



LUMENIA  
INTERIOR

Manager's guide to

# Human Centric Lighting

# Things you should know about **Human Centric Lighting**

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It might sound too good to be true, but good HCL lighting will improve the health of your staff, their wellbeing and productivity.



- What is HCL – Human Centric Lighting?
- How does it work?
- What are its advantages?
- What makes it different?



HUMAN CENTRIC LIGHTNING

# What is HCL – Human Centric Lighting?

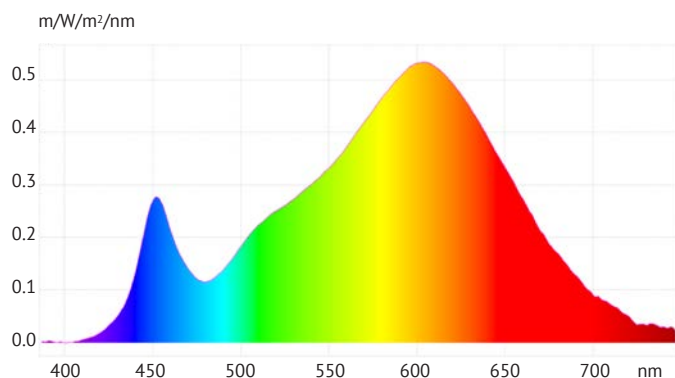
HCL is lighting that produces light very similar to natural skylight, emitting a light spectrum which humans have adapted to in millions of years, and which influenced our evolution and affects all our life processes. Daylight differs from the artificial light produced by traditional luminaries, which create very little radiation within the 455–490 nm spectral range (the peak values of the sunlight).

To define lighting as HCL, it should produce light with a substantial portion of the spectrum in the 455–490 nm range, beside light for non-image forming.

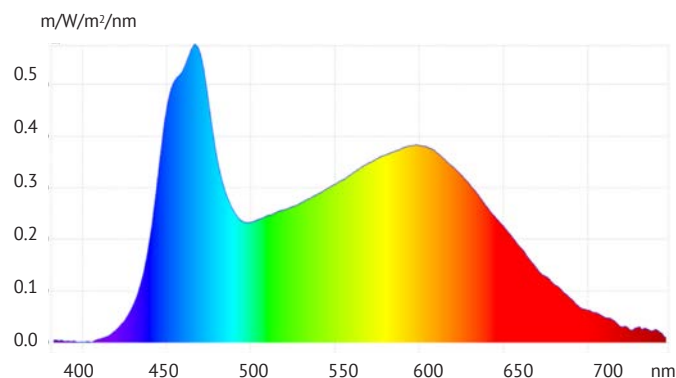
## HCL spectrum

Human Centric Lighting produces light with a substantial portion of light energy emitted in spectrum range from 455 to 490 nm.

The 3000 K spectrum – part of the HCL CCT management



The 5500K HCL spectrum - part of HCL CCT management



# How does it work?

The 455–490 nm range in the light spectrum is very important for regulating the circadian rhythm. The sleep-wake cycle is controlled by an internal body clock and regulated by this narrow light spectrum. This spectrum is absent in the light produced by incandescent or fluorescent lights.

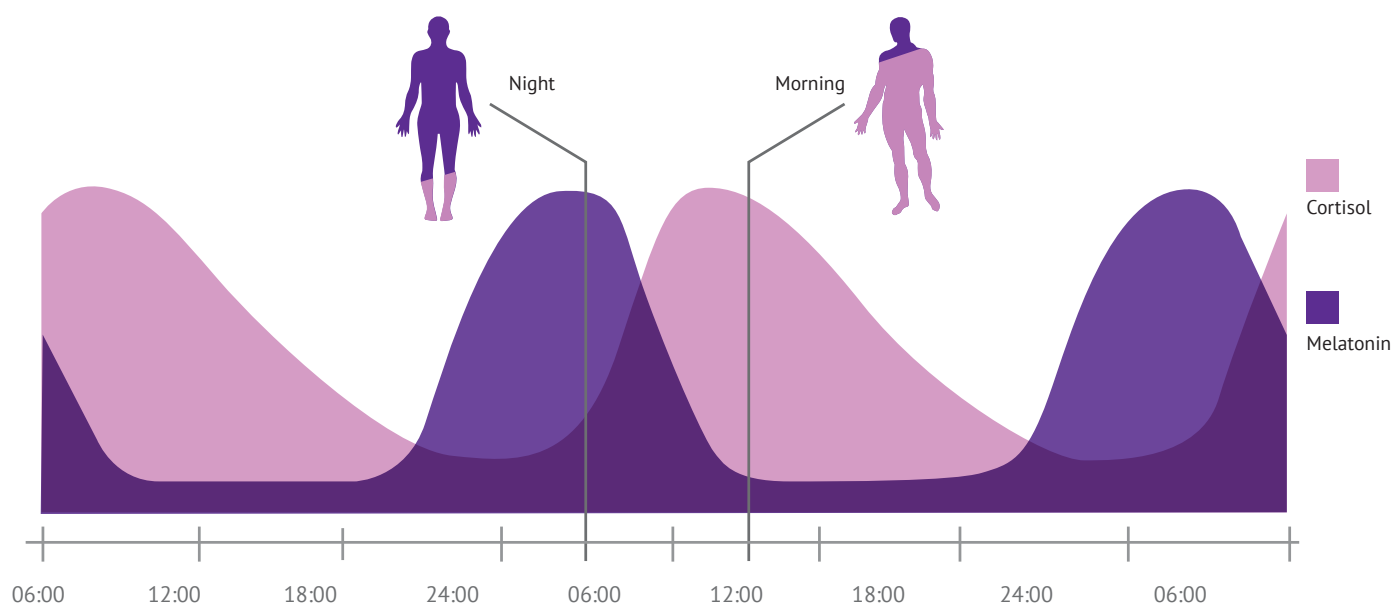
This suppresses the sleep hormone melatonin, and the body starts producing active hormones, such as cortisol and serotonin. The production continues as long as there is a sufficient amount of the bluish light.

Almost all living beings, including plants, animals and even certain bacteria, have an internal circadian rhythm governed by the body clock that depends on the daily changes of light and dark.

When the light stops containing this bluish spectrum in the evening and at night, the body starts producing the sleep hormone melatonin again and the active hormones recede.

At dawn, when the sky becomes bluish and the skylight enters the eye, the retina sends a signal through third receptor cells containing the molecule melanopsin, which is sensitive to light within these spectrum wavelengths. This signal goes to the hypothalamus that controls the biochemical, physiological and behavioural rhythms.

Hormones melatonin and cortisol play a vital role in our sleep-wake process.





# What are its advantages?

HCL can improve people's health, wellbeing and productivity.

## How?

A good sleep with sufficient melatonin secretion improves the immune defence, as well as regenerates other bodily functions and gets your body ready for the next day, for example for hormone biosynthesis and digestive functions.

Unfortunately, the circadian rhythm of most modern people is disrupted, and the negative effects have been proven to include increased rates of breast cancer among women and colon cancer among men, as well as increased risk for many other diseases.

Drowsiness in the second half of the day might not be as dangerous as other effects, but it still harms our alertness, which is crucial for better concentration and cognition, and subsequently the wellbeing and satisfaction of people.

A good HCL system will also improve visual conditions and illuminate your environment with no glare and no flicker.

## It is time for Human Centric Lighting



Circadian Rhythms



Mood



**SKY LUM Series**  
Human Centric Lighting



Improved Productivity



Energy Savings & Sustainability



Visual Acuity

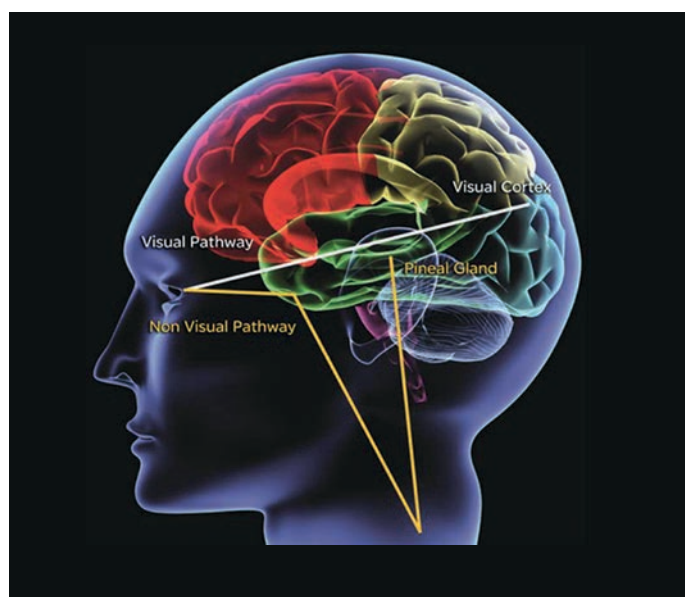
# What makes it different?

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HCL Lightning offers better illumination due to an additional part of the light spectrum and enables the combination of real light with the individual needs of individuals in specific environments.

HCL lighting positively affects users, as it naturally resembles a combination of the light spectrum that prevents biorhythm disorders and supports its natural activity. The blue light inhibits the production of melatonin and helps you stay awake throughout the day, while the warm white light creates a pleasant atmosphere and prepares you for sleep.

Thanks to a combination of short-wave and blue light, HCL lamps provide exceptional visibility to emotional comfort and support for biological functions.



Human Centric Lighting solution has a lot to do with the evolution of the human eye, and the optical system which also includes the non-image forming visual processing function.

# Any additional questions?

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