

A RECONSTRUCTIVE APPROACH FOR DESIGN OF 3-D LOW DRAG PLANAR WINGS

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

Abstract

Design of a low induced drag wing results in it twist. Such a wing posses manufacturing difficulties and its profile drag is high. Here a planar 3-D design is worked out through a reconstructive approach. Wing for transport airplane role is considered. First a twisted wing is generated for minimum induced drag. Then the washout at root is used to off- load the angleof- attack. Thereafter from the resulting 3-D camber an aerofoil is searched that can be commonly used across the span. Search for related angle-of-attack is made those results in minimum drag. The whole process is reconstructive in approach. Results obtained are very encouraging and are application oriented. Camber thus generated is superimposed with thickness to check for the presence of transonic effects.