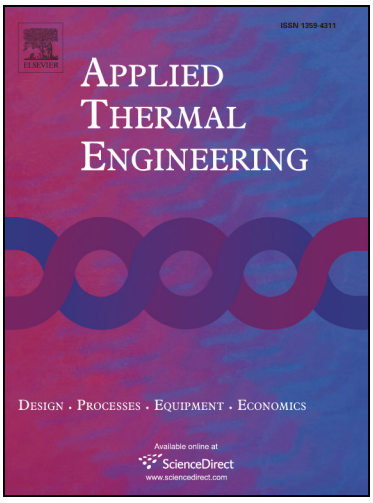

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ABSTRACT

Even though a dual evaporator ejector cycle (DEEC) offers several advantages over a standard two-phase ejector cycle, few experimental investigations of the performance of the DEEC are available in the literature. This study presents the performance characteristics of an R410A air-conditioner adopted with a DEEC under various operating conditions and ejector geometries. The COP of the DEEC decreased with an increase in entrainment ratio (ER) due to the decrease in pressure lifting ratio. For the optimum ER, the effectiveness of the DEEC increased with an increase in compressor speed with a larger total mass flow rate. The optimum mixing section diameter was determined to be 5 mm based on the cooling seasonal performance factor (CSPF) and $CSPF_{bin}$ of the DEEC. The maximum allowable limit for the ER was also suggested to be 0.3. In addition, the CSPF of the DEEC was 6.3% higher than that of the baseline cycle at an ER of 0.1.

Keywords: Dual evaporator ejector cycle, Ejector, COP, CSPF

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