



Influence of the wavelength of cut-in sinusoidal trailing edge shape to the aerodynamics characteristic of airfoil

P Rattanasiri^{1,*}, and R Perrin^{2,3}

¹Department of Mechanical Engineering, Faculty of Engineering, Burapha University, Chon Buri, 20130, Thailand

²Department of Aeronautical Engineering, International Academy of Aviation Industry, King Mongkut's Institute of Technology Ladkrabang, Bangkok 10520, Thailand

³Department of Mechanical Engineering, Faculty of Engineering at Sriracha, Kasetsart University Sriracha Campus, Sriracha, Chonburi 20230, Thailand

* Corresponding Author: pareecha@eng.buu.ac.th

Abstract. The influence of the cut-in sinusoidal trailing edge shape with different wavelengths on the aerodynamics characteristic has been parametrically investigated by numerical unsteady RANS simulation, open-source code; Code_Saturne. The results were compared with the benchmark baseline and blunt profile trailing edge shape. The geometry of NACA0012, NACA4412 and NACA4415 airfoil with a small modification to obtain a zero thickness trailing edge is selected as a baseline profile. The blunt trailing edge is a cut-offs at the trailing edge for 10% of the chord. Three wavelengths of sinusoidal trailing edge shape at 0.25c, 0.50c and 0.75c with 0.05c amplitude are selected, where c is the airfoil chord length. The flow is studied at high Reynolds numbers (Re) 10^6 for angle of attack 5 degree. The results show the change in lift and drag characteristics with changing of NACA profiles and the modified trailing edges.

Keywords: airfoil, NACA, sinusoidal trailing edge, RANS