

Solar Still Absorber Plate Modification and Exergy Analysis

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Abstract : Freshwater availability in the world is as low as 1% of total water available and in many geographical locations dissolved fluoride and arsenic are serious problem. In India availability of freshwater will be stressed by 2025, so the availability saline water from sea is a hope for the people of Indian sub-continent, but saline water is not drinkable it need to be processed, which again require a huge amount of energy. So the most easy and handy option in such situation for all those problems is solar still, this investigation presents various scopes for improvement of its efficiency. Experiments showed that by increasing the absorber plate area through better design can increase the distillate output by two fold and by using jute wicks in the modified absorber plate increases the output up to three times that of conventional solar still available in the Department of Energy, Tezpur University. The experiment is carried out at constant water depth of 8.5 cm and glass cover inclination of 27° facing South. The exergy analysis carried out clearly resulted that with the use of jute wick and baffle plated basin the efficiency achieved more than the simple baffle plated basin. The Instantaneous exergy without jute wick ranges from 2.5% to 4.5% while using jute it ranges from 1.5% to 5.15%.

Keywords : fluoride, absorber plate, jute wick, instantaneous exergy

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