

**FROM EXPERIENCE OF USING MECHATRONICS SUBSYSTEMS
IN RECTIFICATION TECHNOLOGY**

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Authors suggest the energy saving technology of the rectification with controllable cycles of delay and overflowing of liquid without interrupting of steam and liquid flows supply in the column due to additionally installed valves on the moving rods along the entire height of the column connected with the driving mechanisms, the action of which is carried out according to the predetermined algorithm.

Using of mechatronics subsystems allows to implement full (single) or separated (fractional) liquid overflowing on the plates of the distillation column under conditions of cyclic mode. Technical solution allows to extend the interval of liquid and steam contact.

The efficiency of innovative technology in the process of the head fraction of ethanol acceleration is investigated in the production environment. For comparative characteristic held chromatographic analysis of the investigating bottom liquid samples and the head fraction concentrate.

Founded, that using of innovative technology allows to increase the degree of aldehydes and higher fusel oil alcohols extraction by 33 %, methanol by 30 %, the ratio of head impurities concentration by 32 %, methanol by 37 %, intermediate impurities by 30 %. The fluid delay on the plates of the column makes it possible to extract esters and semi-volatile impurities (crotonic aldehyde, acrolein, isopropanol, etc.) in full.

Experimentally proved, that using of mechatronics subsystems for separate movement of phases allows to reduce the specific consumption of heating steam by 40% in comparison with typical rectification installations operating in stationary mode, by reducing the open cross-section of plates by 45 to 50 % and increasing of liquid time delay on column plates to achieve phase equilibrium.

The development of mechatronics control subsystem software of the mass transfer processes between liquid and steam in the rectification columns on basis of pneumoelectroautomation is the decisive factor to achieve these results.

Keywords: mass transfer, phase equilibria, distillation column, controlled cycles, liquid delay.

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