EFFECT OF NACA 0010 AIRFOIL CAR SPOILER TOWARDS DOWNFORCE AND DRAG FORCE

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MUHAMMAD AZRAAI BIN AHMAD FISAL(2010207008)
FACULTY OF ELECTRICAL ENGINEERING
UNIVERSITY TECHNOLOGY MARA
MALAYSIA

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ABSTRACT

This paper presents the analysis of downforce and drag force theory of a spoiler in MATLAB and DesignFOIL software. The observed car spoiler characteristic is an airfoil shape of NACA 0010 airfoil spoiler, 1.65m wingspan and 0.25m chord length. The analysis is tested by varies the speed of the vehicle and the angle of attack of the spoiler toward the air incident on the spoiler. The results obtained from the analysis were recorded in table and plotted on graph. Conceptual assumptions were verified as the down force increase to eliminate lift of the car, the drag is also increase that obeys the basic function of a spoiler.

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Nowadays, automobile become faster and faster, it was notice that the vehicle experienced an uplift force at higher speeds. As a car moves at higher speed through the air, the air flow is split and passes above and below the car. The split air flow creates a pressure different since the air above the car move in higher velocity than the air below the car. The higher velocity of air above the car experience lower pressure and the lower velocity of air under the car experience high pressure. Therefor the car experience uplift force from the ground and the stability of the car become lesser.

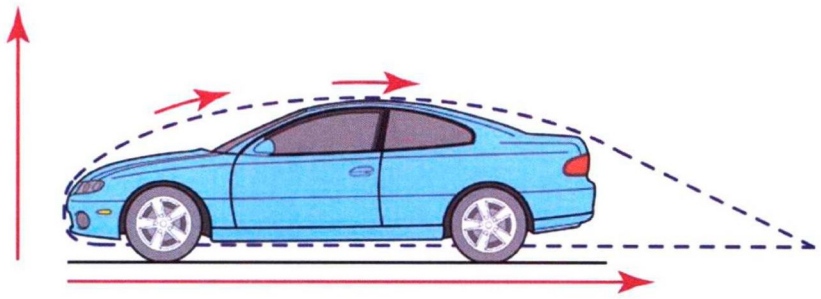

Figure 1. Aerodynamic of car