

Enhancement Performance of Desalination System Using Humidification and Dehumidification Processes

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Abstract : Water shortage is considered as one of the huge problems the world encounter now. Water desalination is considered as one of the more suitable methods governments can use to substitute the increased need for potable water. The humidification-dehumidification process for water desalination is viewed as a promising technique for small capacity production plants. The process has several attraction features which include the use of sustainable energy sources, low technology, and low-temperature dehumidification. A pilot experimental set-up plant was constructed with the conventional HVAC components such as air blower that supplies air to an air duct inside which air preheater, steam injector and cooling coil of a small refrigeration unit are placed. The present work evaluates the characteristics of humidification-dehumidification process for water desalination as a function of air flow rate, total power input and air inlet temperature in order to study the optimum conditions required to produce distilled water.

Keywords : condensation, dehumidification, evaporation, humidification, water desalination

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