Revealing the secrets of CEDD®

CEDD® AGL Design and Installation

Webinar 8th July 2020 - Questions and Answers

Is CEDD® only for apron/taxiways or also for runways?

CEDD® technology can be used for approach, runway and taxiway lighting. Lelystad Airport, for instance, is fully equipped with a CEDD® installation.

Per basestation / circuit, how many lights can be connected?

The circuit length for 1 basestation is up to 2,000 meters, with a maximum of 40 inset lights (8") based on the number and type of lights. We are working hard to expand the number of lights on a circuit.

Does the number of lights per circuit depend on the light wattage consumption?

Yes, that is correct. A circuit can have a maximum of 40 inset or elevated lights (8"), or 20 lights (12").

Does it make a difference having uni-directional or bi-directional lights (refering to the 40 lights limit)? Can the system control each side of a bi-directional light individually?

The limit of 40 lights per circuit counts for both unidirectional and bidirectional lights (the bidirectional ones would not count as 2 lights). The CEDD® system can control each side of a bi-directional light individually.

How many addresses per circuit? Is a bidirectional light considered one address or two?

Bidirectional is considered two addresses. There is a limit of 40 fixtures (8") per circuit, so you can have a maximum of 80 unique addresses per circuit (in case of 80 bidirectional lights).

Do you have any solution in case the circuit length exceeds the 2,000 meters?

The circuit length for 1 basestation is up to 2,000 meters. If more distance is required, then you would need to install an additional basestation.

As there is a limit of 40 lights in 1 circuit, for example for a typical 3,000m runway with runway centerline lights, how many circuits will be required? If one circuit fails, how to maintain the patten of runway centerline?

A typical 3000m runway would require 6 circuits. Should one of the circuits fail, software in the basestation will turn off other lights to maintain the airfield lighting pattern.

Is it possible to add more twisted cable after the first installation?

Yes, a CEDD® circuit can be extended as long as it does not exceed the maximum capabilities of the technology (40 lights 8” / 2,000 meters per circuit).

Is it possible to connect two circuits on the same fixture, like in the case of a combined threshold/end light?

No, that is not possible, but it should also not be required. The light is addressable and each side of the light can be controlled independently, even when on the same circuit.

It seems CEDD® requires some specific software to design a system. Is this something TKH needs to do, or can independent consultants also have access to these tools?

TKH can provide the tools to make a CEDD® design. Afterwards, we always simulate all circuits; the last step is done by us in house.

Are the inset fittings deeper than a non-CEDD® fitting? Do they need a deeper inset shallow base for installation?

The fixtures are indeed deeper than standard lights, but we utilise a standard 8" shallow base or both CEDD® and 6.6A lights.

What is the primary connector type? And is it chemical or plug and play?

There are no connectors in the field. The only connector is a connector to the basestation which is a standard Weidmuller connector.

What is the maximum ambient temperature?

The CEDD® lights can operate in a temperature range of -55 to +55 degrees Celcius. The CEDD® basestation needs to be in a climatised room.

Is any transformer connected to the primary cable?

The CEDD® system does not work with transformers.

Is the CEDD® cable Fiber or Copper cable?

Copper cable.

Is the cable special?

Yes it is a special CEDD® cable with high level characteristics of induction technology. The cable is tested against all aviation fluids (e.g. Jet fuel, de-icing fluid, etc)

Can you provide the cable specification?

The CEDD® cable is a special cable with high level characteristics of induction technology. More specifications can be found in the datasheets which can be downloaded on https://www.tkh-airportsolutions.com/airfield-products/power-supplies/basestation.html.

Does it matter how the cable is connected to the base of the fitting i.e. which core is connected to which side?

No, that does not matter.

Is the CEDD® cable supplied as a twisted pair cable or single cores?

The CEDD® cable is supplied as a twisted pair cable, on a drum.

Can current primary cable be used?

No, it cannot.

What is the recommended cable insolation resistance checks requited CEDD® cable?

Minimum 10 Giga Ohm resistance for a total cable length with 1000V Megger value.

What reports are available from the base station - on/off times, power consumption (kwh per cct), etc?

Around 40 parameters are available, e.g. input voltage, output voltage, temperatures. For detailed information, please contact our staff via sales@tkh-airportsolutions.com.

How is the basestation conected to the remote control system?

The basestation is connected to the remote control system via a Master computer. All basestations have a RJ45 network connection.

Does the CEDD® system circuitry have enough communication speed to be used for Follow the Green or ASMGCS level 2+?

Yes it does.

Do you recommend interleave method - same conduit, different colour so Tech can identify circuit A or B?

Currently all CEDD® cables are blue, but we are considering different colours for the future.

As voltage can go up to 700 Vac, then the standards to comply with are the local low voltage regulations?

Yes, typically they are, this is considered as low voltage (e.g. by IEC)

Is the primary voltage 340?

The CEDD® basestations require nominal 230 Volts / 50Hz power supply. Output from the basestations is max. 750V on full load. A typical voltage for a taxiway centerline circuit would be no more than 350V.

How we can ensure that all LED lighting is getting sufficient voltage?

This is ensured by the system design and the intelligence of the lights.

Can you also show an Elevated Approach and or Elevated Runway Edge light with CEDD®?

We have CEDD® versions of our elevated approach and runway lights. You can find some pictures on our website www.tkh-airportsolutions.com. Contact sales@tkh-airportsolutions.com if you require more details.

Do you have PAPI Lights in LED?

Yes we do, see more details on these products on our website (https://www.tkh-airportsolutions.com/airfield-products/elevated-lights).

Do you also provide PAPI on CEDD®?

No, we do not have a PAPI light available as part of the CEDD® system.

How about approach elevated lights on poles or masts? How they are handled?

We use a base to connect to the CEDD® cable and run a secondary cable to the fixture.

Do you have SFL lights?

Yes we offer SFL lights, but they are currently not available with the CEDD® solution.

Do you have any CEDD® inset rapid exit taxiway centerline lights having 800 candela light output?

Yes we have, but only as a unidirectional light.

Is there a possibility to connect this system to or extend with your system alongside an existing AGLCMS provided by another supplier?

Yes, our CEDD® technology and our CEDD® server can connect to an existing AGLCMS PLC. We have interfaced with most major brands.

Are there any similar technologies from competition? (related to ICAO future standards)

CEDD® technology is the only induction based technology available for airfields.

Can CEDD® be incorporated with the standard 6.6A ALCMS?

Yes, it can.

What happens to the system if there is a cable break?

If there is a cable break, the CEDD® basestation will cut all power to the circuit.

Is it possible to repair a broken cable?

Yes it can easily be repaired as demonstrated during the webinar. There is a standard cold shrink wrap kit from 3M, that allows the CEDD® cable to be repaired or jointed where required.

When a cable breaks, do you have information on the exact location where it is broken?

When a cable is broken, there will be no communication anymore. If a cable is damaged, the location might be determined based on data from the light fixtures.

Can the system detect the point where the cable is broken before it happens?

If the cable is not completely cut through, you will probable notice a degradation in communication that might be able to assist in determining the location.

If you have a leakage in a cable, will your system guide you to the place of the damaged cable?

If there is an earth fault, the system will give a warning, but not an indication where it is. If a cable is damaged, the location might be determined based on data from the light fixtures.

What happens to a CEDD® circuit if there is a communication fault or comms fail?

If there is a communications failure, the lights will revert back to a previously programmed operational state. Stop bars are typically programmed so the lights will turn on. Other types are often set to go to the last known state.

Should we replace the complete fixture, or do you offer spare parts?

We have spare parts available should any of the lights require maintenance.

How to identify the damaged components?

There is a maintenance manual available for the system and the lights. Certain errors can also be detected by the maintenance software.

Regarding asphalt pavement maintenance (inlay or overlay) are the challenges of reinstatement similar to traditional lights or are there advantages of the CEDD® technology?

Depending upon the depth of the CEDD® cable and the installation method, there can be advantages to use the CEDD® technology. You can, for example, do a very quick sawcut install if you decide to renovate part of the runway, as there are no transformer pits required.

I understand that a light fixture can be replaced on a live circuit hence saving access time compared to the traditional 6.6A system? Because CEDD® does not need the technician to "break" into an electrical circuit.

Yes that is correct. The system is low voltage, so you could replace a light on a live circuit. However, as you never know if there would be hidden damage to the cable, we strongly advise to isolate the circuit before working on it.

Can you monitor which installed fixture nears end of function or needs to be replaced?

Yes that can be done as each light is addressable and has its own unique number. The information on the light in case it fails can interface with an existing AFLCMS.

In case of a lack of isolation in the power cable or a short circuit situation, what safety measures are being taken?

A lack of isolation is notified as an earth fault detection alarm. If there is a short circuit, power to the cable is cut off.

LED lights dissipate quite an amount of heat. Does that mean a problem to the power cable and its isolation?

No, it does not. The heat generation is generally from LEDs, these are isolated from where the CEDD® cable and ferrite magnets are located. The heat dissipates like any other normal light, through the top and also through the electronic driver.

How do you protect against lightning for the entire system from basestations, cable and the CEDD® fixtures? Electro magnetic storms and induced current - is this a problem?

The CEDD® system is less susceptible than a normal 6.6A circuit, because the whole system floats compared to earth and the induction clamp can only transfer a limited amount of energy. Hence, indirect hits will likely not be a problem. Direct hits however will cause damage. Depending on the configuration, we advise to install surge arresters where the twisted pair cable enters the substation building (like with a regular 6.6A circuit). If you require further information, please contact our staff via sales@tkh-airportsolutions.com.

If the terminator on a CEDD® circuit fails, will all the lights in the CEDD® circuit turn off immediately?

Yes, it is like breaking a primary cable in a traditional 6.6A circuit.

How can the cable life be checked over time?

There is a standard earth fault detection in the base station. Cables are designed for a cable life of 20 years.

How about ICAO approval?

The CEDD® lights meet the standards of ICAO and are ICAO certified, while the CEDD® cable meets the relevant standards for airfield lighting cables.

We need FAA certified lights for CAT III operations. When do you think you will going to have that certificate?

FAA certification of our CEDD® lights is currently in progress.

Are you able to offer an Ex-certified system?

The fixtures are designed to be Ex proof (double isolated plus potted electronics), but they are currently not Ex certified. We have supplied to Heli platforms in Ex environments.

How you design interleave 2500 metre or 4000 metre runway circuits (4000 metre RWY has 266 fittings) and control to compliance with ICAO 14 cause 8.1.2

Design is interleaved and if one circuit fails, the software will switch off parts of other circuits to maintain a regular light pattern.