DETERMINATION OF HYDRODYNAMIC MODES OF THE WORKING OF WIRELESS TARILOS IN THE MASS-MEDIUM CYLINAL APPARATUS OF CYCLE ACTION

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To increase the efficiency of mass transfer colonies equipped with drowning plates. The lack of drainage devices simplifies their design, allows you to increase the working area by 15-30 % and increase the productivity of the devices in 1,5-2 times. The disadvantage of their work is the lack of time span of steam and liquid contact and the lack of methods for determining the maximum allowable values of steam velocity in their holes.

The purpose of the work is the study of hydrodynamic regimes, in which the liquid is held in the droplet plates and overflows (failure) through the bubble holes, the spray size determination.

Results. The method of mass transfer has proposed. It involves fluid retention on the canvas of the failing plates to extend the contact time of the vapor and liquid. The conditions under which the overflow (failure) of liquid occurs through the bubble holes from the upper plates to the lower ones are determined.

The research was carried out on an experimental column in the water-air system. The object of research was the mesh and scale-shaped plates without overflow devices. The liquid flow was controlled using a flowmeter RM, air velocity in the free section of the column - an anemometer MS-13. The diameter of the column is 300 mm, the number of plates is 5, the distance between the plates is 300 mm, the free section of the plates is 2,6 %, the height of the liquid layer is 35 mm, the diameter of the mesh plate apertures is 2,4 mm, the area of the section of the openings of the scales is 19,42 mm. Air consumption varied in the range of 1-15 dm^3/s, which corresponds to a change in speed in the openings of 1,5-10 m/s. The irrigation density for the grid plates was 4-11 $m^3/m^2 \cdot h$, for scales 5-15 $m^3/m^2 \cdot h$.

In the course of the research, the maximum permissible values of the vapor velocity in the free section of the column (V_{lin}) and in the bubbling apertures (V_{holes}) were determined, during which the liquid is held in the plate and no blistering occurs. For mesh plates: V_{lin} = 0,25-0,7 m/s, V_{holes} = 5,4-8 m/s; for scales: in bubble mode, V_{lin} = 0,5-0,9 m/s, transitional V_{lin} = 0,9-1,3 m/s, jet V_{lin} = 1,3-2 m/s; V_{holes} = 6.5-2 m/s. The relative size of the splash (e) under certain conditions of the mesh plates did not exceed 0.01 kg of fluid per 1 kg of air, scales like plates - in the transition mode 0,1 kg/ kg, in the jet 0,2 kg/kg.

Conclusions. Hydrodynamic modes of operation of dip plates with controlled cycles of delay and fluid overflow through bubble holes are determined. The results of research can be used in the design of mass-exchange devices of cyclic action.