Enhanced Freshwater Production Using Tanned-Plate Air Gap Membrane Distillation (AGMD) (Conference Paper)


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Abstract

Air gap membrane distillation (AGMD), a special type of energy efficient membrane distillation process, is a technology for producing freshwater from waste water. Having some benefits over traditional processes, this method has been able to draw attention of researchers working in the field of freshwater production technologies. In this study, a TEGMD system with flat collector plate has been modified using a specially designed dome to allow much of the solar energy to absorb the water, thus increasing the water distillation rate. For solar energy, experiments were conducted in the open environment. The water temperature and feed temperature of the pond had been recorded using temperature probes. The results showed that the solar energy efficiency was higher for the flat collector plate and experiments were conducted in the open environment. Solar energy and flat temperature of the pond had been varied from 2°C to 20°C and 4°C to 70°C, respectively. Comparing the data, around 6% to 38% distillation enhancement has been observed for channelized collector plate. Also, it was seen that the enhancement was higher for higher feed temperatures and lower feed temperatures. With these findings, a better performing AGMD module has been introduced to mitigate the scarcity of freshwater. 


Indexed keywords:

Engineering controlled terms:
- Membrane distillation
- Energy efficiency
- Environment engineering
- Water

Confureted keywords:
- Air gap membrane distillation
- Concentrations
- Energy efficiency
- Feed temperature
- Membrane distillation
- Production rate
- Production technology

Related documents:


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References (16):

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Membrane distillation desalination: Status and potential

QBR Desalination, pp. 111-111. Chat 3.3 from

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