

Solar Power Monitoring and Control System using Internet of Things

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Abstract : It has become imperative to harmonize energy poverty alleviation and carbon footprint reduction. This is geared towards embracing independent power generation at local levels to reduce the popular ambiguity in the transmission of generated power. Also, it will contribute towards the total adoption of electric vehicles and direct current (DC) appliances that are currently flooding the global market. Solar power system is gaining momentum as it is now an affordable and less complex alternative to fossil fuel-based power generation. Although, there are many issues associated with solar power system, which resulted in deprivation of optimum working capacity. One of the key problems is inadequate monitoring of the energy pool from solar irradiance, which can then serve as a foundation for informed energy usage decisions and appropriate solar system control for effective energy pooling. The proposed technique utilized Internet of Things (IoT) in developing a system to automate solar irradiance pooling by controlling solar photovoltaic panels autonomously for optimal usage. The technique is potent with better solar irradiance exposure which results into 30% voltage pooling capacity than a system with static solar panels. The evaluation of the system show that the developed system possesses higher voltage pooling capacity than a system of static positioning of solar panel.

Keywords : solar system, internet of things, renewable energy, power monitoring

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