

WING AERODYNAMIC OPTIMIZATION IN THE PRESENCE OF INTERACTING CANARD AT SUBSONIC AND SUPERSONIC SPEEDS

S.C. Gupta
Professor and Head
Department of Aeronautical Engineering
MVJ College of Engineering, Kadugodi Post, Near ITPL
Bangalore-560 067, India
Email : hod_aero@mvjce.edu.in; satish_chander_gupta@yahoo.co.in

Abstract

Effort is made to minimize the drag subject to lift constraint. The wing and canard interacting planform is considered to study the effect of canard presence towards optimization of wing. The aerodynamic efficiency of optimized wing is worked out for off-design values of angles of attack and compared with the wing alone case. Subsonic and supersonic flow conditions are handled through panel methods. Results are presented for wing alone and canard-wing combination for subsonic and supersonic flows. Substantial drag reduction is seen possible for subsonic Mach numbers. The off-design aerodynamic efficiency of canard-wing combination is seen to be superior as compared to wing alone case. The program is executed on a 2.4 GHz laptop using gfortran compiler that is built in the fedora operating system. Fedora12 double precision 64 bit is used for this work. Alternatively, Ubuntu operating system can also be utilized. Fedora and Ubuntu both are Linux based.

Paper Code : V68 N4/920-2016.