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Solar box cooker analysis with Fourier series and fuzzfication with economic studies

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Abstract

In order to support the fuzzy inference, a cooking process was also done. According to the study, it is possible to simulate the suggested system using fuzzy logic modeling & Fourier series analysis in a variety of climates that are similar to the climate in Chennai. Strong relationship exists between Pt levels and CO2 emission mitigation. The overall efficiency was found to be 38.99% while the oil was at temperature and 52.6% when the water was boiling.

Introduction

Thamizharasu et al [1] experimentally investigate the stepped solar cooker with adaptive control method. Researchers used the nanolayer of SiO_2/TiO_2 with different volume fractions. They attained the 37.69% (10%) and 49.21% (15%) of coating materials. Palanikuamr et al.[2] compare the act of different type solar box cookers (waste cooking oil and $C_4H_4O_3$, $MgAl_2O_4$/Ni/Fe_2O_3-PCM, without NPCM). The thermal image processing and mathematical method explains, the bar plate attained the high temperature of 164.12 °C by using the effect of nanocomposite PCM. Palanikumar et al. [3] have been studied cooker perfomance by means of fuzzy and fourier theorems with differnt types (low, middle, High) [4]. The food stuffiness is examined by the themal image process, [5] it explains the cooker achieves productivity up to 7.6%

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Fig-1 Experiment of cooker.

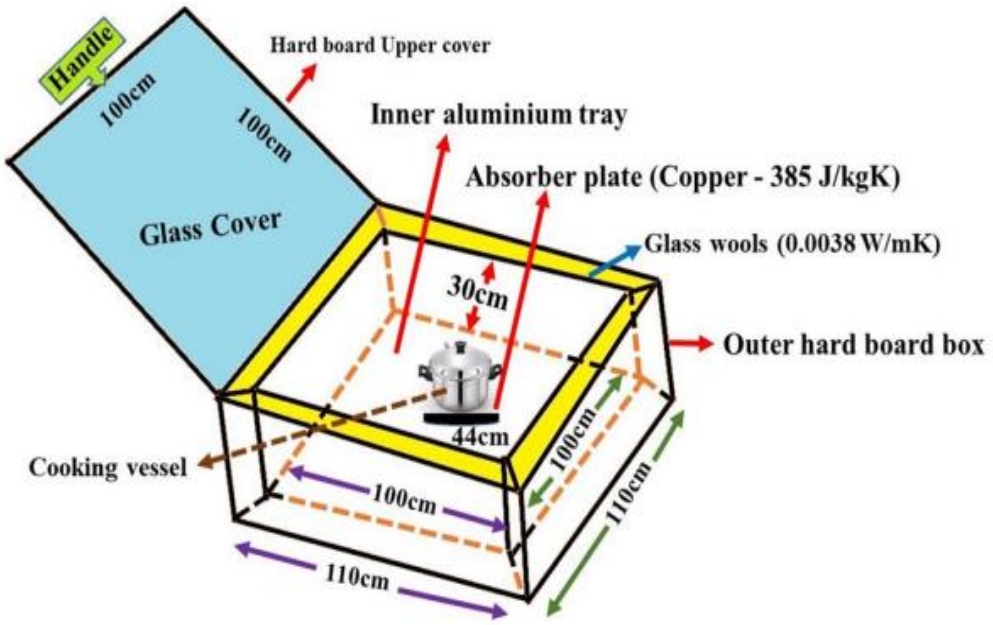

Fig - 2 Schematic diagram

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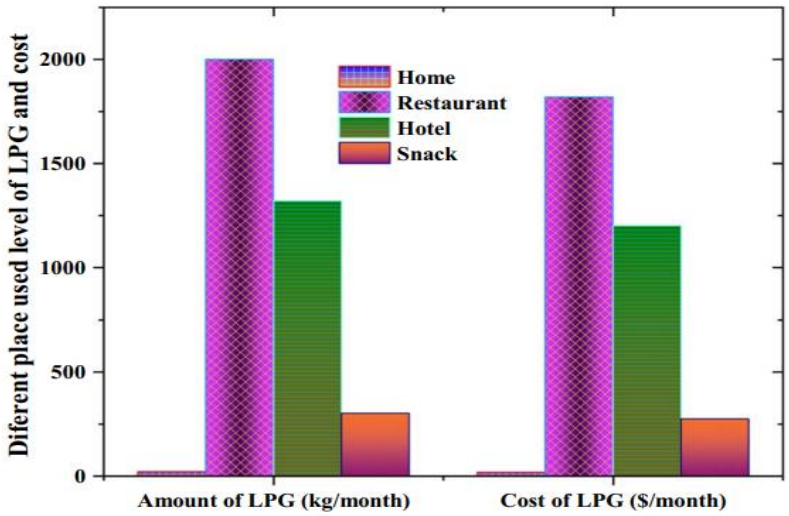

Fig 3 Amount LPG analysis

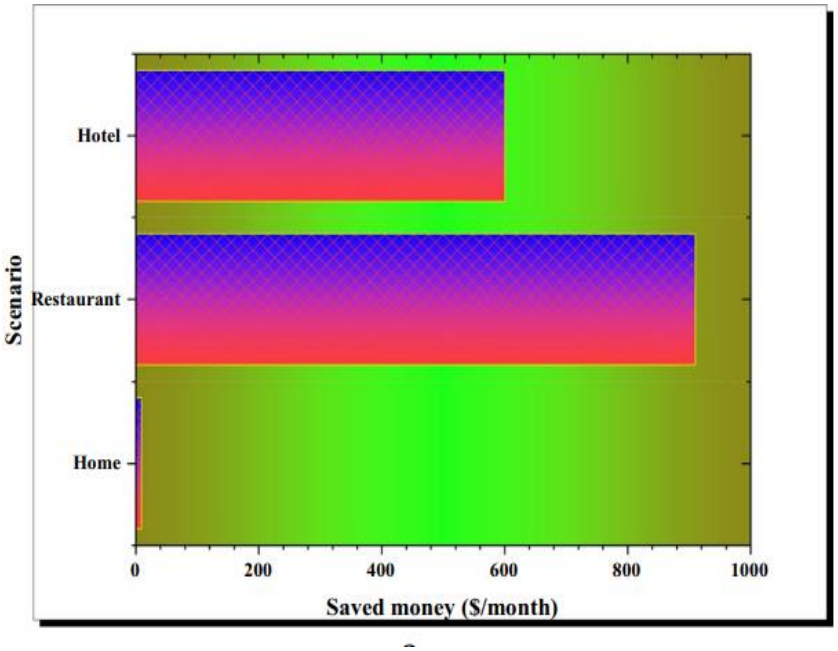

Fig 4 cost analysis ($)

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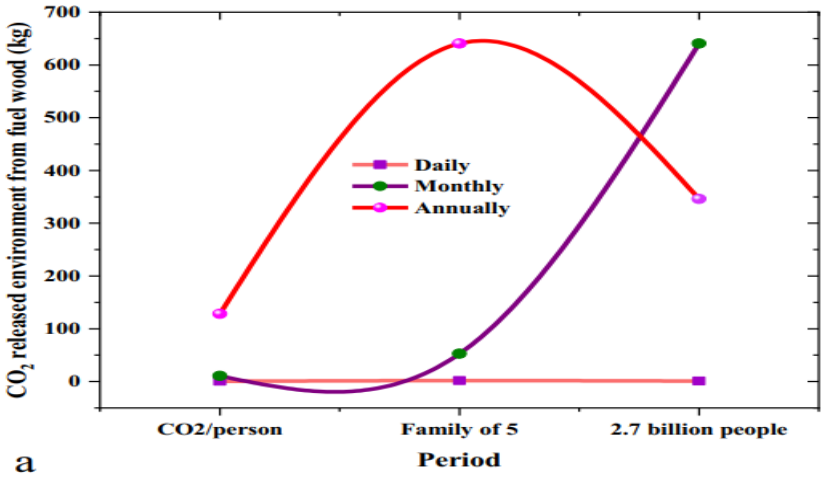

Fig 5 CO_2 release rate

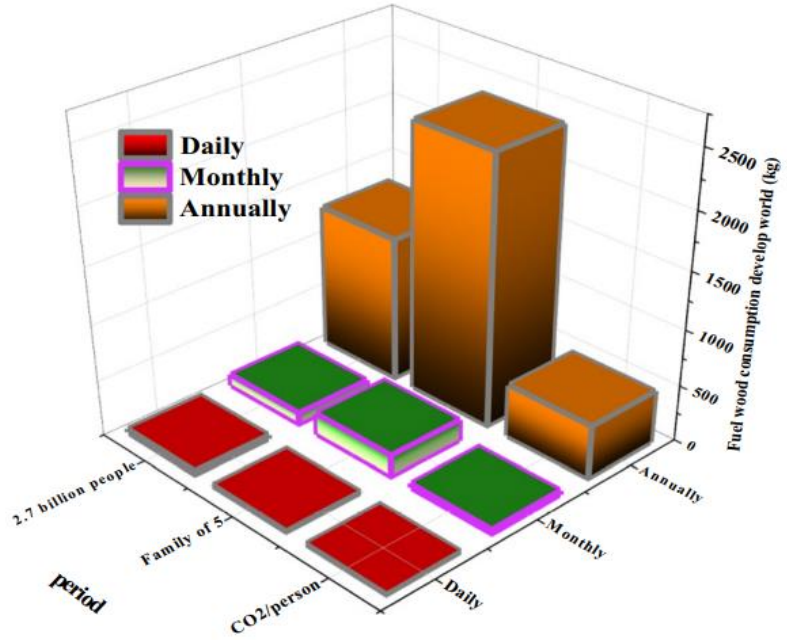

Fig - 6 Fuel wood utilization

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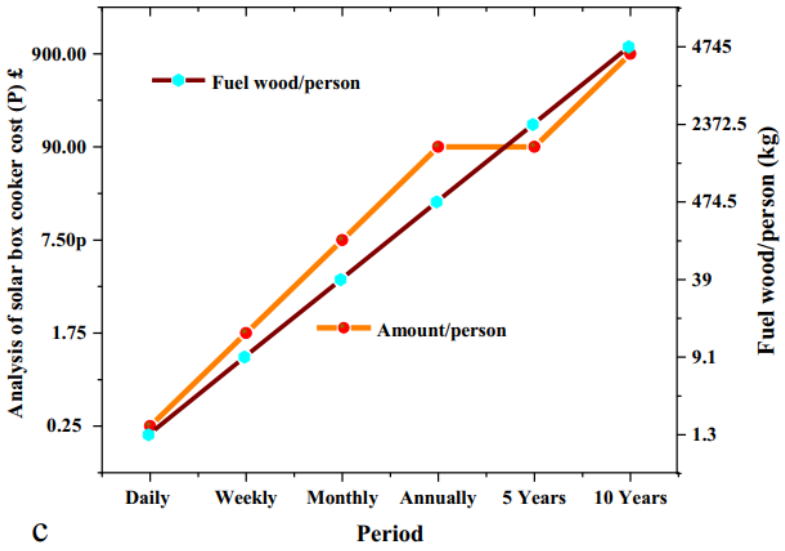

Fig 7. Cost analysis

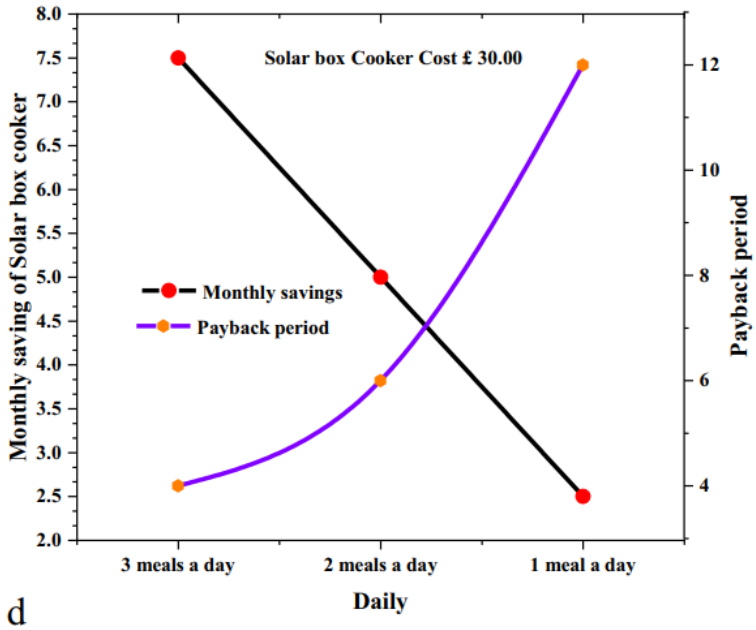

Fig. 8 Payback period

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Conclusion

• The vital factors that affect the heat of cooking flame are solar radiation; base cooking containers; and lid cooking vessels.

• Total efficiency is 52.6% while using water as the cooking medium. When cooking with oil, or frying, the overall efficiency is 38.99%.

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