

Mathematical Modelling and Performance Investigating of Salt Gradient Solar Pond

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Abstract : The author has tried to increase the efficiency of the storage zone of a salt gradient solar pond, storing heat and delivering it to different uses by extracting heat from the storage zone of an SGSP. A mathematical analysis has demonstrated that the heat extraction from the storage zone might potentially produce heat at a reasonably high temperature of up to 115 degrees centigrade, which increases the efficiency of the salt gradient solar pond when compared to a corrugated bottom solar pond to a conventional salt gradient solar pond. The C++ program was implemented to get the simulation results. The system and operating characteristics of the salt gradient solar pond, such as the depth of the pond, heat extraction rate, heat capacity rate, and area enhancement factor (β), have been found to have a variety of effects on efficiency and temperature distribution. It has been reported that system and operating factors affect the temperature distribution in the solar pond.

Keywords : solar pond, heat extraction rate, simulation results using C++, area enhancement factor (β), surface convective zone, gradient zone, storage zone

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