Specification of Competency Standards
for the Automotive
Unit of Competency

Functional Area - Vehicle Servicing

Title	Familiar with electric vehicle technology and the associated risk handling
Code	111739L3
Range	This unit of competency is applicable in electrified vehicle service workshops. Practitioners should be able to be acquainted with electric vehicle technology and the associated risk management of faulty electric vehicles according to the instructions in the corresponding vehicle manufacturer's service manual and the relevant requirements on environmental protection, occupational safety and health regulations. They should also be able to provide a written report on risk assessment, rescue and remedy actions.
Level	3
Credit	1 *(For Reference Only)*
Competency	**Performance Requirements** 1. Knowledge (Electric vehicle technology and associated risk management of faulty vehicles) • Conversant with the basic principles of electrical and electronics, including but not limited to electromagnetism, power switching and inversion. • Acquainted with the operating principles and output characteristics of power transmission, modulation and control, electromotive machines and power inverters. • Understand the operating principles and applications of multiplexing, analogue and digital devices, sensors and actuators for vehicle operation. • Good understanding of the operating principles and applications of various types of electronic control systems and related components, such as traction motor power control, battery power management, etc. • Identify the potential hazards and preventive measures associated with faulty electric vehicles according to the instructions in the corresponding vehicle manufacturer's service manual. • Good understanding of the risk assessment and techniques for dealing with faulty electric vehicles, including live working. • Identify the construction and operation of different kinds of electric vehicles, their emergency rescue and remedy procedures • Understand the relevant legal requirements on road and vehicle safety, and environmental protection.

	2. Performance (Familiar with electric vehicle technology and risk handling) • Explain the basic principles of electrical and electronics, such as electromagnetism, power switching and inversion, etc. adopted for the operation and control of electric vehicles. • Explain the basic principles of multiplexing, analogue and digital devices, sensors and actuators, their applications on the powertrain and energy management systems of electric vehicles. • Correctly differentiate the voltage levels of various operating systems onboard. • Safely perform the risk assessment for a faulty electric vehicle, and establish emergency rescue and remedy procedures according to the instructions in the corresponding vehicle manufacturer's service manual and the requirements of occupational safety and health and environmental protection, including but not limited to cable intact, system electrical insulation, control functions, rechargeable energy storage system and onboard charging under live working conditions, as well as the working environment. • Provide written report on the risk assessment, rescue and remedy actions.
Assessment Criteria	The integrated outcome requirements of this unit of competency are that the practitioner being assessed shall prove that he/she is: • Capable of explaining the principles of electrical and electronics, such as electromagnetism, power switching and inversion, etc. adopted in the powertrain and energy management systems of electric vehicles; • Capable of explaining the principles of multiplexing, analogue and digital devices, sensors and actuators, as well as their applications on the control of electric vehicle systems; • Capable of performing risk assessment to allow a safe emergency rescue and remedy environment for a faulty electric vehicle under various conditions, including the failure of high-voltage system power down, according to the instructions in the corresponding vehicle manufacturer's service manual and the relevant requirements of road and vehicle safety, environmental protection, occupational safety and health regulations; and • Capable of providing a written report on the risk assessment, rescue and remedy actions for a faulty electric vehicle.
Remark	The credit value of this unit of competency is set on the presumption that the practitioner concerned has already possessed comprehensive knowledge of electric vehicle operation. The major ordinance involved in this unit of competency is as follows: • Relevant ordinances to the Road Traffic (Construction and Maintenance of vehicles) Regulations • Occupational Safety and health