

ELECTRICAL SAFETY

1. Scope

This standard applies to all Vedanta business units and managed operations, including new acquisitions, admin/corporate offices and research facilities located off site; during exploration, through all development phases, construction, operation to closure and - where applicable - for post closure management. This standard applies to all electrical work above 110 volts DC or 50 volts AC.

2. People

- 2.1. There shall be site-specific electrical competency standards covering all electrical work including construction, usage, maintenance, repair, decommissioning and demolition of electrical equipment and including arc flash protection;
- 2.2. The competency standards shall specify the frequency for re-certification, which shall be no less than every two years;
- 2.3. Employees and contractors exposed to electrical hazards shall receive electrical hazard training at the commencement of their employment and thereafter on an annual basis that is specific to the equipment and conditions of their work area;
- 2.4. Duty Electricians/Artisans must be appropriately trained in emergency fire and first aid response procedures and appropriate equipment must be readily available;
- 2.5. All electrical work must be executed by competent personnel in accordance with governing regulation, code, design criteria and safe work procedures.

3. Process

- 3.1. Electrical safety devices such as earth leakage and overload protection shall be installed on all final distribution circuits and the settings established by qualified personnel;
- 3.2. Any electrical equipment or system must be capable of being separated from the source of supply in such a manner that it cannot be inadvertently re-energised;
- 3.3. **Isolation and access:**
 - 3.3.1. Work on live equipment shall not be allowed except in circumstances where it is essential to have equipment energized, such as testing or fault finding, and only with the necessary PPE and insulated tools. All energised electrical work will require a safe work procedure and, with the exception of voltage testing or where no tools are used, will require an Electrical Work Permit;
 - 3.3.2. Electrical panels, enclosures, control centres, substations and equipment shall be appropriately guarded, labelled, and made inaccessible (except for emergency shut off mechanisms) to unauthorised personnel. Areas containing such equipment are 'controlled areas';
 - 3.3.3. Where it is necessary for untrained personnel such as visitors to enter controlled areas there shall be a system for communicating the hazards and for escorting them with appropriately trained

personnel. Contractors must have a permit to work in controlled areas;

- 3.3.4. Access to an electrical cabinet or other enclosure with exposed and energised terminals in excess of 1,000 volts is prohibited;
- 3.3.5. Where high voltage switching is required, specific procedures and equipment to protect against arc flash must be in place.
- 3.4. Any alterations/addition/deletion within the established electrical system/protection scheme must include a documented change management procedure duly approved by a competent authority;
- 3.5. There must be a proactive system for making safe and removing electrical equipment unfit or unsafe for purpose or continued use;
- 3.6. There must be a system for maintaining an up-to-date set of single line diagrams, with supporting documentation showing system fault calculations, equipment details, electrical protection discrimination curves and cable ratings;
- 3.7. Single Line Diagrams should be displayed at electrical distribution points and should indicate the normal position of the incomer switches, bus-couplers and feeder switches;
- 3.8. There must be an assessment of overhead and underground power lines and appropriate labelling and controls must be in place to protect personnel working in close proximity;
- 3.9. There must be a system for maintaining an up-to-date set of buried services drawings and a mechanism for capturing installation changes;
- 3.10. Electrical equipment earthing switches must be used where provided and portable earths employed where they are not, using extreme caution to ensure that a live conductor is not inadvertently earthed;
- 3.11. Substations and electrical rooms must have appropriate signage and emergency procedures posted;
- 3.12. Adequate and safe means of removing victims in contact with live equipment must be available.

4. Review

- 4.1. Electrical equipment, grounding continuity and electrical safety devices shall be inspected and/or tested on a suitable schedule and the findings recorded;
- 4.2. Businesses are required to comply with local laws and regulations covering electrical safety.



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