IoT Based Solar Panel Fault Monitoring and Control

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Abstract- **Continual monitoring of the status and detecting the faults to guarantee the infallible faculties administering of Solar panel in aloof district is our contribution in this form, this work is part of occupation. This paper describes the hardware implementation for fault detection and continual monitoring system for solar panel in remote area using IOT. This analysis problem has been stated by engineers working in Solar panel maintenance system. As expectedsolution to this wireless sensor node is provided with Voltage sensor, Existing antenna, Light sensor, Temperature sensor and Dust sensor and XBeeS2 to implement WSN. Materials are being continuously stored and monitored at central station called HUB and through that data are being sent to server via Ethernet.A accessible GUI using Python is implemented to visualize monitoring performance and save data on Excel file. The described system is built and acceptable results has been obtained.**

Keywords—Wireless Sensor Network (WSN), Light Dependent Resistor (LDR)

I. INTRODUCTION

As non-renewable energy resources are depleted with time it is prime to use renewable energy resources like Solar and air efficiency because of its unlimited supply, monetary long-term benefits and environmental friendliness. According to DJ Pandian, principal secretary, energy and petrochemicals department of the stategovernment, they foretaste more 300 MW of solar proficiency generation capacity to be commissioned in the state before 31st December 2015. The heaping of solar photo-voltaic promotes in consumer market shows awareness of renewable energy. In function to reach maximum benefit and efficiency and to prevent damage it is necessary to monitor the condition of photovoltaic panels continuously [1][2][5]. No matter how here is frank debased luck of sway mistreat of capacity fitting adventitious or unconditional nervous breakdown of encode it is vital to limit and notify the center station to prevent from damage as the cost of components are unconditionally decidedly snobbish.

Essential cause like bolt strikes, cyclone, blast and heavy rain or even a insect can also damage solar panel and overloading in supply grid can also force power reduction and sometimes shutdowns in addition to. So it is foremost to monitor each and every smallest fault and give result to central station quickly otherwise it leads to large financial losses. Expect for it is plead to acquire losses fitting to hesitating of Solar panel. In present industrial scenario PLC and SCADA structures are being used to monitor Voltage and Current of Solar panel plant. In this manufacture of monitoring system all the panels are connected and the monitoring system is placed after the inverter. Calling with this type of monitoring system is we cannot get each solar panel Voltage and Current of individual solar panel and also we can't detect fault or take effort to crash of solar panel. Corporation orthodoxy is very much costlier also and once it is wired it is static.

In order to overcome this problems and as a better alternative solution to this we provide wireless solar panel condition monitoring system that measures electrical parameters of all of the solar panel individually and also it monitors the condition of solar panel continuously. This micro-controller based system is also cost-effective as it does not requires any extra sensor circuits for voltage and current, also the end node is powered by solar panel so it is versatile solution.