Resources Safety & Health
Queensland

Recognised Standard 03

Explosion protected diesel engines

Version 2.1

Resources Safety and Health Queensland

Coal Mining Safety and Health Act 1999

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Recognised standards

This document is issued in accordance with PART 5—RECOGNISED STANDARDS and section 37(3) of the *Coal Mining Safety and Health Act 1999*.

PART 5 - RECOGNISED STANDARDS

71 Purpose of recognised standards

A standard may be made for safety and health (a "recognised standard") stating ways to achieve an acceptable level of risk to persons arising out of coal mining operations.

72 Recognised standards

(1) The Minister may make recognised standards.
(2) The Minister must notify the making of a recognised standard by gazette notice.
(3) The CEO must publish on a Queensland government website each recognised standard and any document applied, adopted or incorporated by the standard.
(4) In this section—
Queensland government website means a website with a URL that contains 'qld.gov.au', other than the website of a local government

73 Use of recognised standards in proceedings

A recognised standard is admissible in evidence in a proceeding if—

(a) the proceeding relates to a contravention of a safety and health obligation imposed on a person under part 3; and
(b) it is claimed that the person contravened the obligation by failing to achieve an acceptable level of risk; and
(c) the recognised standard is about achieving an acceptable level of risk.

PART 3 - SAFETY AND HEALTH OBLIGATIONS

37 How obligation can be discharged if regulation or recognised standard made

(3) …. if a recognised standard states a way or ways of achieving an acceptable level of risk, a person discharges the person's safety and health obligation in relation to the risk only by—
(a) adopting and following a stated way; or
(b) adopting and following another way that achieves a level of risk that is equal to or better than the acceptable level.

Where a part of a recognised standard or other normative document referred to therein conflicts with the *Coal Mining Safety and Health Act 1999* or the Coal Mining Safety and Health Regulation 2017, the Act or Regulation takes precedence.

This recognised standard is issued under the authority of the Minister for Natural Resources, Mines and Energy.

[Gazetted 22 November 2019]

Contents

1. Purpose

To assist manufacturers and users of plant powered by internal combustion engines to meet the requirements of section 261(2) of the Coal Mining Safety and Health Regulation 2017 (CMSHR 2017): section 261(2) addresses the requirements of internal combustion engines used to power plant operated in an Explosion Risk Zone 1 (ERZ1) in an underground coal mine.

261 Using plant powered by internal combustion engines

…..

(2) The underground mine manager must ensure an internal combustion engine used to power plant in an ERZ1 is -

(a) a compression ignition type; and

(b) a type that has been tested by a nationally accredited testing station under AS/NZS 3584.2: 2008 'Diesel engines systems for underground coal mine – explosion protected; and

(c) assessed by the engine's manufacturer, having regard to the recognised standard for explosion protected diesel engine systems, as safe to use in an ERZ1; and

(d) clearly marked with information identifying -

(i) the test report for the test mentioned in paragraph (b); and

(ii) the assessment report for the assessment mentioned in paragraph (c)

(3) The underground manager must ensure an internal combustion engine is not used to power plant in an ERZ0.

In this section – *'AS/NZS' means a joint Standards Australia and Standards New Zealand standard.*

2. Scope

This standard applies to all internal combustion engines powering plant in an ERZ1 of underground coal mines in Queensland.

3. Application framework

Internal combustion engines used to power plant used in Queensland underground coal mines must be of the compression ignition type; refer section 261 Using plant powered by internal combustion engines (CMSHR 2017). When diesel engines are used in underground mines they introduce safety and health hazards and must be designed and built (and maintained) to ensure that the risks associated with these hazards are properly managed.

The major safety hazards associated with using diesel engines underground in a coal mine are explosion and fire. Explosion is the result of the engine igniting an explosive mixture of gas, usually methane, which is naturally present in most underground coal mines. Fire caused by diesel engines is usually the result of igniting spilt fuel or coal dust on hot surfaces.

Areas of an underground coal mine are given a risk zone rating depending on the probability of an explosive mixture of gas being in that particular area. In order of descending probability of the presence of an explosive mixture of gas, areas are zoned ERZ0, ERZ1 and NERZ.

ERZ0 is the area of a mine with a high probability that methane will be present in a concentration greater than 2%. This presents an unacceptable level of risk when operating an internal combustion engine in an area with this classification.

ERZ1 is an area of a mine where on most occasions the methane level will vary between 2% and 0.5%. On some occasions the concentration will possibly exceed 2%, creating an unacceptable level of risk of an explosion; refer section 288 of CMSHR 2017 for full definition of ERZ1 zone. Diesel engines used in these zones need to be explosion protected.

NERZ is an area of the mine considered at negligible risk of an explosive mixture of explosive gas being present.

This standard addresses the testing and assessment of engines to ensure that they are explosion protected and can operate safety in areas of the mine classified as ERZ1.

NOTE: RECOGNISED STANDARDS ARE NOT MANDATORY

Recognised Standards are not mandatory; but when followed provide a way of meeting safety and health obligations. A person may adopt another way of managing that risk, however, in the event of an incident the person may be required to show that the method adopted was equivalent to the method in the recognised standard.

4. Controls and testing

The controls and testing contained in this recognised standard are:

(1) those provided in Australian and New Zealand Standard AS/NZS 3584.2: 2008, Diesel engine systems for underground coal mines, Part 2: Explosion protected; and

(2) the requirement that where non-metallic filter material is tested in accordance with Appendix H of AS/NZS 3584.2: 2008 and the material is treated with a water soluble flame retardant material, the test on the clean filter shall be carried out after washing the material to remove the water soluble retardant.

5. Definitions

Risk assessment – An assessment of the risks associated with an activity and it should be in accordance with AS/NZS ISO 31000:2009 Risk management – Principles and guidelines.

Normative – Refers to a standard or document that forms an integral part of the recognised standard in which it is mentioned.

Informative – Refers to a standard or document that is only for information and guidance.

6. References – Normative standards

The following documents are referred to, directly or indirectly, in this standard:

AS/NZS ISO 31000:2009 Risk management – Principles and guidelines

AS/NZS 3584.2: 2008 Diesel engine systems for underground coal mines, Part 2: Explosion protected