

## ABSTRACT

The power supply devices is an important tool in electronic equipments. In the development of technology industry today, many industrial products in terms of power supply has its own voltage level requirement. This means that every electronic device will be damaged if the output voltage exceeds or is less than the required voltage range. It is very influential to the performance of the tool in making the system work. Therefore, voltage DC supplies its own very necessary. The stability and efficiency of the power supply is an important parameter that is used as a measure of the quality of a power supply devices.

In the design and implementation of this final project makes a tool Dc to Dc converter with a boost converter topologies that methods of how to increase the input voltage corresponding desired output voltage. Implementation of design functions has applications such as motor drivers, power supply, voltage regulator. This final project is use a microcontroller as generating Pulse Width Modulation (PWM) with a switching frequency 23.48 kHz for IRFP450 MOSFET gate.

The system designed in this final project has been tested and works fine. DC-DC converter with a boost converter topology is controlled with AT Mega 8535 microcontroller with PWM regulation voltage to achieve stability in accordance with set point in range of 0-40 volt. DC-DC converter will be used to raise the voltage from 12 V<sub>DC</sub> to 40 V<sub>DC</sub>. Maximum efficiency boost converter that is designed reached 89.45% at light load and efficiency of the DC motor load reaches 75.54%. The stability of the output voltage corresponding the set point with a maximum percentage of voltage regulation by 0.55%.

Keywords: *Pulse Width Modulation* (PWM), Boost Converter, microcontroller.