## *ABSTRACT*

**Arief Budiman**, Bachelor degree majoring in Physics Engineering, Engineering Faculty Telkom University, 5 Februari 2014, *Design And Implementation Of PID Control System At Autonomous Landing Quadcopter*. Adviser Lecturer: Drs. Suwandi, M.Si as first Adviser Lecturer and Reza Fauzi Iskandar, S.Pd.,MT as second Adviser Lecturer.

*Quadcopter as a type of unmanned aerial vehicle (UAV) is an aircraft without on-board human pilot which has four rotors. There are 3 movement of quadcopter: vertical, horizontal and maneuver. One of critical condition that accident frequently happened is caused by landing petition. To stabilize the quad on landing position, controller is required to control rotors in x axis (roll), y axis (pitch), z axis (yaw), and high-altitude. Stabilization controller provides PWM signal to control rotors speed. PID controller is developed using tuning Ziegler Nichlols Method to control system. Parameters value which is obtained by tuning roll and pitch controller is $K_p = 4.5$ dan $K_d = 2.6$. By these control parameters, respond error that generated is $\pm$ 10 degree. While parameters as a result of tuning yaw controller is $K_p = 9$ dan $K_d=0.005$ that gives 10 degree error and tuning high-altitude controller with $K_p= 3$, $K_d = 0.04$ dan $K_i=0.05$ gives good performance to maintain quad in 70 cm but gives 28 second settling time. During experiment with all of control system on autonomous landing, the experimental responses are different from individual control system. It was caused by noise and unreachable of microcontroller to accomplish all control system simultaneously. Autonomous landing experiment generate high responses error: error roll $\pm$15 degree, error pitch $\pm$10 degree, error yaw $\pm$40 degree/sec.*

*Keyword : Quadcopter, roll, pitch, yaw, Ziegler Nichols, PWM, PID, error.*