

RECTIFICATION OF BIOETHANOL IN THE GUIDED CYCLES MODE

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Technical progress in alcoholic industry can not take place without development and introduction of high-efficiency columnar vehicles and energy keepings methods of mass-transfer in the process of bioethanol rectification. Plate contact devices are applied in the production to divide multicomponent mixtures with a help of which there is a step contact of the phases on the height of a column. The rectifying plates are produced different constructions. An output-input ratio of plates depends on their construction a diameter and free cut of the column, its loading, interdish distance, speed of steam, physical properties of the mixture which is a subject of a division and others like that. It is determined by an experimental way. For most plates it does not exceed more then 0,4...0,6.

The researchers efforts are directed on the perfection of the construction of the devices for providing of the most intensive contact of steam and liquid, efficiency of which is determined by a degree of the phase equilibrium achievements. Practically on the real plates such equilibrium is almost never reached. One of the sufficient causes of it there is an insufficient time interval of stay of the contacting phases on a plate. Obviously, there is a limit, below which time of contact of the liquid and steam unsuffices to achieve the phase equilibrium. A duration of the cycles is determined experimentally, as the time of phases contact in every special case depends on high-quality composition of streams of feed and structural features of the contact devices. To provide maximally possible output-input ratio of the simplest plate for its construction it is necessary to create certain conditions what force delay of liquid on a plate is till complete satiation of steam by the easy admixtures of liquid, and liquid – by the heavy admixtures of steam.

To increase an efficiency of a line-to-line contact the technology of rectification, is suggested which foresees the lead through of the guided delay of liquid loops on the plates of a column for the set time and its synchronous flowing from a plate on a plate on all height of the columns due to the mobile valves additionally set in a plate device, which are related to the drive mechanisms. Their action takes place after the set algorithm in accordance with the inspector program and does not depend on the mode of serving warming steam and its pressure [1]. A duration of the cycles is determined experimentally depending on the degree of phase equilibrium achievement. Introduction of innovative technology allows to approach efficiency of every real plate to theoretical efficiency. Thus the charges of warming steam go down largely on the process of rectification, the volumes of spirit containing production wastes decreases, the prime price of the equipment diminishes.

KEY WORDS: rectification, bioethanol, a column, mass-transfer, plates.