

Abstract

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Aerodynamic Drag Reduction by Vortex Generators for Sedan Cars

To save energy and to protect the global environment, fuel consumption reduction is primary concern of automotive development. One of the main causes of aerodynamic drag for Sedan vehicles is the separation of flow near the vehicle's rear end. To delay flow separation, bump-shaped vortex generators are tested for application to the back end of a sedan. The main purpose of the present work is to investigate the effect of vortex generators on the drag coefficient for the modern road vehicles at different velocities. Computational Fluid Dynamics (CFD) code FLUENT was used to evaluate the flow distribution around Sedan model. For this purpose we choose one sedan car model (Fabia) which is common in Egyptian market. The CFD results obtained were also used to evaluate the drag coefficient by calculating the force acting on the body. The results obtained indicate that CFD flow simulation is a useful tool for providing predictions of pressure distribution and forces exerted on the vehicle components.