

ABSTRAK

Design and Implementation of Smart Energy Management System Integrated With Internet of Things (IoT) Technology in Engineering Faculty Unila

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Manajemen energi dilakukan untuk perencanaan, pencatatan, pengawasan dan evaluasi secara kontinu tanpa mengurangi kualitas produksi atau pelayanan. Melalui proses audit energi listrik akan diketahui seberapa besar nilai Intensitas Konsumsi Energi (IKE) listrik, audit energi dengan survey secara langsung objek pada gedung A Fakultas Teknik Universitas Lampung dengan luas bangunan gedung ini $\pm 1071,5$ m². Sumber energi listrik berasal dari PLN dengan kontrak daya 3 fasa 66 kVA, tegangan 380 Volt dan golongan tarif P2. Monitoring penggunaan konsumsi energi dapat diamati dengan alat yang terpasang setiap ruangan dengan data pencahayaan, temperatur, dan kelembaban serta alat yang terpasang pada panel dengan data tegangan dan arus yang terhubung dengan data base untuk menampung data dengan program aide dengan bahasa pemograman PHP, javascrip, HTML, dan CSS untuk menampilkan data berbentuk grafik dan angka secara real time melalui website, menampilkan pada hari senin 08 maret 2021 nilai rata-rata pencahayaan pada gedung lux 155, temperatur 27⁰C dan kelembaban 65% pada tegangan dan arus puncak memiliki nilai tegangan pada fasa R 210 volt, fasa S 208 volt, dan fasa T 195 volt serta nilai arus pada fasa R 38 amper, fasa S 41 amper dan fasa T 68 amper dan memiliki nilai energi pada 24 jam terlihat secara kontinu fasa R 157534,6384 Wh. fasa S 245566,7396 Wh, sedangkan fasa T 182885,2032 Wh terlihat bahwa nilai rupiah energi fasa R Rp.47.085,71712. fasa S Rp. 73.397,74943, dan fasa T Rp. 54.663,19905 untuk Intensitas Konsumsi Energi (IKE) memiliki nilai 0,151912 dengan status sangat efisien.

Kata kunci — Manajemen Energi, Audit Energi, IKE, Bangunan Gedung A FT Unila, Efisiensi Energi, Web

ABSTRACT

Design and Implementation of Smart Energy Management System Integrated With Internet of Things (IoT) Technology in Engineering Faculty Unila

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Energy management is carried out for planning, recording, monitoring and evaluating continuously without compromising the quality of production or service. Through the electrical energy audit process, it will be known how much the value of the Energy Consumption Intensity (IKE) of electricity is, energy audit with a direct survey of objects in building A, Faculty of Engineering, University of Lampung with a building area of ± 1071.5 m². The source of electrical energy comes from PLN with a 3-phase power contract of 66 kVA, a voltage of 380 Volts and a P2 tariff group. Monitoring the use of energy consumption can be observed with tools installed in each room with data on lighting, temperature, and humidity as well as tools installed on panels with voltage and current data connected to a data base to accommodate data with the Aide program with the PHP, JavaScript, HTML programming languages , and CSS to display data in the form of graphs and numbers in real time through the website, displaying on Monday, March 8, 2021, the average value of lighting in the lux 155 building, temperature 27 °C and humidity 65% at peak voltage and current has a voltage value in phase R 210 volts, phase S 208 volts, and market T 195 volts and the current value in the R phase is 38 amperes, the S phase is 41 amperes and the T phase is 68 amperes and has an energy value at 24 hours that can be seen continuously in the R phase 157534,6384 Wh. the S phase is 245566,7396 Wh, while the T phase is 182885,2032 Wh, it can be seen that the rupiah value of the R phase energy is Rp.47,085.71712. phase S Rp. 73,397,74943, and the market T Rp. 54,663,19905 for Energy Consumption Intensity (IKE) has a value of 0.151912 with a very efficient status.

Keywords — Energy Management, Energy Audit, IKE, Building A FT Unila, Energy Efficiency, Web