CALIFORNIA STATE SCIENCE FAIR
2016 PROJECT SUMMARY

Name(s)
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Project Number
36430

Project Title
Need for Speed: A Study of Drag Reduction Methods in Vehicles

Abstract

Objectives/Goals
The objective of this study is to reduce drag in vehicles via the use of various aerodynamic attributes.

Methods/Materials
Fabricated wind-tunnel, test vehicle, scale, shop vacuum, stopwatch, rope, pulley. Tested vehicle in wind tunnel connected to scale via rope and pulley. Measured differences in vehicle drag corresponding to different aerodynamic attributes.

Results
Applied wind caused the vehicle to pull on the scale. The scale reading for each aerodynamic attribute indicated varying negative readings. The attribute with the smallest average scale reading was the top cover with .77 ounces.

Conclusions/Discussion
The best of the four tests was the top cover with an improvement of 42% over the stock body. I believe this was because the attribute made the car more aerodynamic by reducing turbulence and converting it into a wing shape with airfoil characteristics. The body shape improved the car#s aerodynamic efficiency, and likely improved fuel efficiency.

Summary Statement
Using a wind-tunnel to test various aerodynamic attributes on a vehicle, I was able to identify one attribute that reduced drag by 42% over the stock body.

Help Received
I ran the experiments and and completed the project by myself. My dad helped me set up the wind tunnel.