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Improving Monitoring and Fault Detection of Solar Panels Using Arduino Mega in WSN

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Abstract : Monitoring and detecting faults on a set of Solar panels, using a wireless sensor network (WNS) is our contribution in this paper, This work is part of the project we are working on at Al-Zaytoonah University. The research problem has been exposed by engineers and technicians or operators dealing with PV panels maintenance, in order to monitor and detect faults within solar panels which affect considerably the energy produced by the solar panels. The proposed solution is based on installing WSN nodes with appropriate sensors for more often occurred faults on the 45 solar panels installed on the roof of IT faculty. A simulation has been done on nodes distribution and a study for the design of a node with appropriate sensors taking into account the priorities of the processing faults. Finally, a graphic user interface is designed and adapted to telemonitoring panels using WSN. The primary tests of hardware implementation gave interesting results, the sensors calibration and interference transmission problem have been solved. A friendly GUI using high level language Visial Basic was developed to carry out the monitoring process and to save data on Exel File.

Keywords : Arduino Mega microcnotroller, solar panels, fault-detection, simulation, node design
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