

SAFETY BULLETIN

AUGUST 2022

Photovoltaic and battery energy supply systems and their connection to a mine electricity system

This safety bulletin provides safety advice for the NSW mining industry.

Issue

The technologies in solar photovoltaics, battery energy supply systems and associated inverters are developing at an ever-increasing rate. The number of suppliers and installers are growing on a day-by-day basis.

The electrical equipment components are often interconnected, or connected to main grid supplies, generators, or both. Sometimes they can be off grid, meaning they are not connected to the main power grid.

This introduces additional hazards over and above those encountered with a conventional power supply system, such as isolation, varying levels of prospective fault levels, earth fault protection, short circuit protection and compliance to legislation, codes of practice and Standards.

The Work Health and Safety (Mines and petroleum sites) Regulation 2014 prescribes certain requirements in clause 32 Electrical Safety, as well as the matters in Schedule 2 compliance with which should be evaluated through risk assessment.

With the design and installation of some photovoltaic and battery energy supply systems, compliance to the regulation can be difficult to achieve, however it is not impossible.

Recommendations

Mine operators should:

- consider the requirements of *The Wiring Rules*, which covers the selection and installation of electrical equipment that is intended to form an electricity system. Two examples covered by other Australian Standards are AS/NZS 5033 *Installation and safety requirements for photovoltaic (PV) arrays* and AS/NZS 5139 *Electrical installations - safety of battery systems for use with power conversion equipment*.
- consider the types of equipment, as they need to be aware of various levels of quality, design, and manufacturing aspects. Mine operators should also carefully consider the skills and competencies of the installers, as there can be considerable differences between them.
- be aware that when it comes to the selection and installation of electrical equipment that forms part of an electrical system, innovation should not be an impediment. The risks to health and safety must still be managed along with compliance. Compliance can be achieved through direct design and installation, or it can be managed by risk management of innovative alternatives or a combination of both.
- ensure that the design of existing and proposed electrical installations comply with the legislative requirements of clause 32 of the Regulation, and the controls identified in their risk assessment and electrical engineering control plan. In a situation where the electrical design cannot comply with the legislative requirements but complies with alternative standards that provide an equivalent level of safety, then mine operators should contact the Regulator via cau@regional.nsw.gov.au to discuss their compliance options.

NOTE: Please ensure all relevant people in your organisation receive a copy of this safety bulletin and are informed of its content and recommendations. This safety bulletin should be processed in a systematic manner through the mine's information and communication process. It should also be placed on the mine's common area, such as your notice board where appropriate.

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