Contribution ID: **15** Type: **not specified**

Development of a hybrid solar clothe-drying system using material and system optimization strategies

Monday, 21 July 2025 13:35 (15 minutes)

This research presents, a hybrid solar clothe-drying system developed using material and system optimization strategies. Drying of clothes within the household using electric clothe-dryer could be expensive and time consuming in some densely built urban area around humid tropics, especially in Nigeria where electric power supply is expensive and not regular. With heat pipe and PCM storage unit this challenge was overcome as drying of clothes could be possible at any time of the day. The developed solar clothe-dryer was used to experiment during the indoor and outdoor evaluation performance test which was between July and September 2019, relative-humidity; wind speed, ambient and system temperature were measured. The experimental results were compared with the theoretical results. The maximum and minimum drying rate were 0.512 kg/min and 0.0026 kg/min, while the coefficient of performance was computed to be 0.86 as against the theoretical value of 0.87. The solar clothe-dryer payback period, calculated to be 3.57 years is relatively small compared to a lifespan of 15 years.
KEYWORDS: solar clothes-dryer, thermal-energy, drying-rate, coefficient of performance.

Primary author: Dr SERAH OMOLOLA, Yusuf (Kogi State University kabba)

Co-authors: Dr ETUH, Emmanuel (Kwararafa University Wukari); Dr AJIBOLA, Taiye (University of Ilorin)

Presenter: Dr SERAH OMOLOLA, Yusuf (Kogi State University kabba)

Session Classification: Contributed Talk

Track Classification: Sciences: Physics