World Academy of Science, Engineering and Technology
International Journal of Mathematical and Computational Sciences
Vol:14, No:12, 2020

A Performance Study of Fixed, Single-Axis and Dual-Axis Photovoltaic Systems in Kuwait

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Abstract : In this paper, a performance study was conducted to investigate single and dual-axis PV systems to generate electricity in five different sites in Kuwait. Relevant data were obtained by using two sources for validation purposes. A commercial software, PVsyst, was used to analyse the data, such as metrological data and other input parameters, and compute the performance parameters such as capacity factor (CF) and final yield (YF). The results indicated that single and dual-axis PV systems would be very beneficial to electricity generation in Kuwait as an alternative source to conventional power plants, especially with the increased demand over time. The ranges were also found to be competitive in comparison to leading countries using similar systems. A significant increase in CF and YF values around 24% and 28.8% was achieved related to the use of single and dual systems, respectively.

Keywords : single-axis and dual-axis photovoltaic systems, capacity factor, final yield, Kuwait
Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development
Conference Location : Chicago, United States
Conference Dates : December 12-13, 2020