

عنوان مقاله:

Passive Flow Control over an Airfoil by Control Rod at Low Reynolds Number

محل انتشار:

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خلاصه مقاله:

In the present study, the flow control mechanism of SDY062 airfoil by a rod illustrated using Particle image velocimetry (PIV) technique at pre-stall angles of attack at Reynolds number of $Re = 30000$. The rod was installed on the suction surface of the airfoil at different chordwise locations. Diameter of the rod was normalized with the chord length of the airfoil and three diameter ratios ($d / c = 0.017, 0.033$ and 0.044) were examined at angles of attack of $\alpha = 6^\circ, 8^\circ$ and 10° . Formation of laminar separation bubble for the baseline airfoil and the effect of rod on the laminar separation bubble were investigated in detail. It is observed that the height of boundary layer was reduced up to 22% by proper rod location and diameter ratio. Moreover, the rod suppressed the unsteady vortices over the suction surface of airfoil significantly. Therefore, the peak magnitudes of turbulent statistics were also decreased up to 30% by the rod

کلمات کلیدی:

Airfoil, Control rod, Flow control, Low Reynolds Number flow

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