

Exercise 6- Powertrain Packaging

Read and refer to Chapter 7 Powertrain Packaging, Pages 115-135 to help you answer the questions below.

Select and lay out the propulsion system. Look carefully at the functional objectives and benchmark studies to understand the concept's performance requirements, which include top speed, acceleration, weight, fuel consumption, emissions and traction requirements. If a traditional internal-combustion type system is chosen, this process should be quite straightforward, by benchmarking existing products. Specifying a less conventional, electric or hybrid powertrain will be a more complex process and involves calculations to establish a power-to weight (and vehicle efficiency) ratio vs. speed and range.

Rank in order (1 by the most important, 5 being the least) of priorities you have for your powertrain system.

Power and Image _____ Handling and Aerodynamics _____ Off-road capability _____
Cost Fuel Consumption and Environment _____ Package efficiency and occupants _____

List target Specification for the following:

Top Speed: _____ Acceleration 0-60mph _____ Fuel Consumption (MPG) _____
Emission Requirements (ie Zero) _____

Specify the type of system and the components:

Type (*internal combustion, electric, hybrid or other*): _____

Fuel Type (*Gasoline, diesel, hydrogen, biofuel, eclectic, etc.*): _____

Motor:

Size (Cubic capacity): _____

Configuration (*V8, Flat 4, Straight 6, etc*): _____

Location: _____

Orientation: _____

Power output. BHP or kW: _____

Torque: _____