



Electrical Engineering Safety

Decision Sheet 3.1

Compliance of Remote Controlled Mining Machines with AS/NZS4240

***A basis for consistent application of Electrical Engineering Safety
issues across NSW***

Decision Sheets are developed by the Inspectors of Electrical Engineering in response to issues raised or questions asked by others in the DPI, in particular Mine Safety Operations and from our external clients. They are for use by any staff in Mine Safety Operations, but primarily by Electrical Engineering staff. They can be distributed externally to the DPI.

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Preamble

Remote controlled machines are widely used in the underground coal and metalliferous mining industry. They contain complex electrical and electronic equipment and interface with hydraulic and mechanical systems. They have the potential to kill mineworkers if not designed and used properly.



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Issue

A number of operators and maintainers of remote controlled equipment have been killed at mines. Unplanned movement of machinery has been identified as a priority issue for MSAC. The DPI has long recognised the issues with remote controlled machines. This has been reflected in legislation and safety alerts.

Position

Irrespective of the specific requirements of the Coal Mine Health and Safety Regulation 2006 and the General Rule 2000, mines should either utilise machinery that complies with AS/NZS 4240 or have a program for bringing machines into compliance with AS/NZS 4240 as a result of Safety Alert SA 01-09.

For coal mines gazette notice No 24 specifies requirements that must be met before remote control mobile plant is used. The notice applies to remotely controlled plant to which Australian Standard AS/NZS 4240:1994 Remote controls for mining equipment applies.

Remote controlled plant must be assessed against the relevant requirements (as applicable for the hazards at the particular coal operation) of the Australian Standards listed below.

- AS 60204.1-2005 Safety of machinery – Electrical equipment of machines – General requirements
- AS 60204.11-2006 Safety of machinery – Electrical equipment of machines – Requirements for HV equipment for voltages above 1000 V a.c. or 1500 V d.c and not exceeding 36 kV
- AS/NZS 4871.1:2002 Electrical equipment for coal mines, for use underground - General requirements
- AS/NZS 4871.4:2002 Electrical equipment for coal mines, for use underground - Mains powered electrical mobile machines



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- AS/NZS 4871.5:2002 Electrical equipment for coal mines, for use underground
 - Battery powered electrical mobile machines
- [Note: AS/NZS4871 references AS/NZS4240](#)

Remotely controlled plant must be inspected by a competent person. The competent person must record in writing that the plant is safe to use. Any record or report by the competent person must be kept in the plant safety file at the coal operation.

For metalliferous mines the principles of the gazette notice should also be adopted.

Any upgrade program should have:

- Remote control machines shall have been risk ranked,
- Transmitters should be compliant with AS/NZS 4240
- The highest risk machines should be in compliance. Highest risk machines are continuous miners, roadheaders, LHD's.
- The outcomes of the design and operational risk assessments should have been considered
- MDG5002 should have been applied / considered
- The lifecycle of the machine shall have been considered.
- Identified alternative risk controls shall be in place where machines do not comply with AS/NZS4240 (Alternative risk controls would include increased scrutiny, supervision and reporting of operator positioning behaviour; higher levels of competency; increased training & consultation; more regular review of risks & whole current isolation before entering no-go zones)
- Evidence of assessment of compliance with "soft" barriers such as no go zones.
- That consultation with work force re AS/NZS 4240 compliance has taken place
- The mine shall notify the DPI of any incidents of unplanned movement.

