The Prevectron ESE Terminal and how it relates to AS1768

The Standard:

AS1768-2003 is a guide and not a legislated standard like AS 3000. The latest published standards (AS1768-2003) explore all methods of protection including the Rolling Sphere and Cone of Protection and is based on the strapping of a structure with metal tape and metal rods.

Aerial Termination:

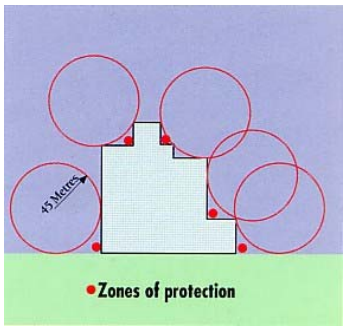

Figure 1

The Prevectron Early Streamer Emission Terminal design calculations are based on the Rolling Sphere Methodology of determining zones of protection. AS1768-2003 utilises the Rolling Sphere Technique to calculate the protection requirement for a structure. Effectively anywhere the sphere touches the building, aerial conductors are required. This can be either in the form of finials or horizontal tape. Protection against direct lightning strikes is achieved by installing a lightning protection system in such a way that its air terminals establish zones of protection encompassing the whole structure (see figure 1). The Prevectron takes this a step further by replacing the large number of terminals and tape with a single terminal offering a single zone of protection for the entire structure (see figure 2).

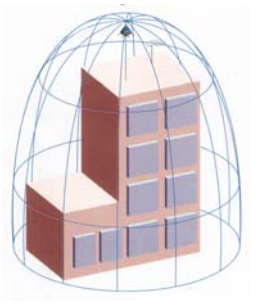

Figure 2

As with the recommendations of AS1768-2003, when installing terminals on the roof of a building, all metal structures on the roof should be bonded back to the horizontal air termination. As such, when installing a Prevectron ESE Terminal in the standard method, all metal structures on the roof should be bonded back to the base of the terminal or to the down conductor which is terminated into the earthing network.

Down Conductor System:

The standard calls for a single down conductor every 20m of building perimeter. This is to allow quick access to the earthing network for lightning energy which could discharge at any point on the structure if a strapping system was installed. As the Prevectron ESE Terminal captures any strike which would have discharged into the zone of protection, only a single down conductor for each and every terminal is required.

The Earthing Network:

The earthing network for both the standard and the Prevectron System are identical and are based on an evaluation of the site. The network can range from a mass of earth electrodes and buried tape to the foundations of the structure to be protected. Normally the foundations are satisfactory as the earthing network. Accordingly all steel reinforcing in the footings, foundation and down

conductor column are to be electrically continuous. This type of earthing is very commonplace and is now an accepted lightning protection earthing method throughout the industry.

How does the Prevectron work?

The Prevectron ESE Terminal gathers energy from the naturally occurring ambient electrical field, which builds up considerably – as much as several thousand volts per meter – when a storm approaches. The lower series of energy collecting electrodes allows electrical energy to be stored within the triggering device. Just before cloud discharge, there is a sudden and rapid increase in the electrical field, which is detected by the Prevectron terminal. This information is sent to the triggering device, which in turn, releases the stored energy in the form of an ionisation at the tip of the terminal. The Prevectron is a passive device, which has no internal power source.

What testing has the Prevectron undergone?

The Prevectron has been undergoing continuous on site testing in real life lightning conditions for many years. These tests were developed closely with a team from the French Atomic Energy Commission (Grenobol: France) who are experts in triggered Lightning. Further real life testing was conducted at Camp Blanding in Florida (USA) and at Saint Privat d'Allier in France. These tests confirmed the results gained from laboratory testing.

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