Square Pyramid and Single Slope Solar Still: Experimental Analysis for Various Depth of Water

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Abstract An analysis between square pyramid solar still and normal solar still is examined in these research works, which includes the effect in water mass on performance, and yield. The square slope solar still is covered with a transparent glass and the solar collecting areas are controlled as 2000 cm^2 of normal as well as square pyramid system. These properties, which are considered influencing parameters like velocity of the wind, intensity and atmospheric temperatures, are considered. The whole analyses were conducted from Dec-2021 to Jun-2022. More importantly, the influencing properties of the quantity of water held in the setup are analysed. This analysis revealed that the square pyramid SS performed well compared to normal

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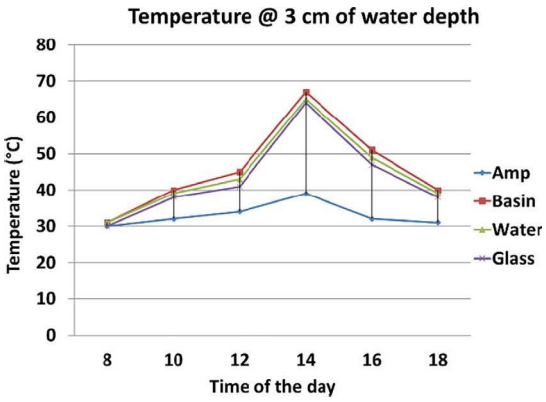
Fig. 2 (continued)



in Table 1. Efficiency of each system is reduced by improved depth of water. The efficiency and session outcome of square pyramid is measured as 32.960–25.020% and 3.83–03.25 kg/m^2 of 1.5 to 3 cm depth. Same as, the efficiency and outcome of a session of normal system is measured and the values are 27.71–22.290% and 3.77–02.87 kg/m^2 for 1.5–3 cm water depth. On reducing the water level from 3 to 1.5 cm, the session outcome of square pyramid basin increased by 22.090%, while the normal solar still session outcome is increased by 36.52%.

4 Conclusions

An analysis of various depth of water on square pyramid and normal basin solar system was examined in the conditions of Salem, India. The final readings of the experiment are shown. By altering the physical properties of the system, the potable water outcome increased to 7.022% (square pyramid system) and then to normal system. On incrementing water level, the outcome of water reduces for these two cases. Although there was a reduction in the outcome of potable water, square pyramid system gave higher outcome (22.32%) than the potable water produced by normal system. Temperature is higher than the normal basin. The temperatures are improved to about 3.9% using square pyramid basin.

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