

## Ambiguity of grounding specifications: IEC 62305 revisited

### ABSTRACT

Grounding issues related to lightning currents have been addressed giving special attention to recommended practices in IEC 62305 (2010). Unambiguous recommendations are needed for the requirement of type A system or type B system or both systems for a given installation. Specifications of the length of conductors, based on the level of protection, were critically analyzed emphasizing the human risk related issues. Calculations reveal that at Level III and IV, the specified lengths of type A conductors may give step potentials, especially in highly resistive soils that may drive currents through human beings in the vicinity, exceeding lethal energy. Furthermore, specification of the limiting value of resistance for transient grounding systems may lead to hazardous situations as the difference between frequency dependent impedance and low frequency resistance may increase to very high values at Mega Hertz range where lightning energy spectrum has significant amplitude. Covering of a sizable surface area surrounding the grounding conductors with insulation material, is recommended as a practical solution to this issue.

**Keyword:** Ground resistance; Grounding; Lightning protection; Step potential; Soil resistivity; IEC 62305