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Applied Solar Energy (English translation of Geliotekhnika)
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Comparison between solar distillers with and without solar concentrator (Article)

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Abstract

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In order to desalinate sea water by only solar energy using they were designed and built three distillers in which experimental measurements were taken to calculate production, performance and cost. Distillers by solar concentration are: a parabolic trough distiller (PTD) and a Fresnel linear distiller (FLD), and a stepped basin distiller (SBD). As a result, fresh water production under similar climatic conditions was $990 \text{ cm}^3 / \text{m}^2 / \text{day}$ with an efficiency of 45.8% for the PTD, $855 \text{ cm}^3 / \text{m}^2 / \text{day}$ with 38% of efficiency for the FLD and $5910 \text{ cm}^3 / \text{m}^2 / \text{day}$ with an efficiency of 4.4% for the SBD. That is, although the SBD has 10 times lower efficiency than the PTD, it produces almost 6 times more fresh water per m^2 of distiller's surface. Regarding the cost of production of each liter of desalinated water, it was calculated in € 0.086, € 0.103 and € 0.034 for the PTD, FLD and SBD, respectively. © 2016, Allerton Press, Inc.

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(2019) *International Journal of Applied Engineering Research*

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Saettone, E. , Valencia-Tovar, Y. , Gómez-de-la-Torre-Gastello, A. (2017) *Desalination*

Engineering controlled terms:

Seawater Solar energy Water filtration

Engineering uncontrolled terms

Climatic conditions Cost of productions Desalinated water Fresh Water Fresh water production
Parabolic trough Solar concentration Solar distillers

Engineering main heading:

Water

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