



LEDVANCE BIOLUX[®] FOCUSING ON PEOPLE WITH HUMAN CENTRIC LIGHTING



FEBRUARY 2020



GERMAN
INNO
VATION
AWARD '20
NOMINEE

MORE LIGHT, MORE POWER

DAYLIGHT DETERMINES OUR QUALITY OF LIFE

Artificial light has revolutionized our lives. We can work anywhere at any time – and of course that has made us more productive. But does it also make us healthier? For a healthy, efficient rhythm of life, we need the natural changes in daylight. Working indoors in poor light makes us tired, depressed and listless.



LACK OF LIGHT, AN UNDERESTIMATED PROBLEM



Sunny day
100,000 lux



Cloudy day
10,000 lux



In offices
500 lux

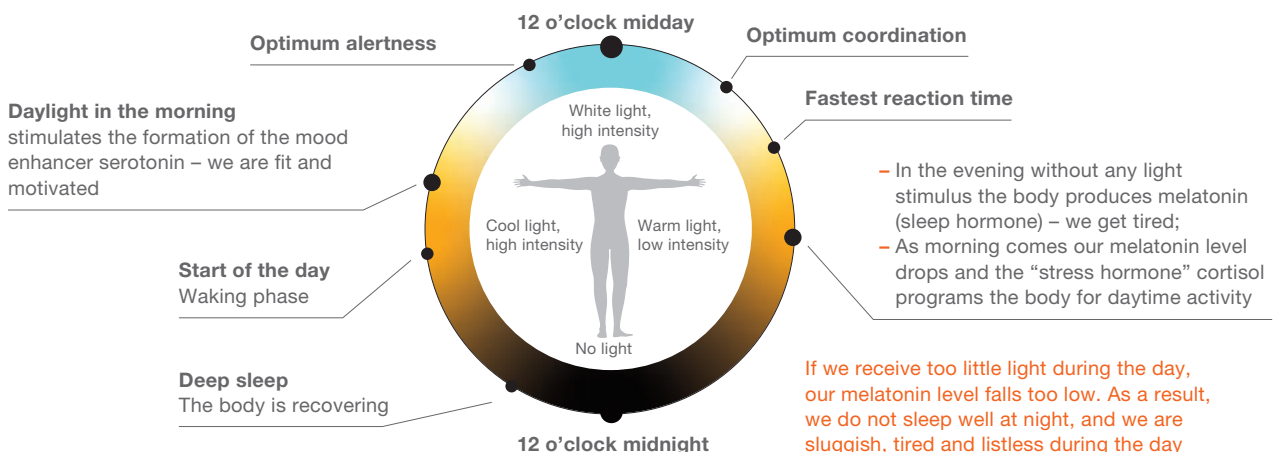
We spend on average **90 %** of our time indoors



MODERN LIVING CONDITIONS – POOR LIGHT QUALITY

Offices with little daylight, dark meeting rooms and artificial light until late at night – in our modern society, we are moving further and further away from our natural environment. Daylight is one of the most important sources of energy for our biological rhythm. A lack of daylight can cause serious disruption to our day/night rhythm (our “inner clock”), and massive degradation in our performance and overall well-being.

CIRCADIAN RHYTHM – THE BODY’S 24-HOUR CYCLE





HUMAN CENTRIC LIGHTING

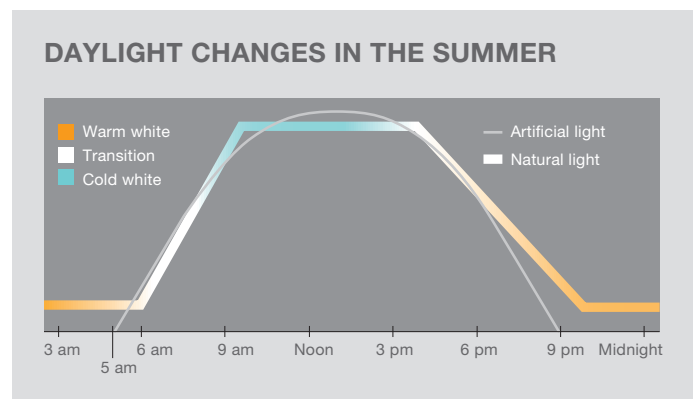
THE FOCUS ON PEOPLE IN LIGHTING DESIGN

Lighting solutions for modern work environments must be designed to promote creative thinking and high levels of concentration at desks, on computers and in factories. Human centric lighting places the focus on people and their need for natural light. Flexible, healthy and effective.

WHAT CAN HUMAN CENTRIC LIGHTING DO?

With the right light at the right time human centric lighting (HCL) creates a working environment that simulates the changes in natural daylight with its visual, biological and emotional effects. To achieve this, the luminaires are controlled by an intelligent control system with appropriate light profiles.

Through color temperatures and illuminance levels, human centric lighting (HCL) can simulate the course of natural daylight in such a way that it provides positive support for the human circadian rhythm (our "inner clock"). A neutral or cold white light color, for example, can energize in the morning. Warm white light is relaxing and ideal for the evening. HCL supports health, well-being and performance.



Source: <http://en.licht.de/>

HCL is based on the natural changes in daylight. This has a positive effect on people.

HCL HAS A POSITIVE IMPACT – ALSO ON THE PERFORMANCE OF YOUR COMPANY

HCL promotes and supports the most valuable resource you have: your employees. That is reflected in their productivity.



+ 2 HOURS
Time effectively gained per month



+ 1 YEAR
Employee loyalty



- 1 PERCENT
Absence/Illness

Source: At Kearney, Quantified Benefits of Human Centric Lighting, (2015)

THE BIOLUX® SYSTEM

NATURAL LIGHT WHATEVER THE TASK

The BIOLUX® HCL system from LEDVANCE automatically adapts artificial light to changes in daylight thanks to an intelligent, patent-pending algorithm – allowing users to choose the right dynamics for them at any time.

NATURALLY SMART!



INTELLIGENT AND POWERFUL WITH HCL

The heart of our innovative, biologically effective lighting system is the BIOLUX® HCL control unit. In combination with the BIOLUX® HCL Downlight and BIOLUX® HCL Panel luminaires, it always provides the right light at the right time of day. To adapt the system even more to your individual needs, you can also choose different lighting mood profiles, such as “RELAX” and “BOOST”.

A real highlight – the BIOLUX® HCL control unit is so easy to install and use:

- Wireless communication between the control unit and luminaires
- Easy switching between different lighting moods using an intuitive rotary switch
- Artificial light based on changes in natural light accurate for the day and location – with the best possible biological effect

These five HCL light profiles are available:

- **BOOST** Highest concentration for highly detailed and particularly demanding tasks
- **FOCUS** Enhanced concentration, e.g. in meetings
- **NATURAL** Default setting
- **CREATIVE** Creativity in workshops, e.g. in brainstorming sessions
- **RELAX** e.g. during breaks in meetings

The BIOLUX® system from LEDVANCE is ideal for single room solutions with up to 20 luminaires¹ such as meeting rooms or offices with little or no daylight.

¹ Higher number of luminaires on request

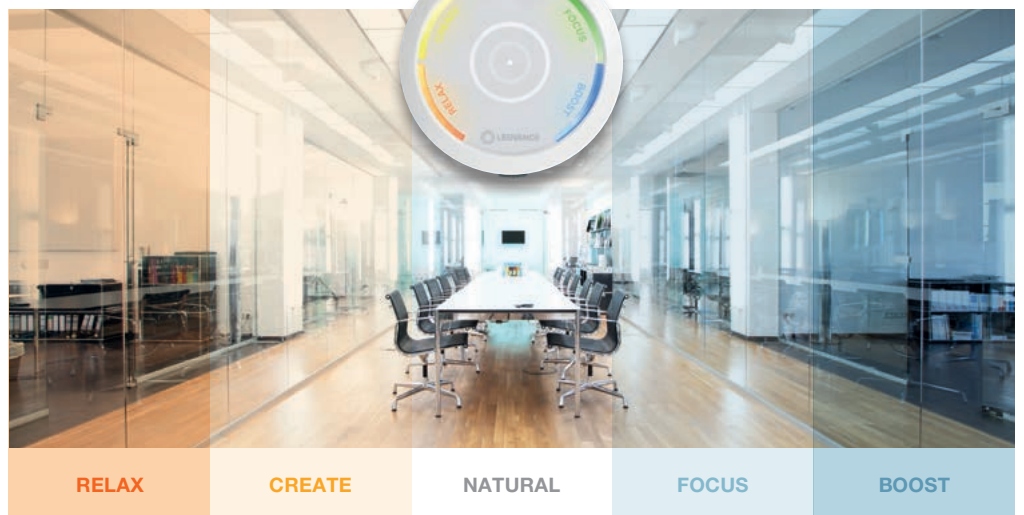
THROUGH THE DAY WITH HCL

Morning to midday/ after lunch:
bright, energizing cold white light with a high blue content (e.g. 6,500K at an illuminance of 450 lux at the eye).

Toward the evening:
direct warm white light with low blue content (e.g. 2,700 to 3,000 K) which helps the body relax and prepare for the night.

LEDVANCE BIOLUX® SYSTEM

THE FIVE LIGHT PROFILES





FAST & EASY

BIOLUX® – THE SMART ENTRY-LEVEL HCL SYSTEM

INSTALLATION – fast and easy thanks to wireless technology

- No control cables required for luminaires
- The control unit only needs to be connected to the power supply
- The HCL luminaires communicate wirelessly via ZigBee

SETUP – easy via a smartphone app

- Luminaires are registered and added to the system using a smartphone to scan a QR code
- No programming required
- Location and time automatically detected via the app

OPERATION – intuitive via the control unit

- Preprogrammed lighting profiles can be selected via a rotary switch on the control unit
- Lighting profiles adjusted automatically to your location and local time
- No programming

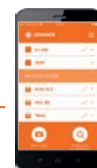
FUNCTION – independent of any light management systems (LMS) or cloud

- Autonomous system
- No complicated integration in an existing LMS
- No data storage, internet connection or cloud functions – privacy is protected

Electrical installer



Bluetooth



QUICK & EASY
Wireless setup
via an app

Control unit



zigbee

HCL luminaires



zigbee

User



Simple operation



PLAN, PLUG & PLAY

LIGHT AND SPACE – PLANNING FACTORS FOR HCL

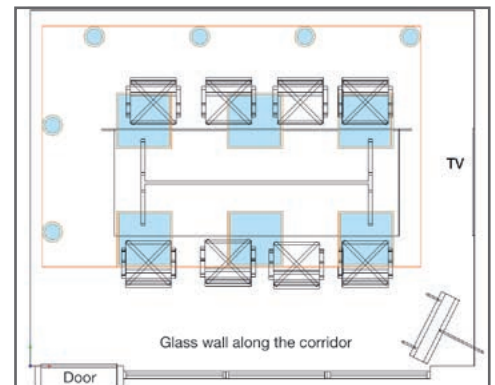
The ideal HCL indoor lighting concept takes into account both the visual and the non-visual effects of light. The aim is therefore not only to ensure good visibility but also to apply the biological properties of light to people. Which planning parameters need to be taken into account? How many luminaires do I need and how should they best be arranged?

PLANNING EXAMPLE FOR A MEETING ROOM

- Room definition:** 5.0 × 4.0 m = 20m² with little daylight
Lighting requirements: 450 lux at the eye, 900 lux on the work surface
- One panel with 4,000 lm is suitable for 4–5 m² (4–6 panels for 20 m²)
 - A maximum of one downlight is required per meter of wall space (not at the window, door or near computer screens)

The following are required:

- 1 BIOLUX® HCL Control Unit
- 3–6 BIOLUX® HCL Downlights (depending on the room layout) to illuminate the walls
- 6 BIOLUX® HCL Panels for large-area illumination from above



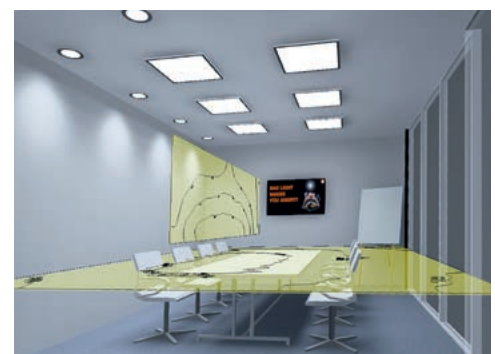
POSITIVE EFFECTS THROUGH INDIVIDUAL HCL CONCEPT

Short-term positive effects¹

- After only a short time, HCL lighting has a positive effect on brain functions – performance and concentration levels are boosted

Long-term positive effects²

- Supporting the circadian rhythm promotes well-being, performance and health
- Daylight simulation supports the sleep-wake cycle and therefore contributes to improved sleep, more rest and greater vitality
- Concentration and performance increase noticeably



Approximately 450 lux is achieved at the user's eye. Optimum support of the biological system for middle-aged users.

Source: ¹Journal of Physiology & Behaviour, Vandewalle& Dijk 2009 | ²<http://en.licht.de/>

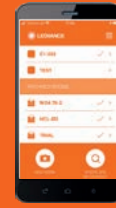
THE BIOLUX® RANGE



BIOLUX® HCL CONTROL UNIT

- Easy installation in standard flush-mounted boxes
- Automated startup and setup via the BIOLUX® HCL app
- Location and time are automatically detected
- No programming required
- Wireless communication between the control unit and the luminaires thanks to smart technology
- Intuitive control of up to 20 BIOLUX® HCL luminaires¹
- Easy selection of suitable lighting scenes for different work situations

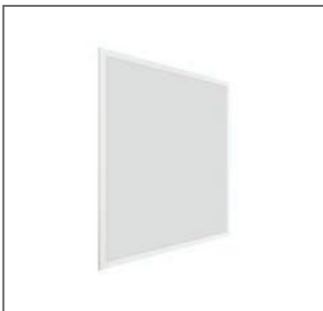
BIOLUX® HCL APP



Simply download the BIOLUX® HCL app to configure your luminaires with the control unit. Available for Apple or Android.



Article name	Product number (EAN)
NEW BIOLUX® HCL Control Unit ZB	4058075 308657



BIOLUX® HCL PANEL

- Individual HCL lighting solutions in conjunction with the BIOLUX® HCL control unit
- Biologically optimized lighting by adapting the artificial light to the changes in natural daylight
- Can support concentrated work
- Good anti-glare properties (UGR < 19)
- High color rendering index (R_a > 90)
- Ready for connection to the BIOLUX® HCL control unit
- Wireless communication between the control unit and luminaires via ZigBee protocol



Article name	Product number (EAN)	W	lm	lm/W	°	K	L x W [mm]
NEW BIOLUX® HCL PL 625 ZB 43W	4058075 364561	43	4000	95	80	2700 – 6500	625 x 625
NEW BIOLUX® HCL PL 600 ZB 43W	4058075 364547	43	4000	95	80	2700 – 6500	600 x 600



BIOLUX® HCL DOWNLIGHT

- Individual HCL lighting solutions in conjunction with the BIOLUX® HCL control unit
- Biologically optimized lighting by adapting the artificial light to the changes in natural daylight
- Can support concentrated work
- Good anti-glare properties (UGR < 19)
- High color rendering index (R_a > 90)
- Ready for connection to the BIOLUX® HCL control unit
- Wireless communication between the control unit and luminaires via ZigBee protocol



Article name	Product number (EAN)	W	lm	lm/W	°	K	∅ x H [mm]
NEW BIOLUX® HCL DL DN150 ZB 20W TW	4058075 400733	20	1800	90	60	2700 – 6500	175.4 x 89.9

¹ Higher number of lights on request | ² For precise terms and conditions go to www.ledvance.com/guarantee

ABOUT LEDVANCE

With offices in more than 50 countries and business activities in more than 140 countries, LEDVANCE is one of the world's leading general lighting providers for professional users and end consumers. Having emerged from the general lighting business of OSRAM GmbH, LEDVANCE offers a wide-ranging assortment of LED luminaires for a broad spectrum of application areas, intelligent lighting products for Smart Homes and Buildings, one of the largest LED lamps portfolios in the industry as well as traditional light sources.



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