



Australian Government

UEEHA0020 Conduct detailed inspection of electrical installations for hazardous areas

Release: 1

UEEHA0020 Conduct detailed inspection of electrical installations for hazardous areas

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

This unit replaces and is equivalent to UEEHA0001 Conduct detailed inspection of electrical installations for hazardous areas.

Prerequisite requirements have been amended.

Application

This unit involves the skills and knowledge required to conduct detailed inspections of the explosion-protection aspects of electrical installations for hazardous areas. It includes using a verification dossier; working safely in a hazardous area; conducting initial, periodic and sample inspections; complying with inspection standards; and recording inspection results.

This unit applies to inspection functions.

Site-specific work permits may be required to work in the hazardous environment. In addition, other permits may be required, such as confined space and to operate specific pieces of equipment such as elevated work platforms in various jurisdictions.

Additional and/or other conditions may apply in some jurisdictions subject to regulations related to electrical work. Practice in the workplace and during training is also subject to work health and safety (WHS)/occupational health and safety (OHS) regulations.

This unit of competency and associated assessment requirements is adopted from clause 2.7 of AS/NZS 4761.1:2018 Competencies for working with electrical equipment for hazardous areas (EEHA). There may be differences between the content of this unit and AS/NZS 4761.1:2018, so the Standard must be checked to ensure compliance with it. Clause 2.7 of AS/NZS 4761.1:2018 includes the following precondition for assessment:

- “A candidate seeking assessment in this unit shall have been deemed competent to inspect electrical installations in a non-hazardous area at AQF level 3 or NZQF level 4 or higher.”

Pre-requisite Unit

UEEHA0004 Enter a classified hazardous area to undertake work related to electrical equipment

UEEHA0022 Determine the explosion-protection requirements to meet a specified classified hazardous area

UEEHA0038 Conduct visual and close inspection of electrical installations for hazardous areas

Competency Field

Hazardous

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare for inspection

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** WHS/OHS procedures and safe work methods are reviewed in preparation to work in a classified hazardous area
- 1.2** Knowledge of the scope of detailed inspections specified in inspection standards and site inspection program is applied to work preparation
- 1.3** Classification of the area is ascertained from hazardous area layout drawings retained in the verification dossier
- 1.4** Type and grade of inspection is ascertained from the inspection schedule retained in the verification dossier
- 1.5** Classification details and specified location of each item of equipment and circuits subject to inspection are determined from design drawings and equipment certification documentation retained in the verification dossier
- 1.6** Special tools, equipment and testing devices needed to carry out the inspection are checked to ensure they are safe and serviceable, and any defective items are either rectified or replaced

2 Conduct inspection

- 2.1** Safe work methods relating explosive atmospheres and inspections, including isolation of equipment, are obtained and applied
- 2.2** Knowledge of the explosion-protection aspects of equipment and hazardous area installation requirements is applied

- 2.3 Equipment, systems and installation are inspected for compliance with the design specifications retained in the verification dossier and in accordance with the inspection schedule and standards
 - 2.4 Where applicable in a given jurisdiction, an appropriately authorised person is directed to remove equipment enclosure covers and internal components, where needed, to enable inspection
 - 2.5 Arrangements are made to store and protect equipment covers and components that are removed to enable inspection
 - 2.6 Where applicable in a given jurisdiction, after the inspection of each item, an appropriately authorised person is directed to replace equipment covers and components in a manner that ensures the integrity of the explosion-protection system
- 3 **Record results of detailed inspection**
 - 3.1 Results of inspection are recorded in accordance with inspection standards
 - 3.2 Defects such as equipment deterioration, faults and unauthorised modifications are recorded in accordance with inspection standards
 - 3.3 Actions to rectify defects are specified in the inspection record
 - 3.4 The inspection record is forwarded to the appropriate personnel for inclusion in the verification dossier in accordance with inspection standards

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Conducting detailed inspection of electrical

- new and existing installations and existing

installations for hazardous areas must apply to:

Conducting detailed inspection of electrical installations for hazardous areas be guided by:

- installation after repairs and maintenance have been carried out
- content of the verification dossier and requirements of inspection standards requiring the use of access equipment, tools and testing devices

Unit Mapping Information

This unit replaces and is equivalent to UEEHA0001 Conduct detailed inspection of electrical installations for hazardous areas.

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEEHA0020 Conduct detailed inspection of electrical installations for hazardous areas

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- preparing to conduct a detailed inspection of the electrical installation, including:
 - reviewing safe work methods associated with the classified area in which the work is to be carried out
 - determining the scope of inspection, including:
 - ascertaining the area classification from hazardous area layout drawings retained in the verification dossier
 - ascertaining the type and grade of inspection from the inspection schedule retained in the verification dossier
 - determining classification details and the specified location of each item of equipment and circuits subject to the inspection from design drawings and equipment certification documentation retained in the verification dossier
 - checking safety and serviceability of special tools, equipment and testing devices needed to carry out the inspection
- conducting detailed inspections of the electrical installation encompassing:
 - accepting and following safe work methods relating to the work
 - carrying out the detailed inspection to requirements, including:
 - conducting detailed inspections for compliance with design specifications and in accordance with inspection schedules and standards
 - making arrangements to store and protect parts of equipment dismantled in order to conduct inspection
 - where applicable in a given jurisdiction, directing an authorised person to:
 - disconnect and dismantle equipment as necessary to conduct the inspection
 - reconnect and reassemble equipment in a manner that ensures the integrity of the explosion-protection system after equipment is inspected
- completing records of detailed inspections of the electrical installation, including:

- recording the results of the detailed inspection including equipment deterioration, faults and unauthorised modifications
- specifying actions to rectify defects found in the inspection
- forwarding the inspection record for inclusion in the verification dossier.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- safe work procedures for explosive atmospheres, including:
 - Work health and safety (WHS)/occupational health and safety (OHS) procedures for working in hazardous areas
 - permit to work systems that cover the hazardous aspects of specific work and location
- scope and aspects of detailed inspections, including:
 - inspection program for the site based on schedules specified by inspection standards
 - periodic inspection schedules covering equipment, installations and environment for:
 - Ex ‘d’, Ex ‘e’ and Ex ‘n’ installations
 - Ex ‘i’, Ex ‘iD’ and Ex ‘nL’ installations
 - Ex ‘p’ and Ex ‘pD’
 - Ex ‘t’
- specific aspects of initial inspections including ensuring:
 - equipment is appropriate to the equipment protection level (EPL)/zone requirements of the location
 - equipment group is correct
 - equipment maximum surface temperature is correct
 - equipment circuit identification
 - cable gland
 - type of cable
 - sealing
 - fault-loop impedance or earthing resistance
 - overload protection
- additional aspects of initial inspection schedule requirements for types of protection:
 - ‘d’ – flameproof enclosure
 - ‘e’ – increased safety
 - ‘i’ and ‘iD’ – intrinsic safety
 - ‘p’ and ‘pD’ – pressurised enclosure
 - ‘n’ - non-sparking enclosure
 - ‘t’ – protection by enclosure
 - ‘m’ and ‘mD’ -encapsulation

- ‘o’ oil-immersion
- ‘q’ powder-filling
- ‘v’ – ventilation
- ‘p’ – pressurisation — rooms
- requirements for installing equipment and wiring systems for explosive atmospheres, including:
 - required documentation
 - installation requirements for protection from dangerous (incendive) sparking, including:
 - earthing system requirements
 - SELV and PELV systems
 - electrical separation
 - limitation of equipment installed above a hazardous area
 - requirements for potential equalisation, including:
 - various earthing systems
 - bonding systems
 - cable armour and screens
 - exposed conductive parts
 - metallic enclosures
 - cathodic protection
 - temporary bonding
 - wiring systems, including:
 - limitation on the use of aluminium conductors
 - fixed cable and wiring systems permitted for Groups I, II and III
 - wiring systems permitted and not permitted in or above hazardous areas
 - cables supplying transportable and portable equipment
 - flexible connections and flexible cables
 - connection to equipment, including:
 - cable glands and blanking elements per enclosure type
 - non-electrical entries
 - conduit systems
 - termination of conductors
 - treatment of unused core
 - unused opening/entries in enclosures
 - joining cables
 - openings in walls
 - passage and collection of flammables
 - additional requirements for each type of explosion protection
- cable and conduit termination devices and techniques, including:
 - cable glands, conduits and sealing:
 - types of glands and components

- requirements for fitting glands and applying sealing compound
- requirements for conduit seals and applying sealing compound.

Assessment Conditions

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

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions and include:

- an area designated as a hazardous area which is a close facsimile of a real work environment
- an area entry point
- delineation of the area into zones for both gas and dust
- a person to act as the ‘authorised person’ for the site
- a qualified supervisor.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate tools and testing devices and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, safe work methods, explosive atmosphere equipment, installation and inspection standards, and verification dossier for the site, including:
 - design documentation
 - area classification drawings
 - certification documents for each item of equipment
 - inspection records
 - maintenance records.

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