ABSTRAK

MANAJEMEN ENERGI LISTRIK PADA BANGUNAN GEDUNG BERBASIS *INTERNET OF THINGS* (STUDI KASUS PADA LABORATORIUM TERPADU TEKNIK ELEKTRO UNIVERSITAS LAMPUNG)

Oleh

AGUS SURINANTO

Manajemen energi listrik peting dilakukan untuk mendukung program penghematan energi listrik, termasuk di gedung Laboratorium Terpadu Teknik Elektro Universitas Lampung. Berbagai teknologi dapat mendukung pelaksanaan manajemen energi listrik, diantaranya adalah teknologi *Internet of Things*. Tugas akhir ini membangun sebuah sistem manajemen energi listrik berbasis *Internet of Things* dengan komponen utama yaitu kWh meter digital, Arduino Mega 2560, Ethernet Shield. Sistem yang dibangun telah diuji di Laboratorium Terpadu Teknik Elektro, dengan hasil pengujian bahwa sistem layak digunakan sebagai alat ukur pada panel distribusi (skala 1,5% sampai 5%). Dari hasil investigasi dan aplikasi sistem *monitoring* pada Laboratorium Terpadu Teknik Elektro diketahui bahwa, perlu ada manajemen khususnya berkenaan dengan Standar Operasional Prosedur (SOP) penggunaan peralatan listrik di Laboratorium Terpadu Teknik Elektro. Penerapan Standar Operasional Prosedur penggunaan energi listrik di Laboratorium Terpadu Teknik Elektro dapat menghemat konsumsi energi sebesar 310,073 kWh (dalam jangka waktu 6 hari). Karenanya, penting dilakukan pengoprasian energi listrik sesuai Standar Operasional Prosedur pada Laboratorium Terpadu Teknik Elektro.

Kata kunci: manajemen energi, *Internet of Things*, SOP, Arduino, kWh meter, Laboratorium Terpadu Teknik Elektro.

ABSTRACT

ELECTRICAL ENERGI MANAGEMENT OF BUILDING BASED ON INTERNET OF THINGS (CASE STUDY THE INTERGRATED LABORATORY OF ELECTRICAL ENGINEERING LAMPUNG UNIVERSITY)

by

AGUS SURINANTO

Electrical energy management is important to be done to support electrical energy saving program, so that at Electrical Engineering Integrated Laboratory of Lampung University. Various technologies can support electrical energy management, one of them is Internet of Things Technology. This thesis aims to build electrical energy management system with Internet of Things based, the primary components are kWh meter digital, Arduino Mega 2560, Ethernet Shield. The built system had been tested at Electrical Engineering Integrated Laboratory of Lampung University, and showed that the system is worth to use as measuring tool on distribution panel (scale 1,5% until 5%). From investigation result and monitoring system application at Electrical Engineering Integrated Laboratory of Lampung University was known that it needs specific management regard to Standard Operating Procedure (SOP) towards the use of electrical equipment at Electrical Engineering Integrated Laboratory. Standard Operating Procedure application of the using electrical energy at Electrical Engineering Integrated Laboratory can decrease energy consumption around 310,073 kWh (whitin six days). So that, it is important to conduct electrical energy operating based on Standard Operating Procedure at Electrical Engineering Integrated Laboratory.

Keywords : energy management, Internet of Things, SOP, Arduino, kWh Meter, Integrated Laboratory of Electrical Engineering.