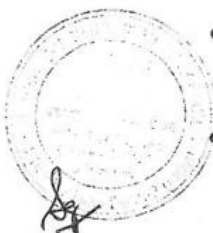


B7.3.8 Earthing and lightning protection installations

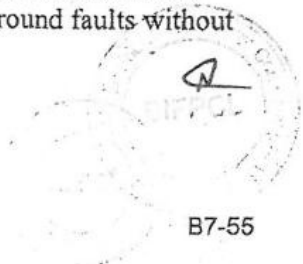
B7.3.8.1 Earthing system - general

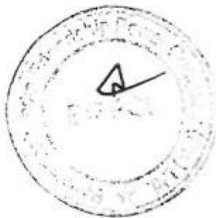
The earthing system will mainly comprise an earthing grid directly buried at a depth of not less than 1.0 m in the ground and a set of raisers connecting all electrical equipment and all metallic frames to the earthing grid forming an equipotential bonding system

The earthing system shall fulfill the following requirements:



- maintain a low overall resistance of the earth mass to limit the plant potential rise and ensure protective relay operation in the event of an external fault
- provide ground connections to all electrical apparatus enclosures and structural steelwork adequate to carry prospective ground faults without excessive heating or fire risk





- limit potential differences within the power plant site in the event of earth current, originating from within or outside the station. To ensure the safety of personnel and eliminate interference or damage to sensitive electronic circuits
- The contractor shall provide a potential gradient control system for all locations where dangerous surface voltage gradients can occur, the step and touch voltage shall be less than the permissible values according VDE 0101- 2 Figure 4.

The Tenderer shall be entirely responsible for the earthing system and connections to cover the whole area and for ensuring that all apparatus is securely and safely connected to this system. The overall resistance of the earthing system shall be 0.5 Ohm or less.

The earthing system shall be interconnected with the earthing system provided for the 400/230 kV kV substation.

The requirements Part B0 shall apply.

B7.3.8.2 Common earthing system

The earthing system is common for:

- protective earthing for equipment at all voltages
- transformer neutral points earthing
- equipment equipotential earthing and bonding
- lightning protection system, etc.

The main parts of common earthing system are:

- indoor earthing system (above-ground earthing system)
- outdoor/external earthing system (under-ground earthing system)
- foundation earthing (see Part B0)
- lightning protection system.
- Screening.

B7.3.8.3 Indoor earthing system



The indoor earthing system shall form one ring inside the building on the walls of each building floor. Encircling bare copper bars shall be used inside the building. From the inner ring the connections to the bus, panels and other electrical apparatus, cable trays, conduits, doors, steelwork, etc., shall be made using tinned stranded copper conductor or copper bars. All the electrical equipment, frames and mechanical apparatus shall be provided with designated earthing points with at least two connections to the earthing inner ring.

Large plants situated in buildings shall each be enclosed by an earth ring connected to the main earth grid at two or more points, at least every 20 m.

The copper conductors may be laid and fixed at the cable trays. Where this is not possible earthing conductor supports shall be provided fixed in concrete or masonry. The copper bars shall be also fixed with earthing support on walls.