

ABSTRAK

Krisis energi listrik sedang terjadi di beberapa negara diantaranya terjadi di pulau Bali. Karena cadangan listrik di Bali pada 2021 sudah tidak ideal karena berada di bawah 30 persen yaitu sekitar 28 persen, sedangkan pada tahun 2023 cadangan listrik hanya tinggal 13 persen. Karena itu sang penulis melakukan penelitian ini melakukan pengujian menggunakan purwarupa untuk melakukan efisiensi energi listrik, sehingga nantinya dapat implementasikan oleh masyarakat di Bali. Penelitian menggunakan konsep *Internet of Things* dan *Smart Home* yang berfokus pada efisiensi energi listrik dengan mengontrol lampu dan kipas. Pengujian akan membandingkan konsumsi daya listrik ketika menggunakan sistem otomatis dengan sistem manual yang nantinya akan diketahui seberapa besar efisiensi konsumsi energi listrik. Sistem otomatis berjalan menggunakan konsep pengkondisian ruangan didalam purwarupa dibantu dengan sensor PIR, DHT22 dan LDR untuk menghidupkan kipas dan lampu. Skenario pengujian sistem otomatis menggunakan objek yang digunakan antara lain adalah Hamster, Kotak Pensil dan tanpa objek. Pengujian tanpa sistem menyalakan kipas dan lampu tanpa bantuan alat beserta tanpa pengkondisian ruangan didalam purwarupa. Hasil efisiensi energi listrik dari perbandingan pengujian sebesar 28% hingga 67%. Data efisiensi yang didapatkan cukup signifikan untuk menghemat energi listrik yang nantinya bisa diimplementasikan pada masyarakat Pulau Bali.

Kata Kunci: Pemborosan Energi, Krisis Energi Dan Pangan, Kenaikan Harga Listrik.

ABSTRACT

The Republic of Indonesia is currently facing an electricity crisis, which has also affected Bali Island. In 2021, Bali's electricity reserves were at an untenable level, standing at approximately 28%. The situation is expected to worsen, with projected reserves plummeting to only 13% in 2023. To address this crisis, the author of this study conducted an experiment to test the efficiency of electrical energy use. The experiment focused on the concepts of the Internet of Things and Smart Home, specifically on controlling lighting and fans to optimize energy consumption. The study compared the energy consumption of automated and manual systems to determine the degree of efficiency. The automated system was designed to condition the indoor environment using PIR, DHT22, and LDR sensors to activate the fan and light. The experiment was conducted under different scenarios, including during the day, evening, and night, with and without objects such as a hamster and a pencil box. The manual system, which did not use any tools or indoor conditioning, consumed 250.5 Watts, whereas the automated system consumed between 70.9 and 166.8 Watts. The efficiency of the automated system ranged between 28% and 67%. These results are indicative of significant energy savings that could be implemented by the people of Bali. The findings of this study have important implications for the development of policies and practices aimed at reducing energy consumption and promoting sustainability. Therefore, it is recommended that further research be conducted in this area to identify additional strategies to optimize energy efficiency in the region.

Keywords: *Waste of Electrical Energy, Electrical Energy and Food Crisis, Increase in Electricity Prices.*