Abstract

This paper aims to present the outline of two additional process for "Desalination of seawater by successive heating of thin layers of water using solar radiations from a Fresnel concentrator"^[1]. For more detail information refer to the article "Desalination of seawater by successive heating of thin layers of water using solar radiations from a Fresnel concentrator"^[1], the preprint "Detail Design - Linear Fresnel concentrator Steam Generator"^[2], the preprint Steam Flow formulation of the Linear Fresnel concentrator Steam Generator^[3] and the preprint 'Solar Heat Transfer formulation for the Steam generation from seawater based on Linear Fresnel Concentrator'^[4].

The first process is the condensation process which reuse an existing process. We recommend to use the HeatSink technology combined to cooling plate. For more information about this condensation process we can refer to this article 'Improvement of condensation step of water vapor in solar desalination of seawater and the development of three-ply membrane system'^[5].

The second process, which the innovation aspect for this paper, is to generate hydro-electrical energy from the condensate water in the first process. This process is based on three steps:

- 1- Vapor is generated from the linear Fresnel concentrator with a given temperature to have the steam density less than the ambient air density but not overheated to be able to condensate it later.
- 2- The Vapor will go up high following the Archimedes' principle inside a vertical pipe partially open from the bottom pushed by the air pression.
- 3- the vapor will be condensed and stored in an elevated tank by using the first process.
- 4- the condensed water will flow downwards by force of gravity so turbines can be used to generate electricity at a constant and sustainable speed and pace.

The great advantage of the second process is to be able to generate energy avoiding inertia issue by storing the sufficient condensed water then the energy can be generated without worrying about the climate conditions variations.

References :

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