

# **Abstract**

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## **Experimental Study of Water Desalination Based on Humidification-Dehumidification Process via Heat Pump**

In this paper an experimental investigation was performed on water desalination system using Humidification-Dehumidification process utilizing open air open water (OAOW) air heated heat pump cycle. The effect of the heat pump two coils of the heat pump cycle (the condenser as hot zone and evaporator as a cold zone). Consequently, the coefficient of performance of the cycle is maximized. Air is heated through the condenser and so its ability to absorb water is increased. Via water nozzles, water at normal temperature is sprayed in the hot air. Three different techniques including cross, counter and parallel spraying flows have been applied. Through the evaporator, the distilled water is condensed from the moist air at exit from the sprayers. The effect of the top temperature on the amount of condensate was studied. Results of the experiments showed that the parallel flow had the highest productivity.