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Carbon credit earned from photovoltaic thermal greenhouse dryer in Indian weather conditions

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The carbon credit earned and the CO_2 mitigation from the single slope photovoltaic thermal (PVT) greenhouse dryer installed at SODHA BERS Complex Varanasi, India has been estimated in the present communication. The annual performance of the system with load condition has been investigated considering all type (a, b, c and d types) of weather condition of India. It has been found that the thermal energy and electrical energy were maximum for the month of May and minimum for month of September. The carbon credit earned by the system in a year on overall thermal energy basis is found to be USD 93.9 and on exergy basis it is USD 28.3.

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Entrochemical thermal battery design for atmospheric heat collectors

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We present two novel design modifications to the basic entrochemical system which enable the generation of an entrochemical thermal battery. The inclusion of a passive mixing mechanism enables the continual disruption of the water layer that forms at the top of the saline solutions enhancing the overall thermal gradient. Embedding of one cell's cool side in the previous cell's warm side allows efficient conduction of thermal energy between the two effectively driving the additive property of the overall thermal gradient, the battery effect. We demonstrate that the passive mixing mechanism enhances performance generating a one-cell gradient of 18.3±0.3° C rather than a non-mixed gradient of 10.3±1.5°C. Using the battery effect, we are able to obtain a three-cell thermal gradient of 40.2±0.3°C. Using the current uninsulated chambers, a projected asymptotic thermal gradient of 64.71°C is determined for many independent cells.

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