

Title	Install fixed gas detection apparatus in hazardous areas		
Level	4	Credits	2

Purpose	<p>This unit standard covers the installation, calibration, and response checking of fixed gas detection apparatus. It requires the ability to match apparatus with that specified for a given location.</p> <p>This unit standard is intended for people who are authorised by the Electrical Workers Registration Board (EWRB) to carry out installations of electrical apparatus, and are responsible for installation of electrical apparatus in explosive atmospheres.</p> <p>People credited with this unit standard are able to:</p> <ul style="list-style-type: none"> – prepare for installation of gas detection apparatus; – install gas detection apparatus; and – check and calibrate response of gas detection apparatus.
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Classification	Explosive Atmospheres > Electrical Apparatus in Explosive Atmospheres - Operations
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Available grade	Achieved
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Entry information	
Critical health and safety prerequisites	Unit 26742, <i>Demonstrate underpinning knowledge of permanently-installed gas detection apparatus in explosive atmospheres</i> ; Unit 17056, <i>Install explosion-protected electrical apparatus and wiring systems in hazardous areas</i> ; and Unit 24976, <i>Use and maintain the integrity of portable gas detection devices</i> ; or demonstrate equivalent knowledge and skills.

Explanatory notes

- 1 This unit standard has been designed for training and assessment on-job or off-job in a simulated environment which includes explosion-protected apparatus and wiring systems similar to those encountered in a real workplace.

- 2 This unit standard and unit standard 26743, *Response check, calibrate, and maintain fixed gas detection apparatus*, are directly equivalent to Unit 2.6 *Install and maintain the integrity of fixed gas detection equipment* in the Australian/New Zealand Standard AS/NZS 4761.1:2008 *Competencies for working with electrical equipment in hazardous areas (EEHA) Part 1: Competency standards* and includes essential skills and knowledge as specified in the relevant clauses. It aligns with Australian Competency Standard *UEENEEM077A* from UEE07 Electrotechnology Training Package Version 3.1 (copyright Australian National Training Information Service).
- 3 This unit standard is intended to be assessed against in conjunction with other work skills related to operation, installation, maintenance, or servicing of plant or machinery in explosive atmospheres.
- 4 Competence is to be demonstrated in relation to any classified hazardous areas and explosion-protection techniques. Where competency is demonstrated on wiring/cabling and apparatus that operate at extra low voltage and low voltage, registration with the EWRB as able to install electrical apparatus is required. For work on wiring and apparatus operating above 1000 V a.c. or 1500 V d.c., competency in high voltage work must be held. A copy of a candidate's current practicing license must be presented at the time of assessment.
- 5 References
AS/NZS 1826:2008, *Electrical equipment for explosive gas atmospheres – Special protection – Type of protection 's'*;
AS/NZS 3000:2007, *Electrical installations (known as the Australian/New Zealand Wiring Rules)*;
AS/NZS 4641:2007, *Electrical apparatus for detection of oxygen and other gases and vapours at toxic levels – General requirements and test methods*;
AS/NZS 4761.1:2008, *Competencies for working with electrical equipment for hazardous areas (EEHA) Part 1 – Competency standards*;
AS/NZS 4761.2:2008, *Competencies for working with electrical equipment for hazardous areas (EEHA) Part 2 – Guide to assessing competency*;
AS/NZS 60079.0:2008, – *Explosive atmospheres – Equipment – General requirements*;
AS/NZS 60079.1:2007, *Explosive atmospheres – Equipment protection by flameproof enclosures 'd'*;
AS/NZS 60079.10.1:2009, *Explosive atmospheres – Classification of areas – Explosive gas atmospheres*;
AS/NZS 60079.11:2006, *Explosive atmospheres – Equipment protection by intrinsic safety 'i'*;
AS/NZS 60079.14:2009, *Explosive atmospheres – Electrical installations design, selection and erection*;
AS/NZS 60079.17:2009, *Explosive atmospheres – Electrical installations inspection and maintenance*;
AS/NZS 60079.20:2000, *Explosive atmospheres – Data for flammable gases and vapours, relating to the use of electrical apparatus*;
AS/NZS 60079.29.1:2008, *Explosive atmospheres – Gas detectors – Performance requirements of detectors for flammable gases*;
AS/NZS 60079.29.2:2008, *Explosive atmospheres – Gas detectors – Selection, installation, use and maintenance of detectors for flammable gases and oxygen*;
Standards Australia HB13-2007, *Electrical equipment for hazardous areas*;
Electricity Act 1992;

Electricity (Safety) Regulations 2010;
Hazardous Substances and New Organisms Act 1996;
Health and Safety in Employment Act 1992, and associated regulations;
Workplace Exposure Standards and Biological Exposure Indices, available from the Department of Labour, <http://www.osh.govt.nz/order/catalogue/329.shtml>, and associated regulations;
and their subsequent amendments and replacements.

6 Definitions

Certification documentation – document(s) that assure(s) the conformity of a product, process, system, person, or organisation with specified requirements.

Explosion-protection techniques – techniques applied to the design of electrical apparatus, components, and systems to prevent the electrical energy from becoming an ignition source in the presence of flammable vapours and gases or combustible dusts in explosive atmospheres. See *explosion-protected apparatus*.

Explosion-protected apparatus – electrical apparatus to which specific measures are applied to avoid ignition of a surrounding explosive atmosphere. Such apparatus employs one or more of the following explosion-protection techniques:

For gas and vapour atmospheres

Ex d – flameproof;

Ex e – increased safety;

Ex i – intrinsic safety; with levels of protection Ex ia, Ex ib and Ex ic;

Ex n – non-sparking;

For dusts

Ex iD – intrinsic safety (dusts);

Ex tD – enclosed;

Others, less common

Ex p – pressurisation; Ex pD (dust);

Ex m – encapsulation, with levels of protection Ex ma, Ex mb, Ex mc (gases and vapours), and Ex mD (dusts);

Ex s – special protection; categorised by Zone of application; e.g. 'Ex s (Zone 0);

Ex o – oil immersion;

Ex q – sand filled;

Ex v – ventilation.

Verification dossier – a set of documents showing the complete compliance history of electrical apparatus and installations within hazardous areas, as defined in Standards.

7 Range

- a Assessment is to take account of variations between the industry sectors and enterprises. For example, apparatus used in underground coal mining will be different in some respects from that used in a petrochemical plant.
- b Occupational Safety and Health (OSH) policies and procedures may include but are not limited to – work permits and clearances, hazard monitoring, evacuation procedures, plant and electrical isolation.
- c The application of contingency management skills must be demonstrated for all outcomes and evidence requirements.
- d Established maintenance procedures must be followed.

- e All activities and evidence presented for all outcomes and evidence requirements in this unit standard must be in accordance with safe working principles and practices, legislation, policies, procedures, ethical codes and Standards, safe and sound practice, and industry practice; and, where appropriate, manufacturers' instructions, specifications, and data sheets.

Outcomes and evidence requirements

Outcome 1

Prepare for installation of gas detection apparatus.

Evidence requirements

- 1.1 Location in which gas detection apparatus is to be installed is determined from design documents.
- 1.2 Gas detection apparatus markings are checked to ensure they conform to design specifications and certification documentation.
- 1.3 Certification documentation supplied with each item of gas detection apparatus is collected for inclusion in site records and verification dossier.

Outcome 2

Install gas detection apparatus.

Evidence requirements

- 2.1 Gas detection apparatus is handled, installed, wired and connected to sampling points/point sensors in accordance with design specifications and standards, within the limits specified by apparatus certification and manufacturer, and in a manner that does not reduce the integrity afforded by the apparatus.
- 2.2 Gas detection sampling point and/or point sensor apparatus is installed in appropriate locations.

Range gas/vapor sources, propagation, and protection from environmental and mechanical damage, access for checking, routine calibration and maintenance.
- 2.3 Gas detection is installed in a manner that does not reduce the type of protection specified by any associated explosion-apparatus design.

Outcome 3

Check and calibrate response of gas detection apparatus.

Range local site, remote site.

Evidence requirements

- 3.1 Gas detection apparatus is formally checked and calibrated in accordance with established site requirements and instrument accuracy.
- 3.2 Installation of gas detection apparatus is documented in accordance with requirements and forwarded to personnel responsible for compiling and maintaining verification dossier.

Planned review date	31 December 2016
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	20 May 2011	N/A

Consent and Moderation Requirements (CMR) reference	0003
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Please note

Providers must be granted consent to assess against standards (accredited) by NZQA, before they can report credits from assessment against unit standards or deliver courses of study leading to that assessment.

Industry Training Organisations must be granted consent to assess against standards by NZQA before they can register credits from assessment against unit standards.

Providers and Industry Training Organisations, which have been granted consent and which are assessing against unit standards must engage with the moderation system that applies to those standards.

Requirements for consent to assess and an outline of the moderation system that applies to this standard are outlined in the Consent and Moderation Requirements (CMRs). The CMR also includes useful information about special requirements for organisations wishing to develop education and training programmes, such as minimum qualifications for tutors and assessors, and special resource requirements.

Comments on this unit standard

Please contact the ElectroTechnology Industry Training Organisation (ETITO) reviewcomments@etito.co.nz if you wish to suggest changes to the content of this unit standard.