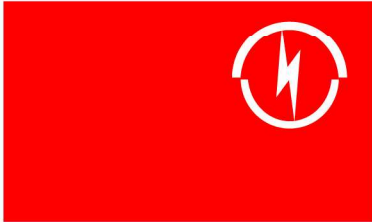




Study – Prevention – Protection – Lightning



The Paraton@ir® system

Years of experiments and numerous tests in laboratory and in real-world lightning conditions were necessary to develop this Early Streamer Emitter lightning rod.

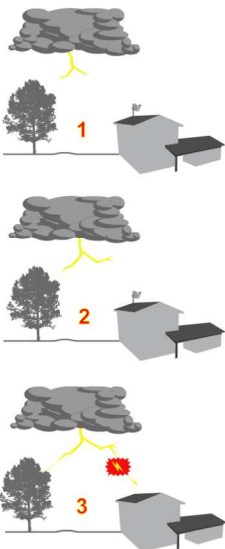
An aluminium alloy and polymeric materials, all patented, form the major part of our lightning rod. Without any fragile priming system, we designed the most reliable and sustainable product of the market.

Called **Paraton@ir®**, in reference to french language and to its communication abilities, our product is manufactured with utmost care in our workshop in France.

Operation

Paraton@ir® creates the optimal conditions to generate a supernatural upward tracer before another natural upward tracer intercepts the surrounding lightning.

The action develops in three steps :



Paraton@ir® accumulates charge :

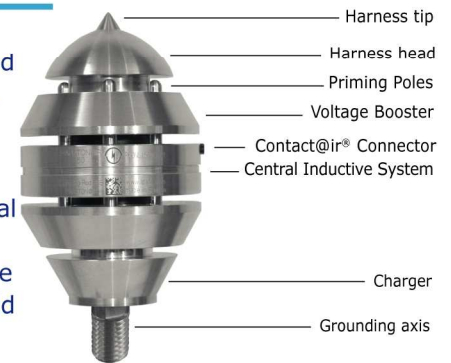
The element called "Charger" is designed to accumulate natural ions in the "Central Inductive System" (patented). This accumulation happens as quickly and in the same proportions as the increase in power of the ambient electric field generated by an upward tracer.

Paraton@ir® creates an electric field on a tremendous scale :

At the same time, thanks to the "Central Inductive System" and the "Voltage Boosters", **Paraton@ir®** creates a huge electrical field the charge of which is opposed to that of the natural electric field in presence and stimulates the "Harness head". According to their quantity, the "Priming poles" multiply the efficiency of the priming.

Harnessing and conduction by Paraton@ir® :

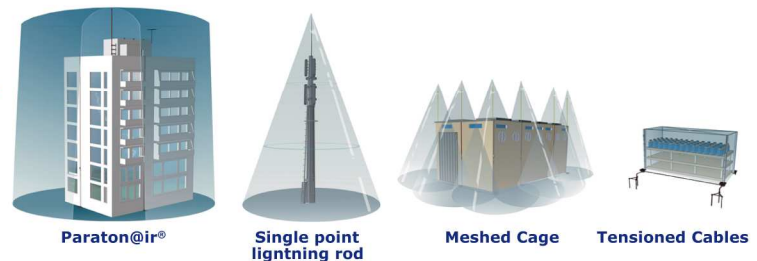
The priming of **Paraton@ir®** system attracts the upward tracer and creates the "lightning strike" conditions. Then the "Harness tip" leads the lightning current through its axis toward the ground conductors.



Benefits

- Optimal protection area
- Remote diagnosis system*
- In-real-time warnings*
- Simple implementation
- Low realization budget
- Limited maintenance costs
- Eight colours available*
- Lifetime warranty*

* : optional



	Paraton@ir®	Single point lightning rod	Meshed Cage	Tensioned Cables
Portection area	●●●●●	●●●●●	●●●	●●●
Portection of open areas	●●●●●	●●●●●	●●●●●	●●●
Study	●●●●●	●●●	●●●●●	●●●
Implementation	●●●●●	●●●●●	●●●●●	●●●
Qualification required for implementation	●●●	●●●●●	●●●●●	●●●●●
Aesthetic (Architecture integration)	●●●●●	●●●	●●●●●	●●●●●
Realization budget	●●●●●	●●●●●	●●●●●	●●●
Maintenance costs	●●●●●	●●●●●	●●●●●	●●●
Standards	NFC 17-102 + IEC 62305	IEC 62305	IEC 62305	IEC 62305
Appropriate structures	Any structure and its environment or open area	Small dimension structure : towers, antennas	Structure containing computer systems or pyrotechnic materials	Open storage area





Study – Prevention – Protection – Lightning

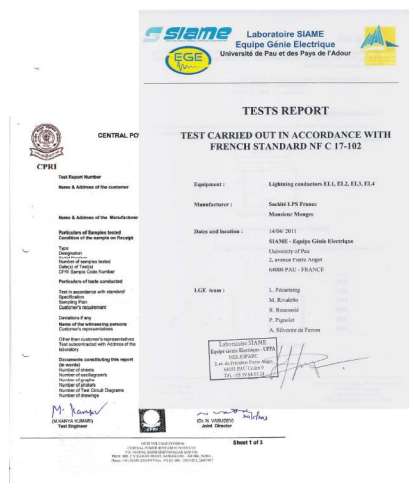
Tests and validations



To know for a fact that we provide you with reliable, efficient and standard-compliant protection against lightning systems, **LPS France** products are systematically tested in laboratory and in the field to validate their operation, their efficiency and their sustainability before they are launched on the market.

Our products are developed in our own research laboratory. Validation tests were carried out with a higher requirement level than standards in recognized laboratories.

Those tests and validations come on top of studies and observations that were made in situ and of returns of experience enhanced by our remote communication system. Our laboratory and in the field experiments enable us to always be in the forefront of Research and Development.



Protection radius

The protection radius of an Early Streamer Emitter lightning rod is related to its height (h) in proportion to the surface area to protect, its efficiency and the selected protection level.

$$R_p(h) = \sqrt{2rh - h^2 + \Delta h(2r + \Delta h)} \quad \text{when } h \geq 5m$$

Its calculation is made as follows :
according to NFC 17-102 standard – September 2011

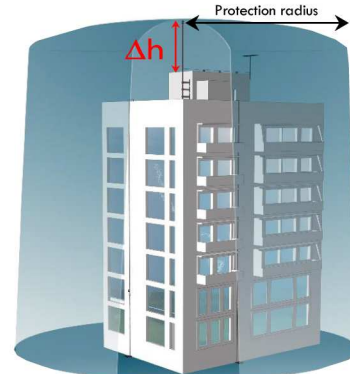
$$R_p(h) = h \times R_p(5) / 5 \quad \text{when } 2m \leq h < 5m$$

$R_p(h)$ (m) $R_p(h)$ (m) stands for the protection radius at a given height h;

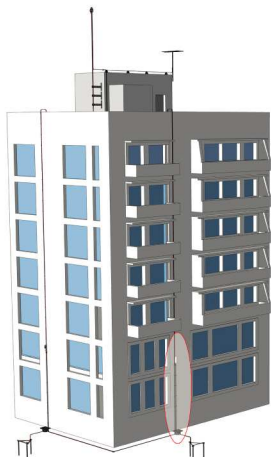
h (m) stands for the height of the ESE end in a horizontal plane to the farthest point of the element to protect.

r (m) 20m for the protection level I;
20m for the protection level I
30m for the protection level II
45m for the protection level III
60m for the protection level IV

Δh (m) $\Delta = \Delta T \times 10^5$
The experience in the field shows that Δ is equal to the efficiency obtained during the ESE evaluation tests.



The protection level is set according to numerous parameters including loss of life and economic risks, the average local lightning striking, the impact on environment, etc... To favour an ideal matching to the layout of the different premises to protect, **Paraton@ir®** is available with 4 power levels.



Implementation

Paraton@ir® Early Streamer Emitter lightning rods are part and parcel of a complete protection against lightning system, including also downward conductors, grounding, etc...

Before its implementation, a protection against lightning system must be the object of an in-depth study. To provide an optimal security, this system must also be installed in compliance with the standards in force and the manufacturer's instructions.

To benefit from your product warranty, your protection against lightning system must imperatively follow those study and installation codes.

Our licensed partners (distributors, installers) are proficient in ensuring you the necessary conditions to the preservation of your warranty.

