

Optimization of Aerodynamic Aids for Autocross Racing :

◆ Project Definition:

Autocross is a fun, yet competitive, driver education event where participants navigate a course, or "track", as quickly as possible against the clock. To minimize lap-time, a competitor has the option to install aftermarket modifications on the automobile but additional modifications add "points" to the stock designation of the automobile, and cause it to compete in classes for vehicles with the same theoretical modification level.

This project studies the aerodynamic aids for the use of autocross racing for Chris Cassidy's 1972 Porsche 914, to ultimately determine whether their use positively affects performance enough to justify their "point" penalties. Point penalties are engine, suspension, and aerodynamic modifications.



◆ Project Objectives:

The primary deliverables for this project:

1.) SolidWorks Car Model and FloWorks Analysis - To analyze the Porsche 914 using a SolidWorks model, the COSMOS FloWorks program is used for flow analysis on the car model. COSMOS FloWorks is a program, which provides a visualization of flow of different velocities through some object, surface or body.

2.) Water Channel Visualization - An 18:1 scale model of a Porsche 914 will be horizontally mounted in the water channel. Operate the water channel at the maximum speed of 2m/s. Inject dye into test section and record visualization using digital camera.

