Specification of Competency Standards
for the Automotive
Unit of Competency

Functional Area - Vehicle Servicing

Title	Diagnose, test and repair vehicle high-voltage batteries
Code	111767L5
Range	This unit of competency is applicable in vehicle battery service workshops. Practitioners should be able to work on the battery system and the related high-voltage components in electrified vehicles, including fuel cell electric, electric and hybrid electric vehicles; diagnose, test and repair the high-voltage batteries, and replace modules safely according to the instructions in the vehicle manufacturer's service manual, occupational and health and environmental protection legislation. They should also be able to conduct performance tests on the high-voltage batteries and provide written report upon completion of work.
Level	5
Credit	4 *(For Reference Only)*

Competency	**Performance Requirements**
	
	1. Knowledge (Common faults of the vehicle high-voltage batteries, diagnostic procedures and equipment)
	• Master the causes of common faults of the vehicle high-voltage batteries on:
	  ○ Overheating
	  ○ Deformation after crash
	  ○ Fluid leakage
	  ○ Smoking
	  ○ Soaked
	  ○ Electricity leakage
	• Master the fault diagnostic process for vehicle high-voltage batteries with reference to the instructions in the manufacturer's service manual, such as:
	  ○ Pressure Test (IP test)
	  ○ Isolation / non-conductive test
	  ○ Cell/module balance test
	• Master the use of special service tools, personal protection and first-aid equipment for relevant servicing tasks of high-voltage battery, such as insulation testers, gloves, rescue hooks, etc.
	• Masterly manage the temporary storage of disposed cells/batteries, disposal and recovery procedures for batteries according to the requirements of environmental protection regulations.
	• Understand relevant legal requirements on road traffic and safety and environment protection.

	2. Performance (Conduct diagnosis and rectify the faults of the vehicle high-voltage batteries)
	• Accurately conduct complicated fault diagnosis on the high-voltage batteries of electrified vehicles according to the instructions in the manufacturer's service manual and the requirements concerning occupational health and safety and that of environmental protection, including the use of special equipment and instruments to assist the diagnostic process.
	• According to the diagnostic result, process the rectification / module replacement work.
	• Conduct pressure test for the high-voltage battery housing the sealing process
	• Conduct functional tests and cell/module balancing.
	• Conduct performance and safety inspection after the work, and provide written report, focusing on:
	  ◦ Abnormalities
	  ◦ Measurement data
	  ◦ Major decisions and the effectiveness
	• Correctly handle the temporary storage, disposal and recovery of cells/batteries according to the requirements of environmental protection regulations.

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 conducting complicated fault diagnosis on vehicle high-voltage batteries, including circuit breakers and associated controls, according to the instructions in the manufacturer's service manual and the relevant requirements on environment, occupational safety and health regulations; • Capable of conducting or arranging rectification, including cell balancing, according to diagnostic results; • Capable of sealing the battery box after repair work and conducting pressure test according to the instructions in the manufacturer's service manual and the relevant requirements on environment, occupational safety and health regulations; • Capable of managing the storage, disposal and recovery of various types of cells/batteries correctly with compliance to the requirements of environmental protection regulations; and • Capable of conducting functional tests and completing fault report, and providing working report upon completion of work.
Remark	The credit value of this unit of competency is set on the presumption that the practitioner concerned has already possessed the intensive knowledge of the vehicle high-voltage batteries and the competency recognition proof issued by the regulatory authority concerned, or equivalent.