From hot spots, glare and flicker to optical control: as flat panels are outpaced by the new modular luminaires, find out how the latest in hi-tech lighting creates business opportunities for the wholesaler

EDA Presentation 27th June

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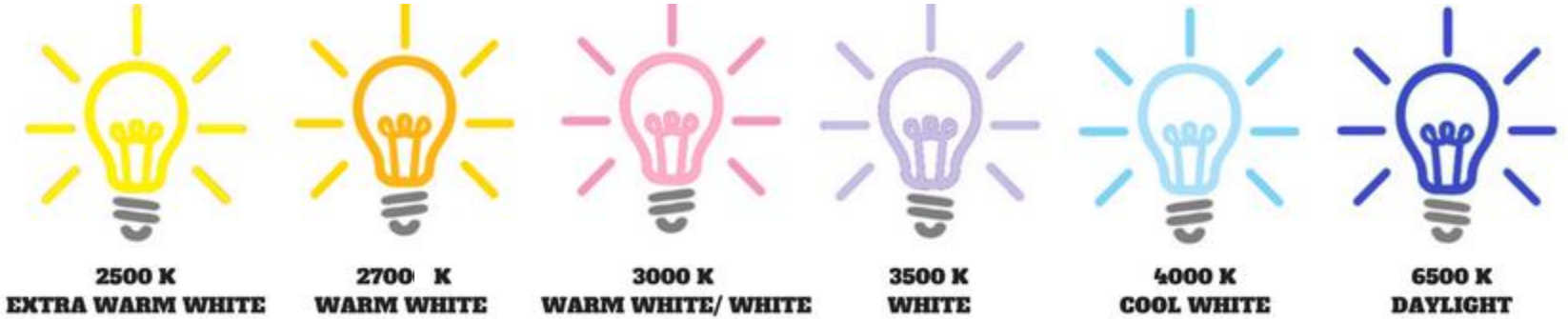
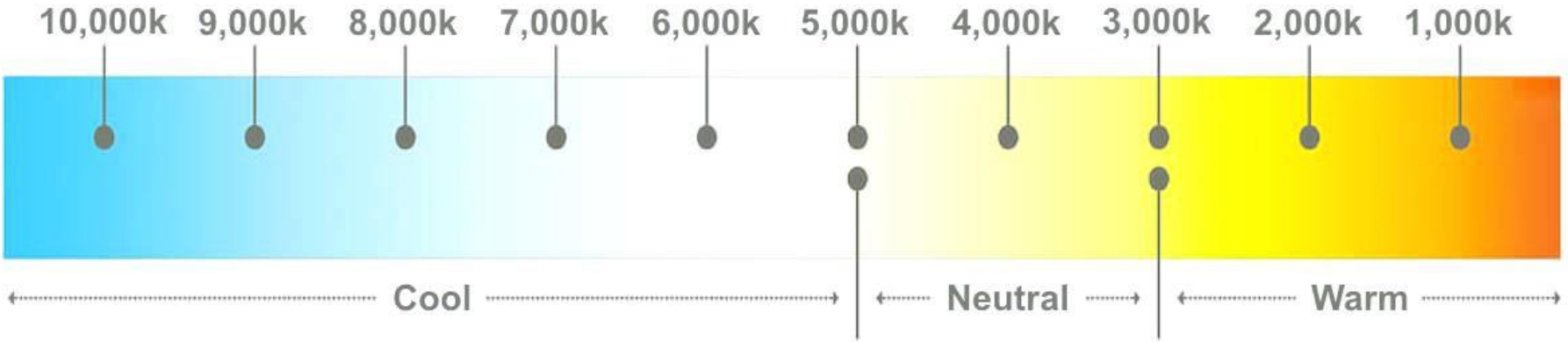
1) Colour Temperature

Fluorescent / Lamps



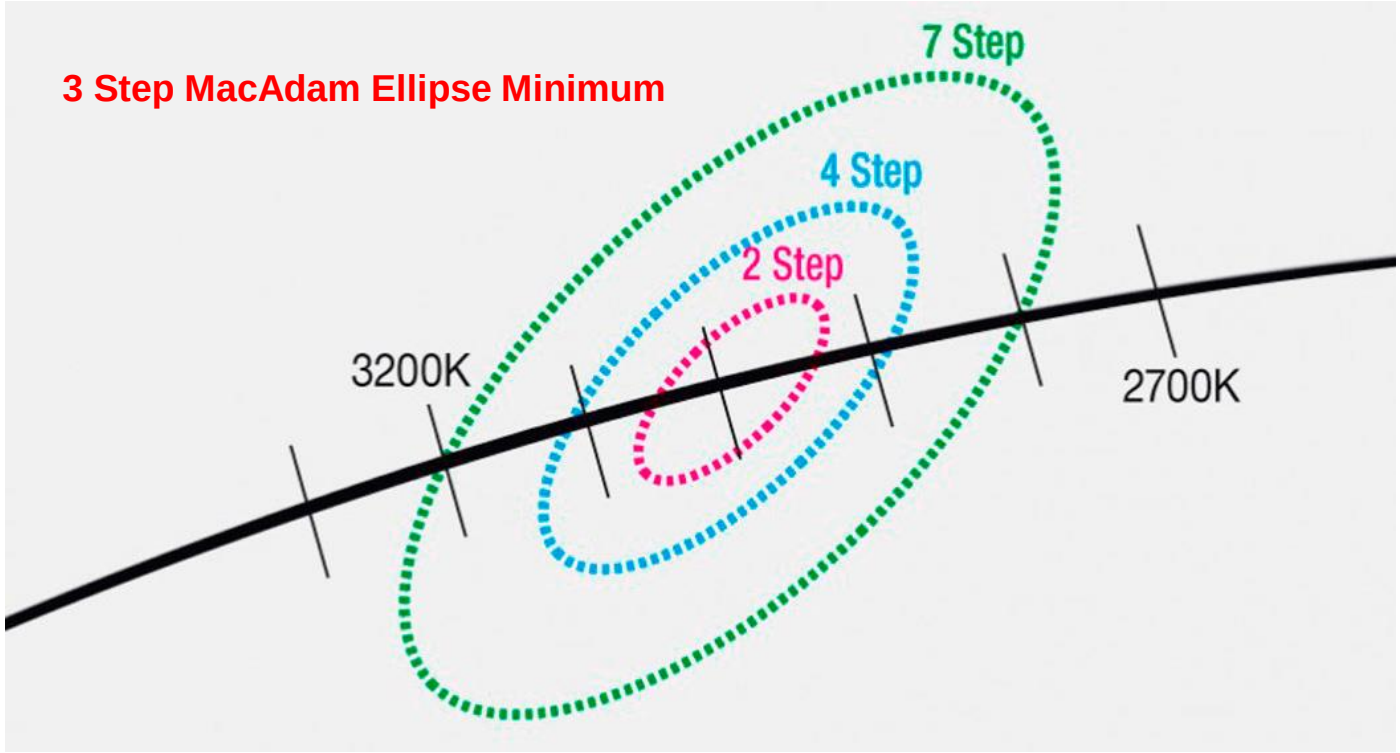
1) Colour Temperature

LED Luminaires

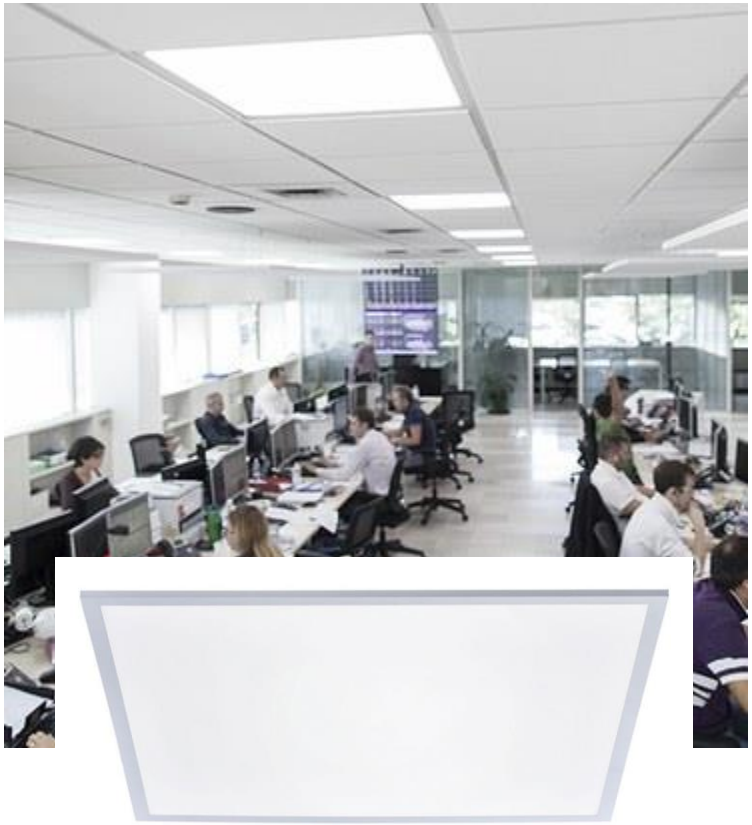


If customer asks for Cool White – make sure you confirm Kelvin

2) Colour Quality – LED Binning

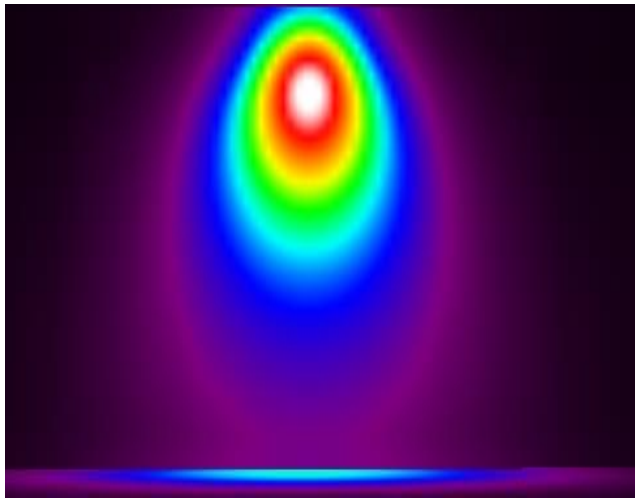


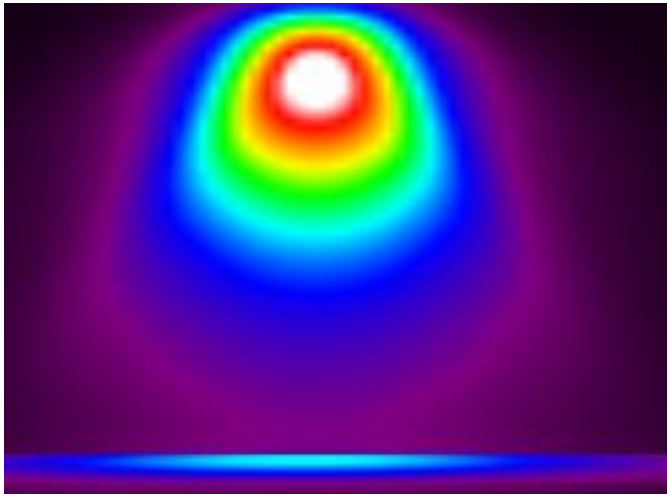
3) Photometrics and Light Distribution



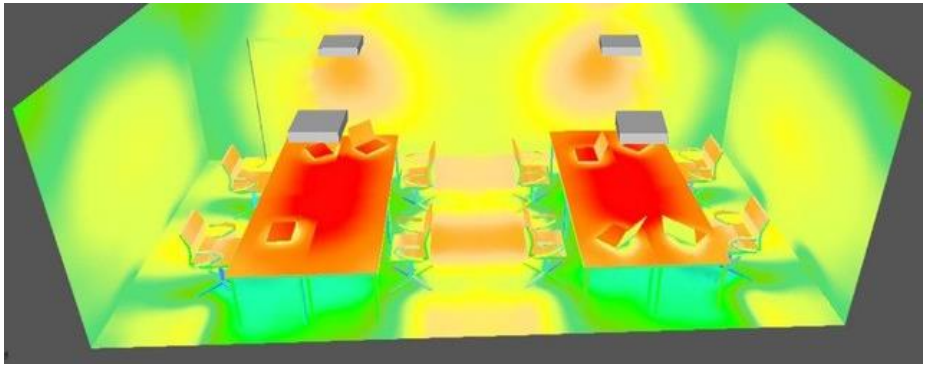
Vs.

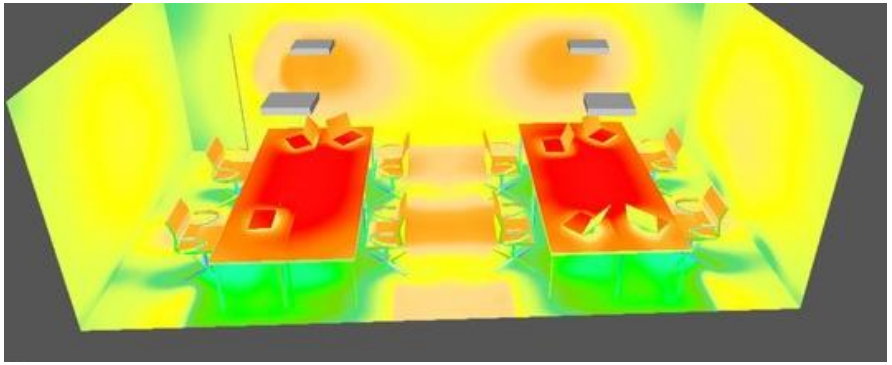
The following comparison shows Flat Panel v Technical optic





Flat Panel v Technical optic



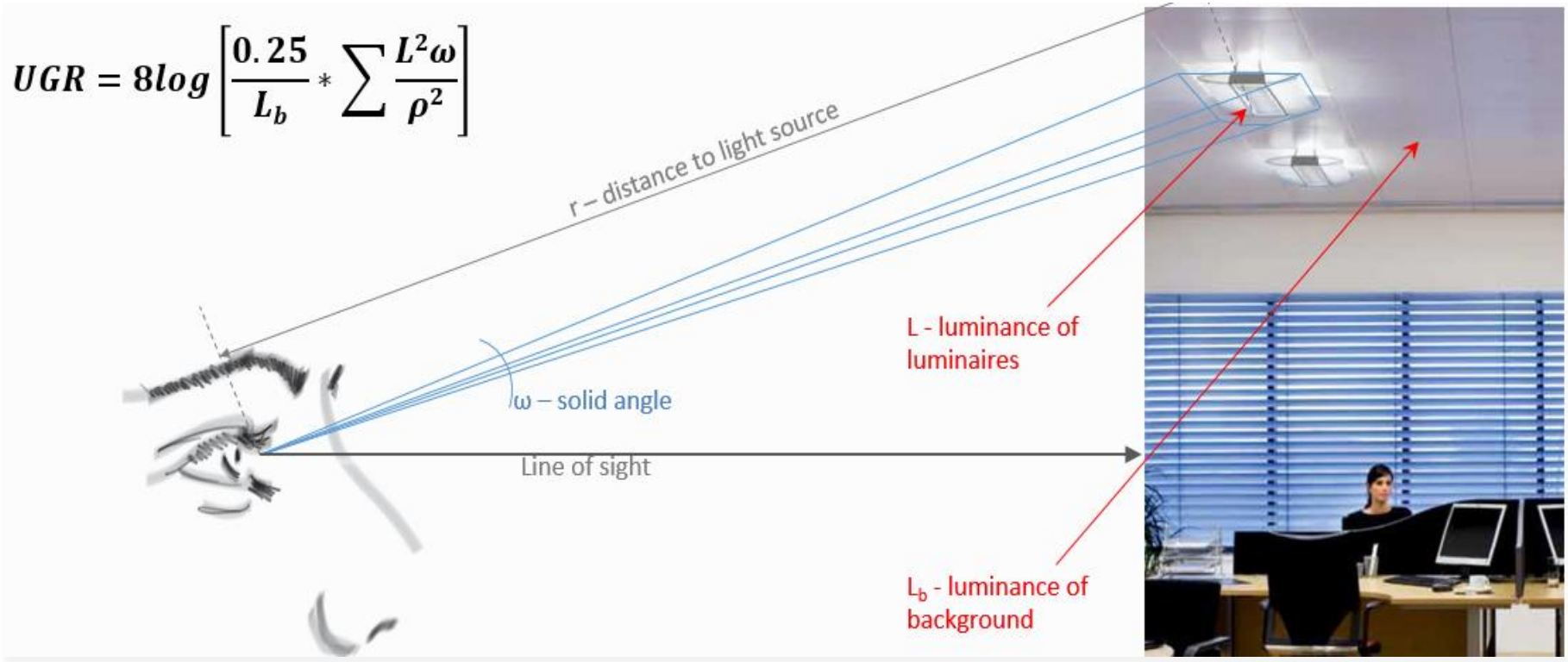


4) UGR – Term stands for Unified Glare Rating.

The new European standard sets UGR = 19 as the maximum permissible value for offices

UGR – The Calculation

$$UGR = 8log\left[\frac{0.25}{L_b} * \sum \frac{L^2\omega}{\rho^2}\right]$$



UGR – Classification

UGR limits (UGR_L) that must not be exceeded:

≤ 16	Technical drawing
≤ 19	Reading, writing, training, meetings, computer-based work
≤ 22	Craft and light industries
≤ 25	Heavy industry
≤ 28	Railway platforms, foyers

The UGR limits are specified in the EN 12464 standard for activities and visual tasks (see tables on pages 29–39).

*LG7 Lighting Guide

5) Flicker

6) LED Lifetime

What's the problem?

Too many factors/ too much data

L80 B10 @60k hrs @ T 25ºC

L80 B20 @100k hrs @ T 25ºC

L90 B30 @75k hrs @ T 35ºC

L70 B50 @50k hrs

L90 B50 @90k hrs

6) LED Lifetime

L Value = Rated Lumen Maintenance (LM-80) is the operating time that the LED light source will maintain at a percentage of its initial light output

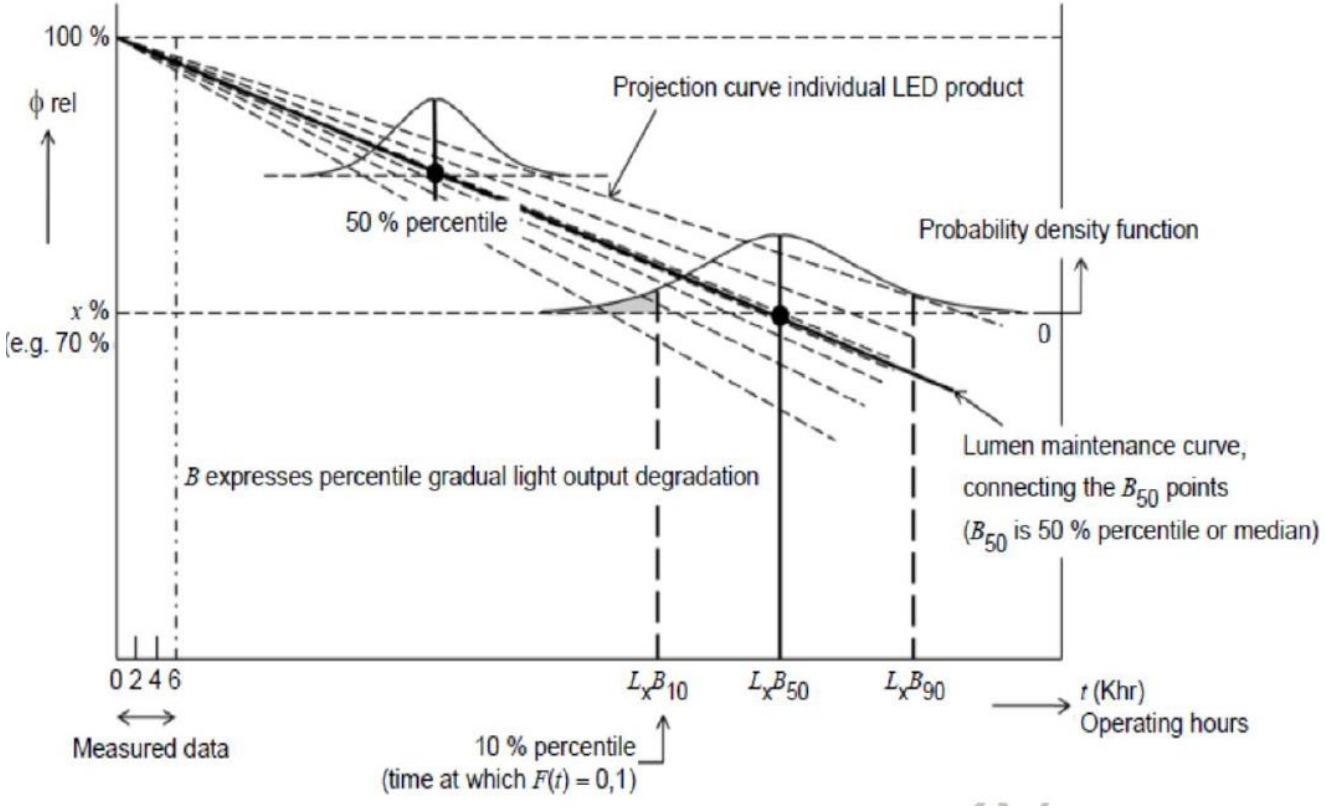
B Value = Percentage of LEDs that are below the stated luminous flux.

L80 @ 60k hours – LEDs produce 80% of the initial light output

B10 @ 60k hours – 10% of LED modules are below the stated light output

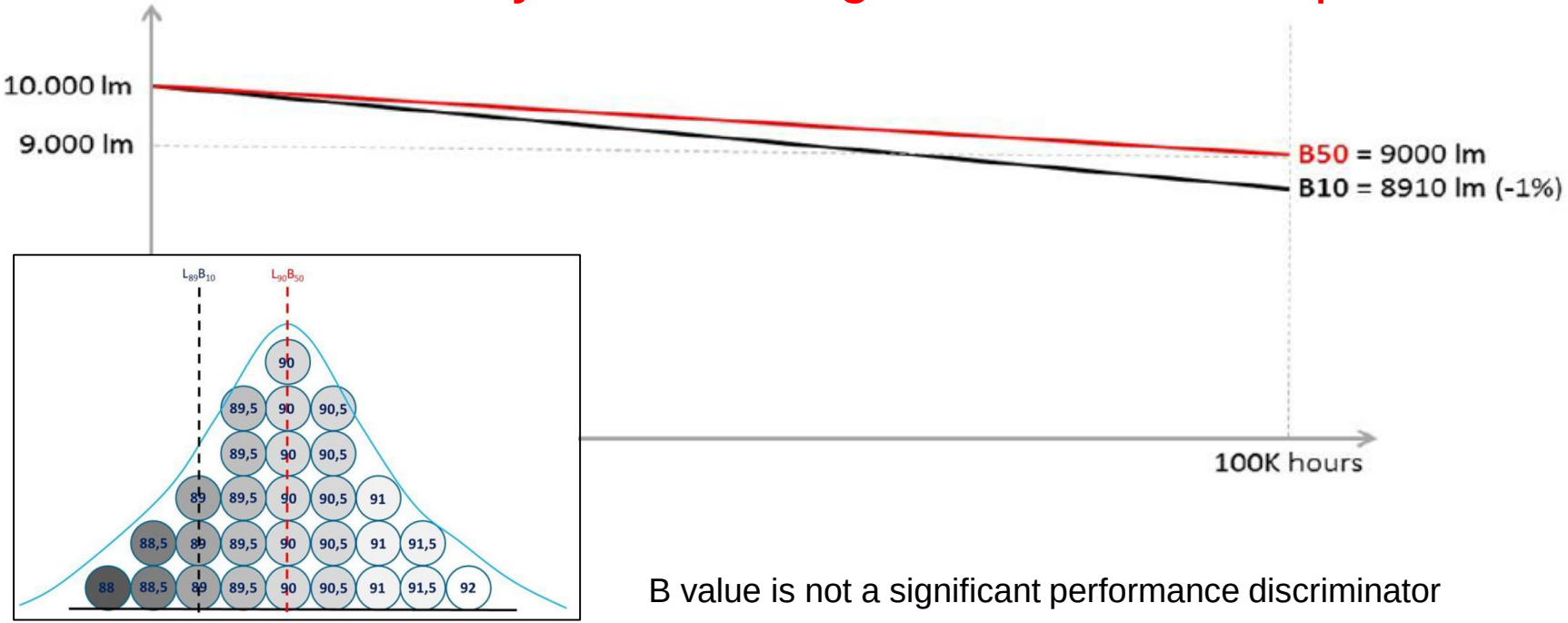
6) LED Lifetime

How is B value calculated?



6) LED Lifetime

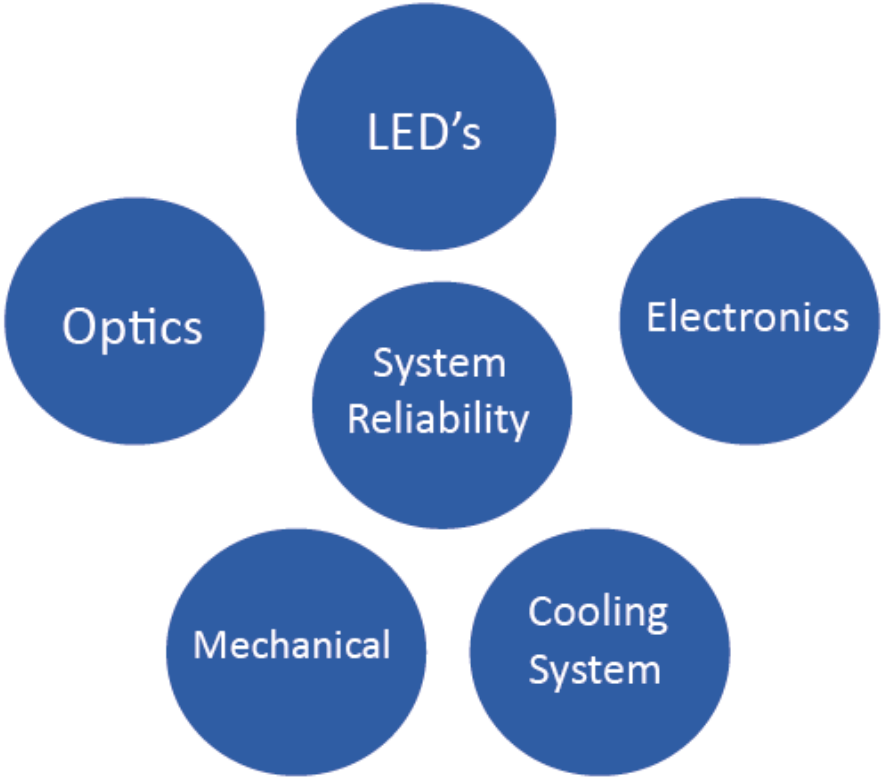
The reality of a B rating on L90 100Khrs product



B value is not a significant performance discriminator

LED Lifetime -

The LED package may not be dominant in determining product lifetime.



Summary

1) Colour temperature – make sure you use kelvin and 4000K is standard for the office

2) LED Binning – always look for 3 Step MacAdam Ellipse

3) Optics and light distribution are key for a lighting scheme

4) UGR<19 – make sure your luminaire is compliant with a UGR<19 lighting scheme

5) Flicker – difficult to calculate but look at driver information if questioned on flicker

6) LED Lifetime is not luminaire lifetime

Many thanks for your attention!