

Design for Flight Endurance and Mapping Area Enhancement of a Fixed Wing Unmanned Air Vehicle

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Abstract : The design and development of new UAV are detailed in this paper. The mission requirement is setup for enhancement of flight endurance of a fixed wing UAV. The goal is to achieve flight endurance more than 60 minutes. UAV must be able launched by hand and can be equipped with the Sony A6000 camera. The design of sizing and aerodynamic analysis is conducted. The XFLR5 program and wind tunnel test are used for determination and comparison of aerodynamic characteristics. Lift, drag and pitching moment characteristics are evaluated. Then Kreno-V UAV is designed and proved its better efficiency compared to the Heron UAV who is currently used for mapping mission of Geo-Informatics and Space Technology Development Agency (Public Organization), Thailand. The endurance is improved by 19%. Finally, Kreno-V UAV with a wing span of 2meters, the aspect ratio of 7, and V-tail shape is constructed and successfully test.

Keywords : UAV design, fixed-wing UAV, wind tunnel test, long endurance

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