World Academy of Science, Engineering and Technology
International Journal of Aerospace and Mechanical Engineering
Vol:9, No:07, 2015

Experimental Studies of Dragonfly Flight Aerodynamics

Authors : Mohd Izmir Bin Yamin, Thomas Arthur Ward

Abstract : Past aerodynamic studies of flapping wing flight have shown that it has increased aerodynamic performances compared to fixed wing steady flight. One of the dominant mechanisms that is responsible for causing this phenomenon is a leading edge vortex, generated by the flapping motion of a flexible wing. Wind tunnel experiments were conducted to observe the aerodynamic profile of a flapping wing, by measuring the lift, drag and thrust. Analysis was done to explain how unsteady aerodynamics leads towards better power performances than a fixed wing flight. The information from this study can be used as a base line for designing future Bio-mimetic Micro Air Vehicles that are based on flying insect aerodynamic mechanisms.

Keywords : flapping wing flight, leading edge vortex, aerodynamics performances, wind tunnel test
Conference Title : ICMAAE 2015 : International Conference on Mechanical, Aeronautical and Automotive Engineering
Conference Location : Singapore, Singapore
Conference Dates : July 04-05, 2015