

## **ABSTRACT**

Alternative renewable energy sources are obtained through sunlight and currently the development and existence of renewable energy sources are widely spread in nature. In solar power generation systems used Sel GH 50P-18 type solar cells with 50 watt power specifications, with a voltage of 17.8 volts and a current of 2.8 amperes.

The solar power generation system consists of several components including: solar cells, controllers, buck regulators, energy storage systems (batteries). The Sel GH 50P-18 solar cell energy output is in the form of a Direct Current (DC) mains voltage and the battery is used as an electrical energy storage system. The battery works on the Direct Current (DC) mains voltage. The controller used is used to regulate the process of storing the converted energy into the battery. The storage process includes: monitoring the electrical energy of solar cell output, monitoring the current and voltage of the controller output, adjusting the battery current and voltage, as well as overvoltage safety system efforts.

The controller device which is designed consists of several subsystems for the process of charging a battery with a voltage and current of around 13 V and 2.5 A with efficiency up to 82.91%.

Keywords : Buck Regulator, Solar panels.