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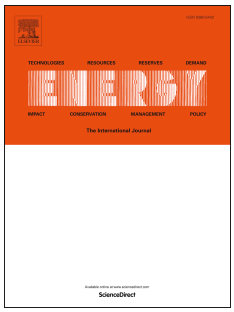

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DEVELOPMENT AND PERFORMANCE OF A HEAT DRIVEN R141b EJECTOR AIR CONDITIONER: APPLICATION IN HOT CLIMATE COUNTRY

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Abstract

This paper proposes the design, construction, and test of a prototype R141b ejector refrigeration system. It was used as an air conditioner for a hot climate country (Thailand). The prototype machine was designed to work as a water chiller to provide thermal comfort condition for the tested room with the cooling capacity up to 4500 W. It was driven by hot water with temperatures of 90 to 98°C. The condenser was cooled by water, which was provided by a cooling tower, with temperatures of 28 to 32°C. CFD simulation was also employed to design the ejector. The tested results indicated that the prototype R141b ejector refrigerator working as an air conditioner was satisfactory in operating conditions consistent with a hot climate (Thailand's environment). The temperature of the air conditioned space was around 23 to 25ºC with the cooling load of 4500 W. The coefficient of performance (COP) was between 0.42 and 0.47.

Keyword: Jet refrigeration; Ejector refrigeration; Air conditioning; Ejector; HCFC–141b