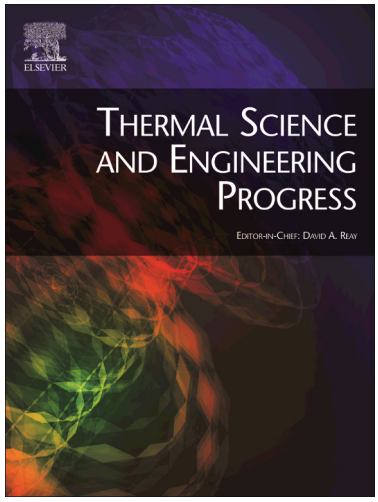

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Energetic and exergetic analyses of modified combined power and ejector refrigeration cycles

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Highlights

- The traditional CPERC is modified based on the power sub-cycle consideration.
- The constant-pressure mixing ejector model is taken into account inside of the ejector.
- The proposed cycles are analysed based upon the first- and second-law of thermodynamics.
- Sensitivity analysis of some key parameters of the proposed cycles is carried out.

Abstract

This paper aims at improving combined power and ejector refrigeration cycles (CPERCs) performance for low-temperature heat sources. Three modified CPERCs are introduced to improve the basic CPERC (BCPERC) performance based upon the first and second laws of thermodynamics. The proposed cycles consist of two condensers and a separator which have made them different from the traditional combined power and ejector refrigeration cycles. The ejector is driven by the exhaust of the turbine to produce more power and refrigeration, simultaneously. With respect to each proposed cycle, energetic and exergetic analyses have been conducted to understand cycles performance more comprehensively. Throughout these state-of-

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