

Abstract Submitted  
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**Control of Flow Structure on Low Swept Delta Wing with Steady Leading Edge Blowing**<sup>1</sup> ILHAN OZTURK, Middle East Technical University (METU), MOHAMMADREZA ZHARFA, MEHMET METIN YAVUZ, Middle East Technical University — Interest in unmanned combat air vehicles (UCAVs) and micro air vehicles (MAVs) has stimulated investigation of the flow structure, as well as its control, on delta wings having low and moderate values of sweep angle. In the present study, the flow structure is characterized on a delta wing of low sweep 35-degree angle, which is subjected to steady leading edge blowing. The techniques of laser illuminated smoke visualization, laser Doppler anemometry (LDA), and surface pressure measurements are employed to investigate the steady and unsteady nature of the flow structure on delta wing, in relation to the dimensionless magnitude of the blowing coefficient. Using statistics and spectral analysis, unsteadiness of the flow structure is studied in detail. Different injection locations are utilized to apply different blowing patterns in order to identify the most efficient control, which provides the upmost change in the flow structure with the minimum energy input. The study aims to find the optimum flow control strategy to delay or to prevent the stall and possibly to reduce the buffeting on the wing surface. Since the blowing set-up is computer controlled, the unsteady blowing patterns compared to the present steady blowing patterns will be studied next.

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