NORKA

LIGHT FOR LOCAL PUBLIC TRANSIT

Lighting for underground stations, bus stops and more

LIGHTING FOR UNDERGROUND STATIONS, BUS STOPS AND MORE

In maintenance areas, at the car wash or simply at the bus stop: Depending on the area of application, lighting in the local public transit environment is exposed to brake dust, lubricating oils, water and cleaning agents or even human destructiveness. The requirements for luminaires vary accordingly. We have been your partner for reliable lighting solutions in the area of local and long-distance public transit for decades. For every application, we offer luminaires that defy harsh environmental conditions and provide pleasant light and safety, whilst being efficient and low-maintenance.

LIGHTING IN LONG-DISTANCE TRANSIT

Since 1953, we have been producing lighting that reliably masters the high demands of railway environments. We do not only supply German railway infrastructure managers with efficient and reliable lighting but also companies in France, Suisse and other countries. Contact our representative in your country for more information!

MADE IN GERMANY– SOLUTIONS FOR YOUR PROJECT

Due to our large vertical range of manufacturing and production in Germany, we can respond to special requirements and create customised solutions for extremely difficult application conditions. NORKA finds solutions: With devotion, precision and competence. Also for your project. Talk to us about project solutions!

HIGH PROTECTION RATINGS ENSURE LIGHT, EVEN IN WET CONDITIONS

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

Both vehicles and stops are cleaned regularly: Car wash facilities and washing bays for trains and buses keep vehicles shiny, whilst cleaning crews tackle the dirt at stops with high-pressure cleaners for instance.
To ensure that lighting systems also survive these cleaning processes undamaged, two aspects must be taken into account: The use of luminaires with a high protection rating and the resistance to cleaning agents.

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.

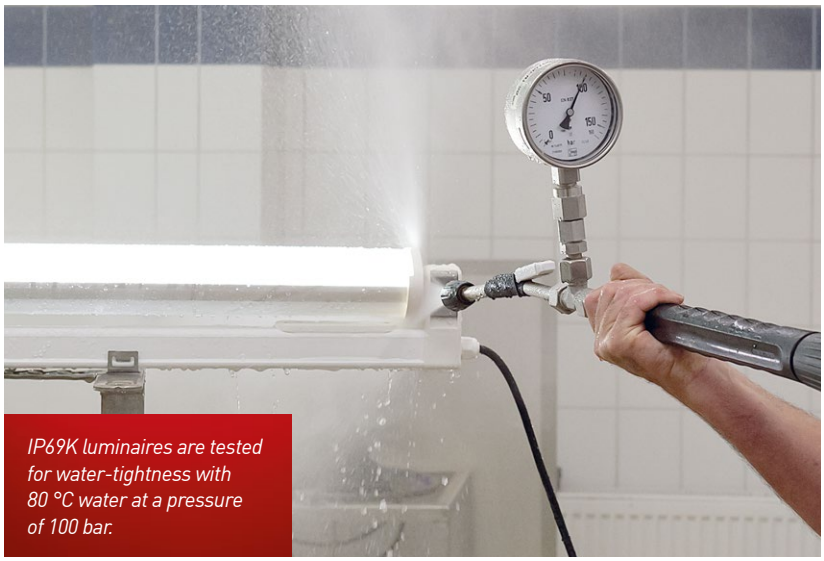
THE ENVIRONMENT IS THE DECIDING FACTOR

When choosing the right luminaire, the lighting requirements of the environment must be taken into consideration. Luminaires with a high protection rating such as IP68 and IP69K are particularly in demand in areas where water is frequently used, such as car wash facilities and washing bays.

At covered stops such as tram stations or bus stations, on the other hand, luminaires with protection rating IP65 are already up to the task. In underground stations, protection against fine dust also comes into play.

A luminaire with protection rating IP65 already withstands many loads, but not necessarily exposure to the elements. Rain, snow and sunlight, as well as UV radiation and temperature fluctuations, demand more from the materials used than one might expect. For this reason, it is important to pay attention to the area of application when choosing a luminaire.

Lighting in work and installation pits must endure high water pressure due to cleaning work on vehicles and in pits. For this reason, luminaires with protection rating IP69K are usually required in work and installation pits.



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

Luminaires with protection rating IP69K, such as the BITBURG LED or ZUG LED, are particularly suitable for areas where high-pressure cleaners are used.

RELIABLE, EVEN WHEN IT GETS DIRTY

CHEMICAL RESISTANCE
Resistance of the materials used to petrol, or lubricants is indispensable, especially in workshop areas. Only in this way can resistance to ageing be guaranteed and the safe functioning of the luminaires over a long period of time safeguarded.

CONSIDERATION OF CLEANING AGENTS
In areas where cleaning agents are used, a lot of thought should go into to choosing the appropriate material. Cleaning agents chemically attack the housing materials of the luminaires, among other things. Over time, the stability of the housing therefore deteriorates, the polymers wear out faster and age resistance is reduced.

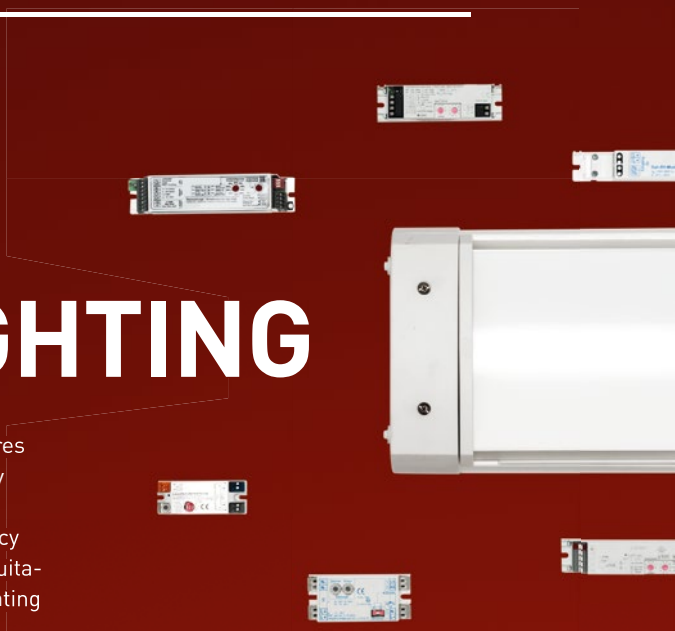
TABLE: OVERVIEW OF CHEMICAL RESISTANCE
Depending on which chemical substances are used in the area of application, attention must be paid to the luminaire material. Due to the high number of individual material groups, the following table can only provide a basic idea and must not be regarded as conclusive.

Thanks to our know-how about difficult environmental conditions and our decades-long experience in luminaire construction, we are familiar with the resistance of our materials to various chemicals and cleaning agents and are therefore able to give you the best advice.
Feel free to contact us!

Chemicals	PMMA	PC
Acids	■, □	■, □
Lyes	■	-
Solvents	-	□, -
Fuels, oil	□	□

KEY:
■ Resistant
□ Limited resistance
— Not resistant

WHEN NOTHING ELSE WORKS – EMERGENCY LIGHTING



Power failure and complete darkness – what can usually be handled at home without major problems is a dangerous situation in publicly accessible areas and at the workplace. To avoid panic and injuries, sufficient visibility for visitors and staff must be ensured at all times. Emergency lighting comes into play here. It enables the safe vacating of buildings, stops and tunnels.

A large number of NORKA luminaires can be upgraded for central battery systems. To enable the necessary testing and monitoring of emergency luminaires, a monitoring module suitable for the selected emergency lighting system can be installed in many luminaires on a project-specific basis. Many NORKA luminaires can also be designed as single-battery emergency luminaires. Simply get in touch with us!

PRODUCT AND PLANNING AS A SAFETY FACTOR

In publicly accessible areas and workplaces, lighting is subject to strict specifications to protect employees and users from accidents. In addition to individual company policies, comprehensive regulations and standards on lighting also exist on a statutory basis.

ELECTRICAL PROTECTION CLASS AND SAFETY EXTRA-LOW VOLTAGE

Depending on rules and guidelines applying in your project, the use of luminaires with protection class II is mandatory. Some transit companies also rely on the use of luminaires with secondary-side safety extra-low voltage (SELV) according to DIN VDE 0100-410 to simplify the handling of equipment during maintenance.

GLARE REDUCTION – RESULT OF PRODUCT AND PLANNING

In workplaces, lighting design is usually carried out in accordance with the regulations concerning lighting for workplaces or other company-specific guidelines. These regulations place particular emphasis on illumination level and glare limitation to create optimum visual conditions. Illumination level and glare also play an important role for underground platforms or track beds.

In the selection of luminaires, special attention is paid to glare limitation. Prisms or other special optics limit the light emission angle of the luminaires and therefore guarantee a reduction of glare. In addition, a uniform luminance on the light emission surface supports a pleasant visual experience. In addition to the product itself, planning also plays its part in hazard reduction.

Too great a difference in brightness between dimly lit or unlit environments such as tunnels and brightly lit stations or stops can cause glare. Excessive ceiling lighting can also cause visibility problems in workshops when cranes are being guided. Irritation or temporarily limited visibility can be the result, thereby increasing the risk of accidents. Well thought-out planning, the targeted use of light and a very good knowledge of the relevant regulations are therefore necessary to minimise glare as a source of danger. The TI value (threshold increment), which is used to evaluate the planning situation, is also an important planning value. A low threshold value increase is an interplay of a well thought-out product in combination with well thought-out planning.

LUMINAIRES THAT RESIST

In local and long-distance public transit structures, fixtures and technology are repeatedly exposed to wilful destruction and other forms of vandalism: Access routes to platforms, stairways or waiting areas, but also luminaires on platforms suffer from brute force or attempts at tampering. In less frequented areas, tags and graffiti can be found on walls and luminaires, which has an influence on the illumination level. To keep failures and maintenance costs at a minimum, attention can be paid to the suitability of the luminaires for these particularly vulnerable areas as early as the time of purchase. High impact resistance, an anti-graffiti coating that facilitates cleaning, and special screws can help ensure that the lighting does its job for as long as possible and with as little maintenance as possible.

HIGH IK PROTECTION CLASSES ENSURE SAFETY

In environments where possible violence to the lighting is to be expected, it is important to look at the IK class. The IK class provides information about the impact resistance of luminaires. A high IK class such as IK10 and higher protects the inner workings of luminaires from deliberate damage by kicks or knocks. A low IK class, on the other hand, makes it easier for people out to destroy to cause serious damage and therefore endanger themselves or others. For operators of installations, this destruction results in additional costs for the replacement of damaged luminaires.

EASIER GRAFFITI REMOVAL

What is art for one person is sometimes just a nuisance for another. Due to the safety-relevant importance of lighting, the removal of tags and graffiti on luminaires is absolutely necessary. An additional coating makes it easier to remove soiling.

PREVENTING TAMPERING ATTEMPTS

In addition to brute force, luminaires in freely accessible spaces can also be subject to attempts at tampering. The use of special screws such as crescent, three-hole or ellipse screws ensures that housings cannot be opened with standard tools. Concealed or rearward cable entries hide supply lines. Manipulating lighting is thus made considerably more difficult.

Special screws
The use of special screws such as crescent, three-hole or ellipse screws ensures that housings cannot be opened with standard tools, making the tampering of lighting much more difficult.

Anti-graffiti coating
The intentional obstruction of lighting with paint can hardly be prevented, but an additional coating of the luminaire surface makes it easier to remove the paint.

LIGHT WITH AFORE-THOUGHT AND COMFORT

Our XARA® lighting control system

Are unused underpasses lit at full illumination level all night? Is the maintenance area provided with sufficient natural lighting as well? From motion detectors to schedules and daylight sensors, there are a variety of ways to control the lighting and, at the same time, significantly reduce energy consumption. With a wide range of possible functions, our XARA® lighting control system offers the right solution for your project.

LIGHTING CONTROL WITH HIGH STANDARDS

High requirements in terms of functionality, protection rating and the vibration and impact resistance of components are the order of the day for NORKA. With XARA®, we also rely on durable components that are as robust as those used for NORKA luminaires.

EVERYTHING FROM A SINGLE SOURCE

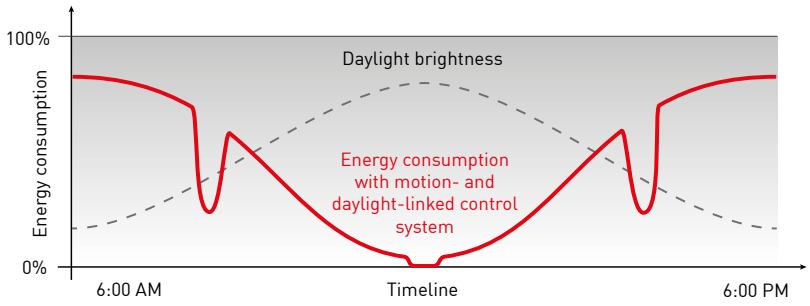
NORKA is with you from start to finish: we offer consulting, hardware and software as well as commissioning and training all from one source.

THINKING OUTSIDE THE BOX

XARA® not only allows NORKA luminaires to be controlled, but also allows integration of other makes into a XARA® control system. But maybe you are already thinking ahead. In many cases, integration into (existing) building management systems makes sense and is easy to do.

FROM SMALL TO LARGE, FROM SIMPLE TO COMPLEX

From a tram stop or an underpass to a vehicle maintenance and handling facility with several tracks, many possibilities are available to save energy and increase comfort for employees and users with a control system.
Based on a few basic principles such as corridor function, light scenes or motion- and daylight-dependent control, a wide variety of solutions can be developed and scaled to almost any size.



> Exploit savings potential with a daylight-dependent control system:
During breaks or when not in use, the lighting system switches off automatically; when the space is in use, the brightness is regulated in accordance with the current daylight brightness in the room.

OVERVIEW OF THE BASIC FUNCTIONS

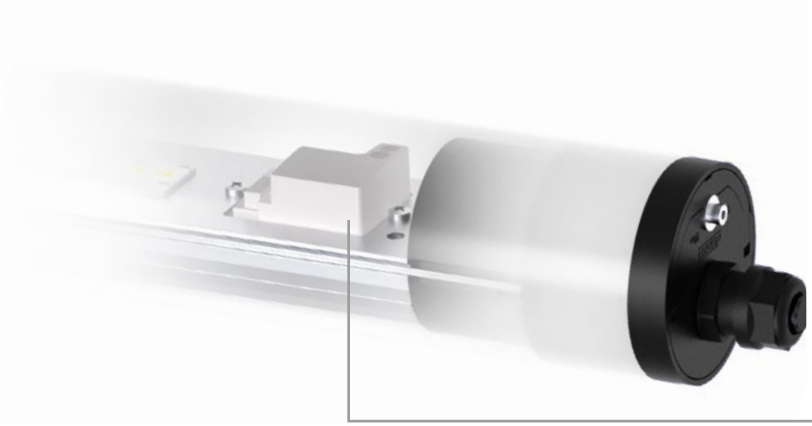
→ Corridor function
The detection of movement causes the illumination level to dim up from a defined basic level. After a defined follow-up time, the lighting is lowered to the basic level again. The principle can be combined with other control options such as time schedules or daylight-controlled system.

→ 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.

Various lighting scenes and settings can be called via centrally placed touch panels or monitors.

How is lighting control used in a project?
Read page 18 for our project report "Fit for the Future".

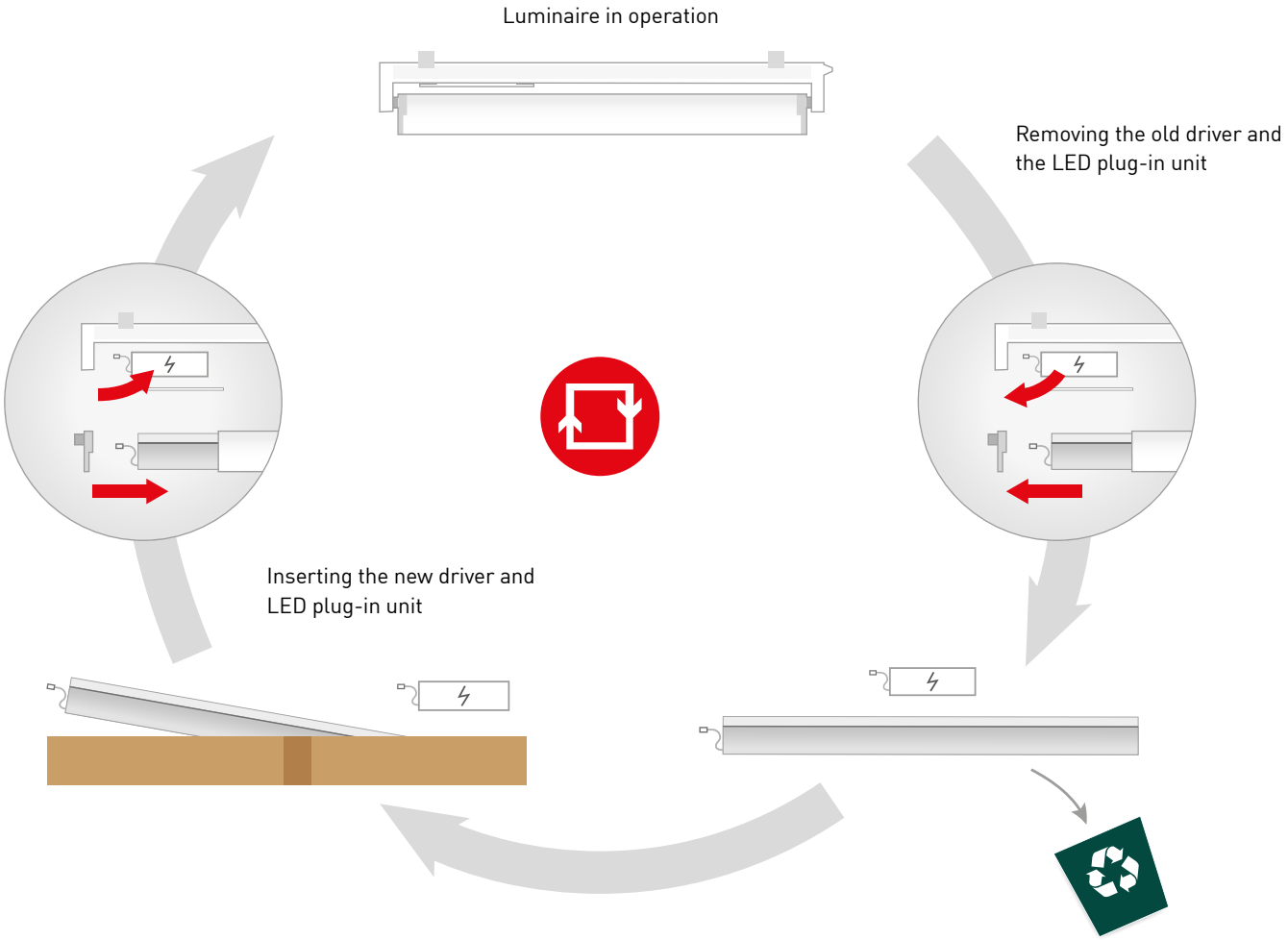
easy eXchange – FOR SUSTAINABLE LIGHT

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.




S1
KVV

OUR LIGHTING SOLUTIONS FOR STOPS AND PLATFORMS

PLATFORMS

Platforms for the underground, trams and mainline trains are used by millions of people every day. Pleasant, uniform light conveys safety and increases the quality of stay. Our solutions include luminaires for all types of platforms.

IP 65 | IK 07 PMMA | IK 08 PC

BRÜNN LED

> Low installation height (85 mm)
> Can be used in various profile systems

IP 65 | IK 04 PMMA | IK 09 PC

ERFURT LED/EIDELSTEDT DB

> Polymer luminaire with swivelling reflector tube (can be swivelled up to ±50°)

PLATFORMS

IP 65 | IK 04 PMMA | IK 09 PC

HAMBURG LED

> Available with protection tube or reflector tube

IP 65 | IK 07 PMMA | IK 08 PC

MÜNCHEN LED/MÜNCHEN LED DB

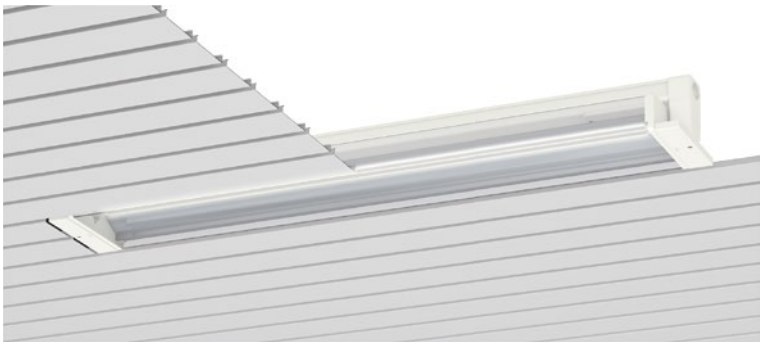
> Low installation height (80 mm)
> Trunking system with various accessories available
> Universal panel ceiling suspension available

IP 65 | IK 04 PMMA | IK 09 PC

KIEL LED

> Available with protection tube or reflector tube
> Fixed into place by two stirrup clamps
> Omnidirectional LIDC for the illumination of showcases

PLATFORMS



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 08 PMMA | IK 09 PC

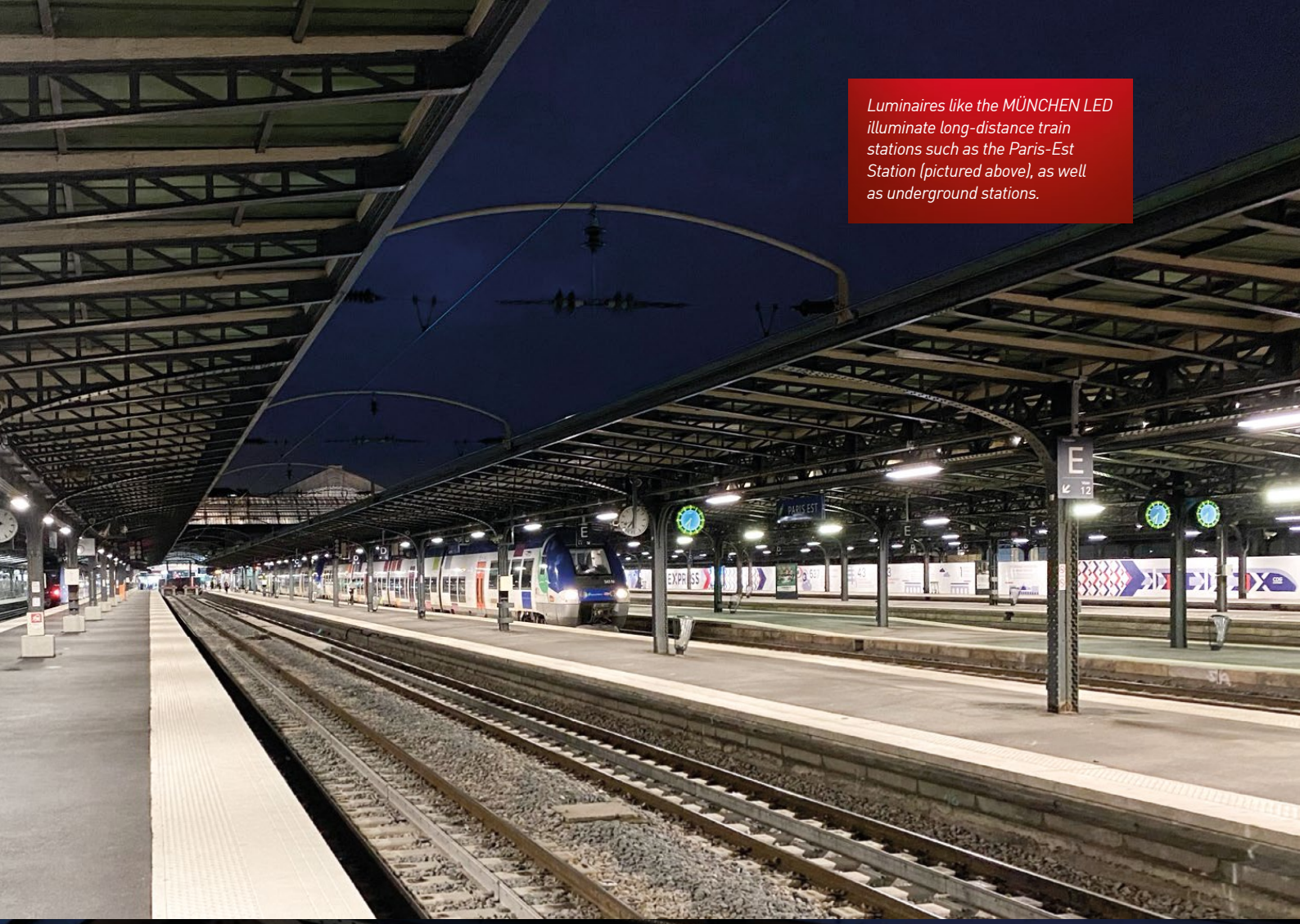
JENA LED/JENA LED DB

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

IP 65 | IK 08 PMMA | IK 09 PC

NIGHTLINE

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



Luminaires like the MÜNCHEN LED illuminate long-distance train stations such as the Paris-Est Station (pictured above), as well as underground stations.

FIT FOR THE FUTURE

Good visibility and safe orientation: Intelligent control technology at the U1 stop “Meiendorfer Weg” in Hamburg ensures more efficiency and comfort – for the station operator and passengers alike.

Intelligent control technology provides reliable lighting around the clock at the U1 station Meiendorfer Weg in Hamburg. The pilot project was initiated as part of the development of the station to make it more accessible. It is an impressive example of the possibilities and advantages that using a demand-oriented lighting control system can offer operators and passengers.

With a route length of almost 56 kilometres, the U1 is Hamburg's longest underground line. The blue line connects Norderstedt with Hamburg's city centre and then continues to Volksdorf, where it splits in two directions to Ohlstedt and Großhansdorf. Almost all of the 47 U1 stations are now accessibility-friendly. After all, the local operating company has been working flat out for several years on its large-scale "Lift Programme" to provide convenient, barrier-free access to all of Hamburg's underground stations: with one lift per platform, (partially) raised platforms for level access and exit, and a tactile orientation system for the blind and visually impaired.
Accordingly, Meiendorfer Weg station also received a thorough facelift at the end of 2018. Opened in 1925, the station was upgraded in the 1950s with a new entrance and a sales area, and is now used by around 7,000 passengers every day.

PROJECT: MEIENDORFER WEG

The luminaires integrated into lighting tubes provide a pleasant ambient light at 4000 K.

INTELLIGENT COMPREHENSIVE SOLUTION

Just as convenient as the barrier-free access is the lighting, which was completely overhauled as part of the refurbishment. As a long-standing partner of the local operating company, the luminaire manufacturer NORKA created the new lighting concept. Together with its partner company NORKA Automation, which specialises in control intelligence, NORKA developed a highly complex overall solution tailored to the special requirements in the form of a pilot project.

Good visibility and safe orientation both within the building and on the covered platform are provided by ERFURT LED luminaires in different designs. They are integrated into a support tube system that houses other technology such as loudspeakers and cable routing. On the central platform, two of these systems are used along the tracks. These feature single luminaires with wide-beam light characteristics are spaced about three metres apart. The swivelling tube and the internal aluminium reflector create the light distribution that exactly matches the platform geometry.
In other words, the lighting reliably meets all standard specifications in terms of the illumination level, uniformity and absence of glare both in a longitudinal and transverse direction. The luminaires with medium-beam light distribution provide pleasant, uniform brightness in the two ticket halls and passageways, in the staircase area and in the waiting area.

FULLY AUTOMATIC LIGHTING CONTROL

Even if a passenger only spends an average of seven minutes in the station, it is important that each one feels comfortable and safe during this time. XARA® professional light control ensures that this is always the case, especially in the event of a malfunction. Both the heart and the brain of the lighting system, it controls the luminaires fully automatically: it watches over the various illuminated areas and constantly regulates the amount of light depending on the intensity of daylight. It detects and responds to movement, leaving no one in the dark for reasons of safety. It monitors the emergency luminaires, identifies possible defects and ensures that, in the event of a fault, the light reduction in the affected area is compensated. It records energy consumption, and is capable of a whole lot more.

This variety of functions is achieved with a programmable logic controller (PLC), which is otherwise used to control industrial machinery. It switches and controls the light in the stop from a control cabinet. The PLC sends its commands to a total of 60 luminaires via DALI (Digital Addressable Lighting Interface). The input for the lighting control is provided by light sensors as well as infrared and radar motion sensors located in defined lighting areas, such as the ticket hall, stairs and covered platform. These different areas are assigned lighting functions that are activated and controlled on the basis of the operating status of the station and the measuring signals.


Meiendorfer
ndorfer Weg
HOCHBAHN
Straßenverzeichnis
Rauchverbot
Alkoholverbot

PROJECT: MEIENDORFER WEG

AROUND THE CLOCK LIGHTING AS REQUIRED

In normal daytime operation, the lighting on the platform is controlled in line with the daylight and in the ticket hall according to daylight and movement. If the minimum illumination level falls below a constant 100 lux on the platform and a basic level of 60 lux in the building, e.g. in the event of thunderclouds or on grey winter days, the control system increases the light level accordingly. If the motion sensors installed in the building detect movement, the luminaires are gently dimmed up to as high as 150 lux. When the last passengers leave the building, the brightness is maintained for another 15 minutes and then slowly dimmed down to 100 lux. After a further 15 minutes without motion detection, the dimming returns to the basic level of 60 lux. This does not apply to the staircase, which has a constant illumination level of 150 lux for reasons of safety.

There is a twilight switch function incorporated in the control system that tells the system at which brightness level it should switch to night mode. A minimum illumination level of 100 lux ensures that the station remains comfortably bright even in night mode. In the twilight phase, increasing the light level by around another 50 lux gives the train driver a better overview of the situation on the platform and increases passenger safety. In darkness, the non-dimmable luminaires used for lighting information and pathways in the vicinity of the station are switched on and off by means of a circuit breaker.

During the operational downtime, in other words in the period between the last train at night and the first in the morning, there is minimum lighting at the station that roughly corresponds to the brightness on the platform during a full moon.

The daylight- and movement-dependent control system automatically regulates the lighting of the platform and ticket hall.

RELIABLE SAFETY

In addition to recording the energy consumption of each individual luminaire, the lighting control system continuously carries out self-diagnosis and queries any faults within the luminaires, the drivers or in the communication via the DALI bus at regular intervals. The power supply and sensor signals are also monitored. If a fault is detected, the control system generates a fault message and displays it immediately on the local control panel. At the same time, it sends the corresponding status signals to the control centre and, if possible, initiates a fault compensation scenario. For example, if there is a luminaire failure, the control system compensates for this failure by increasing the dimming level of the surrounding luminaires until the minimum illumination level is reached again in the affected area.

This enables the highly complex lighting control system in the Meiendorfer Weg station to offer the operators a high degree of safety. They can rely on the lighting to function reliably even in the event of a malfunction. This also means that passengers benefit from safe and pleasant lighting that is precisely tailored to their needs.

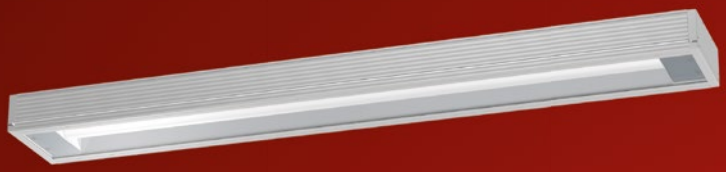
OUTDOOR STOPS

Bus and tram stops are usually located outdoors, and the luminaires are often within reach of waiting passengers due to low ceiling heights – as a result, caution may be required here and a high impact protection class should be taken into consideration. A pleasant, uniform light provides an increased feeling of safety, even at night or in the winter.

IP 44 | IP 65 | IP 69K | IK 10+

BELFAST

- L80 B10 > 100,000 h at +35 °C.
- Rearward concealed mounting apertures
- Trunking system available



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

IP 65 | IK 04 PMMA | IK 09 PC

HAMBURG LED

> Available with protection tube or reflector tube

IP 65 | IK 04 PMMA | IK 09 PC

KIEL LED

> Available with protection tube or reflector tube
> Fixed into place by two stirrup clamps
> Omnidirectional LIDC for the illumination of showcases

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

OUTDOOR STOPS

IP 44 | IP 65 | IP 69K | IK 10+

PHALANX LINEAR 115

> Retention of functionality in case of vandalism
> Rearward concealed cable duct
> Special screws for tampering prevention optionally available

IP 44 | IP 65 | IP 69K | IK 10+

PHALANX LINEAR 200

> Retention of functionality in case of vandalism
> Rearward concealed cable duct
> Special screws for tampering prevention optionally available

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

ZUG LED/ZUG LED DB

> Suitable for intensive cleaning processes with high-pressure cleaners

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

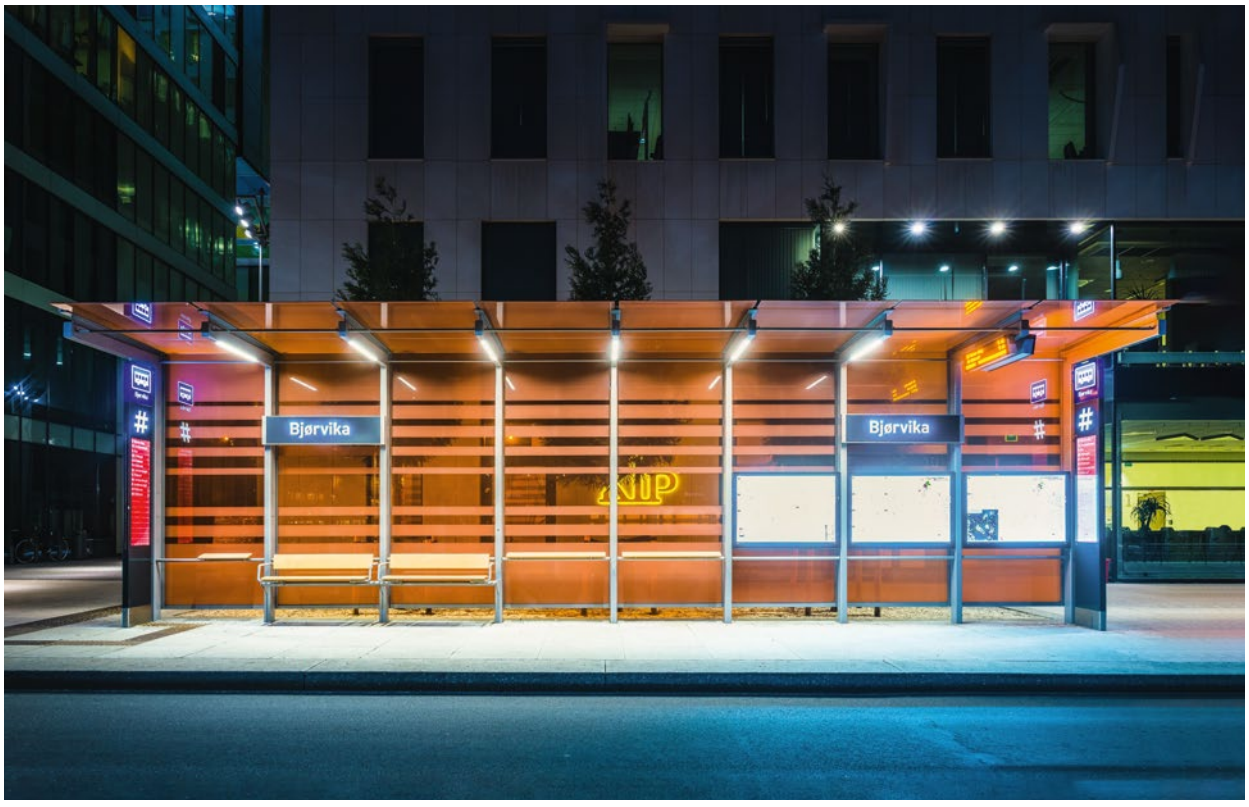
ZUG LED EXTREME

> Suitable for intensive cleaning processes with high-pressure cleaners
> L80 B10 > 100,000 h

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

ZUG LED AL/ZUG LED AL DB

> Rearward concealed mounting apertures
> Suitable for intensive cleaning processes with high-pressure cleaners




Ratusz Arsenał
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UNDERPASSES / AREAS EXPOSED TO VANDALISM

Underpasses and areas leading to underpasses need reliable lighting for orientation and safety. Luminaires in these areas are often at risk of vandalism or even negligent destruction and tampering. A high impact protection class and an anti-graffiti coating can reduce maintenance and save costs.

IP 44 | IK 10+

PHALANX LINEAR 75

- Vandalism-proof luminaire with steel housing
- Retention of functionality in case of vandalism
- Rearward concealed cable duct
- Special screws for tampering prevention optionally available

IP 44 | IP 65 | IP 69K | IK 10+

PHALANX LINEAR 115

- Vandalism-proof luminaire with steel housing
- Retention of functionality in case of vandalism
- Rearward concealed cable duct
- Special screws for tampering prevention optionally available

IP 44 | IP 65 | IP 69K | IK 10+

PHALANX LINEAR 200

- Vandalism-proof luminaire with steel housing
- Retention of functionality in case of vandalism
- Rearward concealed cable duct
- Special screws for tampering prevention optionally available

UNDERPASSES / AREAS EXPOSED TO VANDALISM

IP 65 | IP 69K | IK 10+

PHALANX LINEAR 240/LUTTEROTH LED DB

> Vandalism-proof luminaire with metal/stainless steel housing
> Retention of functionality in case of vandalism
> Special screws for tampering prevention optionally available
> Suitable for intensive cleaning processes with high-pressure cleaners

IP 65 | IK 10+

PHALANX 430/STRALSUND LED DB

> Decorative aluminium vandalism-proof luminaire
> Retention of functionality in case of vandalism
> Rearward concealed mounting apertures
> Special screws for tampering prevention optionally available

An anti-graffiti coating on the luminaire surface simplifies the removal of paint.

IP 65 | IK 10+

PHALANX 620/ROSTOCK LED DB

- Decorative aluminium vandalism-proof luminaire
- Retention of functionality in case of vandalism
- Rearward concealed mounting apertures
- Special screws for tampering prevention optionally available

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

ZUG LED AL/ZUG LED AL DB

- Vandalism-proof luminaire with stainless steel housing
- Rearward concealed mounting apertures
- Suitable for intensive cleaning processes with high-pressure cleaners

WORK PITS

Fracture proof, easy to clean, resistant to chemicals – work pits place their own unique demands on lighting. Uniform illumination and flexibility in luminaire alignment facilitate the oft-times strenuous and meticulous visual tasks and increase working comfort.

IP 65 | IP 66 | IP 67 | IP 68 1m | IK 07 PMMA | IK 10 PC

BEBRA LED

> Luminaire made of thermosetting polymer with reflector tube (can be swivelled by ± 75°)

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

IP 65 | IP 66 | IP 69K | IK 08 PMMA | IK 09 PC

FULDA LED/FULDA LED DB

> Polymer luminaire with asymmetric beam, optionally with floor illumination

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

ZUG LED/ZUG LED DB

> Tubular luminaire with 75 mm diameter
> Suitable for intensive cleaning processes with high-pressure cleaners

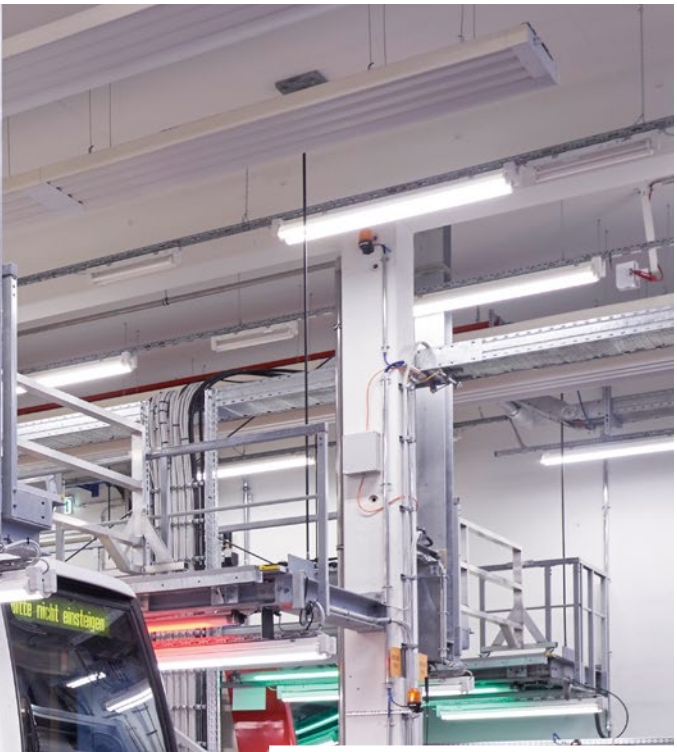
IP 65 | IP 66 | IP 67 | IP 68 20m | IP 69K | IK 09 PMMA | IK 09 PC

ZUG LED EXTREME

> Tubular luminaire with 75 mm diameter
> Suitable for intensive cleaning processes with high-pressure cleaners
> For ambient temperatures up to +65 °C

THE REJUVENATION OF THE HAMBURG UNDERGROUND LINES

In the new underground train bodyshop in Hamburg-Billstedt, underground vehicles are serviced, cleaned and maintained on a daily basis. Whether signal luminaires on the tracks or emergency lighting, NORKA luminaires provide the right light.



Just imagine: a maximum five-minute wait for buses, trains or shuttles – throughout Hamburg, hundreds of additional newly installed stops, and quiet, eco-friendly traffic. And as a passenger, no more having to memorise timetables, as there will be a means of transport arriving or departing in the immediate vicinity every five minutes anyway. This is the vision that the Senate of the Free and Hanseatic City of Hamburg hopes to achieve by 2030 under the name "Hamburg-Takt" – and for which the local operating company has already initiated and realised numerous projects.

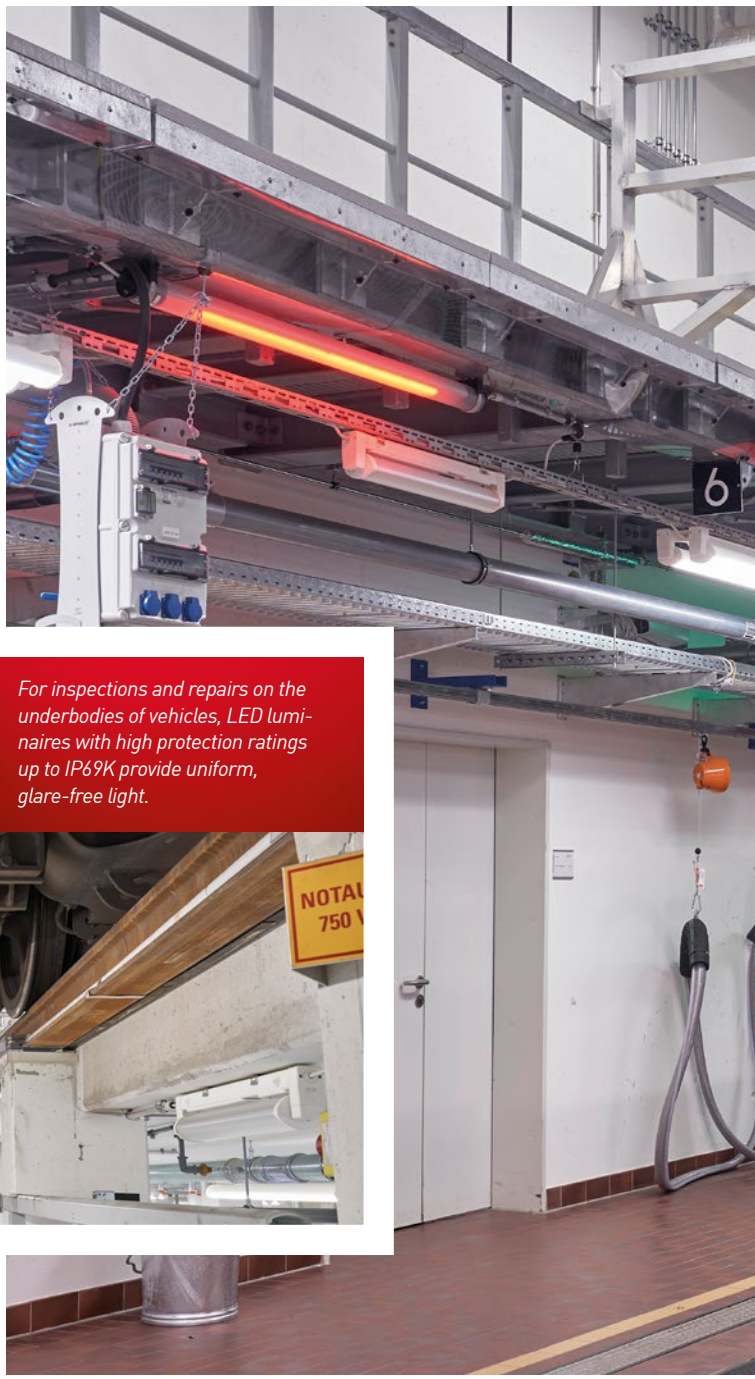
One of these is the new underground railway workshop, including a washing facility, in Hamburg-Billstedt, which began regular operation in November 2020. Located between the Billstedt and Legienstraße underground stations, it joins the existing workshops in Barmbek and Farmsen, which had reached their capacity limits. This means that the U2 and U4 lines now have their own line workshop, dispensing with the transfer trips to Farmsen; this not only frees up more capacity in the two workshops, but also on the track.

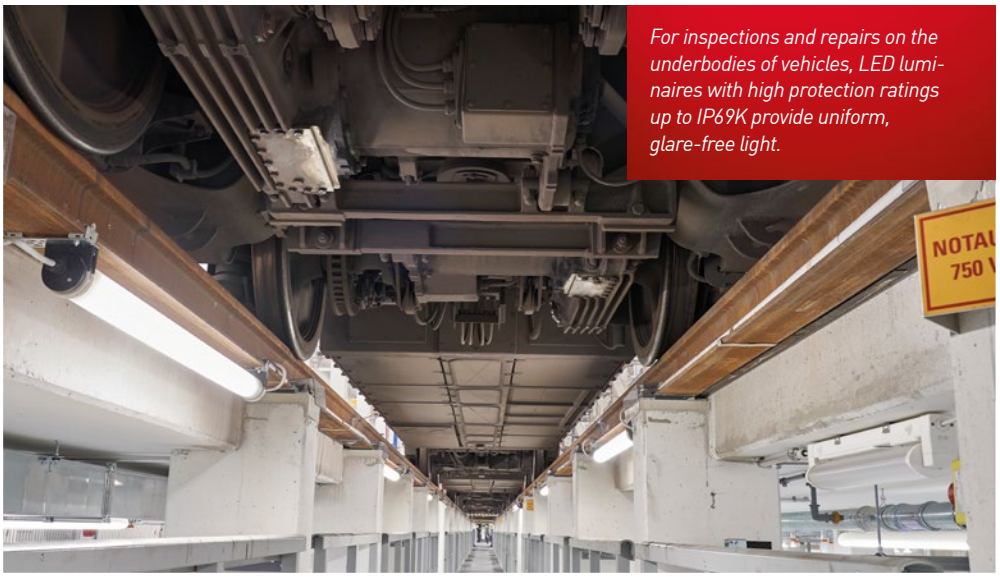
Located between the Billstedt and Legienstraße underground stations, the new building joins the existing workshops in Barmbek and Farmsen, which had reached their capacity limits.

PROJECT REPORT: UNDERGROUND TRAIN BODYSHOP BILLSTEDT

**CONVENIENT FACILITIES –
SUSTAINABLE USE OF RESOURCES**

The new workshop in Billstedt is 135 metres long, 34 metres wide and has four tracks, each one 120 metres long. This means that work can be carried out on several trains in parallel, using state-of-the-art technology on three different levels at the same time, from oil changes in the work pit to roof work on air-conditioning systems and technical checks. For the daily cleaning of the trains a new wash hall is available. It is also 135 metres long, seven metres wide and has one track. When designing the entire facility, great importance was attached to the sustainable use of resources: for example, rainwater is collected in a catch basin for cleaning the vehicles and recycled after use, and the roof of the operating workshop has insect-friendly plants – especially for the benefit of wild bees and bumblebees.





For inspections and repairs on the underbodies of vehicles, LED luminaires with high protection ratings up to IP69K provide uniform, glare-free light.

GREAT VISIBILITY AND SAFETY ON ALL LEVELS

The maintenance gangways and walkways in the workshop building are flanked by ERFURT LED luminaires with reflector tubes made of PMMA Transopal® that can be swivelled. In the two-lamp, wide-beam version, they produce an illumination level of 500 lux and ensure balanced brightness, uniformity as well as glare limitation, thus creating the best visual conditions for working on trains from any position, without any shadows. ERFURT LED luminaires are available with finely graduated luminous fluxes, allowing them to be precisely planned to meet specific requirements. This means significant energy savings up to 60 percent. The emergency lighting is also provided by ERFURT LED luminaires, but in the smaller single-lamp variant. They are mounted at regular intervals between their big brothers and also have a monitoring module that can carry out functional tests of the system. Powered by a central battery, they guarantee fail-safe emergency lighting with illumination levels of 50 lux in the event of a lighting failure. This means they fulfil the requirements of the Workplace Directive, which stipulates ten percent of the general illumination level for areas with an increased risk of falling.

ZUG LED as signal lights in green and red indicate whether the traction current for the section is switched on or off.

The principle of two-lamp general lighting combined with single-lamp emergency lighting is also continued in the wash hall. This is because the ERFURT LED luminaires have all the features necessary for lighting under such special environmental conditions. They comply with protection class II (additional protective insulation for live parts), feature protection rating IP65 (dust-tight and protection against water jets), and are resistant to corrosion and impacts, as well as acids and alkalis.

PROJECT REPORT: UNDERGROUND TRAIN BODYSHOP BILLSTEDT

ROBUST WORK LIGHTS – RELIABLE SIGNAL LIGHTS

Good visibility is essential for inspections and repairs on the underbodies of rail vehicles. From the work pits, for example, the wheels are tested for material defects using ultrasonic instruments and the brake linings are inspected. Having uniform, glare-free light in sufficient quantity is immensely important to ensure that even the smallest damage to the vehicles is detected immediately. In the operating workshop in Billstedt, this is ensured by ZUG LED luminaires. These particularly robust luminaires are preferentially used in work pits and in zones with special safety requirements due to their high protection ratings up to IP69K. Thanks to the medium beam light characteristic, the floor and walkway in the pit as well as the undercarriage of the train are uniformly illuminated.

In addition, ZUG LED luminaires also perform an important function for the workshop team at the tracks, in that their signal light indicates the operating state of the rail current in the respective work area: If the ZUG LED luminaires are red, the rail current is on. The colour green indicates that the rail current is switched off.

DURABLE LIGHTING SOLUTION FOR HARSH ENVIRONMENTS

By using NORKA products, the client and planners have not only opted for an efficient and robust lighting solution, but also one that is particularly long lasting – as demonstrated in numerous projects. NORKA is a specialist for light under extreme environmental conditions, which means that the maintenance area, the work pits and the wash hall areas are no problem for the NORKA luminaires. Resistant to oil and alkalis and particularly to impacts and high and low temperatures, ERFURT LED and ZUG LED are designed for harsh environments, holding their own where standard products often fail. The sealing system made of non-ageing silicone/synthetic rubber and high protection ratings also prevent soot, dust, liquids and insects getting into the luminaire housing and allow the luminaires to be cleaned by water jet. As such, the lighting used in the maintenance, repair and cleaning of the underground trains will provide good service for a long time without having to be maintained itself.

In the wash hall, the lighting concept continues with ERFURT LED, as the luminaires have all the features needed for lighting in such specific environmental conditions.

ERFURT LED luminaires with reflector tube made of PMMA Transopal® that can be swivelled ensure the best visibility for working on the trains from any position.

CAR WASH

Car wash facilities and washing bays require waterproof luminaires that can withstand water jets or high-pressure cleaning. In addition, increased resistance to cleaning agents is advisable. This can be achieved with a special coating.

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

ZUG LED/ZUG LED DB

> Tubular luminaire with 75 mm diameter
> Suitable for intensive cleaning processes with high-pressure cleaners

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

ZUG LED EXTREME

> Tubular luminaire with 75 mm diameter
> For high temperature ranges
> 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 reflector tube (can be swivelled by 60°)
> Suitable for intensive cleaning processes with high-pressure cleaners


NOTAUS
750 V

In addition to protected cable routing, trunking systems also offer the structural integration of loudspeakers and other technical equipment.

SUPPORT SYSTEMS – MOUNTING RAIL, TRUNKING SYSTEM, ETC.

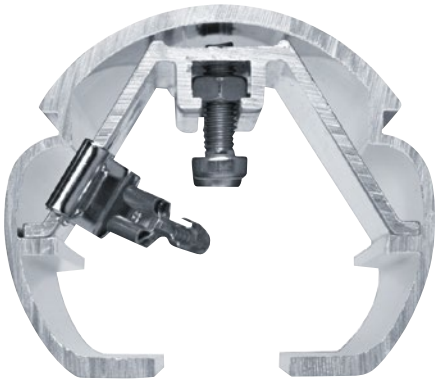
For the illumination of structural situations such as platforms or workshops, where long stretches need to be illuminated uniformly, support systems such as mounting rails or trunking systems are ideal. They are not only used to hold luminaires, but also for supply cables, loudspeakers or cameras.

MOUNTING RAILS – ORDERLY AND FLEXIBLE
Mounting rails are mostly used in factory and maintenance halls. They act as a tidy cable guide and allow flexible positioning of the luminaires to meet visual requirements. In halls, mounting rails and continuous row luminaires are an easy-to-install and easy-to-maintain alternative to spotlights.

TRUNKING SYSTEMS – BALANCED AND PROTECTED
Especially in the field of public transit, trunking systems are used because they protect the supply lines on the one hand, whilst allowing easy mounting and maintenance and offering a high degree of stability against external influences such as wind on the other. In addition, they can be used to bypass challenging basic building structures such as cross beams. For areas such as underpasses or access routes, trunking systems also offer good protection against wilful destruction and tampering in combination with vandalism-proof luminaires. Additional technical equipment such as loudspeakers or cameras can also be integrated into trunking systems.

INSTALLATION RECESS FRAME
For other visual requirements, ceiling recessing using installation recess frames is also possible. Loudspeakers can also be integrated here in combination with trunking system elements. For use in panel ceilings, panel ceiling fixings are also available for specific products.

Mounting rails offer orderly cable routing, easy installation and flexibility.



Our BELFAST is used in combination with a corner trunking system, for example, in areas such as underpasses or access routes that are at risk from violence and tampering.

Mounting frames offer a flat integration of the luminaires into ceilings. Panel ceiling fixings are also available for certain products.

Mounting rails allow flexible positioning of luminaires and orderly cable routing.

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