

Thesis Title	Performance Analysis of a Domestic Hot Water Heat Pump System
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Abstract

This research is to study performance of a domestic hot water heat pump using R134a vapor compression unit. The concept of this system is to compress the refrigerant at low temperature and pressure to a high level condition and heat from the refrigerant is to increase temperature of water in the condenser.

The system consists of a 342 W compressor, a condenser, an expansion device and an evaporator. The system could generate 1.2 kW of heat at the condenser.

From the simulation, compare with 3500 watts of electric hot water, the system has to use 1100 W compressor and 2.6 kW evaporator coil. The coefficient of performance is about 4.0 - 4.2 and the system can generate 41.7 °C outlet from 25 °C inlet of water at 3 liters/min.

From economics analysis, it could be found this per working period of using the system should be over 2 h / day. At 2 h / day working period hot water is between 5 - 8 years.

Keywords : Vapor-Compression Heat Pump / System Simulation / Hot Water Heat Pump / Mathematical Model.