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Experimental study on the effect of internal and external reflectors on the performance of basin type solar stills at various seasons

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ABSTRACT

This paper presents an experimental investigation on the effect of internal and external reflectors on the output of simple-basin solar stills in summer, autumn and winter. A simple still that equipped with internal reflectors and an external reflector is investigated at a latitude angle of 33.3° N. It was found that the internal and the external reflectors increase the daily output throughout the different seasons except for summer where the reflector(s) effect was insignificant. The increase in the daily output averaged over the seven months test period by adding both internal and external reflectors was 35.5%, and that by adding the internal reflector only was 19.9% compared to a still with no reflectors. The percentage increase in output by adding the internal and/or external reflector(s) is higher in winter than in summer. The results of this study agree with the trend of the theoretical predictions and with the winter experimental results cited in the literature at 30° N and 32.2° N latitude angles, respectively.

Keywords: Solar still; Reflector; Validation; Productivity; Desalination

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