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Fuzzy Treatment applied Energy Control Solar Cooker

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Abstract

This study was created to examine the fuzzy logic principles used in the thermal energy assessment of a box-style solar cooker under the specific meteorological conditions in Chennai, Tamilnadu, India. With containers made of copper, aluminum, bottom side, and bar plate coated in black paint & (Al_2O_3) for the system, various cooking tests of food items have been produced. The following fuzzy logic rules are specifications. It is accepted to provide the manufacturer with a brief window of opportunity for improving the cooker.

Introduction

Thamizharasu et al [1] experimentally investigate the stepped solar cooker with adaptive control method. Researchers used the nanolayer of SiO2/TiO2 with different volume fractions. They attained the 37.69% (10%) and 49.21% (15%) of coating material. Thamizharasu et al [2] verified the cooker performance with SiO_2/TiO_2 material with ratios of 5% to 25%. Compared to the single nanolayer coating in the conventional type cookers SiO_2/TiO_2 materials enhance the moist air temperature then achieved the thermal performance upto 49.21% (15%). Palanikumar et al [3] combined the fuzzy techniques hybrid with thermal image processing technique to analyze the food stuff. The solar model cooker obtain the overall efficiency 15.41% by the implementation of $C_{18}H_{36}O_2$ and Al_2O_3. Palanikumar et al [4] investigate the influence of NPCM enhance the food stuff examined by edge detector segmentation techniques. It shows the 45.14% of the thermal act and 53.10% adaptenesss of nanoparticle.

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Fig 1 Experimental process

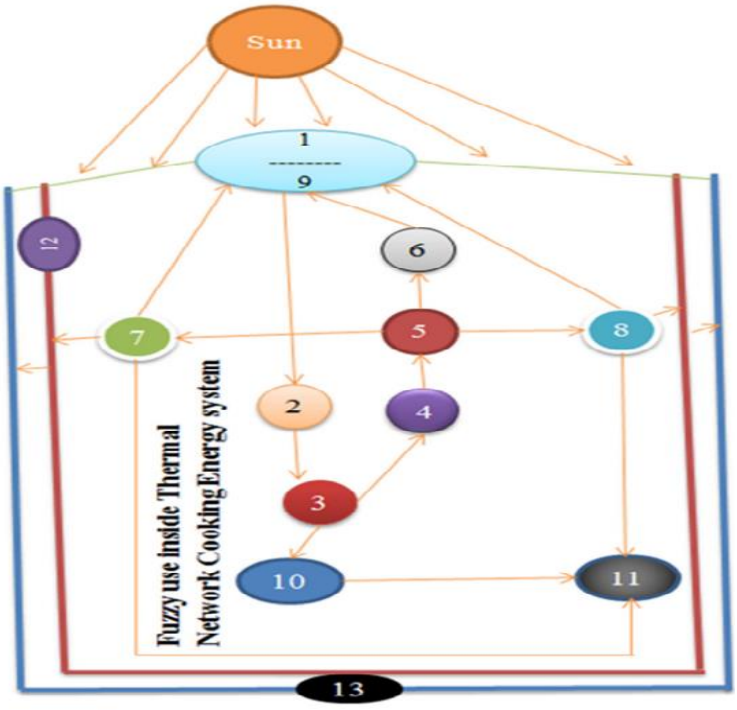

Fig 2. Fuzzy rule

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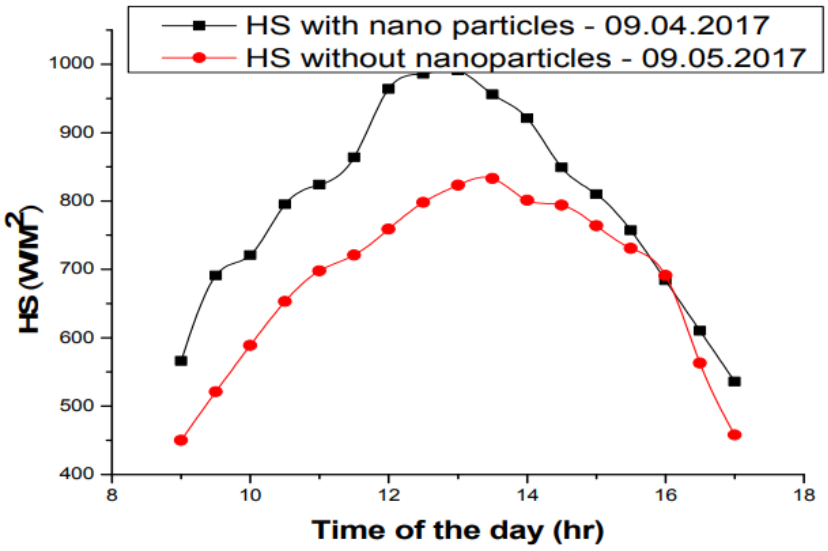

Fig 3 solar radiation

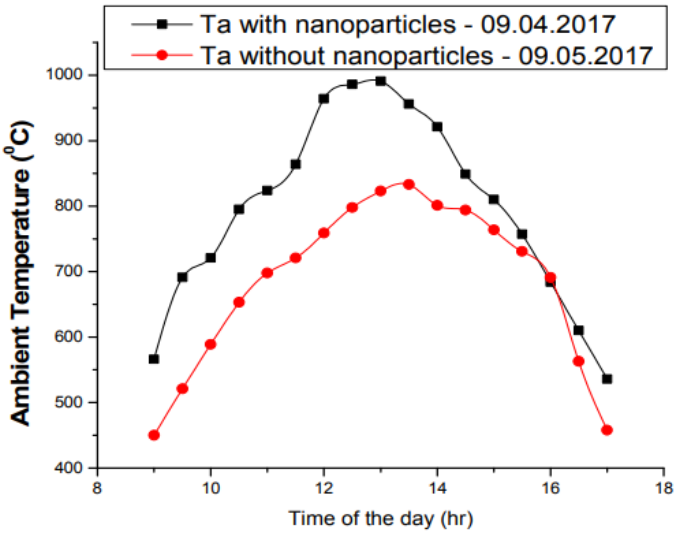

Fig 4 ambient temperature

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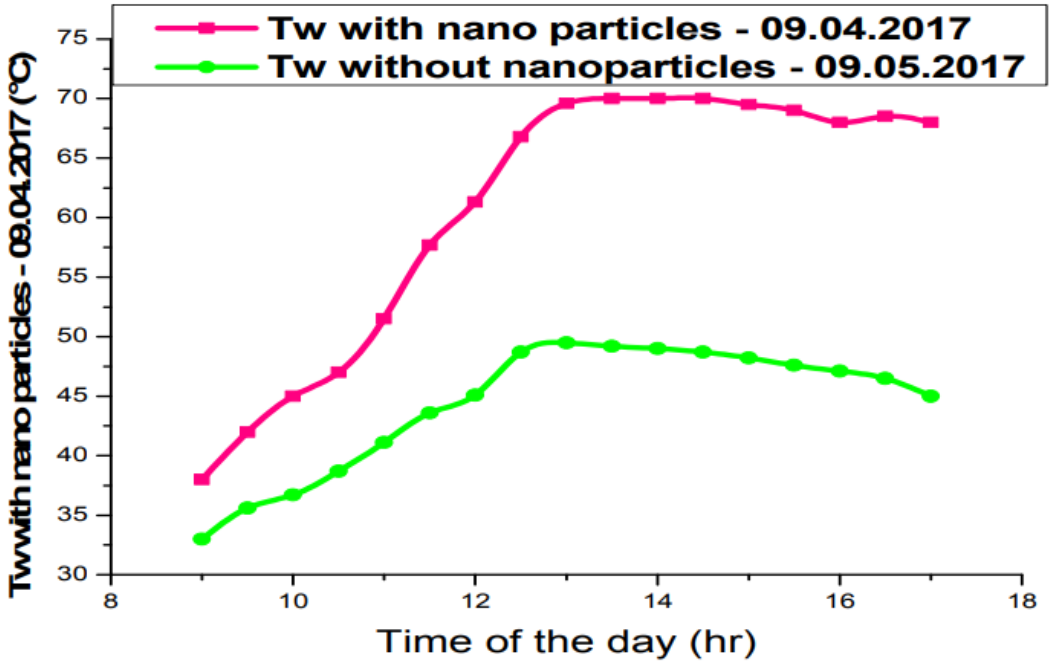

Fig 5: water temperature with & without nanoparticles

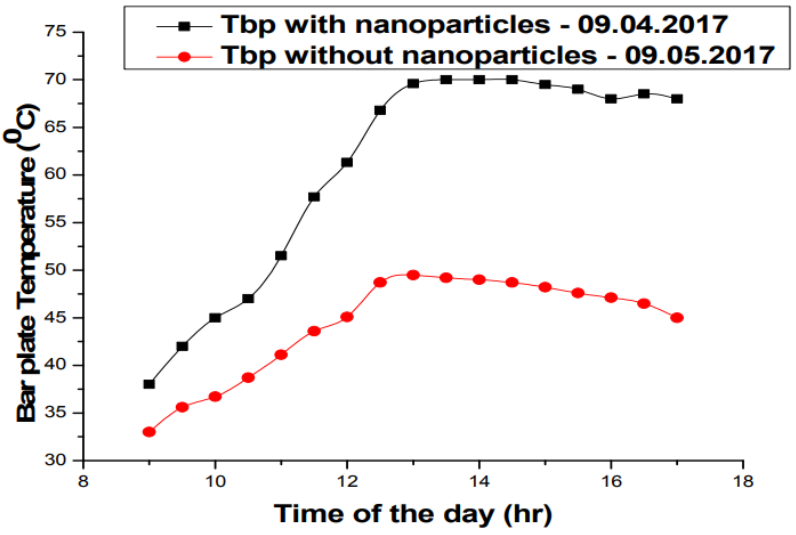

Fig 6: load in Water efficiency

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Conclusion:

The fuzzy logic modeling of the solar cooker's internal heat transfer concept and its results in terms of the theory are pretty amazing. It offers both a meaningful representation of fuzzy concepts communicated in languages as well as a meaningful and potent value of a cooker representation of gauging uncertainty. It will be quite difficult for the cooker to balance objectives with local requirements, notwithstanding the benefits.

Reference

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