„*End of Life*“-Discussion on Ex Luminaires for Fluorescent Lamps in Zone 1?

Not a Problem for Us!

EOL tested
IEC 60079-7: 2005


Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin
PTB
EC-TYPE-EXAMINATION CERTIFICATE
(Translation)
PTB 05 ATEX 2018 U

EVG 05

Tested and Certified According to the Latest Standards from March 2005

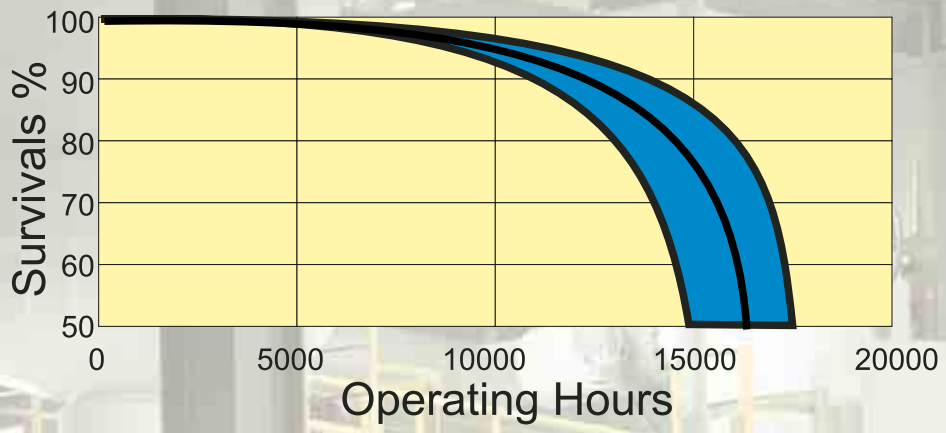
CEAG | COOPER Crouse-Hinds

EOL (END OF LIFE) – What is it?

As with all other lamps, the lifetime of every fluorescent lamp is limited.

Users of all Ex fluorescent light fittings reported on some critical situations where, after being in operation for longer periods, they overheated or even caught fire.

It is not possible to say for certain to what extent the EOL effects were the cause of this.



At the request of the German Manufacturers Association the **Phsyikalisch-Technische Bundesanstalt (PTB)** in Braunschweig carried out an independent investigation of this phenomenon.

The results of this latest investigation have been published and can be found on either of the following Internet pages:

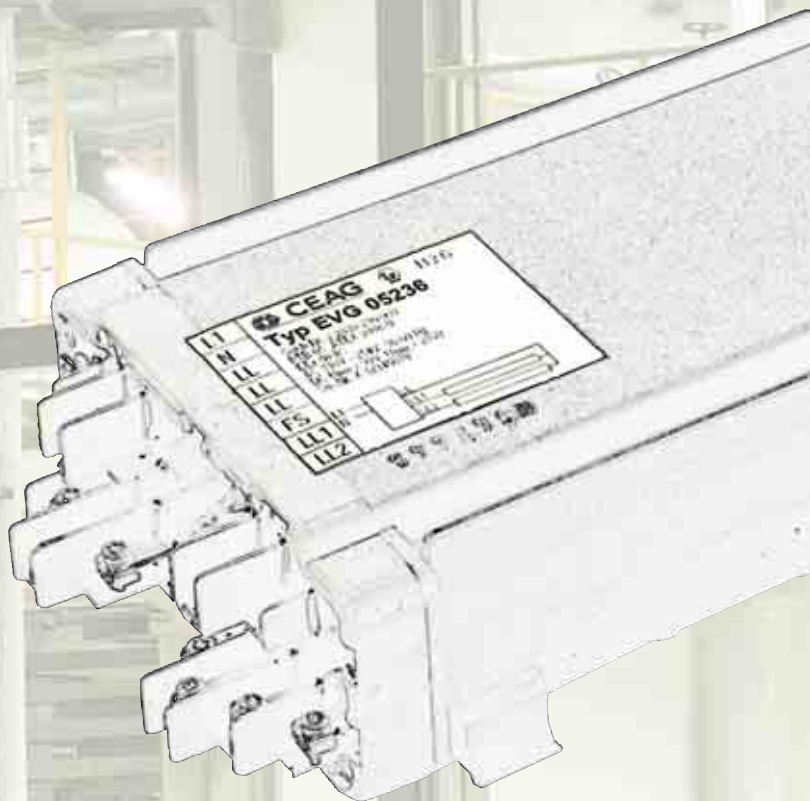
www.explosionsschutz.ptb.de/pruefung-plex-komp-langfeld.htm

or:

www.ceag.de/de/Explosion_Protection/Expert_Forum/Application_Reports/

Extract from this report:

„In the more recent past, luminaires used in conjunction with these fluorescent lamps have been found to fail as a result of local overheating of the lamp cap and the lamp socket. There are different kinds of faults that may have led to these failures. One possible explanation is the end-of-life effect (EOL) of the lamp, which will occur only in exceptional cases at the end of the lamp lifetime. It is for the time being not possible to reproduce this EOL effect in the laboratory in a conclusive manner, but it may be described as follows in qualitatively terms ...“



The Solution for Zone 1 Applications – CEAG EVG 05

All the EVGs (electronic ballast's) supplied by CEAG since 1988 feature monitoring of the lamp circuit, detection of the rectifier effect, as well as a shutdown of the circuit in the event that the lamp does not strike.

Therefore, the CEAG EVGs already ensured a high level of safety at the service life of the lamps long before the discussions on EOL ever started.

The new **CEAG EVG 05** also fulfils the relevant EOL requirements of the **industrial standard IEC 61347-2-3** (§ 17.2 and 17.3), as well as those laid down in the latest draft of **IEC 60079-7 Ed. 4** (Electrical Apparatus in the type of protection Increased Safety), issued March 2005, for luminaires for use in potentially explosive atmospheres Zone 1.

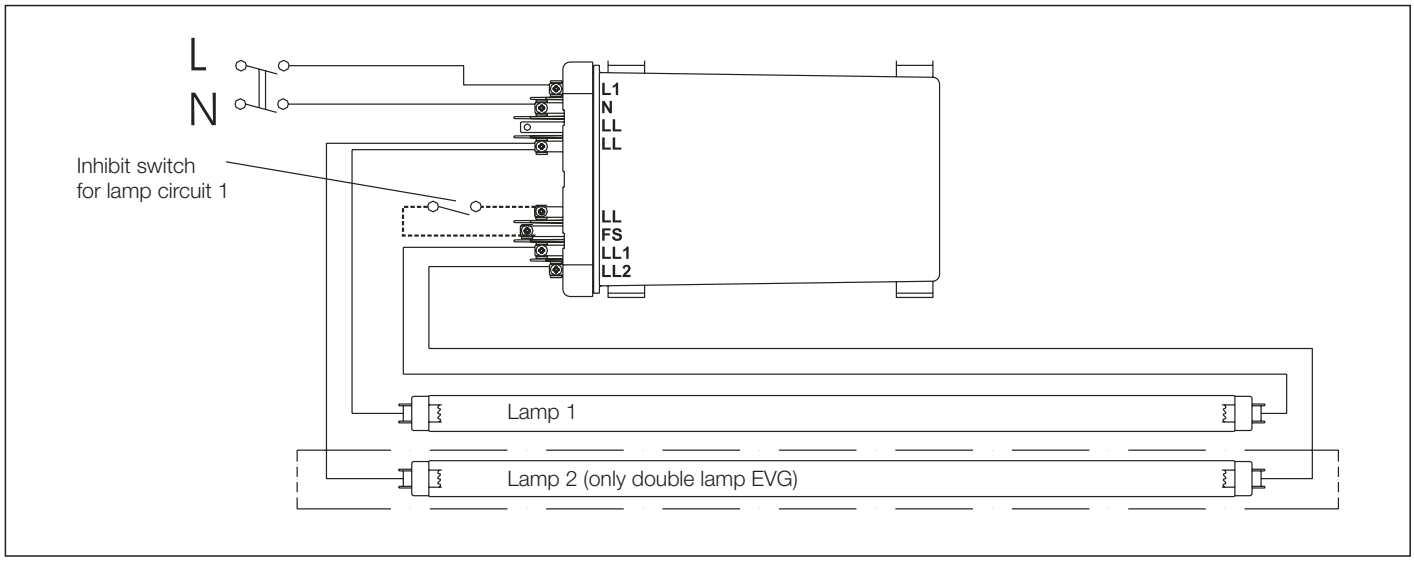
Thus, the **CEAG EVG 05,** which is certified to:

PTB 05 ATEX 2018 U,
meets the latest findings and the newest standards (issue 2005).

The advantages for you:

- **Time-tested and reliable technology**
- **Latest lamp circuit monitoring as an additional safety factor**
- **Meets all requirements of the standard draft IEC 60079-7 for luminaires with fluorescent lamps in "Increased Safety" (EOL)**
- **EVG designed specially for rough operating conditions of Zone 1 – not just an encapsulated industrial EVG**
- **Thermally optimised circuitry for long service life, even in high ambient temperatures**
- **Wide input voltage range and DC operation for universal use**
- **Two separate lamp circuits (autarkic switching) provide more safety for your employees and installations**
- **Practically insensitive to network harmonics and over-voltage influences**
- **Isolation of one lamp circuit for use in emergency lighting installations (economic battery use)**

Connection diagram series EVG 05 ... (18 W, 36 W, 58 W)



Electrical data (T_A= 25 °C)
(permissible tolerances accd. to EN 50014)

Technical data	
EC-Type Examination Certificate	PTB 05 ATEX 2018 U
Category of application accd. to 94/9/EC	Ex II 2 G EEx ed II C
Approval of the production quality assurance	PTB 96 ATEX Q001-2
Supply terminal clamping capacity	0.75 - 2.5 mm² 2 x per terminal
Type of protection accd. to EN 60 598	II
Permissible ambient temperature	-20 °C ... +70 °C

Type: EVG 05...	218	136	236	158	258
Rated voltage AC	110 - 254 V				220 - 254 V
Rated voltage DC	110 - 250 V				196 - 250 V
Rated frequenz	50 - 60 Hz				
Operation frequenz	25 - 60 kHz				
Ignition voltage (< 3 sec)	660 V				
max. installed load (230 V)	40 VA	40 VA	75 VA	70 VA	140 VA
Output voltage at rated operation (T8-26 mm)	52 V	100 V	100 V	130 V	130 V
Lamp current at rated operation	0.31 A	0.33 A	0.33 A	0.49 A	0.49 A

300 8000 2056(C)/2/04.05/SL
Technical details subject to alteration.
Manual valid from april 2005.

CEAG

COOPER Crouse-Hinds

Licht & Design | Lichttechnik - Leuchtmittel
Inh. Slobodan Petkovic | Herrenberger Str. 10
D- 72202 Nagold | Germany
Tel. +49-7452-813-13 | Fax. +49-7452-813-15
www.licht-versand.de | www.lud.de
UID : DE144402911

Which Protective Circuits does the New EVG 05 have?

The standard DIN EN 61347-2-3 (VDE 0712-33), which was issued in February 2005, only stipulates a permanent monitoring of the lamp circuit for EOL effects for T4 and T5 lamps (16 mm and thinner). The draft version of the standard IEC 60079-7, which was derived from this standard, lays down the test requirements for Ex-e light fittings with cold start EVGs for T6 (26 mm) fluorescent lamps.

Unlike industrial luminaires with EVGs, Ex-e luminaires shall fulfil all of the relevant conditions of this standard.

The CEAG EVG 05 fulfils all these requirements and, thanks to the continuous lamp monitoring, ensures the following functions:

1. Shutdown of lamps that do not strike

If a fluorescent lamp does not strike correctly within 5 seconds, the start process is stopped and the lamp circuit deactivated with a power break of approx. 5 seconds. The second lamp circuit continues to function without a break.

2. Shutdown at end of life of the lamp

under the most unfavourable conditions, the ageing process of the lamp electrode can lead to higher power consumption (additional voltage drop at the electrode) and a temperature rise.

All the EVGs in the **EVG 05** range continuously monitor this process and safely limit the power as given in the standards draft IEC 60079-7, P_{max} = 10 W, by shutting down the lamp circuit.

EN 61347-2-3 lays down three different test procedures for simulating the end of life of fluorescent lamps. The first test procedure (monitoring for coil breakage) cannot be used for Zone 1 Ex – light fittings, because in this case the coils are short-circuited.

The new EVG series **EVG 05...** implements both the other conditions using the following two monitoring methods:

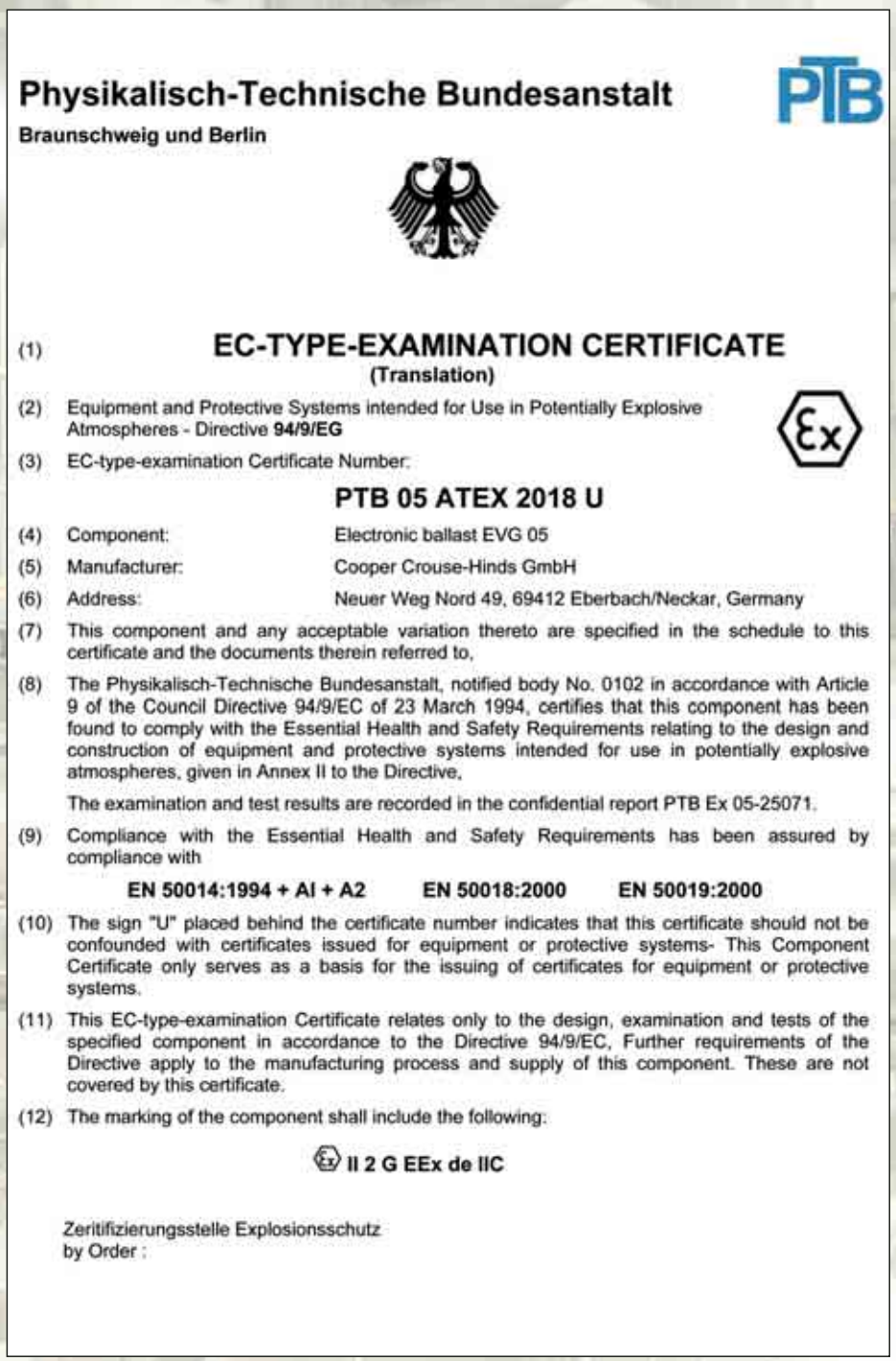
a) Asymmetric power test

The lamp voltage and the resulting power at the lamp increases at the end of the life of the fluorescent lamp. This increase is monitored continuously and when the limit (10 W) is exceeded, the respective lamp circuit is shut down. The second lamp circuit continues to function without a break.

b) Asymmetric pulse test

A further characteristic for the end of life of a fluorescent lamp is the flickering of the lamp.

To recognise this effect, an asymmetric pulse test (….) is simulated, whereby all the EVG 05 units shut down the lamp circuit within 30 seconds. The second lamp circuit continues to function without a break.



Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

PTB

(1) **EC-TYPE-EXAMINATION CERTIFICATE**

(Translation)

(2) Equipment and Protective Systems intended for Use in Potentially Explosive Atmospheres - Directive **94/9/EG**

(3) EC-type-examination Certificate Number:

PTB 05 ATEX 2018 U

(4) Component: Electronic ballast EVG 05

(5) Manufacturer: Cooper Crouse-Hinds GmbH

(6) Address: Neuer Weg Nord 49, 69412 Eberbach/Neckar, Germany

(7) This component and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to,

(8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this component has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive,

The examination and test results are recorded in the confidential report PTB Ex 05-25071.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with

EN 50014:1994 + AI + A2 **EN 50018:2000** **EN 50019:2000**

(10) The sign "U" placed behind the certificate number indicates that this certificate should not be confounded with certificates issued for equipment or protective systems- This Component Certificate only serves as a basis for the issuing of certificates for equipment or protective systems.

(11) This EC-type-examination Certificate relates only to the design, examination and tests of the specified component in accordance to the Directive 94/9/EC, Further requirements of the Directive apply to the manufacturing process and supply of this component. These are not covered by this certificate.

(12) The marking of the component shall include the following:

Ex II 2 G EEx de IIC

Zeritifizierungsstelle Explosionsschutz
by Order :

The EVG 05 in Practice:
Explosion Protected Luminaires with Trademark CEAG

All these functions are just one component in the extensive safety concept of the CEAG EVG 05.

The use of high impact resistant plastic materials for the encapsulation in the type of protection EEx-de, as well as the additional unit fuses for the event that a fault occurs rounds off the whole package.

The new CEAG EVG 05 will become standard for our fluorescent light fittings series:

eLLK 92 .../..

eLLM 92 .../..

eLLK 92 .../.. NIB

as well as the flush mounting fitting

eLLB 20...

Thus, as of May 2005, all luminaires supplied will be to the newest standard.

Naturally all existing luminaires can still be used without any limitation.

The investigation report from the PTB explicitly states:

Quote:

„Measures as part of the operating instructions

The measures mentioned are intended for newly issued certificates. This is to allow any insights gained to be used for technical improvements.

The assessment of potential ignition risks, and the number of faults that have been identified to the present day, do not justify the requirement of having previously certified luminaires of category 2G (zone 1) and category 3G (zone 2) retrofitted or converted.

Apart from these equipment-specific measures, there are no special maintenance requirements in addition to the normally required manufacturer's specification ...“

Have we awoken your interest?

Then look under www.ceag.de for your local sales engineer.

Or send us a mail to:

info-ex@ceag.de

We will be pleased to help you.