



INSTITUTE OF THE  
MOTOR INDUSTRY



# ELECTRIC HEAVY VEHICLE

## eLEARNING

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### COURSE OVERVIEW

**Note:** Ideally, you should complete the first seven EV courses (or similar learning) before working on this one.

This course will enable you to develop an understanding of the different heavy vehicle EV systems from batteries and motors to inverters, and a case study overview of Tesla Semi

This course will also enable you to develop an understanding of the range of technologies in use on different types of heavy electric vehicle.

### WHO IS THE COURSE FOR?

Technicians, recovery and emergency services, technical trainers, assessors and vehicle owners.

### WHAT WILL I GET OUT OF IT?

You will be able to:

- Explain the difference between light and heavy EV systems
- Understand why multiphase systems are used
- Explain the benefit of ported axle systems
- Describe heavy EV features.

To find out more go to [www.theimi.org.uk/elearning/ehgv](http://www.theimi.org.uk/elearning/ehgv)  
or call +44 (0) 1992 511521



## CONTENTS

### First Lesson:

#### Technology overview

Heavy vehicle electric drive systems are fundamentally the same as those used on light vehicles, except that they generally need to produce more torque. Some also use more than three phases to drive the motor; more on this later.

### Second Lesson:

#### Heavy vehicle hybrid/electric vehicle systems

This will cover some current examples of the components, and methods of using them, in heavy vehicle applications. In this context coaches and buses are considered to be heavy vehicles, not just trucks and construction vehicles.

### Third Lesson:

#### Case study: Tesla semi

Tesla announced, in November 2017, that the Semi would be powered by four electric motors of the type used in the Tesla Model 3. This content may feel a bit like an advert for Tesla, but its intention is just to be an overview of what is under development!

Several manufacturers' videos are then presented to give a further overview of the subject.

#### Key topics covered in the lessons include:

COMPONENTS

INVERTERS

MULTIPHASE INVERTERS

BATTERIES AND BATTERY MODULAR DESIGNS

CASE STUDY EXAMPLES FROM MAJOR  
COMPONENT MANUFACTURERS

