Human Powered Vehicle Progress Report

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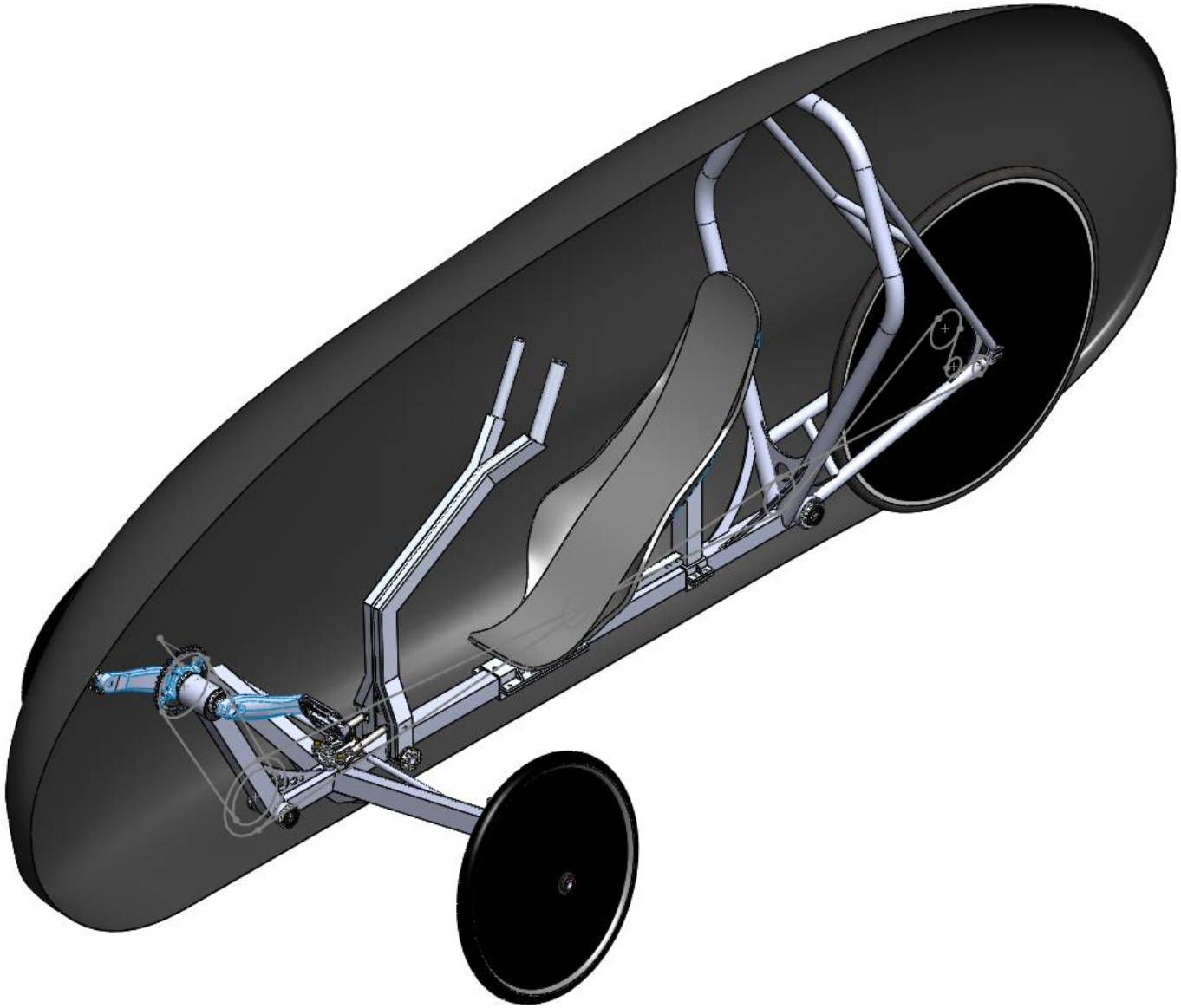
Overview

- Project Description
- Frame
- Steering
- Ergonomics
- Drivetrain
- Fairing
- Innovation
- Spring 2014 Gantt Chart
- Conclusion

Project Description

- ASME Human Powered Vehicle Challenge
- Clients- Perry Wood, ASME
- Objectives
  - High speeds
  - Maneuverability
  - Lightweight
- There is no current form of transportation that provides the benefits of bicycle commuting, while offering the practicality of automobiles.

Figure 1- Full Assembly With Fairing



Frame

- Modifications
  - Rear triangle
  - Gussets added
- Progress
  - Tubing cut
  - Gussets cut
  - Next step: Roll bar bending and welding

Figure 2- Gussets and Tubing

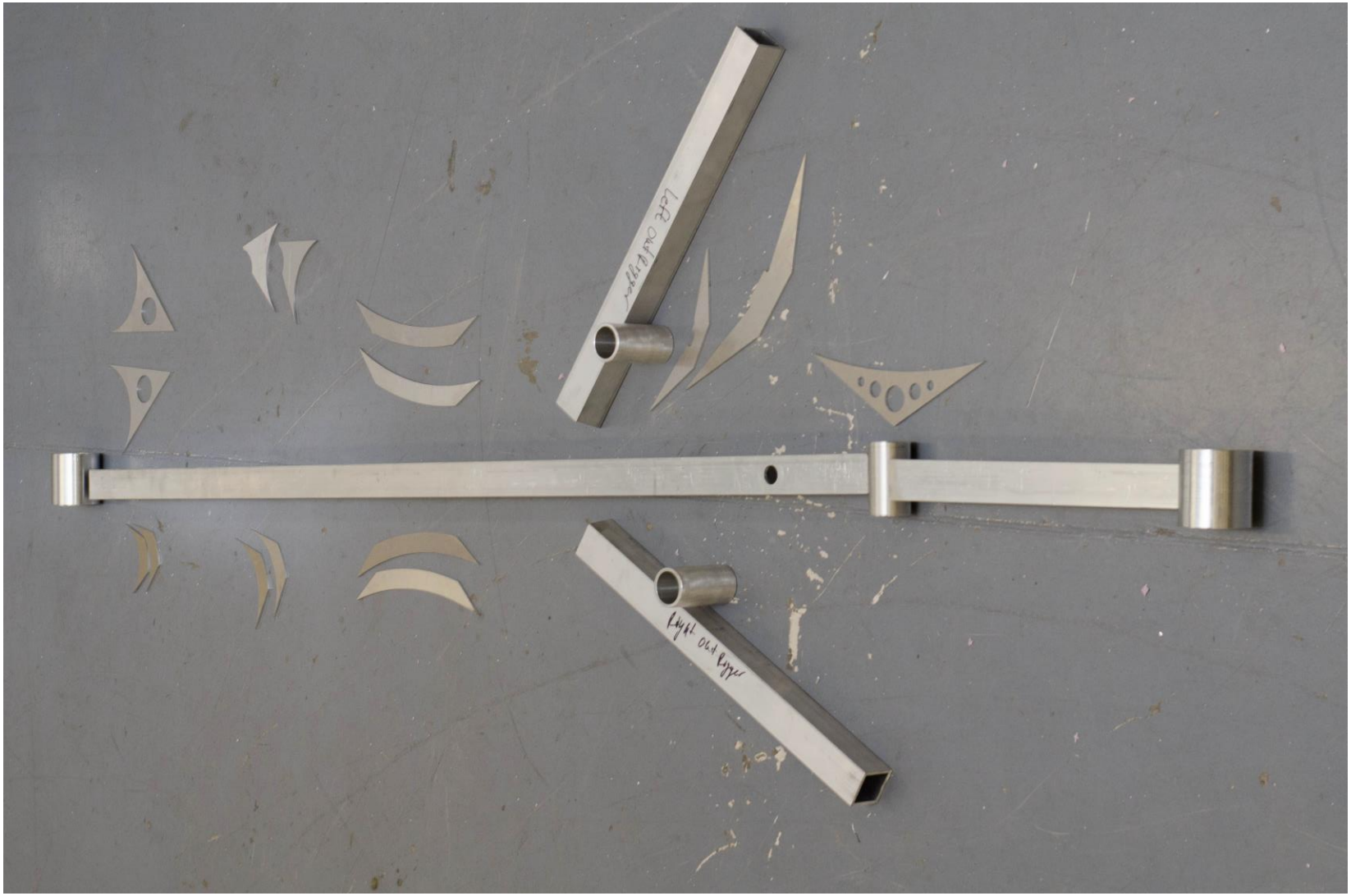


Figure 3- Frame With Modified Rear Triangle

Steering

- Modifications
  - Gussets added to steering arms
  - Bell crank – weight reduction
  - Steel inserts for second pair of knuckles
- Progress
  - All raw materials have arrived
  - Manufacturing has begun
  - Several components completed

Figure 4- Steering Arms Before and After

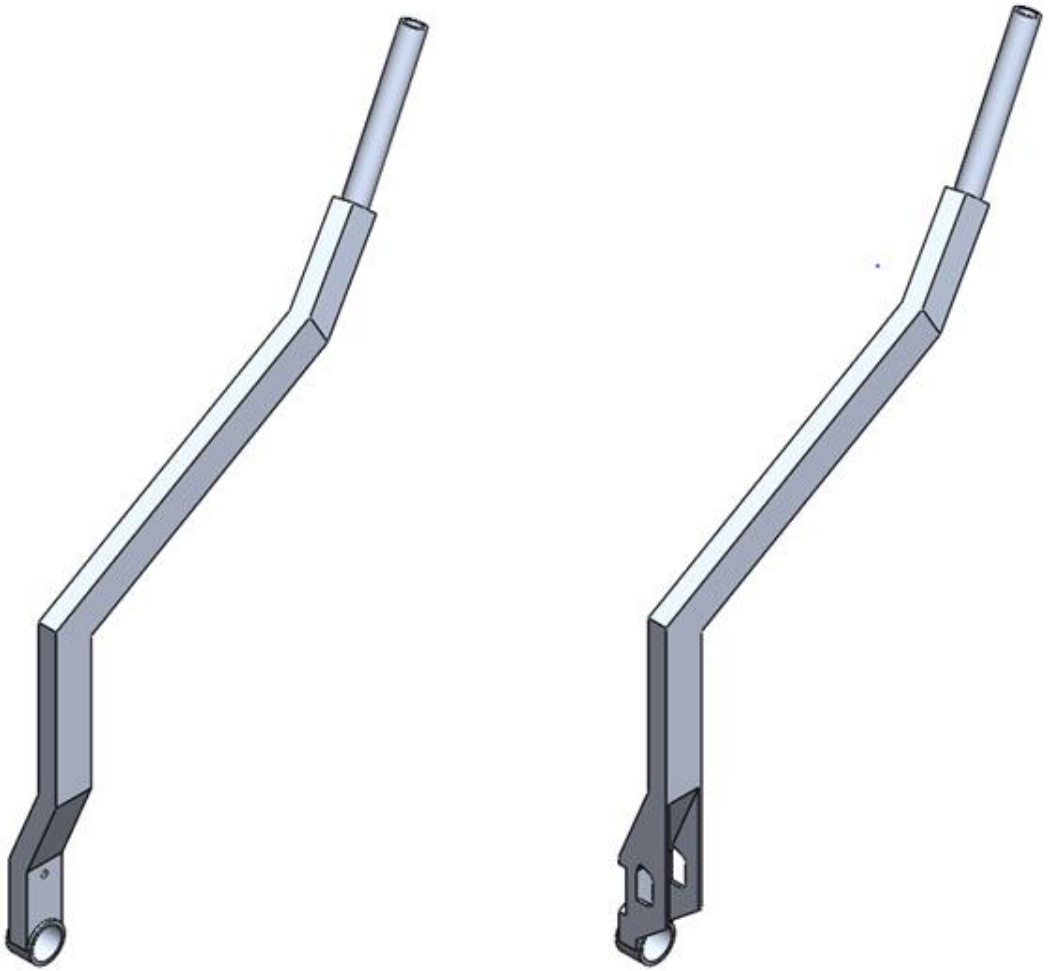


Figure 5- Bell Cranks Before and After

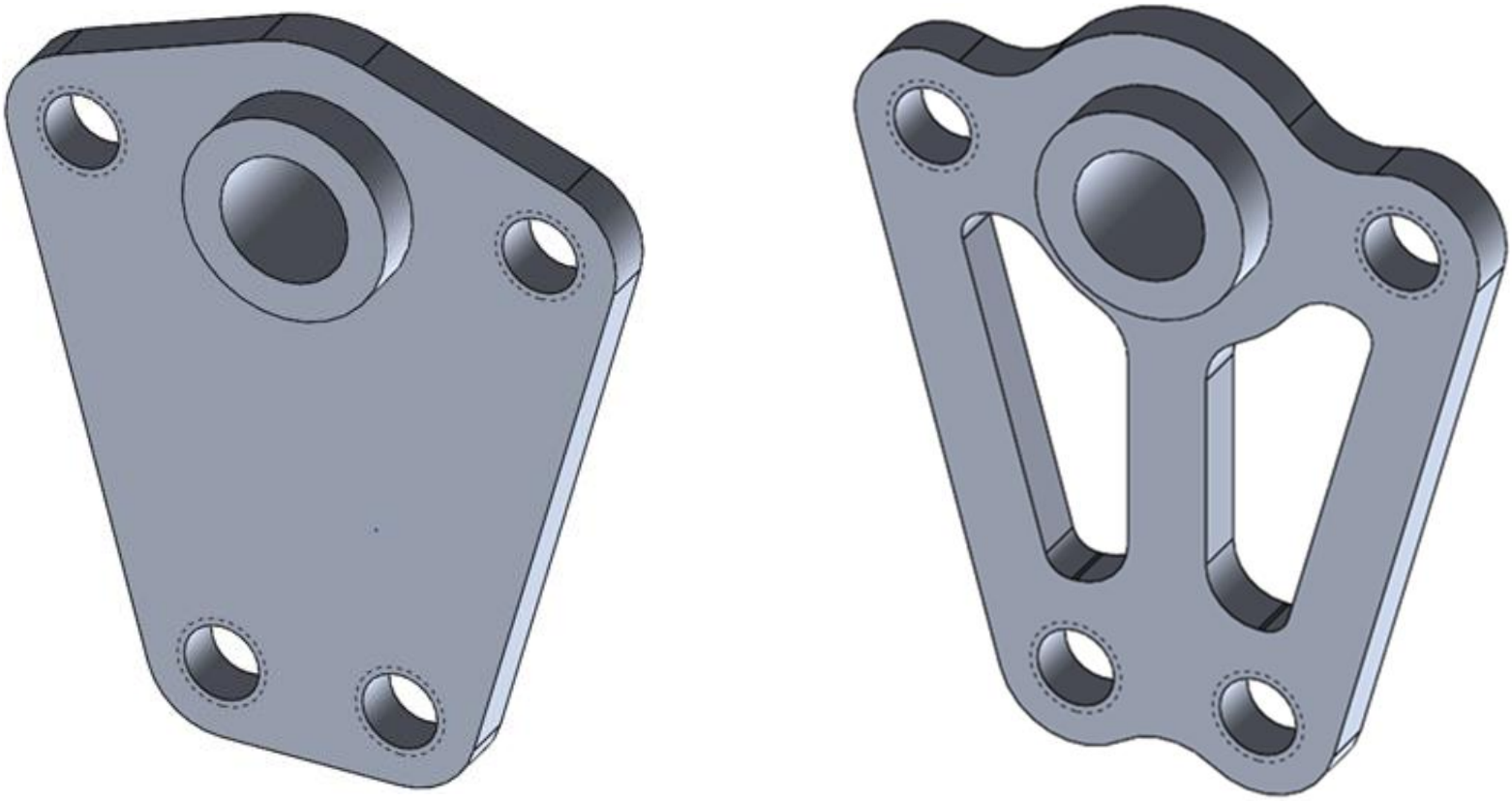
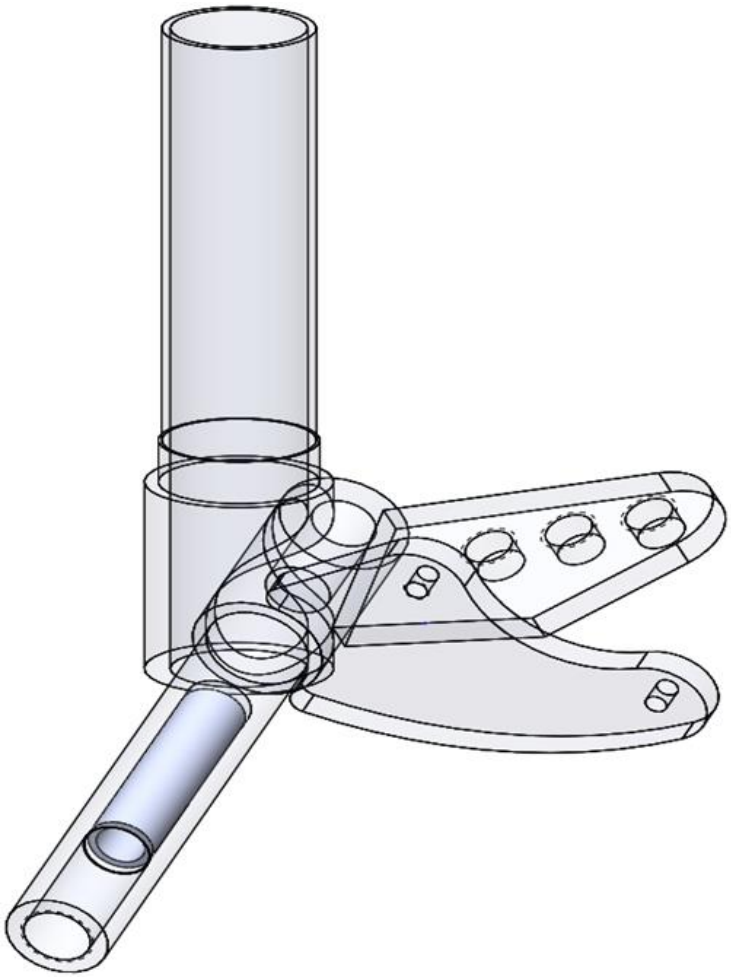


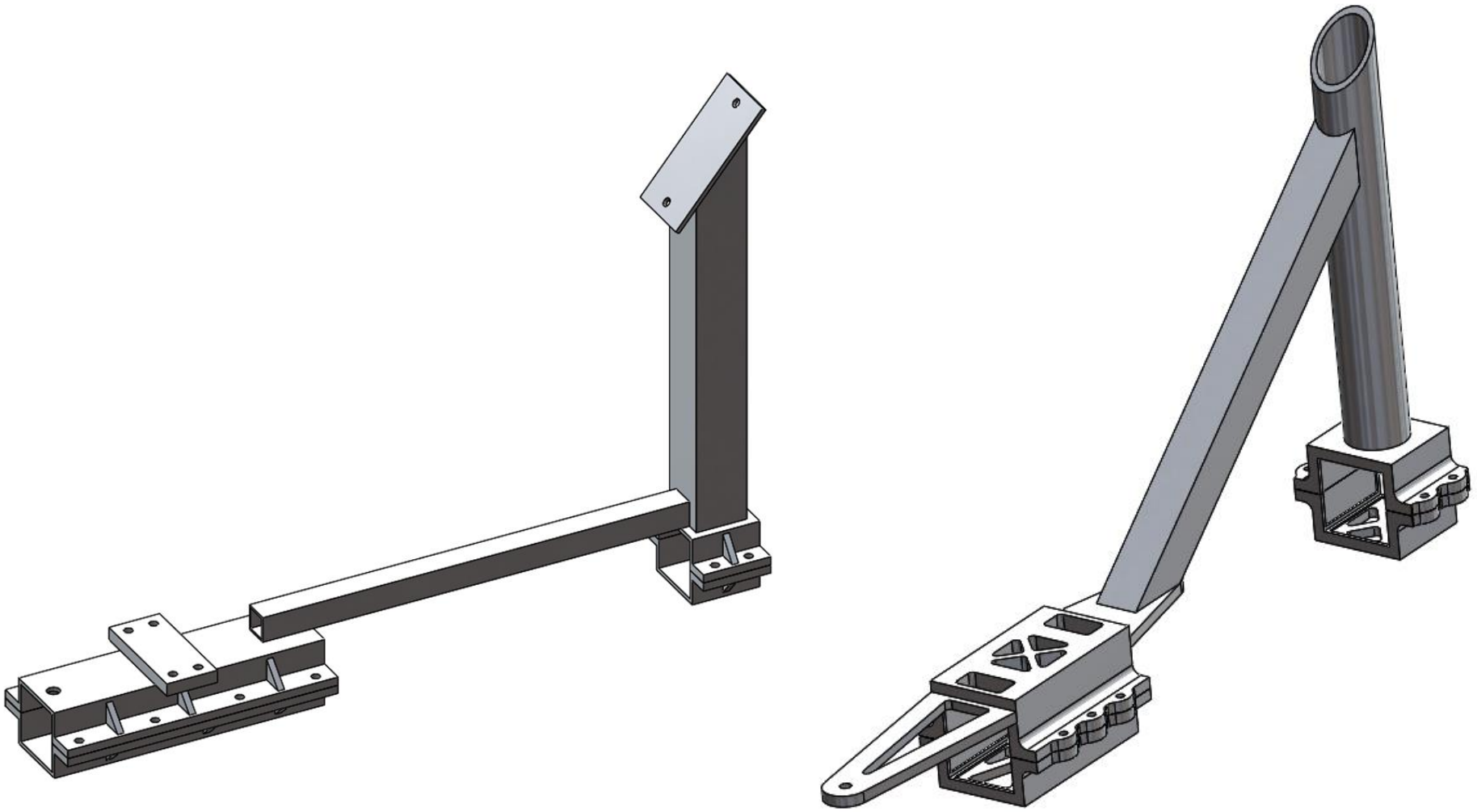
Figure 6- Knuckles with Steel Insert



Ergonomics

- Modifications
  - Weight reduction
  - Minor design changes
- Progress
  - Seat and cushion
  - Raw materials ordered
  - Next step: begin manufacturing

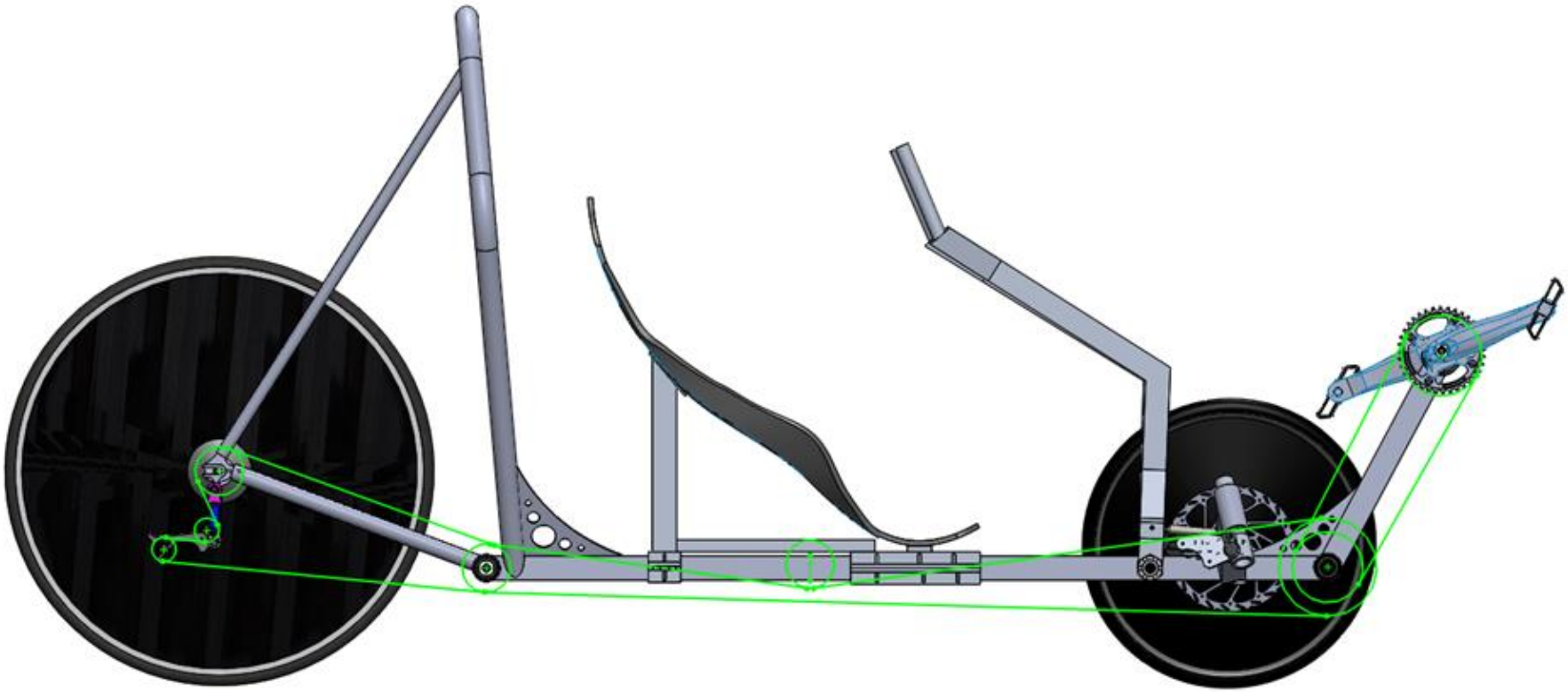
Figure 7- Seat Mount Before and After



Drivetrain

- Modifications
  - Chain line position
- Progress
  - All components ordered
  - Reverse gear prototype is completed
  - Next step: machine parts for reverse gear

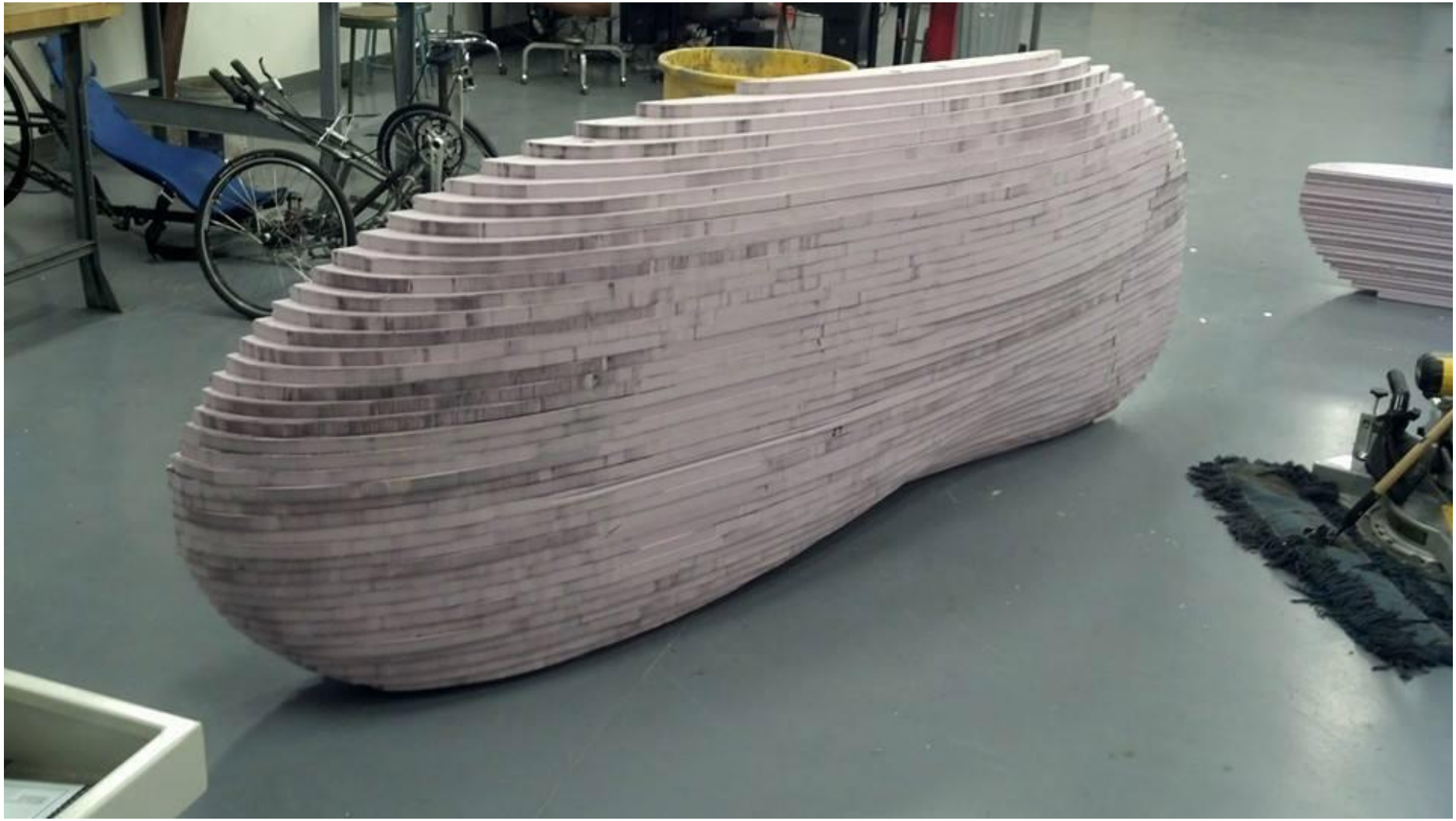
Figure 8- Chain Line Configuration



Fairing

- Modifications
  - Slight shape change
- Progress
  - Foam cut and glued
  - Scheduled build times with Novakinetics
  - Next step: sanding, fiberglass, carbon fiber lay-up

Figure 9- Foam Structure



Innovation

- Progress
  - Investigated various ventilation inlet shapes
  - Prototype of inlet completed
  - Light circuitry developed
  - Next step: integrating lights and vents into fairing

Figure 10- Pressure and Velocity Distribution Plot

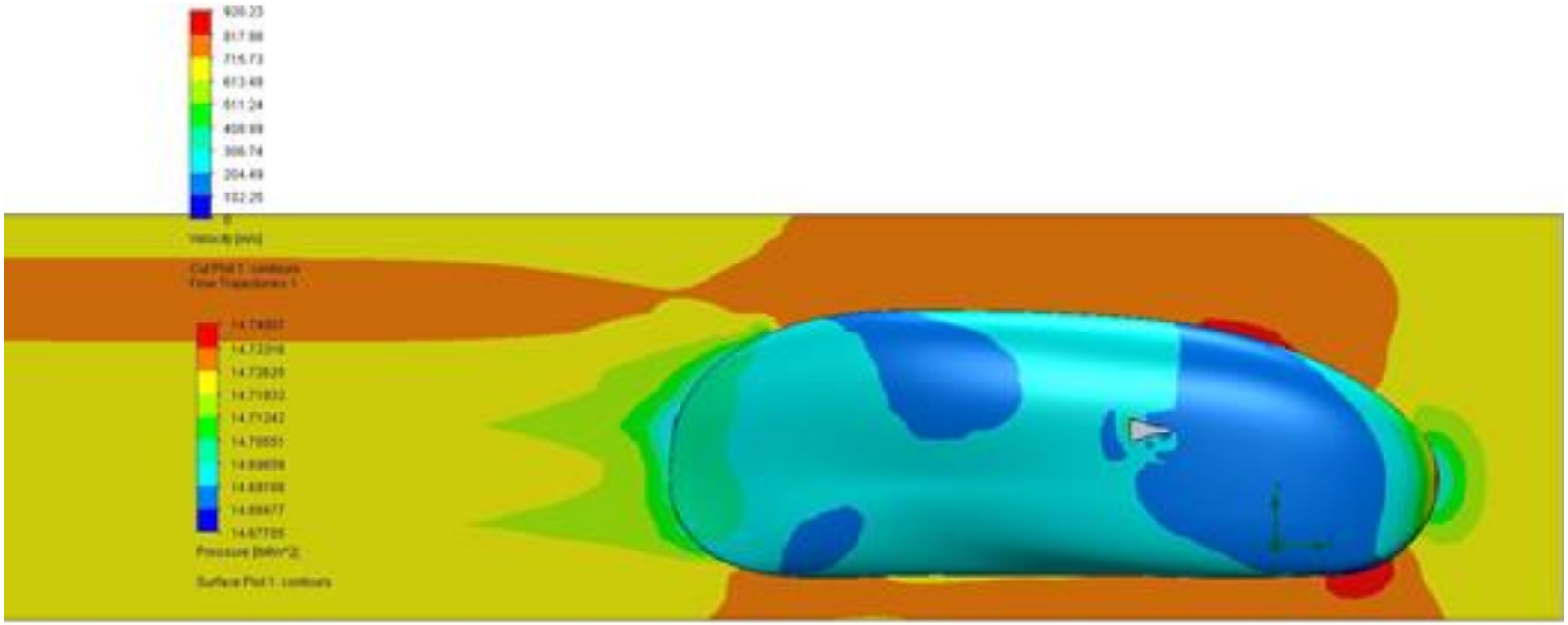
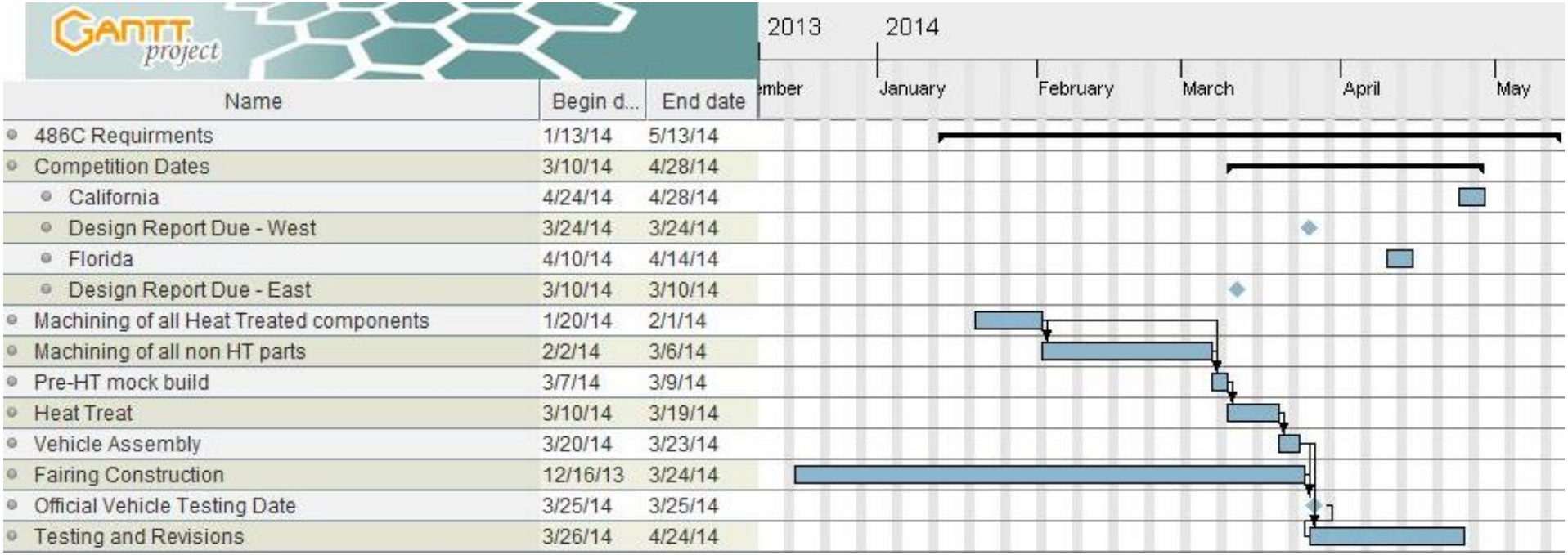


Figure 11- Ventilation Inlet Prototype

Figure 12- Spring Semester Project Plan



Name	Begin d...	End date
486C Requirments	1/13/14	5/13/14
Competition Dates	3/10/14	4/28/14
California	4/24/14	4/28/14
Design Report Due - West	3/24/14	3/24/14
Florida	4/10/14	4/14/14
Design Report Due - East	3/10/14	3/10/14
Machining of all Heat Treated components	1/20/14	2/1/14
Machining of all non HT parts	2/2/14	3/6/14
Pre-HT mock build	3/7/14	3/9/14
Heat Treat	3/10/14	3/19/14
Vehicle Assembly	3/20/14	3/23/14
Fairing Construction	12/16/13	3/24/14
Official Vehicle Testing Date	3/25/14	3/25/14
Testing and Revisions	3/26/14	4/24/14

Conclusion

- Designs have been finalized.
- 95% of the materials have been ordered.
- All subsections have begun manufacturing.
- We are currently on schedule to finish prototype before the end of March.

Questions?