

ABSTRACT

The need for electrical energy for humans continues to increase along with the increasing number of human population and the more modern human lifestyle is also one of the causes of increasing energy consumption. One of the electricity needs that is often encountered is lighting. The solution to these problems is to provide new and renewable energy sources as an alternative to supplying electrical energy with a PLTS electrical system with a backup battery.

The purpose of this study is to build a PLTS electrical system with battery backup for lighting in the car park business area and to replace electricity consumption from PLN and the utilization of solar natural resources into electrical energy. The PLTS system is backed up by the battery as a store of electrical energy generated by solar cells.

The results of this study produce a PV mini-grid design and the supporting components needed to produce a PV mini-grid. PLTS with a battery backup battery with a battery capacity of 45 Ah with a voltage of 12V, 1 Photovoltaic 100Wp, a PWM type solar charge controller with a capacity of 10A. This PLTS system has a monitoring system that can be viewed through the smartphone of each user. This monitoring system aims to monitor the PLTS system as a supply in turning on the lighting.

Key Word: *Lighting, electrical energy, PLTS*