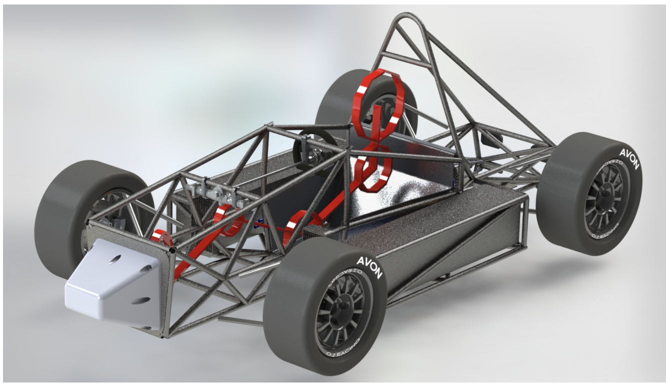
AERODYNAMIC DESIGN REAR WING



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Abstract

Race cars wooo! Formula studee3333nt

Contents

1

Introduction

Drag, lift and side force. Those are the three cornerstones to vehicle aerodynamics, which dictate how a car acts. Inverted wings serves as perfect agents to create negative lift, also known as downforce.

- Initial thought would be to reduce drag in order for the car to move as smoothly as possible. [1]
- Downforce increases tires' cornering and acceleration abilities. Higher downforce gives better grip.
- Downforce is like having extra weight pressing down on the wheels without the extra weight penalty. The Hannah Montana deal.

1.1 Motivation

- Why are we designing this to begin with

1.2 Design Philosophy

- what are we designing for? low weight, high downforce. drag a bit neglegible due to high power motors.

1.3 Design restrictions

2

Theory

2.1 Aerodynamics

2.2 Vehicle Performance

2.2.1 Improvements in Top Speed

2.2.2 Cornering performance

2.2.3 Load Distribution

3

Simulation

3.1 Star-CCM+

3.2 Finite volume method

3.3 Mesh generation

3.4 The Wing

3.4.1 Multi-Element Wing Optimization

Wing was moved around to optimize lift. Here's the results changing the variables.

3.5 The Aerodynamics Package

3.5.1 Undertray, Diffuser, Front Wing and Driver

3.5.2 Everything together now

3.6 Results

4

Construction

4.1 Requirements

FiXme Note: Hvad kræves af styrke fra konkurrencens side? Hvad ønsker holdet?

FiXme Note: Overvej CES (for flair jo)

4.2 Prototyping

4.3 Material Selection

4.4 Molds

4.5 Assembly

4.6 Finish

5

Experiment

5.1 Equipment

5.2 Experimental Procedure

5.3 Results

6

Discussion

7

Conclusion

bla

Perspective

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