Automotive Engineering Technology
Senior Design Project
Smart Car 2011-12

Abstract:
From the factory, the Smart Car’s rear wheels are powered by a rear mounted diesel engine and transmission. This senior design project will add a secondary power train system to the vehicle. The front wheels will be powered by an electric motor and controller. These two very different power plants will work together in order to achieve maximum efficiency from the car. This year’s team will first validate all previous research and modifications. That will be followed by the installation of the motor, controller, batteries and wiring; along with designing and writing the code for the electric motor controller.

Objectives:
- Validate previous groups research and modifications.
- Get the motor, controller, and batteries all working together on a dynamometer before installation into the car.
- Choose a proper gear ratio to maintain efficiency throughout all of the FTP-72 drive cycle.
- Validate the use of the current transaxle, or decide on a new option.
- Install the electric motor and controller with the proper wiring and cooling solutions.
- Have the car moving solely powered by the electric motor.