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Energy saving into an absorption heat transformer by using heat pipes between evaporator and condenser

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Abstract

This study explores the feasibility of using heat pipes as heat exchangers inside an absorption heat pump type II (Absorption Heat Transformer) of a thermal capacity of 0.7 kW. The heat pipe is a passive device to transfer heat because of low thermal resistance. A heat exchanger with heat pipes can be integrated between the condensation and evaporation processes of an Absorption Heat Transformer. This study has demonstrated that seven commercial heat pipes are required to condense 0.714 kW and to reuse 0.177 kW at 60 °C in the evaporator, representing almost a third part of total heat supplied without heat pipes, provided that the generator temperature is over 55 °C. Therefore, the efficiency of the Absorption Heat Transformer can be improved based on the concept of the Coefficient of Performance up to 20 %.

Keywords

Heat pipe; Heat exchanger; Absorption heat transformer; Heat pump; Coefficient of performance; Energy saving;

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