Why LED Colour Rendering Matters

Light colour characteristics comprise many facets, and there is often much confusion over the concepts. Colour rendering is a vital element in a quality lighting application but is a frequently neglected consideration, often leading to poor visual outcomes and disappointed users.

WHAT IS COLOUR RENDERING?

Colour Rendering Index (CRI) is a parameter that rates the ability of a light source to depict true colours. The colour fidelity of high CRI light dramatically lifts visual appearances, with colours, surfaces, products and people seen as crisp and vibrant. Conversely, low CRI light renders subjects as washed-out, pallid and lifeless.

WHAT HAS CHANGED?

For thousands of years natural sunlight and firelight have been the mood-defining light benchmarks for humans. For electric lighting, low-voltage halogen light was understood and highly valued as the gold-standard for colour fidelity and vibrancy, leaving other lightsources far in the distance. Now that LED is the universal light source, defining light colour quality is less clear, and selecting high performing luminaires is more involved.

WHY COLOUR RENDERING MATTERS

- For retail merchandising, the visual cues of product displays are sharpened
- For hospitality venues, mood, ambience and guest appearances are enhanced
- For home interiors, nuances of timber floors, furniture and fabrics really come alive
- For commercial offices, user mood, wellness and productivity are boosted.

LIMITATIONS AND OPPORTUNITIES

In earlier years most LED light sources were around CRI 70+, with the current 'normal' being CRI 80+. However, low quality, low CRI LEDs are abundant and can deliver sub-par spectral performance. Some colour bands can be notably absent, with red spectrum often weak. Some NZ suppliers are now focusing only on CRI 90+ as the 'new normal', delivering affordable white light as vibrant as daylight.

FROM ENERGY EFFICIENCY TO QUALITY

Much lighting for buildings continues to focus on reducing energy, with a lower regard for lighting quality and user experience. LED lightsource energy performance has evolved to appreciable heights and is now levelling-off, so the time is right to emphasise lighting quality and colour discernment. Trade-offs between energy efficiency and CRI, and unit price and CRI, still exist but the gaps are now small and the advantages are many.

CRI 90+ Excellent

CRI 80+ Acceptable

CRI 65+ Poor

Lighting Council New Zealand is the industry association for lighting manufacturing, importing, and distribution companies in New Zealand, and associated lighting industry participants. ***www.lightingcouncil.org.nz***

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