NUMERICAL ANALYSIS OF DRAG AND LIFT FORCES ACTING ON LONG RANGE PROJECTILES

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ABSTRACT

Projectiles play an important role in modern time ammunition and the development of an efficient projectile is very important. The design parameters of a projectile depend on the drag and lift force acting on the projectile. Therefore, a detail simulation is required to understand the projectile performance against the wind. In this article, an numerical investigation of long-range projectiles under different wind conditions is carried out. Three different sizes of projectiles model are used in this Study (105 mm, 122 mm, and 130 mm). The simulation was done using simulation software packages changing the Angle of Attack (AOA, 30°, 35°, 40°, 45°, and 50°) keeping wind velocity and geometry the same. The drag and lift coefficients were obtained from the measured pressure and a projected area of the projectiles. The wind flow effect on the projectiles is also analysed by Ansys. The simulation result shows that the size of the projectile is an important factor that is related with the drag force.

Keywords: Projectile, long range, CFD, Drag Force, Lift Force.