عنوان مقاله:

DESIGN AND MODELING OF A PHOTOVOLTAIC REVERSE-OSMOSISSYSTEM FOR SOLAR DESALINATION OF SEAWATER

محل انتشار:

بیست و سومین کنفرانس بین المللی برق (سال: 1387)

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خلاصه مقاله:

Renewable energies, particularly solar energy, are considered for desalination of seawater. Among different solar desalination technologies, the PV-RO (photovoltaicreverse-osmosis) is much more popular. In this technology, the needed energy for reverse osmosis (RO) pumps is provided by an array of photovoltaic cells. The present paper deals with the design and modeling of a PV-RO solar powered seawater desalinating unit which is capable for desalination of water with the TDS of 40,000 ppm and produces potable water which complies with international standards. This unit has the capacity of producing 1424 cubic meters of potable water per annum. In order to run continuously, desalinating units are equipped with lead-acid batteries, but these batteries are causing some problems and are costly. In this system, instead of storing electricity in batteries, potable water is stored in storage tanks to maintain constant flow rate of potable water. In this design, the number of photovoltaic cells to provide needed energy for the RO system is determined with the assumption that it should function with a minimum reception of solar energy. Economic assessment is also carried out to draw comparison between this system and conventional systems in terms of costs.

کلمات کلیدی:

Photovoltaic, Reverse-Osmosis, Seawater Desalination, Solar energy