

# ALTERNATIVE FUEL VEHICLE DAMAGE ANALYSIS AND SAFETY

ALT03

The technology needed to meet CAFE fuel efficiency standards drives vehicle makers to increase the number of alternatively fueled models in their fleets, especially hybrid electric and pure-electric vehicles. So the chances of encountering more repairs on a variety of alternatively fueled vehicles will only increase. This means there is a need for auto physical damage appraisers as well as technicians in a repair facility to have a sound knowledge of working around alternatively fueled vehicles.

This course provides an understanding of how to safely approach an electric vehicle after a collision and the risks and risk-avoidance of working around alternative fuel vehicle technology. Applying knowledge gained in this course will also aid in performing a more thorough damage analysis.

## Course Content

### Module 1 – Hybrid-Electric Vehicle Parts

The course begins by examining the different types of electric and hybrid-electric vehicles. The first module continues by describing the high voltage parts associated with these vehicles, including batteries, motors, inverters, converters, chargers, cables, and more.

### Module 2 – Approaching a Damaged Electric Vehicle

The second module is designed specifically with the safety of the collision professional in mind. Understanding how to safely approach a damaged electric vehicle is discussed through in-depth classroom conversations. The module starts with a series of activities showing how to identify whether the vehicle being approached is electric. The module continues with discussions of how to access various information sources. The module concludes with describing how to avoid hazards specific to electric vehicles.

### Module 3 – Hybrid-Electric and Electric Vehicle Features

The course continues by examining specific features of hybrid-electric and electric vehicles. These features include high voltage disabling, regenerative braking, start/stop systems, cooling systems, and special service notes. Information found in this module will assist the student with conducting a thorough damage analysis of a damaged electric vehicle.

### Module 4 – Alternative Fuel Vehicles

The final module of the course details other types of alternative fuel vehicles and their impact to the collision repair industry. Upon completion of the course, the student will better understand the hazards of diesel-, CNG-, and LPG-fueled vehicles, including unique characteristics for each alternative fuel vehicle type.

## Recommendations

This course is fast-paced and covers a variety of topics related to electric and hybrid electric vehicles. It is strongly recommended that students have an understanding of electrical systems prior to taking this course. Courses that are helpful include:

- Basic Electronics Damage Analysis (DAM13e)
- Electrical Circuits and DVOM Usage (ELE01)
- Diagnosis, Testing, and Repair of Common Electrical Loads (ELE02)
- Fault Code Retrieval, Diagnosis, and Testing Electronic Systems (ELE03)
- Hazardous Materials, Personal Safety, and Refinish Safety (WKR01)

## Registration

To register for Alternative Fuel Vehicle Damage Analysis and Safety (ALT03), visit the I-CAR website at [www.i-car.com](http://www.i-car.com) or contact I-CAR Customer Care at 800.422.7872.

## Course Highlights

**Credit Hours:** 3

**Estimated Duration:** 4 hours

**Format:** Classroom instruction with written test

**Meets I-CAR ProLevel® or annual training requirements for the following roles:**

-  ESTIMATOR
-  STEEL STRUCTURAL TECHNICIAN
-  ALUMINUM STRUCTURAL TECHNICIAN
-  NON-STRUCTURAL TECHNICIAN
-  ELECTRICAL/MECHANICAL TECHNICIAN
-  AUTO PHYSICAL DAMAGE APPRAISER

**After completing this course, you will be able to:**

- Explain how to take safe measures when working on hybrid electric and alternative fuel vehicles
- Understand high voltage issues with electric A/C systems
- Identify new application for hybrid technology and unique hybrid system features
- Know how to properly care for a high voltage battery prior to and during the repair process
- Identify the different types of alternative fuel vehicles currently on the market, as well as concepts in tomorrow's technology



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