ASBTRACT

THE DEVELOPMENT OF AUTOPILOT SYSTEM FOR UNMANNED AERIAL VEHICLE (UAV) FIXED WING PROTO-03

By

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The *Unmanned Aerial Vehicle* (UAV) is an alternative of manned aircraft for aerial photography purposes. The flight accuracy is absolutely done to create high quality of aerial photography based on the coordinates of area which will be taken. Ardupilot Mega is *autopilot open source system* which had used for the UAV. The development of autopilot system is required in order to have a good flying ability vehicle.

The development of *autopilot* system was devided into 3 parts. First, the configuration of *autopilot* and supporting electronic devices for UAV. Second, the software configuration was *firmware* installation, sensor calibration and setting up the value of *Proportional Integrative Derivative* (PID). And third was flight test to ensure every configuration ran well and knew the error of vehicle track.

The result of flight test shown that the ideal distance among *waypoint* spots were 20 meters with 5 meters radius. The vehicle track at the time of flight mission had the average error which was more than 1 meter for each flight session. The vehicle could keep the flight altitude based on *fligh t plan* which was 50 meters above ground level. *Radio telemetry* succeed sending the data of vehicle during a flight with RSSI (*Received Signal Strength Indicator*) in the amount of 90 % for each flight session with the longest distance was 1 km.

Keywords : *ArdupilotMega Autopilot, Proportional Integrative Derivatif (PID), Unmanned Aerial Vehicle (UAV).*