



Australian Government

**UEERE4012 Maintain, service and fault
find bidirectional systems in a low voltage
environment**

UEERE4012 Maintain, service and fault find bidirectional systems in a low voltage environment

Modification History

Release	Comments
1	This unit of competency was first released in UEE Electrotechnology Training Package Release 11.0.

Application

This unit describes the skills and knowledge required to perform preventative maintenance, servicing, and fault-finding of bidirectional electric vehicle (EV) systems operating in low-voltage (LV) electrical environments.

The skills and knowledge are applied in electrical and energy industry contexts where bidirectional EV systems interface with renewable energy sources and/or the electricity grid. Work includes scheduled maintenance, functional testing, component replacement, software and firmware updates, system recommissioning, and the identification, isolation, and rectification of faults in alternating current (a.c.) and direct current (d.c.) bidirectional systems, in accordance with manufacturer specifications, industry standards, and regulatory requirements.

This unit applies to individuals who are competent in the core skills of an electrician and are undertaking further development in specialist renewable energy systems, energy storage, or advanced system maintenance. Individuals work independently or in consultation with licensed electricians or engineers, taking responsibility for verifying compliance, interpreting technical information, and communicating outcomes to clients and stakeholders to ensure the safe, reliable, and compliant operation of bidirectional EV equipment.

Licensing/Regulatory Information

This unit applies to licensed electricians or individuals that have been deemed competent in their final licensing assessment (capstone) or an equivalent pathway recognised by the relevant state or territory regulatory authority.

Work associated with this unit is subject to electrical licensing requirements and grid connection approvals governed by jurisdictional regulators and electricity distributors. All tasks must be carried out under applicable workplace and regulatory arrangements.

Licensing, legislative, and regulatory requirements can vary between states and territories; relevant jurisdictional information must be sourced prior to commencing the unit.

Pre-requisite unit(s)

UEERE4010 Plan the installation of bidirectional electric vehicle systems in a low voltage environment

Competency field(s)

Renewable Energy

Unit sector(s)

Electrotechnology

Elements and Performance Criteria

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Prepare to maintain, service and fault find equipment	1.1 Determine the scope of work in consultation with stakeholders using system design documentation, manufacturer specifications and regulatory requirements
	1.2 Identify work health and safety (WHS) requirements for the work area
	1.3 Develop and communicate a work plan and identify, organise and verify plant, tools, and test equipment
2. Service EV equipment	2.1 Confirm service requirements from schedules, manufacturer specifications and regulatory obligations
	2.2 Apply WHS controls, verify de-energisation using isolation procedures and manufacturer guidelines
	2.3 Perform scheduled servicing according to the work plan, relevant industry standards, regulations and/or requirements and manufacturer specifications., including firmware and software updates, adjustment of system settings, component replacement, and verification of performance
3. Fault Find Bidirectional EV equipment	3.1 Verify the reported fault and collect evidence from relevant data sources, including system logs, alarms, performance history and visual inspection
	3.2 Apply WHS controls, verify de-energisation using isolation procedures and manufacturer guidelines
	3.3 Conduct diagnostic testing of the system in accordance with manufacturer specifications
	3.4 Confirm and document faults and identify corrective actions

	3.5 Perform corrective actions in accordance with manufacturer specifications
	3.6 Verify and test the equipment to confirm operational integrity on re-energisation in compliance with relevant industry standards, regulations and/or requirements
4. Complete and report service or fault finding work activities	4.1 Record service and fault finding results, including post-commissioning test outcomes, in accordance with relevant industry standards, regulations and manufacturer specifications
	4.2 Clean and make the worksite safe
	4.3 Submit work records, reports and compliance documentation in accordance with manufacturer specifications, relevant industry standards, regulations and/or requirements

Range of conditions

N/A

Assessment Requirements for UEERE4012 Maintain, service and fault find bidirectional systems in a low voltage environment

Performance Evidence

To demonstrate competent application of the skills and knowledge in this unit, evidence must show that the individual can:

- complete servicing and fault-finding activities on two separate bidirectional electric vehicle (EV) installations, including:
 - one servicing task
 - one fault-finding task

Each must include the following control system checks, system verification, and performance testing:

- plan and prepare for servicing and fault-finding activities, including:
 - interpreting design documentation, manufacturer specifications, and regulatory requirements
 - applying WHS procedures and risk control measures
 - determining scope of work, confirming system access, and sequencing tasks in consultation with relevant personnel
 - selecting, checking, and confirming the serviceability and calibration status of tools, test equipment, and diagnostic instruments
- service bidirectional EV systems, including:
 - applying isolation procedures and verifying de-energisation using lock-out tag-out (LOTO) controls
 - conducting routine servicing in accordance with manufacturer specifications and relevant industry standards and regulations
 - applying firmware or software updates as required by the manufacturer
 - recording maintenance activities and verifying correct system operation
- fault-find and rectify system faults, including:
 - using diagnostic tools, data logs, and test instruments to identify faults and determine causes
 - isolating, dismantling, repairing, or replacing faulty components in accordance with manufacturer specifications
 - reassembling, testing, and recommissioning bidirectional EV equipment
 - confirming correct system operation and communication
- document and report outcomes, including:
 - ensuring systems are energised and operating in accordance with manufacturer specifications and relevant industry standards and regulations

- completing and submitting maintenance, service, and fault-finding documentation, including test results, performance data, and compliance records
- communicating system performance outcomes, identified issues, and recommendations to relevant stakeholders
- maintaining accurate records in accordance with workplace and regulatory requirements.

Knowledge Evidence

To demonstrate competent application of the skills and knowledge in this unit, evidence must show that the individual has knowledge of:

- maintenance and servicing requirements for bidirectional EV equipment, including:
 - scheduled and preventative maintenance strategies
 - procedures for inspecting, cleaning, testing, and replacing faulty components
 - verification of system performance following recommissioning
- fault diagnosis and repair principles, including:
 - common causes of operational faults in bidirectional EV systems
 - use of diagnostic tools and data sources such as logs, alarms, and system history
 - procedures for isolating, testing, dismantling, repairing, reassembling, and verifying equipment
 - interpretation of test results and application of corrective actions
- electrical and communication system principles, including:
 - relationships between a.c. and d.c circuits
 - power conversion principles
 - communication principles for power conversion equipment (PCE)
- safety and compliance requirements, including:
 - WHS procedures and responsibilities for electrical maintenance work
 - risk control measures, isolation methods, and LOTO requirements
 - regulatory and licensing obligations for maintenance personnel
- instrumentation and measurement concepts, including:
 - selection and calibration of test equipment to ensure measurement accuracy
 - verification of system compliance through testing and measurement
 - data logging, trending, and performance monitoring methods
 - analysis of test data to identify inefficiencies or potential faults
- standards and documentation requirements, including:

- relevant industry standards, regulations, and manufacturer specifications
 - recording maintenance and fault finding results
 - maintenance of digital and physical records
- sustainability and efficiency principles, including:
 - energy management principles for bidirectional EV equipment
 - methods to optimise system performance and reduce energy losses
 - disposal and recycling of faulty components and materials in accordance with relevant industry standards and regulatory requirements
- monitoring and updating processes, including:
 - methods for monitoring and evaluating maintenance outcomes
 - processes for improving system reliability and operational procedures
 - application of manufacturer updates and firmware updates.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must be conducted in a real or simulated workplace environment that reflects typical bidirectional EV equipment maintenance and fault finding conditions, including realistic job tasks, tools, equipment, and safety requirements.

Learners must be licensed electricians, or have been deemed competent in their final licensing assessment (capstone) or equivalent pathway, as recognised by the relevant regulatory authority. Assessment must demonstrate compliance with current electrical safety legislation, applicable service rules, and electricity network standards.

Mandatory Workplace Requirements

Assessment of performance evidence may be in a workplace setting or an environment that accurately represents a real workplace.

Unit Mapping Information

Previous Code and Title	Equivalence	Comments
	Newly created	This unit has been created to address a skill or task required by industry that is not covered by an existing unit of competency

Links

Companion volumes, including implementation guides, are found on the national training register - <https://training.gov.au/training/details/UEE>.