Modeling and Analysis of Quadcopter

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Abstract: *Quadcopter is high performance with its simple design and model. It has the characteristics of a high carrying capacity. The Quadcopter is one of the UAVs (Unmanned Aerial Vehicles) used to transport, track, record and collect information from one place to another in a short time without using too much space and cost. The quadcopter differs from other aircraft such as vertical take-off and landing (VTOL) and has features that make it a leader in applications in combat, transportation, inspections, festivals and more. The area is crowded. Quadcopter design is an essential part of its aerodynamics, and modeling and analysis are two key factors in the manufacturing process. This article focuses on the modeling and analysis of the quadcopter frame. Modeling is done in CATIA V5 software and all parts are analysed using ABAQUS software. Compare the results with the output in the quadcopter support. Although there are many negative factors affecting the performance of the Quadcopter, our work is limited to optimizing, specifying, modeling and evaluating the framework and integrating them into the whole process to achieve good results*

Keywords: Quadcopter, Aerodynamics, Design, Structural Analysis, Optimizing

REFERENCES

[1] D. Deva Prakash and P. Ananthachristu Raj Design Of A Quadcopter Using PID Control Algorithm, vol-1 , 2014.

[2] D. Hanafi, M. Qetkeaw, R. Ghazali, M. Than, W. Utomo and R. Omar, "Simple GUI Wireless Controller of Quadcopter," International Journal of Communications, Network and System Sciences, Vol. 6 No. 1, 2013.

[3] K. W. Weng, "Quadcopter," Robot Head to Toe Magazine, Vol. 10, 2011. • Quadcopter design and Implementation, Gaponov. I, TALE, IEEE International conference, 2012.

[4] L. Salih, M. Moghavvemil, H. A. F. Mohamed and K. S. Gaeid,"Flight Pid Controller Design for A UAV Quadcopter," Scientific Research and Essays, vol 5(23), pp.3660-3667,December 2010.

[5] Shah, K.N., Dutt, B.J., Modh, H.,"Quadrotor–An Unmanned Aerial Vehicle", International Journal of Engineering Development and Research, (IJEDR), March 2014, ISSN: 2321-9939, Volume.2, Issue 1, pp.1299-1303.

[6] Kivrak, A.O.,"Design of control systems for a quadrotor flight vehicle equipped with inertial sensors", Master's thesis, Atilim University, December 2006.

[7] Seung H. Jeong, Seul Jung, Tomizuka, M., "Attitude control of a quad-rotor system using an acceleration-based disturbance observer: An empirical approach", International conference on Advanced Intelligent Mechatronics, 2012, Kaohsiung, Taiwan, PP.916-921.

[8] Madani T., Benallegue,A., "Backstepping control for a quadrotor helicopter. "Backstepping Control for a Quadrotor Helicopter", October 2006, Proceeding of International Conference on Intelligent Robots and System, pp. 3255-3260.