

## THE HEAT EXCHANGE TUBE BUNDLE WITH THE SEMI-CYLINDRICAL INTENSIFIERS. 2. CALCULATION OF HYDRAULIC RESISTANCE

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To reduce hydraulic losses use of intensifiers in the form of protrusions, recesses, or grooves, and other types of intensifiers, and their geometrical shape chosen from a well-streamlined profile, i.e. one which has no sharp corners and edges. Thus it is necessary to choose such a surface geometry, for which the process of intensification of heat transfer does not lead to a substantial increase in hydraulic losses.

The mathematical model and calculation of hydraulic resistance for the chess of tube bundles in the presence of semi-cylindrical intensifiers on the outer surface. The dependences of the coefficient of hydraulic resistance on the magnitude of the distance between intensifiers for the studied surfaces. Comparison of calculation results with experimental data for pipes with intensifiers in the form of knurling. It is shown that the use of intensifiers increases the hydraulic resistance of such surfaces compared to smooth-tube surfaces. It is determined that the value of the hydraulic resistance is significantly affected by the geometry of the placement of intensifiers on the floor pipes and the value of the Reynolds number in the external flow.

The methodology of calculation of hydraulic losses, the numerical calculation and the resulting hydraulic supports for chess beam pipe with the semi-cylindrical intensifiers.

A comparison of the calculated data with known experimental results. The maximum differences between them range from 17 % to 27 %.

It is shown that the presence of intensifiers in 2-5 times increases the hydraulic losses in comparison with the smooth-tube bundles of tubes. Hydraulic pipe

supports with the semi-cylindrical intensifiers increase with growth of Reynolds number and decreasing the distance between intensifiers.