

ABSTRACT

Many human activities could be the renewable energy sources that are environmentally friendly, one of them by cycling. The previous study^[3] has created a static bicycle generator system, but the output voltage of the generator is not constant and depends on the rotational speed of a bicycle wheel.

This research has made buck converter circuit on Battery Control Unit (BCU) as the generator output current stabilizer, so that battery charging current is stable. Then the power will be stored in the battery before it is supplied to the load. It is hoped this research can improve the efficiency of the static bicycle generator that has been made in previous study^[3]. This system can also be actually monitored via a user interface that displays the input voltage (V_{in}), output voltage (V_{out}), battery charging current (I), the value of the PWM, battery voltage, and the value OC1A.

The results of testing and analysis from the design of the buck converter is obtained the highest power efficiency of 90,255%. Bluetooth module that is used for data transmission that is able to work well with a delay of 0.783 seconds at a radius of 5 meters from laptop.

Keywords: energy, buck converter, battery control unit, bluetooth, generator