LAU
الجامعة اللبنانية الأميركية
Lebanese American University
Department of Industrial and Mechanical Engineering

Project I Description

Project Name: **Modeling of a diesel hybrid car for energy consumption assessment under Beirut driving conditions**

Team Size: **2 MEE Students**

Project Overview

According to the Second National Communication to the UNFCCC, the Lebanese transport sector is the second larger consumer of fossil fuels and GHG emitter, largely dominated by passenger cars. Accordingly, Greater Beirut Area (GBA), which encloses more than 40% of the Lebanese population, undergoes severe chaotic traffic conditions, high rate of passenger cars ownership, poor vehicles efficiency in current driving patterns, and high pollution rates. Therefore, reducing passenger cars dependence on fossil fuels by improving powertrain efficiency has become a must.

In this context, the project consists of modeling a diesel hybrid car (Peugeot 3008 Hybrid 4) in order to assess its energy consumption under the real driving conditions in GBA. The modeled diesel car will be compared to a reference conventional car from the Lebanese car fleet (same vehicle segment) and a gasoline hybrid car. The project aims at highlighting the fuel consumption and GHG emissions savings of hybrid electrified powertrains under current urban and highway driving patterns in GBA.

Project Areas and Majors

- Powertrain and vehicle modeling/ Automotive design (2 MEE students)

Project Deliverables

- Diesel hybrid powertrain model
- Energy management controller for a parallel hybrid powertrain configuration
- Drive cycle data collection through GPS survey in GBA
- Report including the powertrain model design, the energy management control strategy, the energy consumption and GHG emissions assessment of the modeled diesel hybrid vehicle compared to a typical conventional gasoline vehicle and a gasoline hybrid vehicle.

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Students:

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