
Fuel Cell Standards

XVI. Fuel Cell Stack

XVI.e Fuel Cell Propulsion System Overview

Overview:

Classroom instruction on basic fuel cell vehicle architecture, major component identification with emphasis on hydrogen PEM fuel cell vehicles

- History of fuel cell vehicle
- Basic FCEV architectures- parallel hybrid, series hybrid and non-hybrid configurations
- Shared common components with Hybrid and BEV vehicle
- Review of component types shared with BEVs such as traction motors, HV batteries and AC power inverters their common failure modes and diagnostics
- Power flows, energy storage and energy losses in the vehicle
- Review towing, transportation and shipping requirements for a hydrogen fuel cell vehicles

Description:

The fuel cell propulsion system uses systems, subsystems and discrete components, hydrogen and atmospheric air to create high voltage DC electricity, store it, convert it to AC electricity and uses it to drive ancillary systems and traction motor(s) to drive the wheels

Outcome (Goal):

Students will be able to describe the operation of generic fuel cell propulsion system. Student will understand major fuel cell propulsion failure modes.



Objectives:

Student will be able to

1. Identify major fuel cell propulsion system components and location
 2. Understand power flows, energy storage and energy losses in the vehicle
 3. Reference OEM service procedures to find critical information about the fuel cell propulsion system
 4. Understand major vehicle propulsion failure modes
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Task:

Students will

1. Use vehicle schematic diagrams or a vehicle to demonstrate knowledge of the major fuel cell propulsion system components
 2. Use vehicle interface hardware and onboard diagnostic to view data from the fuel cell propulsion system sub-systems and compare it to OEM service instructions
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