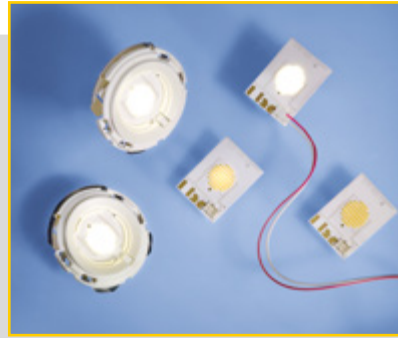


HUMAN CENTRIC LIGHTING

WITH LED SYSTEMS MADE BY VOSSLOH-SCHWABE



■ LIGHT THAT SEES YOU THROUGH THE DAY

The Circadian Rhythm

The circadian rhythm is our biological clock, which in turn is synchronised by the day-night cycle and the change between light and dark. It not only promotes restful sleep at night, but is also responsible for performance levels and physical wellbeing during the day.

VS LED systems actively support this biorhythm with chip-on-board modules (COB) that differ from conventional light sources by providing a dynamically adjustable light spectrum that specifically affects the human organism. The module can alternate between the following two light modes:

- Biodynamic lighting with adjustable colour temperatures that facilitates the suppression of melatonin.
- Lighting that does not influence the release of melatonin, with adjustable colour temperatures.

Vossloh-Schwabe's first biodynamic COB module is capable of emitting approx. 3,000 lm of light and first trials are currently under way at various hospitals and universities.

Typical Application Areas

- Nursing homes and residential care facilities for the elderly
- Private homes, hotels
- Kindergartens, schools, universities
- Offices and industrial workplaces

Key Factors for Biodynamic Lighting

- Spectral composition including wavelengths with a dominant effect
- Lighting times depending on the time of day
- Lighting duration and intensity
- Lighting situation (direct or indirect light)

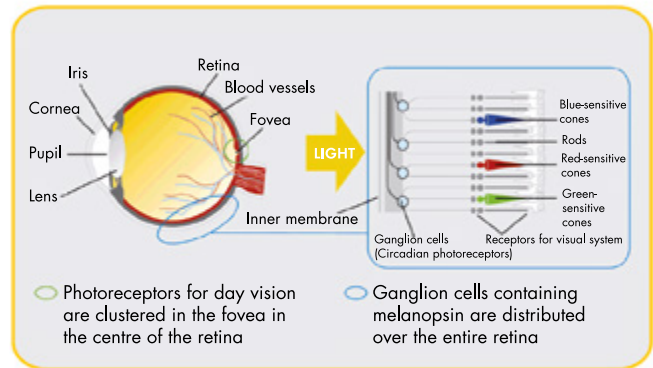
Human Centric Lighting – With LED Systems made by Vossloh-Schwabe

■ BIODYNAMIC LED LIGHTING

Light influences both physical and emotional wellbeing

Humans are diurnal beings whose performance levels are determined by the natural day-night cycle, in which regard daylight plays a decisive role in regulating bodily functions.

Special retinal ganglion cells serve as receptors for nonvisual light stimuli that influence health and wellbeing.

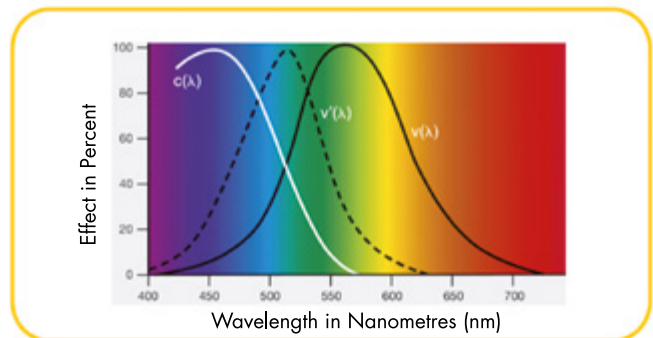


Sensitive Ganglion Cells (Source: licht.de)

Release of Melatonin

The effect of light on human biology is closely linked to the release of melatonin, which – among other things – serves to regulate our sleep-waking rhythm.

The share of blue light that is perceived is decisive for the release of melatonin. The link between wavelength and its biological effects is characterised by the $C(\lambda)$ curve.

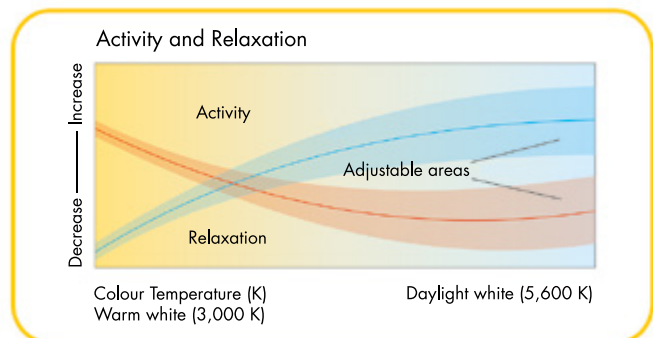


Various Wavelength Ranges (Source: licht.de)

Sleep quality, performance and wellbeing

This "light alarm" facilitates a gradual increase in activity during the morning hours. Light levels that are adjusted to suit different times of day with corresponding control of colour temperatures along the $C(\lambda)$ curve exert a positive influence on both wellbeing and performance, while also ensuring a good night's sleep.

Since our LED modules permit adjustments of this kind, they make a targeted contribution to activity levels and periods of relaxation.



Activity and Relaxation (Source: licht.de)

