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Improvement of solar still with chemical potential

K.Swapna

Research Centre for Solar Energy, Department of Engineering Physics, College of Engineering, Koneru Lakshmaiah Education Foundation, Green Fields, Vaddeswaram, Guntur 522502, Andhra Pradesh, India. s.shanmugam1982@gmail.com

Abstract:

In this chapter explains the chemical potential implemented through pyramid stepped basin solar distiller (PSBSD). They analyzed the different temperature components based on the behavior of the distill process. Different parameter analysis is suitable via to explain the performance of the solar still. It also explains the liquid to vapor phase equilibrium the distillate system. They achieved the 38.135% & 4.280 l/m^2 per day.

Introduction:

Sangeetha et al. [1] Experimentally investigate the double slope solar still with activated carbon nanoparticle blended with ZnO approach Gibbs free energy. They achieved the 14.921 l/m^2 day. Yu et al. [2] numerically analyzed the air evaporating system evaporation unit and thermal collector. The system achieved the efficiency up to 83%. Tully et al. [3] analyzed the double slope distiller fin, PCM, NPCM and internal side wall reflector. The energy and exergy analysis shows the NPCM saved the whole cost per production of water upto 2%.Okati et al. [4] fabricated & studied the contact film distillation unit, 4E analysis shows the improved of exergy efficiency 48.34% and distillate output 15000 m^2 /day. Alsaiari et al. [5] analyzed the solar still with titanium oxide/jackfruit peel improved the internal heat transfer mechanism. Reserchers got distill yield of 8.7919 l/m^2 day.

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Fig.1 Experimental setup - PSBSD

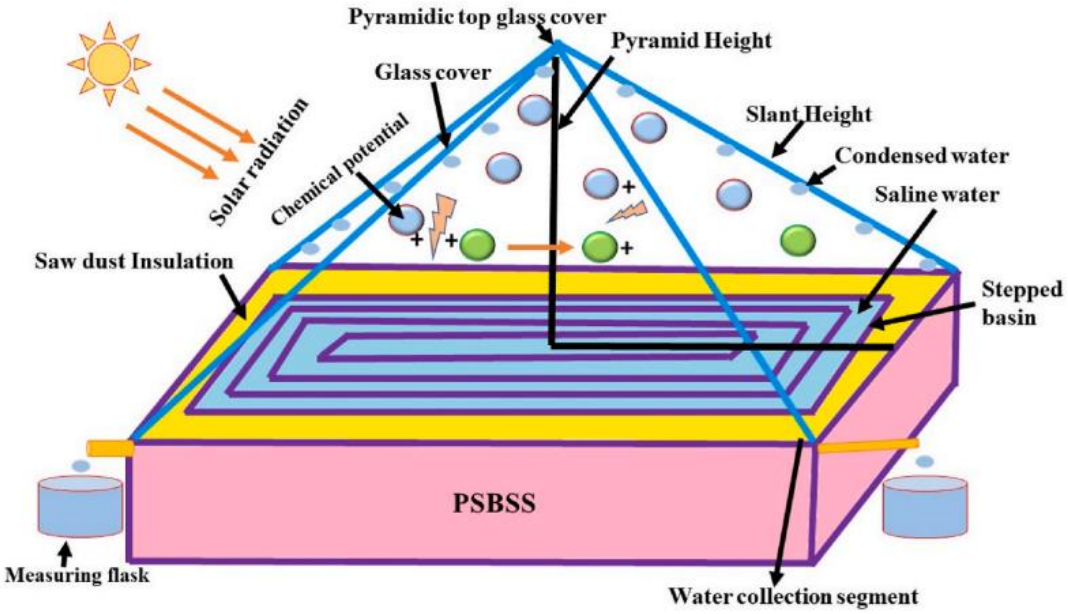

Fig.2 Schematic diagram - PSBSD

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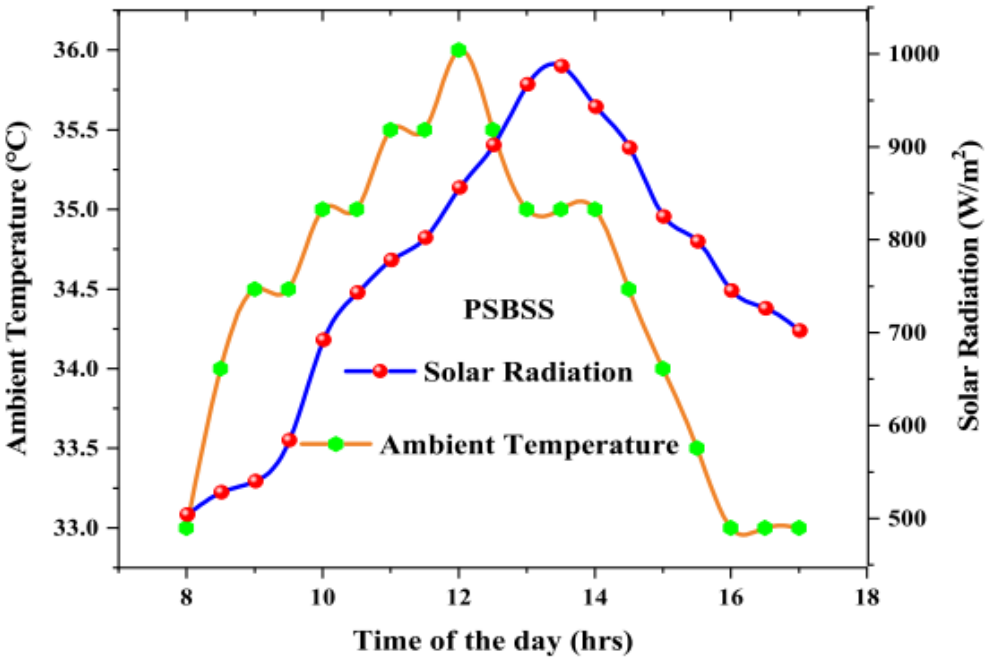

Fig. 3. Changes in sunbeam & air surrounding temperatures.

Fig. 4. Distillation process Hydrological cycle

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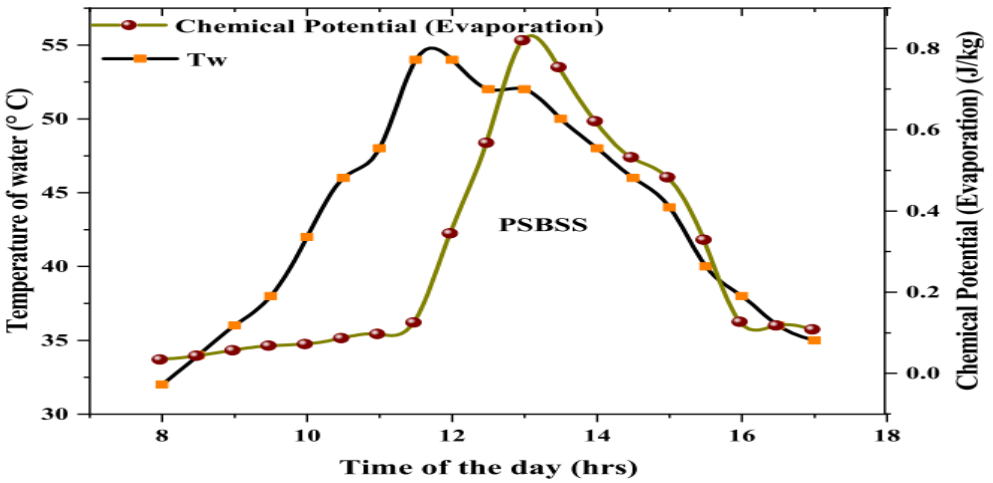

Fig. 5. Chemical potential of basin water

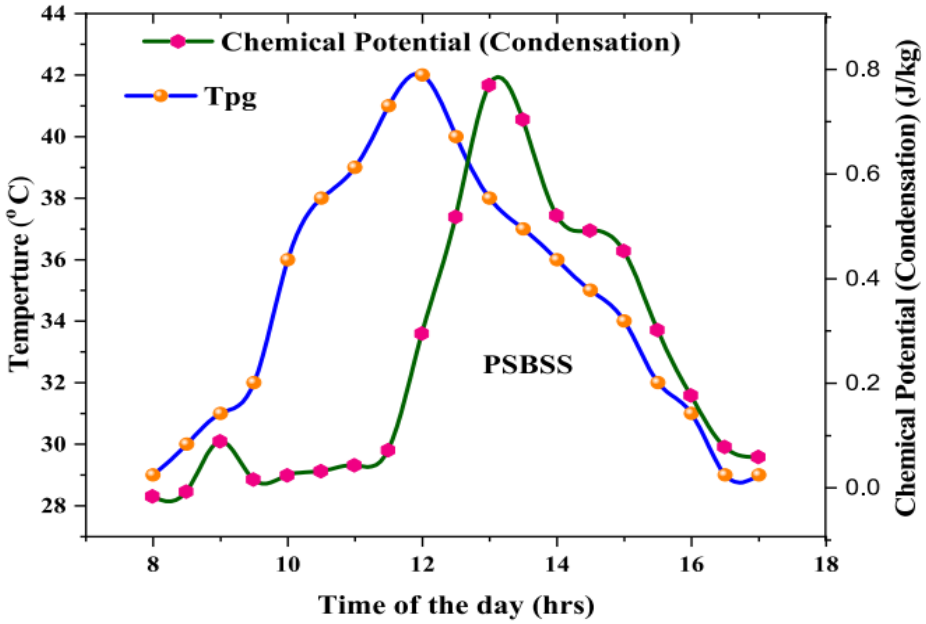

Fig. 6 conduction plate chemical potential

Conclusion

- Chemical potential difference - 0.040 J/ kg
- Chemical potential (30-min interval) - 0.060 J/kg it explain the saturation point
- Daily efficiency - 38.135%

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