

Title:	Solar Electric Powered RO-Brackish Water Desalination System in Palestine
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Abstract: This paper presents the first reverse osmosis brackish water desalination system operated by solar electric power (PV) in West Bank- Palestine. The system is built in Zbaidat village – Jordan valley to demonstrate the utilization of solar energy in water desalination and to provide the inhabitants with the desalinated drink water. Design and evaluation of the system are presented. The annual average of daily solar energy in Palestine amounting to $5.4\text{kWh/m}^2\cdot\text{day}$ was considered in the design. The total PV peak power supplying the RO-desalination system is 5.182kW . The system delivers an average of $11.9\text{m}^3/\text{day}$, which corresponds to a PV peak power of 435W necessary to deliver $1\text{m}^3/\text{day}$ of drink water from brackish with a salinity of 2681mg/L . The energy needed for desalination of the specified brackish water is 2.35kWh/m^3 .

Keywords: *Water desalination; Solar electric powered water desalination; PV power system*