

Exergy Analysis of Vapour Compression Refrigeration System Using R507A, R134a, R114, R22 and R717

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Abstract : This paper compares the energy and exergy efficiency of a vapour compression refrigeration system using refrigerants of different groups. In this study, five different refrigerants including R507A, R134a, R114, R22 and R717 have been studied. EES Program is used to solve the thermodynamic equations. The results of this analysis are shown graphically. Based on the results, energy and exergy efficiencies for R717 are higher than the other refrigerants. Also, the energy and exergy efficiencies will be decreased with increasing the condensing temperature and decreasing the evaporating temperature.

Keywords : Energy, Exergy, Refrigeration, thermodynamic, vapour

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