

ABSTRACT

In today's increasingly high level of global warming due to ozone depletion occurs. So we often feel hot and sultry, more so when were in the room at the time of power failure so it needed a smart fan that can provide coolness at a certain temperature without the need to adjust the fan.

In this thesis, designed a smart fan that uses sensor PIR (Passive Infra Red) serves as an automatic switch detection of human presence and LM35 sensor that functions as a detector state at room temperature and then integrated with Dc Chopper that serves to stimulate and regulate the speed of a DC motor fan. DC chopper is a device that converts the DC voltage remains a DC voltage-controlled variable and its value can be changed as needed. DC chopper designed using the boost converter that is by raising the input voltage through the switching process. ± 12 Vdc input voltage from 1 piece of dried 12V/7AH accumulator variable voltage was raised to 12 to 24 Vdc with how to set the duty cycle value of the PWM signal. The main components used in the design of DC chopper MOSFET boost converter is IRFP260N, TLP250 MOSFET driver, 1.4 mH inductor, capacitor 220 uF input and output capacitor 1500uF and ATmega16 microcontroller.

The results of the testing and analysis of the design of the fan. PIR sensors can detect the presence of humans in the effective range of 0-240cm and LM35 sensor measurements using the formula comparative magnitude of the voltage of electricity produced, the temperature detected by the sensor LM35. DC chopper obtained the highest power efficiency of 95.1% at a speed of 24 volt DC motor rotation. From the results of testing and analysis concluded the integration of sensors with a DC chopper boost converter topologies that are designed to work very well in moving and set the 24-volt DC motor speed to be used to drive the propeller fan.

Keyword : Sensor PIR, LM35,DC Chopper