Solar cooker – A Review

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Abstract

Food is the basic need of human being. Food can be cooked with conventional fuels like wood, cow-dung, kerosene, LPG and electricity. Solar cooker is clean and eco-friendly energy device for cooking. In this paper different solar cookers like solar panel cooker, solar parabolic cooker, solar box type cooker and hybrid solar cooker etc. are discussed in detail. Still lot of modifications are required to make the solar cooker user friendly, lighter in weight, smaller in size and still economic.

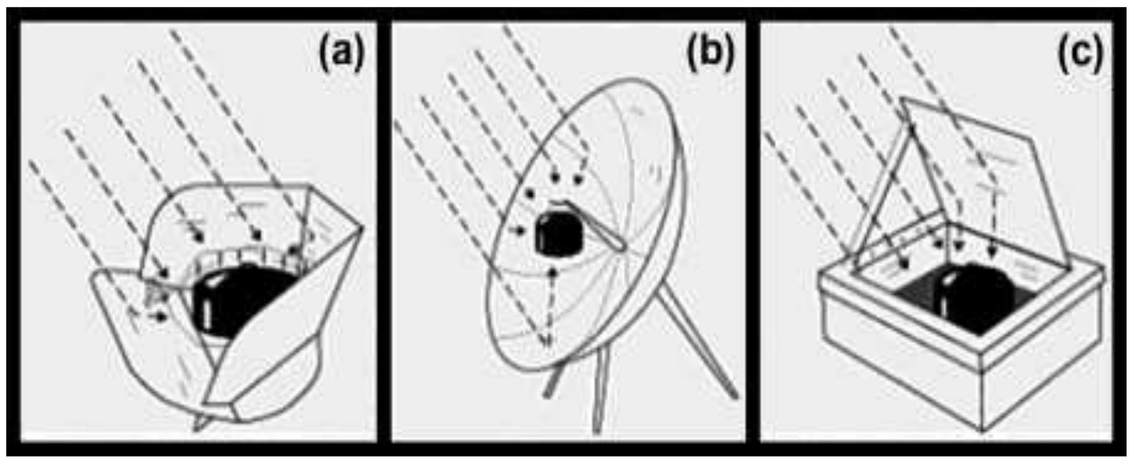

Fig. 1 Types of solar cookers: (a) solar panel cooker; (b) solar parabolic cooker; and (c) Solar box Cooker

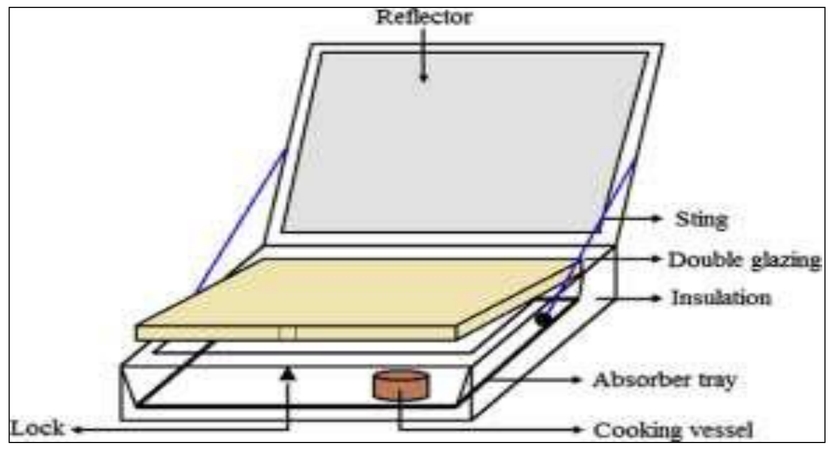

Fig. 2 Box Type Solar Cooker

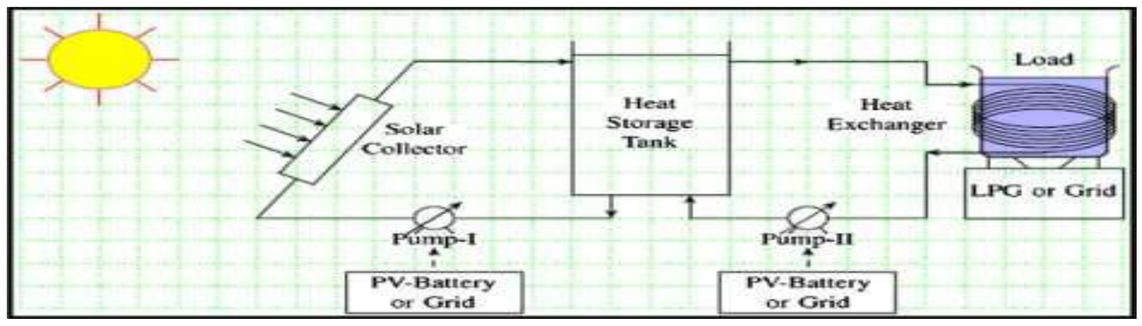

Fig.3 Heat storage material

The small scale Photovoltaic and Thermal Hybridized (Casserole type) solar cooker as designed and developed was developed tested for the performance with (a) Thermal Energy Storage materials (TES), sand (b) Ionic liquids (IL) BF4- and PF6- .

After the 1980s, researchers especially focused on optimization of geometry parameters of solar box cookers since they have a dominant effect on performance. In this context, some researchers analysed the booster mirror effect on efficiency of box-type solar cookers.[1,3]

Conclusion

There are many reasons for that like lake of awareness, large size, bulky models, slow cooking, highly dependent on weather conditions, fixed cooking time etc, The hybrid solar cooker which can work for all time and can cook faster than the conventional solar cooker has being designed and developed which if commercialized can become more popular.

[1] S.B.Joshi and A.R.Jani “All time operating photo voltaic and thermal hybrid solar cooker”, Multi- disciplinary Sustainable Engineering: Current and Future Trends –Tekwani, Bhavsar & Modi (Eds) © 2016 Taylor & Francis Group, London

[2] Smita Joshi, A.R.Jani: A new design of Solar cooker for optimum Utilization. Solar Asia- 2013, 2nd international Conf. on Solar Energy Materials, Solar cells, and solar energy Applications, University of Malaya, Malasia; 08/2013

[3] S.B. Joshi, A.R. Jani: Design, development and testing of a small scale hybrid solar cooker. Solar Energy 12/2015; 122. DOI:10.1016/j.solener.2015.08.025