



***Sertec*** S.R.L.  
*Soluciones inteligentes pensando en usted*



# CMCE SERTEC

## ELECTRO-ATMOSPHERIC FIELD PROTECTOR



Centralian  
Controls

The most effective protection  
system **Against Lightning**



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# THE CMCE SERTEC

Specially designed for:



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**MINES AND  
PETROCHEMICALS  
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**ELECTRICAL SUBSTATIONS  
HIGH AND LOW VOLTAGE  
LINES**



# CMCE SERTEC



## Multiple Compensator of Electric Field

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**The CMCE SERTEC Protector aims to protect people, animals and structures in installations on land, from any electrical phenomenon driven through the air.**

The CMCE SERTEC is designed to compensate the electroatmospheric effects, compensating and stabilizing the current of the electric charges in the environment, draining them to earth in harmless milliamps.

The CMCE SERTEC is the result of the discovery of the behavior of electroatmospheric phenomena that interact in the atmosphere of our planet. The novelty of this technological development is supported by the well-known laws of OHM and Maxwell's equations, on which this new technology is based. Essentially to have at all times the stabilized electric field of the atmosphere referring to ground in the protection area. The system behaves passively at the level of prevention, based on atmospheric electrical activity with the aim of maintaining a clean and controlled environment of electrical contamination.



In 1916 Nikola Tesla in his patent No. 1,266,175 mentioned the operating principles of a primitive device based on the principles that underpin our developments, explaining the inconveniences caused by the lightning rods, which instead of protecting property and people, attracted the lightning increasing the feasibility of electric discharges and consequently the risks that they entailed.

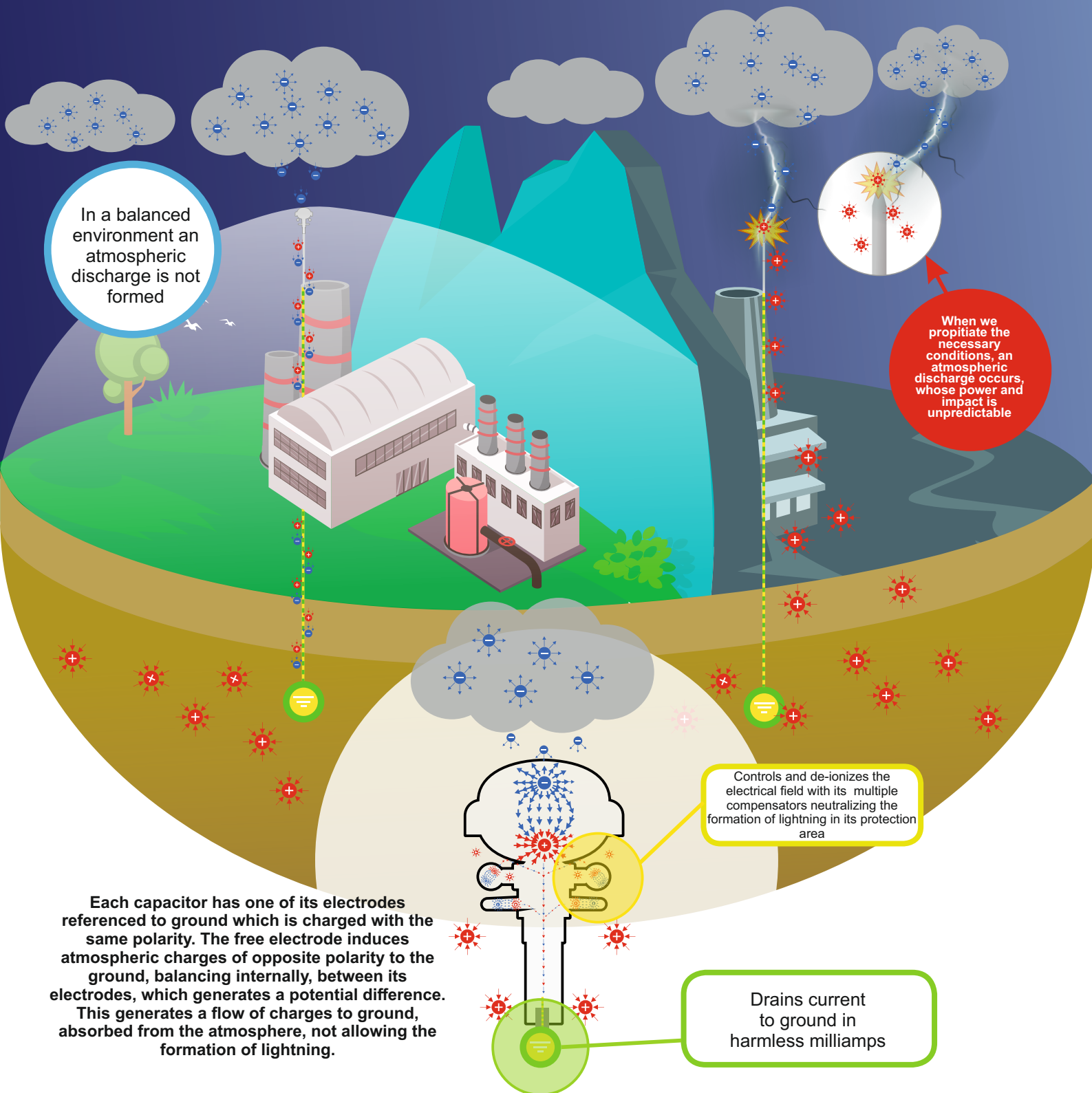
New materials and designs, added to years of experience, have allowed us to improve the experiences of the undisputed scientist Nikola Tesla, evolving in the protection of atmospheric phenomena.



# OPERATING Principle

## The multiple compensator of electric field , CMCE SERTEC

is a passive sensor system designed to balance and deionize at all times the effects of atmospheric phenomena through multiple compensators, generating a protective shield in its coverage area, its operating principle is based on compensating, stabilizing the existing electric field in its environment, in this way it cancels the formation of the ascending tracer neutralizing the lightning draining the electric charges to earth, in harmless milliamperes.



In a balanced environment an atmospheric discharge is not formed

When we propitiate the necessary conditions, an atmospheric discharge occurs, whose power and impact is unpredictable

Controls and de-ionizes the electrical field with its multiple compensators neutralizing the formation of lightning in its protection area

Drains current to ground in harmless milliamps

Each capacitor has one of its electrodes referenced to ground which is charged with the same polarity. The free electrode induces atmospheric charges of opposite polarity to the ground, balancing internally, between its electrodes, which generates a potential difference. This generates a flow of charges to ground, absorbed from the atmosphere, not allowing the formation of lightning.

# MODELS

## Technical Specifications

### Coverage Area

- CMCE Technology Method: Cover radius depending on the model varies between 25m. to 120m. (Check model's manual).
- All models must be installed at a height of 3m. above the highest point to be protected (For more detailed information check the manual).
- Rolling Spheres Method: For protection levels I, II, III and IV defined according to IEC 62305, the rolling sphere method must be used, with the protection radius marked by the standard.

### Connection system to the mast:

It incorporates in its axis the connection system to the mast. The CMCE needs an internal measuring mast 42 mm Ø and outside 49 mm Ø with through hole of 8 mm Ø to 32 mm from the edge of the mast (may vary depending on the model, more detailed information consult the manual).

### Component Materials:

Recycled Aluminum, Insulator: Polyacetal, also called polyoxymethylene (POM); Ceramic, or According to model, consult the manual.



25  
meters

Protection

### CMCE NANO

**Description:** Developed for Small deposits, Telecommunications Towers, Medium and High Voltage Power Lines, Traffic Lights, Small Radars, Road Cameras, Garitas, and other structures that can be covered by their protection radius.  
Weight: 980 grams (Gross)  
Measures: 17cm. Height x 10 cm. diameter.  
Packaging: Galvanized Metallic Material



55  
meters

Protection

### CMCE HOME

**Description:** Developed to protect all types of structures on land, residences, small buildings, warehouses, etc.  
Weight: 2,460 kilograms (Gross)  
Measures: 24 cm. Height x 15.5 cm. diameter.  
Packaging: Galvanized Metallic Material



120  
meters

Protection

### CMCE SERTEC 120

**Description:** Greater deionizing power, for use in buildings, large complexes, mining, boats, electric stations, etc.  
Weight: 7.4 kilograms (Gross)  
Measurements: Ø 24.17 cm x 36.72 cm.  
Packaging: Galvanized Metallic Material



120  
meters

Protection

### CMCE-AT 120

**Description:** Developed for installations in high temperature environments, for example: chimneys, industries, etc. Supports up to 400°C.  
Weight: 7.4 kilograms (Gross)  
Measurements: Ø 24.17 cm x 36.72 cm.  
Packaging: Galvanized Metallic Material

# MODELS Specifications

## CMCE maximum working voltage WITHOUT lightning discharge

515.41 KV at one meter, according to high voltage laboratory tests (UNE 21186:2011// NF C17-102:2011).

## Maximum allowable current of short circuit

The tests carried out according to IEC-10/350 Q curves of 100,000 Amperes, specified in the IEC-62305 norms, show that the equipment supports 7 continuous degasses of 89,906KA; 89.62KA; 88.53KA; 89.3KA; 90.44KA; 96,656KA; 89,688KA; without breaking materials or marks of deterioration or perforation.

## Protection effectiveness

99% reduction of impact of direct rays in the protected structure. In case of direct impact of lightning (1%) or indirect effects due to external induced overvoltages in the protected structure, the CMCE behaves like a thermal fuse, absorbing part of the lightning energy in heat by melting its components, minimizing (between 60% - 90%) electromagnetic effects.

**Does not contain radioactive, electronic or heavy metals components.**



120 meters

Protection

## HIGH RESISTANCE

**Description:** Designed for highly corrosive environments, since it is a steel with high resistance to corrosion, given that the chromium or other alloying metals it contains, have great affinity for oxygen and react with it forming a passivating layer, thus avoiding corrosion of iron (purely stainless metals, which do not react with oxygen are gold and platinum, and of lower purity are called corrosion resistant).

Weight: 20 kilograms (Gross)

Measurements: Ø 24.17 cm x 36.72 cm.

Packaging: Galvanized Metallic Material



120 meters

Protection

## CMCE- HIGH VIBRATION

**Description:** Developed with the same characteristics as the CMCE 120, but with a special design to avoid the fall of the equipment, especially for derricks, etc.

Weight: 11,170 kilograms (Gross)

Measurements: Ø 24.17 cm x 36.72 cm.

Packaging: Galvanized Metallic Material



120 meters

Protection

## CMCE SERTEC 120

**Description:** Same characteristics as the CMCE 120, but with a dark matt color design, to avoid disturbance to the environmental visual.

Weight: 7.4 kilograms (Gross)

Measurements: Ø 24.17 cm x 36.72 cm.

Packaging: Galvanized Metallic Material



120 meters

Protection

## CMCE GRAPHENE

**Description: Developed for special applications and Military use.**

The innovation is based on the properties of Graphene.

Weight: 7.4kg (Net)

Measurements: Ø 24.00 cm x 38.54 cm

Packaging: Galvanized Metallic Material



100 meters

Protection

## CMCE TWIN MAX

**Description:**

For safe and effective protection in high electrical load environments, Sertec SRL has designed, created and tested the CMCE TWIN MAX device that exceeds the high efficiency of its inspiring base, the CMCE 120, to work in the most extreme conditions..

With the CMCE TWIN MAX it manages to compensate extreme electric fields with greater speed, efficiency and reduce the intensity of magnetic fields, so its application is focused on this type of conditions tested in the laboratory, exceeding our expectations by up to 30%.

Weight: 6,460 kg (Net)

Measurements: Ø 24.00 cm x 37.10 cm.

Packaging: Galvanized Metallic Material

# CERTIFICATIONS

## Regulations



### ISO 9001-2015 certified by STAREGISTER

ISO 9001 is the internationally recognized standard for quality management systems (SGC).

### ISO 14001-2015 certified by STAREGISTER

The ISO 14001 standard is the international standard for environmental management systems (EMS), which helps your organization identify, prioritize and manage environmental risks, as part of your usual business practices.



INTN Product Certificate (National Institute of Technology and Standardization and Metrology).



- High Voltage Comparative Tests in the INTI according to NFC-17100, where the comparative difference is that lightning discharges do not appear.



### ENAC; ILAC-MRA

A.1. General tests (Section.c.3.1UNE21186: 2011 // NF C17-102: 2011)

Test: Documentation, information and identification (C.3.1.1)

Test: Marking (C.3.1.2)

A.2. Mechanical tests (Section.c.3.2 UNE21186: 2011 // NF C17-102: 2011)

Test: Mechanical tests (C.3.2)

A.3 Environmental tests (Section.c.3.3UNE21186: 2011 // NF C17-102: 2011)

Test: Salt spray test (C.3.3.1)

Test: Test in sulphurous humid atmosphere (C.3.3.2)

A.4 Current test (Section.c.3.4UNE21186: 2011 // NF C17-102: 2011)

Test: Current test (C.3.4)

TO 5. Priming advance tests (Section.c.3.5UNE21186: 2011 // NF C17-102: 2011)

Test: Determination of the progress in the PDC priming (C.3.5.3 UNE 21186: / C.3.5.2.4 NF C17-102: 2011)





SERTEC S.R.L. It is approved within the NATO Cataloging System (NOC) with the NCAGE code SFKU3 for our CMCE-SERTEC lightning rods



**DUNS REGISTRATION** Number 955067967



We have **CE MARKING** on all CMCE models.



We have **UKCA MARKING** on all CMCE models.

# WARRANTY



**MANUFACTURED BY SERTEC S.R.L. IN ASUNCIÓN, PARAGUAY**

**MAINTENANCE:** Annual mandatory, carried out and certified by the official installer.  
**PRODUCT WARRANTY 5 YEARS** warranty for manufacturing defect, proving annual maintenance.



*Check insurance coverage according to the country where it will be installed and the equipment model.*

# TECHNOLOGICAL CHANGE

































## THE CMCE SERTEC

A legacy of one of the most privileged minds: Nikola Tesla

The CMCE ensures a 99% reduction of lightning impacts in almost all types of buildings and structures through the deionization of electrostatic charge.

Our device guarantees the reliability of computer systems and data during storms, optimizes production by increasing competitiveness and improves staff safety, among other positive aspects.

### TECHNOLOGICAL DIFFERENCES BETWEEN THE CMCE SERTEC AND THE CONVENTIONAL LIGHTNING ROD

	 CMCE	 Conventional Lightning Rod
	 It does not excite or capture the lightning, since it does not generate ascending tracers.	 Excites and captures the lightning, generating upward tracers.
	 Protects all types of structures and environments with risk of fire or explosion.(ATEX)	 Increases the risk of fire or explosion.
	 It does not generate overvoltages.	 Generates overvoltages.
	 Avoids electrical risks.	 Creates high voltage electrical hazards.
	 Complies with the basic principles of occupational risk prevention.	 Does not comply with the basic principles of occupational risk prevention
	 Does not generate Electromagnetic Compatibility effects.	 Generates effects of Electromagnetic Compatibility, since it attracts the ray.
	 Ground connection is compatible with low voltage electrical ground connections according to the REBT.	 Ground connection is NOT compatible with the low voltage electrical earth electrodes according to the REBT.
	 It is not radioactive.	 Some are radioactive.
	 Environmentally friendly.	 Indirectly generates electromagnetic pollution.
	 Price is very competitive in relation to safety.	 Price is NOT competitive in relation to safety.
	 Offers guaranteed protection.	 Does not offer guaranteed protection.

### RISKS - COSTS - EFFECTIVENESS ANALYSIS

	Electrical Risk	Accident Risk	Security-Cost Ratio	Efficiency of the System	Return on Investment
CMCE 	 LOW	 LOW	 LOW	 HIGH · 99% No Lightning	 HIGH · 99% No Lightning
Conventional 	 HIGH	 HIGH	 HIGH	 LOW · 99% Lightning	 LOW



**HELITACTICA  
PARAGUAY**



**RELJUB  
PARAGUAY**



**FEEDLOOT  
ARGENTINA**



**CEPM  
REPÚBLICA DOMINICANA**



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# CMCE SERTEC

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