



AIRCRAFT WARNING LIGHT  
for:

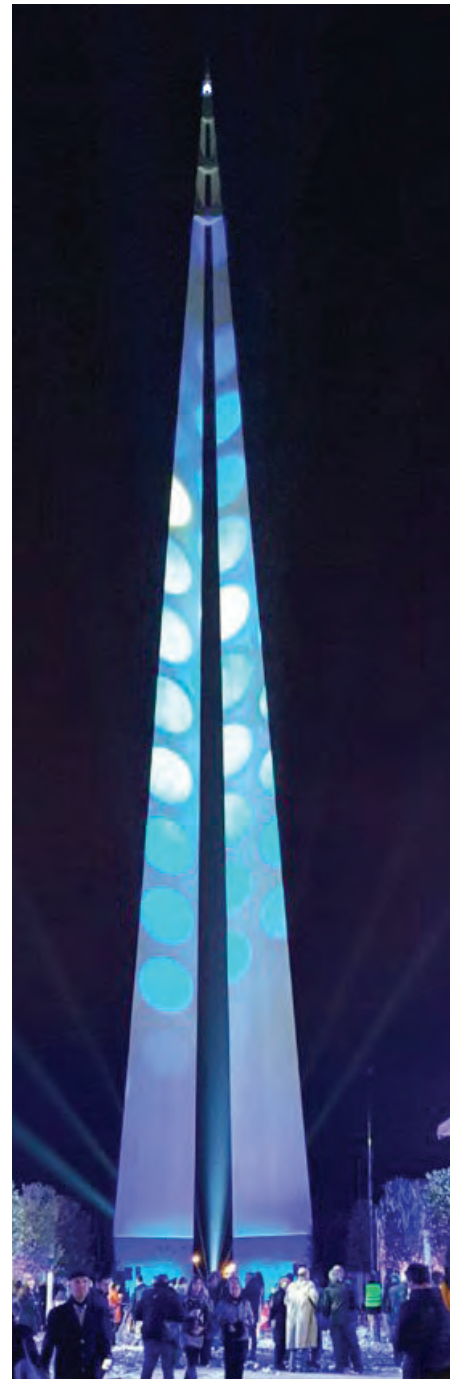
- CHIMNEYS;
- COOLING TOWERS;
- REFINERIES and
- OFFSHORE PLATFORMS.

# COMPANY PRESENTATION

#MADEFORPASSION

AIRCRAFT WARNING LIGHT  
for:

- SAFE and HAZARDOUS  
areas;
- BRIDGES, CRANES and  
TALL STRUCTURES;
- HELIDECK and HELIPORT;
- AERONAUTICAL and
- MARINE areas.



ELECTRICAL EQUIPMENT for  
Oil&Gas world:

- OIL refineries;
- CHEMICAL and  
PRETROCHEMICAL plants;
- Offshore PLATFORMS;
- POWER GENERATORS and
- other INDUSTRIAL PROCESS.





## WORKSHOP and WAREHOUSE

**C&E Srl**, since 1988, is one of the most important manufacturers of special equipment for chemical and petrochemical field. The constant attention to human lives protection in potentially hazardous and explosive areas has allowed C&E srl to develop two new brands, **LUXSOLAR** and **LXS**, under which reliable LED lighting systems are manufactured/produced since **2005**.

Luxsolar and LXS trademarks, in a few years became leader in Italy and among the most established brands in the world for the manufacture of **LED Aircraft Warning Lights** for safe and hazardous areas.

**C&E Srl** offers a wide range of products and solutions that meet customer's requirements in many application fields: buildings, infrastructures, cranes, telecommunication towers, chimneys, onshore/offshore platforms, high-voltage masts, cooling towers, heliports, helideck, wind turbines, oil refineries, chemical and petrochemical plants and power generators. Today, our C&E department conceives, designs, manufactures and tests its products completely on its own, thanks to its skilled engineers and specialists.

Design, passion and high quality are C&E strong points that allow to satisfy the increasing customisation required by the market and to create exclusively made in Italy products, manufactured in Oggiono (Lecco). This approach has allowed Luxsolar to be the only brand of this field to obtain **ENAC** Certification.

A significant part of C&E activity is the concern for the environment; our mission is to create more and more **SUSTAINABLE** products thanks to continuous innovation in the light signalling devices' world.

**C&E SRL** has registered several brands:

- **Combustion and Energy:** electrical equipment for Oil&Gas field;
- **LXS Luxsolar:** LED Aircraft Warning Lights for safe and hazardous areas;
- **Luxlan:** radio communication system;
- **Luxdim:** architectural lights;
- **ABS:** burners.

**C&E SRL** is part of a Holding called **C&E Group**, that includes the following companies:

- 100% **Macrial:** real estate;
- 100% **C&E inc:** certifications, sales and promotions products in USA;
- 100% **C&E sarl:** explosion proof material and AWL (France);
- 52% **VDG LAB:** R&D;
- 48% **Avimar:** aviation & marine technology;
- 25% **Efficient Innovation:** explosion proof material;
- 10% **Kintsugi GmbH:** engineering & sales consulting.

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LUXSOLAR products:

- Aircraft Warning Lights for SAFE and HAZARDOUS areas;
- Marine beacons;
- Helideck and Heliport beacons;
- Aeronautical beacons;
- Solar Aircraft Warning light systems.

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C&E products:

- Flame Relay - Ionization Flame Detector;
- High Tension Ignition Systems;
- High Energy Ignition Systems;
- Flame Detector Systems;
- Ex d IIC Aluminium Enclosures (GUB);
- Ex d IIB+H<sub>2</sub> Aluminium and Stainless Steel Enclosures (EJB);
- Terminal Boxes and Control Stations;
- Instrument Enclosures and Terminal Boxes.

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Contacts

**C&E** *group*

Visit Our websites to find out more and keep updated on our products:  
www.ce2k.com - www.luxsolar.com - info@ce2k.com - lxs@luxsolar.com

# COMPANY CERTIFICATIONS



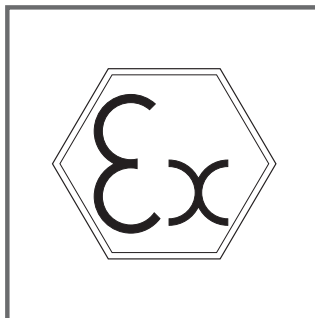
**UNI EN ISO 9001:2015**  
Quality Management  
Systems



**BS-OHSAS 18001:2007**  
Occupational Health  
and Safety Management  
Systems



**FR/INE/QAR 13.0007**  
IECEX - Quality  
Assessment Report



**13ATEXQ701**  
ATEX - Product Quality  
Assurance Notification

# NEXT COMPANY CERTIFICATIONS



**UNI EN ISO 14001:2015**  
Environmental  
Management  
System (EMS) (in 2020)

# LUXSOLAR PRODUCTS

## Aircraft Warning Lights for SAFE and HAZARDOUS AREAS



ICAO regulation - Annex 14 specifies that, low, medium and high intensity lights can be used to warn the presence of obstacle higher than 45m, such as: telecommunication towers, wind turbines, cranes, buildings, tall structures, offshore platforms, refineries, chimneys, flares, cooling towers and other structures. These devices are according to **ICAO**, **FAA** and **ENAC** regulations and **ATEX** and **IECEx** certified (the certifications are only applied for lights installed in hazardous areas).

The **Low Intensity Obstruction Light** is the simplest device according to ICAO standards. LIOL can have a red steady burning light (Type A / Type A Ex or Type B / Type B Ex) or a red flashing light (Type E / Type E Ex) with an omnidirectional light beam and a patented optical reflector.

**Medium Intensity Obstruction Light** must be used where the obstacle is particularly large and the height of structures above the surrounding soil is more than 45m. Medium Intensity Type A / Type A Ex emits a white flashing light; Type B / Type B Ex emits a red flashing light, while Type C / Type C Ex emits red steady burning light.

**High Intensity Obstruction Light** must be used to indicate the presence of structures whose height above the surrounding

ground level exceeds 150m. May also be used when an aeronautical study indicates such lights to be essential for recognition of the structure by day and night.

HIOL beacon Type A and HIOL beacon Type B emits a white flashing light.

Type A has a luminous intensity of: 200.000cd for day mode, 20.000cd for twilight mode and 2.000cd for night mode. Type B has a luminous intensity of: 100.000cd for day mode, 20.000cd for twilight mode and 100.000cd for day mode.



As per ICAO (International Civil Aviation Organization) reference the **LXS-ONE** beacon corresponds to the **LOW INTENSITY**, either Type A or Type B.

Using only **ONE LED** it is able to satisfy and exceed the 32cd required by specific aviation standards consuming no more than 2W for the Low Intensity Type B and 0,4W for the Low Intensity Type A. Moreover, LUXSOLAR has developed a **SPECIAL LENS**, which satisfies international regulation, such as those of Australian and Canadian aviation rules.

**LXS-ONE** has been designed to be easily installable. It is **MORE COMPACT** and equipped with an **ADAPTABLE MOUNT BRACKET**. A balance of **OPTICS, ELECTRONICS** and **MECHANICS** has allowed us to make an **AFFORDABLE** and **CONVENIENT DEVICE**.

## MARINE beacons



Our marine lights series are configured for various nautical applications ranging from **large industrial ports** and **commercial marinas** to **small lakeside docks** and **private waterfronts**.

The lights are designed and manufactured in accordance with the **International Association of Lighthouse Authorities (IALA)** rules, association of which we are members since 2016.

Manufactured specifically for the harshest of marine environments and conditions these lights have been tested in the most extreme maritime locations. They are being used for a wide variety of applications including oil and gas, port and harbour authorities, waterways and lakes, aquaculture applications.

We can offer flashing lighthouse beacons, marine navigation aids both for safe and hazardous area, bridge lights, etc. all using LED technology that guarantees a very long life.

## HELIDECK and HELIPORT beacons

### Heliport



Perimeter light



Heliport Beacon



Approach light



Helihoist Status light



Floodlight

### Helideck



Perimeter light Ex



Helideck Beacon



Repeater light Ex



Status Wave Off light



Floodlight Ex

Based on the experience gained **over more than 10 years** in the Aircraft Warning Light field, LUXSOLAR is now developing a new series of **LED warning beacons suitable for heliports and helidecks** in compliance with the major international standards.

This new range includes: helideck and heliport beacons (HB), helideck status (Wave Off) beacons, helihoist status beacons, perimeter lights (FATO and TLOF), Ex repeater lights, approach lights (flashing and steady burning), heliport and helideck floodlights.

We do not only realize **systems following customer's specifications**, but also give information and advices on how heliport and helideck light systems should be composed of according to updated international regulations.

## AERONAUTICAL beacons



During the last two years LUXSOLAR have been developing a new range of product to add to the several existing ones: the **Aeronautical Beacons**.

An aeronautical beacon is a visual aid to navigation, that displaying white or coloured (green and/or yellow) flashes indicates the location of airports, seaplane airports, heliports and certain areas in mountainous terrain that may constitute hazard to aircrafts.

LUXSOLAR is able to supply beacons in compliance to **ICAO** (Identification Beacon and Aerodrome Beacon) and **FAA** (Airport Light Beacon, Heliport Light Beacon and Seaplane Light Beacon).

## SOLAR AIRCRAFT WARNING light systems



Luxsolar can manufacture **Solar Aircraft Warning Light Systems**, realized ad hoc for each customer according to the installation location and autonomy (minutes/hours/days) required.



# C&E PRODUCTS

## FLAME RELAY - IONIZATION FLAME DETECTOR



Combustion and Energy **600-IFD-140-SRS** is a **SIL2** flame ionization monitor and control relay operates in the rectification mode. An isolated current limited supply is applied between the flame rod and the burner or pilot pipe (ground connected). In the absence of flame the resistance between the rod and the ground has a high value, therefore no current flows.

In the presence of a flame, the area of ionized gas around the rod has a lower impedance allowing a small current to flow. This current will have a DC content related to the ratio of rod to ground area. The 600-IFD-140-SRS monitors this small current, displays its DC value on a **10 color segments bar graph** and operates a relay when the **current exceeds 2 $\mu$ A (flame present relay)**.

## HIGH TENSION IGNITION SYSTEMS



Combustion and Energy **180-HTI-120/180-HTI-130** high tension ignition systems are made with a high tension ignition transformer with 8kV output. Very simple to use, it is suitable to ignite explosive mixture and is very useful in FFG system. It is available in **ATEX** enclosure **Ex d IIC**, cast aluminium material.

## HIGH ENERGY IGNITION SYSTEMS

### Example of HIGH ENERGY IGNITION systems



200-HEP-A6Z



200-HEF-90B



225-HEF-A2Z



225-HEF-A4Z



200-HEP-A6Z-IP

**HEI systems** are used in flame systems to ignite and monitor flare pilots both manually and/or automatically. Combustion and Energy engineering department, through the use of **200-HEP-A6Z**, **225-HEF-A4Z** ignition modules and several ignition accessories (**ignition rod & tip**, **high energy ignition cable**, **junction boxes**, etc.), can supply complete High Energy Ignition systems for hazardous areas.

## FLAME DETECTOR SYSTEMS

### Example of FLAME DETECTOR systems



IRIS500 UNISCAN Ex



U2-ALL-IN-ONE



IRIS500 MAD



IRIS500 MAD Ex



S55XBE



S550BE-Ex

**Flame detector systems** are used to detect all type of flames.

There are three different kind of flame detectors:

- **IR version** (e.g. **IRIS500 IRX2 IP/Ex**): this kind of flame detector is recommended for pulverized coal, oil, hydrogen, sulphide and other difficult waste fuel streams where ultraviolet light is absorbed.

The IR version uses a solid state infrared sensor.

- **UV version** (e.g. **IRIS500 UV IP/Ex**): this kind of flame detector is recommended for gas and oil flames.

It consists of a gas discharge sensor with a spectral response only in the UV region.

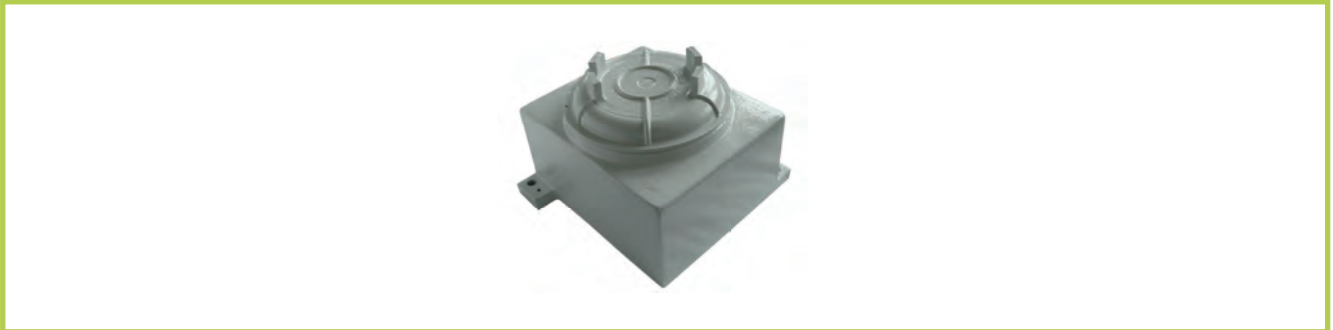
The UV version uses a photo sensor.

- **IR/UV version** (e.g. **S550BE**): this kind of flame detector is a flame monitoring viewing head utilizing two types of detectors: an IR (infrared) solid state sensor and an UV (ultraviolet) photo sensor.

The device detects flames by comparing the threshold signal of both ranges. This helps minimizing false alarms.

Along with these devices, Combustion and Energy can supply flame signal amplifiers.

## Ex d IIC ALUMINIUM ENCLOSURES (GUB)



**GUB enclosures** are normally used in industrial plants where hazardous atmospheres of gases and combustible dusts (Zone 1, Zone 2, Zone 21 and Zone 22) may be present.

Combustion and Energy enclosures are **ATEX** certified, made in copper free aluminium and are also available with window as option.

Combustion and Energy certificate number: **INERIS 03ATEX0174X** (ATEX for GUB without window), **EPT 17ATEX 2760X** (ATEX for GUB with window) e **IECEX EUT 17.0029X** (IECEX for GUB with window).

## Ex d IIB+H<sub>2</sub> ALUMINIUM and STAINLESS STEEL ENCLOSURES (EJB)



**EJB... series** enclosures offer **Ex d IIB +H<sub>2</sub> mode of protection**.

These enclosures are suitable to be used in hazardous areas for different applications, such as push button stations, instrument housing, lighting distribution panels, power distribution panels, heat tracing panels, motor control panel, etc.

Combustion and Energy Certificate Number: **INERIS 14ATEX0002X** (ATEX), **IECEX INE 14.0017X** (IECEX), **AA87.B.00188** (Tr Cu), **LEC 15.0023 X** (INMETRO) and **CNEx17.1730X** (Chinese Certificate of Conformity).

## TERMINAL BOXES and CONTROL STATIONS



SS and GRP Control Stations

SS and GRP Terminal Boxes

The **terminal boxes contain Ex and/or Ex i terminals** for incoming/outgoing cable connections. The control and signalling units series **CE2K-... ..-CS-SSX** can be equipped with certified components. Terminal boxes and control station can be made in Stainless Steel and in GRP (Glass reinforced polyester). Combustion and Energy Certificate No.: **ATEX CEC 15ATEX211** (ATEX), **AA87.B.00582** (Tr Cu) and **LEC 16.0059** (INMETRO - Terminal Boxes) / **LEC 16.0056** (INMETRO - Control Station).

## INSTRUMENTS ENCLOSURES and TERMINAL BOXES



SS and Aluminium Instrument Enclosures

SS and Aluminium Terminal Boxes

The **instruments enclosures** are normally used to contain instruments and measurement devices. The **G... and GO... series** has a cover completed with a transparent part made of tempered glass and is sealed with a special resin that can tolerate operating temperature until +160° C.

The **terminal boxes**, instead, are normally used to contain terminals. The available series is G... : enclosure without sight glass.

Combustion and Energy Certificate Number: **ATEX FTZÙ 15ATEX0182X** (ATEX), **IECEX FTZÙ 15.0035X** (IECEX), **AA87.B.00187** (Tr Cu) and **LEC 16.0080X** (INMETRO).

# PRODUCTS CERTIFICATIONS



**ATEX**  
(Atmosphères Explosibles)



**IECEX**  
(International Electrotechnical Commission)



**ENAC**  
(Ente Nazionale per l'Aviazione Civile)



**DGAC STAC**  
(Service à compétence nationale de la Direction Générale de l'Aviation Civile)



**TRCU**  
(Technical Reglament Conformity Certificate)



**INMETRO**  
(Instituto Nacional de Metrologia, Qualidade e Tecnologia)

# and COMPLIANCE



**ICAO**  
(International Civil Aviation Organization)



**FAA**  
(Federal Aviation Administration)



**CAP168**  
(Civil Aviation Authority)

# ONGOING CERTIFICATIONS



**UL**  
(Underwriters Laboratories)

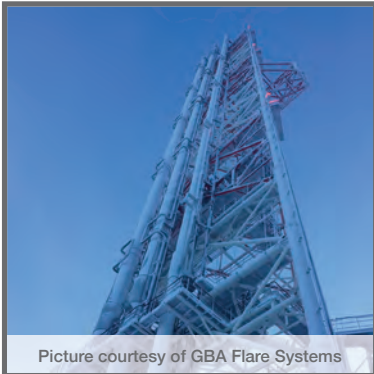


**FAA**  
(Federal Aviation Administration)



**NEC**  
(National Electrical Code)

# SOME INSTALLATIONS



Picture courtesy of GBA Flare Systems

**LNG PROJECT YAMAL**  
**(Yamal - Russia)**  
 (MIOL-B Twin and HEI- 2016)



**BOSPHORUS BRIDGE**  
**(Istanbul - Turkey)**  
 (MIOL-B - 2014)



**PALAZZO DIAMANTE, SOLEA, SOLARIA, ARIA TOWER**  
**(Milan - Italy)**  
 (MIOL-AB and LIOL-B - 2013)



**AZERSU TOWER**  
**(Baku - Azerbaijan)**  
 (MIOL-B and LIOL-B - 2014)



**TAIF-NK VCC LLE2 PROJECT**  
**(Tatarstan - Russia)**  
 (Ignition System for Burners - 2014)



**ABU DHABI NATIONAL BANK**  
**(Abu Dhabi - UAE)**  
 (MIOL-B and LIOL-B - 2013)



**LA PEPA BRIDGE (Cadiz - Spain)**  
 (MIOL-C - 2014)










**VTE GENOVA (Genova - Italy)**  
 (MIOL-AC - 2016)



**JEDDAH AIRPORT**  
**(Jeddah - Saudi Arabia)**  
 (MIOL-B and MIOL-C - 2011)

## CLIENTS LUXSOLAR PRODUCT

DESCRIPTION	BUSSINESS	COUNTRY	A.D.
BANGCHAK REFINERY CCR & HCU PROJECT - PHASE II 	PETROCHEMICAL	THAILAND	FEB,2019
BTS EXPANSION PROJECT 	PETROCHEMICAL	THAILAND	SEP,2019
Map Ta Phut Industrial Port Phase III 	PETROCHEMICAL	THAILAND	OCT,2019
MAP TA PHUT OLEFINS CO. LTD (MOC) 	PETROCHEMICAL	THAILAND	2019
PETRONAS RAPID 	PETROCHEMICAL	MALAYSIA	JUN,2016
LINDSEY OIL REFINERY 	PETROCHEMICAL	UNITED KINGDOM	FEB,2019
MELAKA REFINERY FLARES RESET	PETROCHEMICAL	MALAYSIA	AUG,2019
JG STAGE-1 EXPANSION PACKAGE 2 PROJECT 	PETROCHEMICAL	PHILIPPINES	MAR,2019



## CONTACTS

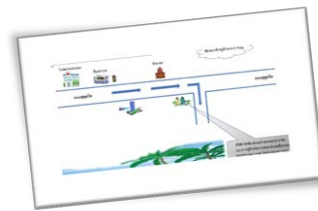


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# COMBUSTION AND ENERGY SRL



LXS and LUXSOLAR are trademarks of C&E Group SRL

The logo features a stylized flame icon in red, green, and blue to the left of the text 'LXS' in a large, blue, sans-serif font. Below 'LXS' is the word 'LUXSOLAR' in a smaller, blue, sans-serif font. Both words have a registered trademark symbol (®) to their upper right. Below the logo, a line of text states: 'LXS and LUXSOLAR are trademarks of C&E Group SRL'.