

Experimental Performance of Vertical Diffusion Stills Utilizing Folded Sheets for Water Desalination

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Abstract : The present study introduces the folding technology to be utilized for the first time in vertical diffusion stills. This work represents a model of the distillation process by utilizing chevron pattern of folded structure. An experimental setup has been constructed, to investigate the performance of the folded sheets in the vertical effect diffusion still for a specific range of operating conditions. An experimental comparison between the folded type and the flat type sheets has been carried out. The folded pattern showed a higher performance and there is an increase in the condensate to feed ratio that ranges from 20-30 % through the operating hot plate temperature that ranges through 60-90°C. In addition, a parametric analysis of the system using Design of Experiments statistical technique, has been developed using the experimental results to determine the effect of operating conditions on the system's performance and the best operating conditions of the system has been evaluated.

Keywords : chevron pattern, fold structure, solar distillation, vertical diffusion still

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