AEV Critical Design Report

Team F

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Abhishekh (Coding)

- Responsible for programming the AEV to fulfill mission requirements

Iskandar (Quantitative Analysis)

- Assists with all aspects of the mission and responsible for calculations

Vincent (Design + Coding)

- Assists with coding if there are issues and responsible for consolidating design choices

Jacob (Design and Documentation)

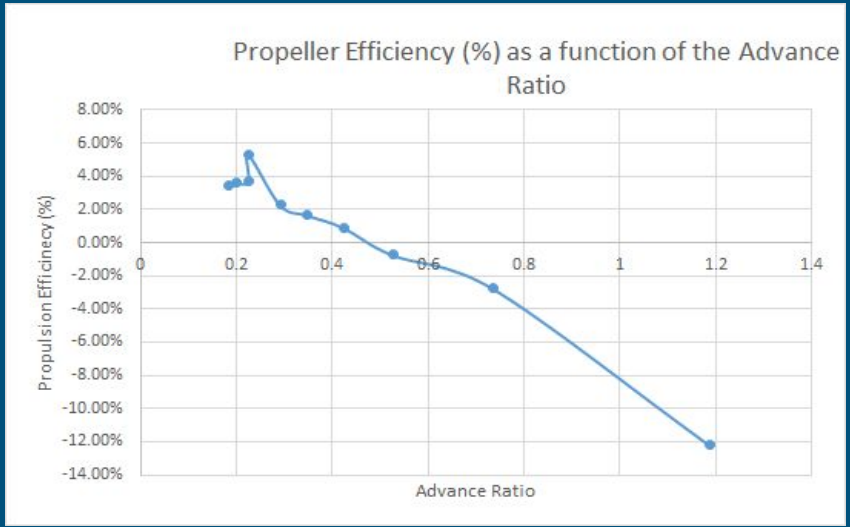
- Assists with designing the AEV and keeps documentation during meetings and coordinates team

Overview of Presentation

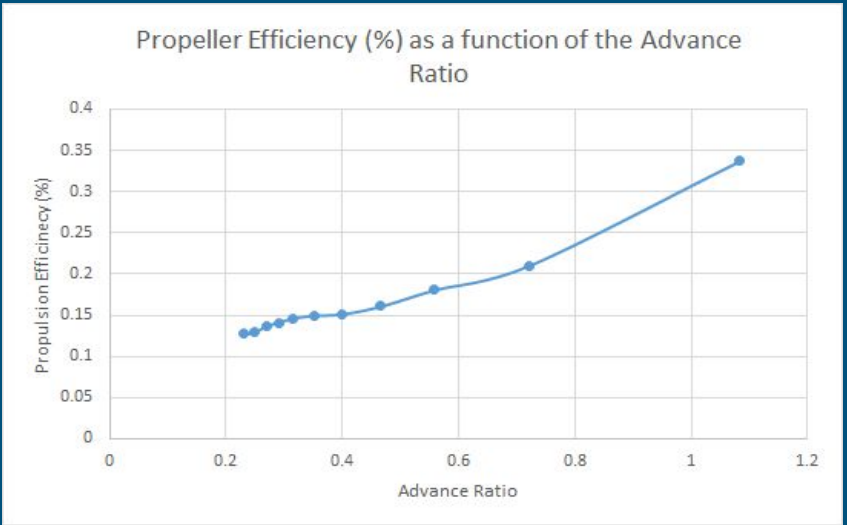
- Design Process
  - Pusher vs. Puller
  - AEV
- Final Code
- Energy Performance
- Final Run

Design Process

Pusher

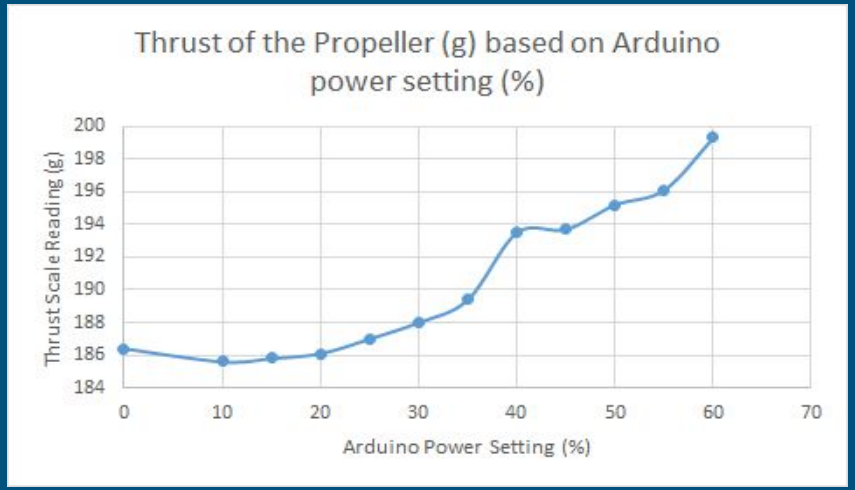


Puller

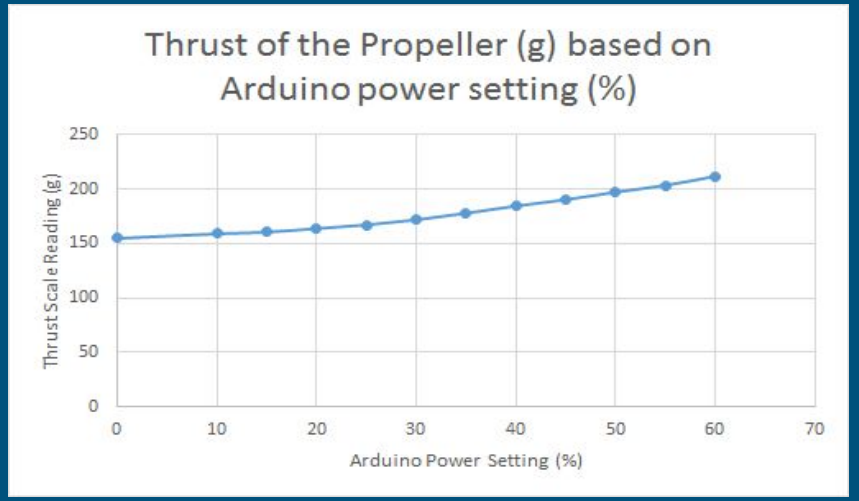


Design Process

Pusher



Puller



Design Process

Considerations:

- Center-of-Mass/Turns
- Stability
  - Weight of AEV
- Track/Rail

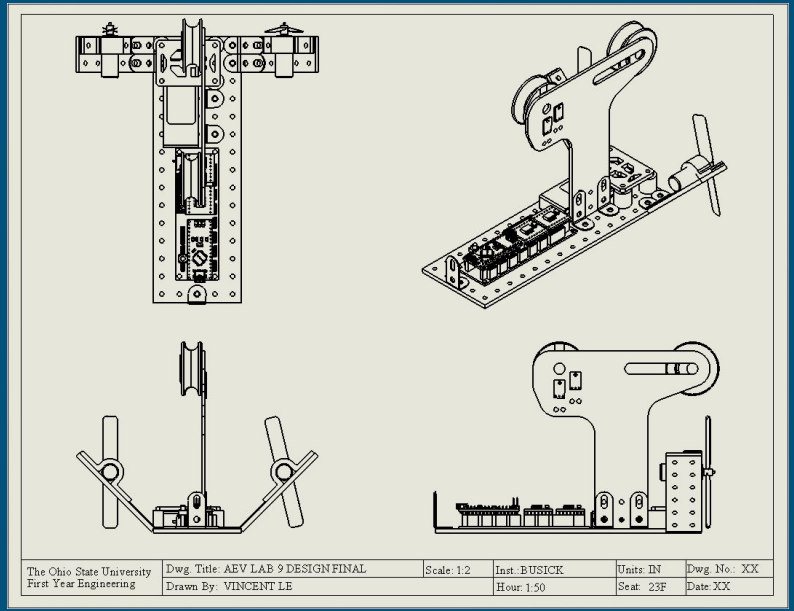
Design Process

Model A:

- 90 degree wings to body
- Wings are tall to reduce inertia

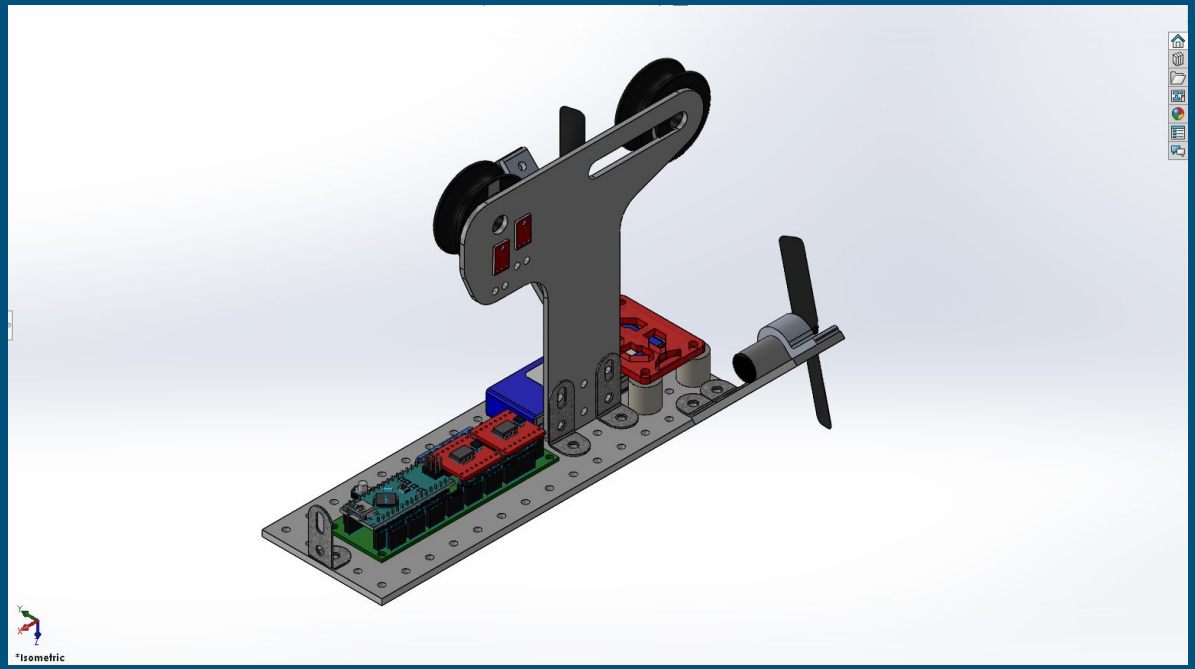
Model B:

- 45 degree wings to body
- Motors moved inboard to compensate



Model B

Final Design



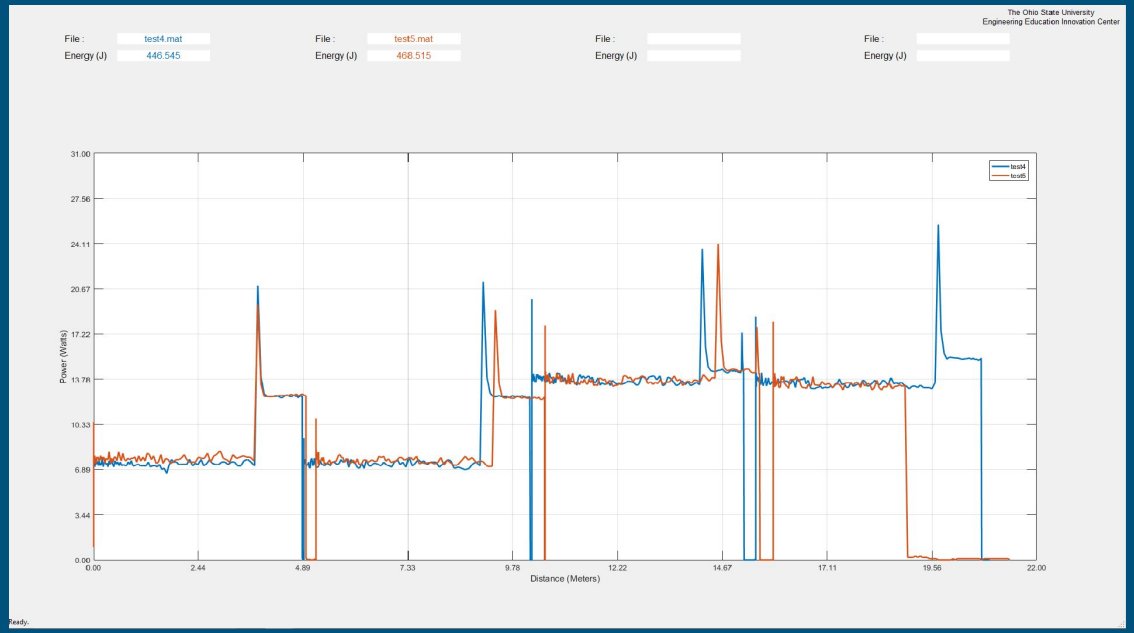
Final Code

- Consistency vs. Energy Efficiency
  - Breaking Mechanism/ Reverse Thrust
  - Utilize the load’s weight
    - Drift

Performance

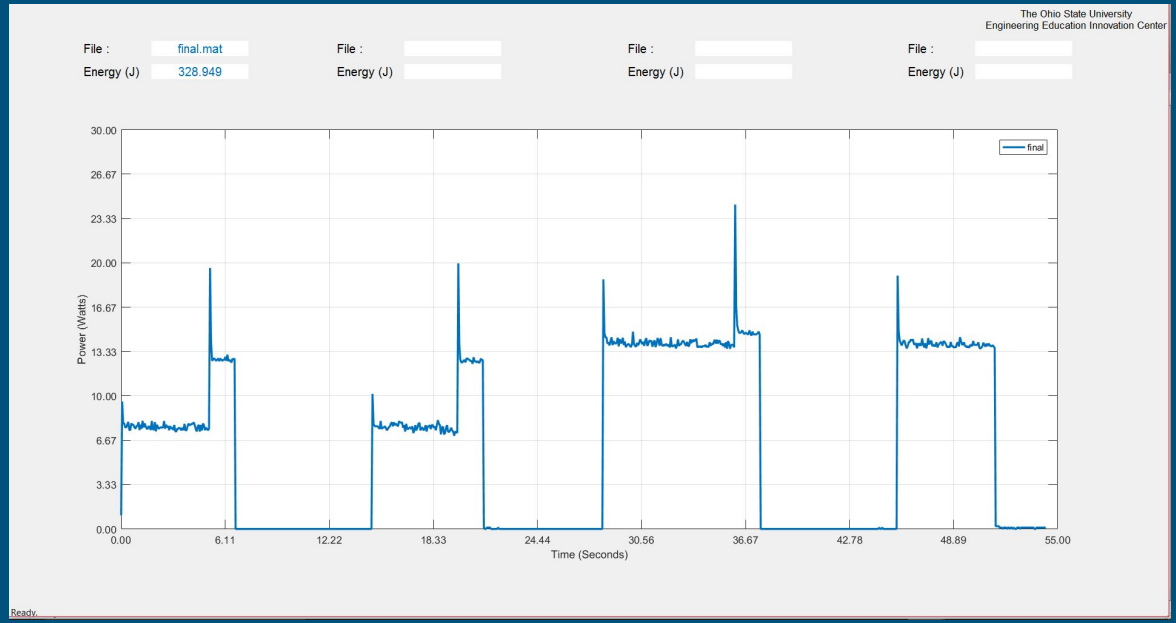
Energy

Comparison of energy usage(back thrust and coast)



Performance

Actual run



Final Run

- Run 1:
  - Nothing went as planned.
  - Reason: Sensor fell out
- Run 2:
  - MISSION COMPLETE!