



Australian Government

UEENEEM068A Assess the fitness-for-purpose of hazardous areas explosion-protected equipment - gas atmospheres

Release: 3

UEENEEM068A Assess the fitness-for-purpose of hazardous areas explosion-protected equipment - gas atmospheres

Modification History

Not Applicable

Unit Descriptor

Unit Descriptor

1)

1.1) Descriptor

This Competency Standard Unit covers the explosion-protection aspects of permanently installed explosion-protected equipment, which has no acceptable certification and a conformity assessment document cannot be prepared to determine the level of conformity with current IEC or AS/NZS Standards. It requires the ability to gather, establish and evaluate technical information on relevant explosion-protection techniques and to report evaluations and findings, including recommendations based on safety requirements and economic considerations.

This unit is directly equivalent to the Unit 2.22 *Assess the fitness-for-purpose of hazardous areas explosion-protected equipment* in the Australian/New Zealand Standard AS/NZS 4761.1 *Competencies for working with electrical equipment for hazardous areas (EEHA) Part 1: Competency Standards*. Equivalence includes endorsement in the explosion-protection techniques listed in the Range statement of this unit.

Application of the Unit

Application of the Unit

4)

This unit augments other formally-acquired competencies in a relevant industry and shall be used only in conjunction such competencies. It applies to safety, maintenance and engineering design and management job functions. The unit is intended to be restricted to :

- end users when considering the use and

Application of the Unit 4)

- refurbishment of legacy plant; and
- selecting repaired or overhauled equipment.

Note:

Examples of relevant industries include aviations, electrical installation and maintenance, fuel storage and dispensing industrial process, instrumentation and control, marine, material handling and storage, mining, and petrochemical.

Licensing/Regulatory Information

1.2) License to practice

The skills and knowledge described in this unit do not require a license to practice in the work place. However practice in this unit is subject to regulations directly related to occupational health and safe and contracts of training such as new apprenticeships.

Pre-Requisites

Prerequisite Unit(s) 2)

2.1) Competencies

Granting competency in this unit shall be made after competency in the following units:

UEENEEM036A Conduct a conformity assessment of explosion-protected equipment - gas atmospheres

UEENEEM044A Conduct detailed inspection of hazardous areas installations - gas atmospheres

UEENEEM065A Conduct audit of hazardous areas installations - gas atmospheres

Employability Skills Information

Employability Skills

3)

The required outcomes described in this unit of competency contain applicable facets of Employability Skills. The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements.

Elements and Performance Criteria Pre-Content

6) Elements describe the essential outcomes of a unit

Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT

PERFORMANCE CRITERIA

1 Prepare to assess fitness-for-purpose of equipment and systems	1.1	OHS policies and procedures are followed.
	1.2	Equipment or system to be assessed is ascertained from instructions and in consultation with appropriate personnel.
	1.3	Available design documentation in accordance with established procedures is obtained from site records or equipment/system manufacturer.
	1.4	Authenticity of documentation is verified with the issuing organization or the assessor.
	1.5	Appropriate Standards and codes of practice against which equipment or systems are to be assessed are determined, obtained and understood.
	1.6	Where design documentation is unavailable

ELEMENT	PERFORMANCE CRITERIA
	arrangements are made to establish the specification of the equipment to determine the normal operating and performance parameters of the equipment or system.
	1.7 Special tools, equipment and testing devices needed to carry out field testing/measurements are obtained and checked for correct operation and safety.
2 Gather technical information to assess fitness-for-purpose of equipment and systems	2.1 OHS policies and procedures for working in a hazardous area are followed.
	2.2 Where necessary tests/measurements are carried out to verify the specification for the equipment or system.
	2.3 Assessment of the equipment or system is made to gather data relevant to the specification and verified according to the appropriate Standards and Codes of Practice.
3 Assess equipment/systems against Standards	3.1 Equipment/system design details are assessed for compliance with each relevant clause in the appropriate Standard. Examination is set up in accordance with established procedures.
	3.2 Differences between the equipment and Standards requirements are identified and documented.
	3.3 Recommendations are developed as to whether remedial work is viable for equipment or systems that are not initially assessed as fit-for-purpose.
	3.4 Specifications are recommended for the remediation of equipment or systems to be suitable as fit-for-purpose are developed.
4 Develop and submit a fitness-for-purpose report	4.1 Assessment results pertaining to the integrity of explosion-protected electrical equipment are documented in a fitness-for-purpose report in accordance with requirements and established procedures.
	4.2 Fitness-for-purpose report and all required appended documentation are forwarded in accordance with requirements and established

ELEMENT

PERFORMANCE CRITERIA

procedures.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

7) This describes the essential skills and knowledge and their level, required for this unit.

Evidence shall show that knowledge has been acquired of safe working practices and testing installations in hazardous areas.

All knowledge and skills detailed in this unit should be contextualised to current industry practices and technologies.

KS01-EM068 Explosion-protected equipment fitness-for-purpose A

Evidence shall show an understanding of explosion-protected equipment fitness-for-purpose to an extent indicated by the following aspects:

T1 Preparation to install and maintain explosion-protected equipment in hazardous areas encompassing:

- OHS procedures to be followed when working in a hazardous area;
- the significance of information provided on the certification documentation and schedules for a given item of explosion-protected equipment;
- the typical contents of a verification dossier and their purpose; and
- limitations in the use of tools and testing devices in hazardous areas.

T2 The relationship between explosion-protected equipment, their certification documents and required locations given in specifications and layout drawings and/or written instructions encompassing:

- the purpose of markings on the compliance plate and certification documents for a given item of explosion-protected equipment;
- matching explosion-protected equipment with certification documents and the equipment specified for an installation; and
- the location the items of explosion-protected equipment for an installation from specifications and layout drawings and/or instructions.

T3 Installation Standards and requirements applicable to hazardous encompassing:

- the wiring systems permitted and not permitted in or above hazardous areas;
- equipment not permitted in or above hazardous areas;
- the regulations and Standards to which explosion-protected equipment and wiring must be installed in a hazardous area and how these are applied; and
- the documentation required as a record of the installation process, including

REQUIRED SKILLS AND KNOWLEDGE

certification documentation.

T4 Maintenance procedures in hazardous areas that will ensure the integrity of the explosion-protection technique encompassing:

- the purpose of a maintenance schedule;
- the purpose and extent of ‘close’, ‘sample’ and ‘periodic’ inspections;
- the features of each explosion-protection techniques that should be included in a maintenance schedule;
- the impact of environmental conditions on explosion-protected equipment, including corrosion and frequency of maintenance;
- the documentation requirements for recording the maintenance process and results;
- the use of Standards in determining the requirements with which the design of explosion-protected apparatus shall comply.

T5 Cable termination types suitable for use in hazardous areas encompassing:

- explosion protection features of cable terminations devices.
- selecting compliant cable termination devices.

T6 The relationship between the documentation held in a verification dossier and the installed equipment encompassing:

- consistency between the location and type of equipment with the area classification details in the verification dossier; and
- equipment certification and any attached conditions that relate to the equipment as it is installed.

T7 Inspecting a hazardous area installation encompassing:

- typical processes for undertaking the inspection of a hazardous area installation;
- requirements applicable to a given installation; and
- reporting of an inspection of a hazardous area installation.

T8 Documentation used in assessing explosion-protected equipment for conformance to accepted Standards encompassing:

- The documentation and Standard(s) required to begin an assessment.
- The differences between the test requirements of Standards from other countries and the compliant/acceptable Standards against which the equipment is being assessed.
- Results given in equipment test reports.
- Conformity assessment processes and procedures.

T9 Assessing to a current acceptable Standard existing equipment that has been certified to previously acceptable Standards encompassing:

REQUIRED SKILLS AND KNOWLEDGE

- processes and procedures used; and
- possible outcomes.

T10 A clause by clause assessment between the equipment manufacturing Standard(s) and the current acceptable Ex Standards encompassing:

- processes and procedures used; and
- differences between the Standards that may be detected.

T11 Techniques used in fitness-for purpose assessment of equipment for use in hazardous areas encompassing:

- Processes for verifying that a design specification meets the integrity of the equipment, showing the equipment is fit-for-purpose and is safe to use:
 - Standards against which fitness-for-purpose assessment is made;
 - the need to maintain the accuracy/calibration of measuring/test devices/tools;
 - assessment and measurements/tests requirements for determining that an item of explosion-protected equipment complies with the relevant Standards and meets the certification requirements;
 - testing that is/is not required to determine compliance of the equipment being assessed; and
 - development of different tests to those given in Standards and justification as to how they achieve the same result.
- Typical specification for the equipment to be assessed as fit-for-purpose.

T12 Processes used in auditing hazardous areas encompassing:

- Requirements to retain hazardous areas documentation on site.
- Components of an audit:
 - authenticity of documentation;
 - hazardous areas delineations shown in site diagrams;
 - location and operating parameters of equipment shown in certification documents;
 - compliance of equipment location;
 - compliance of wiring systems; and
 - alignment of hazardous areas documentation to as-built installation.
- Reporting non-conformance of an installation.

Evidence Guide

EVIDENCE GUIDE

9) This provides essential advice for assessment of the unit and must be read in conjunction with the performance criteria and the range statement of the unit and the Training Package Assessment Guidelines.

The Evidence Guide forms an integral part of this unit. It must be used in conjunction with all components parts of this unit and performed in accordance with the Assessment Guidelines of this Training Package.

Overview of Assessment

9.1)

Longitudinal competency development approaches to assessment, such as Profiling, require data to be reliably gathered in a form that can be consistently interpreted over time. This approach is best utilised in Apprenticeship programs and reduces assessment intervention. It is the industry-preferred model for apprenticeships. However, where summative (or final) assessment is used it is to include the application of the competency in the normal work environment or, at a minimum, the application of the competency in a realistically simulated work environment. It is recognised that, in some circumstances, assessment in part or full can occur outside the workplace. However, it must be in accord with industry and regulatory policy.

Methods chosen for a particular assessment will be influenced by various factors. These include the extent of the assessment, the most effective locations for the assessment activities to take place, access to physical resources, additional safety measures that may be required and the critical nature of the competencies being assessed.

The critical safety nature of working with electricity, electrical equipment, gas or any other hazardous substance/material carries risk in deeming a person competent. Sources of evidence need to be 'rich' in nature to minimise error in judgment.

Activities associated with normal everyday work influence decisions about how/much the data gathered will contribute to its 'richness'. Some skills are more critical to safety and operational requirements while the same skills may be more or less frequently practised. These points are raised for the assessors to consider when choosing an assessment method and developing assessment instruments. Sample assessment instruments are included for Assessors in the Assessment Guidelines of this Training Package.

Critical aspects of 9.2)

EVIDENCE GUIDE

evidence required to demonstrate competency in this unit

Before the critical aspects of evidence are considered all prerequisites shall be met.

Evidence for competence in this unit shall be considered holistically. Each element and associated performance criteria must be demonstrated on at least two occasions in accordance with the 'Assessment Guidelines - UEE07'. Evidence shall also comprise:

- A representative body of work performance demonstrated within the timeframes typically expected of the discipline, work function and industrial environment. In particular this shall incorporate evidence that shows a candidate is able to:
 - Implement Occupational Health and Safety workplace procedures and practices, including the use of risk control measures as specified in the performance criteria and range statement
 - Apply sustainable energy principles and practices as specified in the performance criteria and range statement
 - Demonstrate an understanding of the essential knowledge and associated skills as described in this unit. It may be required by some jurisdictions that RTOs provide a percentile graded result for the purpose of regulatory or licensing requirements.
 - Demonstrate an appropriate level of skills enabling employment
 - Conduct work observing the relevant Anti Discrimination legislation, regulations, policies and workplace procedures
- Demonstrated consistent performance across a representative range of contexts from the prescribed items below:
 - as described in 8) and including:
 - A Following OHS procedures.
 - B Obtaining and authenticating equipment specification and performance documentation.
 - C Obtaining appropriate Standards and codes.
 - D Carrying out appropriate measurements/tests accurately and safely.
 - E Developing a design specification that accurately

EVIDENCE GUIDE

- reflects the function and operation of the equipment or system.
- F Assessing equipment/system for compliance with each relevant clause of the appropriate Standard.
 - G Identifying differences between design details and Standards.
 - H Making decisions on the viability of remedial work that are supportable on safety and economic grounds.
 - I Developing clear specifications for acceptable remedial work.
 - J Writing a fitness-for-purpose report that includes all required elements and appended documents.
 - K Applying relevant contingency management skills.

Context of and specific resources for assessment

9.3)

This unit should be assessed as it relates to normal work practice using procedures, information and resources typical of a workplace. This should include:

- OHS policy and work procedures and instructions.
- Suitable work environment, facilities, equipment and materials to undertake actual work as prescribed by this unit.

These should also be part of the formal learning/assessment environment.

Note:

Where simulation is considered a suitable strategy for assessment, conditions must be authentic and as far as possible reproduce and replicate the workplace and be consistent with the approved industry simulation policy.

The resources used for assessment should reflect current industry practices in relation to testing installations in hazardous areas.

EVIDENCE GUIDE

Method of assessment

9.4)

This unit shall be assessed by methods given in Volume 1, Part 3 'Assessment Guidelines'.

Note:

Competent performance with inherent safe working practices is expected in the Industry to which this unit applies. This requires assessment in a structured environment primarily intended for learning/assessment which incorporates all necessary equipment and facilities for learners to develop and demonstrate the essential knowledge and skills described in this unit.

Concurrent assessment and relationship with other units

9.5)

For optimisation of training and assessment effort, competency development in this unit may be arranged concurrently with any of the following units:

UEENEEM065A Conduct audit of hazardous areas installations gas atmospheres

Range Statement

RANGE STATEMENT

8) This relates to the unit as a whole providing the range of contexts and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

This unit shall be demonstrated in relation to any classified gas hazardous area and all the following explosion-protection techniques:

- Flameproof, (Ex 'd')
- Increased safety, (Ex 'e')
- Intrinsic safety, (Ex 'i')
- Non-sparking, (Ex 'n')

Generic terms used throughout this Vocational Standard shall be regarded as part of the Range Statement in which competency is demonstrated. The definition of these and other terms that apply are given in Volume 2, Part 2.1.

Unit Sector(s)

Not Applicable

Competency Field

2.2) Literacy and numeracy skills

Participants are best equipped to achieve competency in this unit if they have reading, writing and numeracy skills indicated by the following scales. Description of each scale is given in Volume 2, Part 3 'Literacy and Numeracy'

Reading	3	Writing	3	Numeracy	3
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2.2) Literacy and numeracy skills

Competency Field 5)

Hazards

