

# The mastering of lighting

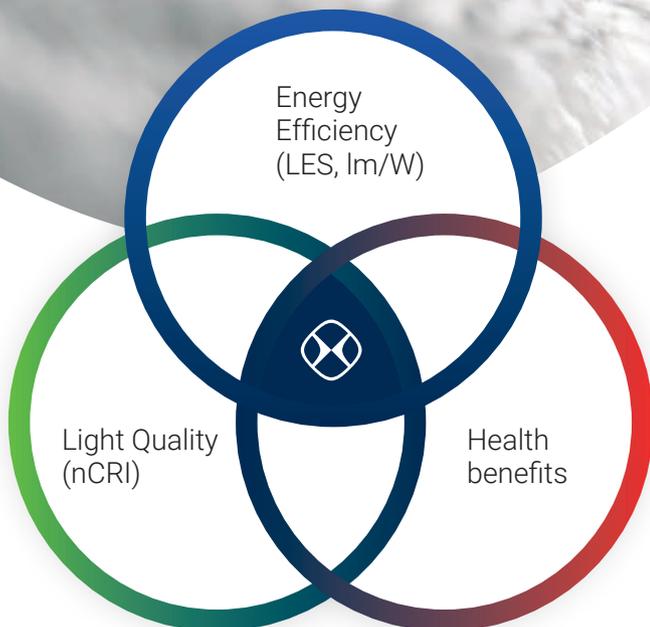




Light spectrum is key

Solar spectral power distribution

Multi-channel is the way



Best

Spectral matching to daylight in the market.

>95

Custom made light spectrum CRI >95 for any CCT.

+4,5%

Increase in employees productivity\*

\*Source: Report 'Quantified Benefits of Human Centric Lighting' by Lighting Europe & ZVEI, April 2015.

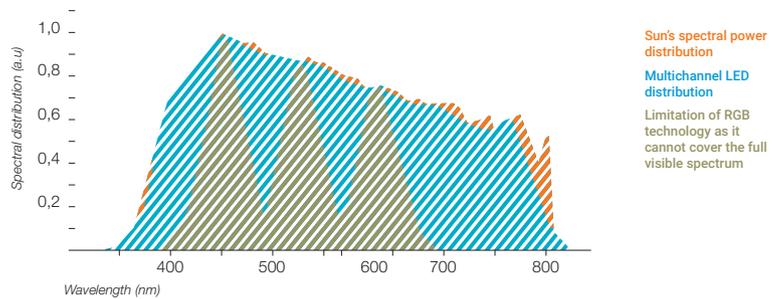
Color, CCT or CRI are simplifications that are useful for illumination. However, when physical and biological processes are involved we need to deal with spectra. Color has no physical meaning and only applies to the human visual system.

This means that, for a full understanding of the interactions between light and our brain it is necessary to work with the energy distribution of the photons impacting on the dedicated cells in our central nervous system (CNS). This is, the light spectrum.

The specific part of neuroscience that studies this topic is known by scientists as "non-visual paths of lighting" as opposed to those paths that enable vision, which are related to color.

The same applies for biological processes, i.e., plant growth or light for horticulture, since photosynthesis efficiency strongly depends on the chlorophyll absorption spectrum.

Thanks to our multi-channel light engines, any light spectrum can be mimicked (i.e. Sunlight), while other RGB-based technologies only cover a limited part of the visible spectrum.



In our products, we are committed to the highest standards with regards to spectral accuracy and precision.

This implies the use of multichannel LED engines that span the visible range without gaps in the SPD (spectral power distribution).

Flatness is achieved thanks to a careful combination of single-peak LEDs and phosphor-converted LEDs. Wavelength shifts are compensated for by means of a feedback from an onboard spectroradiometer.



## APPLICATIONS

### Retail

- High fidelity to daylight. Color perception is not altered.
- Best CRI / R9 / CQS / GAI in the market. Just adapt the spectrum to your needs.
- Create dynamic lighting scenes. CCT and wide range of color reproduction and customization.
- Centralized lighting control from NormaLink. Color assessment. Energy monitoring.

### Museums

- Highest fidelity to sunlight.
- Highest nCRI (latest version of CIE CRI).
- Ability to build customized light spectra for particular artworks and pigments (through reflection spectra measurements).
- Customized luminous efficacy as a function of the selected spectrum.
- Control the amount of blue light to minimize the potential damage on certain pigments.

### Other applications

- Professional Photography or Cinema.
- Scenic arts. Dynamic lighting.
- Horticultural lighting.
- Plant growth.
- Optimization of biological processes by light.





Adaptative  
**LIGHTING**  
LEDMOTIVE inside

- With our technology, it is possible to reproduce exactly the physical properties of daylight.
- The quality of Adaptative Lighting in a working environment has proved to increase the productivity in the employees.
- It is possible to create new spectra with good acceptance and improved non-visual effects.
- This opens the door for further research in more controlled lighting conditions to develop a higher level of understanding of non-visual sensitivity to light.
- Benefits of biologically efficient lighting include improved sleep/wake cycle, daily changes in alertness, performance and mood (circadian changes) as well as responses to seasonal changes.



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