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THE SPECIFIC POWER CONSUMPTION OF BIODIESEL PRODUCTION HYDROMECHANICAL USING STIRRING

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Currently seriously the question of replacement fuels derived from petroleum, such as diesel fuel, whose price significantly growing fuel derived from biomass. Because oil reserves are reduced every year, and the technology that runs on diesel engines – increases. Most real substitute for traditional diesel fuel can be diesel biofuel, which can be obtained as well with vegetable oils animal fats. Therefore there is a need for improvement of equipment for biodiesel production using new structural and technological solutions to streamline production and reduce specific energy consumption, subject to quality indicators biodiesel.

One of the promising areas of improvement equipment for biodiesel production is the use of hydro mixing in the esterification opposed to the use of mechanical agitators.

Improvement of equipment and production lines for the production of biodiesel engaged Dubrovin V.A. and others, which summarized his work experience in the production and use of biofuels. It has also developed equipment for the production of biodiesel using tubular esteryfikator and investigated the use of biodiesel in terms of agriculture. Dragnev S.V. experimentally investigated the influence of design parameters on mechanical mixing biodiesel output quality.

However, the question of determining the parameters of equipment for biodiesel production from hydro mixing remains unexplored.

The purpose of research – experimentally investigate the effect of design parameters to specific hydro energy mixing in the production of biodiesel.

Materials and methods of research. For experimental studies used a matrix by Boks-Banking, which were manageable parameters – speed pump diameter nozzles and the mixing. Studies conducted in the laboratory using vegetable oil, potassium

methylate, experimental setup with hydromechanical stirrer, hydro and Network analyzers DMK-32.

Analysis of the impact diameter nozzles and the rotation frequency of the pump on the specific energy hydromechanical mixers shown, with decreasing diameter nozzles and increased frequency of rotation of the pump specific energy hydromechanical mixers increases due to growth in power consumption of the motor by increasing the pressure of the pump and increase energy expenditure motor for high rotational speed of the pump.

Analysis of mutual influence of time of mixing and the diameter of the nozzles on the specific energy hydromechanical mixers shown, with decreasing diameter nozzles and increased time mixing specific energy hydromechanical mixers is increasing due to increasing energy costs for stirring and increase the power consumption of the motor by increasing the pressure pump .

With increasing mixing time and rotational speed of the pump specific energy mixers hydromechanical increases due to increased costs for energy and mixing by increasing the productivity of the pump. The minimum specific energy mixers hydromechanical is 0.4 kWh/m^3 at speed pump 700 r/min, stirring time of 10 minutes and 2.5 mm diameter nozzles.

Thus experimentally established that the minimum specific energy hydro mixing in the production of biodiesel is 0.4 kWh/m^3 at speed pump 700 r/min, stirring time of 10 minutes and 2.5 mm diameter nozzles. Improvement of hydro mixing process should be made towards the establishment of structures agitators with minimum hydraulic resistance.