Shell Eco-marathon Cars

Overview
The Shell Eco-marathon competition requires schools and enthusiast groups to design highly efficient and innovative vehicle platforms. The competition has two main categories: the Prototype and the Urban Concept. Penn State’s vehicles are in need of mechanical and electrical modifications in order to be competition ready for April 2015.

Objectives
- Develop and implement a hydraulic braking system
- Implement a new hinge and latch system
- Realign wheels for better driving
- Evaluate status of current motor controller design
- Create and populate Microsoft SharePoint site for future teams

Approach
- Discuss project goals with Gary Neal and Ryan Moyer to establish priority.
- Weight customer needs to perform optimally in competition.
- Divide objectives and assign leads to each objective.
- Generate three valid concepts for each objective while remaining within competition rules.
- Discuss project progress in a weekly teleconference meetings with team sponsor.
- Move forward with best concepts after concept scoring is finished.
- Develop CAD models and machine components to implement brake and door systems.
- Fine tune brake and door alignment for optimum performance.
- Test brakes on 20-degree incline to determine if brakes are valid for the competition.
- Perform finite element analysis on the hinge plating.
- Prepare vehicle and supplies for Spring 2015 Shell Eco-marathon teams.

Outcomes
- The Urban Concept vehicle has a full working brake system.
- The Urban Concept vehicle has a functional door and latch mechanism.
- Future teams will be able to communicate more efficiently and work together using the SharePoint site.
- Supplies purchased with the remaining budget become accessible to the new teams.