ABSTRACT

As time goes by, the growth rate of the percentage of humans on earth is increasing, causing various kinds of problems. Humans utilize the natural resources on earth and the development of technology to meet their needs. Urban development, lifestyle and environmental influences on irregular human behaviour cause the need for energy such as water, electricity and other resources to increase. The development of technology is increasingly sophisticated, making it easier for humans to continue to innovate to overcome existing problems.

So to anticipate this, careful planning is needed to be able to face the energy crisis by utilizing the technology that is developing today. One solution that can be applied is the concept of Smart and Green building based on technology 4.0, starting with the design of the lab room located in the TULT building.

There are several tests for this tool. The first test is the range of sensors where PIR can read movements up to 2 meters according to the laboratory door frame. The second test is the information sent with the results of the PIR sensor can read the movement, send it to the database, and be read by the relay. The third test is packet loss with the results for the percentage of packet loss error is 0.91% and the resulting throughput is 32.5 / second. The fourth test of power calculation accuracy, where the relay power calculation tool has a performance similar to the factory-made wattmeter, which is 99.61% for current calculation accuracy and 99.83% for power calculation accuracy and for power savings can reduce up to 60% of power costs. The fifth test of website performance is performance on desktop of 99 which means higher than performance on mobile of 74. The sixth test of user experience on the website is that the average user experience chooses a value of 5, which means that the website performance is appropriate and very satisfied. The last test is the duration and durability of the tool where the duration of the tool while active is 7 hours 31 minutes 40 seconds and the durability of the tool is quite sturdy.

Keywords: Telkom University Landmark Tower (TULT), PIR Sensor, Relay, Power, Database.