

Numerical Study of the Influence of the Primary Stream Pressure on the Performance of the Ejector Refrigeration System Based on Heat Exchanger Modeling

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Abstract : Numerical models of the heat exchangers in ejector refrigeration system (ERS) were developed and validated with the experimental data. The models were based on the switched heat exchangers model using the moving boundary method, which were capable of estimating the zones lengths, the outlet temperatures of both sides and the heat loads at various experimental points. The developed models were utilized to investigate the influence of the primary flow pressure on the performance of an R245fa ERS based on its coefficient of performance (COP) and exergy efficiency. It was illustrated numerically and proved experimentally that increasing the primary flow pressure slightly reduces the COP while the exergy efficiency goes through a maximum before decreasing.

Keywords : Coefficient of Performance, COP, Ejector Refrigeration System, ERS, exergy efficiency (η_{II}), heat exchangers modeling, moving boundary method

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