IoT based string failure detection and monitoring system

Srijeyanthi P. 
srijeyanthi05@gmail.com  
V. S. B Engineering College, Karur, Tamil Nadu  
Karthick C. 
karthik2412@gmail.com 
V. S. B Engineering College, Karur, Tamil Nadu  
Sivakumar R. 
ee@vsbec.com  
V. S. B Engineering College, Karur, Tamil Nadu  
Rajeshwaran M. 
rajeswaran735@gmail.com 
V. S. B Engineering College, Karur, Tamil Nadu  
Cebu A. 
cebuanand@gmail.com  
V. S. B Engineering College, Karur, Tamil Nadu  
Karthick C. 
karthikgm2412@gmail.com  
V. S. B Engineering College, Karur, Tamil Nadu  
Rajeshwaran M. 
rajeswaran735@gmail.com 
V. S. B Engineering College, Karur, Tamil Nadu  
Subhash S. 
subahashsuresh2904@gmail.com 
V. S. B Engineering College, Karur, Tamil Nadu  
Subhash S. 
subhashsuresh2904@gmail.com  
V. S. B Engineering College, Karur, Tamil Nadu

**ABSTRACT**

To harness reliable energy efficiently, the photovoltaic STRING system must remain in its best condition. This requires continuous maintenance and monitoring. However, in case of weather dependable energy yield change. We proposed a novel real-time monitoring system utilizing a small but efficient artificial neural network that is adequate to run on a low-cost system. To get the desired electrical output in various environmental conditions, it is required to analyse the faulty, or shaded, or dust-covered string, and maintain it with an intelligent monitoring system. The proposed string monitoring system can identify if the string exhibit degradation due to fault conditions.

**Keywords:** String Fault, Arduino, Solar, Dust Sensor, Energy Yield Etc

1. **INTRODUCTION**

The fast-ever-growing energy demands and the global environmental issues necessitate the use of renewable resources. Among renewable energy yielding technologies, String fault are of the greatest future projection. An intelligent reference analytical module for real-time individual photovoltaic panel monitoring based on the artificial neural network. We discuss the system overall implementation, the mathematical module behind its intelligent reference model, and its hardware implementation. The contribution of String energy increased remarkably compared to the previous four decades. Nowadays, PV energy represents the third-largest source of renewable energy after wind and hydro.

1.1 **Proposed System**

String fault system is becoming a popular choice as an alternative source of energy. To harness reliable energy efficiently, the string system must remain in its best condition. This system consists of sensor like Temperature Sensor, Dust Sensor and Rain Sensor. Temperature sensor is used to measure the temperature value Dust sensor used for detecting the dust will be high, at same for Rain sensor is used to measure the rain value and display on LCD Display. Measured all sensor information updated to IOT.

1.2 **Advantage**

- Adequate to run on a low-cost system
- Real-time logging and monitoring of the PV panel's environmental conditions and data.
- Artificial neural network enables the monitoring system to predict the normal operation of a PV panel.
- Maintenance Store in a clean and dry place; occasionally clean the case and cords with a dry cloth.

2. **BLOCK DIAGRAM**
3. CONCLUSION
String failure monitoring system is presented with high prediction accuracy. The hardware design and implementation of the monitoring system on low cost microcontroller was discussed. The monitoring system has the ability of identifying any individual string fault that requires maintenance. The more string fault are connected to the string monitoring system; the lower is the additional cost per string fault. The monitoring system wills a string fault for maintenance if the predicted output power for that string fault, obtained from artificial neural network model. The actual output power of that string fault, obtained from sensors, has a percentage difference more than 10%.

4. REFERENCES