



GENT



TYPES OF GENT LIGHTNING PROTECTION

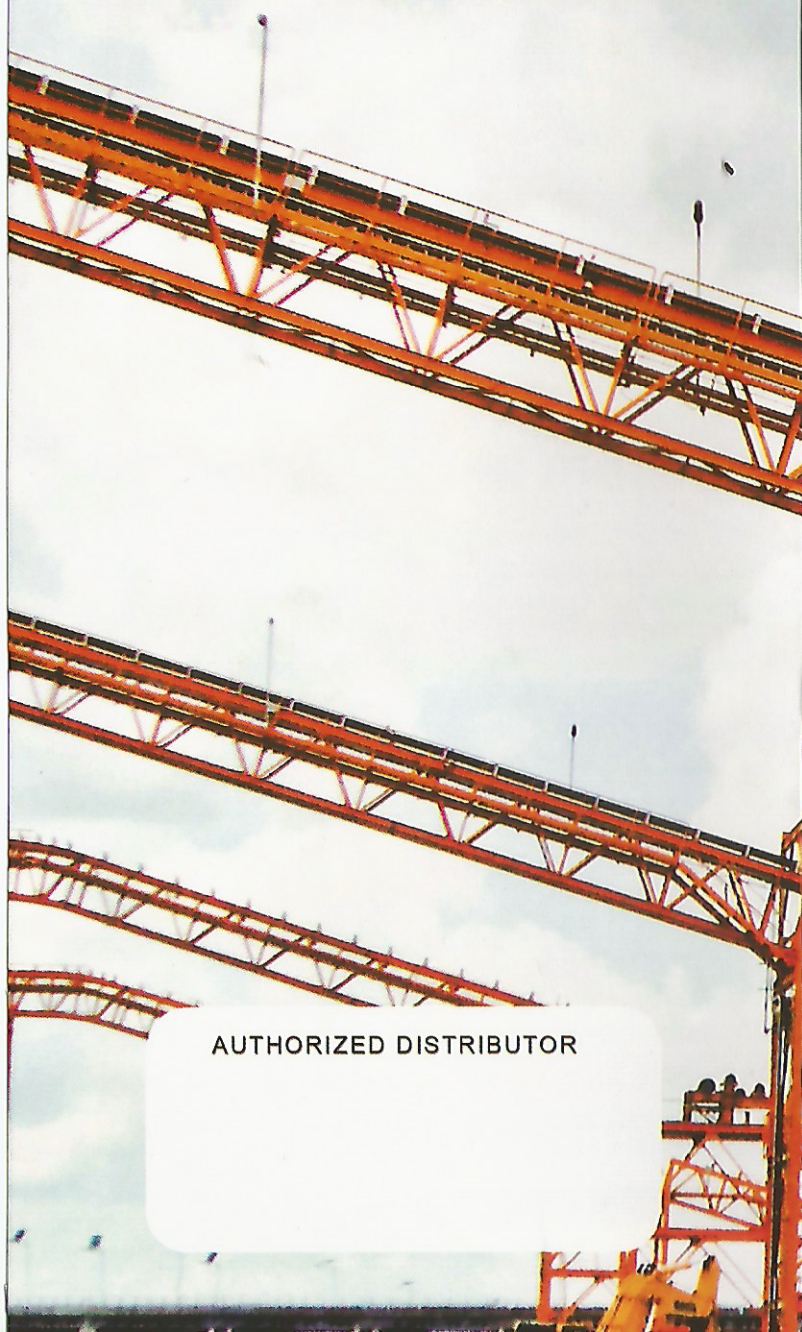
Type	Length		Weight		Diameter		Radius	
	Inch (es)	Cm	Pounds (s)	Kg	Inch (es)	Cm	Yard (s)	m
A	18,80	47,75	10,58	4,80	4	10,16	164	150
B	18,75	47,65	10,47	4,75	4	10,16	82	75
C	18,70	47,50	10,50	4,72	4	10,16	38	35

Electrostatic and Membrane system
LIGHTNING PROTECTION DEVICE



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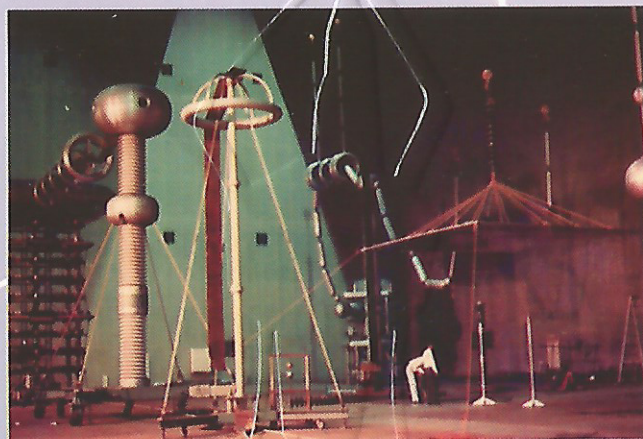


AUTHORIZED DISTRIBUTOR

GENT™ Lightning Protection were originally developed in Indonesia, recognized in Belgium also patented in Switzerland.

GENT™ supported by engineers, university level colleges and research organizations. The installation of GENT™ lightning protection is very simple, it's attached to a huge piece of copper or aluminum wire that's also an inch or so in diameter. The wire is connected to a conductive grid buried in the ground nearby.

GENT



Lightning Protection

Many people believe that lightning rods "attract" lightning. It is better stated to say that GENT™ lightning protection provide a low-resistance path to ground that can be used to conduct the enormous electrical currents when lightning strikes occur. If lightning strikes, the system attempts to carry the harmful electrical current away from the structure and safely to ground.

The system has the ability to handle the enormous electrical current associated with the strike. If the strike contacts a material that is not a good conductor, the material will suffer massive heat damage. The GENT™ lightning protection system is an excellent conductor, and thus allows the current to flow to ground without causing any heat damage.

The purpose of GENT™ lightning Air Terminal :

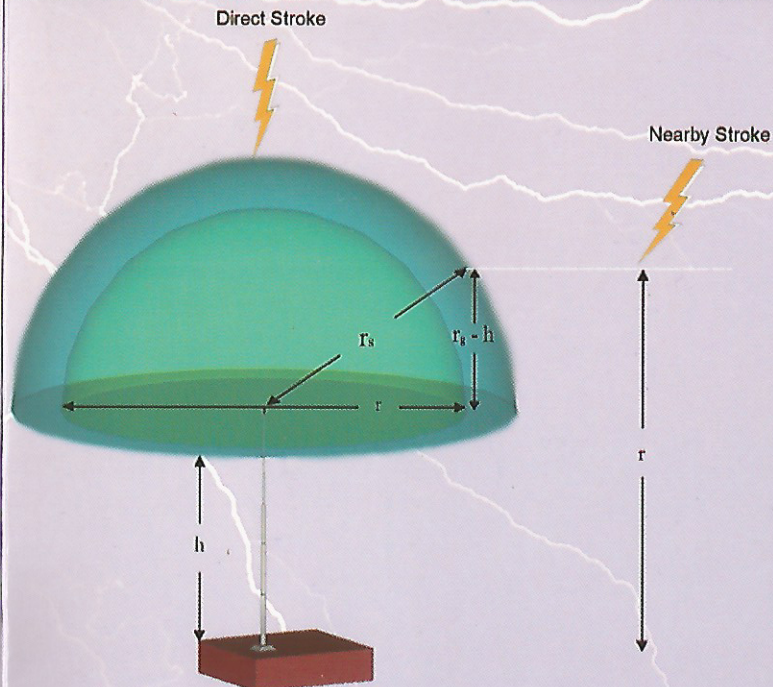
1. Provide a low-resistance path to ground that can be used to conduct the enormous electrical currents when lightning strikes occur.
2. Referred to as positive atomic nuclei surrounded by a fluid like cloud of electrons. That makes GENT™ Lightning Protection good conductor of electricity.
3. It "growing" positive streamers. These streamers also have a purplish color and appear to be more prominent on sharp edges.
4. It is not to attract lightning -- it merely provides a safe option for the lightning strike to choose.
5. It contains Piezoelectricity materials. That generate the piezoelectric effect. It is reversible in that materials exhibiting the direct piezoelectric effect (the production of electricity stress is applied) also exhibit the converse piezoelectric effect (the production of electricity stress is applied).

The ability or freedom of the electrons to move is what makes GENT™ lightning rods Protection a good conductor of electricity.

As the step leaders approach the earth, GENT™ Lightning Protection on the surface begin responding to the strong electric field.

GENT™ Lightning Protection reach out to the cloud by "growing" positive streamers. These streamers also have a purplish color and appear to be more prominent on sharp edges. Once produced, the streamers do not continue to grow toward the clouds; bridging the gap is the job of the step leaders as they stage their way down. The streamers wait patiently, stretching upward as the step leader approach.

As you can see, the purpose of the GENT™ lightning protection is not to attract lightning, it merely provides a safe option for the lightning strike to choose. This may sound a little picky, but it's not if you consider that the lightning rods only become relevant when a strike occurs or immediately after a strike occurs. Regardless of whether or not a lightning rod system is present, the strike will still occur



$$r = \sqrt{r_s^2 - (r_s - h)^2}$$

(equation 1)

Where r_s and r_g are the "striking distances", r_s is the structure striking distances, and r_g is the ground striking distances.

$$r_s = \alpha \cdot I_p^\beta \quad (\text{equation 2})$$

$$r_g = k \cdot r_s \quad (\text{equation 3})$$

Electrogeometrical Attractive radius expression	α	β	k
Armstrong and Whitehead	6.70	0.80	0.90
IEEE	10.00	0.65	0.55

As average bolt of lightning carries an electric current of 40 kiloamperes (kA), although some bolts can be up to 120 kA.

From equation 1, 2 and 3 the radius of coverage area of GENT™ can be determined as:

$$r = \sqrt{(\alpha \cdot I_p^\beta)^2 - ((k \cdot (\alpha \cdot I_p^\beta)) - h)^2}$$

For the calculation, the value of electric current of lightning is 86 kA. And the value of α , β and k are empiric values from the IEEE.

$$r = \sqrt{(10.86^{0.65})^2 - ((0.55 \cdot (10.86^{0.65})) - 20)^2}$$

$$r = 151.07m$$