

# DESIGN AND ANALYSIS OF COMPOUND WING AT WIG EFFECT

## ABSTRACT:

In this study, the aerodynamic characteristics of a new compound wing was investigated during ground effect. The compound wing is divided into three parts with a rectangular wing in the middle and two reverse taper wings with Anhedral angle at the sides. . For this, NACA 6409 airfoil is selected for the design of wing section. The three dimensional wing with computational fluid dynamic (CFD) was used for computational purpose, k- $\epsilon$  turbulence model was used for the analyses of flow over the wing surface, an aspect ratio of 1.5 at 2° angle of attack with different ground distance. Comparison of the aerodynamic coefficients of the compound wing and the rectangular wing is carried out which had an acceptable increase in its lift coefficient at small ground clearances. The compound Anhedral wing is fitted with trailing edge flap and their aerodynamic properties are computed and compared with the properties of compound Anhedral wing.

## KEYWORD:

Wing ship, Anhedral angle, Rectangular wing, Compound wing, Aerodynamic coefficient, computational fluid dynamics (CFD), Ground effect (WIG), Angle of Attack, Linus Romey.

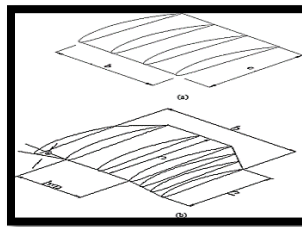


Figure: 1

Rectangular wing

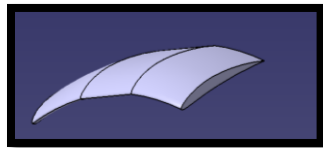


Figure:2

Compound Anhedral wing without flap

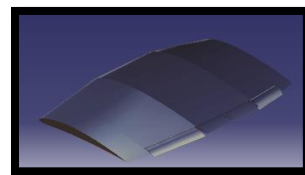


Figure:3

Compounded Anhedral wing with flap