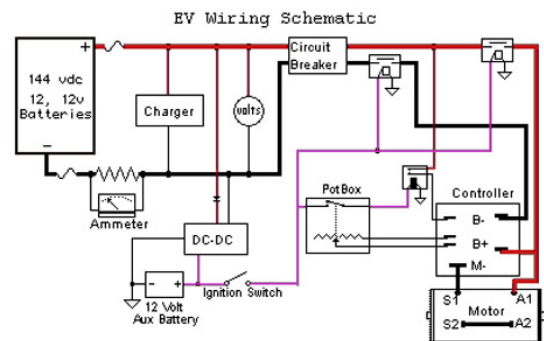




Tesla Roadster Electric Car

Electric Car Design Mini-Project



Electric Car System Schematic

Design an Alternative Electrical Energy Power System for a Model Car

Why is this project important?

- The average internal combustion automobile engine emits 0.9lb of CO₂ per mile
- 30% of all the energy consumed in the US is used for transportation
- 95% of all energy used for transportation in the US comes from petroleum
- Emerging economies are rapidly approaching the US automotive energy use

This project will explore alternative automotive electrical power systems.

What will I do in this project?

LEARN about alternatives to the internal combustion engine based on electric power sources such as **batteries**, **fuel cells**, and **solar cells** that can be used to power electric motors for automotive application.

ANALYZE the operation, energy density, efficiency, and available power of these alternative sources through the use of experiment and calculation.

DESIGN and **BUILD** an electric power system for a model electric car using a combination of any or all of the alternative power systems in this project.

COMPETE with your model electric car design in a series of performance challenges at the end of the project.



What fields of engineering is this project related to?

Chemical Engineering – introduces the concepts of electro-chemical cells, thermodynamic efficiency, material properties, and conservation laws.

Electrical Engineering – introduces the concepts of electric circuit design and construction, electrical energy generation, storage and transfer, and electric motors.

Mechanical Engineering – introduces the concepts of power and torque, locomotion, power conversion, and gearing design.

Who can I contact for more information?

Dr. Edward Char
Electrical Engineering
Office: Tolentine Hall
Room 429
Email: edward.char

Dr. Donald Joye
Chemical Engineering
Office: White Hall
Room 121
Email: donald.joye

Dr. Pritpal Singh
Electrical Engineering
Office: Tolentine Hall
Room 411B
Email: pritpal.singh

All emails are @villanova.edu