

Optimization of a Combined Ejector-Vapor Compression Refrigeration Systems with R134a

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Abstract : A computer simulation model for a combined ejector-vapor compression cycle that uses working fluid R134a. A refrigeration system was developed which combines a basic vapor compression refrigeration cycle with an ejector cooling cycle. A one-dimensional mathematical model was developed using the equations governing the flow and thermodynamics based on the constant area ejector flow model. The effects of the operating parameters on the cooling capacity, the performance coefficient, and the entrainment ratio are studied. The current model is based on the NIST-REFPROP database for refrigerants properties calculations. The simulated performance is compared with the available experimental data from the literature for validation.

Keywords : combined refrigeration cycle, constant area ejector, R134a, ejector-cooling cycle, performance, mathematical simulation, vapor compression cycle

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