Project Id	124
Project Title	Optimizing an electric motor for use in a go kart
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Additional Faculty	
Faculty Department	Engineering
Project Description	This student run project is on the forefront of a changing industry. Currently our team of three senior mechanical engineers are working to optimize power in a small-scale electric motor. The long term goal is to prove our design concept and iterate it to be able to power a full sized vehicle with an eye toward large scale internal combustion engine replacement in a global setting. The project this year is to design and build a 25 horsepower electric motor. We targeted this size because high-end internal combustion engine go karts have set the benchmark at 25 horsepower, and we can easily test our model in direct application using our team's go kart chassis. Currently, our team is building a simplified design of the 25 horsepower motor that can be used for troubleshooting ideas and testing different designs. The electric motor is ideal because the modern global energy situation frustrates consumers who are eager for major innovation in the automotive industry.
Interdisciplinary Nature Description	To design a functioning electric go kart requires a team with skills in machining, mechanical design, circuit design, modeling, programming, and electronics. An electric motor manipulates magnetic fields that need to be properly modeled and optimized through the laws of physics. Rotor dynamics must be used to assure stability at high speed and under full load. The aspects required for creating an electric motor combine the knowledge of the different engineering disciplines, and makes this project relevant and beneficial to all engineering majors.
Links	
Number of Honors Students Requested	4
Applicable Majors	EE, ME, CSC, CPE, PHYS, IME, ENGR
desired_res	Our group needs students that have previous knowledge and experience pertaining to electric motors and can help with design optimization. However, our project is not limited by previous experience we encourage students to join our team if they are ready to face a challenge with creativity, diligence and determination. Later on our project will consist of manufacturing the motor with the resources provided by the machine shop. Students with shop knowledge or who are willing to learn new skills will be able to contribute to our group. Team members will have the chance to work with a diverse range of students from different majors, which reflects the real life work environment. This is a difficult project that encompasses many skills and disciplines and will provide a unique opportunity and challenge to those who are willing to accept it.
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