2015

Florida Tech Drag Racing

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Special Thanks

Dr. Jensen
Dr. Reichard
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Pure Speed Racing
Nassau Driveshaft
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123 Lock and Key

Kondor Technologies Inc.

Project Description

This project seeks to design, engineer, and test a safe and reliable drag racing vehicle that is both innovative and unique from a Mechanical Engineering standpoint. Each team member was responsible for an individual component of the project, which is showcased below.

Engine Mounting Goals

- Design engine mounting plates capable of withstanding 700ft-lb of torque
- Minimum factor of safety (FOS) of 2.5

Engine Mounting Plates

- Aluminum 6061 T6 0.25” Thickness
- Minimum FOS = 2.7213

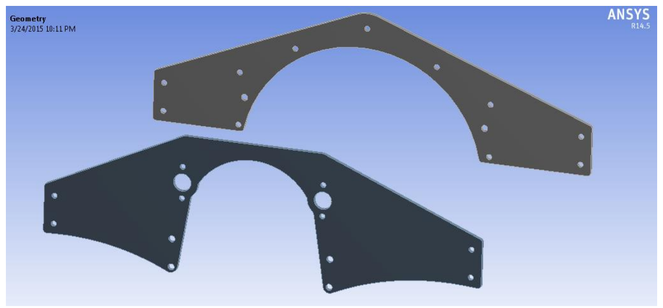


Figure: Motor Plate and Mid-Plate

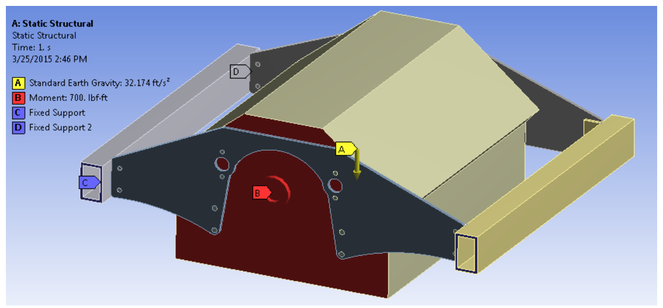


Figure: Motor Plate and Mid-Plate Analysis Setup

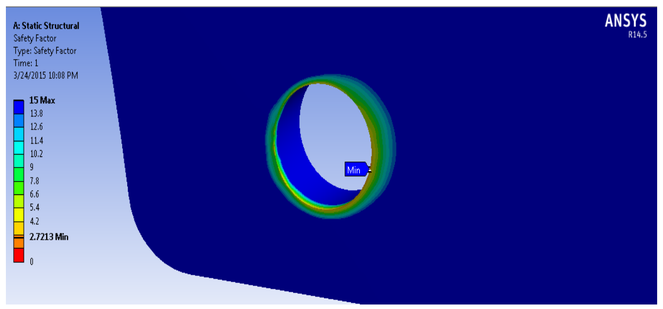


Figure: Motor Plate and Mid-Plate Analysis Results

Powertrain Goals

- Design a carburetor spacer that distributes air evenly to each cylinder with a standard deviation less than 0.400%
- Produce at least 600 horsepower and 550ft-lb torque

Engine Specifications

- Displacement: 476 cubic inches
- Compression Ratio: 13:1
- Fuel Octane Rating: 110
- Max Horsepower*: 728 @6500rpm
- Max Torque*: 665ft-lb @5000rpm

**estimated using computer dyno software*

Figure: Assembled Engine

Intake Spacer Design and Analysis

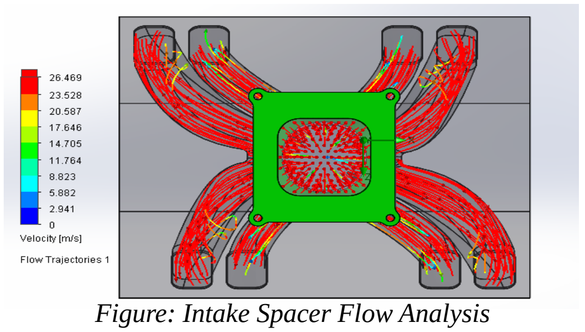
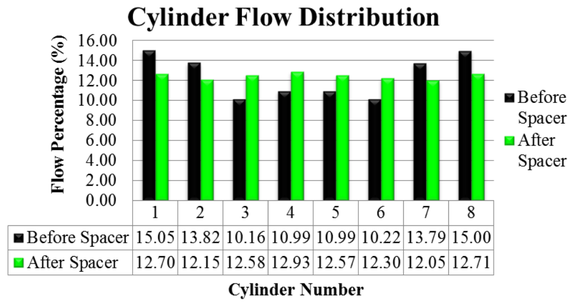


Figure: Intake Spacer Flow Analysis



	1	2	3	4	5	6	7	8
Before Spacer	15.05	13.82	10.16	10.99	10.99	10.22	13.79	15.00
After Spacer	12.70	12.15	12.58	12.93	12.57	12.30	12.05	12.71

Wheelie Bar System Goals

- Design a wheelie bar capable of supporting 3,000 lbs, preventing the worst case scenario, a roll over
- Minimum factor of safety (FOS) of 1.0

Wheelie Bar System

- Mild steel A36 0.25” Thickness
- Minimum FOS = 1.018

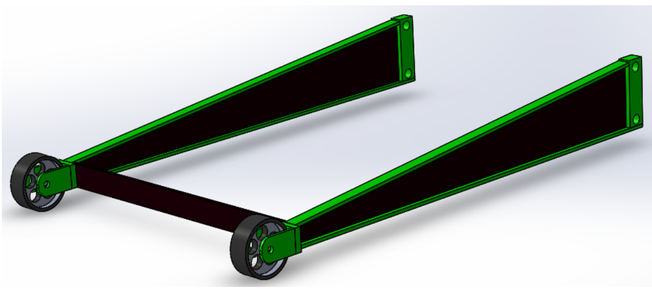


Figure: Wheelie Bar System

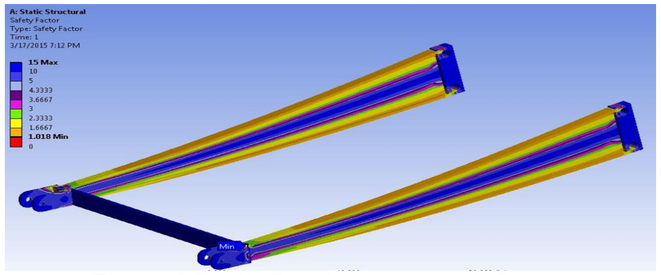
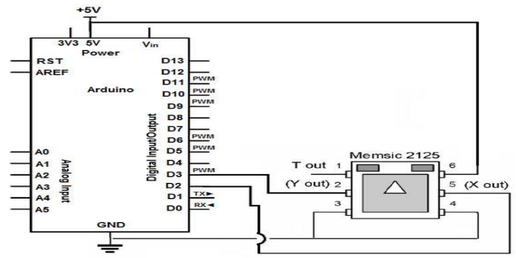


Figure: Wheelie Bar System Analysis Results

Autonomous Emergency Cutoff System

- Design an autonomous cutoff system that will eliminate power to the vehicle in the event of; a fire, an impact, or a throttle failure.



NORTHROP GRUMMAN

Engineering & Science Student Design Showcase at Florida Institute of Technology