COMPARATIVE ANALYSIS OF PARABOLIC DISH COLLECTOR WITH HYBRID NANO FLUIDS

ABSTRACT

Parabolic dish collector (PDC) is a widely used technology for harnessing solar energy for various applications, such as electricity generation and industrial processes. One of the challenges in PDC is improving their thermal performance to enhance overall system efficiency. This abstract presents a novel approach to enhance the thermal performance of PDC by utilizing hybrid nano fluids as the heat transfer medium. Nano fluids are colloidal suspensions of nanoparticles in a base fluid, which exhibit enhanced thermal properties compared to traditional fluids. In this study, a hybrid nano fluid, comprising a mixture of different nanoparticles, is proposed to be used as the heat transfer fluid in PDC. The nanoparticles are selected based on their high thermal conductivity and stability at high temperatures, which can enhance the overall heat transfer performance of the PDC. The abstract highlights the key findings of the study, including the experimental results on the thermal performance of the PDC with hybrid nano fluid. The effects of nanoparticle concentration, size, and type on the collector's efficiency, heat gain, and fluid temperature are investigated. The results show that the utilization of hybrid nano fluid in PDC can significantly enhance the thermal performance of the collector, resulting in improved overall system efficiency. The abstract concludes by discussing the potential applications and benefits of utilizing hybrid nano fluids in PDC, including increased energy generation, reduced operating costs, and environmental sustainability. The findings of this study provide valuable insights for researchers and engineers working in the field of solar thermal energy and nano fluid technology, and pave the way for further research and development of advanced solar thermal systems.