

Numerical and Experimental Investigations of Cantilever Rectangular Plate Structure on Subsonic Flutter

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Abstract : In this study, flutter characteristics of cantilever rectangular plate structure under incompressible flow regime are investigated by comparing the results of commercial flutter analysis program ZAERO^{©} with wind tunnel tests conducted in Ankara Wind Tunnel (ART). A rectangular polycarbonate (PC) plate, 5x125x1000 mm in dimensions, is used for both numerical and experimental investigations. Analysis and test results are very compatible with each other. A comparison between two different solution methods (*g* and *k-method*) of ZAERO^{©} is also done. It is seen that, *k-method* gives closer result than the other one. However, *g-method* results are on conservative side and it is better to use conservative results namely *g-method* results. Even if the modal analysis results are used for the flutter analysis for this simple structure, a modal test should be conducted in order to validate the modal analysis results to have accurate flutter analysis results for more complicated structures.

Keywords : flutter, plate, subsonic flow, wind tunnel

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