

CEDD® Direct Buried Cable

Components

CEDD® AGL
Airfield Ground Lighting
Power, Control and Monitoring System



An introduction to CEDD® AGL

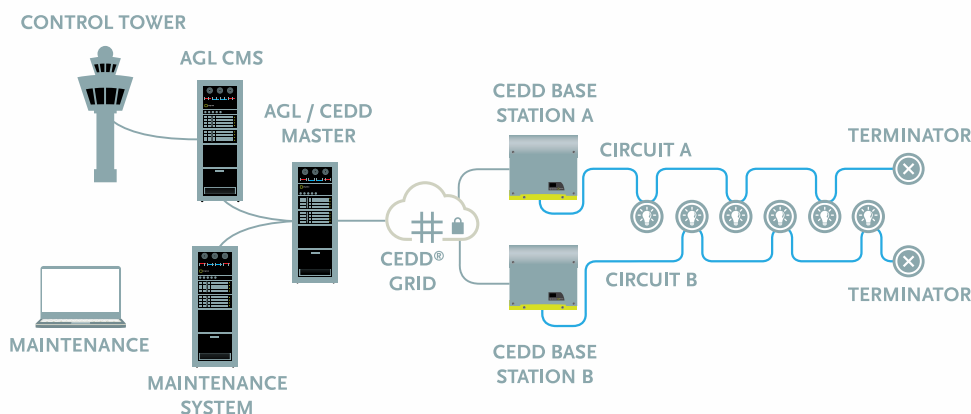
CEDD® (Contactless Energy and Data Distribution) AGL LED lighting has been developed in close collaboration with various international airports, AGL Designers, Installers, Operators and Owners/Investors. The result represents a perfect incorporation of individual requirements, special situations and needs of the airport as a whole. The CEDD® AGL portfolio includes CEDD® HPS Basestations, CEDD® Cable systems and the entire programme of CEDD® fixtures, elevated and inset lights for runways as well as taxiways and aprons. Being a market leader and technology driver, our focus is on continued further development of the current standards and setting new standards, in particular, intelligent electrical control and monitoring. One result is our development of an innovative LED concept ranging from civil and military airports to helicopter landing pads, which completely meets the international standards (ICAO, FAA, STANAG etc.). Another achievement is our ground-breaking power and communication CEDD® platform.

Changing to CEDD® LED lighting is advantageous and profitable in several ways. At first, the advantages of the LED technology compared to halogen light technology. Additional advantages in our AGL solution are given by our CEDD® technology, savings in the civil AGL infrastructure – e.g. no need of manholes and transformer pits - and in the electrical infrastructure – no transformers, less cables, no infield electrical connectors, additional power consumption savings etc. New functionalities have become a standard integrated into the CEDD® technology, which results in improvements in TCO and the BEST IN CLASS asset management performance and a proactive approach to SAFETY. Our CEDD® AGL solution is robust, simple and flexible, sustainable and future proof because of our leading and trendsetting vision.

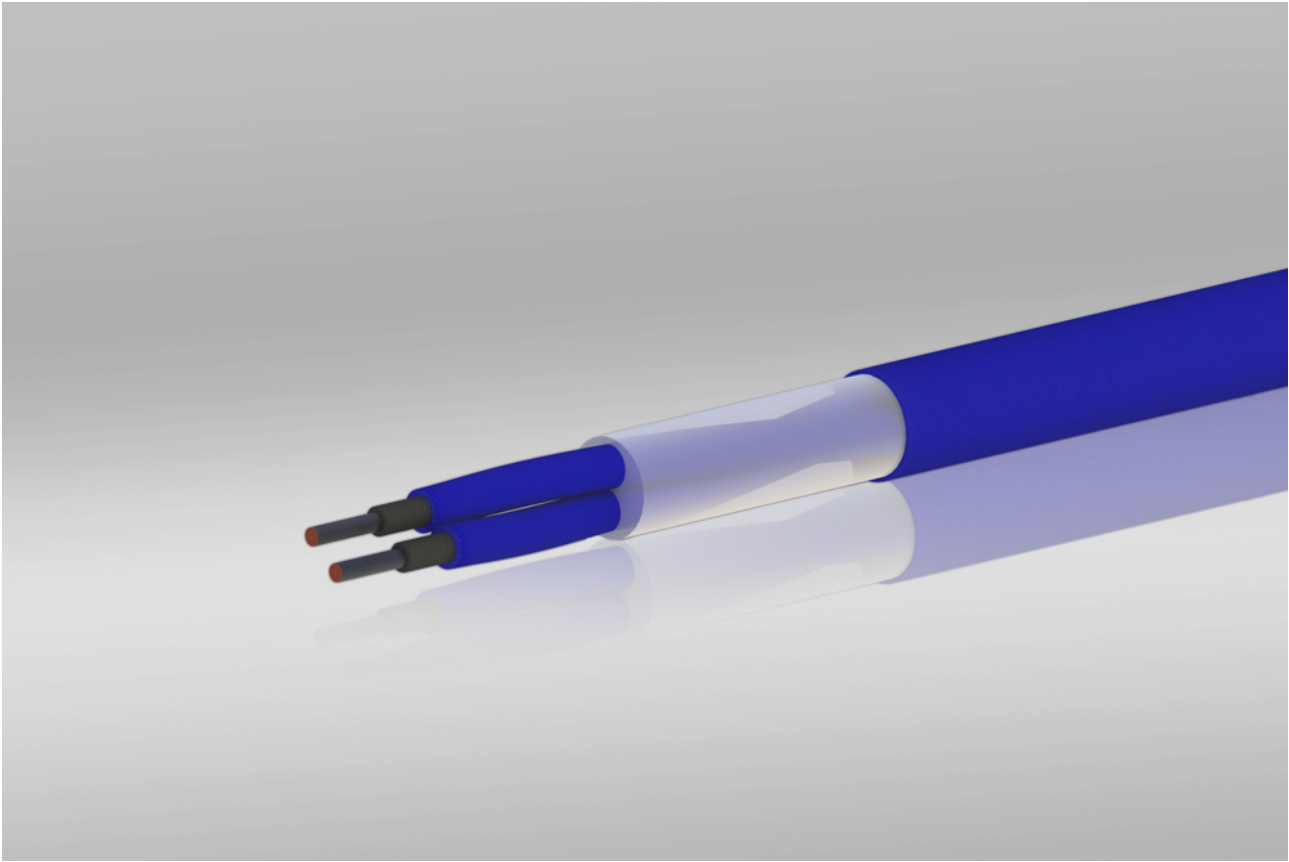
What is CEDD®

CEDD® is an innovative contactless energy and communication technology. Energy and data transport are combined in a twisted pair cable system; an HPS Basestation with contactless fixtures. With this structured connectivity concept, escape lighting in tunnels or lighting for helicopter decks and airfields can easily be installed or replaced without making galvanic (electrical) contact with the power/data cable.

The CEDD® system has been specially designed for demands where high safety requirements and uninterrupted operation of Airfield Ground Lighting Systems on airports are essential. Main advantages of CEDD® connectivity platform are: no connectors and no electrical (galvanic) contact with the cable, energise and bi-directional communication of the fixtures in modular and distributed system topology. This will result in some key advantages of the CEDD® system, such as: simple and easy to use, ultra safe, faster installation, support of maintenance 2.0 with its built-in asset management system and attractive financial savings.



For more information about CEDD®, please visit: <https://www.tkh-airportsolutions.com/>



The design of the CEDD® direct buried cable is a result of an extensive research and development programme. The cable is capable to withstand a wide range of agents that can be found on airfields, e.g. aviation fuel, diesel, water, de-icing fluids and runway rejuvenator and saw-cut sealant. Insulation and sheath material were tested on mechanical properties such as tensile strength, elongation at break and swell over a wide temperature range and electrical properties, e.g. relative permittivity at cable working frequencies.

The CEDD® direct buried cable is designed specifically for CEDD® airfield technology when cables need to be directly buried in the ground and where cable slots (wire ways) and cable ducts are not available or practicable. The cable consists of two single 6.4 mm² core wires surrounded by PE filler and an outer PVC sheath. The construction, in combination with the applied materials, results in a cable that complies with relevant airfield lighting cable standards and specific requirements for CEDD® AGL technology, which includes properties for installation, connection and transmission.

The conductor consists of a class 5 tinned copper wire strand insulated with a high-tech compound and sheathed with PVC. The result is a flexible wire. Two single core wires are assembled by using a torque free twisting process. This twisted pair cable assembly is easy to bend, to install into ducts or cable slots, and to be clamped into the CEDD® fixtures.

The cable assembly is ideally suitable for the "hot pluggable" feature of CEDD® AGL technology.

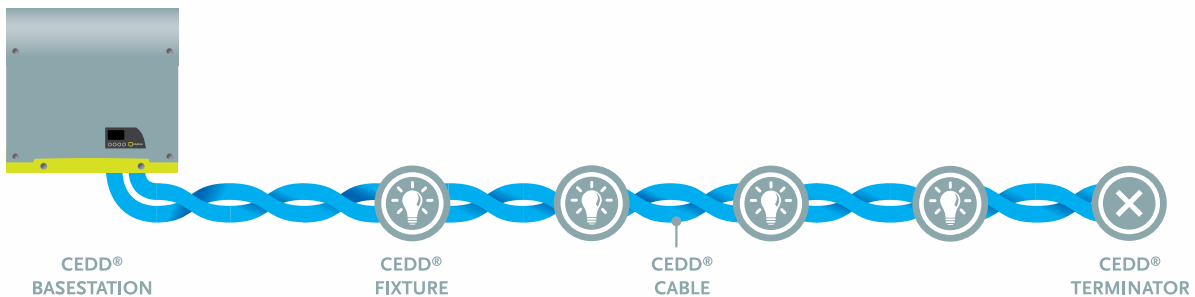
Key features

Some of the key features of the CEDD® direct buried cable are:

- Durable & reliable
- Low EMI
- Can be buried directly into the ground
- Resistant to extreme weather conditions
- Chemical and corrosion resistance
- Excellent water tightness
- Small bending radius
- Highly flexible

Position in the CEDD® AGL system

A typical CEDD® AGL system consists of a CEDD® HPS Basestation that distributes power and bi-directional communication through the CEDD® cable to a CEDD® node. A CEDD® terminator ensures the correct characteristic impedance in the CEDD® system.



The CEDD® cable connects the CEDD® HPS Basestation with the CEDD® nodes.

Standards

The CEDD® direct buried cable is compliant with all the relevant standards for airfield lighting cables:

- FAA AC 150/5345-7F
- ANSI/NEMA WC70 ICEA S-95-658

The insulation and sheathing materials of CEDD® direct buried cable is compliant with the following specifications:

XLPO insulation:

- Type E-2 according to ANSI/NEMA WC70 ICEA S-95-658 table 3.8 “Insulation requirements”.

PVC sheathing:

- Type PVC according to ANSI/NEMA WC70 ICEA S-95-658 table 4.1 “Jacket Requirements”.
- PVC Type T-2 according to ANSI/NEMA WC70 ICEA S-95-658 table 3.8 “Insulation Requirements”.

Specifications

Product information

Description	Values
Marking	{Length} TKF - IMPLEO CEDD Airfield USENC 07-12030 Ro - Direct Buried 2 x 6 mm ² - 2 kV - {Batch} {Year}

Construction information

Description	Values
Standardisation	Generic to FAA AC 150/5345-7F / ICEA S-95-658-2009 / NEMA WC 70-2009
Number of cores	2
Nominal cross section conductor	6.4 mm ²
Conductor material	Tinned copper, according to IEC 60228
Conductor shape	Round
Conductor category	Class 5, according to IEC 60228
Sheath colour	Blue (RAL 5017)
Conductor diameter	3.4 mm ⁽¹⁾
Insulation thickness	1.38 mm ⁽¹⁾
Inner sheath thickness	0.67 mm ⁽¹⁾
Inner cable diameter	2 x (7.5 ± 0.2 mm)
Number of twists	5 per metre
Outer sheath thickness	1 mm
Outer cable diameter	19 mm ± 1 mm
Outer sheath colour	Blue, RAL 5005
Flame retardant	according to IEC 60332-1-2

1. Nominal values

Electrical properties

Description	Values
Maximum rated voltage conductor to conductor	2 kV
AC voltage test (100 %)	5 kV during 5 minutes
DC resistance conductor	2.7 Ω /km ⁽¹⁾

1. Nominal values

Installation and operational properties

Description	Values
Bending radius during installation (min.)	60 mm
Bending radius after installation (min.)	60 mm
Tensile load (max.)	620 N
Conductor temperature (max.)	+90 °C according to ICEA S-95-658-2009 / NEMA WC 70-2009
Installation temperature (min./max.)	-10 / +40 °C
Operation temperature (min./max.)	-40 / +75 °C
Emergency overload temperature (max.)	+130 °C according to ICEA S-95-658-2009 / NEMA WC 70-2009

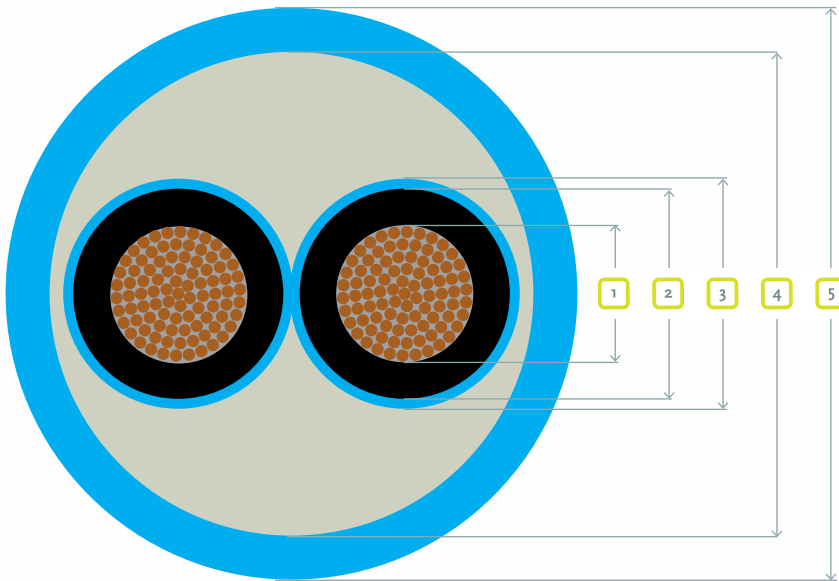
Environmental resistance

Description	Values
Aviation fuel	Resistant
Diesel	Resistant
Water 80 °C/176 °F	Resistant
De-icing fluid	Resistant
Runway rejuvenator	Resistant
UV	Resistant according to UL 1581:1200 - 720 hours
Transport temperature (min./max.)	-15 / +60 °C

Dimensions

Direct buried cable

Pos.	Description	Values
1	Conductor diameter	3.4 mm
2	Insulation diameter	6.2 mm
3	Wire outer diameter	7.5 mm
4	PE filler diameter	17 mm
5	Outer diameter	19 mm



Options

n.a.

Accessories

- CEDD® Cable repair kit; repair damaged outer insulation jacket (USE NC U20-00231)
- CEDD® Cable repair kit; repair a cut cable or extending a cable (USE NC U20-00230)
- CEDD® Cable kit; window cut kit for direct buried cable (USE NC U20-00232)

Packing data

Direct buried cable

Packing material	Dimensions	Gross weight	Net weight
Drum (max. 2 km)			415 kg/km

Ordering code

Please download our configuration tool at <https://www.tkh-airportsolutions.com/airfield-products/> or scan:



Installation

For the installation of CEDD[®] direct buried cable please see manual:

05_CEDD_Cable_Manual_03-70012

Document information

Name : 04_CEDD_Direct_Buried_Cable_03-70028

Version : V1.5

Language : English (Original manual)

For the latest version of this document see <https://www.tkh-airportsolutions.com/airfield-products/> or scan:





Company profile:

TKH Airport Solutions is a provider of comprehensive range of Airfield Ground Lighting products. It includes powerful, highly reliable top of the range LED lighting products as well as future-proof technologies to better power and communicate with your LED lights. With our CEDD-AGL solution, we seamlessly integrate the needs of airports with new airfield network technology.

More information:

TKH Airport Solutions b.v.
sales@tkh-airportsolutions.com
www.tkh-airportsolutions.com
+31 (0)53 57 414 57

Visiting address:

Elektrostraat 17
7483 PG Haaksbergen
The Netherlands



member of the TKH Group <