Design of a Solar Home Energy Management Educational Trainer Using Microcontrollers

Ahmad Fahriannur S.T., M.T (*Undergraduate Thesis*)

Anang Ma'ruf Habibulloh

Renewable Energy Engineering Study Program

Department of engineering

ABSTRACT

2015 saw a dip in Indonesia's energy supply, with the oil and biofuel industries seeing the biggest drop. By 2025, 23% of the country's energy mix is expected to come from renewable sources, according to policies that the Indonesian government has released. One of the kinds of energy required for a nation's development is electricity, and demand for it is rising in tandem with both economic and population expansion. Studies have been done on using passive infrared receiver sensors and Arduino Uno microcontrollers to automatically control lights in order to reduce excessive electricity usage. This study uses Arduino, an RTC, and relays to create an energy management microcontroller that controls how long a load is activated for. The power source is solar panels, and it is expected that they will be used to run the electrical lab and generate power in order to advance faculty research on automation systems. The end result is expected to be innovative, helpful for students, educators, and researchers, as well as improve knowledge and technology, particularly in the field of engineering education. has a daily energy need of 177,16 Wh and the highest power consumption of 30 watts.

Keyword : Renewable energy, electricity, microcontroller, energy management, automation systems.