



ملخص البحث باللغة الإنجليزية:

" Comparative study based on thermal, exergetic and economic analyses of a tubular solar still with semi-circular corrugated absorber "

The solar still is one of the best choices for obtaining fresh water, in small scale demands which covering the demand for remote arid regions which do not have enough power source to distill water or infrastructure to deliver fresh water. In this study, experimental investigation of tubular solar still (TSS) is presented. Two different models were constructed with different water basin absorber shapes; flat plate (TSS-FP) and semi circular corrugated surface (TSS-SC). Those two models were tested at same climatic conditions of 6 October City, Giza, Egypt (Latitude of 29.9381 N, Longitude of 30.9140 E). The TSS thermal, exergetic and economic performance and productivity for the two models were studied and discussed. The TSS water production rate by using semi circular corrugated surface was about 4.3 L/m² with enhancement by 26.47% rather than using a flat absorber with augmentation in thermal and exergy efficiencies about 25.9% and 23.7% respectively. The water cost of the TSS-SC was 0.0067 US\$/L with reduction about 20.77% less than TSS-FP.