

## ABSTRACT

*The development of power electronics technology today is very much needed. Needs of power electronics for a long time using thyristors and rectifiers are often used is the phase thyristor controlled rectifier which is simple and inexpensive. Rectifier is better known as AC - DC converters that convert from AC to DC voltage.*

*In this thesis designed a tool semikonverter using a single phase thyristor SCR type with DC motor load. Semi converter referred to as a controlled rectifier working on one quadrant of the output pulses is only valuable so positive. This pulse is often referred to as ignition angle  $\alpha$  can be set from the point  $0^\circ$ ,  $45^\circ$ ,  $90^\circ$ ,  $135^\circ$  dan  $180^\circ$ . Ignition angle setting is done to maintain the stability of the DC motors that have been set. If the motor rotation is larger or smaller than specified, then the microcontroller will turn on the ignition angle of the SCR.*

*The system is designed using ATmega32 microcontroller as a pulse generator to the circuit SCR. With 60 Vac input when the angle of ignition  $0^\circ$ ,  $45^\circ$ ,  $90^\circ$ ,  $135^\circ$  and  $180^\circ$  the output voltage DC motor is at 33.1 V, 22.3 V, 15.6 V, 8.2 V and 6.1 V. Semikonverter controlled rectifier system is able to increase and decrease the voltage with set point of voltage is 10 V and ignition angle is  $113^\circ$ . Recovery time while burdened DC motor that is 30 seconds and the recovery time of a DC motor regardless of the load that is 12 seconds due to the acceleration of rotation.*

*Keywords: SCR, semi converter, DC motor*