross-sectional model of the electrical characteristics of the material are the same, and the size in terms of who will be the model has been correlated with the size of the laboratory and did not cause any inconvenience when measuring work.

2. The material must have a resistivity in the range of about $8 \cdot 10^{-2}$... 20 Ohm·cm. These limits are recommended values and are set based on the best available means of laboratory measurements.

3. The material must allow to carry out research at a safe level of electrical current without changing its electrical and mechanical properties for the experiment.

4. The material should be stable (not break) to the relatively low mechanical stress (such as a small air movement, a small tensile, compression, shear).

5. The material should allow to easily create models of the desired configuration (length, width and height of the model) and how to allow easier and more economical to connect the various parts of the model.

6. The model of the material should be easy to install and the least expensive.

It has been suggested that in terms of meeting the requirements, the most optimal of all the most accessible and cost-effective materials are carbon fiber sorbent (SHI) brand ASM-3 and activated carbon cloth (AUT) [2].

In the simulation of fluid motion often have the task of creating an object model, which has several areas with different values of hydraulic conductivity. Also, problems arise creating object models in which there is a gradual change in a certain direction filtering coefficient or flow rate. The problem of modeling of the increase in the most expedient in terms of efficiency and cost-effective to solve by creating models of these materials SHI or OUT.

To do this, the filtering area is conventionally divided into parts. In accordance with the rate for certain areas to take certain required number of layers of materials

SHI or OUT. The layers are superimposed on each other and fixed a small clamp.

The use of hydrocarbon materials SHI and OUT as well solves the problem of creating an electrically conductive adhesive. The method EGDA models of these materials said adhesive is not required, because different areas fit together without glue and then fixed.

Models of SHI and OUT have good wear resistance compared with the models of traditional materials. These models do not complicate the process of measurement. Material SHI or OUT model after experimentation can be used in another model.

References

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