

Gas Condensing Unit with Inner Heat Exchanger

Authors : Dagnija Blumberga, Toms Prodanuks, Ivars Veidenbergs, Andra Blumberga

Abstract : Gas condensing units with inner tubes heat exchangers represent third generation technology and differ from second generation heat and mass transfer units, which are fulfilled by passive filling material layer. The first one improves heat and mass transfer by increasing cooled contact surface of gas and condensate drops and film formed in inner tubes heat exchanger. This paper presents a selection of significant factors which influence the heat and mass transfer. Experimental planning is based on the research and analysis of main three independent variables; velocity of water and gas as well as density of spraying. Empirical mathematical models show that the coefficient of heat transfer is used as dependent parameter which depends on two independent variables; water and gas velocity. Empirical model is proved by the use of experimental data of two independent gas condensing units in Lithuania and Russia. Experimental data are processed by the use of heat transfer criteria-Kirpichov number. Results allow drawing the graphical nomogram for the calculation of heat and mass transfer conditions in the innovative and energy efficient gas cooling unit.

Keywords : gas condensing unit, filling, inner heat exchanger, package, spraying, tunes

Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development

Conference Location : Chicago, United States

Conference Dates : December 12-13, 2020