Alltec Lightning Risk Assessment Capabilities

NFPA 780-2011: Simplified Lightning Risk Assessment

This lightning risk assessment methodology provides the facility owner with valuable information in determining the potential risk of damage due to direct lightning strike. The choices made by the client include:

- Lightning Flash Density
- Structure Collective Area
- Type of Construction
- Structure Contents
- Occupancy
- Lightning Consequences

(Visit Alltec’s online NFPA 780 based Risk Assessment page to determine your lightning strike risk.)
IEC 62305/NFPA 780-2011: Detailed Lightning Risk Assessment

Alltec engineers have resources to perform detailed lightning risk assessments as per the IEC 62305-2/ NFPA-780 (2011) standard. The information should be collected as per Annex L, NFPA-780 (2011) standard, and the IEC 62305-2 standard. The types of risk due to lightning for a particular structure or facility could include one or more of the following:

**R1: Risk associated with loss of life or injury**

**R2: Risk associated with loss of service**

**R3: Risk associated with loss of historical significance**

**R4: Risk associated with loss of economical value**

Each Risk component is evaluated as per the standard and total associated risk is calculated. The total risk is compared to the Tolerable Risk Value.

![Figure 1: An example of the calculated risk. The total risk is higher than the tolerable risk value, indicating the facility requires a lightning protection system](image)

The selection of the most suitable protection measures are made according to the share of risk components and according to the technical and economic aspects of the different protection measures. The major protection measures parameters include:

a. Lightning Protection System; includes system of air terminals, conductors, and proper grounding system.

b. Surge Protection Device (SPD) at Service Entrance and Coordinated SPD
Figure 2: An example of the calculated risk after selection of protection measures (Lightning Protection System and Coordinated Surge Protection Devices). The total risk is lower than the tolerable risk value, indicating the facility is well protected.

Typically, this type of risk analysis requires a detailed dialog between Alltec Engineers and the client, resulting in a highly customized and useful analysis. Contact Alltec for details and to plan an IEC 62305-2/NFPA-780 (2011) detailed Risk Assessment for your facility.

**Risk Assessment - Using Electro-Geometric Modeling**

Alltec engineers work with the client to obtain information, along with Isokeraunic level and/or historical lightning strike data, to execute lightning risk assessments in compliance with an Electro-Geometrical Model using specialized Lightning Shielding Analysis Software, including:

a. Model 3-Dimensional drawing(s) of facility structures for lightning risk assessment. Note that detail drawings, i.e., site layout, elevations, and relative locations of individual structures are required for this task.

b. Determine lightning trajectories for each current crest value, and calculate the total exposed area of the structures corresponding to the crest value of return stroke current (from 5kA – 200 kA).

c. Determine the individual and cumulative probability of direct lightning strikes in the areas under consideration.

A detailed description of this type of risk assessment is available at: