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Patent Search

Invention Title	DIRECT DRIVE OCEAN WAVE POWERED FRESH WATER PRODUCTION USING REVERSE OSMOSIS TECHNOLOGY
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Abstract:

The proposed system uses oceanwaves for hydro-mechanical coupling and replaces the reverse osmosis high-pressure pump with a hydraulic converter for direct-drive, allowing for minimal leading to fewer parts necessary for operation and higher efficiencies. The different desalination techniques suitable for this type of combined system, i.e. reverse osmosis, electrodialysis and mechanical vapor compression, have been identified and worked out. The concept was analyzed with suitable programming techniques to model the transient energy dynamics of the wave energy converter, power take-off system, and desalination load. The results of the model were validated at the sub-system level against existing literature on wave energy models and previous work completed on batch reverse osmosis models. This system is validated by comparing to known and predicted values for various types of RO systems.

Complete Specification

Claims:1. A method for ocean wave powered fresh water production comprising, a hydraulic converter having a coupled turbine and pump for a reverse osmosis system.
2. The method for ocean wave powered fresh water production device as claimed in claim 1, wherein the system converts the hydraulic energy from the wave energy converter to be used at a higher pressure with a low flowrate.
3. The method for ocean wave powered fresh water production as claimed in claim 1, builds on existing wave energy simulation tools such as WEC-Sim and PTO-Sim.
4. The method for ocean wave powered fresh water production as claimed in claim 1, wherein pressurized intake water is drawn from the seafloor by a slider-crank mechanism.
5. The method for ocean wave powered fresh water production as claimed in claim 1 uses direct-drive wave-energy powered batch reverse osmosis configuration.

, Description:FIELD OF INVENTION

The invention discloses a method for producing fresh water using reverse osmosis technology.

BACKGROUND OF INVENTION

Ocean waves provide abundant and reliable source of energy making them a viable source for desalination, especially in coastal communities and island nations. However, large capital costs render current wave-powered desalination technologies economically infeasible. This work presents a configuration for ocean-wave-energy-powered batch reverse osmosis. Therefore, there is merit in considering how BRO may be integrated in new configurations to make additional gains in efficiency.

A patent application titled "Method and apparatus for desalting seawater and generating electricity with tidal energy" bearing number WO2012071994A1 discloses a

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