Abstract

Surface modification on NACA 4415 airfoil has been done by utilizing inward dimple and outward dimple at location 50% chord length from the leading edge. The semi-sphere shape dimple was used to investigate the performance of aerodynamic efficiency when the angle of attack increase which produced wake formation due to boundary layer separation. The semi-sphere dimple was set 5mm in diameter, 3mm for depth (inward dimple) and height (outward dimple) with distance 5mm each. The angle of attack was set at 0 deg till 20 deg with 2deg increments at velocity 5.6m/s corresponds to Reynolds number 50 000. The investigation from the calibrated wind tunnel shows that the inward dimpleis more effective in lift enhancement and drag reduction compared to outward dimple and baseline. From the investigation, it also shows that the aerodynamic efficiency for inward dimple is effectively increased CL and reduces CD compared to outward dimple and baseline. © 2020 SERSC.