

WIND TUNNEL TESTING OF AEROSPACE STRUCTURES

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Abstract

National trisonic aerodynamic facilities (NTAF) comprising 0.6m and 1.2 m tunnels at NAL are unique facilities in the country for high speed wind tunnel testing of models of national aerospace structures. The 1.2m tunnel with a test section size of 1.2 m x 1.2 m having a wide range of capability simulating Mach number ranging from 0.2 to 4.0 with angle of attack varying from -12 deg to 24 deg is used for aerodynamic data generation in addition to visualizing the flowfield features using optical and surface flow visualization techniques. During the course of operation of the facility over a period of four decades, test facilities were augmented to improve flow quality and productivity to meet the increasing demands. Special test techniques were also developed to meet new test requirements relevant to national aerospace programmes.

Details of wind tunnel test facilities with augmented capabilities, standard and special test techniques will be described in the presentation. Typical results of our recent studies will also be presented covering test objectives and illustrating high quality of data generated.