

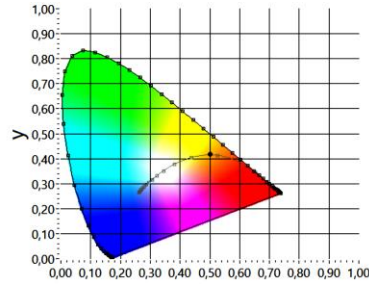
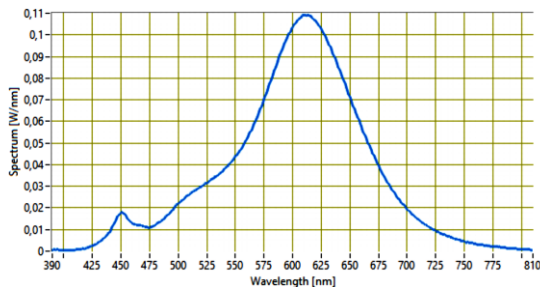
BIODYNAMIC LIGHT

Illumination with tunable colour temperature

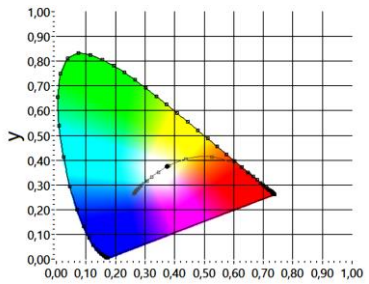
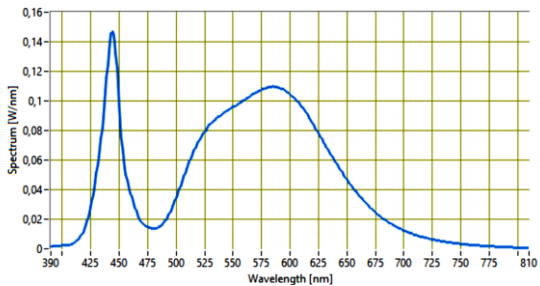
Lighting has important aspects as light synchronizes physiological and behavioral rhythms in our body and influences the biological clock which is located in the suprachiasmatic nucleus (SCN) in the brain

(source: <https://www.sciencedirect.com/science/article/pii/S0360132319300101>).

To follow the biological rhythm of the night, we have developed the system of biodynamic colour temperature adjustment. **Warm colour (2200K)** temperatures are associated with stimulation of the secretion of melatonin, also known as the sleep hormone. The SCN stimulates the production of sleep-wake hormones (cortisol and melatonin) and follows a circadian rhythm.



Cool colour (4000K) temperatures are associated with the inhibition of melatonin and stimulation of the production of cortisol. This hormone is responsible for alertness and activity during the day



The street luminaires emit a colour of 4000K, over the night the colour temperature is reduced to 2200K. Towards the morning the colour temperature returns to 4000K to improve traffic safety. We can implement this system for all types of our luminaires. No PWM is used for colour regulation.



BIODYNAMIC LIGHT

Illumination with tunable colour temperature

Illumination of streets in the residential area

In the period from 23:00 to 4:00 hour, street lighting illuminate with 2200K. Light level is reduced by approximately 30%.



Functionality of biodynamic light is custom made and can be implement most easily on LN and LP series of luminaires. Below is example of most common solution:

- LN Series lamp example
- 2 x 28 LED
- 50% of LEDs are 2200K, 50% of LEDs are 4000K

	First 3 days to validate all setting and time intervals	Until 22:00	22:00 – 23:00	23:00 – 4:00	4:00 – 5:00	5:00 – until morning
Lm	10.800 lm	6.470 lm	5.724 lm	4.347 lm	5.724 lm	6.470 lm
W	86 W	43 W	43 W	43 W	43 W	43 W
K	3000K	4000K	3000K	2200K	3000K	4000K



4000K



3000K



2200K



3000K



4000K

Illumination of pedestrian crossings

Street lighting emits with 4000K standardly.

The idea is that pedestrian crossing areas are illuminated with 6000K (in some town is also a policy that pedestrian crossing is illuminated with 2200K).

When there is a green light on a traffic light or when pedestrians press the button on the traffic light, street lamp switch from 4000K to 6000K. Thus, making the pedestrians stand out of other road areas and make them more visible.

The functionality of tunable colour temperature is custom made and can be implemented most easily on LN and LP series of luminaires. Below is an example of increased colour temperature:

- LN Series lamp example
- 2 x 28 LED
- 50% of LEDs are 4000K, 50% of LEDs are 6000K



	When the function is activated (green light or pressing of a button)	Normal operation when this function is not activated
Lm	6.793 lm	6.470 lm
W	43 W	43 W
K	6000K	4000K

Contact your sales representative for detailed information!