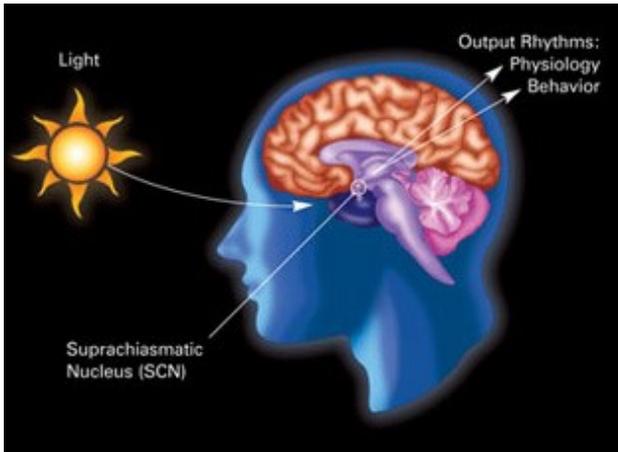


# This Month

We explain colour temperature and how it affects the working environment



Light is the most powerful mechanism to regulate human circadian rhythm, and the timing of light exposure during the course of a day is responsible for how the circadian clock is synchronized with the environment. Circadian rhythms are physical, mental and behavioural changes that follow a roughly 24-hour cycle, responding primarily to light and darkness in an organism's environment.

- Late-evening light exposure delays circadian rhythms, resulting in later sleep and wake times;
- Early-morning light exposure advances circadian rhythms, resulting in earlier sleep and wake times.



Until about 200 years ago, people spent 90% of their waking hours outdoors. Today people spend 90% of their time indoors with electric lighting. For human well-being, it is therefore important to try and imitate natural light in our work and home environments.

With an intelligent lighting solution, we can ensure that the biological clock keeps the pace, especially during the dark months and in rooms with limited access to natural light.

The light that reaches the eye is received by the light-sensitive neurons in the retina. Nerve cells called rods help us see in the dark. The cones on the other hand helps us to distinguish colours. In 2002 scientists discovered the so-called third receptor in the eye's retina. When exposed to light the production of the sleep hormone melatonin is blocked, which increases the secretion of alertness hormone cortisol. The third receptor controls our circadian rhythm and stress level.

Melatonin production therefore increases at low light levels and in the dark (at night), while cortisol production increases at high light levels (daytime). However it must not be too bright, too much cortisol can lead to stress. Too little light can make us slightly depressed, especially during the winter months.





Years ago medical care used light therapy to reduce the impact of seasonal-related depression. Offset circadian rhythm can be caused by lack of light during the day, such as during the winter. Other examples of treatments that exist in addition to light therapy are book reading, melatonin supplements, sleeping pills and exercise.

According to a report from US researchers, the light from electronic screens impairs sleep and memory. Anyone who uses a tablet in the evening will sleep later, sleep less and are more tired the next morning.

By designing good lighting systems, lighting can help to increase concentration, motivation and improve subjective and objective well-being. We know that bluish light activates and warm white light calms. The idea is to imitate the natural light, both in level and colour during the day. Cold, intense light with a high blue colour during working hours seem activating and invigorating and warm dimmed light after-hours help to relax in the evening.

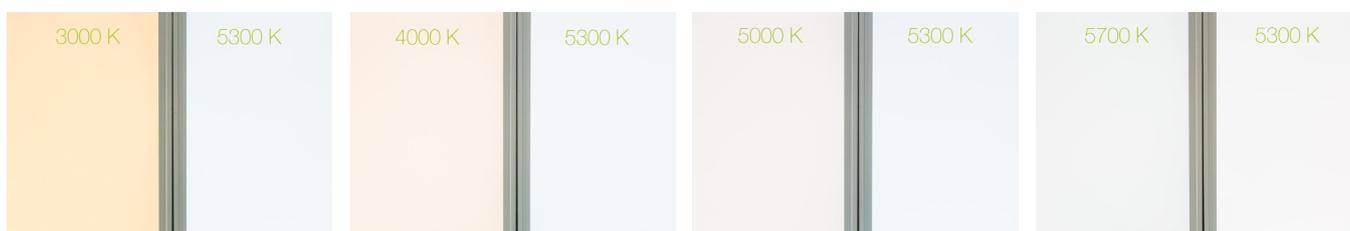
***Light quality, direction, and distribution in the room is of great importance.***

Investing in daylight LED will provide you with lighting that is refreshing and increases concentration in the office, shop floor and other areas in the workplace. LED lighting has the potential to change the colour temperature and intensity of the light so normal circadian rhythms can be simulated day or night.

By switching to an LED lighting solution you could have lower levels of warm light in the morning, increasing to higher light levels of day white until lunch and then slowly returning to lower levels of warm lighting in the evening.

Lighting technology has evolved rapidly in recent years, thanks to LED technology and its possibilities for control. This makes it easy to control lighting based on the amount of daylight and presence so that you use only the precise amount of light needed, where and when needed. Lighting controls can provide huge cost savings.

Replacing old lighting to modern technology is not just about bringing down electricity bills. The gains are much larger than that. Lighting influences how people feel and function. The right light in our work environments makes us fitter and more alert so we can do a better job while our well-being increases.



Colour comparison ( Left) Sky Panel 66 CTC—Colour Temperatures (Right) SkyLIGHT 66 ELP

The United Kingdom is in deep decarbonisation of its energy system. The country has decided to halve its greenhouse gas emissions from 1990 to 2027 and to cut them by a total of 80% by 2050. For this to happen, significant private-sector investment in new energy infrastructure is needed.

**Call us today to lower your electricity bills, increase your motivation and productivity and help to improve the UK's greenhouse gas emissions.**



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