

## CFD Analysis of an Aft Sweep Wing in Subsonic Flow and Making Analogy with Roskam Methods

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**Abstract :** In this study, an aft sweep wing with specific characteristic feature was analysis with CFD method in Fluent software. In this analysis wings aerodynamic coefficient was calculated in different rake angle and wing lift curve slope to rake angle was achieved. Wing section was selected among NACA airfoils version 6. The sweep angle of wing is 15 degree, aspect ratio 8 and taper ratios 0.4. Designing and modeling this wing was done in CATIA software. This model was meshed in Gambit software and its three dimensional analysis was done in Fluent software. CFD methods used here were based on pressure base algorithm. SIMPLE technique was used for solving Navier-Stokes equation and Spalart-Allmaras model was utilized to simulate three dimensional wing in air. Roskam method is one of the common and most used methods for determining aerodynamics parameters in the field of airplane designing. In this study besides CFD analysis, an advanced aircraft analysis was used for calculating aerodynamic coefficient using Roskam method. The results of CFD were compared with measured data acquired from Roskam method and authenticity of relation was evaluated. The results and comparison showed that in linear region of lift curve there is a minor difference between aerodynamics parameter acquired from CFD to relation present by Roskam.

**Keywords :** aft sweep wing, CFD method, fluent, Roskam, Spalart-Allmaras model

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