



Chroma Zenit

Psychiatric Circadian Lighting

Reduced hospitalization, less medication,
and improved treatment

chromaviso
Lighting · Evidence · Health

Best Practice from +130 hospitals and institutions



The evidence-based circadian lighting solution Chroma Zenit, is used with great effectiveness in psychiatry, where the light is tailored to individual needs of stimulation and contributes to supporting patient treatment. At the same time, Chroma Zenit creates natural, automatic, and seamless transitions in light throughout the day, generating a relaxing and pleasant atmosphere for patients, staff, and family members.

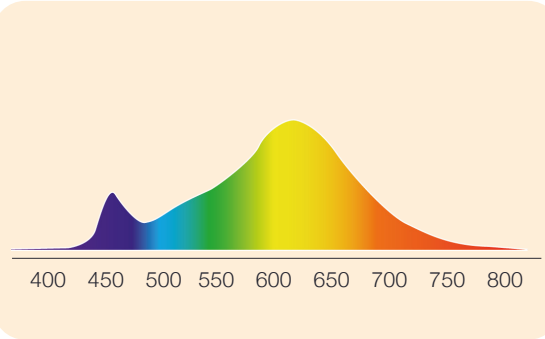
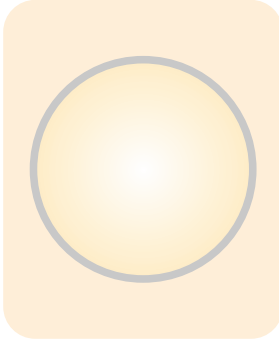
Chroma Zenit circadian lighting is recommended by doctors and scientists as a non-pharmacological intervention and an active part of the treatment for psychiatric diagnoses.

- Chroma Zenit circadian lighting treats psychiatric diagnoses and is an equivalent alternative to medication.
- Chroma Zenit circadian lighting reduces hospitalization time by up to 30%.
- Patients have a positive response to the light and treatment.
- Chroma Zenit circadian lighting has a positive impact on the staff's rate of sick leave, well-being, circadian rhythm, and work environment
- Chroma Zenit is based on diagnosis-specific light protocols for depression, bipolar disorder, and rehabilitation, using a precise dosage of light as treatment method.
- Chroma Zenit circadian lighting can include lightzones for therapy, sensory stimulation, and activities.
- A reliable solution consisting of technology and components of the highest quality.
- High user satisfaction - documented up to 97%



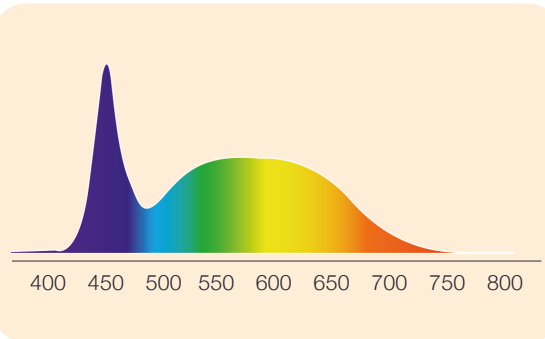
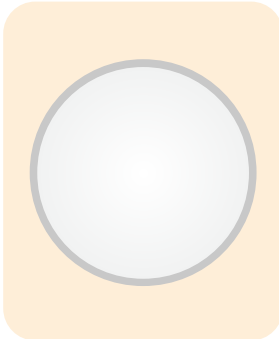
How the documented effect is achieved

Morning light: 2700 kelvin



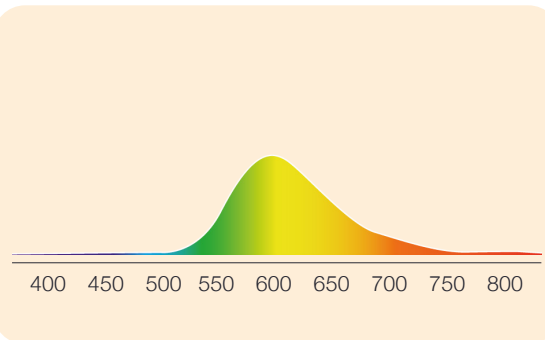
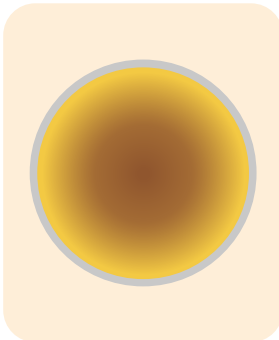
- Wake and sleep preparation make the body ready to get up/sleep
- Natural, slow transitions with sliding fades on and off requires stepless dimming completely down to 0.1%
- Flicker-free dimming throughout the dimming profile in compliance with IEEE1789-2015
- The timing of color temperature and intensity relative to diagnosis defines the physiological effect

Daylight: 6000 kelvin



- Strong daylight ensures circadian rhythm anchoring, energy during the day and sleep at night
- The light quality must ensure 6000 Kelvin, with min. 40% energy below 520 nm, which is nice to stay in
- The light must be fine-tuned and calibrated to the room conditions, needs and work flow
- Lighting design, placement of luminaires and implementation ensure optimal effect and use

Nightlight: 1800 kelvin



- Light at night: Balances considerations for residents and staff
- Biological darkness at night requires 1800 Kelvin with max 1% energy below 520 nm
- Broad-spectrum diodes provide high visibility
- Minimally disturbing settings for wake-up lights, toilet visits, control



90% of all psychiatric patients experience sleep problems

Patients with severe sleep problems experienced lower quality of life and more severe symptoms of other psychiatric disorders. They also had a poorer response to treatment for their mental illness.



Chroma Zenit circadian lighting stabilizes circadian rhythms and reduces hospitalization and medication usage

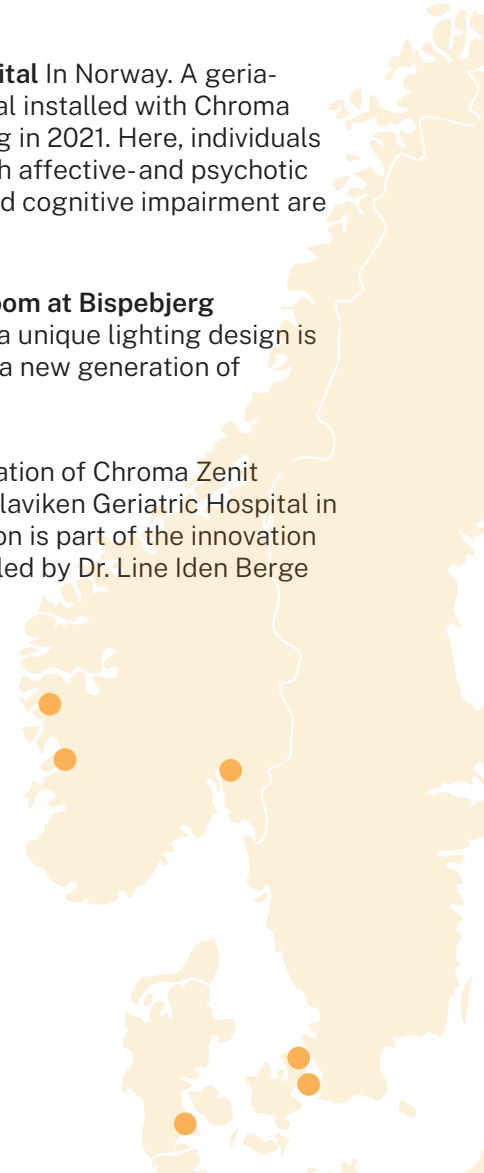
The combination of light and medication is effective, and the need for medication appears to decrease when we use light and darkness strategically in treatment. We can reduce the high doses of medication that patients receive over a long period. This is beneficial because the medication in this area has many side-effects with negative consequences for patients' overall health.

The evidence-based circadian lighting Chroma Zenit is based on a unique platform of experience and knowledge within the psychiatric field

We are responsible for large psychiatric installations such as:

- **Aabenraa Psychiatry** - Denmark's first and largest Psychiatric Hospital with circadian lighting, covering 10,000 square meters, which has been in operation 24/7 since 2015 and has created significant value for patients and staff.
- **Valen Hospital** - Installation of Chroma Zenit circadian lighting at Valen Hospital in Norway for the treatment of depressive and bipolar patients. Linked to a psychiatric research project led by Chief Physician Tone E. G. Henriksen.
- **Room-Light** - A clinical, randomized study conducted with over 150 patients at the Psychiatric Center Copenhagen (2017-2020). A large, international study documenting the effect of Chroma Zenit circadian lighting on depressive patients.
- **Diakonhjemmet Hospital** In Norway. A geriatric psychiatric hospital installed with Chroma Zenit circadian lighting in 2021. Here, individuals over the age of 65 with affective- and psychotic disorders, delirium, and cognitive impairment are treated.
- **The Future Patient Room at Bispebjerg Hospital** 2018, where a unique lighting design is being developed with a new generation of circadian lighting.
- **NKS Olaviken** - Installation of Chroma Zenit circadian lighting at Olaviken Geriatric Hospital in Norway. The installation is part of the innovation project 'Brighter Age' led by Dr. Line Iden Berge and Dr. Elisabeth Flo.

+16 years
of specialization
+3000
projects



Psychiatric stimulation and therapy

Chromaviso has developed a psychiatric stimulation-and therapy concept that offers patients colored and white light settings tailored to situations where patients are agitated, aggressive, passive, or depressive.



Research projects with Chromaviso lighting

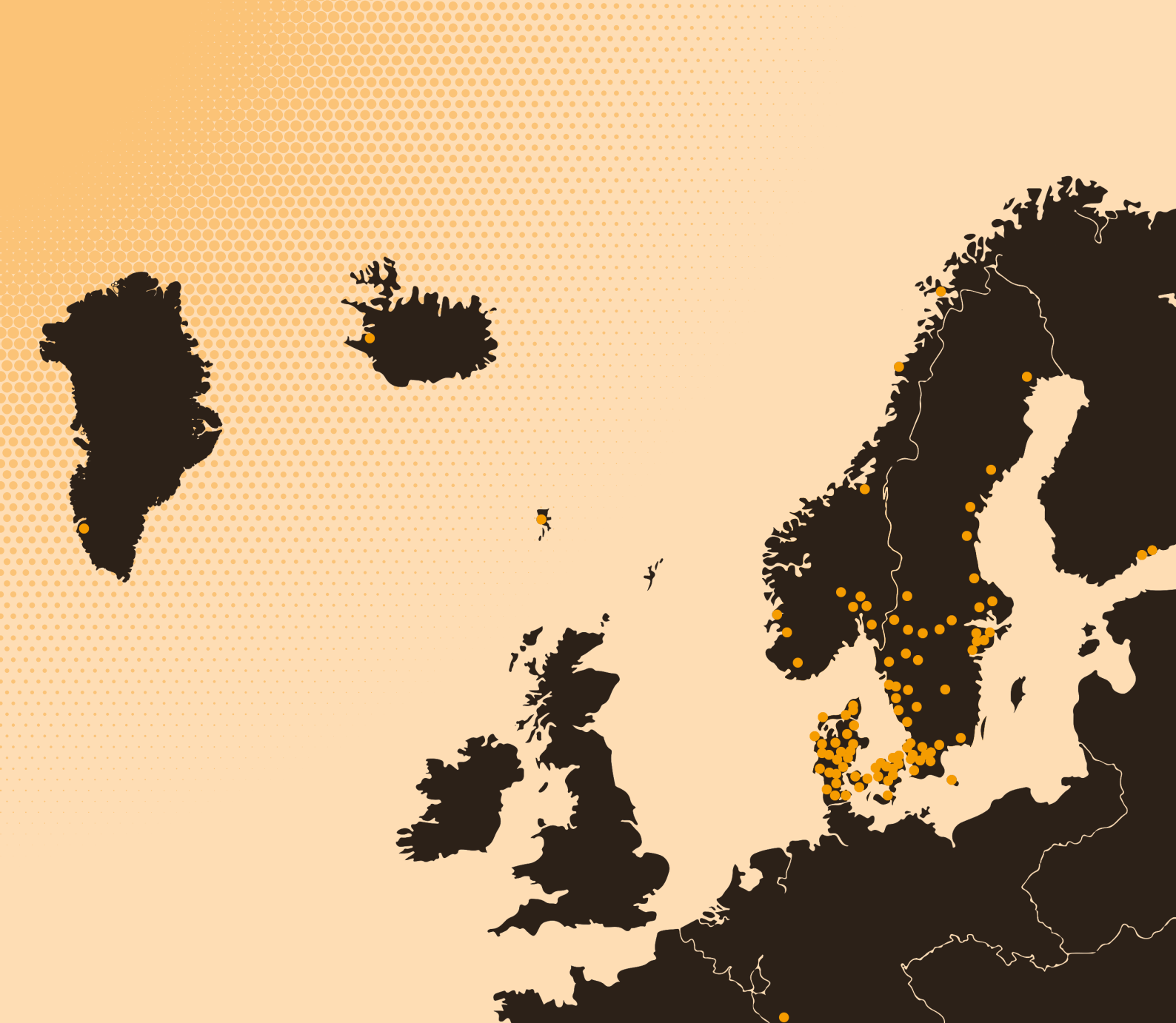
LEVEL OF EVIDENCE	PROJECT	MEASUREMENT POINTS
Clinical studies	<ul style="list-style-type: none"> • Apoplexy Unit, Rigshospitalet Glostrup, Anders West • Neurosurgical Intensive Care, Aarhus University Hospital, Leanne Langhorn • Psychiatric Center Copenhagen, DTU, CTU, Klaus Martiny • Clinical Research Center, Hvidovre Hospital, Albertslund Municipality, and Aalborg University • Lund University, Hillevi Hemphälä 	<ul style="list-style-type: none"> • 90 Patients: Reduced depression, fatigue, anxiety, and improved circadian rhythm and well-being. • 20 Patients: Sleep, agitation, memory, length of stay. • 150 Patients: Length of stay, medication use, faster recovery, depression. • 20 Residents: Improved sleep, health, well-being, rhythm, and behavior. • Lighting during surgery, glare, light quality, and visual ability.
Qualitative studies	<ul style="list-style-type: none"> • Aarhus University Hospital and Rigshospitalet • Occupational PhD, Aalborg University • Dementia Center Aarhus, Aarhus Municipality • VIA University College • Aarhus Municipality-Center for Assistive Technology, Sønderkovhus Local Center • Herluf Trolle Care Center, Odense Municipality 	<ul style="list-style-type: none"> • Pilot study with 26 nurses: Improved sleep, feeling more rested, improved working environment, and quicker adjustment to circadian rhythm. • Implementation and impact on staff. • 46 Residents: Improved attention/memory, mood, reduced outbursts, reduced physical and mental restlessness. • Observation of implementation, usage, business case. • Residents and staff: Reduced outbursts and sick leave.
User surveys	<ul style="list-style-type: none"> • Scandinavian study, Ergonomic Lighting • Aabenraa Psychiatry, CoLab Recovery & Rehab, Region of Southern Denmark • Malmö Neuro-OBS • Hudiksvall Hospital • Sønderkovhus Local Center / Aarhus Municipality • Skovgården Dementia Care Home, Hadsund • Klinkby Residential and Day Center, Lemvig Municipality • Lundtofte Care Center, Vejen Municipality • Quistgaarden, Slagelse Municipality 	<ul style="list-style-type: none"> • 30 hospitals: Improved screen display, reduced fatigue, increased concentration and quality. • 116 patients/staff: Medication use, coercion, calmness, energy level, sleep, well-being, working environment. Usage, user satisfaction, and implementation. • User surveys involving +500 staff members - perceived effects on staff and patients/residents such as well-being, sleep, quality of life, stress, user satisfaction.
Practical evidence	<p>+130 hospitals, nursing homes, psychiatric facilities over +16 years</p> <ul style="list-style-type: none"> • Intensive care units, neurorehabilitation • Recovery, intermediate care units • Nursing homes, dementia, psychiatry • Surgery, radiology, imaging, and radiography 	<ul style="list-style-type: none"> • User experiences, impact on patients/residents, staff, working environment. Usage, user satisfaction, and implementation. • Experiences: adaptations and dialogue.

Technology

Chromaviso's evidence-based and health-promoting lighting solutions are based on the latest knowledge and technology, composed of components of the highest quality.

- The fixtures are of the highest LED quality, ensuring natural light.
- No flicker - meaning no invisible flickering with associated headaches, visual discomfort, and glare.
- Broad-spectrum LEDs ensure consistent and uniform light with smooth and natural transitions.
- Unique lighting designs that support the complex psychiatric treatment and work environment, as well as architecture.
- A modular and flexible system that adapts to new needs and is continuously personalized.
- High efficiency in the light source - reliable and easy to install.
- Meets the recommendations of international researchers for Melanopic EDI values according to CIE S026/2018 and EN 12464-1.





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