

# IONIFLASH MACH® NG TF

PARARRAYOS CON DISPOSITIVO DE CEBADO

**COMPROBABLE A DISTANCIA**



**FRANCE®**  
**PAR ATONNERRES**

IONIFLASH  
PLANET

BE  
SECURE  
FRANCE PARATONNERRES



## THE IONIFLASH **MACH®** NG TF

### THE TECHNOLOGY

The air terminal rod **IONIFLASH MACH®** NG TF includes the last scientific works in Laboratory and in situ for providing a permanent and reliable solution, a higher efficiency with patent protection.

**The efficiency results of the IONIFLASH **MACH®** NG TF with a very low standard deviation confirm the stability and the security of its protection radius.**

The spherical tip of the **IONIFLASH MACH®** NG TF and the design of the sphere increase and regulate considerably the ionization, initial factor of the early streamer process, by activating the propagation of the upward leader.

Indeed, for a particular level of electromagnetic field, the sharp tips produce too many charges. These charges gathered at the top of the air terminal rod reduce drastically the lightning attachment process compared to an air terminal rod with spherical tip.

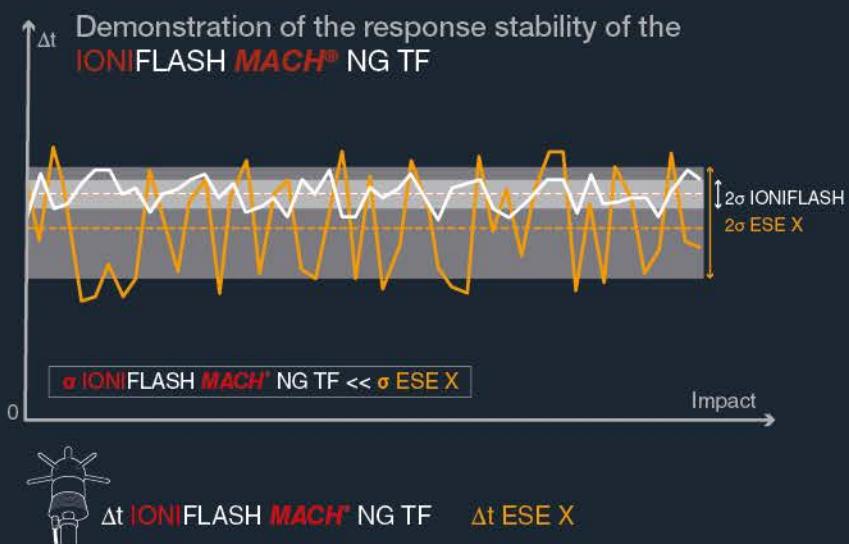
### STANDARD DEVIATION RATIO

The standard deviation of the ESEAT **IONIFLASH MACH®** NG TF (white curve) is more efficient than the standard deviations of the other ESEATs with sharp tip (yellow curve) in the same conditions.

**The standard requires a standard deviation ratio to be under 0.8 and the lowest possible between an ESEAT and a simple rod. The more the ratio will be low the more the response and the protection of the ESEAT will be stable and reliable**

**Value of the standard deviation of the IONIFLASH **MACH®** NG 60 TF  $\sigma = 0,28$**

The standard deviation of the **IONIFLASH MACH®** NG TF presents exceptional performances (see technical data sheet) :



# UNA TRANSMISIÓN SEGURA

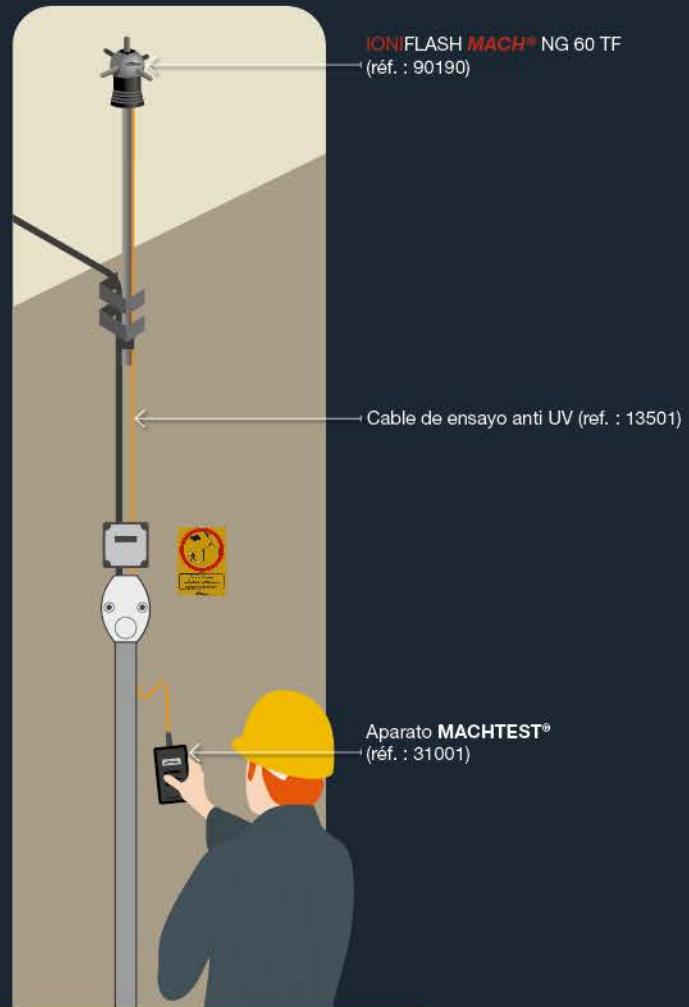
El IONIFLASH **MACH®** NG TF es un pararrayos durable cuya tecnología protege ya más de 35 000 sitios por todo el mundo.

Propuesto en opción comprobable a distancia, IONIFLASH **MACH®** NG TF es controlable a distancia con una fiabilidad total gracias a su dispositivo de cable.

## PRINCIPIO DEL SISTEMA DE ENSAYO :

El Pararrayos con Dispositivo de Cebado (PDC) IONIFLASH **MACH®** NG TF se controla a distancia, con fiabilidad total gracias al dispositivo de cable :

- El cable conectado de forma permanente al PDC permite una comunicación directa.
- Para la verificación del funcionamiento del PDC, desde el suelo o en techo, el aparato de ensayo MACHTEST® se conecta al cable.
- Después de la conexión del MACHTEST®, el aparato activa directamente el proceso de verificación.
- Después de este proceso, el resultado aparece en el MACHTEST® evitando así todo riesgo de mala interpretación y mala visibilidad.
- Al final del ensayo, el MACHTEST® puede ser desconectado y almacenado (no exposición a las inclemencias meteorológicas).



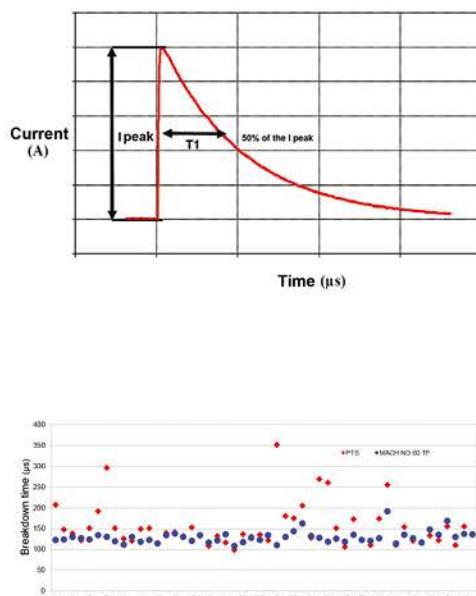
## LA FIABILIDAD DEL IONIFLASH **MACH®** NG TF

- Continuidad eléctrica y física de la punta del IONIFLASH® hacia la tierra.
- Dispositivo fiable y autónomo, incluso en condiciones climáticas extremas.
- Doble seguridad gracias a dos descargadores dimensionados a fin de tener un rango de funcionamiento adaptado al espectro frecuencial del rayo (0 a 10MHz).
- Comodidad y rapidez de instalación gracias a sus dimensiones y peso muy débiles : 2,3 kg.
- Soportes de estudios e instalación (logicial IONEXPERT 3000®, Dispositivos de ensayos operacionales MACHTEST®, contador de impactos IONICOUNT®).

# THE HIGHEST LEVEL OF CERTIFICATION

## TESTS OF THE IONIFLASH MACH® NG TF IN LABORATORY

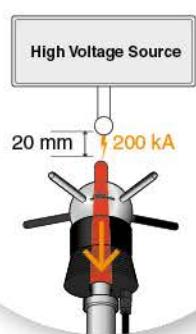
The technology **IONIFLASH MACH®** has passed all the tests in accordance with the last edition 2011 of the NFC 17102 Standard Annex C. All these tests were done on a same sample in independent laboratories.



Tested in accordance to the Standards NFC 17-102 ed. 2011, UNE 21186, NP 4426, EC 62305, EN 62561, IEC 60060-1, manufactured according to Standard ISO 9001: 2015

### SEVERITY TEST BEYOND THE STANDARDS:

Much more severe additional tests such as effectiveness of the early streamer emission in rain conditions and resistance to much higher lightning currents demonstrate the robustness of the **IONIFLASH MACH®** technology.



#### Current test at 200 kA (waveform 10/350μs according to IEC 62561 protocol)

ESEAT subjected to 3 impacts with air gap of 20mm with peak current of 200 kA and energy generated up to 10 MJ/ohm.

With its reinforced structure, the **IONIFLASH MACH®** NG TF resists to impacts much higher than the one required by the standard. The spherical tip has an upper resistance than a sharp tip.

#### Early streamer emission test in condition of heavy rain (according to IEC 60060-1)

The internal early streamer device is totally protected from the rain thanks to the watertightness of the **IONIFLASH MACH®** NG TF and its own design.

Insulation greater than 97%

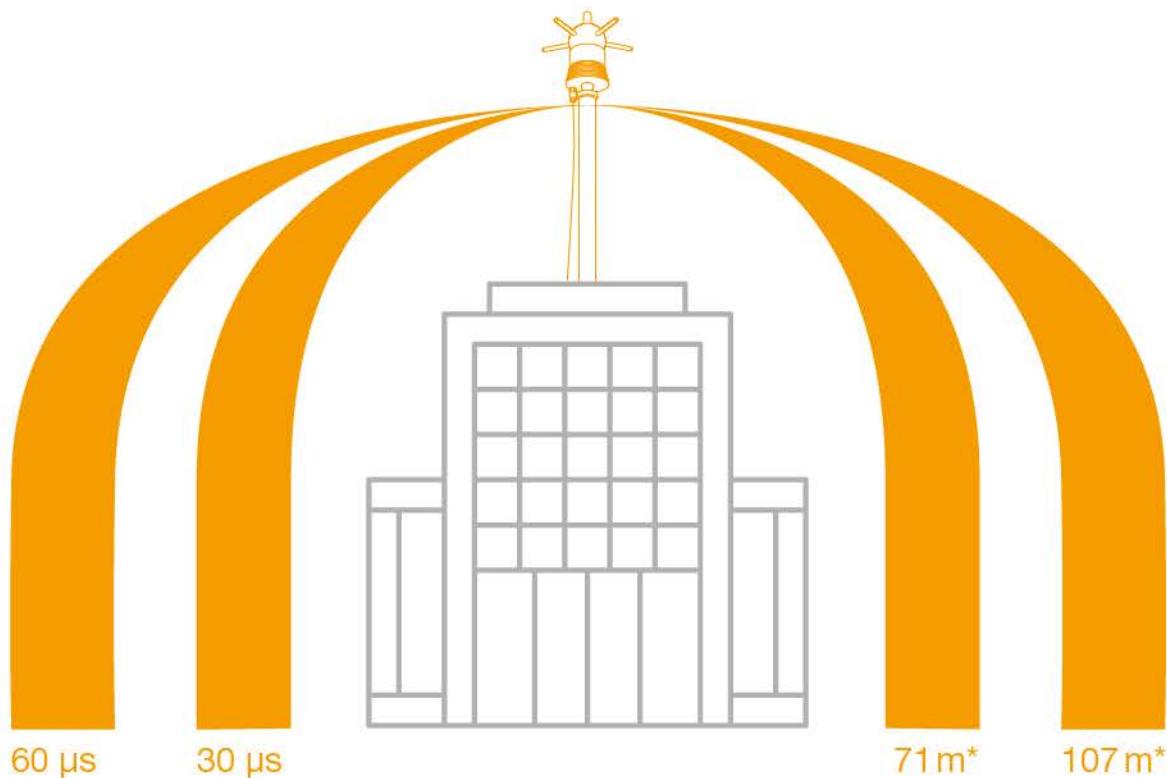


# RULES OF INSTALLATION AND MAINTENANCE

## STABILITY OF THE PROTECTION RADIUS

According to the NFC 17102/2011 art. 5.2.2., « an ESEAT is characterised by its  $\Delta T$  efficiency, determined through evaluation test ». The  $\Delta T$  maximum value allowed is  $60\mu s$  even if the value of the results of the test is higher.

With the exceptional standard deviation of the ESEATs IONIFLASH **MACH®** NG TF, the protection radius here below have a greater stability :



\*Example of the protection radius, at 5m under the tip, in protection level IV.

## INSPECTIONS OF THE LIGHTNING PROTECTION SYSTEMS

According to IEC 62305-3, a complete verification imposes, as per the NF C 17-102 (2011), the following periodicities :

Level of protection	Visual inspection (year)	Complete inspection (year)	Complete inspection of the critical systems (year)
Level I and II	1	2	1
Level III and IV	2	4	1

# NUESTRAS REFERENCIAS

40 AÑOS DE EXPERIENCIA : REFERENCIAS PRESTIGIOSAS

Más de 35 000 sitios protegidos



Embry-Riddle  
Estados Unidos



Torre Belém  
Portugal



Palacio de Tokyo  
Francia



Campo Solar  
Francia



Centro administrativo  
Rumania



Mina de plata  
Perú



Iglesia San Agustín  
Ecuador



Estación de bombeo  
de agua - Congo



Refinería Lukoil  
Bulgaria



Río solar  
Líbano



FRANCE PARATONNERRES SAS

Parc Ester Technopole | 9, rue Columbia  
87068 LIMOGES | FRANCE  
T. +33 (0) 555 575 253 | F. +33 (0) 555 358 562  
contact@france-paratonnerres.com  
[www.france-paratonnerres.com](http://www.france-paratonnerres.com)

MADE IN FRANCE

