ME 566 Final Project Proposal

Project Title: Greener Deliveries

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Description: United States Postal Service mail trucks are crucial to our everyday lives. They deliver letters and packages from point A to point B, but they operate in a very inefficient manner. For an ICE-powered mail truck, one of the most inefficient methods of travel is to repeatedly get up to speed and then stop and this is exactly how they operate. With fuel prices rising and demand for cleaner modes of transportation increasing, it seems natural to try to improve the efficiency of these vehicles. The goal of our project is to model a delivery vehicle and implement a power split hybrid system with a right-sized ICE engine and an appropriately sized battery. This would allow for regenerative braking and electric launch.

Tasks: Model a conventional mail truck with respect to vehicle weight and engine size to set the baseline for our project. We will then implement a power split hybrid system and evaluate the potential increase in fuel economy that could be achieved with this system.

Deliverables:

* Models of original and electrified mail vehicles
* Control optimization of electrified mail vehicle
* Analysis of fuel economy comparisons between various drive cycles

Timeline:

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| **Date** | **Action** |
| Week of February 11 | -Create CTools project site  -Submit project proposal  -Accumulate resources and research power-split hybrid systems |
| Week of February 18 | -Continue power-split research  -Develop and finalize specifications for conventional ICE powered USPS vehicle  -Begin to model ICE powered USPS vehicle |
| Week of February 25 | -Continue power-split research  -Continue modeling ICE USPS vehicle  -Have working ICE powered model  -Begin to develop specifications for power-split system |
| Week of March 4 | -Begin to model power-split system  -Finalize specifications for power-split system  -Begin to formulate progress into report format |
| **??** | **Interim Progress Report due with HW??** |
| Week of March 11 | -Continue to work on power-split model |
| Week of March 18 | -Continue to work on power-split model |
| Week of March 25 | -Continue to work on power-split model  -Begin to optimize control strategy for power-split model |
| Week of April 1 | -Begin fuel economy analysis between the two models  -Continue documenting progress in report format |
| Week of April 8 | -Finalize controls optimizations and analysis between powertrains  -Refine report progress into final technical report format |
| Week of April 15 | -Complete report and data analysis |
| Week of April 22 | -Finalize and proof-read final report |
| **April 26** | **-Final Project Report due** |