

عنوان مقاله:

Comparative study of indirect expansion solar assisted air and water source heat pump systems

محل انتشار:

ششمین کنفرانس بین المللی گرمایش، سرمایش و تهویه مطبوع (سال: 1394)

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خلاصه مقاله:

This paper presents the results of a comparative study on the performance of combined indirect air and water solar heat pump system used for heating. To do so, a numerical model considering both solar and heat pump loops was developed. Simulations were carried out using the established computer program based on the climatic conditions on a cold day in Sannandaj. The results indicate that using water as the coolant in solar loop is more effective than using air, due to the more favorable thermo-physical properties and better performance. It was also resulted that an important difference between these systems is the extra heat, which should be provided by the auxiliary heater for the air system. The performance of the air solar assisted heat pump depends more on auxiliary heater, while the water system can reach the same COP with consuming less energy. Finally, it was shown that decreasing the pressure ratio results in a greater COP but lowers the amount of heat delivered to the heating space by the condenser.

کلمات کلیدی:

COP, Solar heat pump, Sannandaj

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