NORKA

LIGHTING FOR SPORTS HALLS AND SWIMMING POOLS

Clear visibility for sports and fun

CLEAR VISIBILITY FOR SPORTS AND FUN

From festive events to junior sports training to the national handball league with TV broadcasts – sports halls as well as multi-purpose halls are frequently used by different players. Ball impact resistance, high uniformity of illumination and flexibility in lighting control are thus recurring requirements for the illumination of sports and event venues. Indoor swimming pools, skating rinks or bobsled runs, however, also have illumination requirements of their own. NORKA offers suitable luminaires for a wide variety of sports facilities.

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Freiberger Platz:
Top-class sports and recreational swimming

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More attractive thanks to lighting

LIGHTING REQUIREMENTS

04 **Light quality**
Very good light quality is especially needed in top-class sports – flicker can negatively affect the perception of fast balls and HD recordings.

05 **Temperature and service life**
Temperature plays a special role in LED illumination and its service life. The service life specifications provide precise information about the durability of the LED.

Shower rooms
28

06 **Water-tightness**
Environments with a high humidity or in which lights are in direct contact with water require a greater protection against water ingress.

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Sustainable light
Our luminaire housings are designed to ensure a long service life. That is why you can replace the interior almost every NORKA luminaire – this exchange is especially easy with easy eXchange.

10

XARA® lighting control system
To meet all requirements, a well-designed lighting control system is the ideal solution. For example, different light scenes can be controlled from one control panel.

08

Chlorine-resistance
The chlorinated atmosphere of indoor swimming pools affects the durability of the materials used. Here, the resistance of the luminaires to chlorine must be taken into account.

07

Ball impact resistance
When it comes to sports in particular, paying attention to the ball impact resistance of luminaires is vital in order to minimise the risk of injury in the event of a stray ball.

ILLUMINATION ALWAYS PLAYS ALONG

In professional sports, athletes regularly achieve peak physical performance. At the same time, all athletes – regardless of the sport – also depend on their environment and equipment. Illumination also plays a role here: The optimum lighting in sports facilities should be uniform, low-glare and flicker-free.

Volleyball players or handball players must always keep an eye on their surroundings in order to be able to react appropriately to events in the game. A quick turn of the head or looking up at the ball are just as much a part of the game as the serve or the smash.

Other athletes are highly concentrated due to high speeds, and distractions can lead to a loss of time. Uneven illumination of the surroundings can result in confusion, and bright spots of light can lead to glare and therefore to temporary visual disturbances. In both cases, the athlete's perception can be impaired and they may therefore no longer be able to realise their full performance potential. During planning, attention must therefore be paid to a high degree of uniformity of the illumination and, at the same time, to the glare behaviour of the luminaires themselves. An even luminance of the light-emitting surface leads to a more pleasant visual experience.

Evenly illuminated tracks and glare-free luminaires provide ideal conditions for top performances, for example, in a downhill skeleton run.

FLICKER-FREE FOR FAST BALLS AND HD TRANSMISSION

In high-speed sports, such as ice hockey or table tennis, flicker-free lighting plays a crucial role in ensuring good visibility. The fast movements of a puck or ball can appear erratic or choppy in the "wrong" light. In this case, light quality in the form of freedom from flicker can decide victory or defeat. In television broadcasts, it is also important to ensure that the illumination is suitable for HD transmissions and that flickering does not impair the image. In addition, clearly defined minimum illumination levels and uniformities are usually required.

HOT OR COLD, SERVICE LIFE UNDER CONTROL

LEDs prefer cooler environments as temperatures that are too high will damage the LEDs and shorten the service life. We therefore advise that you look at the service life specification, especially in areas with a constantly high ambient temperature. At NORKA, this specification is L80 B10, and the hours are often also noted as well. NORKA LED products predominantly have a service life of L80 B10 > 60,000 hours. Divergent service lives are specified separately.

The temperatures specified for NORKA LED products are primarily based on a minimum service life of 60,000 hours. This means that a service life of at least 60,000 hours is achieved if the luminaire is constantly operated at the specified minimum or maximum ambient temperature ("service life temperature").

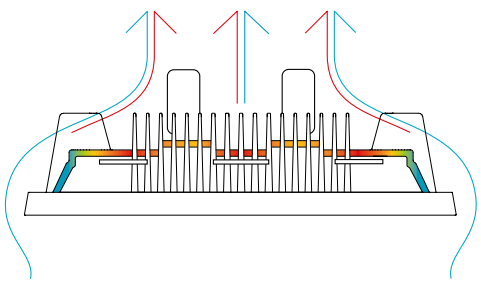
The L value describes what percentage of the initial luminous flux is still guaranteed at the end of the LED service life. L80 means that 80 % of the initial luminous flux is still achieved at the end of the service life. In other words:

L80 describes a maximum 20 % decrease in luminous flux from the initial value of the LED module.

The B value describes the static number of LEDs or modules affected by the luminous flux decrease at the end of the LED service life in percent. B10 means that 10 % of the modules can be below the defined L80 value after the specified service life.

The ambient temperature of the LEDs not only influences their service life, but also the available luminous flux. Higher temperatures mean lower light efficiency. To provide the most accurate information possible about the luminous flux during the actual operation of the luminaire, NORKA measures the luminous fluxes after a stable operating state is reached during constant, non-pulsed operation of the LEDs. The luminous flux specifications of NORKA LED products refer to the lamp luminous flux (gross luminous flux). They refer to a temperature of +55 °C at the Tc point of the LEDs.

Heat transport on the CENTAURUS luminaire: A sophisticated design reduces the heat load on the LED and increases service life.



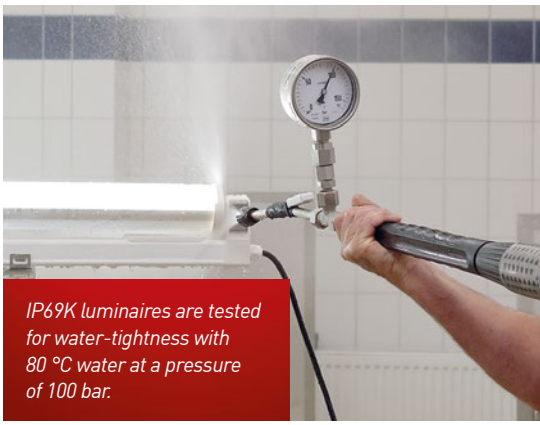
HIGH WATER-TIGHTNESS GUARANTEES LIGHT EVEN IN WET CONDITIONS

The topic of water-tightness always plays a major role in lighting.

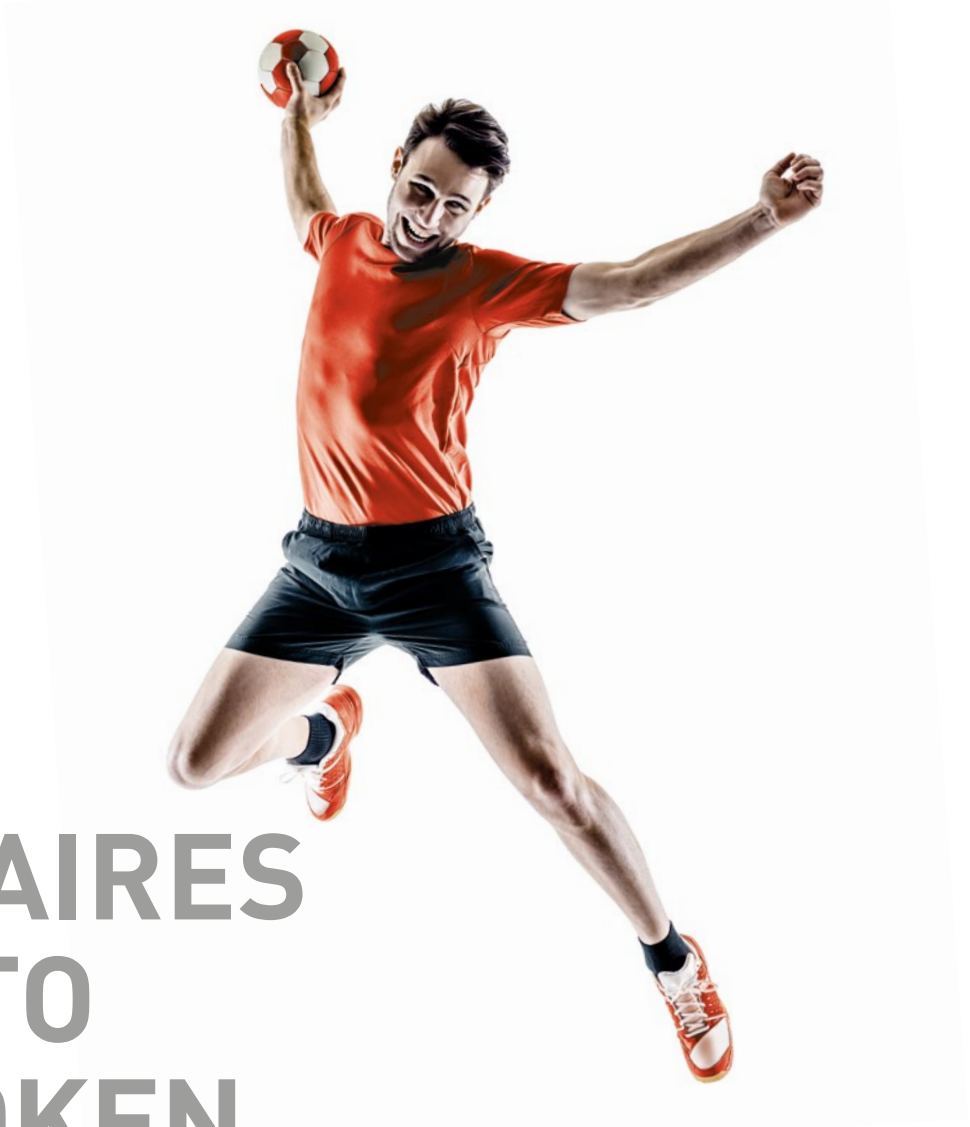
Environments with high humidity or in which the illumination is in direct contact with water, such as swimming pools or shower rooms, require increased protection against water ingress.

THE USE OF LIGHTING IN WET CONDITIONS

The IP (ingress protection) rating provides information about the degree to which a luminaire is protected against dust and water. The first digit stands for the protection of the luminaire against contact and foreign bodies such as brake dust, whilst the second digit designates the extent of protection against water. NORKA luminaires generally offer protection against the penetration of water jets (IP65) at least; luminaires with protection rating IP69K are suitable for cleaning with high-pressure or steam jets. Important to know: Protection rating IP69K does not automatically include lower protection ratings such as IP68; these protection ratings are specified separately.



IP69K luminaires are tested for water-tightness with 80 °C water at a pressure of 100 bar.



LUMINAIRES HARD TO BE BROKEN

Whether volleyball, football or handball – balls do not always end up in the goal, but can stray onto the walls or ceiling. Even luminaires can be hit by an odd ball in the process. Depending on the skill of the player, high speeds can be reached, for example, up to 140 km/h for professional handball players. As a result, paying attention to the ball impact resistance of luminaires is vital in order to minimise the risk of injury in the event of a stray ball.
The test for ball impact resistance is defined by DIN EN 12193.

The standard-compliant test requires that the luminaire withstands 36 shots at an impact speed of 60 km/h from a handball from three directions without significant damage or loosening of parts.
This applies not only to the luminaires themselves, but also to accessories and assembly parts, such as mounting rails or trunking systems.

Risk of breakage minimised
The use of fracture proof materials lends itself particularly well here.

CHLORINE-RESISTANCE

The use of chlorine to disinfect water in indoor swimming pools is intended to protect the health of the users. Chlorine is also released into the atmosphere in the process. As a strong oxidant, chlorine leads to corrosion on metallic surfaces, also affecting aluminium and stainless steel. Over time, rust eats through the materials and corrodes them. Fastening screws or clamps may literally disappear into thin air without being noticed.

For this reason, it is essential to pay attention to the chlorine resistance of products in swimming pools. NORKA offers the "Swimming pool version" option for all suitable products. In this case, the luminaire is modified during production so that all components are suitable for use in chlorinated environments. Accessories such as fastening clamps or mounting rails must also be selected according to the application environment.

SO THAT NOTHING RUSTS – CHLORINE ON THE SCREEN

Select the "Swimming pool version" option!

Fastening clamps in particular or other mounting elements must also be selected in a chlorine-resistant version.

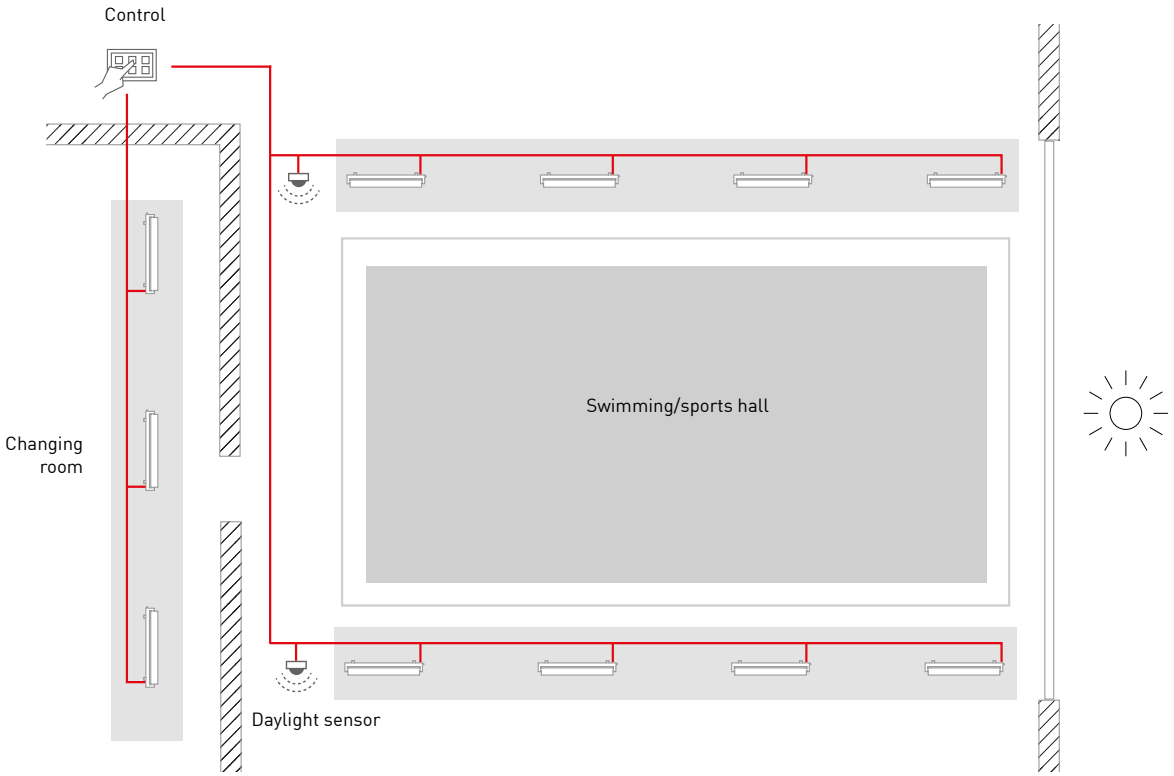
LIGHT WITH AFORE-THOUGHT AND COMFORT

Swimming pools, sports halls and multifunctional halls often require a high degree of flexibility when it comes to lighting. Various requirements have to be addressed in these areas.
For regular operation, a daylight-linked lighting control system that saves energy is a good choice.
For sports competitions, uniform, high-quality illumination is needed whereas subtle mood lighting is more appropriate for special events. To meet all these requirements, a well-designed lighting control system is the ideal solution.

Various lighting scenes can be operated centrally from a control panel, for example. Additionally, other elements of the building control system, such as the sunshade, can be integrated to achieve optimal interaction of lighting and daylight, in turn maximising energy savings.

In adjacent areas such as changing rooms or showers, daylight-linked control and motion detection also help to save even more energy.

> Example diagram: daylight-linked control and predefined lighting scenes for various applications ensure maximum convenience and potential savings. Staff can call up the required lighting scenes from a centrally placed control panel.



Our XARA® lighting control system

OVERVIEW OF THE BASIC FUNCTIONS

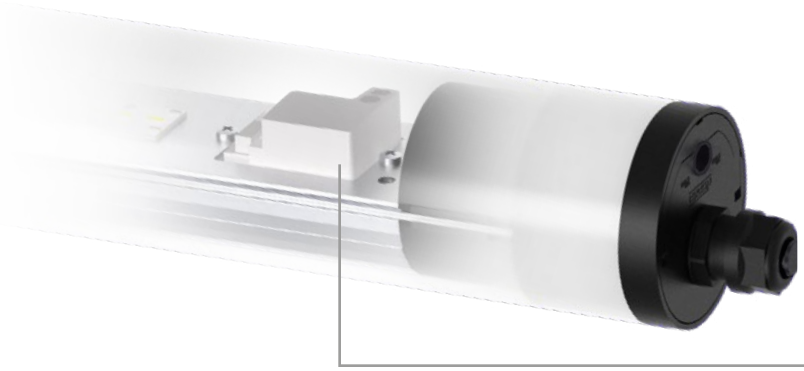
→ Corridor function
The detection of movement causes the illumination level to dim up from a defined basic level. After a defined follow-up time, the lighting is lowered to the basic level again. The principle can be combined with other control options such as time schedules or daylight-controlled system.

→ Lighting scenes
Different lighting scenes can be called up from a control panel. Lighting scenes include stored settings – for example, defined illumination levels for different luminaire groups – depending on the required application.

→ Motion-controlled control system
Movement can be detected by PIR or radar sensors. A detected movement triggers a predefined control sequence.

→ Daylight-linked control system
Through the detection of the natural ambient light, the power needed to meet the required illumination level is determined. The luminaire power is then automatically adjusted.

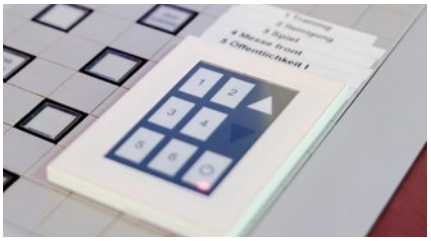
In addition, numerous other options such as luminaire and energy monitoring or automated function tests are available.



XARA® sensor technology can be structurally incorporated in selected products. Due to this integration, the sensor technology is discreetly incorporated and protected from extreme ambient conditions.

How is lighting control used in a project?
Read page 30 for our project report „Unihalle Wuppertal“.

Different lighting scenes can be easily called up from a control panel as needed.

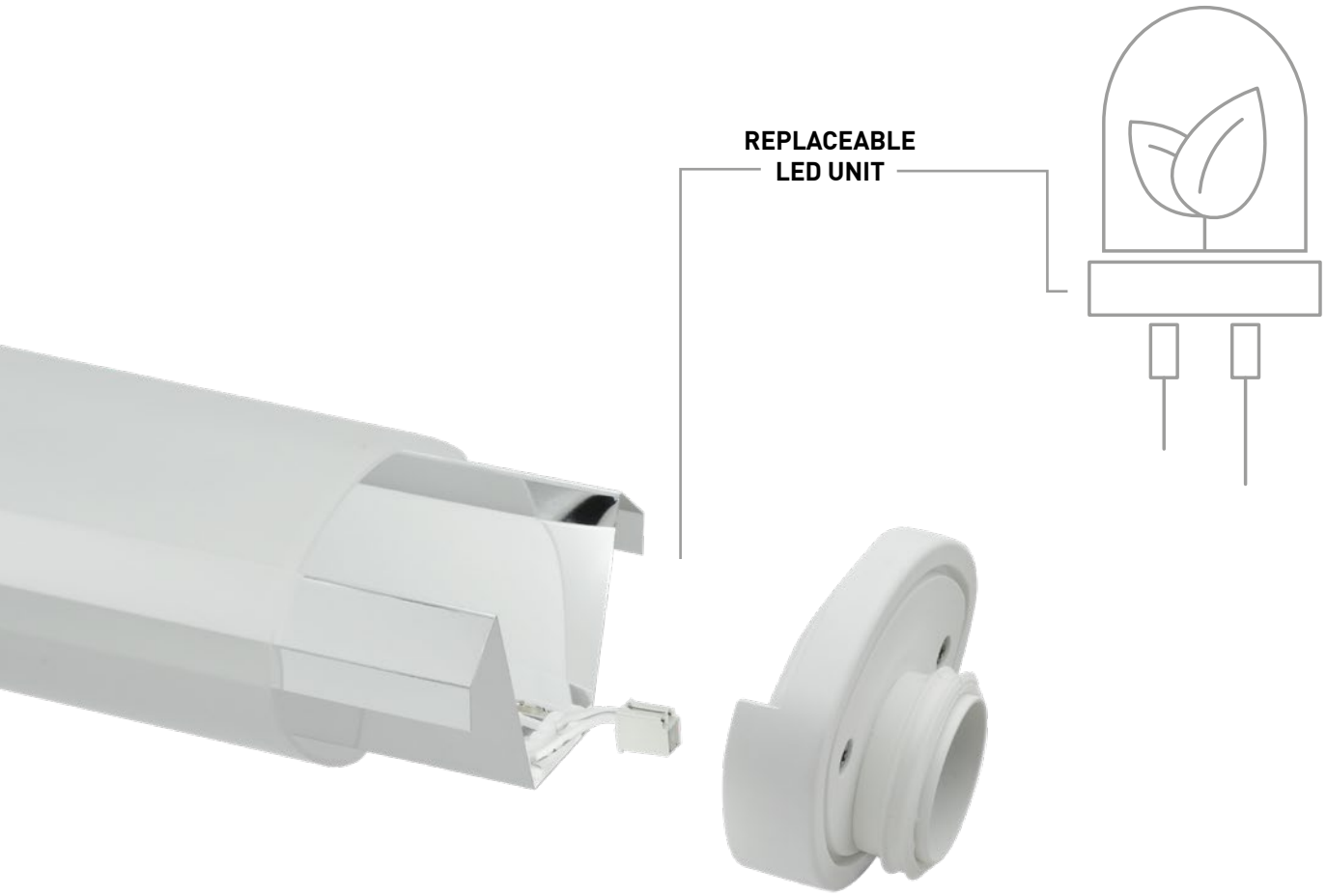


easy eXchange – FOR SUSTAINABLE LIGHT

easy eXchange
LEDS AND DRIVER COMPLETELY REPLACED
Luminaires featuring easy eXchange can simply be completely replaced. The electronic components (LEDs and driver) are really easy to replace with new ones once they have come to the end of their service lives. The housing and reflector tube can still be used.

easy eXchange LED
EASY TO CHANGE LEDS
The LEDs in the reflector tube are easy to change by means of a plug connection. The reflector tube can still be used.

easy eXchange DRIVER
EASY TO CHANGE DRIVER
Easy eXchange DRIVER (RAPDEX) enables the easy and quick exchange of drivers, while the luminaire can remain in its installation position.

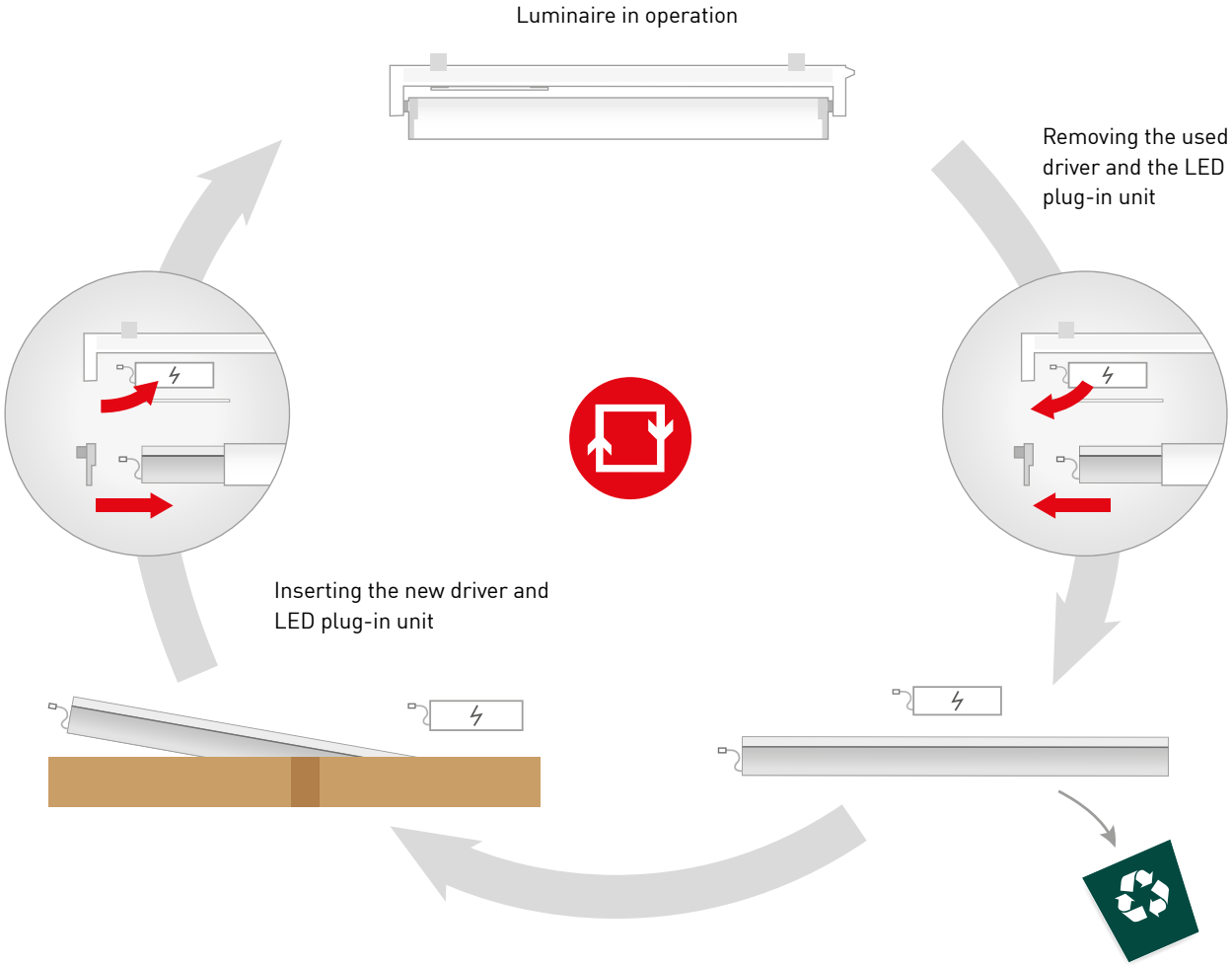


NORKA luminaires are designed for use in the most demanding environmental conditions. Above all, they stand out for their long service life and high resistance to a wide range of chemicals and other environmental influences. They are luminaires built to last.

Due to their excellent durability, NORKA luminaire housings often outlive the life cycles of the built-in electronic components. It therefore makes sense to think about the future as well:
By choosing the right easy eXchange product, the driver and LED can be replaced quickly and easily at the end of the product's service life.

The installed luminaires can be made "fit for purpose" again, thus avoiding unnecessary new purchases, saving installation time and conserving resources.

As a rule, the design of NORKA luminaires generally allows components to be exchanged. Replacement is really convenient, however, with luminaires fitted with our easy eXchange components.



OUR LIGHTING SOLUTIONS FOR SPORTS HALLS AND SWIMMING POOLS

SWIMMING HALLS

NORKA luminaires are also at home in the swimming pool. Here, the "Swimming pool version" option must be selected as the chlorinated atmosphere places its own demands on materials, which are taken into account in production.

IP 65 | IK 09 ESG | IK 10 PC

CENTAURUS

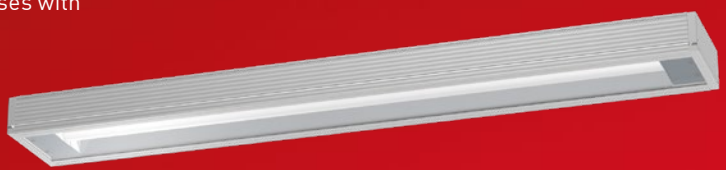
- VHT version suitable for ambient temperatures up to +85 °C
- Suitable for high ceiling heights
- Optionally ball impact resistant

Select the "Swimming pool version" option!

IP 65 | IP 66 | IP 67 | IP 68 20m | IP 69K | IK 10 PC | IK 10 PMMA

BERN LED

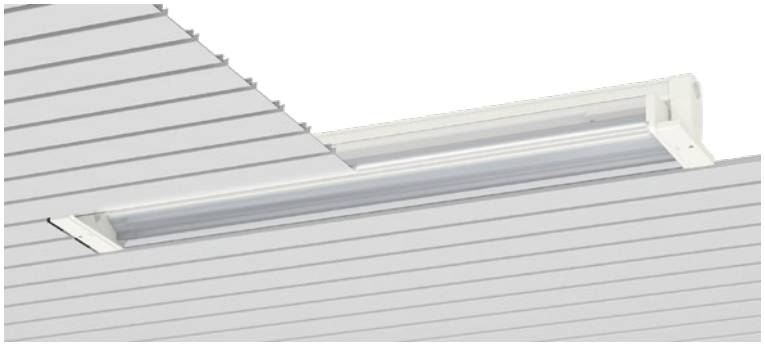
- Tubular luminaire with 60 mm diameter
- Suitable for intensive cleaning processes with high-pressure cleaners



IP 65 | IK 08 PMMA | IK 10 PC

DUBLIN LED

- Decorative linear luminaire made of anodised aluminium
- Rearward concealed mounting apertures
- Optionally applicable in NORKA trunking system 185
- Optionally ball impact resistant



IP 65 | IK 03 PMMA | IK 08 PC

GERA LED

> Panel installation for two-panel width, module 100
> Universal panel ceiling suspension available as accessory

IP 65 | IK 04 PMMA | IK 08 PC

GENF

> Low installation height (80 mm)
> Two swivelling protective reflectors from 25° internal rotation to 180° external rotation

IP 65 | IK 08 PMMA | IK 09 PC

JENA LED

> Panel installation for single-panel width, module 100
> Universal panel ceiling suspension available as accessory

IP 65 | IK 08 PMMA | IK 10 PC

LONDON LED

> Decorative linear luminaire made of anodised aluminium
> Rearward concealed mounting apertures
> Optionally applicable in NORKA trunking system 285
> Optionally ball impact resistant

SWIMMING POOLS

IP 65 | IK 07 PMMA | IK 08 PC

MÜNCHEN LED

> Low installation height (80 mm)
> Optionally applicable in NORKA trunking system 191
> Universal panel ceiling suspension available

IP 65 | IK 09 ESG | IK 09 PC | IK 10 PC

POLARIS

> Suitable for ambient temperatures up to +45 °C/+65 °C
> Four different beam characteristics
> Optionally ball impact resistant

IP 65 | IP 66 | IP 67 | IP 68 20m | IP 69K | IK 09 PMMA | IK 10 PC

ZUG LED/ZUG LED INDUSTRY

> Suitable for intensive cleaning processes with high-pressure cleaners
> ZUG LED INDUSTRY L80 B10 > 75,000 h up to +55 °C

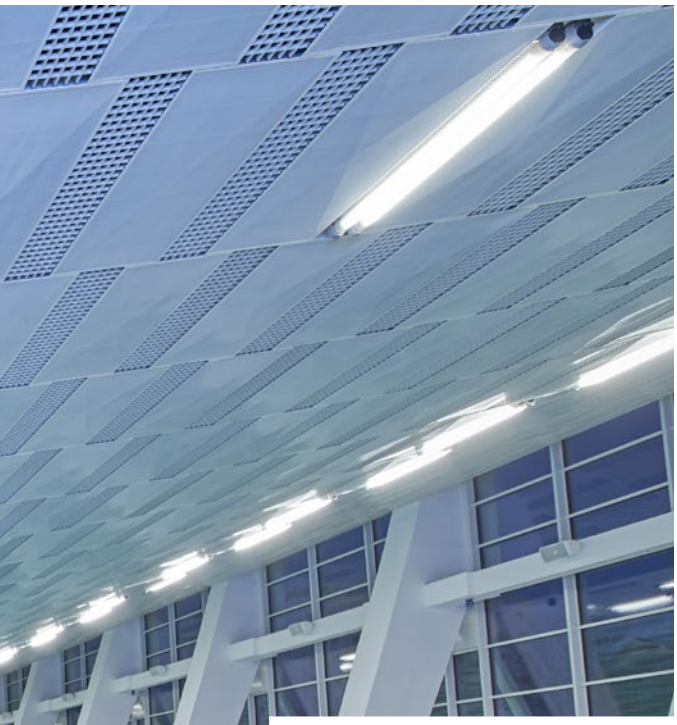
IP 65 | IP 66 | IP 67 | IP 68 20m | IP 69K | IK 09 PMMA | IK 10 PC

ZUG LED EXTREME

> Suitable for intensive cleaning processes with high-pressure cleaners
> Suitable for ambient temperatures up to +65 °C
> L80 B10 > 100,000 h

TOP-CLASS SPORT AND RECREATIONAL SWIMMING

With its lighting solution from NORKA, the swimming complex at “Freiberger Platz” in Dresden masterfully combines the old and new fabric of the building, while reliably satisfying the needs of both competitive and recreational swimmers for good visibility.



ILLUMINATED IN KEEPING WITH LISTED BUILDINGS
With the construction of a new competition hall and the renovation of the old hall from 1969, Dresden has the second largest swimming complex in Germany. With its sweeping roof made of prestressed concrete, the old swimming hall is one of the outstanding examples of GDR architectural modernism and has been a listed building since 2008.

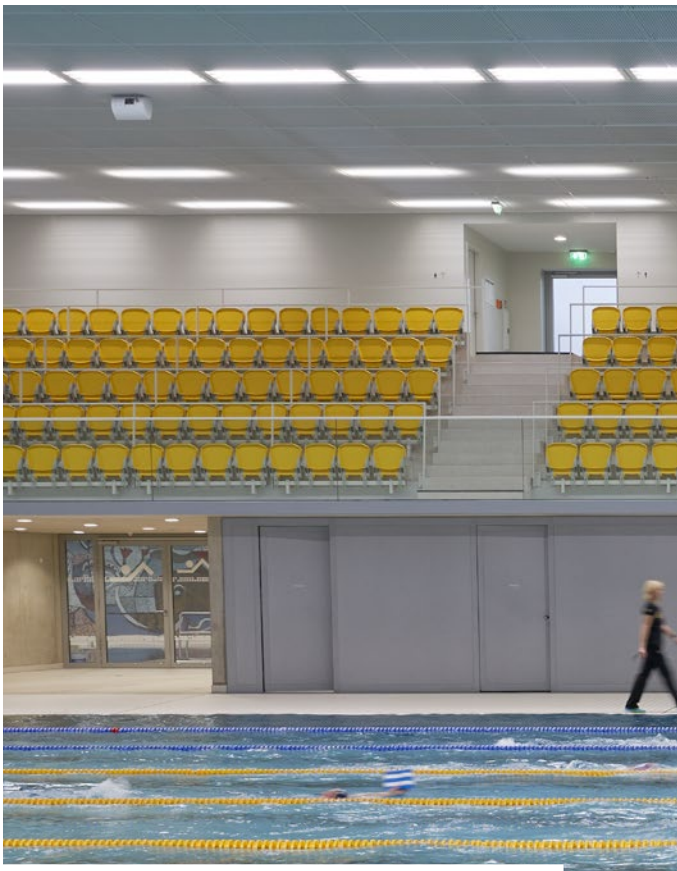
MODERN LIGHT REFLECTS THE ZEITGEIST OF THE 1960s
In the renovated hall, the lighting is integrated into the rhythmically structured, restored original ceiling cladding made of metal grids and panels. For this purpose, the designers chose ZUG LED tubular luminaires in the special length of 1,200 millimetres, in keeping with the existing ceiling louvre structure. As is customary in swimming pool construction, the lighting is positioned to follow the pool contours so that maintenance can be carried out “without getting wet”. As slim, linear light sources, these luminaires emphasise the elegance of the 1960s roof construction, breathing new life into the spirit of this architectural era.

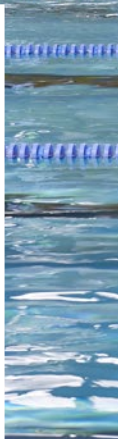
LED lighting in swimming halls: The luminaires in a special length version fit perfectly into the historical ceiling.

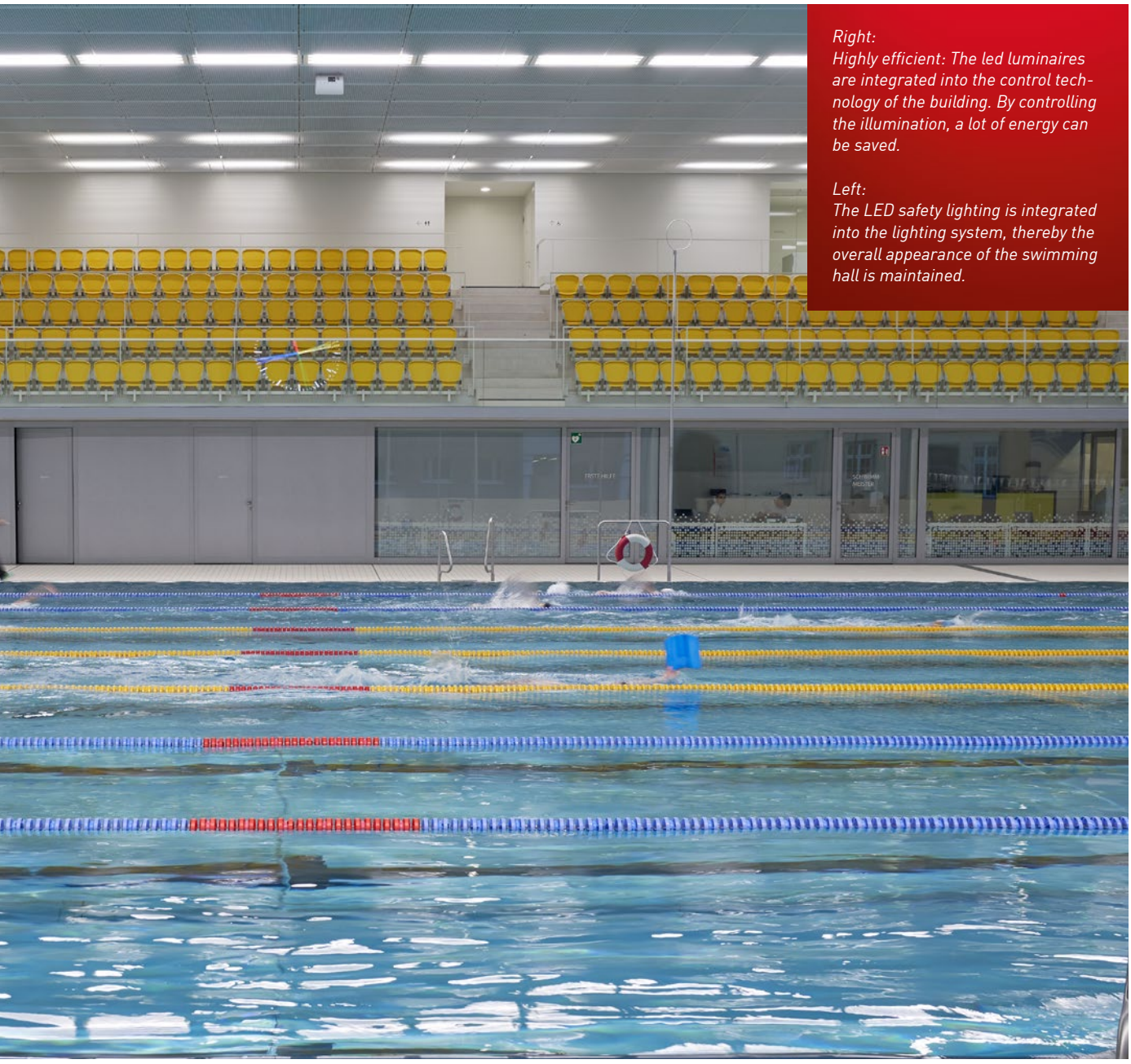
PROJECT: SWIMMING HALL LIGHTING FREIBERGER PLATZ

Two each of the total of 172 tubular luminaires are combined in a mounting frame; 30° lenses focus the light and allow it to be directed onto the relevant area in use.
With polymer as housing material and special mounting elements, also made of polymer, corrosion is not an issue even in swimming pool air containing chlorine.

The designers used more than 300 of the flat, rectangular MÜNCHEN LED luminaires in the new 2016 building to match the functional, sporty and elegant interior design with exposed concrete surfaces and differentiated white tones. As recessed luminaires, they are mounted flush with the ceiling – both in the competition pool and in the training pool area with its charming maritime wall mosaic, which was saved from the demolished old building. In the competition hall, asymmetric beam versions produce illumination levels of up to 500 lux at water surface level from the pool periphery, thus meeting the requirements for international sporting events. The highly efficient LED luminaires have DALI-interfaces for integration into the control technology of the entire building, which means brightness levels for training, school and recreational swimming can be reduced as required – as well as saving energy.







Right:
Highly efficient: The led luminaires are integrated into the control technology of the building. By controlling the illumination, a lot of energy can be saved.

Left:
The LED safety lighting is integrated into the lighting system, thereby the overall appearance of the swimming hall is maintained.

TAILORED TO TYPES OF USE AND ROOM ZONES

MÜNCHEN LED luminaires are also installed above the spectator stands, in this case, however, with medium beam characteristics and concealed behind a white ceiling louvre. This protects the audience from glare and creates a softer lighting character that separates the two zones of the room to suit their purpose. The colour temperature used throughout the room is 4,000 K, which harmonises perfectly with the daylight entering through the large window areas. To ensure that this harmonious atmosphere is not spoiled by a fussy ceiling, the safety lighting in the swimming pools is not provided by separate luminaires but is integrated into the general lighting system. For this purpose, some of the NORKA luminaires were equipped accordingly and connected to the central battery.

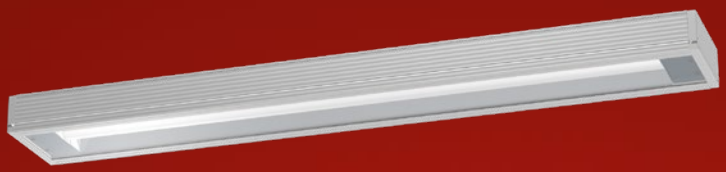
SPORTS HALLS

A high degree of uniformity, a pleasant colour temperature and – if the goal is missed – ball impact safety are the basic requirements for lighting in sports halls.
In indoor ice rinks, in addition to the conditions of normal sports halls, the low temperature is another special aspect.

IP 65 | IK 09 ESG | IK 10 PC

CENTAURUS

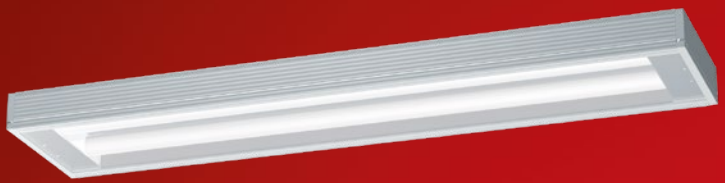
> VHT version suitable for ambient temperatures up to +85 °C
> Suitable for high ceiling heights
> Optionally ball impact resistant



IP 65 | IK 08 PMMA | IK 10 PC

DUBLIN LED

> Decorative linear luminaire made of anodised aluminium
> Rearward concealed mounting apertures
> Optionally applicable in NORKA trunking system 185
> Optionally ball impact resistant



IP 65 | IK 08 PMMA | IK 10 PC

LONDON LED

> Decorative linear luminaire made of anodised aluminium
> Rearward concealed mounting apertures
> Optionally applicable in NORKA trunking system 285
> Optionally ball impact resistant

SPORTS HALLS

IP 65 | IK 08 ESG

MERKUR LED

> Made of temperature-resistant and glass-fibre reinforced polymer
> Floodlight suitable for recessed ceiling mounting

IP 65 | IK 09 ESG | IK 09 PC | IK 10 PC

POLARIS

> Suitable for ambient temperatures up to +45 °C/+65 °C
> Four different beam characteristics
> Optionally ball impact resistant

MORE ATTRACTIVE IN A NEW LIGHT

There are plenty of fans of ice sports in the Hanseatic city, and when the Crocodiles Hamburg play in Farmsen Eisland, they easily fill the stands. The new LED lighting from NORKA ensures excellent visibility.

With almost 2,000 spectator seats, the ice rink is currently the largest of its kind in Hamburg. Constructed in 1978, it is a purpose-built, austere, reinforced concrete building, with more than four decades of intensive use having left their mark. However, the ice rink in Hamburg's Farmsen district still plays a key role for ice sports in the Hanseatic city. Offering space for 1,980 spectators, it is the official home of the Crocodiles Hamburg. During the season from October to March, not only professional athletes but also recreational skaters of all ages like to use the 1,800-square-metre ice rink – especially since a completely revamped lighting system now ensures perfect visibility.

A MODERN LIGHTING CONCEPT

The old floodlight system with its 400-watt high-pressure lamps and total of around 30,000-watt connected load had had its day; during league matches in particular, players and spectators simply found the lighting of the ice surface too dim. Measurements showed maximum illumination levels of 500 lux – far too little for today's requirements. This is where the NORKA light experts stepped in to develop a state-of-the-art lighting concept for the hall operating company, the municipal Bäderland Hamburg GmbH. Using LED technology, the design provides significantly better light while reducing energy consumption. A lighting control system also makes it easier to use and increases efficiency through lighting scenes that are appropriate for the use at hand.

PROJECT: ICE RINK „EISLAND“ IN HAMBURG-FARMSEN

The luminaires span the ice surface at a height of 5.5 metres at six rows of lights.

ROWS OF LIGHTS WITH ENORMOUS OUTPUT

The basis is provided by 86 twin-lamp ERFURT LED HO (high output) type luminaires. They now span the ice surface at a height of 5.5 metres as six rows of light, following the grid of the roof construction. In contrast to the old lighting and the emergency lighting that continues to be used, the new luminaires are not mounted directly on the tension rods of the roof construction, but on a separate mounting rail suspended with steel wires. Each luminaire delivers an enormous output of 26,200 lumen in a neutral white colour temperature of 4,000 Kelvin. This means that they can easily replace conventional HIT high-bay luminaires, but are far more energy-efficient. For optimum illumination uniformity, the narrow-beam reflector tubes are slightly swivelled outwards on both sides.

ADAPTED TO ICE SPORTS

The special requirements of ice sports are taken into account in the details, such as the covers made of fracture-proof PC Tropal®, which can definitely withstand a stray puck. Special fixings, which act as anti-theft devices in other applications, provide additional fall protection for these luminaires. The electronic drivers feature DALI interfaces and are flicker-free so that even photo or HD video recordings can be made in the hall without any interference. They are the prerequisite for using the NORKA XARA® lighting control system, which future-proofs the ice rink in this respect too.

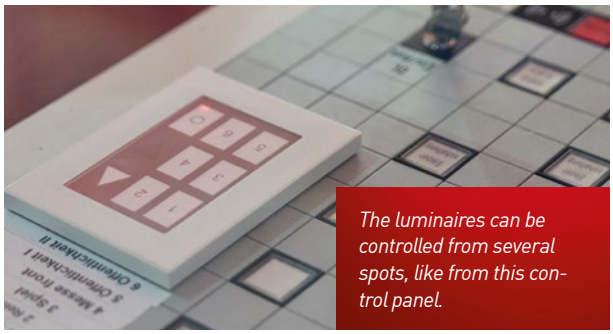
The luminaires have covers made out of PC Tropal® in order to prevent unwanted damage and fractures that might happen in an indoor ice rink.

DIFFERENTIATED CONTROL SCENARIOS

The separately addressable DALI drivers for the two reflectors of each luminaire enable a highly differentiated approach when forming luminaire groups and metering the illumination levels on the area in use. For example, the lighting setting for league matches once again highlights the two goals from the uniformly high illumination level of the pitch. On the other hand, the illumination for training, recreational use or ice maintenance can be dimmed to save energy at the touch of a finger – and suitable lighting scenes are also available for occasional use of the hall without ice during the off-season, for example, for exhibitions or events.

The system is operated from several locations. However, staff at the outdoor and indoor ticket counters can only call up certain lighting scenes, while advanced functions are available in the control room. Scenes and luminaire groups were programmed by the NORKA technicians during commissioning according to the requirements of the operators.

The result impressed everyone involved: The ice rink has never looked so attractive as it now does in the new light – at a fraction of the previous energy consumption and with reduced maintenance costs, because the time-consuming lamp changes are no longer necessary.



The luminaires can be controlled from several spots, like from this control panel.

CHANGING ROOMS, SHOWERS AND WASHROOMS

IP 65 | IP 66 | IP 67 | IP 68 20m | IP 69K | IK 10 PC | IK 10 PMMA

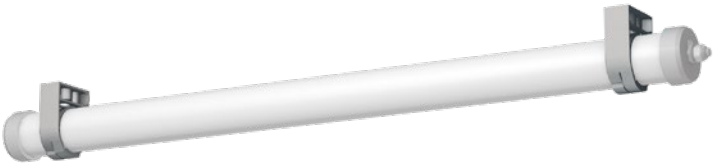
BERN LED

> Tubular luminaire with 60 mm diameter
> Suitable for intensive cleaning processes with high-pressure cleaners

IP 65 | IP 66 | IP 67 | IP 69K | IK 04 PMMA | IK 09 PC

BITBURG LED/BITBURG LED INDUSTRY

> Polymer luminaire with protective tube reflector (can be swivelled by 60°)
> Suitable for intensive cleaning processes with high-pressure cleaners



IP 65 | IP 66 | IP 67 | IP 68 20m | IP 69K | IK 09 PMMA

LUGANO

> Applicable for special requirements
> Suitable for intensive cleaning processes with high-pressure cleaners

IP 65 | IK 07 PMMA | IK 08 PC

MÜNCHEN LED

> Low installation height (80 mm)
> Optionally applicable in NORKA trunking system 191
> Universal panel ceiling suspension available

CHANGING ROOMS, SHOWERS AND WASHROOMS

IP 65 | IP 66 | IP 67 | IP 68 20m | IP 69K | IK 09 PMMA | IK 10 PC

ZUG LED/ZUG LED INDUSTRY

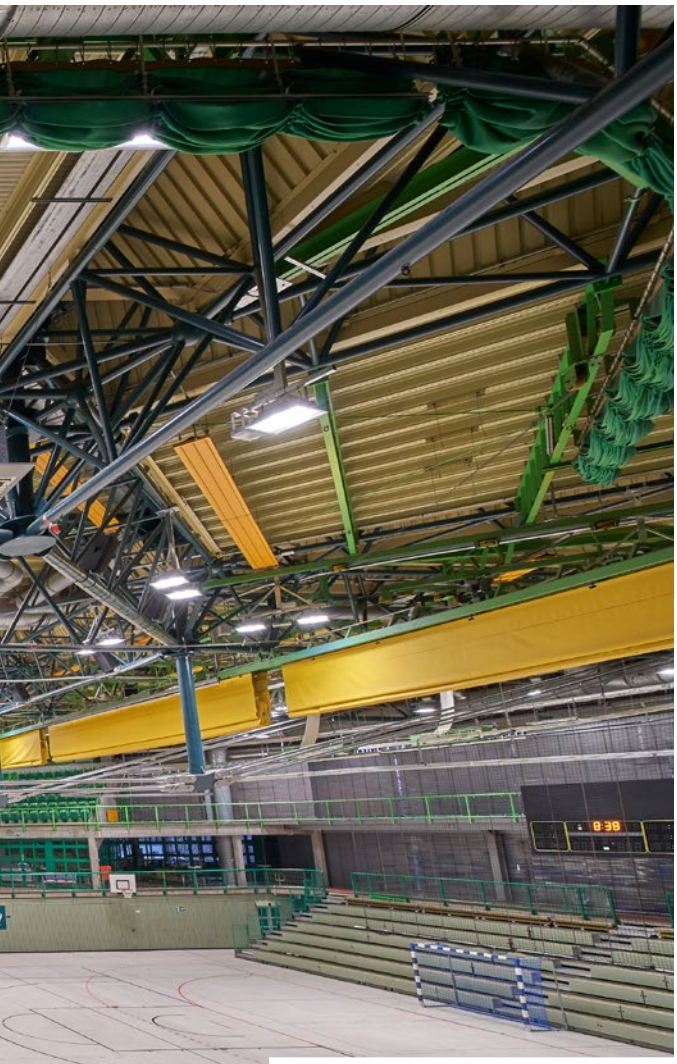
> Suitable for intensive cleaning processes with high-pressure cleaners
> ZUG LED INDUSTRY L80 B10 > 75,000 h up to +55 °C

IP 65 | IP 66 | IP 67 | IP 68 20m | IP 69K | IK 09 PMMA | IK 10 PC

ZUG LED EXTREME

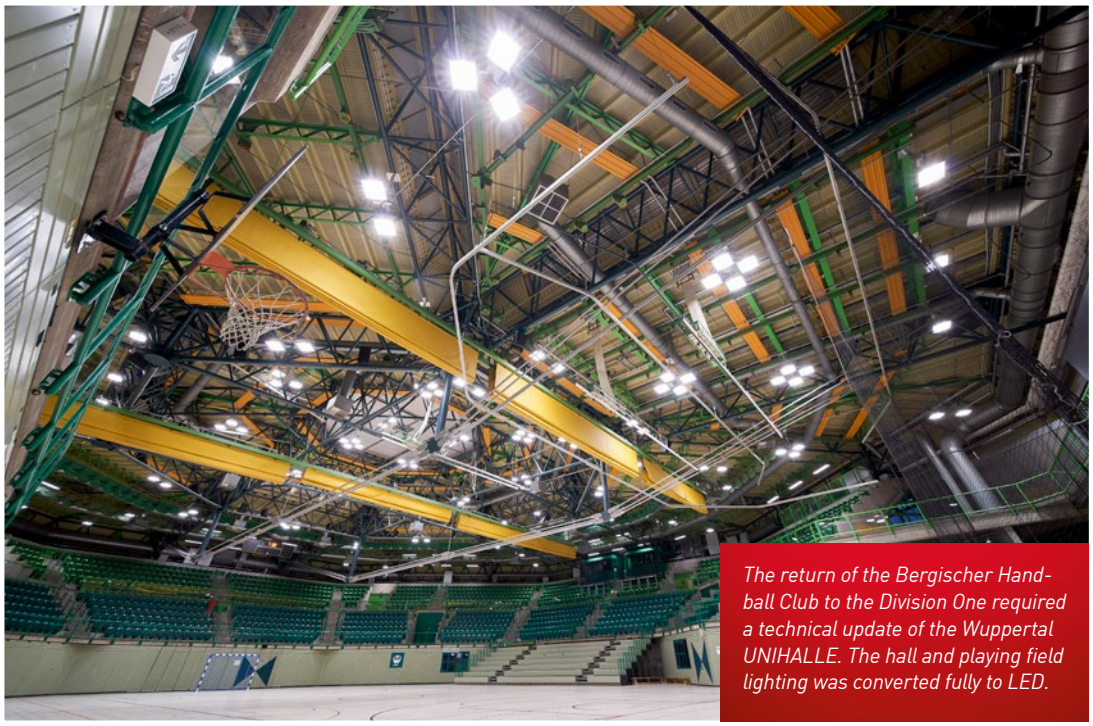
> Suitable for intensive cleaning processes with high-pressure cleaners
> Suitable for ambient temperatures up to +65 °C
> L80 B10 > 100,000 h

INDIVIDUAL LIGHT AT YOUR FINGERTIP



The entire package put together by NORKA and NORKA Automation for the renovation of Wuppertal University's multipurpose hall was developed with efficient LED luminaires, tailor-made suspensions and a lighting management system that provides not only versatile lighting scenes, but also a connection to the central fire alarm system.

Sports and culture have been at home in the Wuppertal UNIHALLE. Mainly a training location for the students of the Bergische University of Wuppertal, the hall can also turn into an atmospheric stage for a concert, an exhibition hall or a suspenseful venue for a national league handball match in no time. To fulfill the requirements of the German Handball-League, the hall did recive a technical upgrade. In addition to new ball nets, stands for the cameras and high-speed Internet for journalists, an LED lighting system with intelligent control was also implemented.



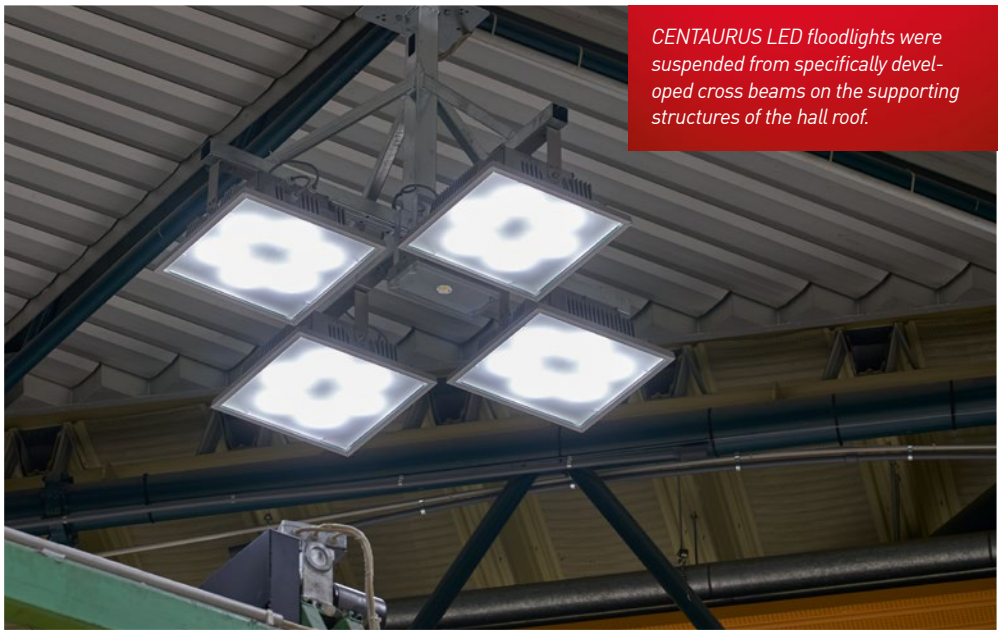
The return of the Bergischer Handball Club to the Division One required a technical update of the Wuppertal UNIHALLE. The hall and playing field lighting was converted fully to LED.

PROJECT: UNIHALLE WUPPERTAL

TECHNOLOGICAL ADVANCE INCREASES EFFICIENCY AND QUALITY

The former solution in the large multi-purpose event hall in Germany's Bergisches Land region still used mercury-vapour lamps, a lamp type whose sale is now prohibited within the European Union, which means that replacement lamps can no longer be provided. Before this background, the decision was made to re-equip the hall with modern LED luminaires. In addition to considerable energy savings, the modern light sources should also increase the quality of the lighting. These expectations were able to be fulfilled with luminaires from the NORKA portfolio. For hall and playing field lighting, 130 CENTAURUS floodlights fitted with LED arrays and LONDON LED and DUBLIN LED luminaires equipped with LED stripes are used.

The increase in illumination level on the playing field was decisive for meeting the requirements of the German Handball League on Division One playing venues. Instead of the previous medium illumination level of about 950 lux at a height of about 1.50 metres above the playing field the required 1,700 lux is now reached easily - with reserves. The hall is not only brighter, but the new luminaires are also very well deglared, whilst the light is evenly distributed across the playing field. Not just the active participants in the sporting events profit from the new lighting quality, it is also creates a considerably better spatial perception for all kinds of events. The good visual conditions also simplify orientation in the stands and on the steps, providing more walking safety on stairways and in aisles.



CENTAURUS LED floodlights were suspended from specifically developed cross beams on the supporting structures of the hall roof.

HIGH VISIBILITY AND SAFETY

The flicker-free light is suitable for HDTV, whilst the long service life of the LEDs reduces maintenance costs to practically nothing. In regard to illumination level and consistency, the new lighting solution must meet the German Handball League on Division One playing venues.

PROJECT: UNIHALLE WUPPERTAL

VERSATILE ILLUMINATION OPTIONS

In addition to high-quality luminaires, the prerequisite for this excellent result was a detailed planning of the lighting system. The sensitive statics of the hall roof prohibited the weight of the existing luminaires from being exceeded. In addition, NORKA had to continue to use the mounting sites of the old luminaires. It was decided to suspend the LED luminaires on new, statically tested cross beams. As a result, the light emission level always lies below the support structure of the roof and the stage equipment installations, which reliably prevents shadows. Three different types of zinc-coated, ball impact resistant cross beams accommodate combinations of two to four CENTAURUS 230N floodlights in the vicinity of the playing field.

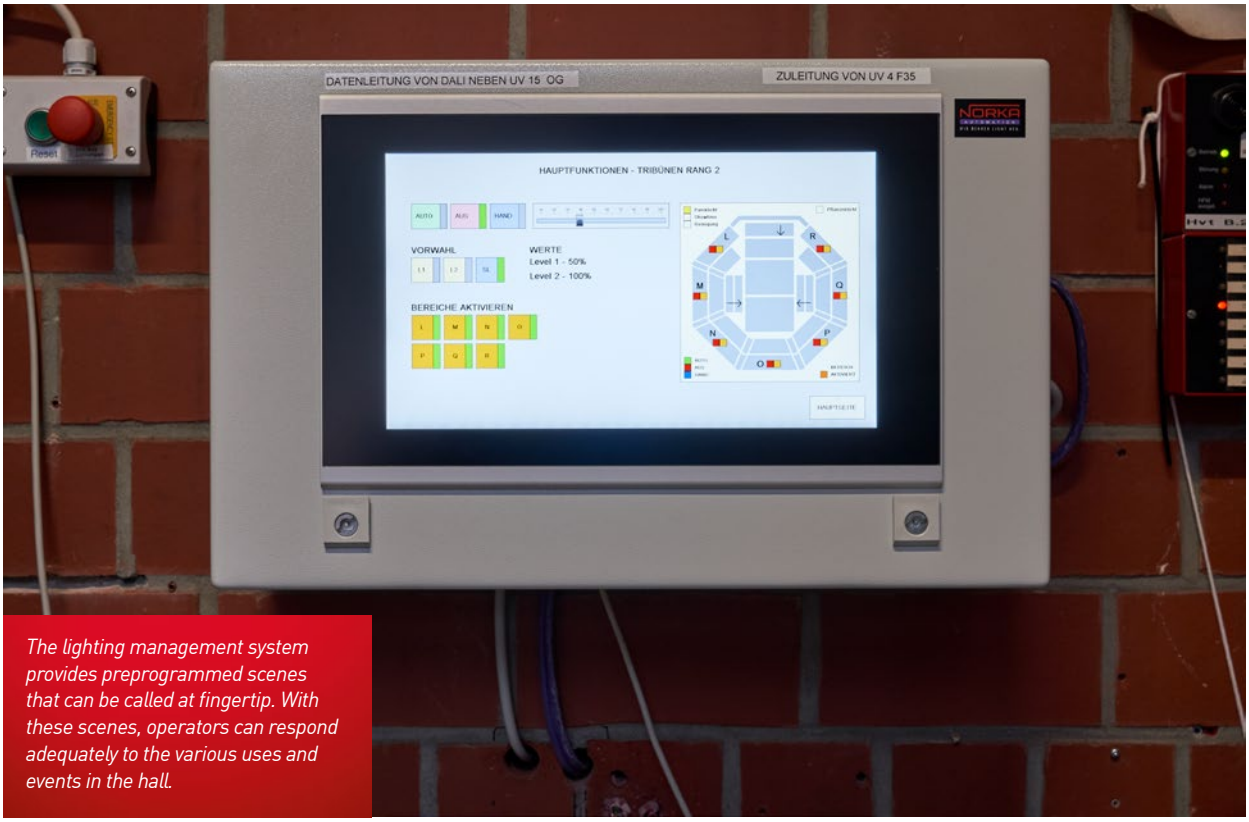
A special feature of the Wuppertal UNIHALLE is its adaptability to a wide variety of uses. For instance, the hall can be divided into smaller units and the stands can be moved. NORKA Automation installed the XARA® Professional DALI lighting control system so that the right light would be able to be called for all these configurations. NORKA Automation planned five DALI circuits. These circuits provide a total of 320 addresses – a sufficient number to control each light source individually whilst integrating an additional 36 DALI motion sensors. Three presence detectors and four daylight sensors complete the hardware range. Three touch panels are used as control points. As a whole, the lighting control system provides a huge selection of switching and dimming combinations.

THE DESIRED LIGHTING SCENE AT A FINGERTIP

Lighting scenes were preprogrammed and saved for the typical spatial and utilisation formats. For example, one presetting with 1,700 lux can be called for Division One games, one with 750 lux for table tennis games and two with 300 and 500 lux for university athletics. In addition, special lighting dramaturgy options are available for special moments of events. In cleaning mode, the motion sensors ensure that the light is on only where people are currently working. In the interest of easy manual operation, 24 luminaire groups were also defined that were allocated to one section of the hall each. Tapping the touch panel with a fingertip is all that is needed to illuminate only the upper or lower stands, only the playing field or only one section of the hall.

NORKA Automation has implemented an additional safety-related function through the integration of the lighting control system into the central fire alarm system: In case of a fire alarm, all luminaires in the hall switch to 100% brightness and remain on until the fire alarm has been deactivated – independently of the settings in the control room.

The new lighting solution in the Wuppertal UNIHALLE offers maximum efficiency, comfort and safety in all situations. NORKA luminaires with precise optics, a high light efficiency and modern driver technology provide the basis for a sustainable, consistent and glare-free illumination that is also suitable for HDTV.



The lighting management system provides preprogrammed scenes that can be called at fingertip. With these scenes, operators can respond adequately to the various uses and events in the hall.

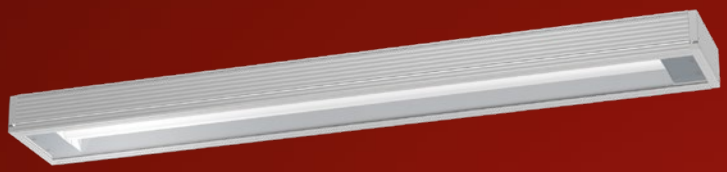
MULTI-PURPOSE HALLS

Multi-purpose halls are subject to many different usage requirements; as a result, special attention must be paid to the flexibility of the lighting in these environments. In the process, using a lighting control system to meet different requirements quickly, easily and conveniently is a good idea.

IP 65 | IK 09 ESG | IK 10 PC

CENTAURUS

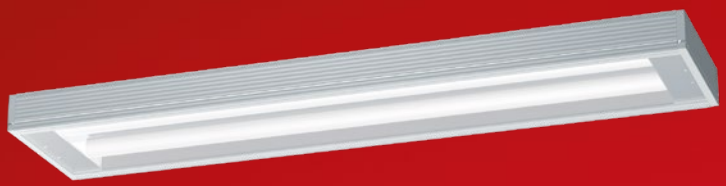
- VHT version suitable for ambient temperatures up to +85 °C
- Suitable for high ceiling heights
- Optionally ball impact resistant



IP 65 | IK 08 PMMA | IK 10 PC

DUBLIN LED

- Decorative linear luminaire made of anodised aluminium
- Rearward concealed mounting apertures
- Optionally applicable in NORKA trunking system 185
- Optionally ball impact resistant



IP 65 | IK 08 PMMA | IK 10 PC

LONDON LED

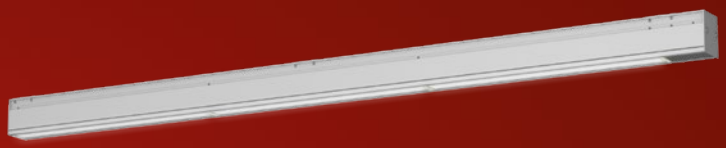
- Decorative linear luminaire made of anodised aluminium
- Rearward concealed mounting apertures
- Optionally applicable in NORKA trunking system 285
- Optionally ball impact resistant

MULTI-PURPOSE HALLS

IP 65 | IK 07 PMMA | IK 08 PC

MÜNCHEN LED

> Low installation height (80 mm)
> Optionally applicable in NORKA trunking system 191
> Universal panel ceiling suspension available



IP 65 | IK 08 PMMA | IK 09 PC

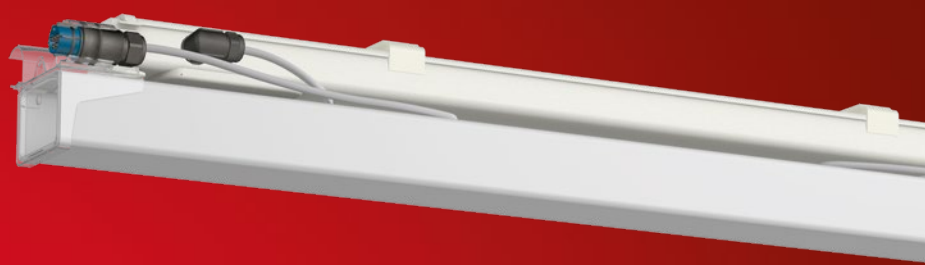
NIGHTLINE

> Extremely robust, high-quality continuous row system
> Continuous, homogeneous light emission

NIGHTLINE LUMINAIRE INSERT

With the plug-and-socket system already installed, the built-in luminaires can be quickly connected to each other. Both 5-pole and 7-pole through wiring is possible with DALI.

The transparent end caps of the individual luminaire inserts provide light without interruption.



FACADES

Facade lighting plays a central role in the design of all types of buildings, encompassing both aesthetic and functional aspects. Targeted lighting can highlight the architectural details, structures and special features of a building. A well-lit facade also facilitates orientation for visitors and passers-by and increases safety.

IP 65 | IP 66 | IP 67 | IP 68 20m | IP 69K | IK 10 PC | IK 10 PMMA

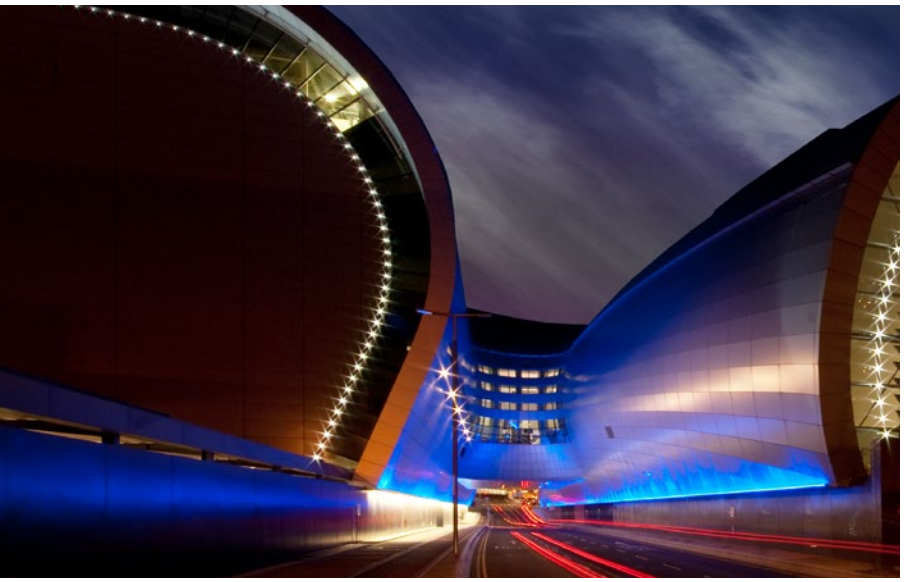
BERN LED

> Tubular luminaire with 60 mm diameter
> Suitable for decorative indoor and outdoor use

IP 65 | IK 03 PMMA

BRIG

> Aluminium luminaire for ceiling and wall with LED lamps



IP 65 | IK 10 ESG | IK 10 PC

URANUS

> For the illumination of buildings and advertising spaces and the illumination of car parks
> Luminaire housing made from weatherproof, UV-resistant, fibreglass-reinforced polymer

IP 65 | IK 10 PC

URANUS PF

> For the illumination of buildings and advertising spaces and the illumination of car parks
> Luminaire housing made from weatherproof, UV-resistant, fibreglass-reinforced polymer

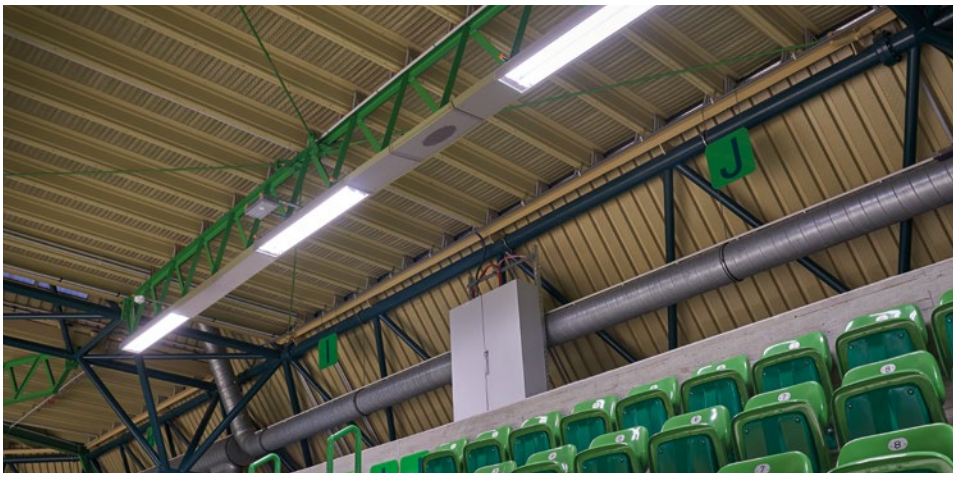
IP 65 | IP 67 | IP 68 1m | IK 07 PMMA | IK 09 PC

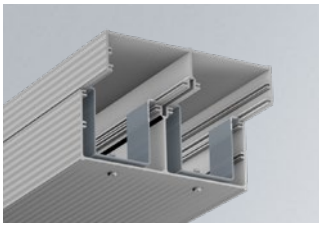
LUZERN 38 LED

> Tubular luminaire (Ø 38 mm) with LEDs
> Resistant to pressurised water up to 1 m according to protection rating IP 68

TRUNKING SYSTEMS

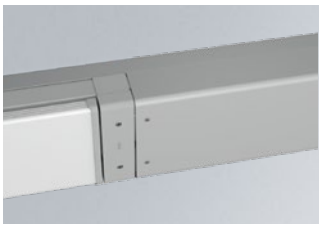
Trunking systems offer the possibility of bridging complex building structures, as well as integrating additional technical equipment such as loudspeakers, while achieving a uniform appearance.

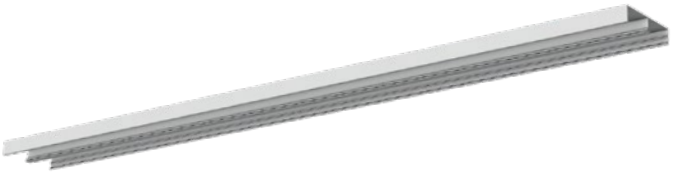




TRUNKING SYSTEM 185

> Suitable for DUBLIN LED
> Also available: Fixation system for blind cover





TRUNKING SYSTEM 191

> Suitable for MÜNCHEN LED
> Also available: Fixation system for blind cover

TRUNKING SYSTEM 285

> Suitable for LONDON LED
> Also available: Fixation system for blind cover

Scan the QR code
and find
your contact!

You can also find your contact at norka.com!

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