

CEDD AIRFIELD GROUND LIGHTING

CONTACTLESS ENERGY &
DATA DISTRIBUTION



LIGHTING THE WAY TO A GREEN, SMART AND SAFE AIRFIELD

At TKH Airport Solutions, we are committed to revolutionizing the aviation industry by providing sustainable and innovative airfield solutions. We believe that airfields should not only be safe and efficient but also environmentally friendly and technologically advanced. With this vision in mind, we have made it our mission to create green, smart, and safe airfields that are equipped with reliable, cutting-edge airfield lighting technology that reduces their environmental footprint.



SMARTER

- Built-in individual light control & monitoring
- Active light calibration ensuring a consistent uniform light pattern
- Predictive maintenance based on diagnostics information from the light fixtures

BETTER

- Reliable airfield ground lighting technology
- Safe low-voltage system (< 1000 V)
- Up to 70% lower energy consumption compared to regular LED AGL

FASTER

- Real-time light status and switching of lights in less than 0.5 s
- Ready for sensor-based light pattern integration such as Follow-the-Greens, leading to significant reduction of NO_x and CO₂
- Remote monitoring and asset management

STRONGER

- No transformers, no connectors; energy and data transfer via induction
- No transformer pits required, reducing civil works
- Fast installation process leading to significant reduction of airfield downtime

CONTACTLESS ENERGY & DATA DISTRIBUTION

CEDD lights are individually addressable, allowing for greater flexibility in managing airfield lighting. This leads to innovative functionalities such as dynamic light level adjustment and sensor based light patterns to suit specific operational needs. It also makes the system highly suitable for floating ‘Follow-the-Greens’ applications. Using up to 70% less energy than regular LED AGL systems, CEDD reduces the airfield’s environmental impact.

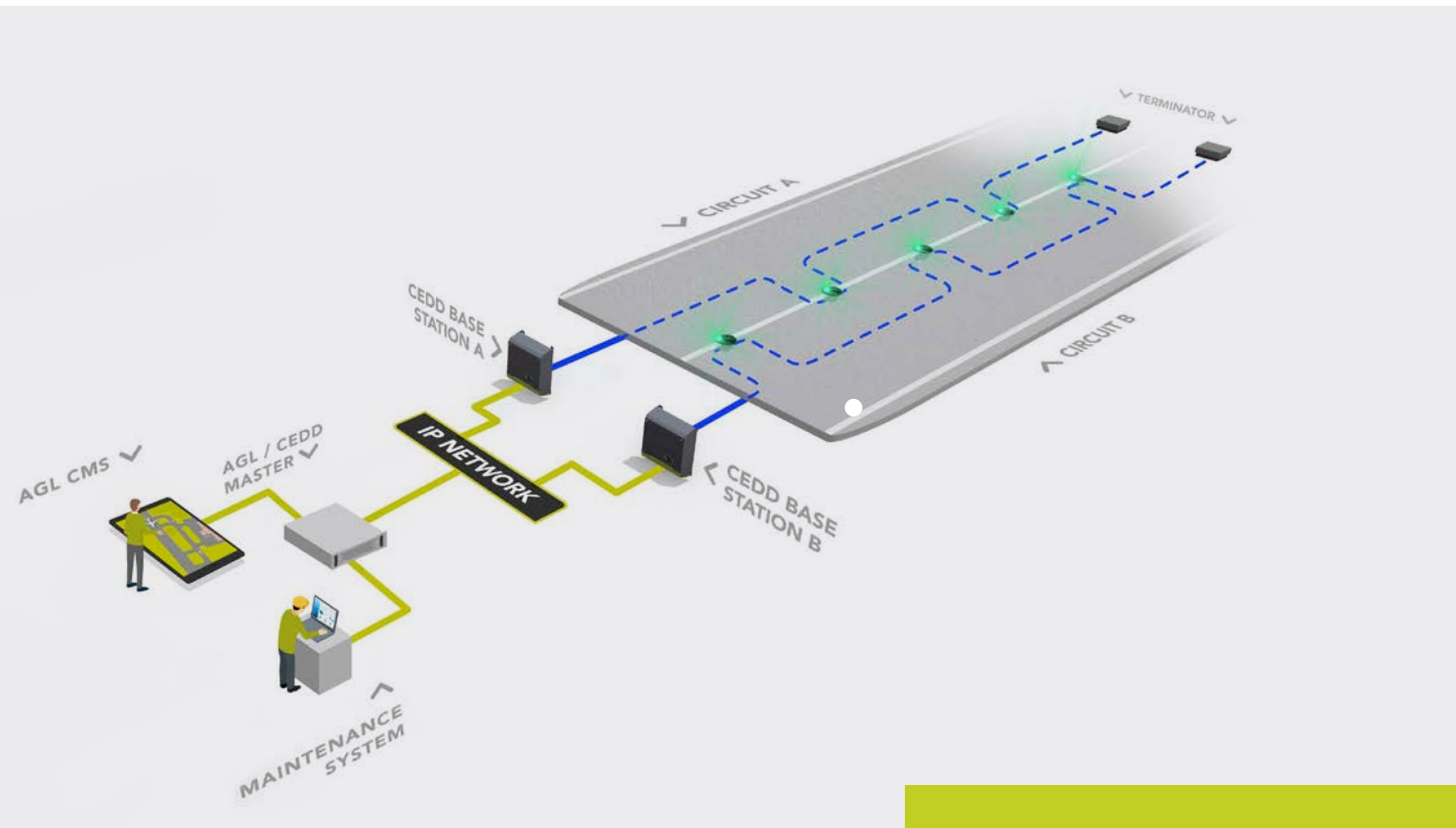
CEDD FEATURES AND BENEFITS

The CEDD® technology is a prime example of how innovation can lead to smarter, better, faster, and stronger solutions. CEDD is a smart, safe and sustainable airfield ground lighting technology. Energy and data transport are combined in a single cable. Airfield lights receive their power and data by means of induction, removing the need for transformers and connectors in the field. The lights can easily and safely be installed or replaced without making electrical contact.

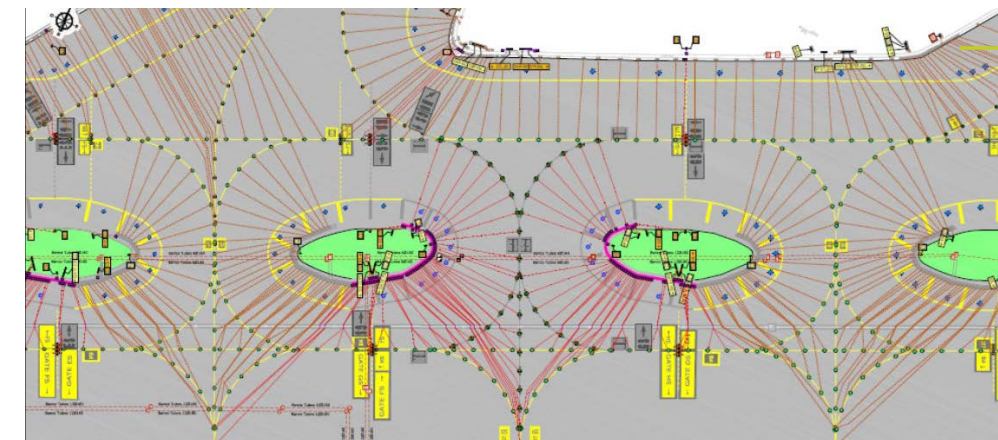


An individual CEDD circuit consists of 1 Basestation, a single twisted cable, light fixtures and a Terminator. Circuits are usually interleaved. Multiple Basestations are connected to one Master server in the IP network. The CEDD

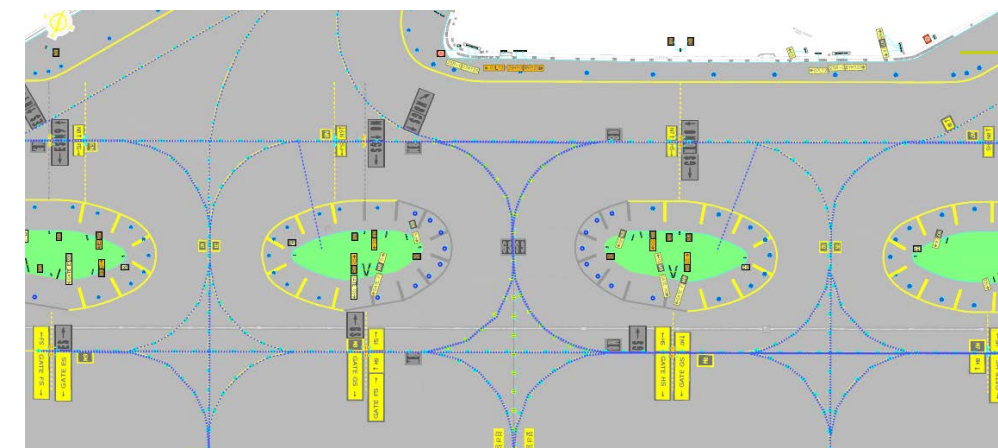
Master controls the Basestations and connects to the Airfield Lighting Control and Monitoring System (ALCMS) using a JSON or Modbus over IP interface. The CEDD system is usually maintained with a separate Maintenance system.



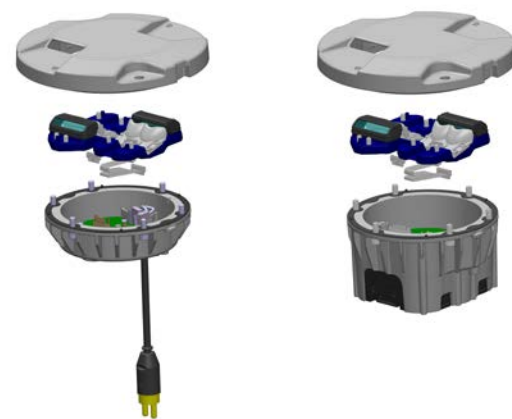
6.6A LED VS CEDD CIRCUIT DESIGN



Typical 6.6A
LED AGL Circuit



Typical CEDD
AGL Circuit



All the fixtures are created according to a modular concept, with interchangeable parts. The top part of a CEDD fixture is identical to that of traditional 6.6A LED fixtures.

All CEDD light fixtures are **ICAO and EASA certified** by TÜV Rheinland. The CEDD system is compliant with ICAO and FAA regulations.

“... a great improvement for the security of our passengers and airport community.”

Aeropuertos GAP

CEDD SYSTEM INFRASTRUCTURE

The Basestations are typically housed in small-sized, air-conditioned shelters or cabinets closer to the field. These shelters are connected to the main equipment in the tower with an optical fibre network.



PLUG-AND-PLAY:

- No cable splicing necessary
- One twisted cable for power and communication, no secondary cable required
- No high voltages, no CCRs or transformers, no traditional power carrier technology
- No galvanic connection or corroding contacts in the field
- Installation either through saw cuts or in conduits



CEDD CABLE INSTALLATION

The cables can be installed in sawcuts with fixtures in shallow bases, or in a conduit system with fixtures in shallow bases or deep cans. No additional pits are required since no transformers or additional modules are used.



STEP 1
INSERT
CABLE



STEP 2
CONNECT

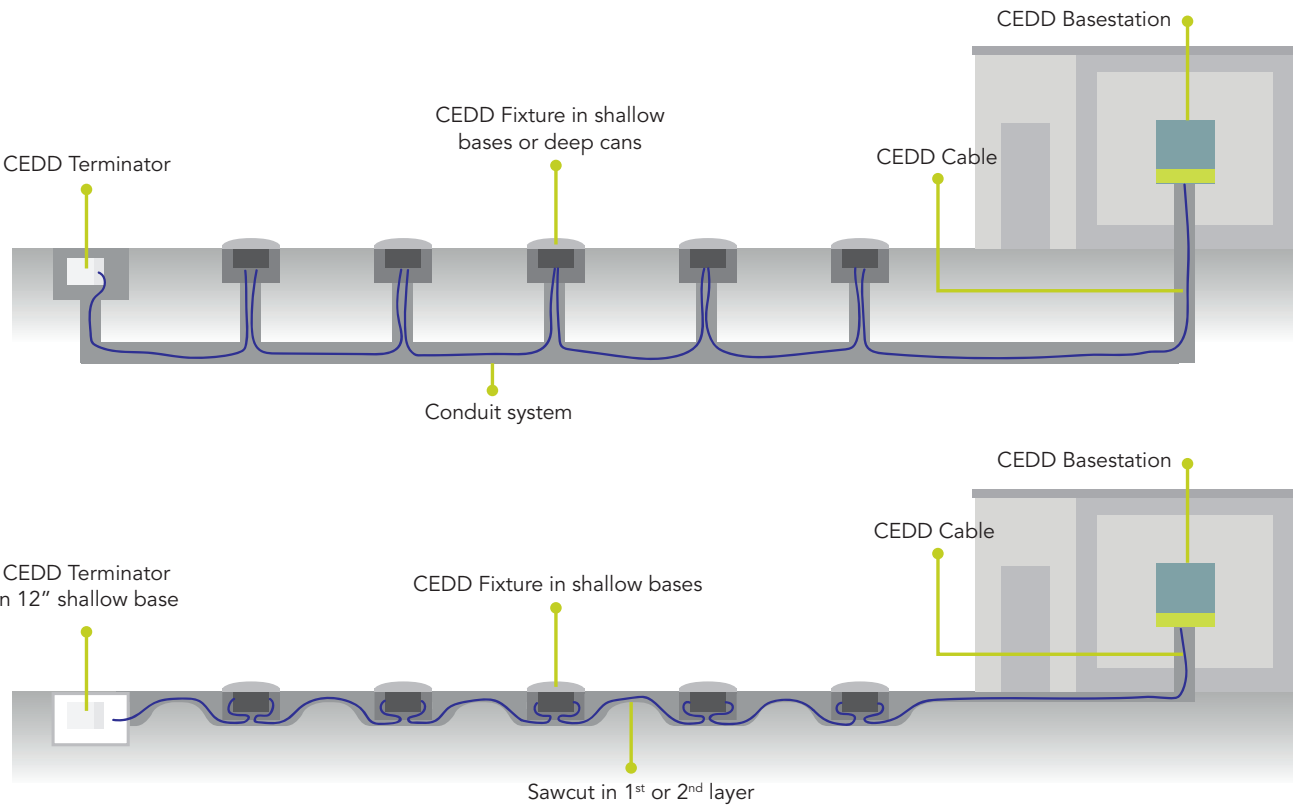


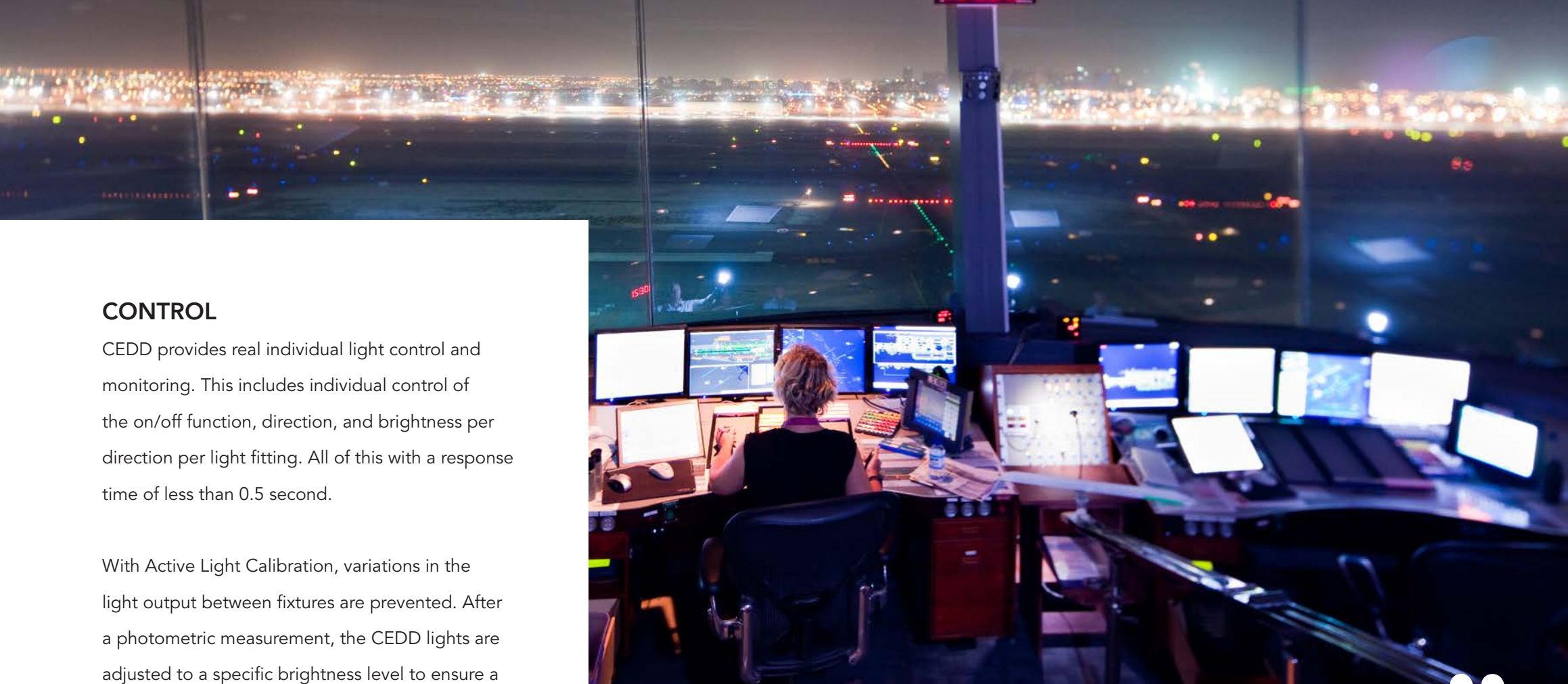
STEP 3
GO

”

“Known issues with power carrier technology were causing the previous conventional circuit installation to fail. CEDD solved this problem with a response time of less than 1 s.”

Manager Airfield Lighting
Vancouver International Airport





CONTROL

CEDD provides real individual light control and monitoring. This includes individual control of the on/off function, direction, and brightness per direction per light fitting. All of this with a response time of less than 0.5 second.

With Active Light Calibration, variations in the light output between fixtures are prevented. After a photometric measurement, the CEDD lights are adjusted to a specific brightness level to ensure a consistent, uniform light pattern and photometric compliance.

CEDD & 'FOLLOW-THE-GREENS'

CEDD AGL technology is highly suitable for implementing floating 'Follow-the-Greens', a method that guides pilots to the correct runway and approach path by using synchronized lighting signals. The reliable and accurate delivery of power and data through CEDD AGL technology ensures that the lighting system operates optimally, allowing pilots to follow the correct path and safeguard an efficient ground flow.

Implementing Follow-the-Greens will lead to a significant reduction of NO_x and CO₂ at the airfield because of improved traffic fluency.

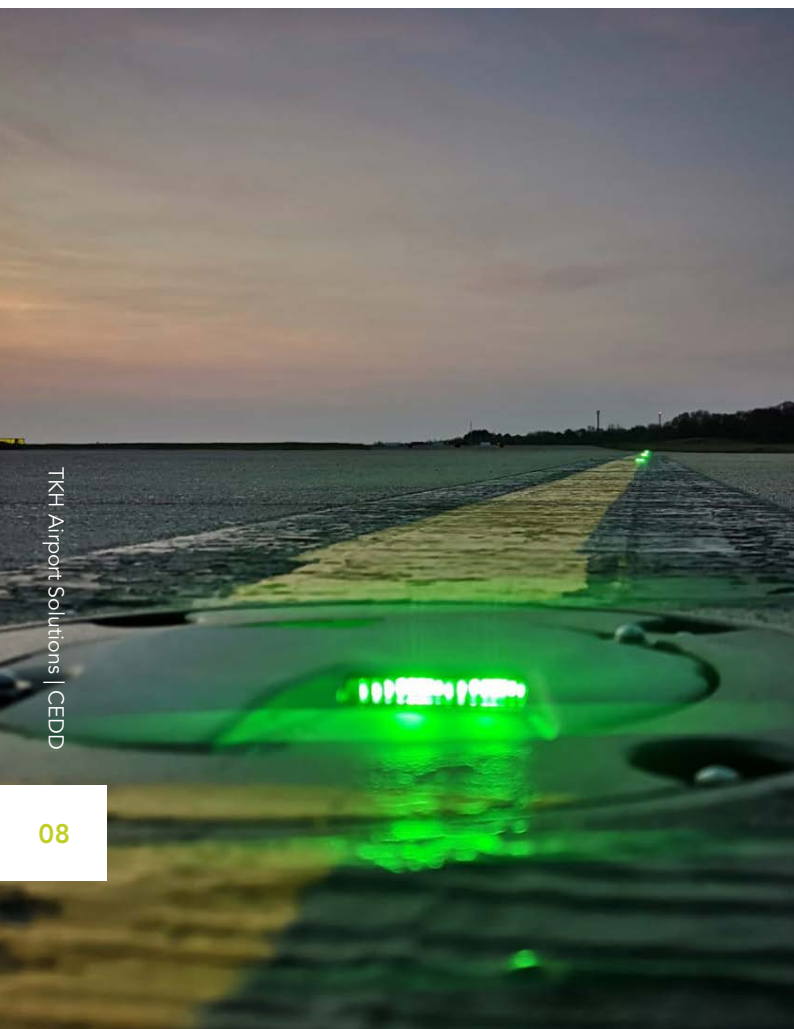
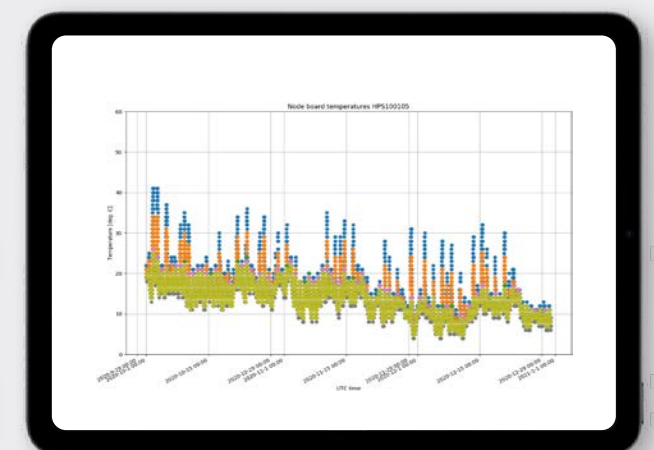
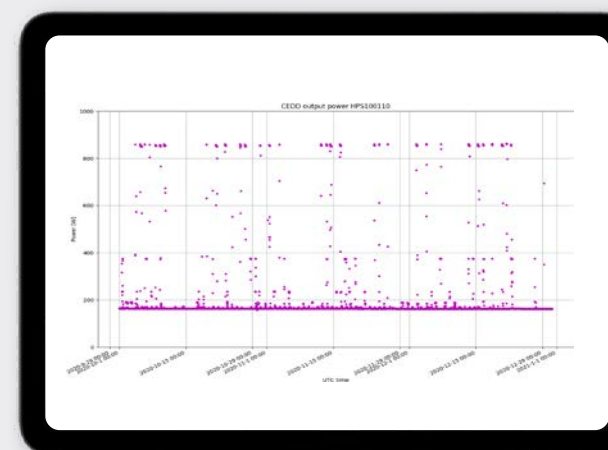
"An excellent system for installations where avoiding operational downtime is essential and individual lamp control is required."

Schiphol Airport

MONITORING AND (PREDICTIVE) MAINTENANCE

CEDD AGL enables real-time monitoring of each individual fixture, collecting data on e.g. operating lifetime, temperature, and fixture faults. As an example, node board (CEDD light fitting) temperature can be an indication of failing fixture electronics. The Basestation will detect and report faults in fixtures in real-time to the ALCMS.

Regular maintenance is similar to conventional AGL, but with fewer components. Asset data is gathered from the system to enable preventive maintenance. This proactive approach to maintenance can help to prevent major issues from occurring and reduce the need for reactive maintenance, improving operational efficiency and reducing downtime.



PRODUCTS

Approach

		
	Approach & Side Row	Approach & Side Row
Type	inset 12"	elevated
Certification	ICAO	ICAO
Colors	white, red	white, red

Taxiway

						
	Taxiway	Taxiway Edge	Intermediate Holding Position	Stand Manoeuvring Guidance 60cd	Stop Bar	Stop Bar
Type	inset 8" omnidirectional	inset 8" omnidirectional	inset 8"	inset 8" omnidirectional	inset 8"	elevated
Certification		ICAO	ICAO		ICAO	ICAO
Colors	yellow, white	blue	yellow	yellow	red	red

Runway

							
	Threshold & Threshold Wing Bar	Threshold & Threshold Wing Bar	Combined Threshold / Runway End	Combined Threshold / Runway End	Touch Down Zone	Runway Entrance	Runway Centerline
Type	inset 12"	elevated	inset 12"	elevated	inset 8"	inset 8"	inset 8"/12"
Certification	ICAO	ICAO	ICAO	ICAO	ICAO		ICAO
Colors	green	green	green/red/yellow	green/red	white, red	red	white/red

Accessories

			
	Taxiway Centerline Straight/Curved	Rapid Exit Taxiway 800cd Straight/Curved	Runway Guard
Type	inset 8"	inset 8"	inset 8"
Certification	ICAO	ICAO	ICAO
Colors	green/yellow/red/amber/blue	green, yellow	yellow

	
Shallow Base	CEDD Cable Repair Kit
8" or 12" shallow base for use with all light fixtures. Side or bottom entry.	For repairing a damaged CEDD cable jacket and/or conductor

Power & Communication Equipment

			
CEDD Basestation	CEDD Master	CEDD Cable	CEDD Terminator
'Smart CCR', distributing power and bi-directional communication to the CEDD fixtures	Master configuration (hardware & software) for a CEDD installation	Special cable for power and data distribution to and from CEDD fixtures	Ensures the correct characteristic impedance in the CEDD system

Other

	
Heliport TLOF/ FATO	
Type	inset 8"
Certification	ICAO
Colors	green, white

SUCCESS STORIES



AIRPORTS THAT MADE THE
CHOICE FOR CEDD AIRFIELD
GROUND LIGHTING



MEMPHIS INTERNATIONAL AIRPORT, USA

Year

2022

Scope

De-icing bay

Products (CEDD)

32 CEDD HPS Basestations

1232 Inset Taxiway & Stop Bar fixtures



ISTANBUL SABIHA GÖKÇEN AIRPORT, TURKEY

Year

2021-2023

Scope

Second runway

Products (CEDD)

270 CEDD HPS Basestations

7000 Inset fixtures (various types)



**AMSTERDAM LELYSTAD
AIRPORT**

Scope
Full airport

Year

2019

Products (CEDD)

48 CEDD HPS Basestations
800 fixtures (Runway + Taxiway)



**MORELIA INTERNATIONAL
AIRPORT, MEXICO**

Scope
Approach

Year

2022

Products (CEDD)

2 CEDD HPS Basestations
60 Approach lights (inset + elevated)



**AL ULA AIRPORT,
SAUDI ARABIA**

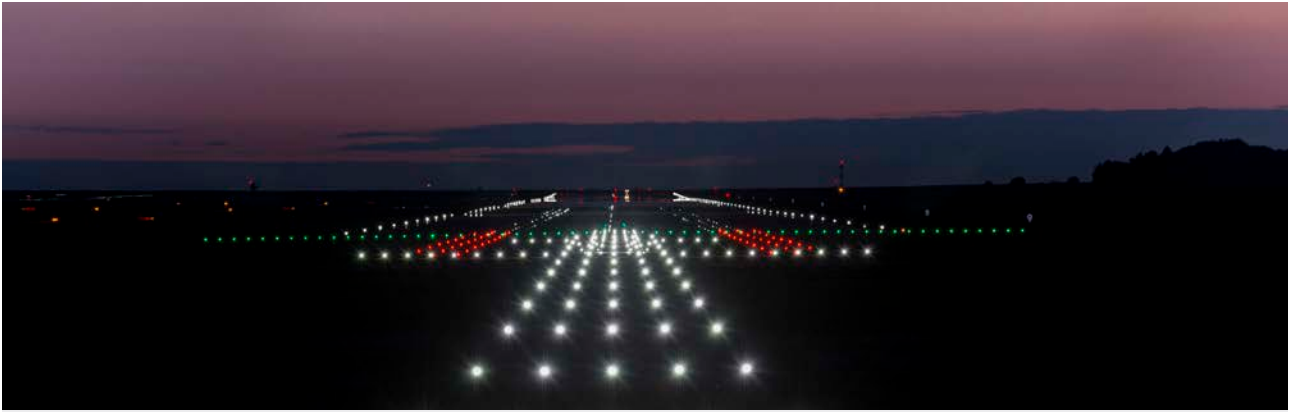
Scope
Taxiway

Year

2022

Products (CEDD)

1 CEDD HPS Basestation
25 Inset Taxiway lights



**VANCOUVER INTERNATIONAL
AIRPORT, CANADA**

Scope
Stop Bar

Year

2017

Products (CEDD)

2 CEDD HPS Basestations
38 Inset Taxiway & Stop Bar fixtures



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