

## **AERODYNAMIC ANALYSIS OF PERSONAL VEHICLE SIDE MIRROR**

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### **Abstract**

Side mirrors are important parts of a vehicle to aid the driver in order to view behind and the side of the vehicle to assess traffic conditions. However, side mirrors contribute to increase aerodynamic drag of the vehicle due to the increased frontal area. The objective of this study is to calculate the aerodynamic drag of side mirrors using numerical methods. Statistical data is gathered regarding the dimensions of side mirrors from different vehicles. This data is used to find the averages such as the size of the mirrors compared to the car, the side mirrors angle and the streamline factor of the side mirror. A 2011 Perodua Myvi is used for CFD simulation with and without side mirrors. By comparing the two configurations, the effect of the side mirrors on the total drag coefficient of the car can be studied. Results from this study are that side mirrors contribute between 2%-5% increase to the total drag of a car. This study also aims to analyse the impact of the drag in terms of fuel consumption and cost. Current calculations for the Myvi find that removing the side mirrors can save a maximum of RM 96 a year at 100 km/h.

Keywords: Automobile, CFD, Drag, Fuel consumption, Side mirrors.