Australian Government

UEENEEH161A Install fire detection and warning system apparatus

Release 2

INDUSTRY SKILLS COUNCILS
Creating Australia's Future

UEENEEH161A Install fire detection and warning system apparatus

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor **1) Scope:**

1.1) Descriptor

This unit covers installing electronic fire detection and warning systems in buildings and premises. It encompasses, working safely and to standards, following oral and written instructions and procedures, securely placing and connecting fire detection system and warning, components, and applying customer relation protocols.

Application of the Unit

Application of the Unit **2)**

The skills and knowledge described in this unit require a license to practice in the workplace where plant and equipment operate at voltage above 50 V a.c. or 120 V d.c. However other conditions may apply in some States/Territories subject to regulations related to electrical work. Where the fire alarm system has a call-back-to-base facility practice in the workplace is also subject to ACMA regulations to undertake cabling work.

Note:

Unit 'UEENEEF102A' provides the required skill and knowledge for registration in accordance with ACMA regulations for undertaking cabling work

Practice in the workplace and during training is also subject to regulations directly related to occupational health and safety and where applicable contracts of training such as apprenticeships.

Licensing/Regulatory Information

License to practice **3)**

The skills and knowledge described in this unit do not require a license to practice in the workplace. However, practice in this unit is subject to regulations directly related to occupational health and safety and where applicable contracts of training such as apprenticeships.

Pre-Requisites

Prerequisite Unit(s) **4)**

Competencies **4.1)**

Granting competency in this unit shall be made only after competency in the following unit(s) has/have been confirmed.

UEENEEE101A	Apply Occupational Health and Safety regulations, codes and practices in the workplace
UEENEEE102A	Fabricate, assemble and dismantle utilities industry components
UEENEEE105A	Fix and secure electrotechnology equipment
UEENEEE107A	Use drawings, diagrams, schedules, standards, codes and specifications

Literacy and numeracy skills **4.2)**

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

Employability Skills Information

Employability Skills **5)**

This unit contains Employability Skills

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 competency standard 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 assemble and set up basic fire detection and warning systems.	1.1 OHS procedures for a given work area are identified, obtained and understood through established routines.
	1.2 Established OHS risk control measures are followed in preparation for the work.
	1.3 Safety hazards that have not previously been identified are reported and advise on risk control measures are sought from the work supervisor.
	1.4 The nature and location of the work is obtained from work supervisor or other appropriate person to establish the scope of work to be undertaken.
	1.5 Advice is sought from the work supervisor or other appropriate person to ensure the work is co-ordinated effectively with others.

ELEMENT	PERFORMANCE CRITERIA	
	1.6	Sources of materials that may be required for the work are established in accordance with established routines.
	1.7	Tools, equipment and testing devices needed to carry out the work are obtained and checked for correct operation and safety.
2 Assemble and set up basic fire detection and warning systems.	2.1	Established OHS risk control measures for carrying out the work are followed.
	2.2	Circuits/machines/plant are checked as being isolated where necessary in strict accordance OHS requirements and procedures.
	2.3	Fire protection controller and detection and warning devices are located for optimum performance within limitation imposed by customers and regulations.
	2.4	Accessories are installed straight and square in the required locations and within acceptable tolerances.
	2.5	Cables and conductors are terminated at accessories in accordance with manufacture's specifications and regulatory requirements.
	2.6	Procedures for referring non-routine events to immediate supervisor for directions are followed.
	2.7	Fire protection installation is carried out efficiently without waste of materials or damage to apparatus, circuits or the surrounding environment and using sustainable energy practices.
3 Set up basic fire detection and warning systems.	3.1	OHS work completion risk control measures and procedures are followed.
	3.2	Work site is cleaned and made safe in accordance with established procedures.
	3.3	Fire protection system is documented in accordance with regulatory requirement and established routines.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

8) 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 positioning and terminating fire detection and warning system apparatus.

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

- **KS01-EH161A Fire detection and warning system and apparatus**
- Evidence shall show an understanding of fire protection technologies, fire detection and warning systems, technical standards and regulations and working safely on or around fire protection equipment to an extent indicated by the following aspects:
- T1 Regulation governing fire protection and warning system installations
- T2 Applying Standards and Codes for fire protection systems and equipment encompassing:
- Standards mandated under regulation or by an authority, deemed-to-comply standard and local service requirements and codes include those applicable to electrical safe working practices
- Installation arrangement
- Certified/approved fire equipment
- Installation of fire equipment
- Testing and verification
- Final commissioning verifications
- T3 Purpose of fire alarm and warning systems
- T4 Purpose and operating principles of fire detection and warning systems.
- T5 Operating principles and characteristic of the various types of fire alarm detectors.
- T6 Operating principles and characteristic of the various warning system components
- T7 Effective and ineffective locations for fire detection devices and common causes of false alarms.
- T8 Warning devices and their operating parameters
- T9 Common operational requirements and types of control and indicating equipment.
- T10 Common operation and types of field data gathering equipment
- T11 Common operation and interface connections to other systems.
- T12 Purpose and interface requirements to smoke hazard management system
- T13. Life and safety concerns for fire protection.
- T14. Basic principles of combustion

REQUIRED SKILLS AND KNOWLEDGE

- T15. Bi-products of combustion that can be detected
- T16. Basic principles of fire behaviour within and enclosure
- T17. Types of fire protection systems and the difference between automatic and passive systems and wet and dry systems.
- T18 Risks and control measures associated with fire protection equipment encompassing:
- Principle and purpose of risk management,
- Processes for conducting a risk assessment
- Hazards associated with low-voltage, extra-low voltage and high-currents (arrangement of power distribution and circuits in an electrical installations, parts of an electrical system and equipment that operate at low-voltage and extra-low voltage, and parts of an electrical system and equipment where high-currents are likely).
- Procedures for isolating/reinstating and disconnection and reconnection of supplies in excess of extra-low voltage (Isolation and disconnection and reconnection are required to be performed by an appropriately qualified and authorise persons).
- Arrangements for isolating/reinstating fire protection systems to inhibit back-to-base signals to monitoring station.
- Arrangements for isolating/reinstating fire protection systems to inhibit alarms operating fire protection suppression equipment
- Arrangements for isolating/reinstating sections or parts of a fire protection system to inhibit alarms during building maintenance or system testing.
- Interface arrangements to isolate control functions between different fire protection building service systems
- Documentation and licensing requirements for working on fire protection systems
- Identification of personal and environmental hazards in working on fire protection systems.
- Control measures used for dealing with the hazards related to fire protection systems

Evidence Guide

EVIDENCE GUIDE

9) The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package. .

The Evidence Guide forms an integral part of this unit. It must be used in conjunction with all parts of the 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 must 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/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 evidence required to demonstrate competency in this unit **9.2)**

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 shall be demonstrated on at least two occasions in accordance with the 'Assessment Guidelines – UEE11'. 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, polices and workplace procedures
- Demonstrated consistent performance across a representative range of contexts from the prescribed items below:
  - Position and terminate fire detection and warning system apparatus as described in 8) and including:

A	Reading and interpreting drawings showing apparatus/device locations and connection arrangements.
B	Placing and securing devices and accessories accurately.
C	Maintaining fire integrity.
D	Terminating cable and conductors correctly.
E	Documenting installation.
F	Dealing with unplanned events by drawing on essential knowledge and skills to provide appropriate solutions incorporated in a holistic assessment with the above listed items.

Note:

Successful completion of relevant vendor training may be used to contribute to evidence on which competency is deemed. In these cases the alignment of outcomes of vendor training with performance criteria and critical aspects of evidence shall be clearly identified.

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 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 positioning and terminating fire detection and warning system apparatus.

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 that the specified essential knowledge and associated skills are assessed in a structured environment which is primarily intended for learning/assessment and 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 unit:

UEENEEE102A	Fabricate, assemble and dismantle utilities industry components
UEENEEE105A	Fix and secure electrotechnology equipment
UEENEEE107A	Use drawings, diagrams, schedules, standards, codes and specifications

Range Statement

RANGE STATEMENT

10) 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 using a representative range of fire detection and warning system apparatus by installing at least two-fire alarm and warning systems.

Installation shall include the following system components:

- Fire alarm system with at least one control and indicating panel, 50 input devices, 5 output device and 2 system interface controls on at least of the following: Analogue addressable system, addressable system and or conventional system.
- Fire warning system with at least one control and indicating panel, 50 speakers, 5 interface communication devices and 2 warning indicators

  Note:

  1. Input devices can be conventional, analogue or analogue addressable fire detectors, flow switch connections or switch connections and the like.

  2. Output devices can be shutdown signal, door or system release controls, solenoid valve controls and the like.

  3. System interface controls can be communication signals to remote Control and indicating equipment, Building monitoring systems, paging system, Colour graphics and or the like.

  4. Interface communication devices can be Warden In communication phones, Remote PA inputs and the like.

  5. Warning Indicators are flashing lights for hearing impaired persons, fire brigade building indication and the like.

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

Competency Field **11)**

Electronics