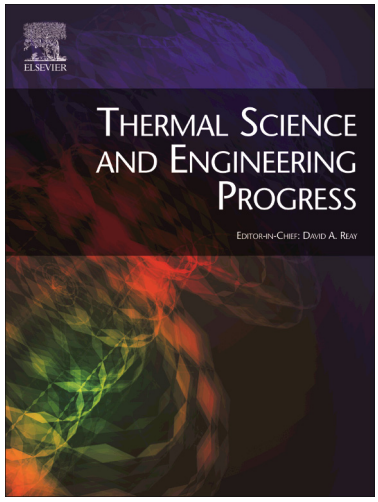

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Revision Submitted to Thermal Science and Engineering Progress

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Abstract

This study represents the thermodynamic analysis and optimization of single effect aqua-ammonia absorption cooling system. Mathematical models are derived from thermodynamic theory to compute the optimum performance parameters. Cut-off temperature to operate the system is obtained at various operating temperatures. Analysis depicts that with raise in evaporator temperature from -5 to 5 °C, the required cut-off temperature decreased from 72 °C to 59 °C. Through realistic comparison between thermodynamic first and second law analysis, optimum generator temperature corresponding to maximum *COP* and minimum exergy destruction is evaluated. It is found that the optimum generator temperature corresponding to exergy approach is 11 °C lower as compared to energy approach. Optimum generator temperature is a strong function of evaporator and condenser temperature. Hence, it is feasible to determine optimum generator temperature for certain range of evaporator and