



BRAINLIT ALVEN PLAYBOOK

Improving life with BioCentric Lighting™

 **BRAINLIT**

October 2021

A NOTE FROM OUR FOUNDER

TORD WINGREN



With more people eager to be all they can be, the interest in how we as humans can gain from spending time in daylight indoors increase rapidly. Tord Wingren, the man behind the patents of BrainLit's biocentric lighting and the founder of the company, is passionate about bringing light for health all over the world.

It all started in his parents cellar, where young Tord learned about transistors and computers from his father, working as a teacher in physics and mathematics. By using his father's ABC 80 computer, he gained insight in the mysteries of programming.

These early learnings have evolved into a life-long interest in the interface between man and machine and wireless transmission of speech and data, where his major achievements are specifying the wireless technology standard Bluetooth and later participating in establishing the wireless communications protocol Z-WAVE used for home automation.

Parallel to studying applied mathematics Tord cultivated an interest in medical technology and machine learning. Inspired by world class researchers in different fields of how light affects humans, he decided to leave his job to work full time on understanding the correlation between light and health and the importance of daylight vs the limitations and negative consequences of indoor lighting.

He came to the conclusion that there where room for innovation in the cross border between environmental psychology, physiology and medicine using LED and control system in a lighting system mimicking daylight indoors.

After filing several system patents on lighting, he in 2012 founded BrainLit to develop biocentric lighting in a system with light created by light recipes based on experience from research and collected data, analysed, processed and adjusted by an AI generator to the actual system configuration and individual needs.

Today BrainLit's Biocentric Lighting system is in use all over the world and Tord's dream of contributing to a world where everyone can have their share of the positive aspects of daylight, even if they don't spend time outdoors, is about to come true.





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BRAINLIT

INTRODUCTION

WHO WE ARE

In 2012 Tord Wingren - inventor of Bluetooth - founded BrainLit in Sweden. Together with a dedicated team he has since developed several solutions including BioCentric Lighting™ (BCL™), a self-learning system leveraging LED luminaires, light control systems, UI, sensors and BCL Light Recipes to optimally mimic the solar day for the individual, delivering the equivalent circadian boosting biological benefits of the sun and ultimately improving sleep - the preeminent pillar of human health.

Headquartered in Lund, Sweden, BrainLit has subsidiaries on three continents and growing. BrainLit is a health technology company, first-and-foremost, that focuses on light to deliver significant health and wellbeing improvements. By doing so, we help our users reduce operational costs at scale, minimize capital outlay, enhance productivity while reducing service errors, improve cognitive performance and increases overall health and safety for employees and guests alike.

It just so happens that when delivering light-for-health, BrainLit can equal and far exceed the practical elements of commoditized light systems, including energy savings and install cost parity, securing truly valuable indoor environments for our users.

OUR HISTORY

- 2012 BrainLit is founded by Tord Wingren who submits the first patent, the system patent, and becomes its first chairman of the board and CEO.
- 2013 Tord Wingren presents lectures of the BrainLit vision at exhibitions and conferences. Vinnova approves the company's joint application with Lund University for ICT-lighting, which becomes the first company project with revenue. BrainLit's first patent is registered, in the US.
- 2014 Nobel Prize in Physics is awarded for the invention of blue light diodes, which enables white LED light. BrainLit joins the Swedish Energy Agency in a project collaborating with a scientist team led by Thorbjörn Laike.
- 2015 The company now has five employees and BrainLit's scientific advisory board is formed with Klas Sjöberg as its chairman.
- 2016 The first hotel customer is secured. A study showing significant improvements in sleeping patterns of students who use BCL™ is published by at Lund University.
- 2017 The Nobel Prize in Physiology is awarded to the discoveries of molecular mechanisms controlling the circadian rhythm. BrainLit organizes lectures around the science which relates to the BCL system. BrainLit's project in the Neonatal Ward at Helsingborg Hospital becomes public. BrainLit secures its first large scale order from one of the leading property owners in Sweden.
- 2018 A commercial advisory board is formed. SIGMA Connectivity orders BCL™ and BrainLit moves into larger premises.
- 2019 BrainLit secures an additional round of capital to fund global expansion, bringing in Niclas Olsson as CEO, with a growing customer list with national and international accounts including Swedbank and Sony adopting BCL™. BrainLit sets up an affiliate in the US.
- 2020 A study is published by scientists at The Technical University of Denmark which proves a substantial improvement of students' study results in mathematics, when spending time in BCL™. Orders are secured with a leading health system in the US. To completed the ELVEN solutions commercially available on the market, BrainLit announces the imminent launch of additional technologies to support users through the SARS-CoV-2 "COVID-19" and beyond including UVEN to help users remediate against pathogens and ALVEN™, the world's first standalone solution to deliver personalized BCL™ which is easily deployed in home offices. BrainLit's R&D team continues to develop technologies that will positively impact human health into the future.

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HOW WE MAKE A DIFFERENCE WITH OUR MISSION

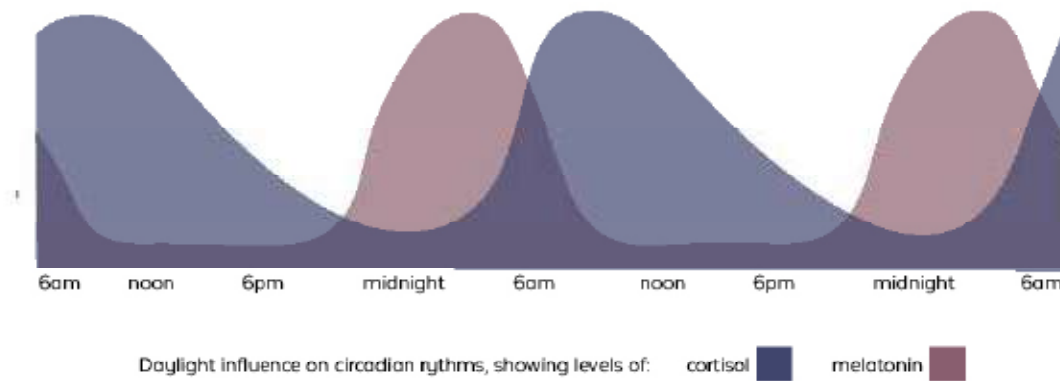
BrainLit is on a mission to establish BioCentric Lighting™ as a global standard for indoor lighting. Light affects normal human physiology in a profound way - such as sleep and growth - and a lack of access to daylight can have multiple negative health effects. By mimicking daylight and providing individually adapted lighting through our self-learning lighting system, BrainLit is able to stimulate real health and overall wellbeing. Through continuous development of our products and services in line with scientific research, we provide easy-to-use solution packages for the end user. We view our users as partners and together we are on a journey to create health, productivity, sustainability and prosperity.

BRAINLIT BY THE NUMBERS

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WHY IS BIOCENTRIC LIGHTING™ IMPORTANT?



Most people's curves of the steroid hormone cortisol and the sleep hormone melatonin when in their normal daily environment, based on a normal day with sunrise at 7am and sunset at 5.30pm. With our dynamic lighting the oscillation of the curves is larger, supporting alertness in daytime and sleep at night.

Our modern 24-hour society and working conditions are often in conflict with our intrinsic photobiology, and on average people spend 90% of their time indoors. More often than not, natural synchronization with daylight is lacking, and light indoors usually does not have the necessary properties to entrain the circadian rhythm. For example, a sunny day outside might give 100,000 lux, a cloudy day 10,000 lux, whereas indoor lighting commonly only provides 300 lux illuminance. Additionally, outside light shows a wide spectrum of colors while indoor lighting such as incandescent, fluorescent or halogen light sources only provide a limited color spectrum and are very much lacking in the blue wavelengths important for circadian entrainment. Unnatural exposure to light is also common at night, a time when the circadian disruptive effect of light exposure is highest, especially for light with shorter wavelengths and peak around 460–480 nm. Social life patterns are often separated from the solar day, which desynchronizes the biological rhythm and rhythm of life further.

A variation in life with social and work-related tasks further disrupts sleeping patterns. There are several factors in today's work/life schedule that can disrupt the circadian rhythm with negative health consequences, which are often overlooked:

- Too little daylight to synchronize with the solar day;
- Unnatural light exposure outside the solar day;
- Our social rhythm is out of sync with the solar day;
- Our social rhythm varies (shift work, late night out etc)

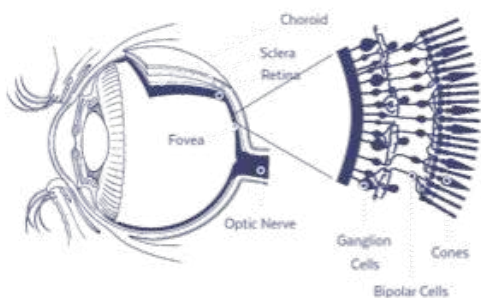
Clocks in different tissues adapt to circadian changes at a different rate causing misalignment between different body clocks thus the timing of hormone release, metabolism and other processes may become disturbed¹. Circadian misalignment is associated with a variety of health consequences such as cancer, metabolic syndrome with type 2 diabetes and obesity, cardiovascular disease, immune dysregulation, reproductive problems, mood disorders and learning deficits².

BCL™ environments directly counter the effects of circadian misalignment with cutting edge technology and the very best in medicinal research. As an intelligent lighting network solution that accurately mimics natural daylight indoors for human wellbeing, BCL™ uses algorithm based light recipes for both individuals and groups to both balance and sustain the circadian rhythm. With a Lux range of 7-3000 and with more than 95% CRI, BCL™ environments are proven to help restore, balance, and maintain the human sleep/wake cycle – resulting in better sleep and improved health and wellbeing. Benefits of a synchronized circadian rhythm through BCL™ include:

Increased Alertness: Daylight exerts an alerting effect on our brain. We spend more time indoors today than ever before and we receive less daylight than we biologically need. BioCentric Lighting™ stimulates the natural production of the activation hormone cortisol during the day by mimicking variations of daylight indoors, improving cognition, drive and creativity.

Better Sleep: Humans follow a sleep/wake cycle and light is a key factor in influencing this cycle – also called the circadian rhythm. A disrupted circadian rhythm affects us negatively in many aspects as noted. BCL™ helps balance the human circadian rhythm (aka biological clock), i.e., the balancing and timing of the production of previously mentioned cortisol – the activation hormone – as well as the sleep hormone melatonin. The outcome is a balanced circadian rhythm, which results in better sleep.

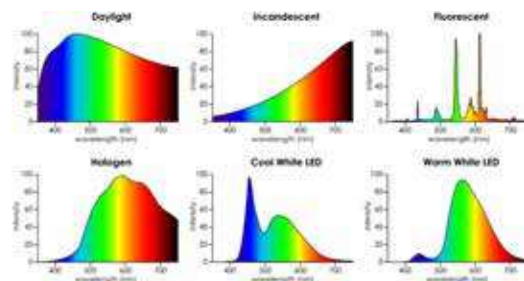
Stronger Immune System: By mimicking daylight indoors and balancing our sleep/wake cycle, BCL™ benefits many physiological processes vital to our health, including the immune system, metabolism, blood pressure, heart rate and body temperature.



The ganglion cells are photoreceptors in the retina acting as sensors for daylight.

The science behind BioCentric Lighting™ lies in the understanding of human anatomy and our responsiveness to light. Increasing amounts of evidence reiterate the importance of daylight for our health, wellbeing and sleep. Classical rod and cone photoreceptors that detect light in the eye, a new third type of photoreceptors, the intrinsic photoreceptive retinal ganglion cells (ipRGCs), were discovered in the early 2000's³. The ipRGCs are a sub-population of retinal ganglion cells that contain a photopigment called melanopsin⁴. Furthermore, the scientific community suggests that approximately 20% of our genome is light dependent and that 75% of light that influences our health is non-visual.

The ipRGCs convey information regarding the reset of the diurnal (circadian) clock and they are most sensitive to blue light i.e. light with shorter wavelength with a peak around 460- 480 nm¹. This means that light without the blue spectra only sparsely activate the ipRGCs. Daylight is rich in delivering light with full spectra including these blue wavelengths, but other light sources like incandescent bulbs, halogen lamps and fluorescent tubes only scarcely contain these important wavelengths. See figure below on spectral compositions:



Spectral composition and intensity of selected light.

WE ARE ALL EQUAL, BUT DIFFERENT!

While the exogenous environment is on millisecond close to 24 hours in duration, the endogenous human circadian rhythm is, among most of us, a little bit longer than 24 hours. As humans have evolved over thousands of years, so too have our genetic differences. Recent evidence supports the idea of a genetic variability of clock genes associated with individual differences in sleep and circadian physiology which is shown in preferred time to wake up and go to sleep⁹. This behavioural expression is called chronotype.

Recent evidence points to genetic variability of clock genes associated with individual differences in sleep patterns, circadian physiology and a non-visual response to light¹⁰. The circadian rhythm is dependent on light so that its entrainment does not fall out of phase¹¹. A small number of the human population have a circadian rhythm that is shorter than 24 hours and they need to prolong this rhythm to prevent falling out of phase with the solar day. This minority needs light that shifts the rhythm slightly later, whereas those with a rhythm longer than 24 hours, most of the human population, need to shorten the rhythm. One extreme, the “larks”, have a mental and physical performance that peaks in the first half of the day and these individuals prefer to wake early-morning. Conversely, the “owl” chronotype prefers a later schedule.


Our modern 24-hour society and working conditions are often in conflict with our intrinsic photobiology, and on average people spend 90% of their time indoors. More often than not, natural synchronization with daylight is lacking, and light indoors usually does not have the necessary properties to entrain the circadian rhythm. For example, a sunny day outside might give 100,000 lux, a cloudy day

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Social life patterns are often separated from the solar day, which desynchronizes the biological rhythm and rhythm of life further. A variation in life with social and work-related tasks further disrupts sleeping patterns. There are several factors in today's work/life schedule that can disrupt the circadian rhythm with negative health consequences, which are often overlooked:

- Too little daylight to synchronize with the solar day;
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- Our social rhythm varies (shift work, late night out etc)

Clocks in different tissues adapt to circadian changes at a different rate causing misalignment between different body clocks thus the timing of hormone release, metabolism and other processes may become disturbed¹. Circadian misalignment is associated with a variety of health consequences such as cancer, metabolic syndrome with type 2 diabetes and obesity, cardiovascular disease, immune dysregulation, reproductive problems, mood disorders and learning deficits².



BCL™ environments directly counter the effects of circadian misalignment with cutting edge technology and the very best in medicinal research. As an intelligent lighting network solution that accurately mimics natural daylight indoors for human wellbeing, BCL™ uses algorithm based light recipes for both individuals and groups to both balance and sustain the circadian rhythm.

With a Lux range of 7-3000 and with more than 95% CRI, BCL™ environments are proven to help restore, balance, and maintain the human sleep/wake cycle – resulting in better sleep and improved health and wellbeing. Benefits of a synchronized circadian rhythm through BCL™ include:

Increased alertness

Daylight exerts an alerting effect on our brain. We spend more time indoors today than ever before and we receive less daylight than we biologically need. BioCentric Lighting™ stimulates the natural production of the activation hormone cortisol during the day by mimicking variations of daylight indoors, improving cognition, drive and creativity.

Better sleep

Humans follow a sleep/wake cycle and light is a key factor in influencing this cycle – also called the circadian rhythm. A disrupted circadian rhythm affects us negatively in many aspects as noted. BCL™ helps balance the human circadian rhythm (aka biological clock), i.e., the balancing and timing of the production of previously mentioned cortisol – the activation hormone – as well as the sleep hormone melatonin. The outcome is a balanced circadian rhythm, which results in better sleep.

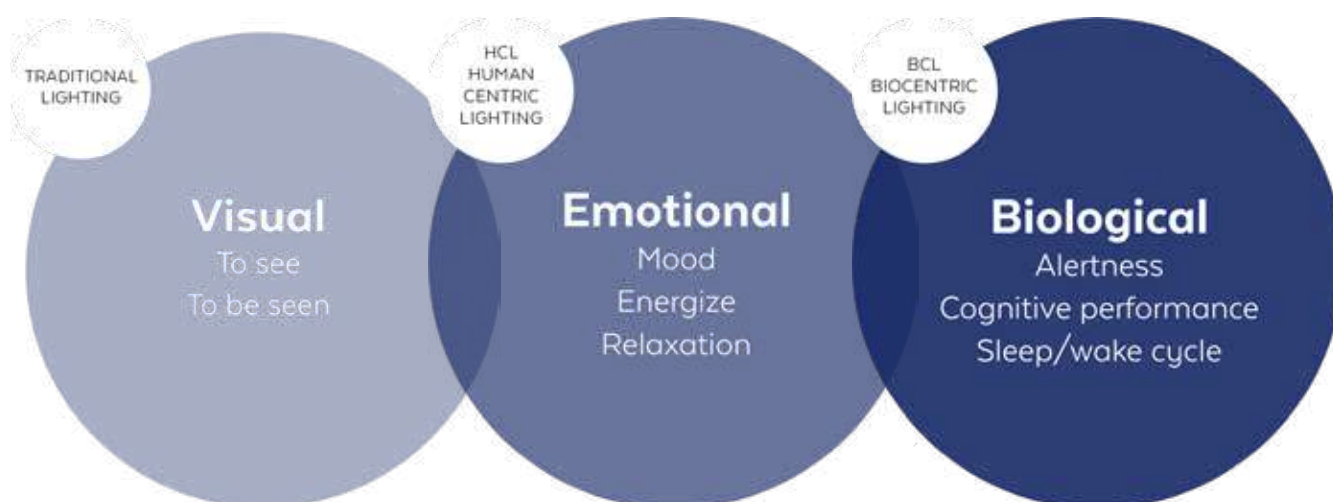
Stronger Immune System

By mimicking daylight indoors and balancing our sleep/wake cycle, BCL™ benefits many physiological processes vital to our health, including the immune system, metabolism, blood pressure, heart rate and body temperature.

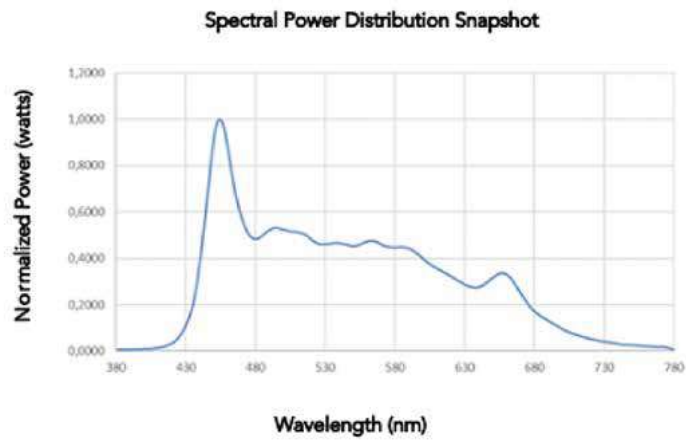
BIOCENTRIC LIGHTING™ DELIVERY

Light affects us in three ways: Visually; Emotionally; and Biologically. The visual effect of light is what is delivered by traditional light systems and which affects what we see and how are seen. The emotional dimension has to do with how light affects our mood, energy and state of mind. Interest in the third dimension, how we are biologically affected by light, is rapidly increasing for reasons noted earlier.

BioCentric Lighting™ addresses all three dimensions of light. Our system is flexible and modular to meet different needs of both light for sight and health, matching site, situation, activity and desired outcome.



Conclusion: BCL™ is the only technology that covers all required dimensions of light.



A snapshot of BCL™ SPD is illustrated above, showing high circadian impact.

Modern LED technology has introduced the possibility to adapt color saturation and brightness. Terms such as “tunable white” and “dynamic white” are often used within the lighting industry. The subsequent effect lighting has on health has led to the birth of a new term; Human Centric Lighting (HCL). However, to succeed in creating healthy lighting environments, both the LED technology and basic anatomy need to be considered.

At BrainLit we use luminaries, peripherals and control systems that adapt to real human needs instead of present standards. This is what we call BioCentric Lighting™. After years of extensive scientific research, we have produced light environments that cater to individual needs across critical dimensions such as Intensity, Spectra, Wavelength, Duration, and Time. Traditional lighting sources fail to regulate the circadian rhythm due to insufficient temperature, brightness or dynamic changes.

BrainLit offers a range of system packages that deliver BCL™ and ancillary services, that are designed with the users existing space and future goals in mind.



LIGHT IN AN INDUSTRIAL SETTING

Light can improve attention and cognition

Light and especially blue light exert an alerting effect on the human brain. The physiology behind this was understood only 20 years ago with the discovery of a new type of photoreceptor in the retina, a subpopulation of retinal ganglion cells (intra photoreceptive retinal ganglion cells ipRGCs), activated primarily by blue light¹. When blue light hits the eye the ipRGCs project through the optic nerve and affect non-visual forming areas in the brain important for alertness and cognition such as the prefrontal cortex and the hippocampal area in the midbrain².

MRI- experiments illustrating increased activity in these specific brain regions have shown that light, and especially blue light, can modulate brain responses already after a few minutes exposure³.

Lighting as a tool at the workplace

Industrial workplaces require numerous solutions for different locations with specialized layouts. The lighting needs to provide correct lighting allowing personnel to focus on their task and retain energy, despite potentially unsociable hours of work. Dynamic lighting system can be adapted to the special requirements of the industrial sector, providing correct lighting conditions and safe environments.

At times, tasks may require a much higher level of concentration and wakefulness. In these cases, the alerting effect of light can be used in “light showers” as a mean to boost attention and alertness.

In an experiment with 21 individuals, 1 hour exposure to 40 lx blue light (470 nm) was found to be as effective as 240 mg caffeine in a reaction test and the blue light outperformed caffeine when distractions were presented⁴. In another study acute wake-promoting effects and faster reaction times was seen with blue enriched light in the first half of the day (8-11 am) than with warm-white light from incandescent bulbs.

Some of these effects even persisted until the evening. The blue- enriched light was also shown to be protective against detrimental melatonin-suppressing light at night⁵.

1. Hattar S, Liao HW, Takao M, Berson DM, Yau KW Melanopsin-containing retinal ganglion cells: architecture, projections, and intrinsic photosensitivity *Science* (2002) Feb 8;295(5557):1065-70

2. Alkozei A, Smith R, Dailey NS, Bajaj S, Killgore WDS. Acute exposure to blue wavelength light during memory consolidation improves verbal memory performance *PLoS One* (2017) Sep 18;12(9):e0184884

3. Vandewalle G, Maquet P, Dijk DJ Light as a modulator of cognitive brain function. *Trends Cogn Sci* (2009) Oct;13(10):429-38

4. Beaven CM, Ekström J A comparison of blue light and caffeine effects on cognitive function and alertness in humans *PLoS One* (2013) Oct 7;8(10):e76707

5. Münch M, Nowozin C, Regente J, Bes F, De Zeeuw J, Hädel S, Wahnschaffe A, Kunz D Blue-Enriched Morning Light as a Countermeasure to Light at the Wrong Time: Effects on Cognition, Sleepiness, Sleep, and Circadian Phase *Neuropsychobiology*. (2016);74(4):207-218

BRAINLIT'S VALUE

Whether deployed in offices, conference rooms, production areas or control-rooms, BrainLit environments are valuable virtually anywhere people operate indoors.

Ultimately, BrainLit technologies are designed to be future proof. We achieve this by being obsessed with science and utilizing highly specified, long-life hardware that can replicate any light environment required. Whether it a particular Light Scene the user is looking to recreate, or there is a future pathogen that requires a different dose of UV-C disinfection vs. SARS-CoV-2 "COVID-19", with user-friendly software updates, these reconfigurations are easily achieved and totally non-disruptive to the operating environment.

When investing in BioCentric Lighting™ above and beyond traditional LED or Human Centric Lighting systems, you do so first and foremost as a health technology tool to drive operational efficiency while improving lives. However, BrainLit's focus is not only to provide our users with benefits in health and overall wellbeing, but also to provide significantly improved business outcomes and it just so happens that BCL™ also delivers the practical functionality, energy savings and install cost parity of commoditized LED systems.

As such, our users have all determined to evaluate BCL™ as a stand-alone high value technology, achieving tremendous KPI improvements across the organization - typical ROI of 3 to 24 months - and significant competitive advantage against peers who opted for traditional LED environments before uncovering BCL's true potential.



A close-up, high-resolution photograph of a human eye. The iris is a vibrant, golden-brown color with intricate, radiating patterns. In the center of the pupil, there is a clear reflection of the Earth, showing continents and oceans. The surrounding skin and eyelashes are visible, adding to the detail of the image. The lighting is soft, highlighting the texture of the eye and the surrounding skin.

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VALIDATED BY SCIENCE

BCL is fundamentally designed from the deep understanding of the circadian system in human beings by our scientific board, with professors in medicine, environmental psychology, psychiatry and physics as prominent members. Each member is in place to ensure that BrainLit continues to reflect the latest research and understanding of human physiology.



Lennart Minthon
Member of the Scientific Board

-
PhD. Professor at Lund University, MultiPark: Multidisciplinary research on Alzheimer's disease. Founder of Minneskliniken. Co-founder of companies focussing on dementia care



Madeleine Selvander
Member of the Scientific Board

-
PhD. Ophthalmologist. Former senior consultant at Skåne University Hospital. Head of private ophthalmology clinic Sundets Ögonläkare.



Thorbjörn Laike
Member of the Scientific Board

-
PhD. Professor of Environmental Psychology at the Department of Architecture and Built Environment, Lund University.



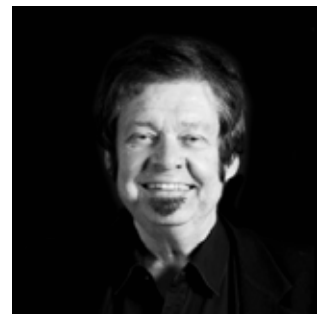
Tord Wingren
Founder, Strategy & Partnerships

-
More than 30 years' experience within IT and communication industry. Pioneered Bluetooth by writing its first specification. Innovator and patent initiator of BrainLit's basic patents. M.Sc Electrical Engineering



Klas Sjöberg
Chairman of the Scientific Board

-
PhD. Consultant and Associate Professor at the Gastro Clinic at Skåne University Hospital.



Lars Samuelson
Member of the Scientific Board

-
PhD. Professor of Semiconductor Electronics at Lund University. Awarded the "Einstein Professorship" by the Chinese Academy of Sciences. Appointed Fellow of the American Physical Society

SUSTAINABILITY IS NATURAL

Our approach to sustainability is as straightforward as everything else we do – do good and good things will happen.

To be more specific, we agree with the United Nations 17 Sustainable Development Goals (also referred to as Agenda 2030), following a set of guidelines to help us act in sustainable ways when it comes to the social, economic and climate aspects of creating growth in responsible ways.

We do this by repeatedly questioning how and why we do what we do, in order to challenge ourselves and our customers to work in more efficient and sustainable ways. Overall, we focus our sustainable efforts on areas where we really can make a difference:

- It is estimated that 15-20% of global electricity consumption is used with the purpose to generate lighting, from which less than 10% of the energy ends up in useful light. This is caused by bad conversions or useless lighting called “light pollution”. In addition, poor lighting environments with flickering and low intensity luminaires lead to high maintenance costs and negative health effects on humans. By continuously improving energy efficiency in the products and systems we sell will generate savings for our customers and preserve our climate. One way to achieve this is to keep improving our luminaires, being energy efficient and virtually flicker free, but also delivering high output beyond the expected life span of 50,000 hours, thanks to premium quality of components.
- Reducing our carbon footprint by use of less and more climate friendly material in what we sell together with how it’s being produced, packed and transported. Ways of achieving this is i.e. to increase the number of drivers in

each package to reduce packaging together with incoming deliveries by train when possible to keep freight emissions low.

Saving energy in how we run our operations by efficient use of office and warehouse spacing, travelling and entertaining customers. One way to achieve this is to work with partners using their existing channels to sell, distribute and install our system and products worldwide.

- Saving energy in how we run our operations by efficient use of office and warehouse spacing, travelling and entertaining customers. One way to achieve this is to work with partners using their existing channels to sell, distribute and install our system and products worldwide.
- Following our Code of Conduct, requiring our supply chain partners to demonstrate similar standards in their operations, providing innovative connected solutions that protect the privacy and data security of our customers, and continuing to operate with the leadership of a diverse team that is all measured by success.
- Increasing associate engagement by contributing to charitable activities, continuing to drive our focus on health and safety, and improving development and recognition opportunities. One way of handling the security focus in conjunction with virus issues is to encourage homework and having routines supported by a technical platform enabling meetings over the internet.

BrainLit aims to continue implementing and improving ways of working in order to further evolve both our customers’ and our sustainable footprint.



BRAINLIT ECOSYSTEM

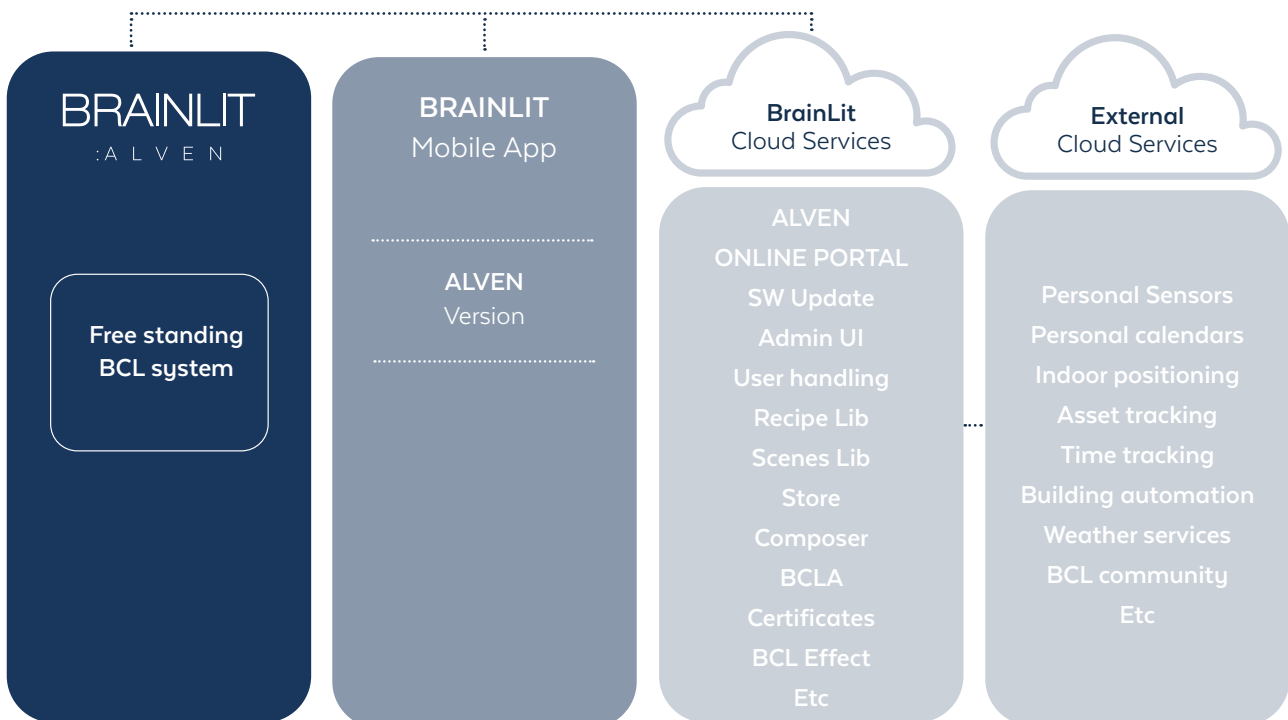
BrainLit’s Ecosystem is the control center that underpins the delivery of BioCentric Lighting™ and BioCentric™ Disinfection solutions. This collective platform – leveraged in part or whole – enables users to fully immerse themselves in any BrainLit environment. Whether it is the installer, user or BrainLit themselves (with user permission) accessing the system to deliver remote support, optimize light recipes, configure a BCL network, monitor light output, personalize user interaction or integrate with third-party systems via open API, the Ecosystem unlocks these capabilities.

The Ecosystem comprises of four independent technology pillars:

- BrainLit System Package
- BrainLit Mobile Application
- BrainLit Cloud Services
- External Systems (third-party)

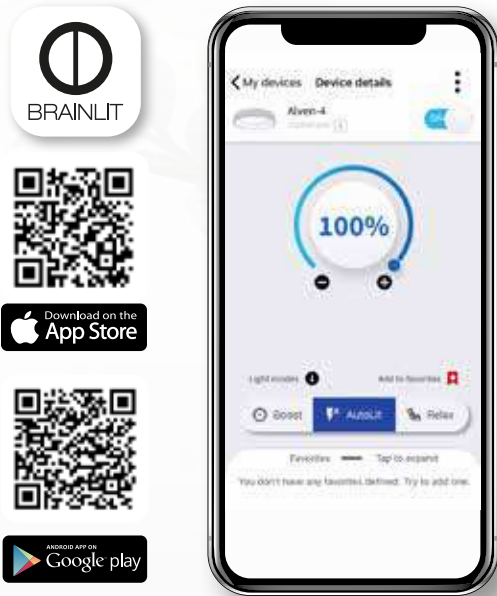
THE BRAINLIT ALVEN ECO SYSTEM

EXTERNAL SYSTEM



BrainLit Mobile Application

The BrainLit Mobile Application is an ever-developing user interface tool, that provides additional interaction between the BrainLit Ecosystem and the user. The app can delivery functionality for the user across the ELVEN, ALVEN and UVEN System Packages.

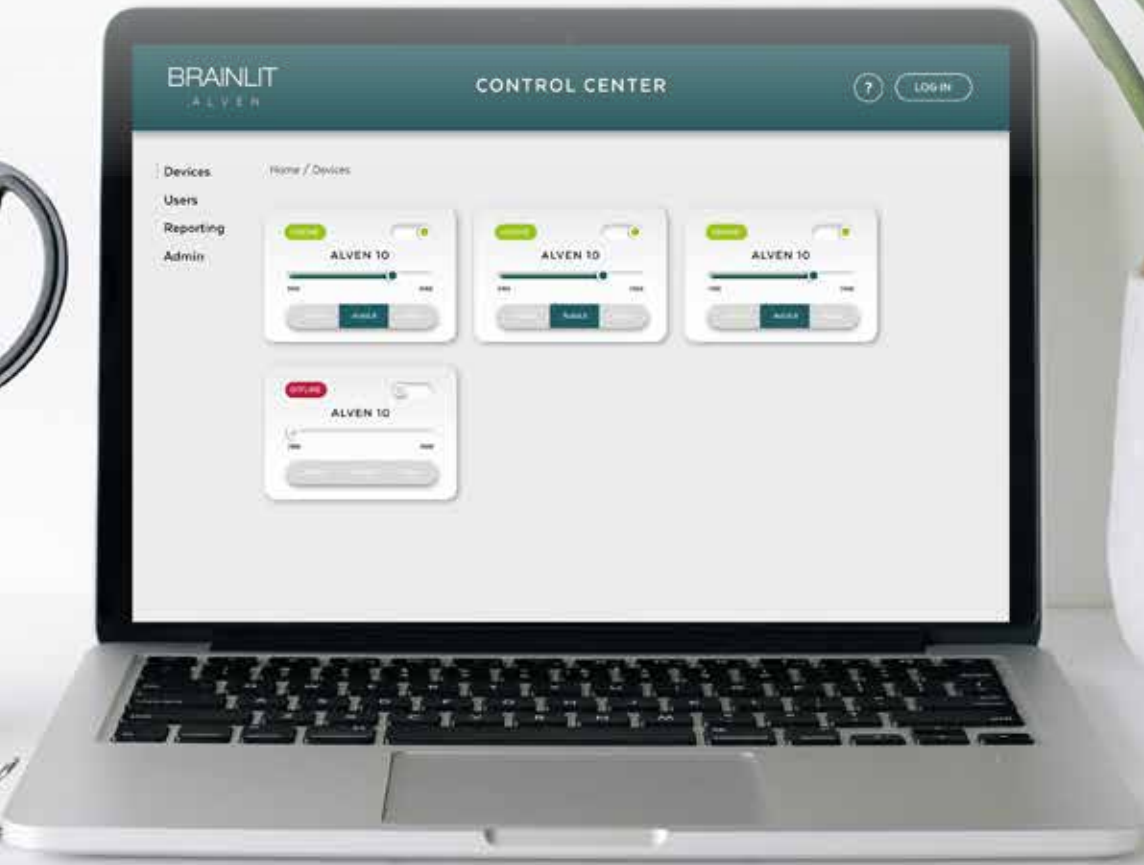


BrainLit Online Portal

For corporate users managing a fleet of BrainLit Alvens, the BrainLit Online Portal provides user management, device control functionality, and statistical reporting as is available in the BrainLit app but through a web interface available from any internet-connected device. Staff can manage Alven remotely, generate user reports, and add new users quickly and easily through the intuitive interface.

External Services

The BrainLit Cloud can retrieve data from external systems via secure APIs, which feeds back into the BCL™ Ecosystem. For example, data from building automation systems, indoor positioning tools, personal calendars, personal sensors, weather services and the like. Some of these services could also be connected directly to a local BrainLit System Package. BrainLit Cloud services can export data through well-defined and secure APIs to for external systems to utilize depending on service level, typical data would be used for BCL statistics, building automation, asset tracking, automated time management, redirecting user to BCL community, etc



KEY SEGMENTS



CORPORATE



EDUCATION



HEALTHCARE



SPORTS



HOSPITALITY



HOME OFFICE

BrainLit Alven™:

A connected, free-standing, multi-user LED luminaire that delivers dynamic, personal lighting to support health and well-being.

BrainLit Alven™ provides an exceptional lighting environment by leveraging BrainLit's patented BioCentric Lighting™ System. BrainLit Alven™ creates an optimal and personal natural lighting environment, with proper variations of light intensity and color at the right time of the day, to synchronize the body's circadian rhythm and the production of the necessary hormones (e.g., cortisol and melatonin) to keep your body system in balance. This helps you feel more energized, maintain focus, and perform at your very best.

Light based on individual need

The different light settings of BrainLit Alven™ can be used throughout the day to maintain an individual's natural circadian rhythm, to receive an energy boost before an important meeting, or to unwind towards the end of a busy day.

Multi-user system

BrainLit Alven™ is a multi-user system, so multiple employees can create accounts, download the BrainLit app, and enjoy the benefit of BioCentric Lighting™ by checking in or checking out of the system.

Future-proof solution

BrainLit Alven™ can also be connected to the BrainLit cloud, which means your BrainLit Alven™ can receive software updates remotely and can always feature our latest findings in light science technology.

BrainLit App and Online Portal

Download the BrainLit app or log onto the Online Portal to control your BrainLit Alven™ and to further personalize your BioCentric Lighting™ experience.



PRODUCT SPECIFICATION

BCL FREE STANDING LUMINAIRE BRAINLIT ALVEN™

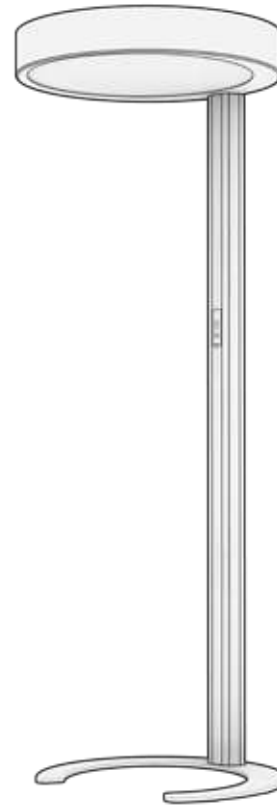
PRODUCT DESCRIPTION

BrainLit Alven is the world’s first personal, connected and dynamic BioCentric Lighting™ system in a free-standing LED luminaire. It provides an exceptional lighting environment by leveraging BrainLit’s patented BioCentric Lighting™ System.

BrainLit Alven creates an optimal and personal natural lighting environment, with proper variations of light intensity and color at the right time of the day, to synchronize the body’s circadian rhythm and the production of the necessary hormones (e.g., cortisol and melatonin) to keep your body system in balance. This helps you feel more energized, maintain focus, and perform at your very best.

By dynamically adjusting its color temperature anywhere between cold white (6500K) to warm white (2700K), BrainLit Alven transforms the ambience of its surroundings while promoting personal circadian alignment.

Alven’s AutoLit recipe provides optimal light conditions for aligning your circadian rhythm. The light conditions can be further adjusted through the BrainLit app or Online Portal.



MEASUREMENTS / PACKAGING

Weight (kg)	22
Size LxWxH (mm)	680x709x1912
Box quantity	3
Boxed size LxWxH (mm)	1: 723x723x163, 10,3 kg 2: 1978x167x107, 7,4 kg 3: 690x609x10, 10,3 kg
Boxed weight (kg)	28

MARKET AVAILABILITY

EMEA	EU
AMERICAS	US/Canada
APAC	Selected markets

AREAS OF USE (examples)

Healthcare	Wards-Long Term Care / Dialysis Centres
Residential	Nursing Homes / Elderly Care / Luxury Room Settings
Office	Offices / Home Offices / Meetings & Seminar Rooms
Hospitality	Customer Interaction Centres / Receptions / Terminals / Conference Centres / Lounges / Premium Room Settings
Education	Conference Centres / Classrooms
Industrial	Control Rooms



PRODUCT TECHNICAL SPECIFICATION

LIGHT PROPERTIES

Light source type	Optimized LED
LED color temperature	6500K-2700K
Color rendering	CRI Ra >90
Lumen output	6400lm
Beam angle	110°
Flicker handling	Compliant with IEEE1789
Motion detection	PIR

POWER PROPERTIES

Maximum rated power	120W
Supply voltage range	120-250V
Supply power frequency	50/60Hz
Efficiency LED driver	>90 %
Power supply	Wall plug

MECHANICAL PROPERTIES

Colors	White matte
Material	Aluminum + PMMA
Lifespan	50 000 hours
Configuration	Floor standing, backlit LED
IP rating	20 (IP41 with accessory)
Certifications	CE, FCC

System Security

Many measures have been taken to make the BrainLit Ecosystem as “hacker proof” as possible, with security across all critical components that BrainLit controls within the Ecosystem.

Hardware Security:

Hardware interfaces not used in production versions of the BCL™ Hardware units shall be disabled.

Software Security:

All software packages for the BCL™ Ecosystem are signed. Only signed packages are handled within the system, unsigned packages are discarded. This is required for ALL types of Software packages such as logs, data points, recipes, scenes, configuration files, software update files and the like. Software interfaces not used in production versions of the BCL™ Ecosystem shall be disabled.

Personal Data Security

All personal data handling where applicable is in compliance with GDPR and encrypted following the software security requirements for software packages.

Product Information

Product Warranty:

BrainLit warrants that the Products upon delivery are (i) in conformance with the product specifications set forth in the relevant Sales Agreement and (ii) are free from defects in material and workmanship. In case a buyer wants to make a claim for non-visible damage or non-conformities, notice must be served within seven (7) days after the buyer in question having become aware of such damage or non-conformity and in all cases within five (5) years from delivery;

Product Compliance:

All products that are commercially available have been tested and validated by recognized third-party bodies.

Product Insurance:

BrainLit holds the necessary commercially reasonable levels of insurance.



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