

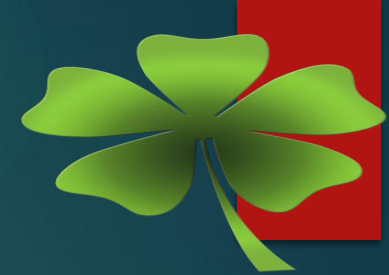
HIGH-PERFORMANCE LED LIGHTING TECHNOLOGY

Efficient, **Comfortable** and **Healthy**

ENERGY EFFICIENCY WITH THE INTEGRATION OF RENEWABLE ENERGIES IN
THE TOURISM SECTOR IN CAPE VERDE“

22.05. – 26.05.2023



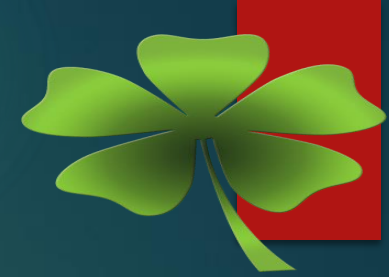


LED-LIGHT-Germany's high performance LED-Technology is designed, developed and made in Germany.
LED-LIGHT-Germany is

- a specialized manufacturer for lighting and interior
- The lighting, the interior and service offers are tailored to the respective customer needs and projects.
- a system partner for energy-efficient lighting systems and renovation, with the highest possible quality and service processes

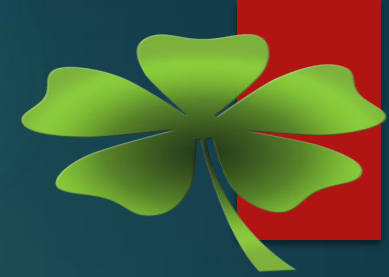
LED-LIGHT-Germany

- analyzes and develops the optimal solution for each project together with its customers.
- equips Hotels with all types of Lighting and interior
- equips Hotels with antibacterial and germ-free concepts for new buildings, and also especially for quick renovations from existing objects.
- also provides hospitals, schools, kindergarten with antibacterial light concepts and human centric lighting
- as well as antibacterial light concepts for the food-and clean-room industry.
- LED Lights can be used for architecture, monuments, public areas, landscape lighting, Sport-and Eventhalls/places, theater and conference and exhibition halls



Unique SellingPoints

- Research & Development Chip technology since 2006
- 5-Color High-Performance Technology since 2009.
- No binning absolute uniformity of colors over the entire lifetime possible! !
- Up to 10 years gurantee warranty based on experience and proven existing projects. no calculations from laboratory values. we know what we promise our customers and keep this promise !!! "Trust and believe" this is the foundation on which we have built our company and will always maintain !!!
- Stepless CRI control of CRI 60 -CRI 97
- All luminaires are passively cooled. Areas of application up to 100 degrees are possible
- Highly reflective reflectors with special facets and surface structures also with special steaming for the lifetime. They are a garant for absolut homogen illumination
- Modular design allows almost near unlimited use
- Modular design allows almost unlimiteduse
- Cradle to Cradle return of used products in to there source cycle
- Permanently protected antibacterial and germ-free light
- Permanently protected antibacterial and germ-free interieur
- Special financing options includet ESCO Models which are optimally adapted to the project

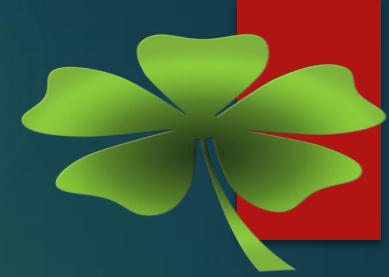


Which target persons are we looking

- Hospitals, Schools, Kindergarten
- Operator of Hotels
- Industrial Project
- Airport, Seaport, Trainstations
- Agriculture Industrie
- Fun and leisure Parks
- Operator of Airports, Seaports, Trainstations
- Architects
- Lighting-Designer
- Projectplaner/developer
- Electrical and Energy companies as Cooperation Partners
- Private and Municipal Facility Management Company
- Operator of Monument-Cultur-Sports and Event Venues
- Production Companys
- Gouvernment(Public-Lighting)

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Kameha Grand Hotel Bonn

2011 Hotel of the Year worldwide



INTERNATIONAL
PROPERTY
AWARDS

mipim
awards
winner

CO2 Einsparung: 33.90 Tonnen/jährlich



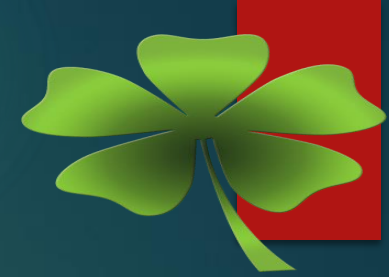
We illuminated one of the world's best real estate projects.

Since October 2009, this unique LED lighting technology is in operation 24 hours and therefore more than 80.000 hours without led failure.

Despite the difficult application area (under a glass roof) and only with passive cooling!!!

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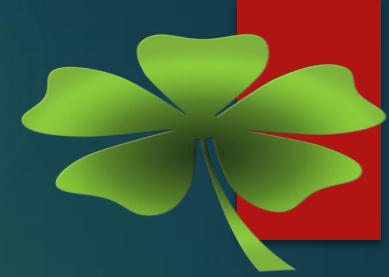


Kameha Grand Hotel Bonn We replaces 2009 the planned 35000 Watt conventional ceiling lighting (hit and halogen) with just under 5.0000 Watt of its high-performance LED RGBW lighting technology. In daily operation only 1400 Watt are required. At a light point height of 25 meters the required 500 Lux can be safely secured on the ground



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Humboldt Carre, Berlin



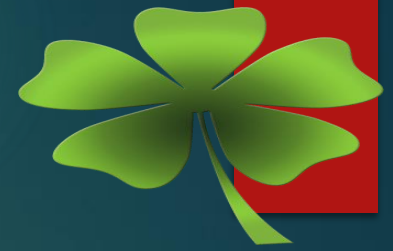
2011 The Humboldt Carre Berlin
receives the award
"Best Eventlocation in Germany"



The independent jury of experts was particularly enthusiastic about the world's unique high-performance LED lighting system. With only just under 600 Watt of LED-RGBW total power, which is fully controllable and dimmable via DMX, this system convinced holistically.

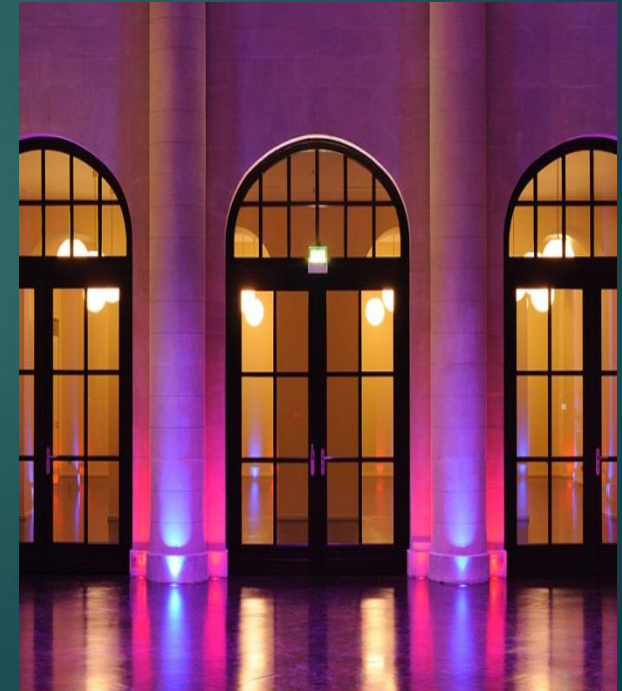
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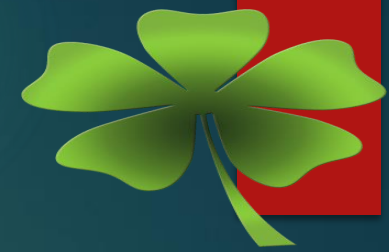
Humboldt Carre, Berlin

Conference hall with a total of 600 watts led RGBW illuminated and via DMX fully controlled!!



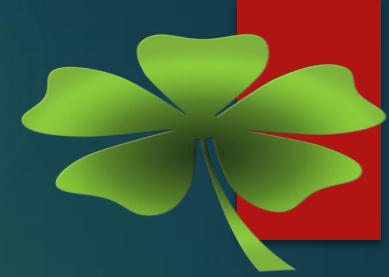
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Kursaal Bern is considered to be the largest Congress and cultural centre in the Espace Mittelland in Switzerland and offers numerous rooms with the latest technology for various occasions. The conference Room Forum, which with its concise façade is regarded as a new landmark of the city of Bern. 900 LED lamps immerse the total of 2000 square meters in a refined light, because the modern ceiling lighting designs the room at the touch of a button in the colour of your choice – so every event will have an unforgettable frame. The conference rooms are equipped with highly efficient LED downlights, dimming via Touch panel and a turnable white





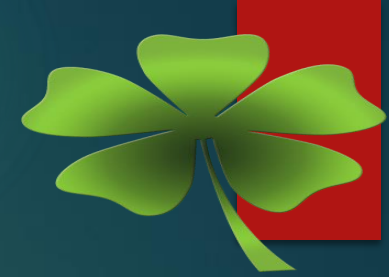
Titanic Deluxe Berlin, Französische Straße Facade Lighting

With a total power of only 120 watts LED illuminated (0.8 watts per led spot and window). This project was installed in 2015 and has been running until today. Not a single failure !!!



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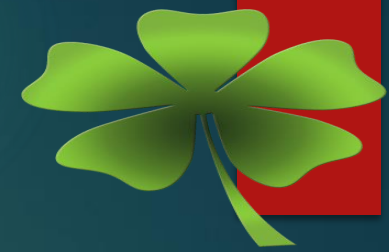


Festung Ehrenbreitstein At the German corner, the place where the Moselle flows into the Rhine, is the second largest fortress in Europe. Today on the fortress next to the Provincial Museum Koblenz with its manifold exhibitions also the memorial of the German Army, part of the UNESCO World Heritage, as well as a youth hostel. The historic fortress and its generous parks are set in a unique way by the harmonious lighting



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Freiburger Münster. Here, the LED lighting of a competitor, existing since 2011, has been completely replaced by our high-performance LED lighting technology. Result Investment costs 2011 of **750.000 euros** and about **9000 watts**. This project was implemented from us with **only 330.000 euros** investment and nearly **1.500 watts** system performance



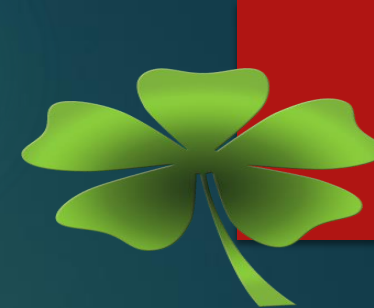
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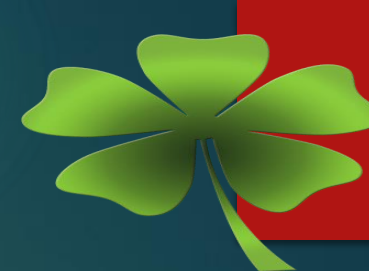
Hambacher Schloss is referred to as the "cradle of democracy" because of the Hambach Festival of 1832, as a milestone on the development of Germany to democracy – thanks to this cultural significance, the castle is still preserved as a building monument. In addition to historical exhibitions, the National memorial is also the scene of modernity: the historical festive halls and the romantic courtyard as well as the unique restaurant with roof terrace today offer space for various events





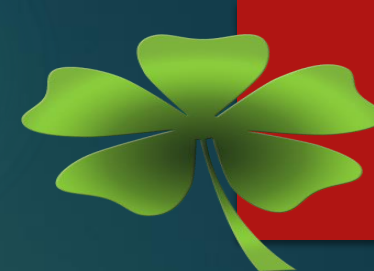
Project „Monument-Lighting House of Wisdom „ Sharjah UAE



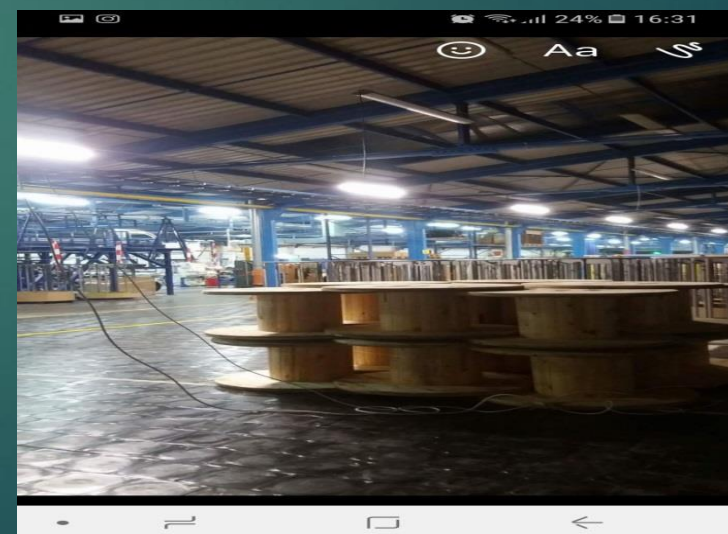


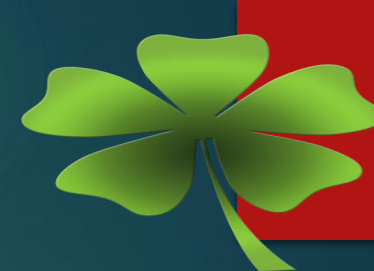
Project „Monument-Lighting House of Wisdom „ Sharjah UAE





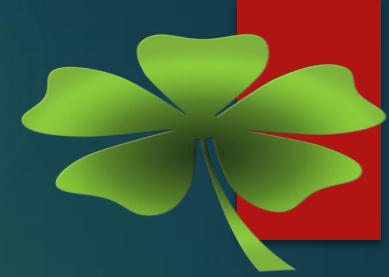
25.000 sqm production hall + warehouse 75% energy savings + 54% saving on luminaires.
ESCO model with an investment of 255.000 euros and a 58-month ROI of only 6 ct kWh





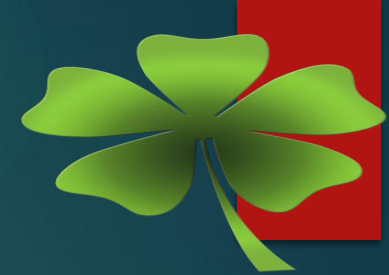
HIPP KFT HUNGARY, Production site of the family-owned company HIPP, one of the leading manufacturers of baby food. Switching the exterior lighting to our high power LED light technology, with the result that we could save **64% energy**. Currently, our lighting technology has been successfully used in local production for more than a year without any interference





The conventional airfield lighting of the US Military Airport Ramstein (airfield 1.500 x 400 meters) with 350.000 Watt hit, was replaced with 151.000 Watt led RAS120, at a mast of 65 meters. The required 500 lux and homogeneous illumination are easily achieved





Permanently antibacterial and germ-free Surfaces

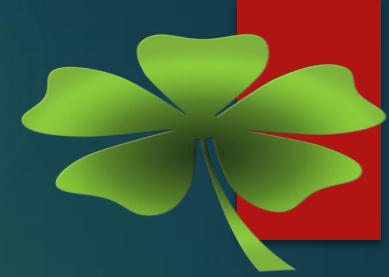
With our AntiBac, an antibacterial composite material has been developed which, with its antibacterial nano-silver surface, now makes it possible to use fibre-reinforced plastic in panels for the interior of surgeries, clinics, etc. The new composite material has an antibacterial effect and can be used as a self-disinfecting surface in clinics and other rooms where maximum hygiene is required. Maximum hygiene and safety through germ-free surfaces are increasingly required, this includes hospitals as well as exhibition and event spaces where (flexible) partition walls are used. Here, the new composite material with its antibacterial effect is an interesting alternative. As a self-disinfecting surface, it helps clinics and other rooms to be hygienically clean and safe -permanently. The fibre-reinforced plastic contains certified nano-silver, with the result that even multi-resistant germs die within a few hours and the regeneration of critical amounts of germs is prevented.

This means, for example, that wall coatings can be used in operating theatres and other clinical facilities as well as in doctors' surgeries. The products can also be installed in other areas where maximum hygiene is required.

The product is available in RAL and NCS colour sand, on request, also in customized colours.

Convincing and unique advantages:

- Kills over 99.9% of all bacteria within 24h (DIN ISO 22196 & JIS Z 2801)
- 3-fold effect against all types of bacteria including resistant variants
- Repeatedly confirmed harmlessness for humans and nature according to OECD standards
- Highest safety and minimisation of risks through permanent disinfection at every point of the surface
- Outstanding strength-to-weight ratio
- Highest impact resistance
- Attractive exterior products with UV-resistant high-gloss surfaces



Antibacterial and germ-free Lighting for Schools and Kindergartens in combination with

Human-Centric-Lighting HCL

Nature as a model Nature offers ideal conditions for keeping the inner clock in balance. A similar effect is achieved by artificial light that adapts to the rhythm of daylight. Daylight changes continuously in intensity, colour temperature and direction of light. If artificial light adapts dynamically to the course of daylight, it increases the sense of wellbeing and motivation just like natural daylight. Moreover, the adaptation is beneficial in terms of energy. Targeted control of light can support memory and concentration, general well-being and communication.



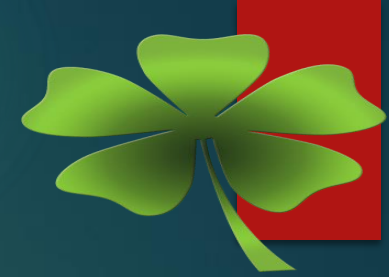
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some possible applications





Antibacterial and germ-free Lighting for Hospitals in combination with **Human-Centric-Lighting** HCL

1. Patient Room

Light is more than a medium for seeing: It not only serves visual needs but also has emotional and biological effects on people. This knowledge is taken up by contemporary lighting concepts. In line with the **Human-Centric-Lighting** HCL approach, they focus more than ever on people and their needs - in a targeted manner and with long-term effects.

Human-Centric-Lighting HCL stands for a lighting concept that provides the user with the right light for the respective living or working situation at all times. Light is always effective - and HCL concepts provide targeted, long-term support

- Health,
- Well-being and
- Human performance



LED-LIGHT-Germany GmbH

High-Power antibacterial and germ-free LED Ceiling Module

MADE **IN GERMANY**

“The light at the end of the tunnel”



Born 200 years ago, Max von Pettenkofer created a new awareness of hygiene. Yet even today, around one million patients are infected with germs in hospitals every year, and up to **40,000 even die as a result**. The reasons include inadequate hygiene measures, **triggered by staff shortages and lack of money**.

Everyone carries germs on their skin, some even the germ MRSA. This is not dangerous in itself.

But: If someone has a wound or a puncture, the germs can get into the body, for example through hands that have not been disinfected. An infection develops. In the case of MRSA, this can even be life-threatening and fatal.



High-Power LED Ceiling Module LLG-EM-120-1-600-60-4000-AB

Application fields

Health Care & Nursing with medical intervention

Clinics & Hospitals as well as surgeries and medical centres

Chemical industry incl. pharmaceutical and biotechnology and laboratories

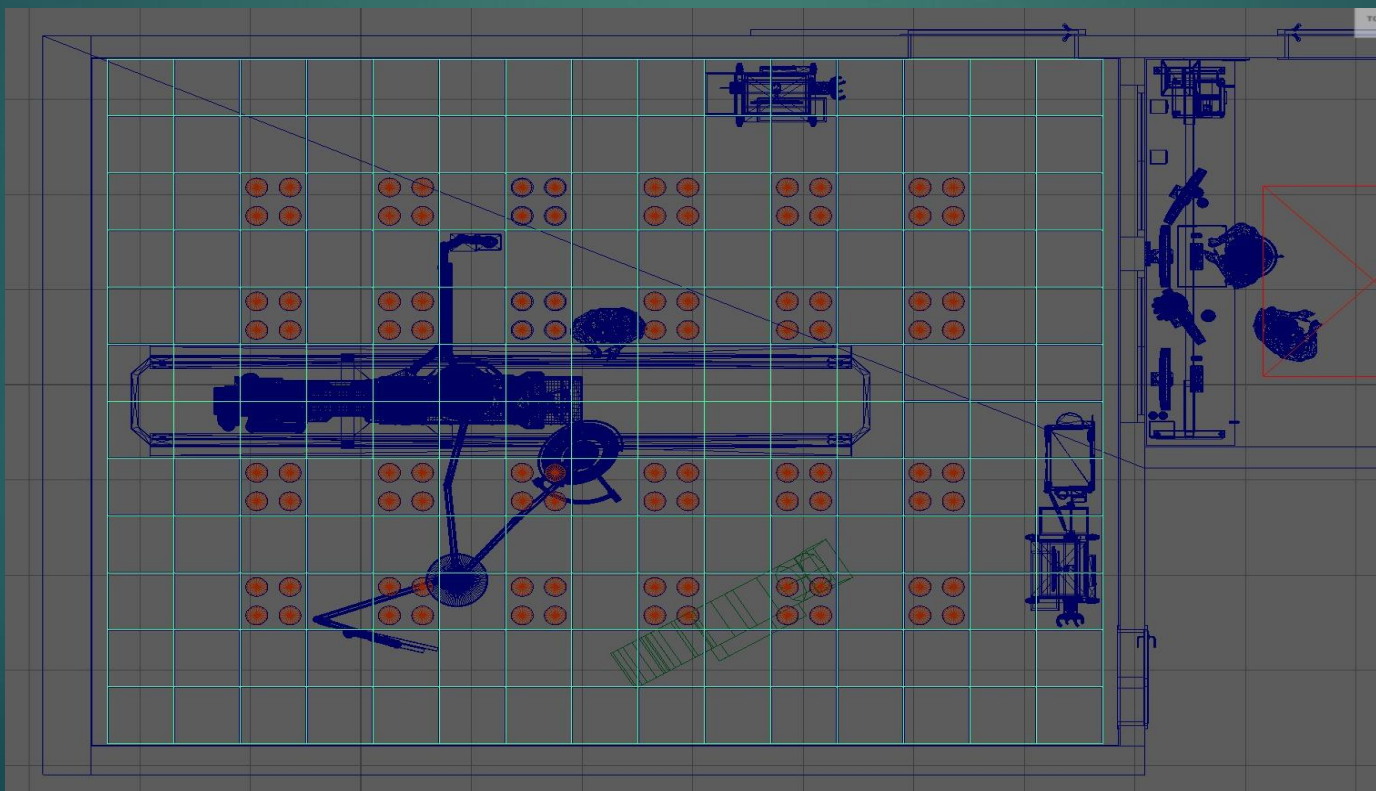
Food & Cosmetics industry with aseptic areas, Hospitality, industrial kitchens etc.

Industry and trade Laser and optical industry Microelectronics and microsystems technology
Surface and plastics technology Aerospace technology Automotive and electromobility



High-Power LED Ceiling Module LLG-EM-120-1-600-60-4000-AB

Application example



LLG-EM-120-1-600-60-4000-AB

Application example



LLG-EM-120-1-600-60-4000-AB

Applications example



Unique Selling Points I

High-Power LED Ceiling Module

LLG-EM-120-1-600-60-4000-AB

- Permanent antibacterial and germ-free coating
- **High-Lifespan > 80.000h up to more than 100.000h up to 10 years warranty**
- High-Power COB LED extremely sturdy up to 200Lm/W
- Highly efficient reflectors guarantee homogeneous illumination and prevent glare
- High-CRI up to 98
- DALI, DMX, 1-10V other possibilities on request
- Emergency light function possible on request
- Protection type IP65 up to IP68
- Protection class II -III
- All components are replaceable and available almost for an near unlimited time
- **Cradel to Cradel extremely resource-saving**
- Available in all RAL colours on request
- Module fire-resistant according to fire protection class 1 (highest stress group German Fire Protection Ordinance).
- Module Respiratory and Acoustic Active
- Modul Permanent antibacterial and germ-free coating
- Modul is water-resistant
- Modul extremely sturdy
- Module is available in all RAL colours
- Modul with a high -lifespan

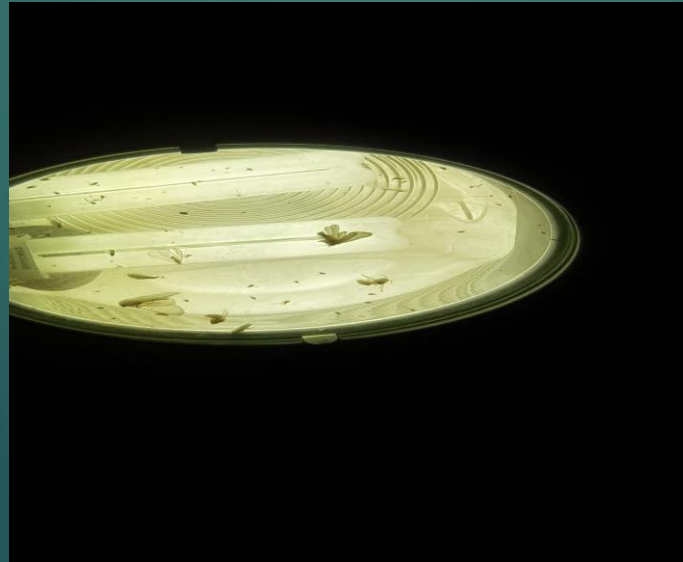
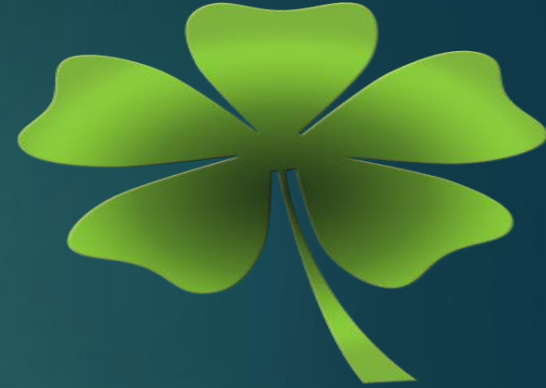


Unique Selling Points II

High-Power LED Ceiling Module

LLG-EM-120-1-600-60-4000-AB

- Very high savings in maintenance costs
- Highest possible hygiene standard and thus more safety is easily achieved
- Optimal illumination in all applications.



TECHNICAL HIGHLIGHTS 4000K

Input voltage control 90 - 260 VAC & 127 - 290 VDC

Frequency range control 47 - 63 Hz

Protection class III

Power factor (PF) > 0,9

Operating voltage LED 32 VDC

Maximum operating power LED 312 Watt

Power at full control 45 watts

Working temperature - $20^{\circ}\text{C} < \text{TA} < 50^{\circ}\text{C}$

Luminous efficacy white(system) 146 lumen per Watt

Initial luminous flux (system) 6012 lumen at 45 Watt

Luminaire system efficiency > 90%

Colour temperature **4000K**

Colour rendering index (CRI) >90 up to 97

Protection class IP65

Dimmability DALI or DMX

Lifetime >80.000h up to more than 100.000h

General light intensity > 80% after 50,000h

Luminaire material Anodised aluminium

Warranty 10 Years Lightsource and Housing/ 7 Years for the elektro components



TECHNICAL HIGHLIGHTS **RGBNW-4000K**



Input voltage control 90 - 260 VAC & 127 - 290 VDC

Frequency range control 47 - 63 Hz

Protection class III

Power factor (PF) > 0,9

Operating voltage LED 32 VDC

Maximum operating power LED 312 Watt

Power at full control 45 watts

Working temperature - 20°C < TA < 50°C

Luminous efficacy white(system) 127 lumen per Watt

Initial luminous flux (system) 5721 lumen at 45 Watt

Luminaire system efficiency > 90%

Colour temperature **RGBNW-4000K**

Colour rendering index (CRI) >95

Protection class IP65

Dimmability DALI or DMX

Lifetime >80.000h up to more than 100.000h

General light intensity > 80% after 50,000h

Luminaire material Anodised aluminium

Warranty 10 Years Lightsource and Housing/ 7 Years for the elektro components



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