

Modeling of Reverse Osmosis Water Desalination Powered by Photovoltaic Solar Energy

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Abstract : Freshwater is an essential material in our daily life; its availability is on the decline due to population growth and climate change. To meet the demand for fresh water in regions where reserves are insufficient, several countries have adopted seawater desalination. Several physical methods allow the production of fresh water from seawater; among these methods are distillation and reverse osmosis, and there is great potential to use renewable energy sources such as solar Photovoltaics. The work presented in this paper consists of three parts. First, the generalities of desalination technologies will be presented. The second part is devoted to the presentation of different water desalination systems combined with renewable energy and their benefits and drawbacks on different sides. In the third part, we will perform a modeling of a PV water desalination system under Matlab Simulink software. Then, according to the obtained simulation results, we conclude this paper with the prospects of the presented work.

Keywords : reverse-osmosis, desalination, modelling, irradiation, Matlab

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