BELYSNINGSBRANSCHEN

CHECKLIST FOR PERFORMANCE COMPARISONS OF LED LUMINAIRES

In the absence of international standards for performance criteria for LED luminaires, it is of the outmost importance that purchasers ask for relevant information from suppliers to be able to compare LED luminaires from different manufacturers. Listed below are the most relevant issues.

SUBJECT	COMMENTS	LUMINAIRE 1	LUMINAIRE 2
LIFE			
Is lumen depreciation for the LED/LED-module taken into account? How is lifetime defined?	It is recommended that lifetime be specified as burning hours when 70% of nominal flux remains. Normally showed as L_{70} X hours in documentation		
Are the lifetime and expected mortality for electronic gear given?	It is recommended that the lifetime of electronic gear correspond to the lifetime of the LED/LED-module. Mortality to be specified in % /1000 burning hrs		
Can a LED/LED module be replaced if it breaks and if so by whom?	Question is primarily relevant to outdoor luminaires where expected lifetime can be up to 30 years.		
In luminaires that contain a number of LED/complete LED-module, what happens if a one or more individual LED breaks?	Depending on design, a single defective LED can cause the entire luminaire to stop working. It is recommended not to use luminaires with a design that switches off all LED/LED module if a single LED breaks		
QUALITY OF LIGHT			
What is the correlated colour temperature, CCT, in kelvin (K)? Are tolerances for CCT given? Is information available about colour stability over time?	Colour temperature "warm white" can have different CCT in Kelvin (K) depending on manufacturer. Inferior luminaire design may have a negative impact on CCT over time. Colour quality and spread to be given as SDCM on a scale from 1 to 10 in accordance with CIE 1931 or 1964. The lower the figure the better it is. For indoor applications SDCM <5 and for outdoor applications SDCM <7 are recommended as minimum.		
What is the colour rendering index, R_a / CRI? Is information available about colour rendering over time?	General recommendation is $R_a > 80$ for indoor applications and $R_a > 70$ for outdoor applications. Inferior luminaire design may negatively influence Ra over time.		
EFFICIENCY			
How high is the total efficiency in Lm/W, including electronic gear? (Should be related to system power at normal operating conditions.)	System power for luminaire, during operating conditions, is the only relevant figure.		
DIMMING			
Can luminaire be dimmed? If yes, which technology is used?	There are different technologies for dimming available. PWM, pulse width modulation, is recommended for LED.		
MISCELLANEOUS			
Ambient temperature, ta, around luminaire is crucial for LED performance. Is test temperature given and relevant for application?	Indoor luminaires are normally tested at an ambient temperature, ta, of 25 C and outdoor at an ambient temperature, ta, of 15 C. If actual ambient temperature is higher, one has to look for special luminaires.		
Are photometric data for lighting calculations available? Are maintenance factors visible in calculations?	Idt-files with photometric data are a good example that can be used in Dialux and similar programmes		
Are guarantee conditions clear?	Is any kind of an extended guarantee offered by supplier		

Checklist can be downloaded at www.belysningsbranschen.se and www.ljuskultur.se.
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