INTISARI

ENERGY MONITORING PADA *SOLAR CELL PHOTOVOLTAIC (PV)*

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Energi monitoring pada solar cell photovoltaic (PV) sangat dibutuhkan untuk mengevaluasi keadaan sumber energi dan memberikan informasi keadaan energi terkini. Penempatan solar cell PV yang tersebar memberikan kebutuhan akan sebuah sistem monitoring nirkabel berbasis *Wireless Sensor Network (WSN). WSN* tersebut termuat sistem hardware, sistem software, sistem informasi, komunikasi data dan sistem database.

Sistem energi monitoring pada Solar cell photovoltaic PV yang dikembangkan dalam penelitian ini terdiri atas modul komponen hardware dan software dengan basis modul sensor, dataservice, datacenter. Modul sensor berupa rangkaian *SCB-Raspberry Pi* dengan pemrograman *python* dan sistem pertukaran data menggunakan metode *REST*. Dataservice menggunakan arsitektur *RESTful* sebagai layanan pertukaran data berbasis web. Datacenter dibangun menggunakan media penyimpanan MySQL server. Metode perhitungan rata-rata statistik digunakan untuk menghasilkan pesan linguistik berupa *low, middle dan high* tentang keadaan informasi tingkat level energi panel solar cell terkini yang diolah dari datacenter sensor.

Hasil diperoleh menunjukkan bahwa model arsitektur sistem monitoring berbasis WSN dengan model modul sensor, dataservice, datacenter efektif dan efisien dapat mencatat informasi energi yang dihasilkan dari setiap panel sel surya. Visualisasi energi monitoring yang dihasilkan berupa grafik realtime nilai power energi (*Vmp*) dan status kekinian level energi pada jaringan panel surya dapat membantu proses pengamatan langsung secara realtime. Implementasi perhitungan dengan statistik yang gunakan mampu memberikan informasi pesan peringatan linguistik *low, middle dan high* tentang keadaan status energi panel solar cell photovoltaic (PV) terkini yang sedang beroperasi.

Kata Kunci : Energi Monitoring, Solar Cell PV, Modul Sensor, Visualisasi Energi Monitoring.

ABSTRACT

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Energy monitoring on solar cell photovoltaic (PV) is urgently needed to evaluate the source of energy condition and provide information on the current energy source. PV solar cell placement spread gives the need for a wireless monitoring system based on the Wireless Sensor Network (WSN). The WSN system included hardware, software systems, information systems, data communications, and database.

Energy monitoring systems on Solar cell PV photovoltaic developed in this study consists of hardware and software components of the module with the sensor module, the data service, data center. The sensor module in the form of a series of SCB-Raspberry Pi with python programming and system data exchange method using REST method. *RESTful* service architecture developed as a web-based data exchange service. Datacenter built using MySQL server storage media. The calculation method of average statistics is used to generate a status message in the form of low linguistic, middle and high-level information about the condition of the energy level of the current solar cell panel prepared from data center sensor.

The results obtained show that the monitoring system architecture model based WSN with model sensor module, the data service, data center effectively and efficiently can record information energy generated from each solar cell panels. The resulting energy monitoring visualization form a graph of real-time values power energy (Vmp) and the status of the present level of energy on a network of solar panels that help the process of direct observation in real-time. Implementation of the calculations with the use of statistics to provide information on the message warning low linguistic, middle and high status on the level energy panel solar cell photovoltaic (PV) that are running.

Keywords: Energy Monitoring, Solar Cell PV, Sensor Module, Visualization of Energy Monitoring.