

The logo for ATEXOR features three red circles of equal size arranged in a triangular pattern on the left. To the right of the circles, the word "ATEXOR" is written in a bold, white, sans-serif typeface. The entire logo is centered horizontally against a dark, textured, greyish-green background.

ATEXOR

Are LED luminaires causing higher risks in Ex Areas ?

By: Tarmo Rintala

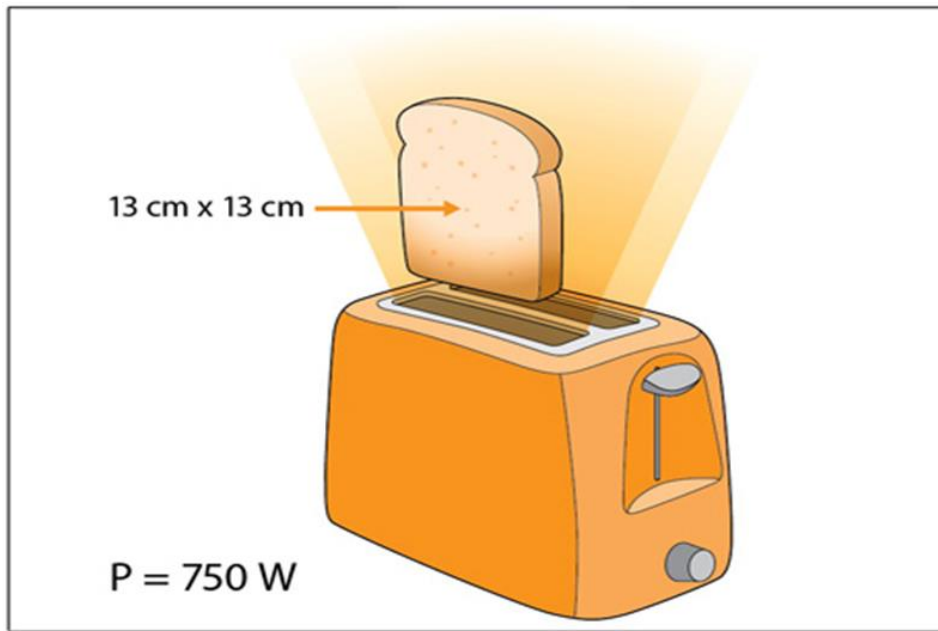


This presentation is for personnel sharing an interest in HSEQ standards and implementing latest technologies on hazardous area equipment as well as utilizing them.

Safety is playing a big role in his everyday work. For the past 21 years his “Topics of the day” has been at least one of the following: Customer, ATEX, IECEx, HSEQ

Optical Radiation

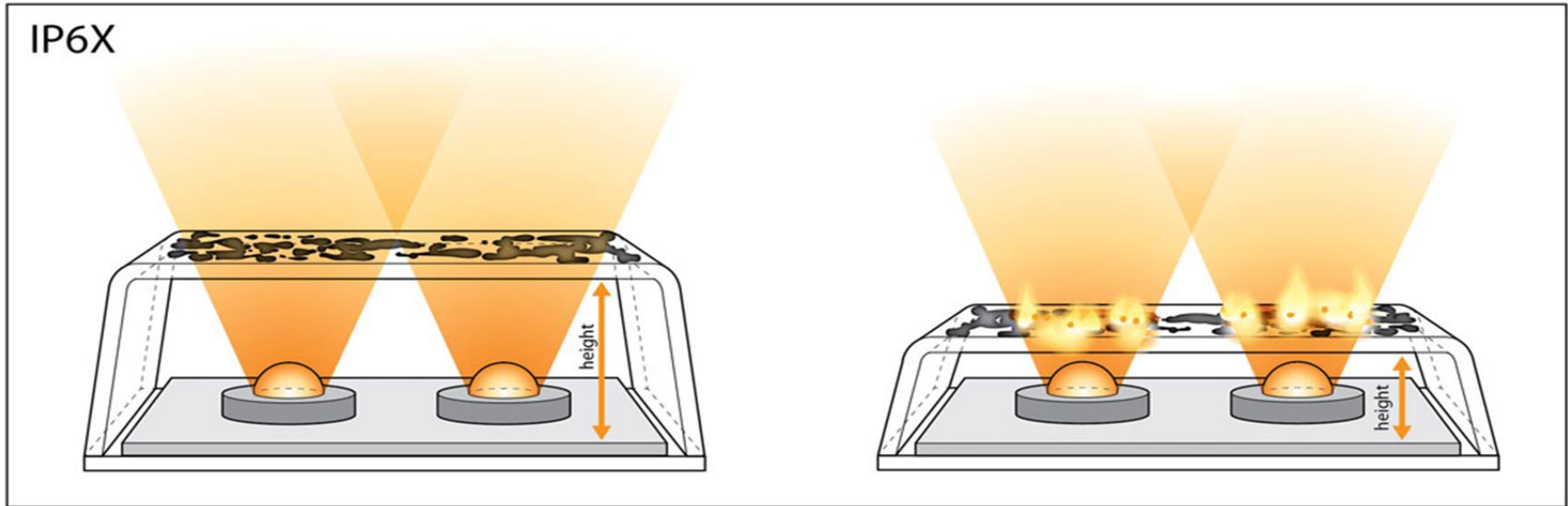
Example demonstrating the impact of radiation.



Case Luminaire: There are four key factors that determine if otherwise harmless light can become an ignition source:

- the energy output of the light source,
- the focal point of the light waves,
- the distance from the light source and
- the presence of an energy-absorbing material (absorber)

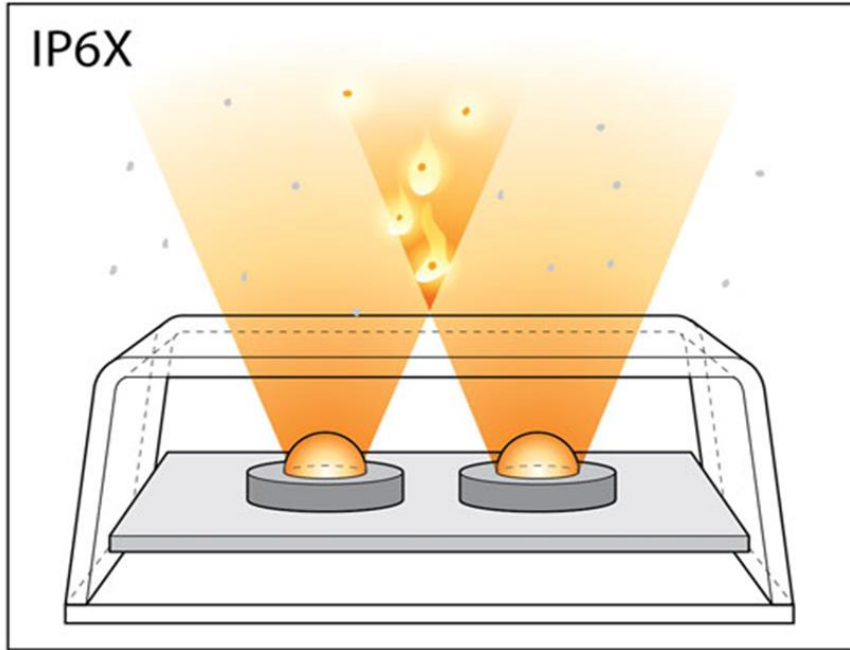
Optical Radiation



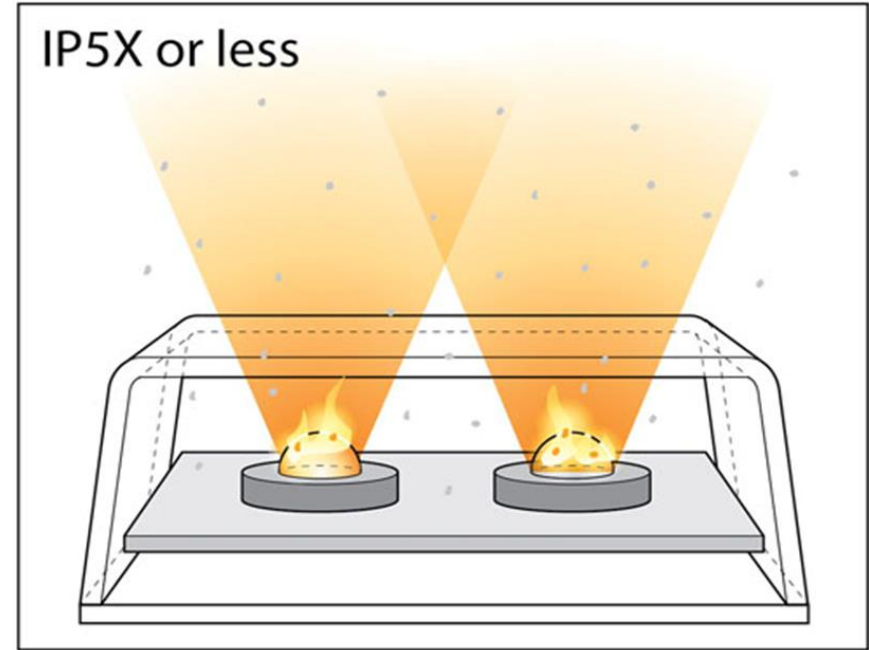
The distance between a light source and an external surface with absorbers may be critical when taking optical radiation into account.



Optical Radiation



A single light source can be safe, but multiple adjacent light sources may overlap and create intensive radiation



If the enclosure is not dust tight (e.g. IP5X), absorbers may infiltrate the enclosure and become a possible ignition source.

Concern

- In September 2016, at the IECEx meeting at Umhlanga, South Africa, The chairman of the Ex Technical Advisory Group (ExTAG), Professor Xu Jianping, presented the issues regarding LEDs and the possible ignition sources caused by powerful light.
- The main message is clear: There are too many different interpretations of the standards, and this is resulting in compromises on safety

Concern explained

Is there a difference on safety between examples below ?

Option 1:
Certificate marking

Ex em IIC T4

IEC 60079-0

IEC 60079-7

IEC 60079-18

Option 2:
Certificate marking

Ex em IIC T4

IEC 60079-0

IEC 60079-7

IEC 60079-18

IEC 60079-28

Option 3
Certificate marking

Ex em op is IIC T4

IEC 60079-0

IEC 60079-7

IEC 60079-18

IEC 60079-28



Concern explained

Is the difference on safety understood? Or is there any difference?

- Industrial customer likely does not know
 - Yet he is responsible for selecting the right product with right safety level
- I don't know, it requires a very detailed investigation on certificate and marketing material of each product to have a good guess "I don't know.."???
- Certifying officer is likely not sure without looking at a confidential test report

At the moment the code of practice is systematically leading to a situation where Ex classified sites have an increasing number of LED luminaires which may or may not be safe to be used at the site.



The way forward

What needs to be fixed ?

- Regardless of the angle you look at it, the current situation is intolerable and needs urgent clarification.
- The competition amongst Notified Bodies as well as manufacturers of luminaires is not fair because the playing field is not level.
- This, in turn, creates very real risks at hazardous sites using luminaires with potentially unsafe optical radiation.



The way forward

How it may be fixed ?

- Experts in standards and Certification are processing this at the moment
 - Target: Less variation on certificates issued
- There are several suggestions how to clarify this situation
- There are suggestions which are quite radical

Further news should be available during this year, maybe even by the summer of 2018

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