

Abstract

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Utilization of Solar Energy in Inland Water-Way Units

The world faces a challenge on energy resources such as fossil fuels are getting scarcer & instability. The continuous increase in the consumption of the fossil fuels pollute local & global environment & the public demand environmentally friendly energy for all walks life sectors. The earth receives an abundant amount of the renewable solar energy from the Sun. The Middle East region is rich with solar energy, & Egypt is located in the Sunbelt Solar energy area. In addition, the solar resources on Upper Egypt are excellent the Upper Egypt cities & Luxor & Aswan" are located in the strongest solar density area & most powerful in the world throughout the year. There are a large number of luxury cruise ships sailing between Cairo to Luxor & Aswan & vice versa (Nile Cruise) about 300 Nile cruise ships (large floating hotels) in addition to about 50 heritage, majestic & historical boats are famous by a common name known as "Dahabiyya". This paper focuses on the exploitation of the of solar energy for the inland water-way Nile Cruise units through experimental study & numerical analysis using Computational Fluid Dynamics (FLUENT code) to simulate, demonstrate & investigate thermal heat energy & other parameters for the hybrid photovoltaic thermal (PVT), which consist of photovoltaic (PV) modules for electric loads plus thermal units under the (PV) modules to absorb excess heat generated & protect (PV) module efficiency .