

Darrian-MCR GT (Aerodynamics)

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Introduction

The aim of this project is to create a Darrian/MCR GT race car. This will be done by taking an existing MCR Sports2000 prototype chassis and modifying it for a different championship and allowing Darrian bodywork to be fitted.

Within the Sports/Saloon Championship regulations, there is scope for aerodynamic developments. In order for initial developments, a series of validation studies needed to be performed.



(<http://www.uwtsd.ac.uk>, 2017)

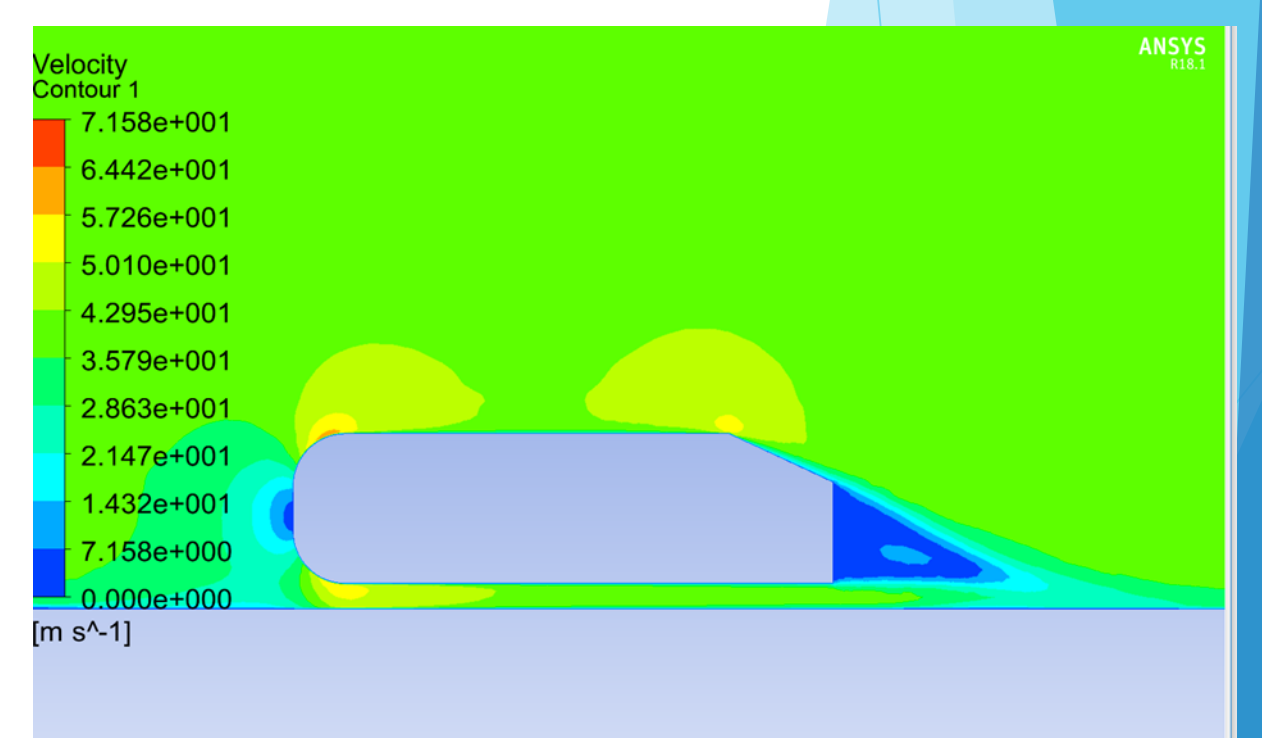
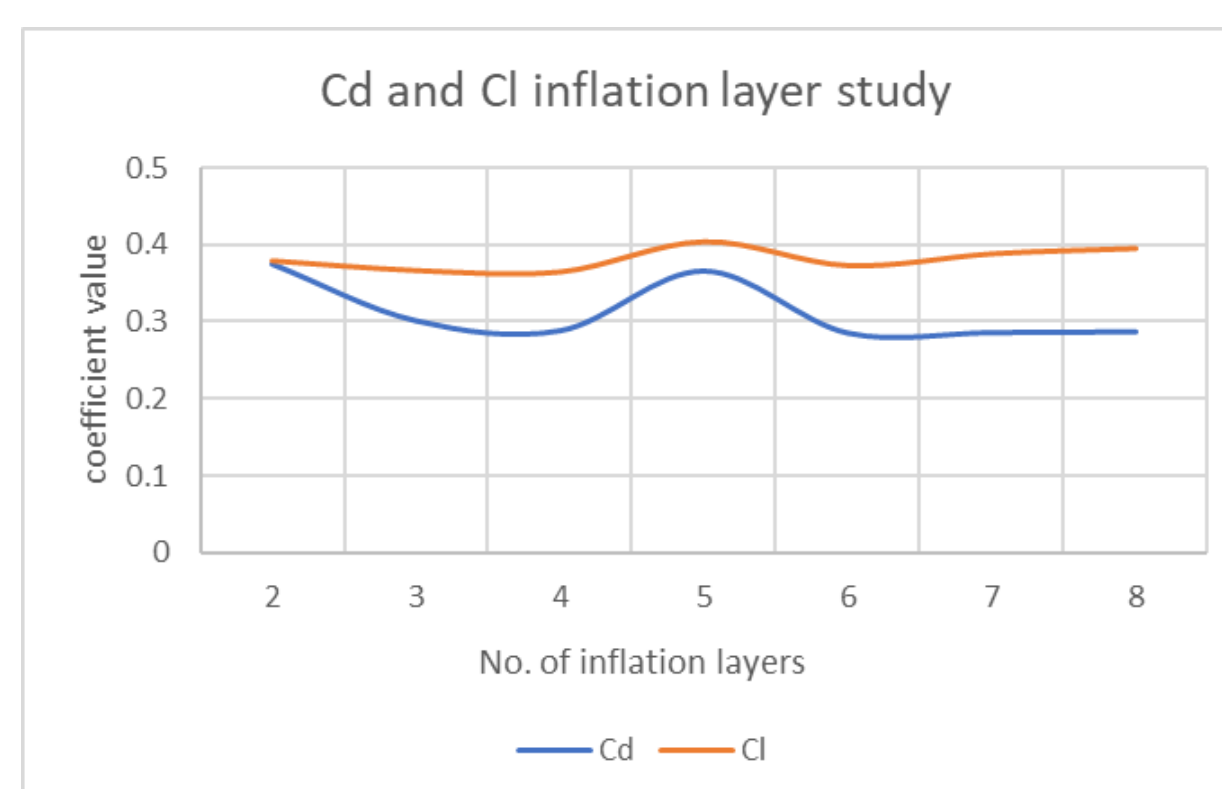
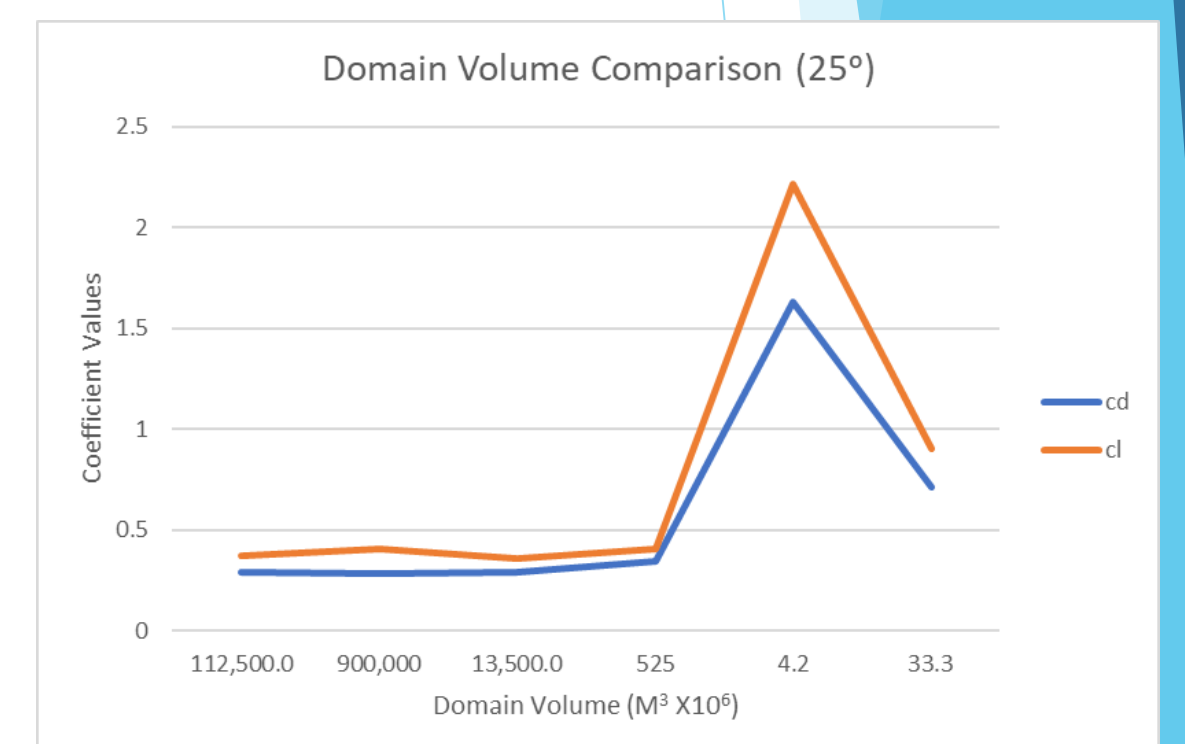
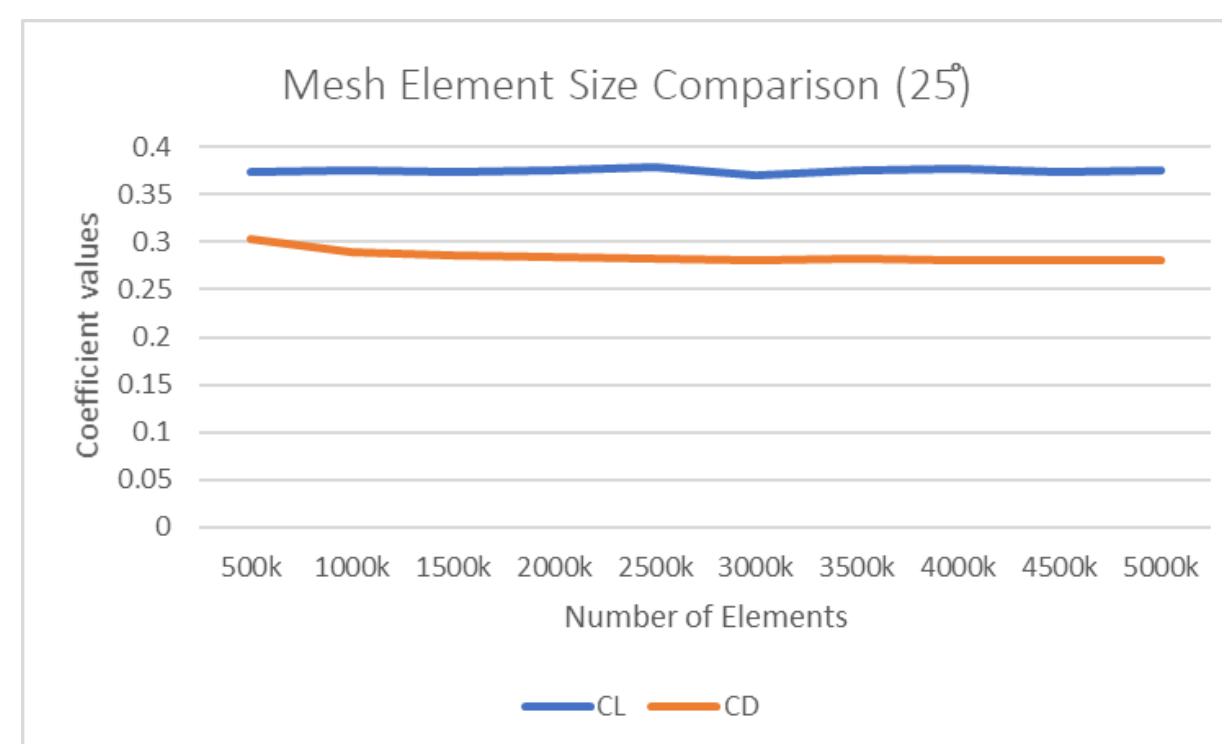
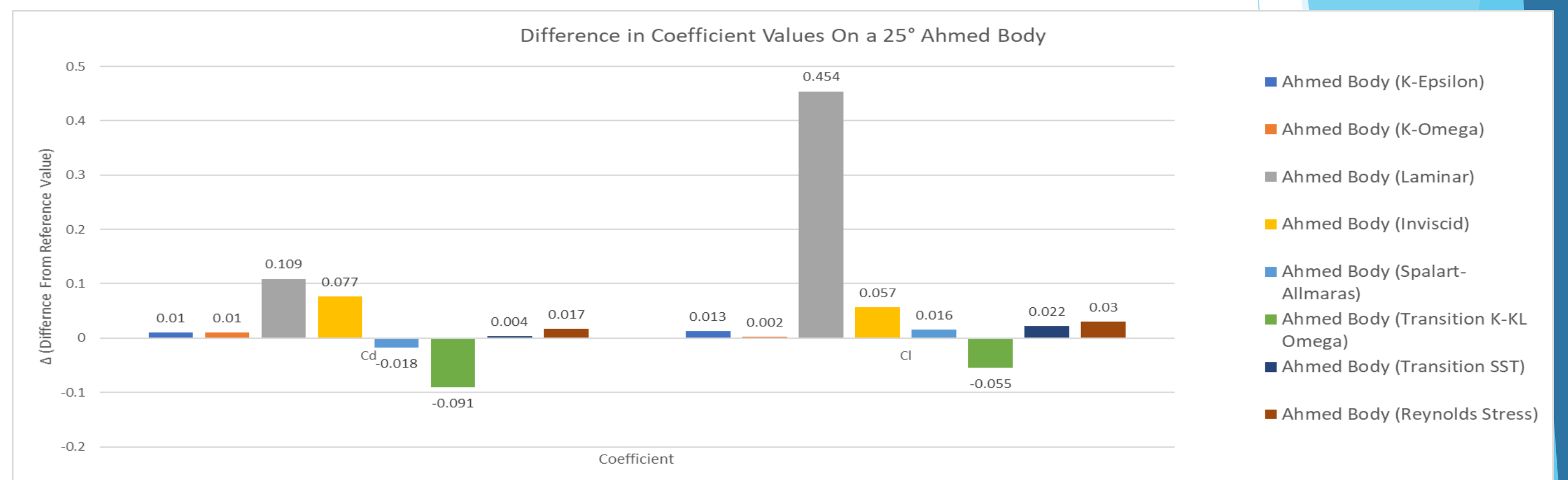
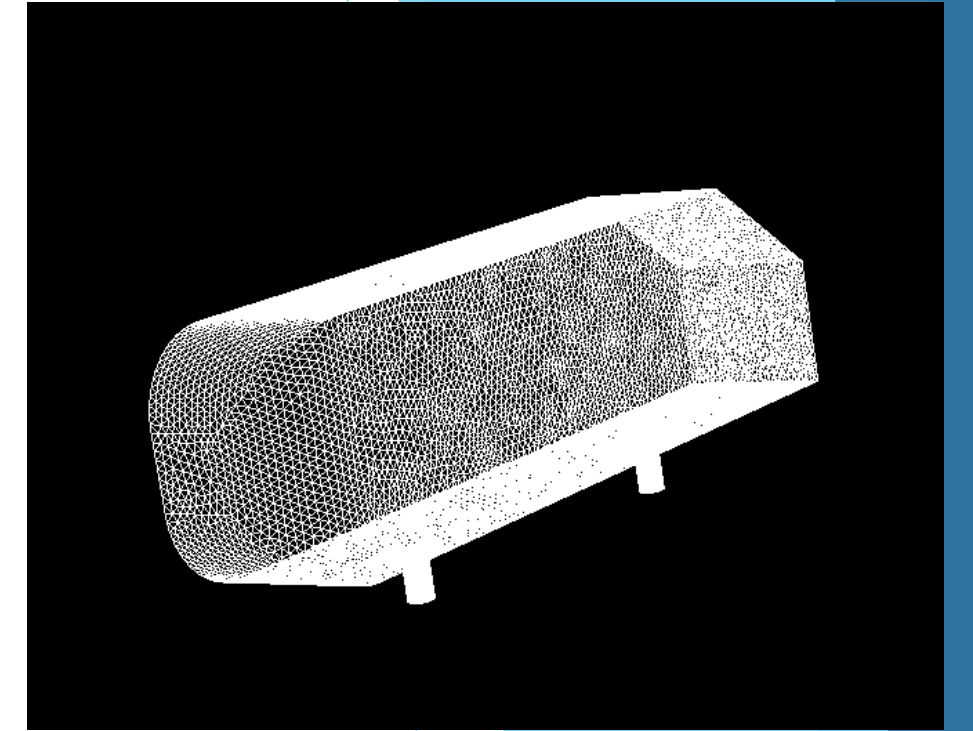


(<http://www.darrian.co.uk>, 2015)

Validation

A series of studies were conducted on the Ahmed Body to compare against known valid results which proves the methodology used.

The reasoning for this is to allow future calculations to be correct.

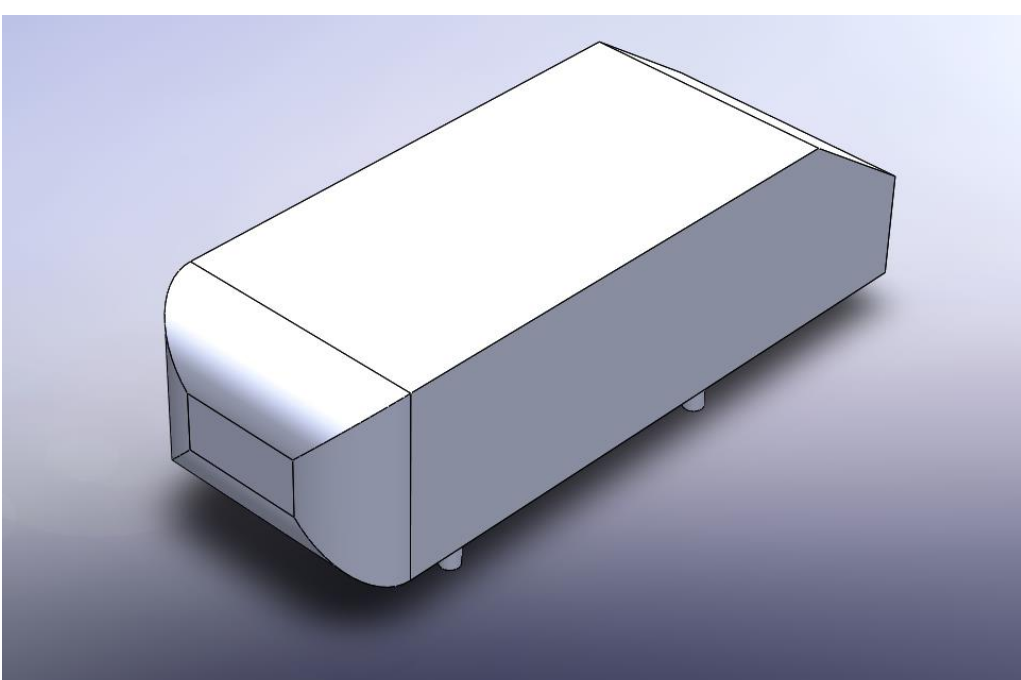


Ahmed Body Study

In 1984 the Ahmed body was developed by S. R. Ahmed. Using an Ahmed Body helps to visualise the flow characteristics of a basic car model.

Using an Ahmed body teaches:

- Domain sizing
- Creating a Boolean tool body
- Basic mesh element sizing
- Inflation layer development
- Model solving techniques
- Interpretation of results
- Validation of results



Areas of Development

As per the regulations, the Darrian Bodywork must retain the original cars silhouette. This limits overall bodywork modifications but we have identified the following free areas:

- Underbody/Diffuser
- Rear Wing
- Splitter
- Cooling
- Boot & Bonnet Area
- Anything below the centre point of the wheel hub.

References

- <http://www.darrian.co.uk>, 2015. The 2015 Darrian T90 GTR+. [Online] Available at: http://www.darrian.co.uk/2015_darrian_t90gtr.html [Accessed 2 11 2017].
- <http://www.uwtsd.ac.uk>, 2017. Automotive, Motorcycle and Motorsport Engineering. [Online] Available at: <http://www.uwtsd.ac.uk/automotive-engineering/> [Accessed 2 11 2017].