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C2Po1D-06: Modeling of Condensation in the Presence of Noncondensables in GFSSP

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Modeling of condensation of gases including O2 and CH4, in the presence of high concentrations of noncondensables, is needed for the design and analysis of ISRU systems. The objective of this study is to provide the Generalized Fluid System Simulation Program (GFSSP) computer code with the capability of scoping analysis of condensation in the presence of noncondensables in internal flow systems. Condensation in the presence of noncondensables is modeled using the Couette flow film (stagnant film) model. Experimental data on the condensation of water vapor in downward flow of air-water vapor and helium-water vapor mixtures in vertical tubes are compared with the predictions of GFSSP. The comparisons show that with the implemented capability GFSSP can predict the experimental data well.

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