Computational Fluids Dynamics (CFD) Analysis of UiTM Blended Wing Body (BWB) Baseline-II UAV Model without Canard at Similar Reynolds and Mach Numbers with Wind Tunnel Test.

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"I declare that this thesis is the result of my own work except the ideas and summaries which I have clarified their sources. This thesis has nit been accepted for any degree and is not concurrently submitted in candidature of any degree"

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ABSTRACT

In this project paper, the aerodynamics analysis using Computational Fluid Dynamics (CFD) has been employed for Blended Wing Body (BWB) Baseline-II UAV Model without Canard at similar Reynolds and Mach numbers with wind Tunnel Test. The project was carrying out at 0.1 Mach number which is consider at low subsonic flow. The surface drawing of BWB is modified using CATIA software to get the required body of BWB. After that, the drawing is converted to IGES format before be imported from STARCCM software. Then, the BWB models are meshed with appropriate size functions. Steady-state, ideal gas, three-dimensional CFD calculations were made for the BWB model using the standard one-equation turbulence model, spalart-allmaras. Aerodynamics characteristics such as lift coefficient drag coefficient and pitching moment coefficient and pressure contours were completed at various angles of attack without canard. Subsequently, the graphs are plotted using the data obtained from the simulations. The results achieved are important in term of the stability for BWB's control system.

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