CFD analysis of concept design 500kg drone with ducts using 3D experience

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Abstract
An unmanned aerial vehicle(UAV) or unscrewed aerial vehicle commonly knownas a drone.DRONE denoted as Dynamic Remotely Operated Navigation Equipment.Drone is an aircraft that is not operated by a pilot on board.Drone includes a UAV , aground-based controller and a system of communications between the two.Drone use rotors for propulsion and control. The simulation shows a very stable operation and control of the developed Drone.For this purpose, we importing the model in 3D experience software and giving the velocity from 80km/hr to 500km/hr in each interval of 10km/hr through CFD analysis using 3D experience.

Key points

UAV, Analysis of Drone,LBM,CFD, Lift force, Drag force

INTRODUCTION

Computational fluid dynamics (CFD) based on the Lattice – Boltzmann Method (LBM) has the potentiality to make it possible for all people to understand this application of CFD, allowing more engineers of varying skills and experience to start applying CFD even to complicated aircraft designs in dynamic flight [1].
Nowadays unmanned aerial vehicles (uavs) are plays an important part in both military and space.Advantages of substitute for vehicles are they protecting human life from multiple dangerous environments[2].

Currently unmanned flying vehicle market represented by military applications,and this industrial sector is growing strongly. It is becoming common vehicles that can be used in many places with many designs and features & it is developing technology[3].

Drone is an aircraft that is not operated by a pilot on board,it is also known as remotely operated aircraft[4].

After first flight of wright Brothers' , aerial vechlies have been improved speedily,because aerial vehicles are difficult to design,due to low efficiency & high cost[5].
The unmanned aerial vehicles(UAVS) also known as drones are also use for agriculture for critical problem faced by agriculture in terms of acces to actionable real-time quality data[6].

For both commercial & military uav exports,motivate the export of uav services by allowing recipients to receive the benefits of category[7].
A large-scale aircraft design process is iterative and follows a certain methodology.It requires highly creative thinking and compromise between the variousdesign parameters and eventually optimization[8].

The capacity of drone to fly at elevation is indirectly related to maximum range requiremt since earth curvature influences LOS(line of sight) distance[9].
Eren Turanoguz has studied aircraft design is an engineering technique that is considering balance betweendefined specifications,aspects and requirments.Aerodynamics structures,weight , production, cost, stability, control are the main requirement in aircraft design process [10].
Wang et al. have studied the method of numerical simulation of fluid dynamic to calculate numerically the 3D flow field around the uav & propeller engine[11].

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