

ABSTRACT

With the increasing demand of electrical use by citizen in all aspect of their life resulting higher load on PLN. However, the increase of the demand is not followed by increase of PLN performance in accommodating the demand. This will give negative direct and indirect implications to the citizen. One of the examples that gives direct negative implication to the citizen is traffic light blackout. This blackout will generate traffic jam or even accident. One of possible solutions to cope this traffic light blackout is by utilizing Uninterruptable Power Supply (UPS). UPS is an electrical tool that utilizes back-up battery to work as alternative power supply on electronic device, i.e. traffic lights. The utilization of the UPS not only supply energy during blackout but also protects the electronic device from catastrophe.

UPS has several parts, the rectifiers, inverters, transfer switches, battery 12 V, and a transformer. In order to build this system, the processes are as follows: determination of device specification, design of the system and network, components procurement, system investigation. After that, the process continues with system analysis.

In this study, the investigation on the UPS showed good performance, it can distribute 4 lamp 15 Watt for 1 hour 6 minutes with 74.57% of efficiency. The specification of the UPS is as follows: 0.4 of electric current, 220 volt of voltage, 90 Watt of power and 1:18 of electrical coils.

Keywords: UPS, alternative power supply, electric power, traffic jam.