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INTENSIFICATION OF HEAT AND HYDROOYNAMIC PROCESSES IN INDUSTRIAL VACUUM PANS

A namber of complexes in investigating heat and hydrodynamics has been conducted at the Kiev Institute of Food Technology.

New methods of intensification of these processes hare been developed here purely in hydrodynamic ways:

a) by the way of blowing gas into boiling tubes of vacuum pans;

b) by the way of localisation of thorough boiling of massecuite in a layer of small thickness, gravitatingly flowing along the plane inclined heating surface.

New types of vacuum pans designed according to these methods of intensification of massecuite thorough boiling have been constructed.

A vacuum pan of intermittent action with intensified circulation of massecuite has a device for directing and distributing gas (or steam) blowing into boiling tubes.

Designs and calculation ware done by the Ukrainian Researeh and Design Institute of Equipment for food production; the Smela Machine-building Plant has made experimental vacuum pans of intermitteat action with intensifidel periodical circulation of massecuite.

On the ground of conducted investigations in the field of hydrodynamics and heat transfer when massecuite and doable-massecuite mixture flow andboil in tubes new methods of hydrodynamic and heat design of vacuum pans with intensified circulation of massecuite have been developed here.

Experimentally received data were used for definition of hydraulic resistance, quantity of gas, massecuite vlscosity and rates of heat transfer.

Investigatios in the field of hydrodynamicce and heat exetange during massecuite boiling in a layer whiet gravitatingly flows along the plane inclined heating surface have been. accomplished.

We have got data as to intensified heat exchange and the rate of flow depending upon various parameters such as heat flow, heat and physical qualities of massecuite, quantiti of massecuite, the inclination of heatsng surface to the horison and etc.

These data were taken as a basis for methods of hydrodynamic and heat calculations of these vacuum pans.