

Heat exchange calculation for condensation of superheated and saturated steam in a tube

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Abstract

The process of steam condensation for the annular flow mode within a horizontal or vertical tube is considered. A pure saturated steam is laid into a cooled tube. The steam flow mode at the input is turbulent. The film flow mode is laminar at the beginning and then after achieving the critical Reynolds number is turbulent. The film heat transfer coefficient is calculated on the base of the three-layer model of the turbulent boundary layer. The dependence of the relative heat transfer coefficient on the steam content for steam condensation at 3 MPa is given. Good agreement between experimental and calculational results is obtained.
