

## ABSTRACT

Arm robot is one of industrial robot that have similar function with human arm. In this thesis, The type that I used in this thesis is articulated robot arm. In Indonesia production company is very rare so the robots in all sector that have been used in Indonesia are from another country robot production company. So researcher wants to design and realization arm robot that specification almost approach the arm robot from robot production in the another country.

The arm robot that has been designed has some part there are, base robot, robot body, 2 arm buffer, weight balancer, and end effector. This robot has 5 axes, has 60 cm arm length, and has weight 42 kg. The actuator that used in this thesis are 5 pieces Vexta PH-599. This motor is kind of 5 phase stepper motor that have  $0,72^\circ$  each step and have maximum current 1,1 ampere each phase. In this research, researcher uses ATMEGA 8535 microcontroller for main controller. In the slave controller board there are ATMEGA 8 microcontroller and 5 IRF3205 N-channel mosfet for stepper controller.

This robot have been able to lift 500 gram weight for 500 milisecond stepper motor signal control period. The robot that has been designed and realization has 3,35% error displacement movement for x-axis and has 5,58% error displacement movement for x-axis in condition not lifting any weight. The robot has 3,74% error displacement movement for x-axis and has 6,89% error displacement movement for x-axis in condition lifting 200 grams weight.

***Keywords*** : *Arm Robot, Stepper motor, Articulated arm robot*