

Memo

To: City Administration/City Council

From: Mark Sollenberger/Water & Wastewater Director

Date: November 04, 2021

Re: Bid Award Recommendation – WWTP Lightning Protection System Project

This memo is to recommend that the city council award the bid for the installation of a lightning protection system that will protect all of the wastewater treatment plant buildings including the distribution shop. This is a 2021 budgeted wastewater capital project, approved for \$45,000.00. Bid documents were sent out to 6 different contractors, and 4 plan holder companies. Bid opening occurred on 10-21-2021 at 2:00pm with only one bid received, and that bid is under the budgeted amount for this project. This bid is for a newer type of lightning protection technology, is UL listed, and meets the intent of the bid specifications. There is a ten-year warranty with this system, that covers damages to equipment caused by a direct lightning strike up to \$500,000.00. Although this is a newer lightning protection system/technology, it is already being used at thousands of locations worldwide. The design engineer and staff have investigated this new system, and it has proven to work effectively. This new system will protect the entire complex at the wastewater plant.

My recommendation is to award the bid to EMP Solutions (the only bidder) for the total cost of (\$28,613.00). I have included the bid tabulation below for your review, and have attached a brochure that explains this lightning protection system and a sole source statement that EMP is the only approved company able to install this type of system in the United States. Thank you in advance for considering this request.

Vendor

Total Bid Amount

EMP Solutions

\$ 28,613.00



November 4, 2021

Mark Sollenberger
Water & Wastewater Director
City of Craig
300 W 4th Street
Craig, Colorado 81625

RE: Bid Evaluation – Contractor Recommendation for Wastewater Treatment Plant Lightning Protection Project

Dear Mark:

Western Water Solutions, LLC (WWS) is pleased to provide this letter regarding a recommendation for Contractor selection for the City of Craig's (City) Wastewater Treatment Plant Lightning Protection Project. The project was advertised for bid on October 1st, 6th and 8th of 2021. Six qualified Contractors requested the bidding documents, in addition to four separate plan holder agencies advertising the bidding documents. Bids were received on October 21, 2021, at 2:00 PM to the City Clerk's Office. The contract documents and addenda outlined the required documentation to be submitted with the bid.

Only one bid was received from EMP Solutions, Inc. (EMP) based in Fishers, Indiana for a total bid price of \$28,613.00. EMP proposed an alternative lightning protection system to what was specified in the contract documents. Since receipt of their bid, WWS and the City participated in a webinar with EMP to learn more about the technology and protection capabilities. Following our webinar EMP provided a revised bidding package highlighting the corrected mapped location for the wastewater facility and corrected pricing, which did not increase from the original bid. In addition, EMP provided their Terms and Conditions, responded to our direct questions, and provided supporting documentation including the UL certification.

WWS reached out to the four references provided in the bid submittal. I had the opportunity to connect with three of the references. Two of the three entities are nearing a year from which the lightning protection system was installed at their facilities. They have reported zero lightning strikes since installing the newer lightning protection technology. One of the references is nearing four years since installation with zero strikes to their protected facilities. Each of the references relayed positive feedback regarding EMP, the installation and follow up customer service. Each of the entities were also new to this technology and their experience with the technology so far has been positive.

EMP has committed to installing the corrosion resistant unit at the wastewater plant by December 15, 2021 which meets the bidding requirements. The device has a 10-year warranty while the grounding components have a 5-year warranty, in addition to a \$500k No Direct Strike Guarantee. EMP will train City staff to annually inspect and certify the device and grounding components.

In closing, WWS and the City have completed a level of due diligence to learn more about the system and technology and received positive feedback from the provided references. As such, I recommend the City enter into a contract with EMP Solutions to complete the lightning protection project at the Wastewater Treatment Plant.

Please do not hesitate to reach out with any questions or to discuss further.

Sincerely,

Theresa Weidmann, PE

cc: Carl Ray and Liz White, City of Craig



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CMCE SERTEC LIGHTNING PROTECTOR

ELECTROSTATIC FIELD PROTECTOR



The most effective protection
system **Against Lightning**



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Is great for:



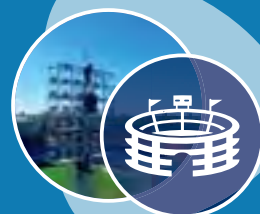
FACTORIES



**HOSPITALS
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**SPORTS
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CONSTRUCTION



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**MONUMENTS AND
HISTORICAL SITES**



**BUILDINGS
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**MINES AND
PETROCHEMICALS
EXPLOSIVE ATMOSPHERES**



**AIRPORTS
RADARS
CONTROL TOWERS**



**WIND GENERATORS
PHOTOVOLTAIC PANELS**



**ELECTRICAL SUBSTATIONS
HIGH AND LOW VOLTAGE
LINES**

CMCE LIGHTNING PROTECTOR

Multiple Field Electric Compensator

SERTEC Electrostatic Field Protector

The CMCE SERTEC LIGHTNING PROTECTOR aims to protect people, animals and structures in installations on land, air and water from any electrical phenomenon.


The CMCE SERTEC LIGHTNING PROTECTOR is designed to protect against electroatmospheric effects produced by climate change, industrial, meteorological or solar electromagnetic pollution, manifested in the form of electrical storms, etc. The CMCE SERTEC LIGHTNING PROTECTOR is permanently protecting its coverage area to correct the effects of electrostatic disturbances according to their origin, frequency, voltage and intensity; compensating, stabilizing the current of the electric charges in its environment, draining them to ground in harmless milliamperes, minimizing the formation of the lightning in its protection area

The CMCE SERTEC LIGHTNING PROTECTOR 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 and magnetic 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 rays increasing the feasibility of electric discharges and consequently the risks that they entailed.

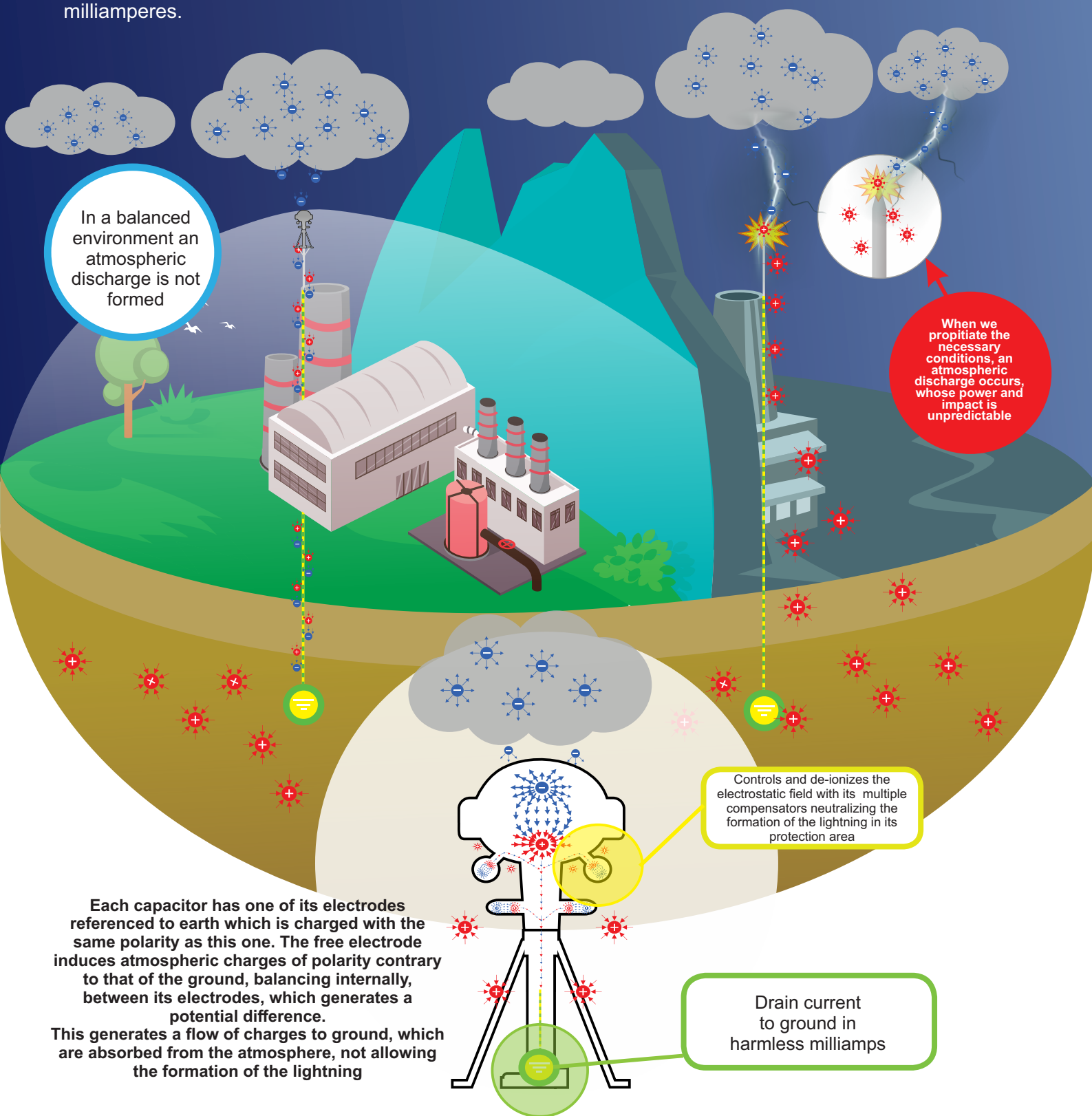
New materials and designs, added to years of experience, have allowed us to improve the experiences of the undisputed scientist Nikola Tesla, evolving in the protection of atmospheric phenomena.



OPERATING Principle

The multiple electric field compensator, 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 ground, in harmless milliamperes.



CLIMATE CHANGE



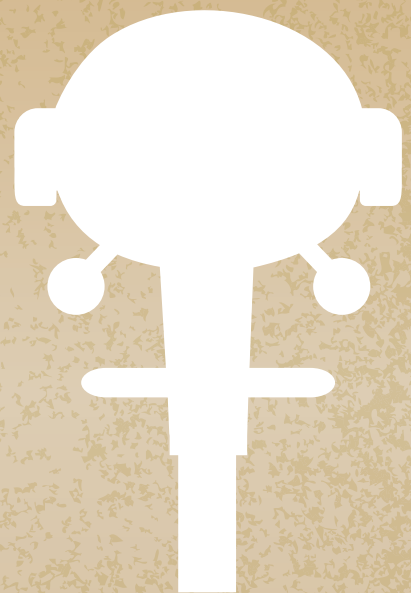
CURRENT SITUATION

The current climate change is generated by air pollution, deforestation, greenhouse gases. To all this we would have to add the solar eruptions that when they reach our atmosphere, generate meteorological phenomena producing electrification of the atmosphere for hours, creating thunderstorms with a lot of lightning activity, where the positive polarity predominates (ascending ray) , although there is also the negative polarity (downward beam).

Aluminum life cycle

The high durability of aluminum and its 100% recycling, without loss of quality, has established its reputation as the green metal. Its remarkable strength and low maintenance characteristics make it the definitive construction material of an industry that is constantly searching for more resistant, lightweight, durable and ecological alternatives.

Recycling a ton of aluminum saves about 4 tons of bauxite, its main raw material, and 95% of the energy needed to produce primary aluminum. This, in turn, saves 9 tons of CO2 emissions. The recycling of aluminum scrap today saves around 80 million tons of greenhouse gas emissions every year. This is equivalent to the elimination of 15 million cars from the world's roads.



ECO
Product

ENVIRONMENTAL RESPONSIBILITY



SERTEC S.R.L. demonstrates its commitment to the environment by developing a production system that is also effective, friendly and sustainable.

A high percentage of the materials used for the production of the CMCE SERTEC Protector are recycled, in this way we seek to collaborate with a more sustainable and above all more secure environment.



TECHNOLOGICAL CHANGE

































THE CMCE LIGHTNING PROTECTOR

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













The CMCE LIGHTNING PROTECTOR 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 PDCE-CMCE SERTEC AND THE CONVENTIONAL LIGHTNING ROD

		CMCE LIGHTNING PROTECTOR		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 and is manufactured according to the RoHS regulations.		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 LIGHTNING PROTECTOR 	 LOW	 LOW	 LOW	 HIGH · 99% No Lightning	 HIGH · 99% No Lightning
Conventional 	 HIGH	 HIGH	 HIGH	 LOW · 99% Lightning	 LOW

EVOLUTION

Of The Lightning Rod

Benjamin Franklin, published in London in his famous almanac (Poor Richard's Almanack), an article where he proposed the idea of using pointed steel rods, on roofs, to protect themselves from falling lightning. His theory was tested in England and France before he even executed his famous comet experiment in 1752. One would say that he invented the lightning rod and presented the so-called single fluid theory to explain the two types of atmospheric electricity, the positive and negative.

In 1753, the Russian Georg Wilhelm Richmann followed Franklin's investigations to verify the protective effect, but in his investigation a lightning strike struck him when he was excited and attracted by the lightning rod, and he received a deadly electric shock when manipulating part of the installation of the lightning rod.

The foundation of an ESE (Early Streamer Emission) terminal as it is known generates impulses of controlled magnitude and frequency at the tip of the terminal during high static fields before a lightning strike. This allows the creation of an uplink leader from the terminal that propagates into the downlink leader from the cloud.

A lightning conductor creates an electric field distribution with field lines concentrated at its tip, thus facilitating the current of ionized particles, which is a lightning bolt. This applies to any lightning rod, when trying to facilitate the path of charges and therefore say that it is "attracts lightning".

Already in 1916 Nikola Tesla in his patent N° 1.266.175 mentioned the principles of operation of a primitive device based on the principles that sustain our product, the protector of electroatmospheric field PDCE-CMCE SERTEC, explaining the disadvantages that already at that time produced the point lightning conductors that instead of protecting the goods and people, attracted the rays increasing the feasibility of fall of lightning and consequently the risks for the goods and people.



....It is popularly believed that by allowing a leak into the air, the needle-shaped lightning rod fulfills two functions: one, to drain the ground of its negative electricity, the other to neutralize the positive of the clouds. To a certain extent it performs both functions. But a systematic study of electrical disturbances on earth has made it palpably evident that the action of the Franklin conductor, as commonly interpreted, is largely illusory. The actual measurement proves that the amount of electricity escaping from numerous points is entirely insignificant when compared with that induced within a considerable terrestrial area, and unimportant in the dissipation process. But it is true that the negatively charged air in the vicinity of lightning rods, which has been converted into a conductor through the influence of lightning, facilitates the passage of lightning. This increases the probability of lightning strikes in the immediate vicinity. The fundamental facts behind this type of lightning conductor are: First, it attracts lightning, so that it will be struck by one more often than if it were not; second, it makes most, but not all, discharges it receives become harmless; third, by turning the air into a conductor, and for other reasons, it is sometimes the cause of damage to objects in the vicinity; and fourth, in general, its power to prevent damage predominates, more or less, over the risks it summons..... (condensed translation patent 1,266,175)

Technical Specifications



120
meters

Protection

CMCE LIGHTNING PROTECTOR

Description: Greater deionizing power, for use in buildings, large complexes, mining, boats, electric stations, etc.

Weight: 10.490 kilograms (Gross)

Measurements: Ø 20.8 cm x 54.9 cm.

Packaging:

Galvanized Metallic Material

INFO: For the installation of the CMCE, a base and a brace are incorporated. For more information consult the manufacturer

CMCE maximum working voltage WITHOUT lightning discharge

640,000 volts to one meter, according to high voltage laboratory tests.

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.

Coverage Area

- PDCE-CMCE Technology Method: Cover radius depending on the model varies between 120m. (Check model's manual).
- All models must be installed at a height of 3m. above the highest point to be protected. The use of braces for the fastening and support of the air terminal is mandatory (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.

Structur connection:

It incorporates a stainless steel base with different configurations according to the surface to be fixed. M5 or larger perforations are necessary.

Component Materials:

Recycled aluminum of greater than 90% purity. Stainless steel base.

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.



This product is UL certified



DUNS REGISTER Number 955067967



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. is approved within the NATO Cataloging System (NOC) with the NCAGE code SFKU3 for our CMCE-SERTEC lightning conductors



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



Electromagnetic field protection

It complies with Decree 10071/07 of the Secretary of the Environment SEAM Paraguay on the protection of electromagnetic fields, sets the maximum parameters of exposure to electric and magnetic fields in the frequency range from 0 to 300 Gz. The regulations approve as maximum permissible maximum permissible exposure limits, the values established as reference levels by the International Commission on Non-ionizing Radiation Protection ICNIRP (International Commission on Non-Ionizing Radiation Protection).

Electric field: 10 kV / m (occupational exposure)
5 kV / m (public exposure)
Magnetic field: 500 μ T (occupational exposure)
100 μ T (public exposure)

In situations in which simultaneous exposures of different frequencies are given, the criteria and recommendations of the ICNIRP are adopted.
The enforcement authority is the Secretariat of the Environment.



GREEN RECYCLING SEAL

The Green Seal delivered by SERTEC S.R.L. in its products it allows the user to be informed that we are a company responsible for the life cycle.

By choosing this product you are collaborating with the environment since we use recycled materials.

Environment solid waste management Complies with the requirements of law No. 3956/09 on solid waste management in the Republic of Paraguay, the SEAM Environment Secretariat, is the enforcement authority, whose regulatory content and practical use should generate the reduction of the same, to the minimum. Topic addressed: the SUMMIT OF THE EARTH at the 1972 Stockholm Convention held by the United Nations for the preservation of natural resources. Environmental Action Program to address global warming, generating agreements such as the Kyoto Protocol

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.



sertec S.R.L.

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CMCE LIGHTNING PROTECTOR

CONTACT US

Av. Gral Santos 2555
Asunción - Paraguay

Teléfonos:

+ 595 21 302023

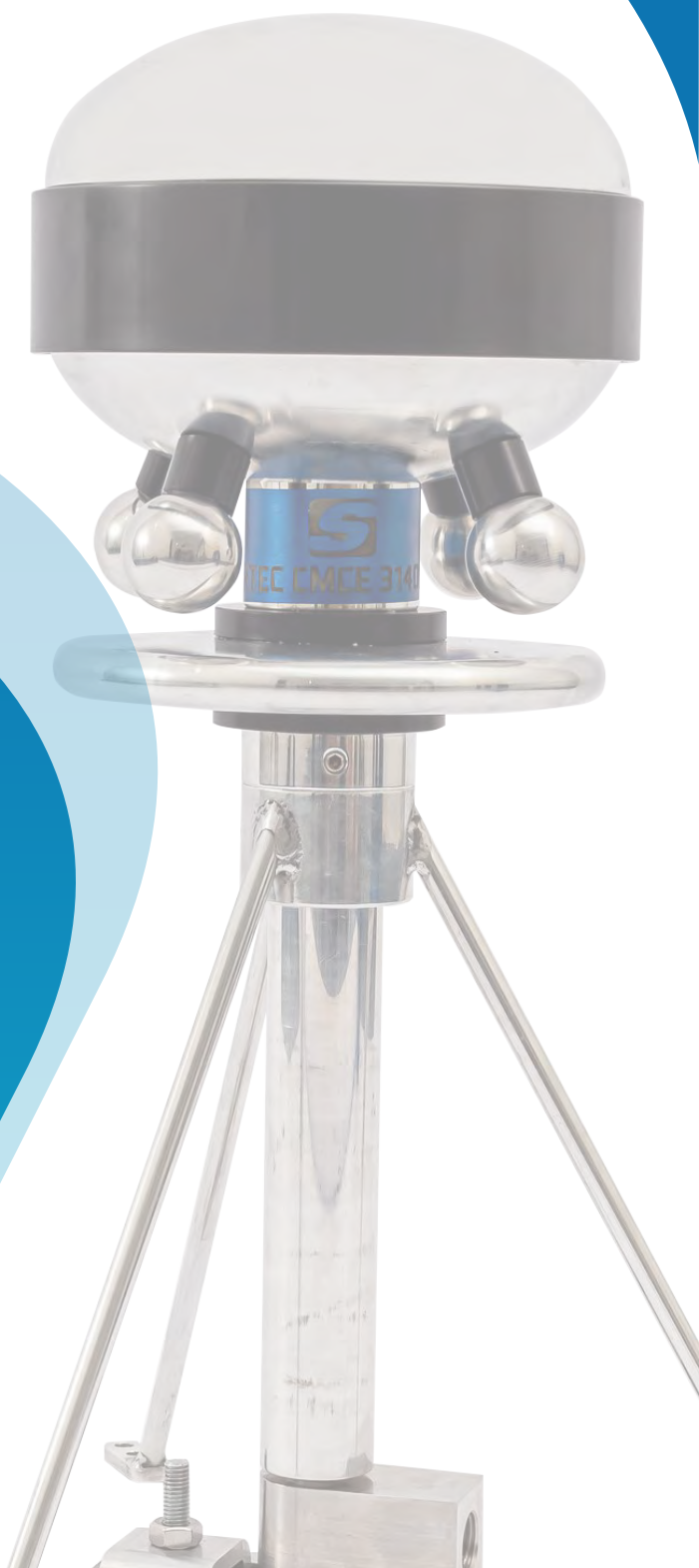
+ 595 21 302024

E-mail:

sertec@sertec.com.py



www.sertec.com.py



February 7th, 2020

To Whom It May Concern

RE: Sole Source of CMCE in the United States

This letter is to certify that EMP Solutions, Inc., located at 11650 Lantern Road Suite 105, Fishers, Indiana 46038, along with its affiliates, agents and distributors, are the sole source in the United States for all CMCE products including the CMCE-120, CMCE-55 and CMCE-25 using the brand, design and name designated by the Manufacturer Sertec S.R.L.

There are no other companies authorized to sell the CMCE in the United States or Canada.

Regards.



Sertec S.R.L.
Soluciones Inteligentes pensando en Usted
Ing. ARMANDO CHIFARELLI