



BioUp: Lighting for Well-Being



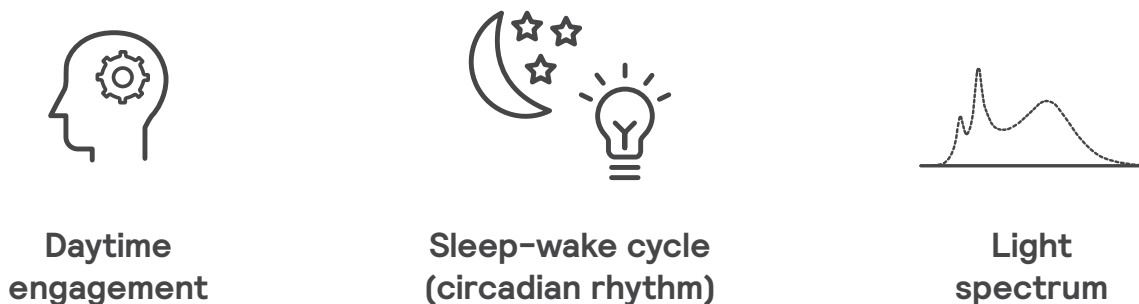
Light has impact beyond the visual aspect.

We have become the indoor generation. On average, we spend more than 90% of our time indoors, with 36% of that spent in the workplace. But, the more time we spend indoors, the less we are exposed to the beneficial effects of natural daylight.

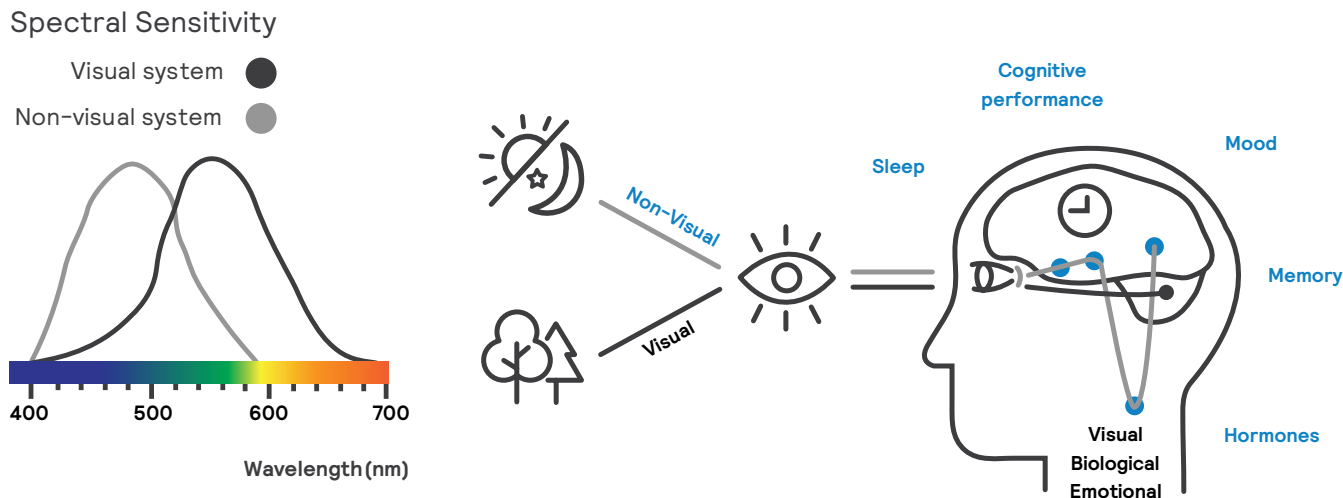
Light has a [visual impact](#) that helps us see well, a [biological impact](#) that helps us perform well, and [emotional benefits](#) that help us feel well. The combination of these elements is essential for well-being and the foundation for circadian lighting.

Benefits of melanopic light

Melanopic light plays a major role in synchronizing the internal body clock with non-visual effects of light. When you properly design melanopic lighting in your building, it can bring the benefits of natural daylight indoors, supporting **visual comfort, well-being** and **performance**. Melanopic light has a direct relationship with:



Non-visual aspects of light



Source: Schlangen, L.J.M., & van der Zande, B. M. (2022). The power of healthy daytime lighting in indoor settings: melanopic lighting advances and office applications (Version 1). Zenodo. <https://doi.org/10.5281/zenodo.7362816>

At the beginning of the 21st century, it was discovered that photoreceptors in the human eye – photosensitive retinal ganglion cells or ipRGCs – contain melanopsin, a protein that is highly sensitive to the blue wavelength. When melanopsin is stimulated by light, the ipRGCs send a signal (non-visual path) to the body's internal clock, subsequently ensuring that our bodies are synchronized to the 24-hour day-night cycle. This supports daytime engagement and sound sleep patterns.

What is melanopic-EDI?

Melanopic equivalent daylight illuminance (melanopic-EDI), unit lux, is the circadian metric adopted by the International Commission on Illumination (CIE). It describes the response of the non-visual photoreceptors (ipRGCs) in our eyes.

This response is indicative of how the body will respond and is a combination of the spectrum of and intensity of the light.

What is melanopic-DER?

The melanopic daylight efficacy ratio is a spectral metric of the biological effect of an artificial light source compared to daylight (6500K). The melanopic-DER of a reference daylight spectrum is 1.

Typically, artificial lighting has a lower biological effect than daylight, with the melanopic-DER being below 1.

Design recommendations for optimal melanopic lux and application efficiency:

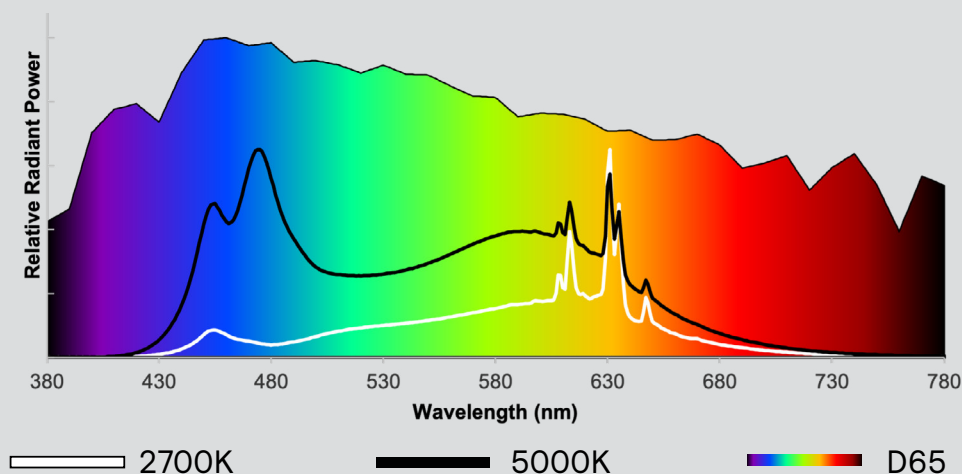
- 1 Make circadian lighting calculations on the vertical plane at eye level.
- 2 Position luminaires appropriately to deliver melanopic lux.
Note: Directly above the head is inefficient.
- 3 Slight glare is beneficial if UGR requirements are met.
- 4 Wide beams are advantageous, as narrow beams provide less light on the vertical plane.
- 5 Delta shaped beams deliver the best illumination.

What is BioUp?

BioUp is a spectrally tunable technology allowing for minute adjustments to certain wavelengths in the LED light spectrum. By enhancing the LED spectrum with cyan light, BioUp helps to support biological impact. You may not see the impact of BioUp on the visual color or intensity of light, but you can experience the impact on how you feel and perform.

BioUp mimics elements of natural daylight that are visually imperceptible but profoundly impactful. It achieves a high Melanopic Daylight Efficacy Ratio (MDER) value at cooler CCT levels while maintaining high efficacy. This produces a spectral content close to that of natural daylight.

The graph below shows the cyan peak at 480 nm delivering optimal melanopic benefits. The table below shows the CRI and MDER values throughout the broad CCT range.



	2700K	3000K	3500K	4000K	5000K
CRI ¹	94	91	88	86	82
MDER ²	0.44	0.59	0.72	0.82	0.97

Representative data based on the Ledalite SyncLine product.

1. Color Rendering Index (CRI) is calculated in accordance with CIE 013.3-1995.

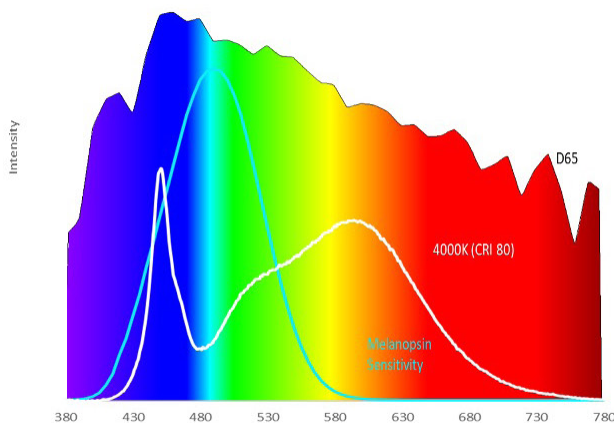
2. Melanopic Daylight Efficacy Ratio (MDER) is the measure for "spectral melanopic efficiency" as defined in CIE S 026-2018.

3. Standard daylight (D65) has an MDER value of 1.

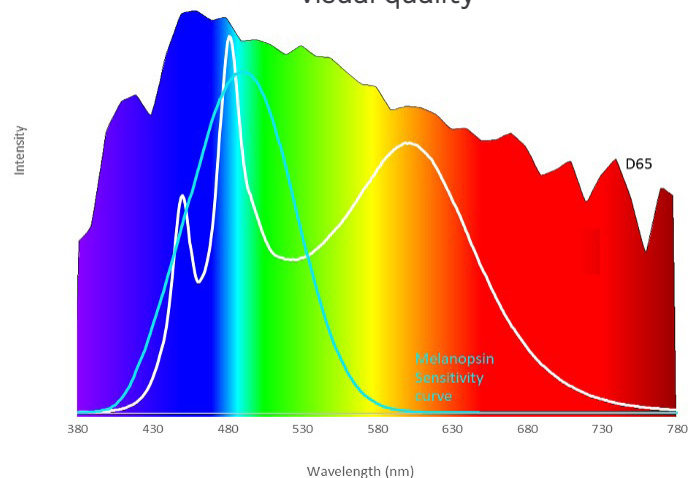


BioUp during the day is the most powerful regulator of the internal clock!

Standard 4000K LED solutions have a dip at around 480nm



Light spectrum boosted with cyan at the 480nm dip increases LED effectiveness and improves visual quality



LED technology allows for more Cyan, while maintaining the visual quality of a traditional light source

Get the benefits of daylight without the blue visual light effect.

With BioUp, you are not stepping into a cyan-colored space.



BioUp @ 3000K achieves MDER of .59

BioUp is built on Tunable White technology
Can be tuned from 2700K to 5000K

BioUp @ 4000K achieves MDER of .82

BioUp uses a proprietary cyan-boost LED
recipe to support circadian rhythms
There is no blue visual effect

BioUp @ 5000K achieves MDER of .97 (daylight = 1)

Tune BioUp to 5000K to maximize the
daylight benefits of artificial light
Alternatives appear blue



Education
Ledalite TruGroove recessed
BioUp @ 4000K



Office
Day-Brite FluxGrid
BioUp @ 4000K



Cleanrooms and labs
Alkco Speciality Downlight
BioUp @ 4000K

Primary application areas: school, offices, and healthcare facilities

BioUp is Genlyte Solutions' innovative indoor lighting technology designed for circadian responses.

What differentiates BioUp?

- Higher Melanopic-DER of up to 0.97: more melanopic light per lumen.
- Higher Melanopic-DER*LER: more melanopic light per watt radiation for higher efficiency (up to 19% more).
- The ability to tune CCT with MDER values over a wider range, from 5000K at 0.97 to 2700K at 0.44, for better daylight simulation.

- CCT range (2700K – 5000K)
- CRI of 82–94 throughout the range
- R9 value of 62–76 throughout the range

Specifications @ 4000k	BioUp	Others
MDER	0.82	0.81
Lm/W	178	160

BioUp contributes up to 19% more melanopic light per watt vs competitors based on publicly available competitor specification sheets.



BioUp enablement and NatureConnect support WELL certification by fulfilling Light, Mind, and Movement features for up to 14 points max. BioUp alone earns 3 points.

To receive points towards the WELL v2 standard, you must achieve 250 lux M-EDI (D65) at eye level for a period of at least four hours per day.

Improve the health and well-being of your occupants today.

BioUp-Enabled Products

ALKCO

The LumaMed Slot brings linear lines of light into complex environments, such as cleanrooms, food processing, and healthcare by combining modern aesthetics with necessary ratings.



[Click here for the LumaMed Slot spec sheet](#)



ALKCO

The EvoSeal centerbasket troffer combines modern aesthetics with industry-leading performance for healthcare and laboratory applications.



[Click here for EvoSeal spec sheet](#)



LEDALITE

SyncLine's slim design rivals that of high-end LED luminaires with performance that's in sync with your budget.

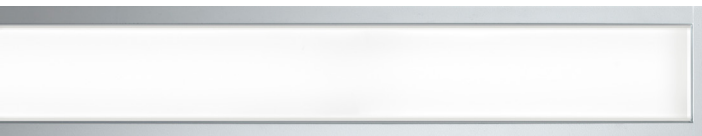


[Click here for the SyncLine spec sheet](#)





TruGroove recessed delivers unrivaled performance and innovative design – making a definitive statement in any architectural space.



[Click here for the TruGroove spec sheet](#)

Day-Brite

FluxGrid's familiar style, high quality, and affordability make it the perfect value choice for functional application areas.



[Click here for the FluxGrid Gen 2 spec sheet](#)



Day-Brite

EvoGrid's architectural appeal, dependable design, and affordability make it ideal for functional application areas.



[Click here for the EvoGrid spec sheet](#)



These products are BioUp-enabled as a standard.

BioUp can be enabled for many types of fixtures and application areas. BioUp enablement is available on other indoor products upon request.

BioUp-Enabled Lighting with Connected Technology

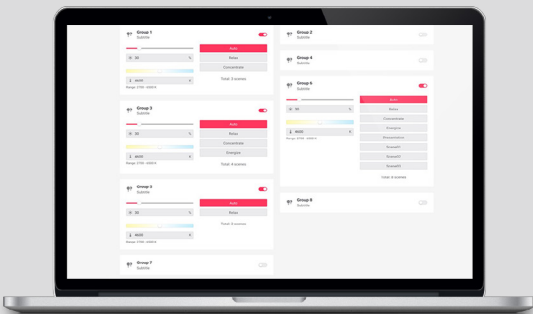
Lead the way to healthy, more engaging workspaces with personalized lighting control. Help occupants thrive with the right light at the right time during the day.

BioUp Control Options:

- Wired or wireless
- Interact or Dynalite
- 0-10V or DALI
- Third-party controls

Capabilities of Interact Ready Lighting

- Create wireless scenes with light level and color temperature (CCT)
- Flexibility to tune your CCT levels from a smartphone app, wall switch, or the software dashboard
- Support luminaire integrated occupancy and daylight sensors
- Read CCT driver range and automatically determine max and min CCT levels



Capabilities of Philips Dynalite

- Multi-protocol support: DALI, 0-10V, phase dimming, or DMX
- Choose design options with award-winning Antumbra user interfaces for chic look and feel
- Independent functionality with distributed intelligence and no single point of failure
- Easily integrate with other subsystems in the building such as HVAC



Indoor brands with BioUp offerings

ALKCO  LEDALITE LIGHTOLIER Day-Brite
CFI



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