THE HEAT EXCHANGE TUBE BUNDLE WITH THE SEMI-CYLINDRICAL INTENSIFIERS. 1. HEAT CALCULATION

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Pipe with a semi-cylindrical intensifiers, which are formed on the surface of the roll, have a wide scope in the design of heat exchangers for various purposes. Such surfaces are effective for heat exchangers with a heat transfer type liquid-liquid and gas-gas, that is, for those cases where the values of heat transfer coefficients on the inner and outer surface of the pipe compared with each other.

In terms of practical application of the considered surfaces of most interest is the geometry of the surface with intensifiers, for which per unit area of heat transfer surface is given the maximum amount of heat. To determine the surface with the optimal placement of intensifiers were carried out alternative calculations of surfaces with cylindrical intensifiers by varying the magnitude of the gap between adjacent protrusions (cavities).

Using the described methodology of calculation of the conjugations formulation of the problem was local and integral thermal characteristics in each cell between the projections (cavities). In the counting process was determined by the total amount of heat transferred to the wall with knurling by summation of heat flows discharged from the surface of all cells

In the calculations, the optimum values of the distances between the protrusions inside the tube lie within . Given that the reduction of distance between intensifiers increases the surface area per unit length of pipe, it is advisable to choose the optimal interval equal . The optimal distance between the depressions on the outer surface of the pipe is substantially less than the inner surface and lie in the interval. It is stipulated by other conditions of flow and determining the contribution to the total heat transfer pipe sections between the slots. In General, when choosing the optimal geometry of the pipe with intensifiers, given the difference of the optimal distance between the inside and the outside of the pipe, it

is necessary to take into account the difference of heat transfer coefficients from two sides of the pipe surface.