

BATTERY VOLTAGE STABILIZER BY USING PID CONTROL

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Abstract

Current technological developments, especially in the field of electrical energy, are heading towards being completely portable. Many electronic devices require batteries as a source of energy today. The need for battery electrical energy will increase along with the development of existing electronic technology. Therefore, portable electrical energy (battery) will play an important role in the development of technology in the future. The battery is an electric cell in which a reversible electrochemical process takes place with high efficiency. A fixed output voltage on a battery is very important to produce the desired power supply. The drop in the output voltage on a battery is affected by its use. The average error percentage of the measuring instrument designed is 1.338% at the voltage sensor output, the current sensor is 6.94%, the boost converter is 12.78%, the PID control parameter to control the output voltage used in this design is able to provide the most control response well, with the value of $K_p = 10$, $K_i = 10$, $K_d = 30$ with the set point of 12 volts, it produces a fairly constant response voltage of 12.12 volts. It can be seen from the graph results that the resulting rise time is quite fast, which is 10 seconds.

Keywords: Battery, Voltage, PID.