

Abstract Submitted
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Optimum design of vortex generator elements using Kriging surrogate modelling and genetic algorithm RITHWIK NEELAKANTAN, RAMAN BALU, ABHINAV SAJI, Ace College of Engineering — Vortex Generators (VGs) are small angled plates located in a span wise fashion aft of the leading edge of an aircraft wing. They control airflow over the upper surface of the wing by creating vortices which energise the boundary layer. The parameters considered for the optimisation study of the VGs are its height, orientation angle and location along the chord in a low subsonic flow over a NACA0012 airfoil. The objective function to be maximised is the L/D ratio of the airfoil. The design data are generated using the commercially available ANSYS FLUENT software and are modelled using a Kriging based interpolator. This surrogate model is used along with a Generic Algorithm software to arrive at the optimum shape of the VGs. The results of this study will be confirmed with actual wind tunnel tests on scaled models.

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