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Aerodynamics investigation of delta wing at low reynold's number

(Article)

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Abstract

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A numerical simulation has been carried out to investigate the aerodynamics of an oscillating delta wing and to evaluate the flow structure over the leading edge at different low Reynolds numbers. The numerical results of coefficient of lift (CL) vs angle of attack is validated with the experimental results from the previous study. Effects of Reynolds number and angle of attack is investigated for the wing lift coefficient, and the aerodynamic efficiency. Pressure contour and turbulence kinetic energy are also observed for each case. Vortex formation from each case is noted from pressure contour and lift coefficient. The stall condition is also observed. Considering the three Reynolds number at max CL, which is at angle of attack of 40 degrees, the CL only increased by 0.01, which is not a very significant increase. But L/D ratio has in-creased significantly for Reynolds number in the range from 8x104 to 1.5x105 and from Re 1.5x105 to 2.68x105. Whereas for each Reynolds number, the lift coefficient CL seems to attain highest value of 0.4 at angle of incidence between 10 degrees and -10 degrees to-20 degrees. © 2019 PENERBIT AKADEMIA BARU-All rights reserved.

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References (15)

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- 1 Korukonda, S., Nagnoori, S. Numerical Investigation of an Airfoil at Low Reynolds Numbers for MAV Application (2014) *ICRAMAV-2014 (3 International Conference)*, pp. 175-180.

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-
- 3 Kawachi, K.
Unsteady wing characteristics at low Reynolds number
(2006) *WIT Transactions on State-Of-The-Art in Science and Engineering*, 4.

-
- 4 Polhamus, E.C.
(1966) *A Concept of the Vortex Lift of Sharp-Edge Delta Wings Based on a Leading-Edge-Suction Analogy*. Cited 183 times.

-
- 5 Ol, M.V.
(2010) *Unsteady Low Reynolds Number Aerodynamics for Micro Air Vehicles (Mavs)*. AIR FORCE RESEARCH LAB WRIGHT-PATTERSON AFB OH AIR VEHICLES DIRECTORATE. Cited 8 times.

-
- 6 Görtz, S.
(2005) *Realistic Simulations of Delta Wing Aerodynamics Using Novel CFD Methods*. Cited 7 times.
PhD diss., KTH

-
- 7 Sahana, D.S., Aabid, A.
CFD Analysis of Box Wing Configuration

-
- 8 Khan, S.A., Aabid, A., Baig, M.A.A.
CFD analysis of cd nozzle and effect of nozzle pressure ratio on pressure and velocity for suddenly expanded flows ([Open Access](#))

(2018) *International Journal of Mechanical and Production Engineering Research and Development*, 8 (3), pp. 1147-1158. Cited 10 times.
<http://www.tjprc.org/publishpapers/2-67-1529468467-119.IJMPERDJUN2018119.pdf>
doi: 10.24247/ijmperdjun2018119

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-
- 9 Singh, P.K., Tripathi, A.K., Er, S., Rana, K.
CFD Analysis for Supersonic Flow over a Wedge
(2017) *IJAR/IIE*, 3 (2), pp. 5645-5663. Cited 2 times.

-
- 10 Allan, M.
(2002) *A CFD Investigation of Wind Tunnel Interference on Delta Wing Aerodynamics*. Cited 11 times.
PhD diss., University of Glasgow