

# Electric Vehicle Battery Repairs

## Manufacturing and Technology

Show us that you know how to perform diagnostic analysis and restorative actions on high voltage traction batteries to ensure electric vehicles operate as per manufacturers' specifications.

- Level 5
- Credits 10
- \$199 NZD (GST incl.)

## Assessment

### Conditions of Assessment

You are required to submit evidence of the following:

1. Perform diagnostic analysis to identify faulty high voltage traction battery components and complete restorative actions to manufacturers' specifications.
2. Perform quality control diagnostic analysis to ensure electric vehicles operate according to manufacturers' specifications

All work for this EduBit must be your own.

### Evidence submissions options:

Below are two (2) options to choose from to collect and submit evidence for this EduBit

1. From evidence produced as a result of your normal work and validated with attestations from your qualified supervisor. Refer to acceptable evidence requirements below.

OR

2. Enrol in an Electric Vehicle Battery Repairs Workshop\* and provide evidence as per requirements below.

\*If you are interested in attending a workshop, please register your interest by emailing [cecladmin@op.ac.nz](mailto:cecladmin@op.ac.nz).

## Instructions

### Acceptable Evidence Requirements:

- Photographs of three (3) electric vehicles for which you performed electronic high voltage traction battery diagnostics.
- Copies of the three (3) job cards requiring you to perform electronic diagnostic analysis performed for each of the electric vehicles high voltage traction batteries.
- Copies of the three (3) electronic diagnostic data print-outs for each of the three (3) batteries.
- Copies of your documented interpretation and justification of issues identified from diagnostic data results for the three (3) batteries.

- Copies of your documentation restorative option recommendations for each the three (3) batteries.
- Attestations from your qualified supervisor.

## Learning Recommendations

Nissan Leaf Service Factory Manuals

[www.nicoclub.com/archives/nissan-leaf-factory-service-manuals.html](http://www.nicoclub.com/archives/nissan-leaf-factory-service-manuals.html)

EECA Electric Vehicle Battery Life

[www.energywise.govt.nz/assets/Resources-Energywise/on-the-road/ev-battery-report.pdf](http://www.energywise.govt.nz/assets/Resources-Energywise/on-the-road/ev-battery-report.pdf)

Factory Service Manuals - Leaf 2013 LEAF – EVB

[www.nicoclub.com/service-manual?fsm=Leaf/2013%20LEAF/EVB](http://www.nicoclub.com/service-manual?fsm=Leaf/2013%20LEAF/EVB)

Factory Service Manuals - Leaf 2013 LEAF – EVC

[www.nicoclub.com/service-manual?fsm=Leaf/2013%20LEAF/EVC](http://www.nicoclub.com/service-manual?fsm=Leaf/2013%20LEAF/EVC)

## Tasks

### Proof of Identity

Please include a scanned copy of photo identification (e.g. passport, drivers licence, work ID card).

### Attestation Form(s)

An attestation is a declaration by a witness that the tasks and activities specified have been performed in their presence and that the evidence provided is true and correct. The Attestation form(s) relevant to this assessment is located in the Resources section above.

Please complete and scan a copy of the necessary form(s) then upload it here.

### General Information

*Please provide:*

a) The name of the workplace are you employed in.

b) Your current automotive qualifications.

(This information is not assessed but provides context for the assessor).

**Task 1: Perform diagnostic analysis to identify faulty high voltage traction battery components and complete restorative actions to manufacturers' specifications.**

*I can do the following:*

Electric Vehicle high voltage traction battery electronic diagnostics and completed restorative actions.

*By providing:*

1.1. Copies of job cards for three (3) different vehicles. The electric vehicles must be one of the following: electric vehicles, HEV, PHEV, heavy electric vehicles.

1.2. Photographs of the three (3) electric vehicles identified in Task 1.1 for which you have performed electronic diagnostic analysis. The photographs must include the make and model of each electric vehicle with you standing next to each. (Check out our Photograph Tips, under Resources for this assessment).

1.3. Copies of the data printouts for electronic diagnostics performed identifying all the faulty traction battery components for each electric vehicle identified in Task 1.1.

1.4. Video/s showing you following all the manufacturer's specifications while carrying out restorative actions to faulty traction battery components for electric vehicles identified in Task 1.1. (Check out our Video Guidelines, under Resources for this assessment).

The videos must include:

- At all times you wearing the correct PPE and using safety equipment meeting health and safety specifications.
- Safety signage and environmental warnings.
- Powering down each electric vehicle.
- Removing each traction battery.
- Disassembling each traction battery.
- Testing, both visually and electrically, internal components for each traction battery to identify potential hazards.
- Identification of faulty components for each traction battery.
- Carrying out restorative actions (repairs) on faulty components of each traction battery.
- Carrying out high voltage insulations tests to insulation standards before re-assembly.
- Reassembling each traction battery.

1.5. An attestation from your qualified supervisor and/or facilitator attesting to your having performed, on your own, diagnostic analysis to identify faulty high voltage traction battery components and you completing restorative actions to manufacturers' specifications for electric vehicles identified in Task 1.1.

## **Task 2: Perform quality control diagnostic analysis to ensure electric vehicles operate according to manufacturers' specifications**

*I can:*

2.1. Produce video/s showing me following manufacturers' specifications to refit each traction battery and power-up the electric vehicles.

*By providing:*

Video or videos showing you following all the manufacturers' specifications refitting traction batteries, powering-up and preparing to perform quality control diagnostic analysis for each of the electric vehicles identified in Tasks 1.1.

The video must include:

- Wearing PPE gear at all times.

- Using safety equipment meeting health and safety specifications.
- Ensuring health and safety of self and others.
- Safety signage and environmental warnings.
- Refitting each traction battery to manufacturers' operating condition.
- Powering-up each electric vehicle.

*I can:*

2.2. Produce video evidence showing me performing quality control diagnostic analysis to ensure electric vehicles are operational to the manufacturers' specifications.

*By providing:*

Video or videos showing you following all the manufacturers' specifications and/or industry legislation performing quality control diagnostic analysis on the electric vehicles identified in Tasks 1.1 after restorative actions have been completed.

The video must include:

- Safety signage and environmental warnings.
- Ensuring health and safety of self and others.
- Plugging in each electric vehicle.
- Performing diagnostic analysis.

*I can:*

2.3. Provide data printouts of quality control electronic diagnostics I have performed, showing faulty components in each traction battery that have been restored and electric vehicles are operating as per manufacturers' specifications.

*By providing:*

Copies of the data printouts of quality control electronic diagnostics you have performed, ensuring each of the electric vehicles identified in Task 1.1 are operating in accordance with the manufacturers' specifications.

*Please provide:*

2.4. An attestation from your qualified supervisor and/or facilitator attesting to your having performed, on your own, quality control diagnostic analysis to ensure each of the electric vehicles operates according to manufacturers' specifications.

