

DISTILLATION OF ALCOHOLIC DISTILLATE IN CONTROLLED CYCLES MODE

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Authors have proposed an innovative technology of alcoholic distillate distillation. The construction of distillation column allows to manage the cycles delay and the liquid overflowing by predetermined algorithm. The design of scaly plates is offered. It allows to increase the intensity of the mass transfer process of volatile liquid and steam components. The expediency of using an innovative technology in production environment is proved.

Experimental column with a diameter of 650 mm was equipped with 30 scaly plates with distance of 400 mm and movable valves mounted on rods connected with the cylinders DNT 63-50-PPV-A FESTO. Rods was set in motion in accordance with the controller program. Were used applied contact devices with coaxial arrangement of the arched type scales, with the help of which the principle of gas-liquid jets collision was realized.

Founded, that using of the proposed technology allows to optimize the process of alcohol distillation of alcoholic distillate by reducing the specific consumption of heating steam by 35 % compared to a typical distillation columns and the increasing of ethanol concentration in the distillate by 28...30 % with the normative losses of alcohol with stillage. If you increase the interval delay of the mash on the plates of the column more than 12 sec. the specific consumption of heating steam and the alcohol concentration in the distillate is rising insignificantly. This causes the decreasing of column liquid throughput. Proposed design of the contact devices allows to exclude the unidirectionality of the fluid flow, the possibility of stagnant zones formation on the steps of the phase contact, the sticking of alcoholic distillate suspended particles on the surface of the plates and allows to increase the intensity of the mass transfer process of liquid and steam volatile components and extend the lifetime of distillation column without its service stop.

Keywords: alcohol distillation column, cyclic rectification, mass transfer, innovative technology.

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