

Case study on aerodynamics stability of bixel wing-in-ground effect craft

ABSTRACT

Wing-in-ground effect (WIG) crafts fly efficiently by exploiting the ground effect i.e. generating a notable rise in the lift-over-drag ratio when a three-dimensional wing approaches a large flat plane either water or ground surface. A successful WIG craft will create another mode of transportation categorise in between commercial airplanes and marine vessels. Hence, this paper presents a case study of Bixel Wing-In-Ground-Effect aerodynamic (Bixel WIG). The initial task is to simulate Bixel WIG aerodynamic using XFLR5 software. The craft configuration is a double wing flat aerofoil wave rider design with aspect ratio variation from 0.25 to 0.5 as in USA PATENT #5105898 C.BIXEL. Based on the result of the simulation, the design of the six seater double wing Bixel WIG is proposed. The design is benchmarked against Lippisch RHB X-114 and UH-18 SPW.

Keyword: Wing-in-ground-effect; WIGE craft; Aerodynamics; Bixel; Hoverwing