World Academy of Science, Engineering and Technology
International Journal of Aerospace and Mechanical Engineering
Vol:12, No:06, 2018

Effect of a Stepwise Discontinuity on a 65 Degree Delta Wing

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Abstract : Increasing lift effectively at higher angles of attack has always been a daunting challenge in aviation especially on a delta wing. These are used on military jet fighter planes and has some undesirable characteristics, notably flow separation at high angles of attack and high drag at low speeds. In order to solve this problem, a design modification is modeled on a delta wing which would increase the lift so that we can improve maneuverability. To attain an increase in the lift of a 65 degree delta wing at higher angles of attack, a step-wise discontinuity is created at the upper surface of the delta wing. A normal delta wing is validated for comparison which would thereby give us a measure of flow separation and coefficient of lift affected by the modification. The results obtained deliver a significant increase in lift at higher angles of attack thereby delaying stall. Hence the benefits of the modification would aid the potential designs of aircraft's in the time to come.

Keywords : coefficient of lift, delta wing, flow separation, step-wise discontinuity
Conference Title : ICAMAME 2018 : International Conference on Aerospace, Mechanical, Automotive and Materials Engineering
Conference Location : New York, United States
Conference Dates : June 03-04, 2018

Open Science Index, Aerospace and Mechanical Engineering Vol:12, No:06, 2018 publications.waset.org/abstracts/93174/pdf