

THORN

LIGHTING



KEEP MOVING

TRANSPORTATION LIGHTING

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**BETTER
LIGHT
BETTER
MOVEMENT**

WE MAKE LIGHT WORK

KEEP MOVING

Transportation involves moving people and goods from one place to another. The following guide provides an overview of key aspects to consider when planning and designing a lighting installation for transportation spaces and buildings.



**NICE TO
MEET YOU**

INSIDE

WE'LL GUIDE YOU THERE	08	Light for people, places and the environment
LIGHTING FACTS	10	Key transportation insights
THE WHOLE LIGHTING PICTURE	14	Key transportation applications
SEAPORTS	16	Great visibility for bustling activities
AIRPORTS	22	Safety and reassurance for travellers
RAIL	28	Illumination for better transit
BUS AND TRAM	34	Brightening up the daily commute
PARKING	40	Creating a positive presence
HIGHLIGHTS	48	Product highlights, emergency lighting and control solutions

WE'LL GUIDE YOU THERE

Creating stimulating lighting experiences that guide passengers through transportation hubs is a speciality of Thorn. Appropriate lighting designs are crucial – for safely guiding people to their destinations, highlighting buildings and places, also for reducing costs and protecting the environment.



LIGHT FOR PEOPLE

Good transportation lighting offers travellers safety and reassurance while in transit. It makes it easier for them to find their way and safely operate their vehicles.



LIGHT FOR PLACES

Transport hubs require well and uniformly lit spaces. Whether in wide open areas or transition zones, precision lighting is key for providing a balanced ambiance, atmosphere and colour representation.



LIGHT FOR THE ENVIRONMENT

Smart designs and high-quality optics help to minimise light pollution, even with powerful outdoor lighting. Modern controls effectively reduce energy consumption by switching lights off when not in use.

KEY TRANSPORTATION

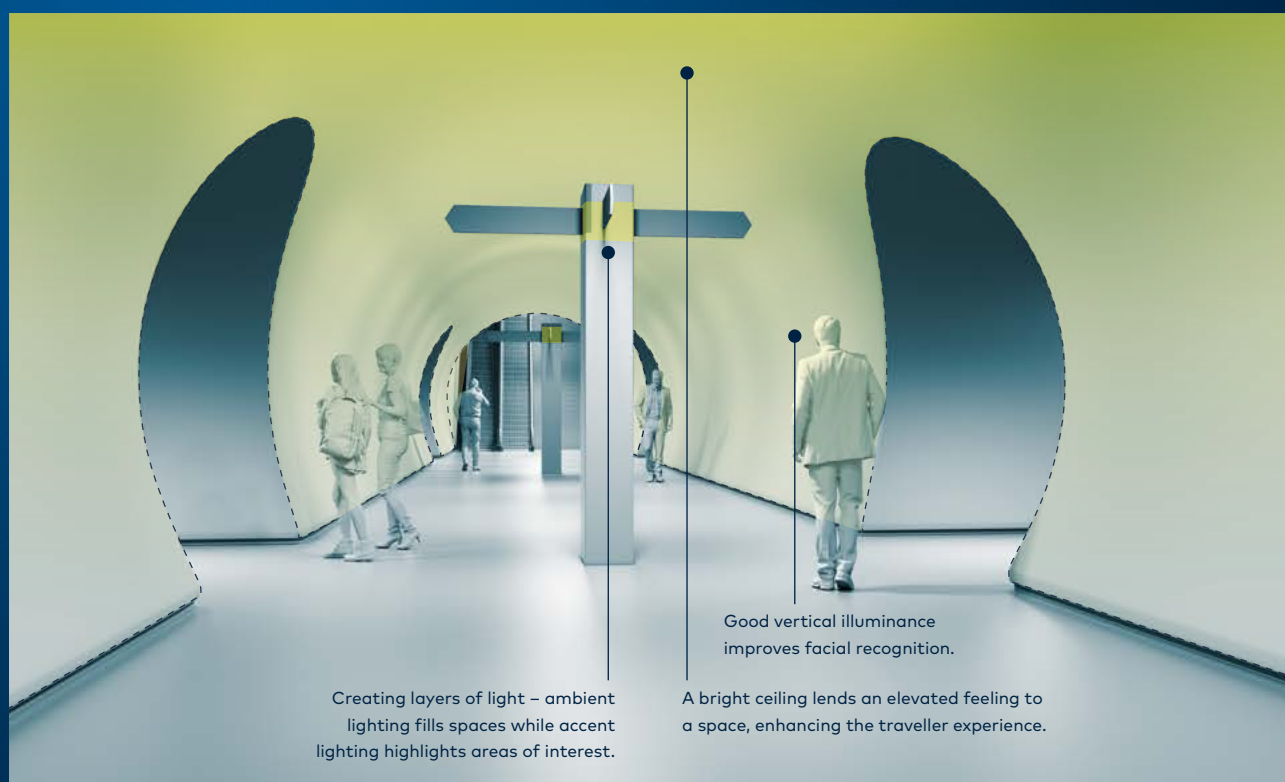
LIGHTING FACTS

Transportation hubs facilitate the safe passage of large numbers of people and goods. Thorn Lighting takes all factors into consideration in designing optimal lighting solutions for these spaces.

01

LIGHTING VERTICALS

Transportation environments require layered and task-specific lighting. When walking or standing, there are more vertical surfaces in the visual field than horizontal ones. Bright ceilings, entrances and exit zones can enhance the traveller experience. They create varied lighting layers that enable people to proceed quickly and safely. Vertical illuminance is also essential for good facial recognition.





02

HAZARD IDENTIFICATION

Pedestrian hazards such as steep ramps, stairs, construction sites and areas with moving vehicles and equipment are common at transportation hubs. Local accent lighting helps travellers to better identify and manoeuvre around any hazards they may encounter along the way.



03

WAYFINDING

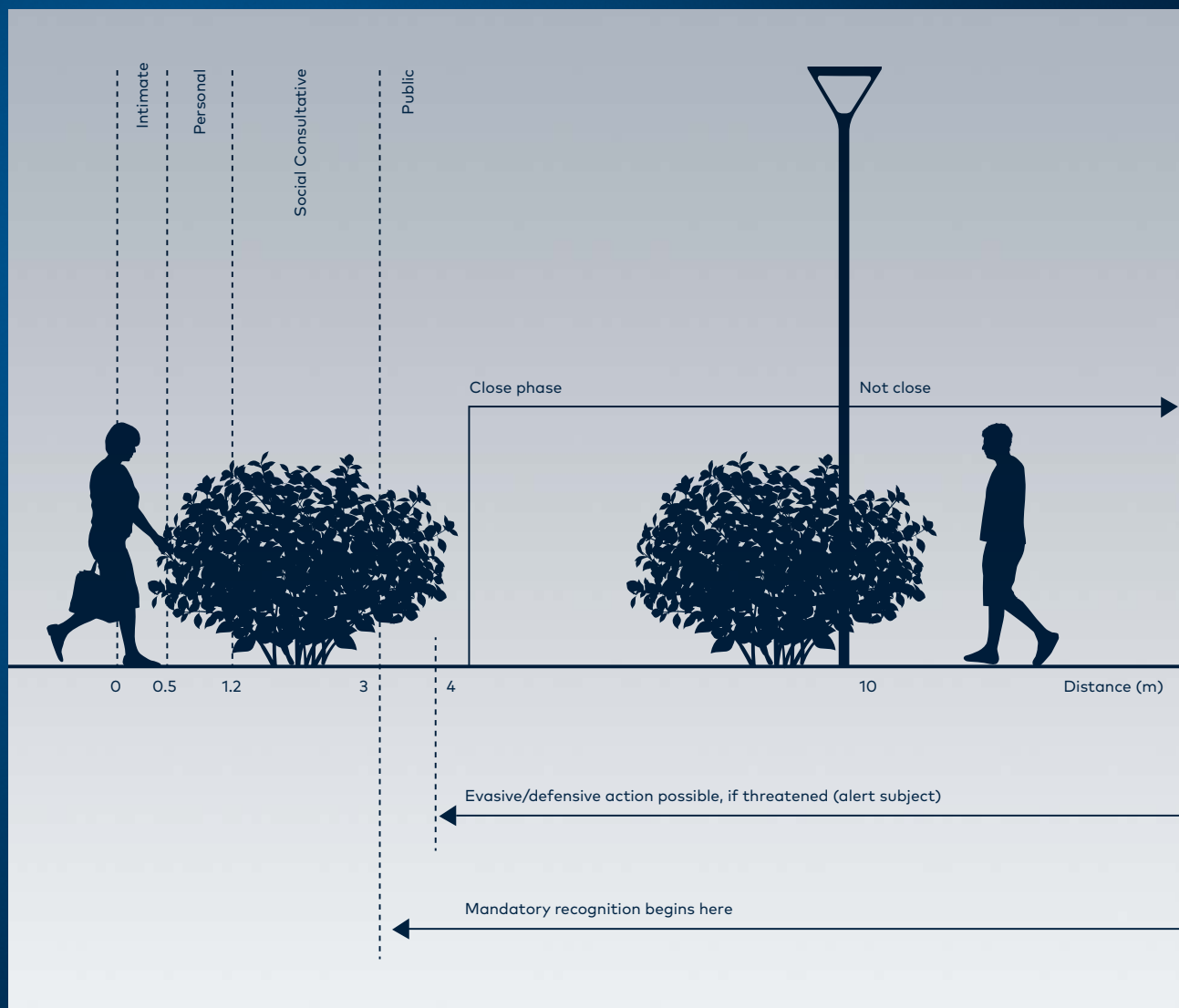
Proper lighting is indispensable for effectively assisting travellers and vehicles in their movements at transportation hubs. In addition to providing adequate illumination for directional signage, display panels and maps, modern lighting installations also support wayfinding by highlighting decision-making areas and destination points.

04

SAFETY AND SECURITY

Appropriate illuminance levels and uniformity, both internally and externally, are a must for safe and secure movement throughout transportation environments. Adequate lighting is needed for good facial recognition, particularly in external areas, also to effectively monitor activity after dark with CCTV cameras. What's more, travellers feel more comfortable when they can clearly see who is approaching them.

ZONES OF PROXIMITY

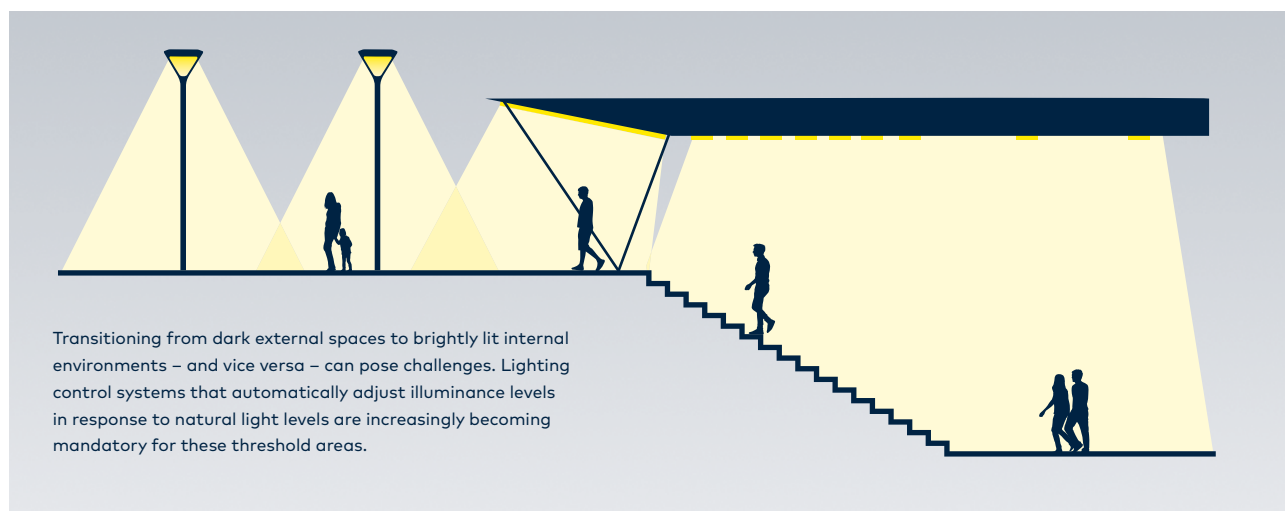


05

VISUAL ADAPTATION

Fast-moving transit areas require lighting solutions that enhance visual acuity and hazard recognition for travellers and vehicles. Visual adaptation techniques, particularly for light and dark adaptation, play an

important role. Enhanced illuminance levels at building thresholds, for example, improve visual awareness, even during the daytime.



06

ACCESS AND MAINTENANCE

Modern lighting fixtures and fittings are designed for durability, easy cleaning and maintenance over their life span, also for simple installation and replacement, if needed. Easy access to switches, control gear and electrical connections are equally important, as are environmental friendliness and IP ratings.

THE WHOLE LIGHTING PICTURE

KEY TRANSPORTATION APPLICATIONS

01 SEAPORTS

02 AIRPORTS

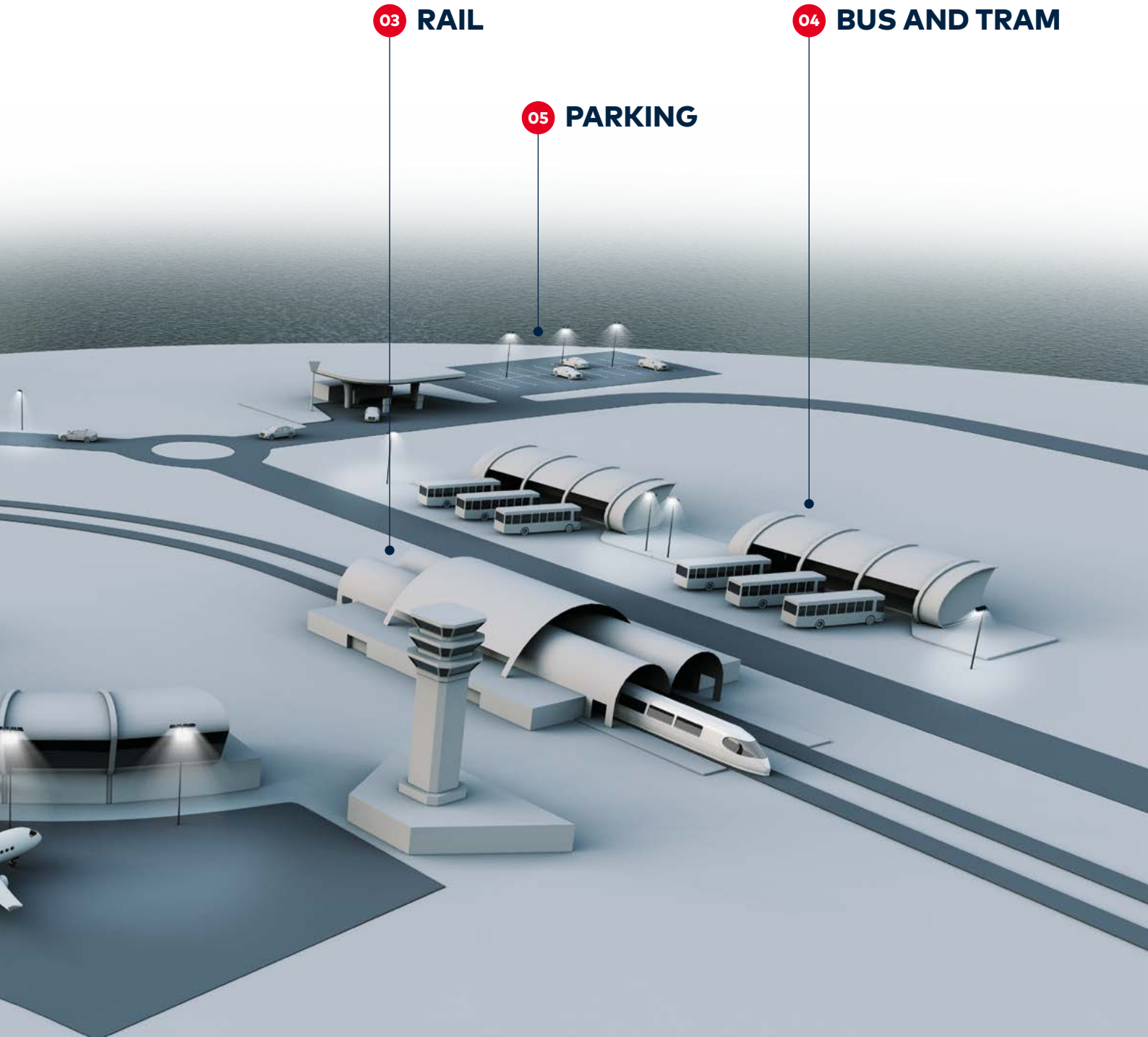


Seaports, airports, train, bus and tram stations, parking lots and more – Thorn covers it all. Our advanced lighting solutions provide illumination, safety, savings and more for all types of transportation applications. The following pages provide an overview of some of the highly efficient, durable and future-proof technologies we offer for key applications.

03 RAIL

04 BUS AND TRAM

05 PARKING



SEAP



GREAT VISIBILITY FOR
BUSTLING ACTIVITIES

PORTS

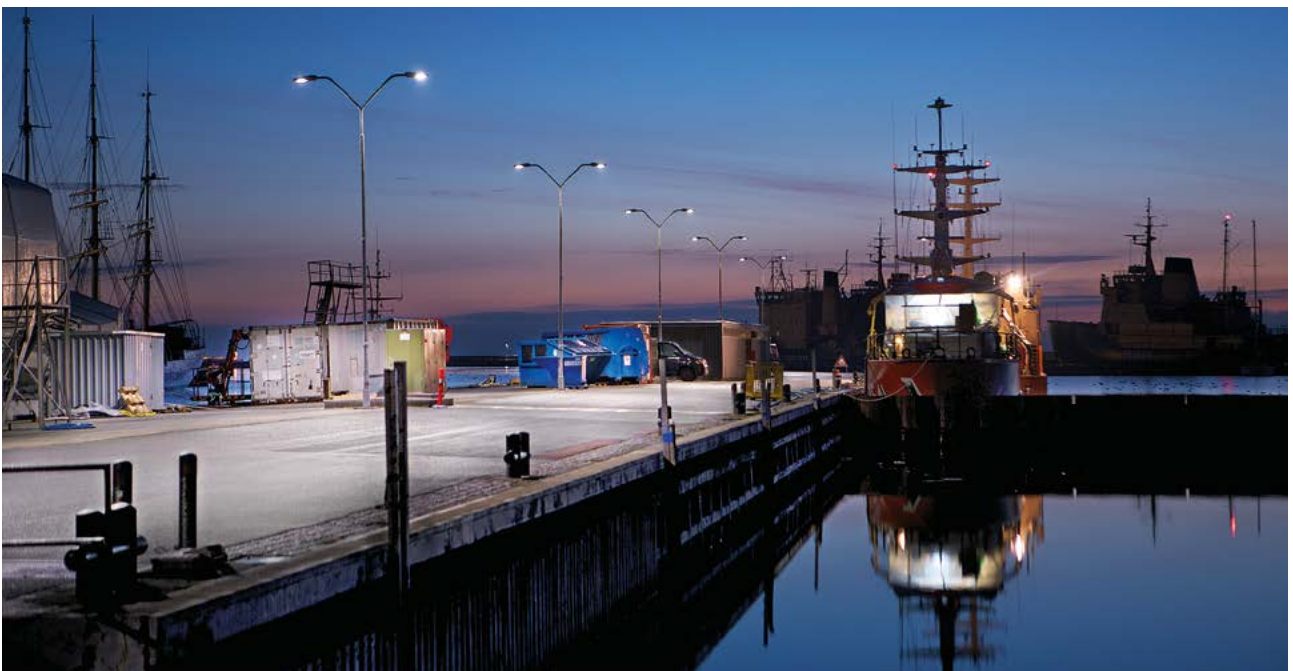


RELIABLE LIGHTING IN TOUGH ENVIRONMENTS



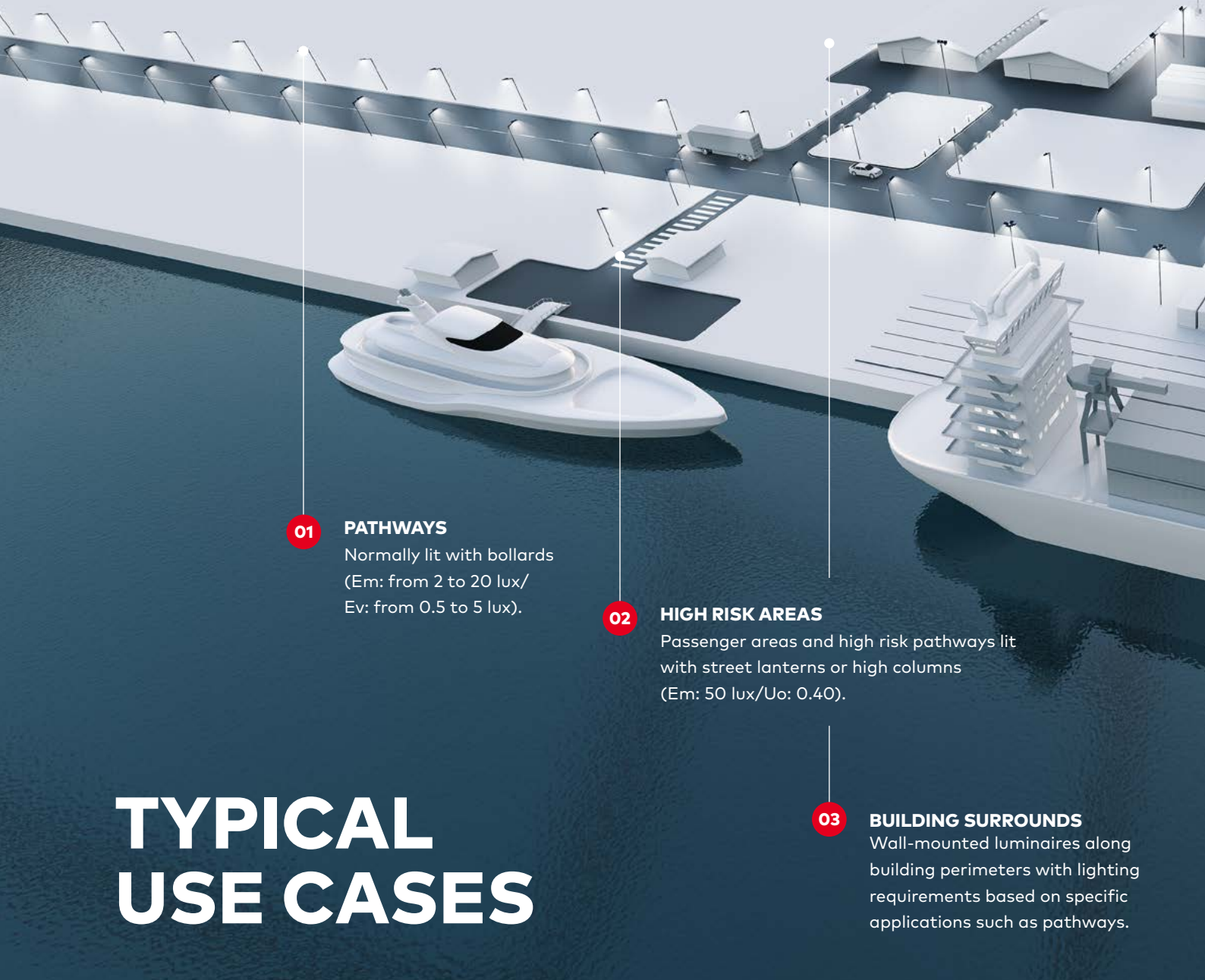
PORT OF LIVORNO, ITALY

Ports are among the most demanding environments for lighting solutions. In addition to reliably providing support for high security monitoring of constant ship and container movements, they must also be robust enough to withstand extremely harsh elements such as moisture and salty sea air.



FLADESTATION, FREDERIKSHAVN, DENMARK





01

PATHWAYS

Normally lit with bollards
(Em: from 2 to 20 lux/
Ev: from 0.5 to 5 lux).

02

HIGH RISK AREAS

Passenger areas and high risk pathways lit
with street lanterns or high columns
(Em: 50 lux/Uo: 0.40).

03

BUILDING SURROUNDS

Wall-mounted luminaires along
building perimeters with lighting
requirements based on specific
applications such as pathways.

TYPICAL USE CASES

Thorn products for seaport applications



ALTIS

High-powered LED
floodlight for area
applications such
as quaysides and
loading.



ISARO PRO

High-performance
LED street lantern
for high risk areas
and parking.



PIAZZA II

IP65 outdoor wall-
mounted luminaire,
ideal for building
surrounds.



AREAFLUOD PRO

LED floodlight with
superior optical
control, ideal
for high column
mounting.



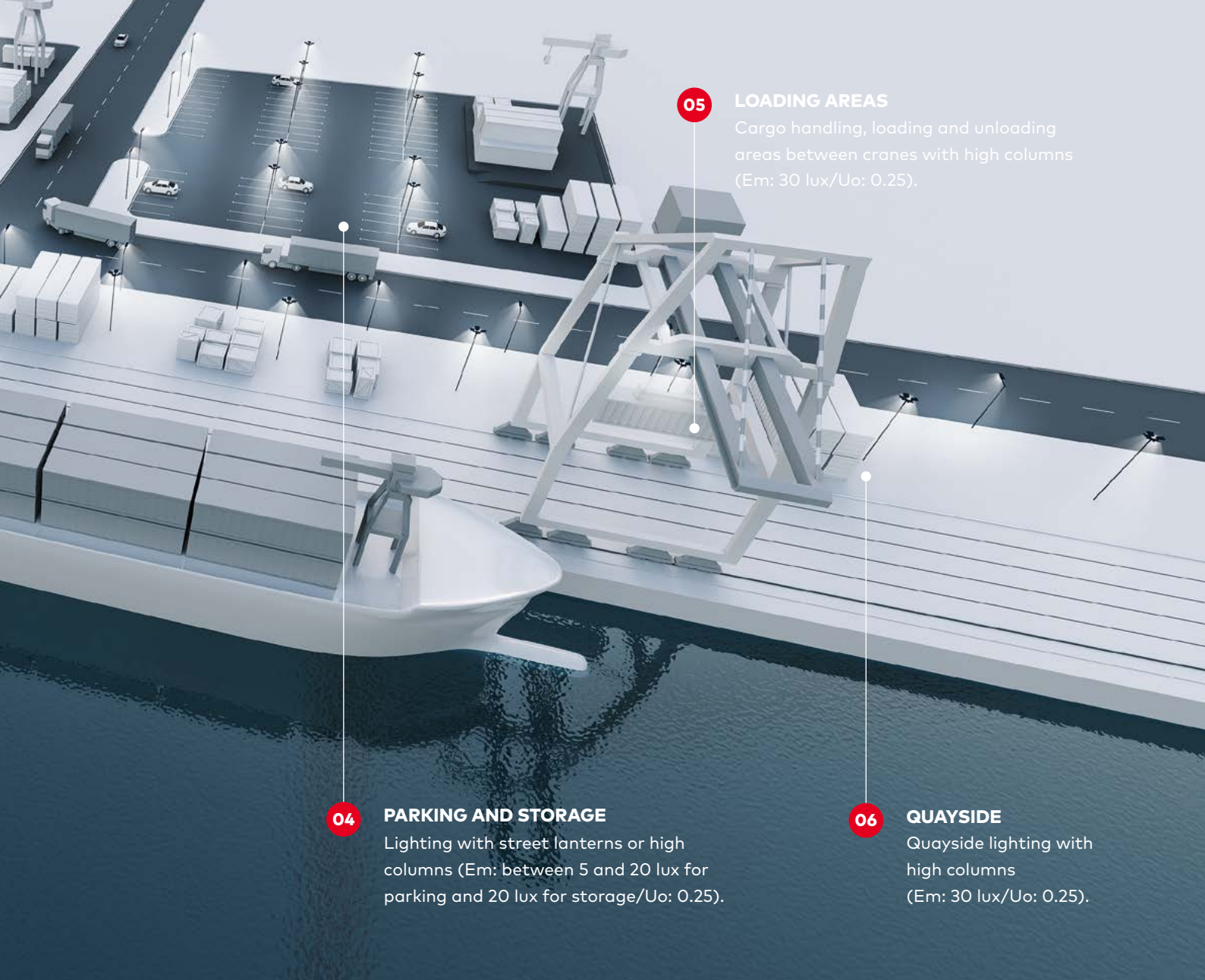
THOR BOLLARD

Vandal-resistant,
high-performance
bollard for pathways.



EYEKON

Robust LED bulkhead
for building surrounds.



05

LOADING AREAS

Cargo handling, loading and unloading areas between cranes with high columns (Em: 30 lux/Uo: 0.25).

04

PARKING AND STORAGE

Lighting with street lanterns or high columns (Em: between 5 and 20 lux for parking and 20 lux for storage/Uo: 0.25).

06

QUAYSIDE

Quayside lighting with high columns (Em: 30 lux/Uo: 0.25).

✓ BEST PRACTICE

SAFETY FIRST

Optimise people and vehicle movement safety, for example, by positioning lighting columns where they do not interfere with port activities.

TASK LIGHTING

Adequately light access routes, stairs and loading areas to improve task dispatch.

LUX LEVELS

Limit high illuminance for ships approaching port areas and avoid strong contrasts and glare.

EFFICIENT CONTROL

Lower light levels during reduced traffic to save energy and reduce light pollution.

UPHOLD VISIBILITY

Ensure that good visibility of containers and indication signs is provided in all areas.

MARINE SUITABILITY

Use luminaires and columns with marine coatings.

Em (lux): Average Illuminance
Ev (lux): Vertical Illuminance
Uo: Uniformity

All recommended lighting values are based on EN 12464-1 and -2 standards. Values for colour rendering and glare may vary between Ra 20 and 40 for colour rendering and around GR 50 and 55 for glare.



AIRPORT

SAFETY & REASSURANCE
FOR TRAVELLERS



SPORTS

ROUND-THE-CLOCK LIGHTING PRECISION



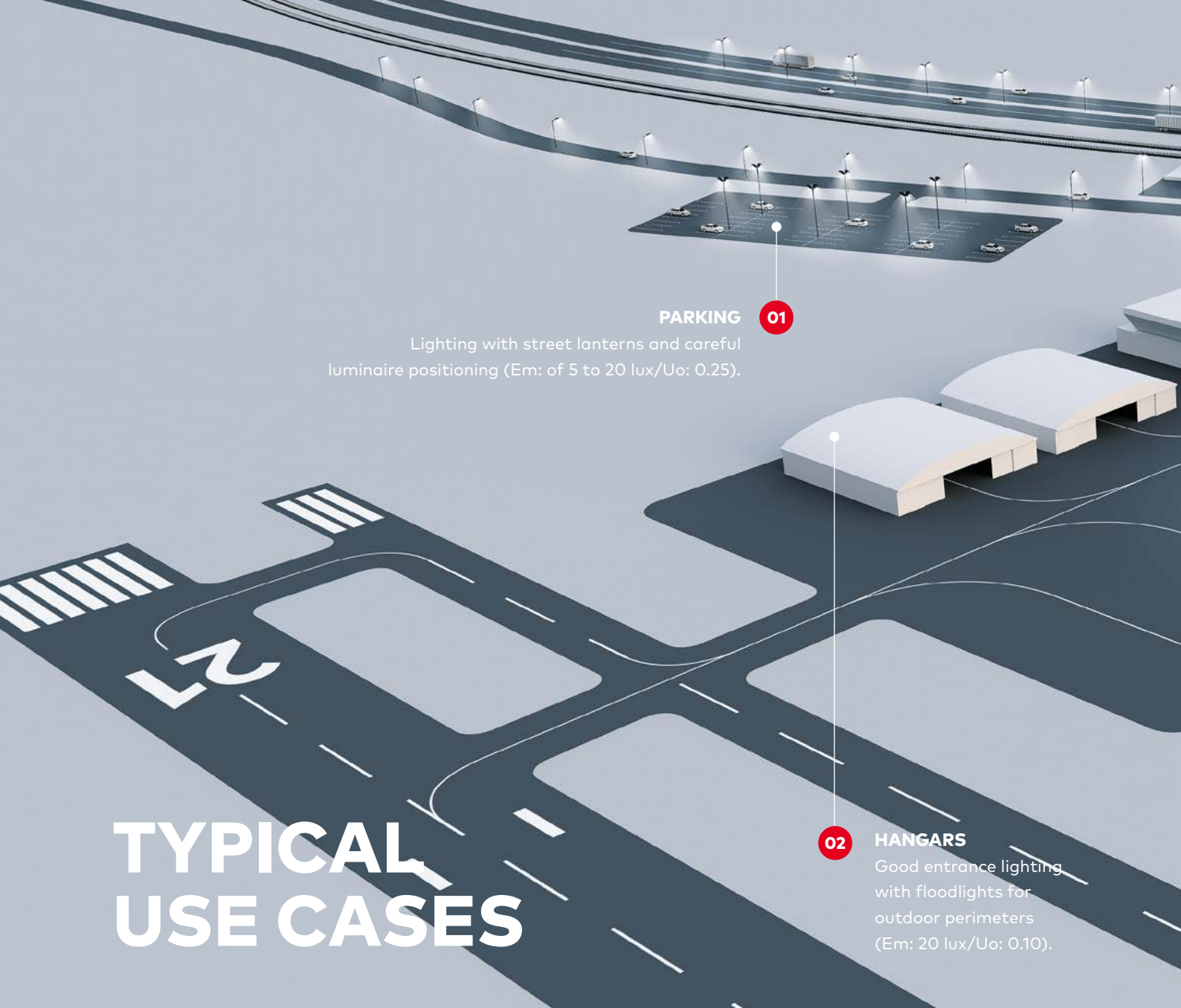
PALERMO AIRPORT, ITALY

Airport lighting and control solutions, both for outdoor and indoor spaces, are designed with great precision. Security measures as well as safe vehicle, aircraft and people movement must be upheld at all times. They should also be robust, easy to maintain, provide orientation and create a pleasant atmosphere. Powerful, low-energy fittings combined with smart controls get the job done cost effectively.

BERGAMO ORIO AL SERIO AIRPORT, ITALY







PARKING

Lighting with street lanterns and careful luminaire positioning (Em: of 5 to 20 lux/Uo: 0.25).

01

HANGARS

Good entrance lighting with floodlights for outdoor perimeters (Em: 20 lux/Uo: 0.10).

02

TYPICAL USE CASES

Thorn products for airport applications



CHAMPION

LED floodlight with good control of spill light for applications such as aircrafts stands.



R2L2

A complete lantern family for roads and streets.



HIPAK

A flexible high bay luminaire for high ceiling areas.



AREAFLOOD PRO

LED floodlight, ideal for outdoor perimeters such as hangars.



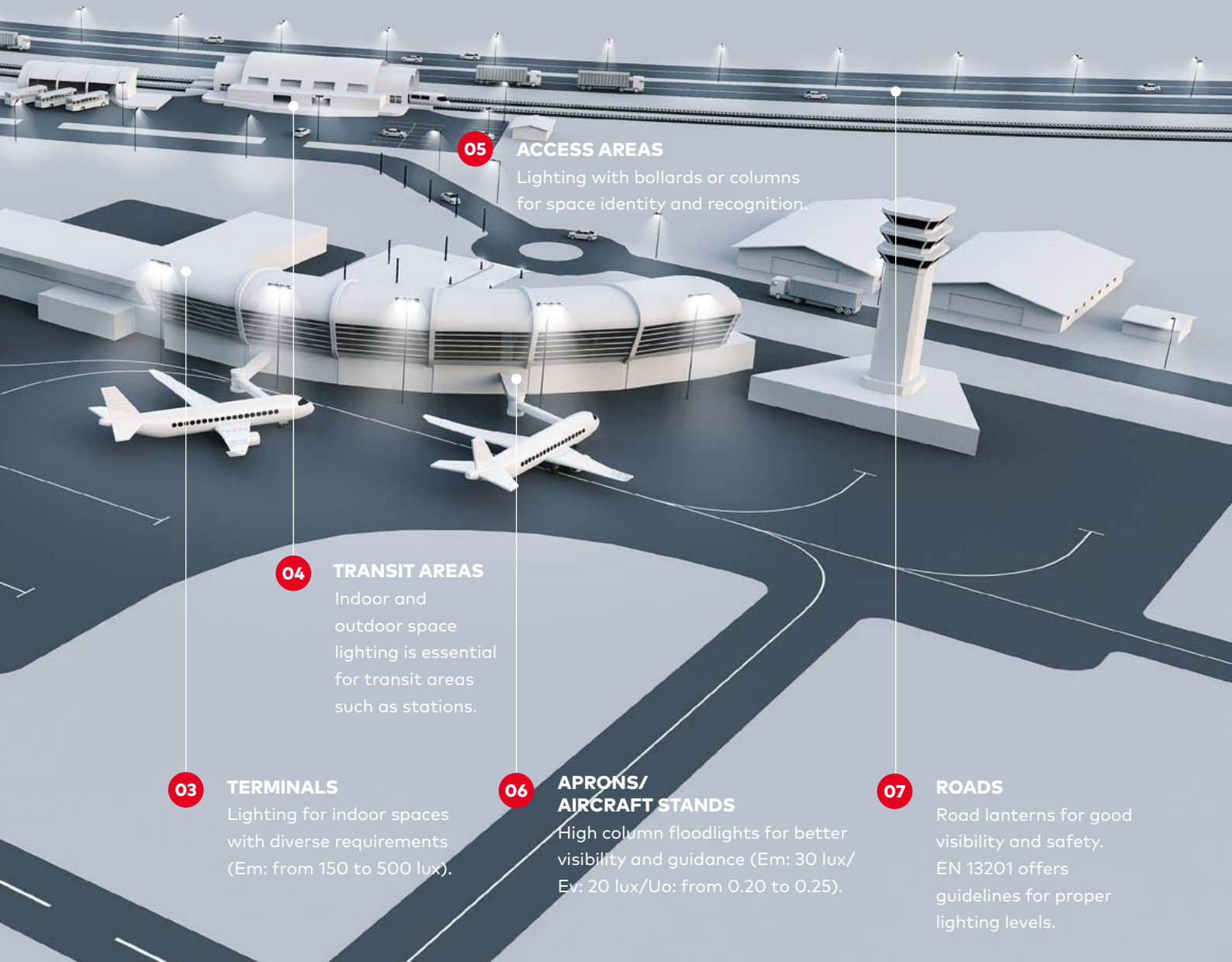
ALUMET STAGE II

A flexible multi-directional column for access areas.



CHALICE PRO

Surface-mounted LED downlight for indoor spaces within terminals.



05

ACCESS AREAS

Lighting with bollards or columns for space identity and recognition.

04

TRANSIT AREAS

Indoor and outdoor space lighting is essential for transit areas such as stations.

03

TERMINALS

Lighting for indoor spaces with diverse requirements (Em: from 150 to 500 lux).

06

APRONS/ AIRCRAFT STANDS

High column floodlights for better visibility and guidance (Em: 30 lux/ Ev: 20 lux/Uo: from 0.20 to 0.25).

07

ROADS

Road lanterns for good visibility and safety. EN 13201 offers guidelines for proper lighting levels.

✓ BEST PRACTICE

LIGHTING CONTROL

Airports operate 24/7. Good lighting controls save energy and provide flexibility.

AVOID SPILL LIGHT

Airports are usually located on the outskirts of cities with strict environmental zones. Light pollution must be minimised.

SPECIFIC LIGHTING

Additional lighting for check-in, baggage reclaim and lounge areas has to be foreseen.

APRON/STANDS

Carefully position high column floodlights to avoid glare and obstruction of the flow of planes.

REDUCE GLARE

Asymmetric floodlights tilted at an angle between 0 and 5 degrees help reduce glare issues for pilots.

Em (lux): Average Illuminance
Ev (lux): Vertical Illuminance
Uo: Uniformity

All recommended lighting values are based on EN 12464-1 and -2 standards. For outdoor spaces, values for colour rendering and glare may vary between Ra 20 and 40 for colour rendering and around GR 50 and 55 for glare.



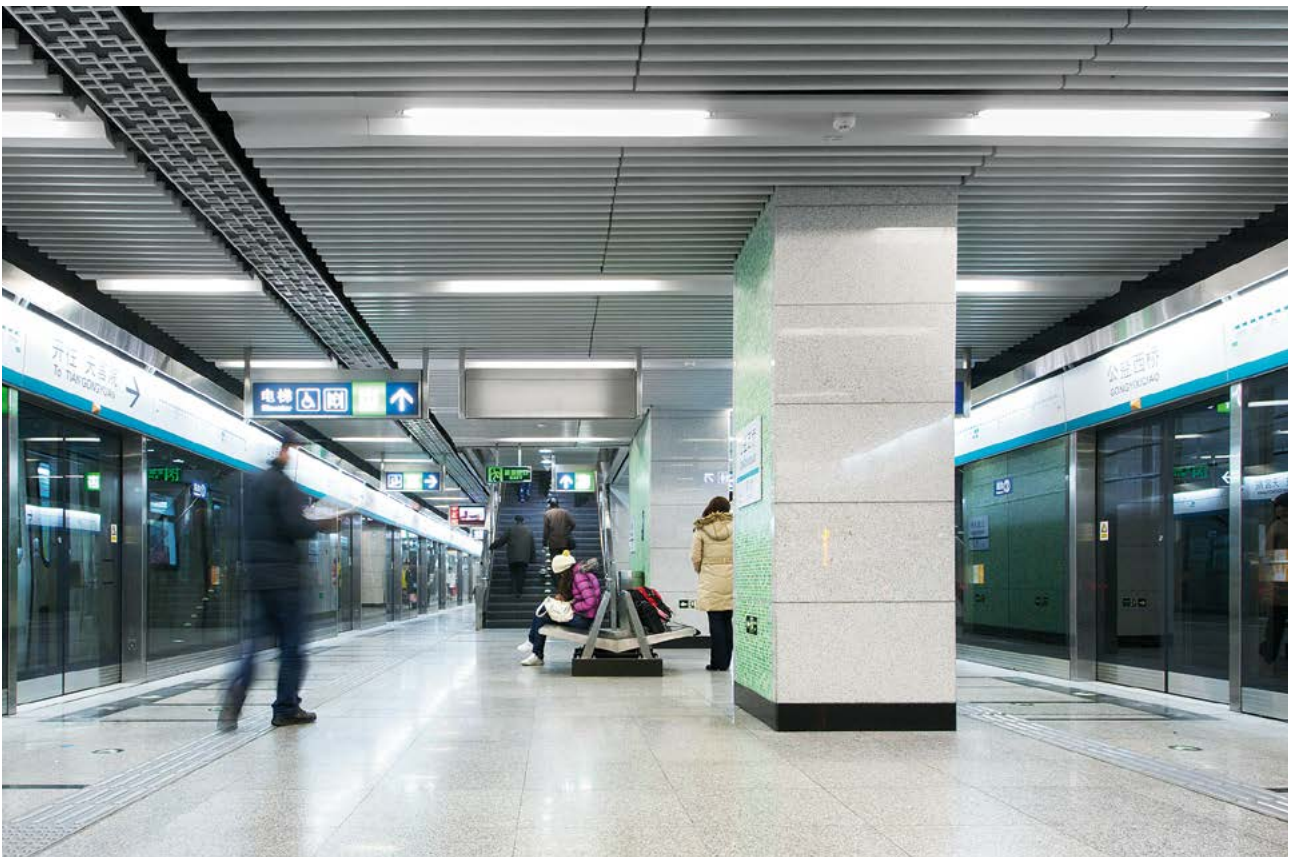
ILLUMINATION FOR
BETTER TRANSIT



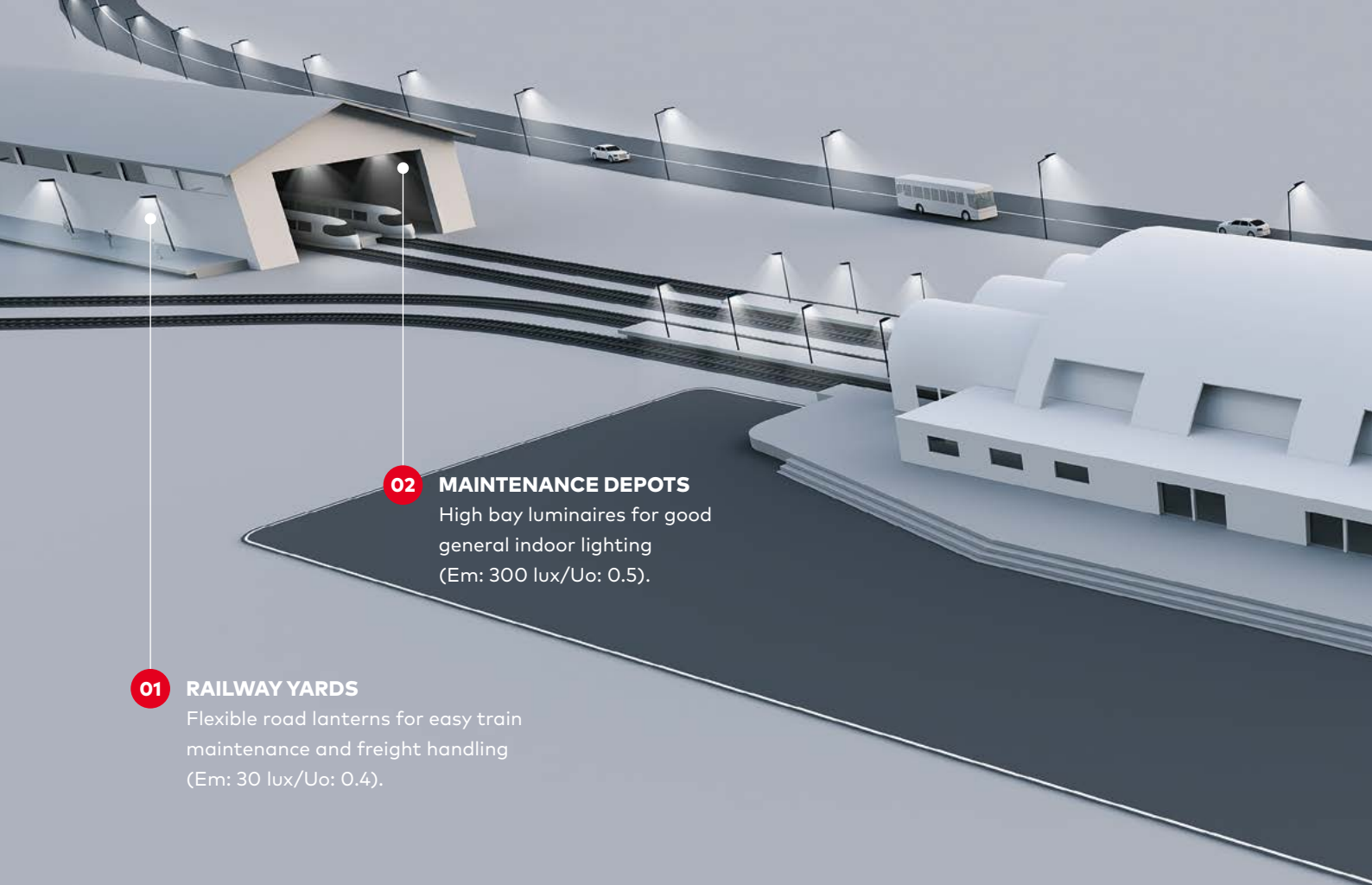
BRINGING NEW LIGHT TO TRAIN STATIONS

More than just places where people catch trains, today's railway hubs are increasingly doubling as multi-functional spaces, often with dramatic architectures and a wide range of shopping and eating opportunities. Lighting solutions must meet all of these needs in addition to fulfilling all technical rail requirements.

TIANTONGYUAN SUBWAY STATION IN BEIJING, CHINA







01 RAILWAY YARDS
Flexible road lanterns for easy train maintenance and freight handling (Em: 30 lux/Uo: 0.4).

02 MAINTENANCE DEPOTS
High bay luminaires for good general indoor lighting (Em: 300 lux/Uo: 0.5).

TYPICAL USE CASES

Thorn products for rail applications



URBA
Sophisticated outdoor lantern, ideal for open platforms.



LED FIT
An ultra lightweight floodlight for building entrances and canopy areas.



AQUAFORCE PRO
IP66 dust and moisture resistant luminaire for challenging environments.



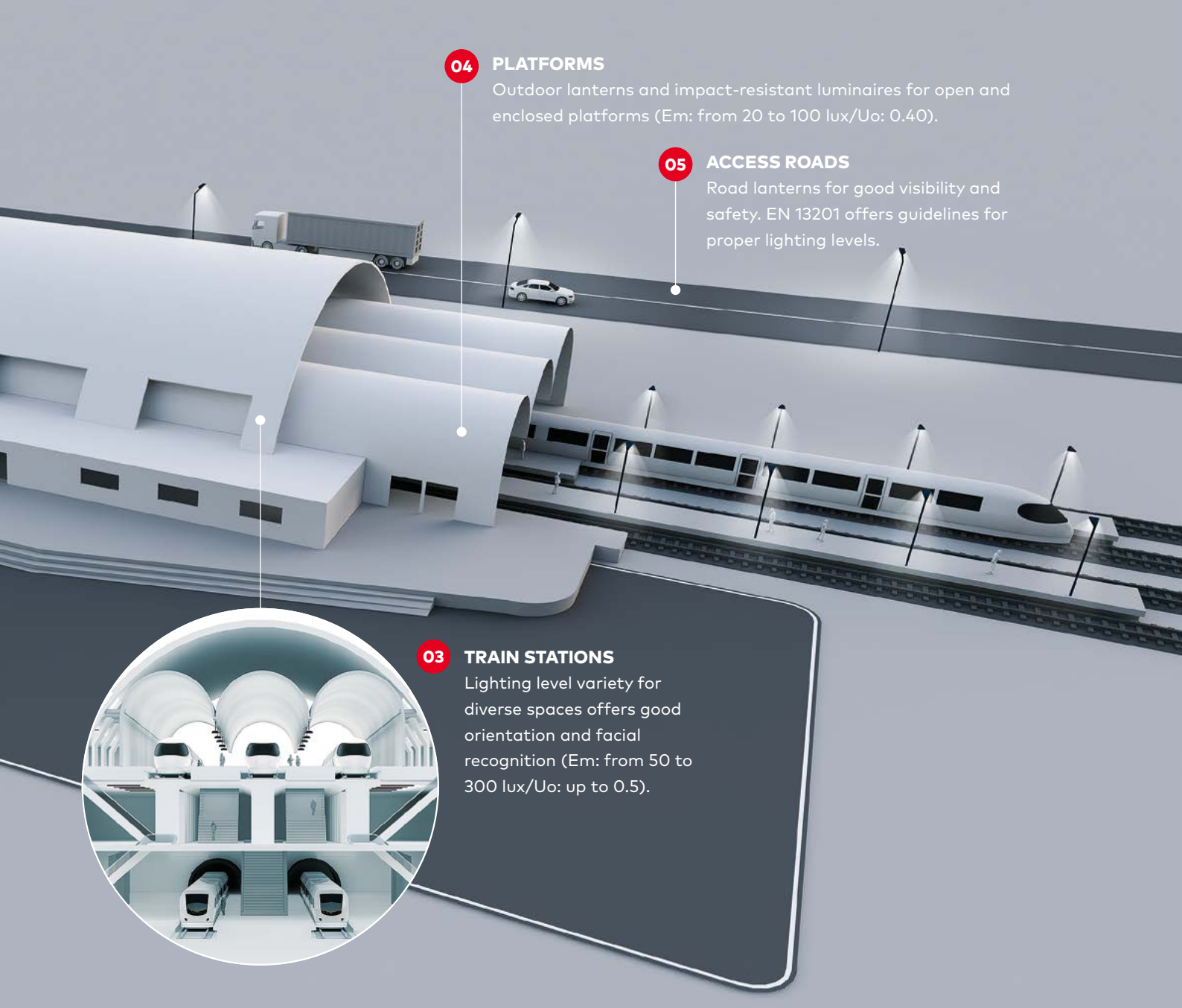
ISARO PRO
High-performance LED street lantern for access roads.



HIPAK
Flexible high bay luminaire, ideal for maintenance depots.



FEROZ
Impact resistant luminaire, ideal for underpasses and infrastructure spaces.



04 PLATFORMS

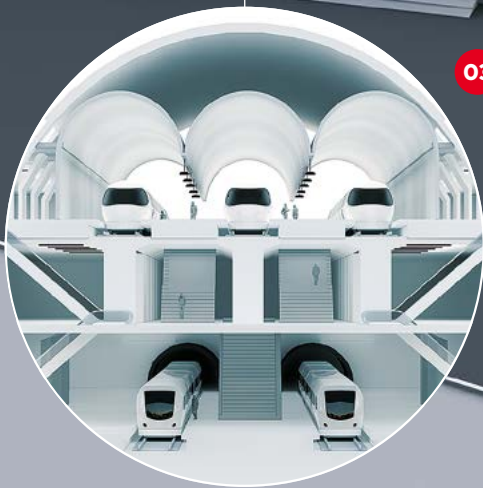
Outdoor lanterns and impact-resistant luminaires for open and enclosed platforms (Em: from 20 to 100 lux/Uo: 0.40).

05 ACCESS ROADS

Road lanterns for good visibility and safety. EN 13201 offers guidelines for proper lighting levels.

03 TRAIN STATIONS

Lighting level variety for diverse spaces offers good orientation and facial recognition (Em: from 50 to 300 lux/Uo: up to 0.5).



✓ BEST PRACTICE

REDUCE GLARE

Make sure that lighting does not cause glare that distracts drivers.

CORRECT LIGHTING

Ensure that correct lighting and gradual luminance transitions are provided for safe pedestrian and vehicle movements.

MINIMISE REFLECTIONS

Avoid lighting areas with glossy high reflectance on wall, ceiling and floor surfaces.

ARCHITECTURAL INTEGRATION

Use lighting solutions that seamlessly integrate with new and existing building architectures.

SPILL LIGHT

Reduce and control spill light at outdoor platforms by directing the lighting towards the ground.

LIGHTING CONTROL

Use lighting controls to reduce power consumption, increase installation lifetime and optimise maintenance operations.

Em (lux): Average Illuminance
Uo: Uniformity

All indicated lighting values mentioned here are based on the EN 12464-1 and -2 for lighting of workplaces. Values for colour rendering and glare may vary between Ra 20 and 80 for colour rendering and around GR 19 and 55 for glare.



BUS A

BRIGHTENING UP THE
DAILY COMMUTE



AND TRAM

A SAFE PRESENCE IN ALL TYPES OF WEATHER



TEA TREE PLAZA BUS INTERCHANGE, AUSTRALIA

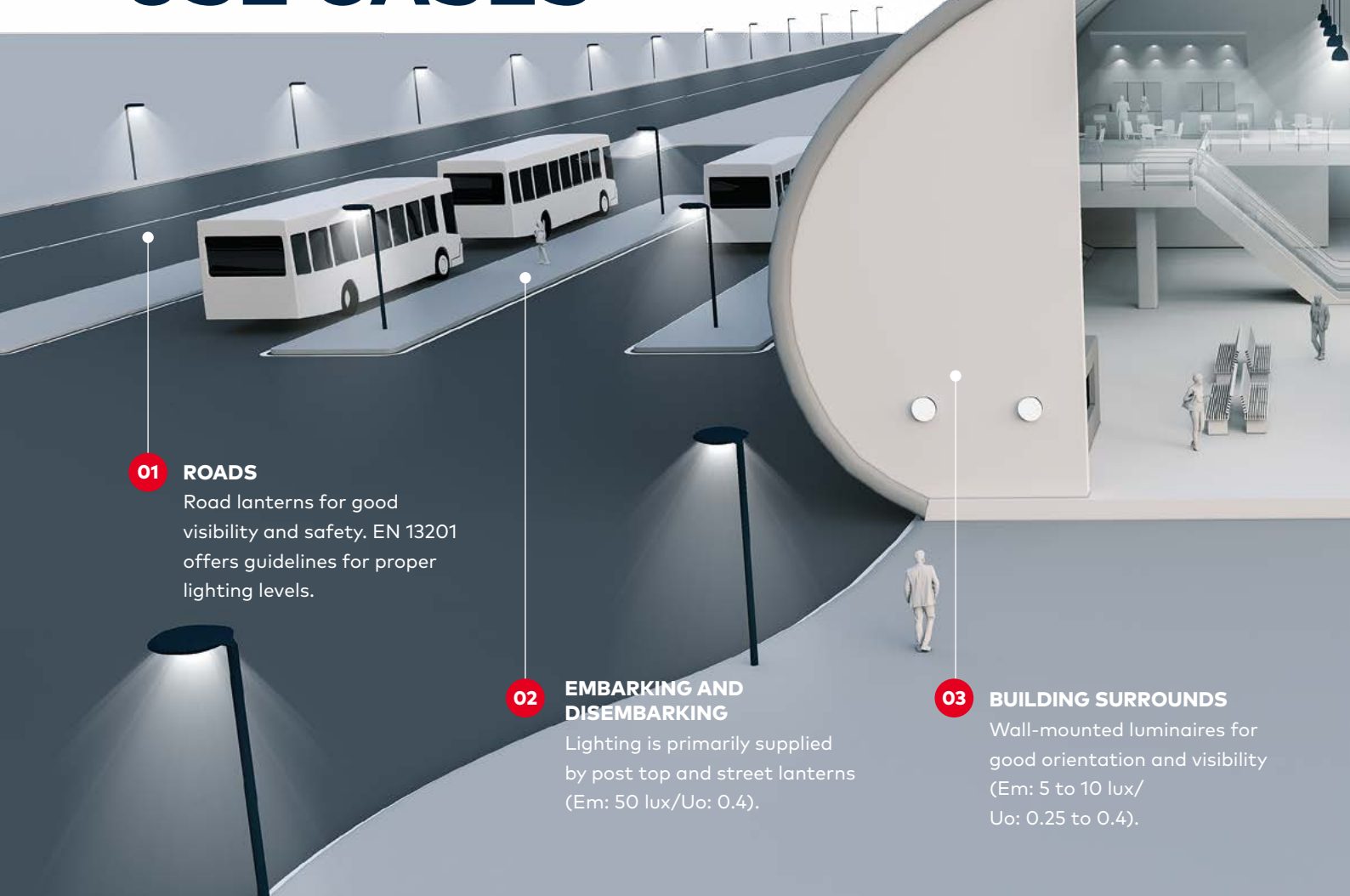
More than anything else, lighting solutions for bus and tram stations must be reliable and cost-effective, also powerful and well controlled to provide clear visibility for drivers and passengers. Strong exposure to the elements also requires that luminaires be robust and well-protected.

BUS STATION IN BOLOGNA, ITALY





TYPICAL USE CASES



01

ROADS

Road lanterns for good visibility and safety. EN 13201 offers guidelines for proper lighting levels.

02

EMBARKING AND DISEMBARKING

Lighting is primarily supplied by post top and street lanterns (Em: 50 lux/Uo: 0.4).

03

BUILDING SURROUNDS

Wall-mounted luminaires for good orientation and visibility (Em: 5 to 10 lux/Uo: 0.25 to 0.4).

Thorn products for bus and tram applications



KATONA

IP65 wall-mounted luminaire for building surrounds and canopy areas.



CHALICE PRO

High-performance LED downlight, ideal for indoor circulation spaces.



FLOW POST TOP

Flexible street lantern for roads leading up to embarking/disembarking areas.



GLACIER II

Decorative LED pendant luminaire for indoor open spaces.



AQUAFORCE PRO

IP66 rated luminaire for dusty and moist environments.



FLOW AMENITY

Decorative post top luminaire for urban spaces at bus/tram stops.



04

BUS/TRAM STATIONS

Downlights, pendant luminaires and battens are commonly used. Good facial recognition is key (Em: from 50 to 300 lux/ Uo: up to 0.5).

05

BUS/TRAM STOPS

Post top luminaires provide lighting that offers a sense of safety and security (Em: 50 lux/Uo: 0.4).



BEST PRACTICE

LIGHTING FOR SAFETY

Lighting at bus and tram stations should provide good illuminance and a feeling of safety.

LIGHT THE VERTICALS

Facial recognition and CCTV cameras require vertical illuminance for ideal visibility and good colour rendering.

DAYLIGHT INTERACTION

Integrate daylight and artificial lighting at stations and other spaces to smooth transitions between lighting levels.

REDUCE SHADOWS

Minimising shadows at open vehicle bays heightens passenger reassurance.

ADDITIONAL LIGHT

Additional lighting in areas with a high throughput of people and vehicular traffic enhances clarity.

ENHANCING SPACES

Integrating accent lighting in areas such as lounges and shops enhance spaces.

Em (lux): Average Illuminance
Uo: Uniformity

All indicated lighting values mentioned here are based on the EN 12464-1 and -2 for lighting of workplaces. Values for colour rendering and glare may vary between Ra 20 and 80 for colour rendering and around GR 19 and 50 for glare.



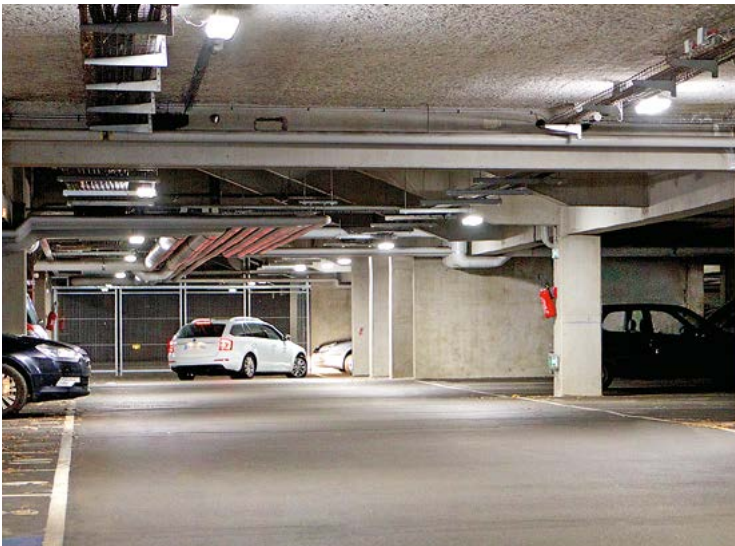
KING

CREATING A POSITIVE
PRESENCE

BANKWEST STADIUM, AUSTRALIA



LIGHTING THAT GUIDES THE WAY



ANGERS UNIVERSITY PARKING, FRANCE

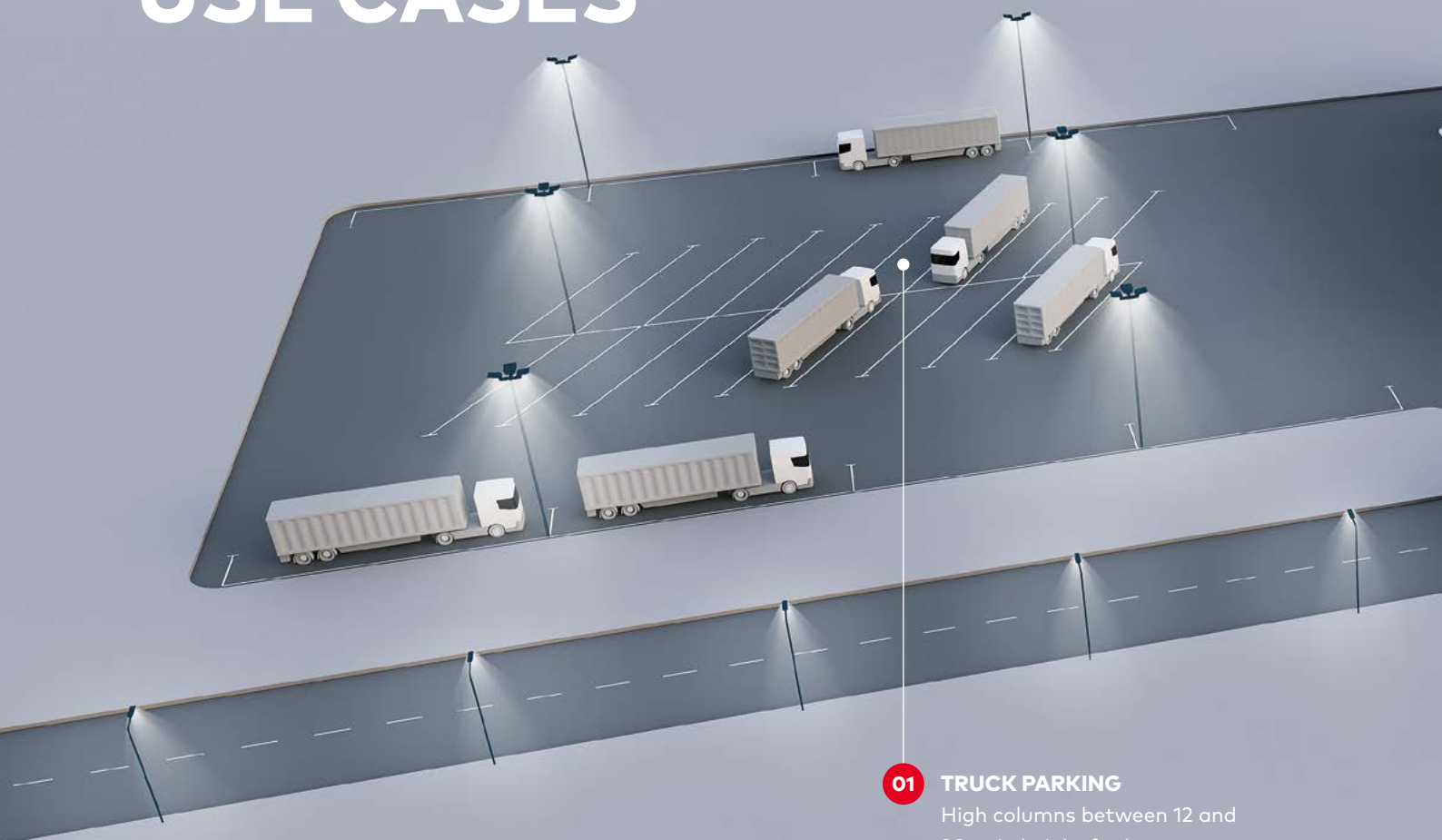
Lighting solutions for parking areas often provide the first and last impression at a transportation hub. They must be simple, safe, energy efficient and pleasant. Usually, they are part of the larger transportation concept, present in different places and applications, providing safe guidance, even helping drivers find a parking space. When not in use, smart controls dim and turn lights off.



BOLOGNA AIRPORT, ITALY



TYPICAL USE CASES



01

TRUCK PARKING

High columns between 12 and 20 m in height for large areas with only a few lighting points (Em: 20 lux/Uo: 0.25).

Thorn products for parking applications



ISARO PRO

High-performance LED street lantern for roads and streets.



PLURIO

Versatile post top lantern for outdoor parking.



AQUAFORCE PRO

IP66 rated luminaire for indoor parking and access areas.



AREAFLOOD PRO

LED floodlight, ideal for outdoor truck parking.



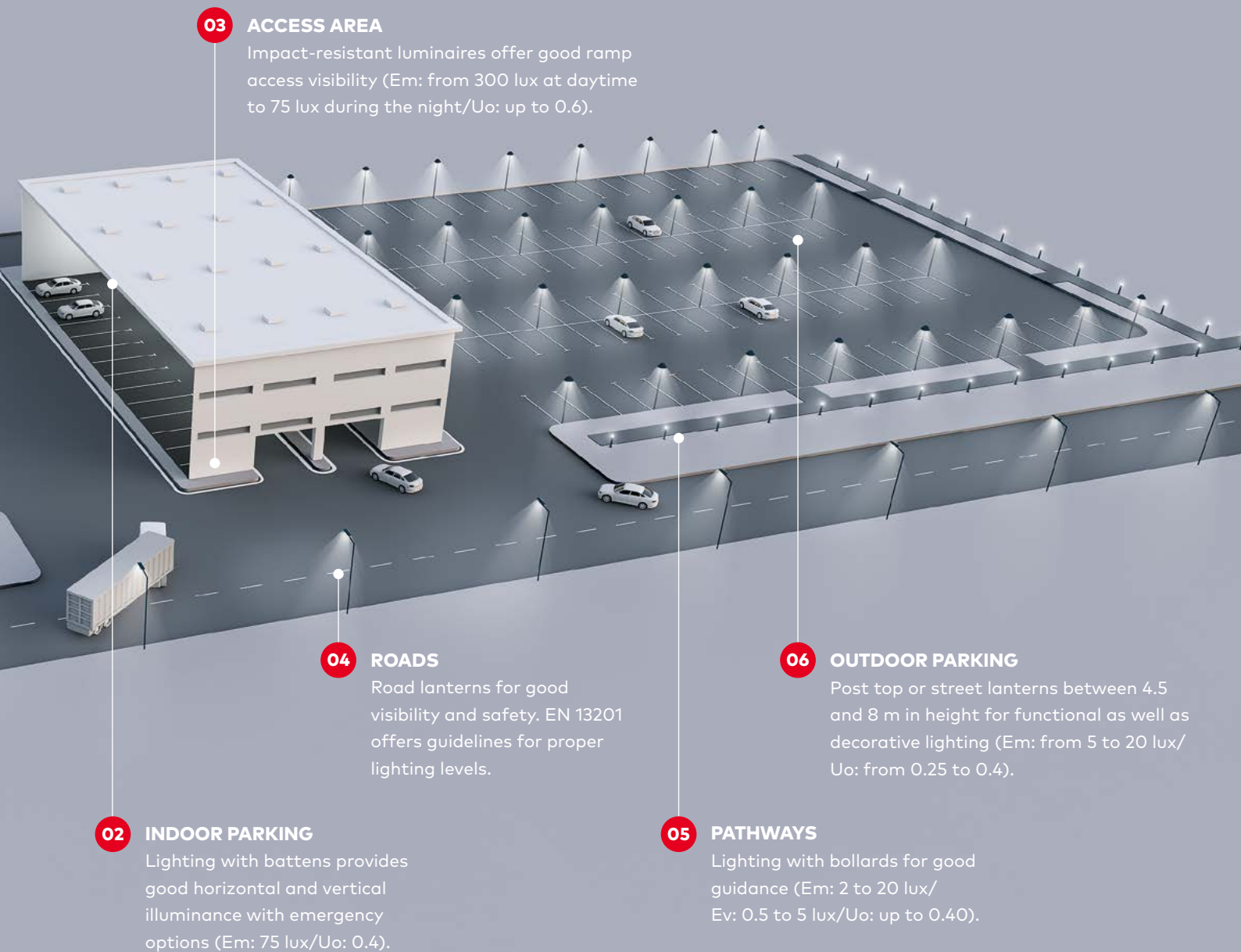
D-CO BOLLARD

Timeless bollard for pathways.



VOYAGER SOLID

IP65 rated ceiling mounted emergency LED fixture for indoor parking.



03 ACCESS AREA

Impact-resistant luminaires offer good ramp access visibility (Em: from 300 lux at daytime to 75 lux during the night/Uo: up to 0.6).

02 INDOOR PARKING

Lighting with battens provides good horizontal and vertical illuminance with emergency options (Em: 75 lux/Uo: 0.4).

04 ROADS

Road lanterns for good visibility and safety. EN 13201 offers guidelines for proper lighting levels.

06 OUTDOOR PARKING

Post top or street lanterns between 4.5 and 8 m in height for functional as well as decorative lighting (Em: from 5 to 20 lux/Uo: from 0.25 to 0.4).

05 PATHWAYS

Lighting with bollards for good guidance (Em: 2 to 20 lux/Ev: 0.5 to 5 lux/Uo: up to 0.40).

✓ BEST PRACTICE

KNOW THE STANDARDS

Guidelines for public and off-street parking lighting are provided by the standards EN 12464 for workplaces.

OPTIMISE APPEARANCE

Lighting solutions should optimally blend into the surroundings – enhancing spaces, as needed.

LIGHT LEVELS

Average light levels of around 20 lux and a minimum uniformity of 0.25 are recommended for urban parking lots.

REDUCE GLARE

Good quality optics and careful light source positioning help to reduce glare.

FEELING SAFE

Well-designed lighting minimises shadows, supports wayfinding and gives users a sense of reassurance and safety.

USE CONTROLS

Modern control systems save energy, increase installation lifetime and simplify maintenance.

Em (lux): Average Illuminance
Ev (lux): Vertical Illuminance
Uo: Uniformity

All indicated lighting values mentioned here are based on the EN 12464-1 and -2 for lighting of workplaces. Values for colour rendering and glare may vary between Ra 20 and 80 for colour rendering and around GR 19 and 55 for glare.

HIGHLIGHTS

CHAMPION

FLOODLIGHT CONTROL AND FLEXIBILITY

True to its name, the new Champion floodlight provides excellent spill light control and project flexibility. Featuring three different light distributions, it is an ideal choice for a wide-range of applications.



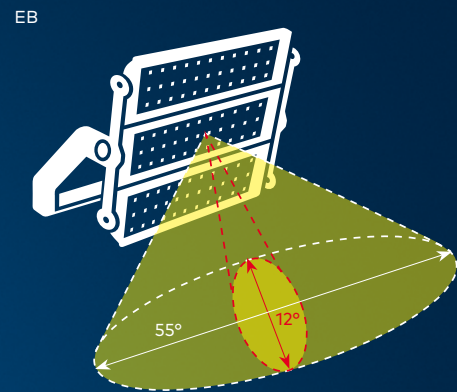
ALTIS

HIGH-POWERED LED FLOODLIGHTING

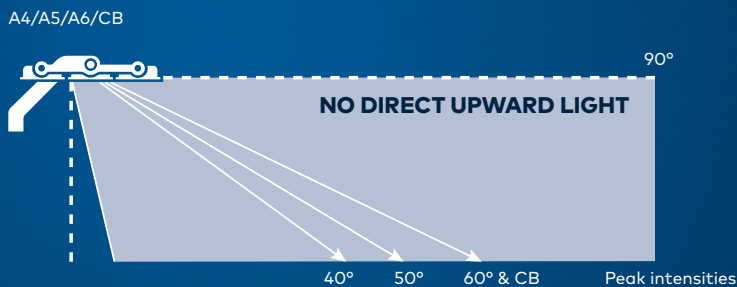
OUTSTANDING PERFORMANCE

A powerful, flicker-free and flexible LED floodlight – that's Altis. Whether with electronic, DMX/DALI or gear tray control, it immediately delivers 100% light. Separately adjustable LED modules and seamless dimming at various levels allow for optimised lighting design. Its safety features include protection class I, IP66 and IK08 as well as a die-cast aluminium housing, frame and mounting bracket.

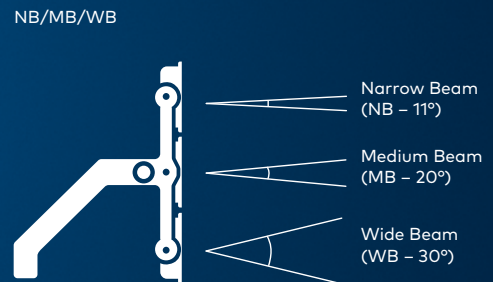
ELLIPTICAL LIGHTING DISTRIBUTION



ASYMMETRICAL LIGHTING DISTRIBUTIONS



SYMMETRICAL LIGHTING DISTRIBUTIONS



MODULAR AND HIGHLY FLEXIBLE



3 LED MODULES (396L)



2 LED MODULES (264L)



1 LED MODULE (132L)



CONTROL GEAR TRAY

Installation from local to the floodlight to up to 200m remotely.

AREAFLOOD PRO

GENERAL PURPOSE FLOODLIGHTING WITH GREAT OPTICAL PERFORMANCE

Areaflood Pro is an ideal fit for numerous transportation applications. It features three sizes with optimised lumen packages, superb optics and lighting controls, also installation and maintenance flexibility. It is available in IP66 and IK08 protection and colour temperatures of 3000K and 4000K.



AREAFLOOD PRO LARGE

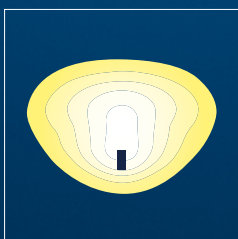


AREAFLOOD PRO MEDIUM

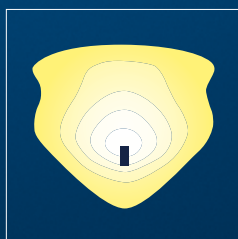


AREAFLOOD PRO SMALL

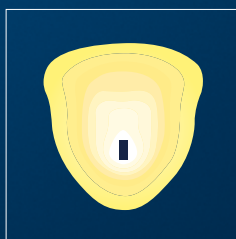
CHOOSE FROM FIVE OPTICS FOR WIDE-RANGING APPLICATIONS



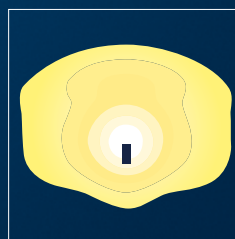
A4 – 40°
Asymmetric Optic



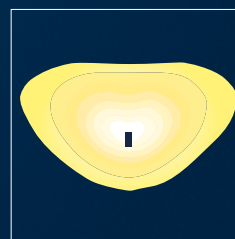
A5 – 50°
Asymmetric Optic



A6 – 60°
Asymmetric Optic



EWR: Extra Wide
Road Optic



WR: Wide Road Optic

AQUAFORCE PRO

THE NEW BENCHMARK FOR MOISTURE AND DUST RESISTANT LED LIGHTING

Offering excellent moisture and dust resistance and simple to install, use and maintain, Aquaforce Pro gives new meaning to performance reliability. This IP66 rated luminaire incorporates cutting-edge light transmission technology with refraction prisms to deliver high levels of illumination. Ideal for refurbishments with wide-ranging lumen outputs or as a one-to-one replacement for 2 x 58 W or 2 x 49 W luminaires, it can be controlled individually or in groups with presence or light sensors – even connected wirelessly.

BOLOGNA AIRPORT, ITALY



HIGHLIGHTS

EMERGENCY LIGHTING

A SAFE WAY OUT WHEN NEEDED



Lighting is vital for helping people safely evacuate buildings in the event of an emergency. It provides clarity, guidance and reassurance, potentially saving lives. Emergency lighting must fulfil strict guidelines and regulations. Advanced emergency lighting systems incorporate flexible luminaire technologies designed for easy installation and maintenance, excellent energy efficiency and long lifespans.

Emergency lighting solutions from Thorn are designed, manufactured and tested to meet the latest European safety and electromagnetic compatibility standards, including:

- EN 60598-1
- EN 60598-2-22
- EN 62471
- EN 55015
- ISO7010

THE VOYAGER FAMILY

EMERGENCY LUMINAIRES

Architectural



Voyager Star

Cutting-edge technology, flexible mounting and hassle-free connectivity.



Voyager Fit

A super-compact new LED emergency luminaire for ceilings.

EMERGENCY EXIT SIGNS



Voyager Style

Stylish yet strong.



Voyager Blade

Fast. Simple. Affordable.

Industrial IP65



Voyager One

Combining the best of 2 worlds: safety luminaire & safety sign luminaire in one.



Voyager Twin Spot

Flexible. Durable. Strong.



Voyager Solid

A flexible LED emergency bulkhead.

Our **VOYAGER** family comprises of a wide offer of escape luminaires, safety signs and networked systems to manage and monitor all the components, from self-contained to centrally supplied systems.

CONTROL SOLUTIONS

ADJUSTING LIGHT TO SUIT YOUR NEEDS

Thorn offers a wide range of lighting control solutions. These are generally selected depending on the scale and complexity of the lighting management task.

WIRELESS CONTROL

Thorn wireless controls like the basicDIM Wireless Bluetooth module perform dimming, presence detection and many other functions via an app. Our RF controller with Zhaga interface features an antenna and ambient light sensor interface (LSI) for outdoor luminaire applications.

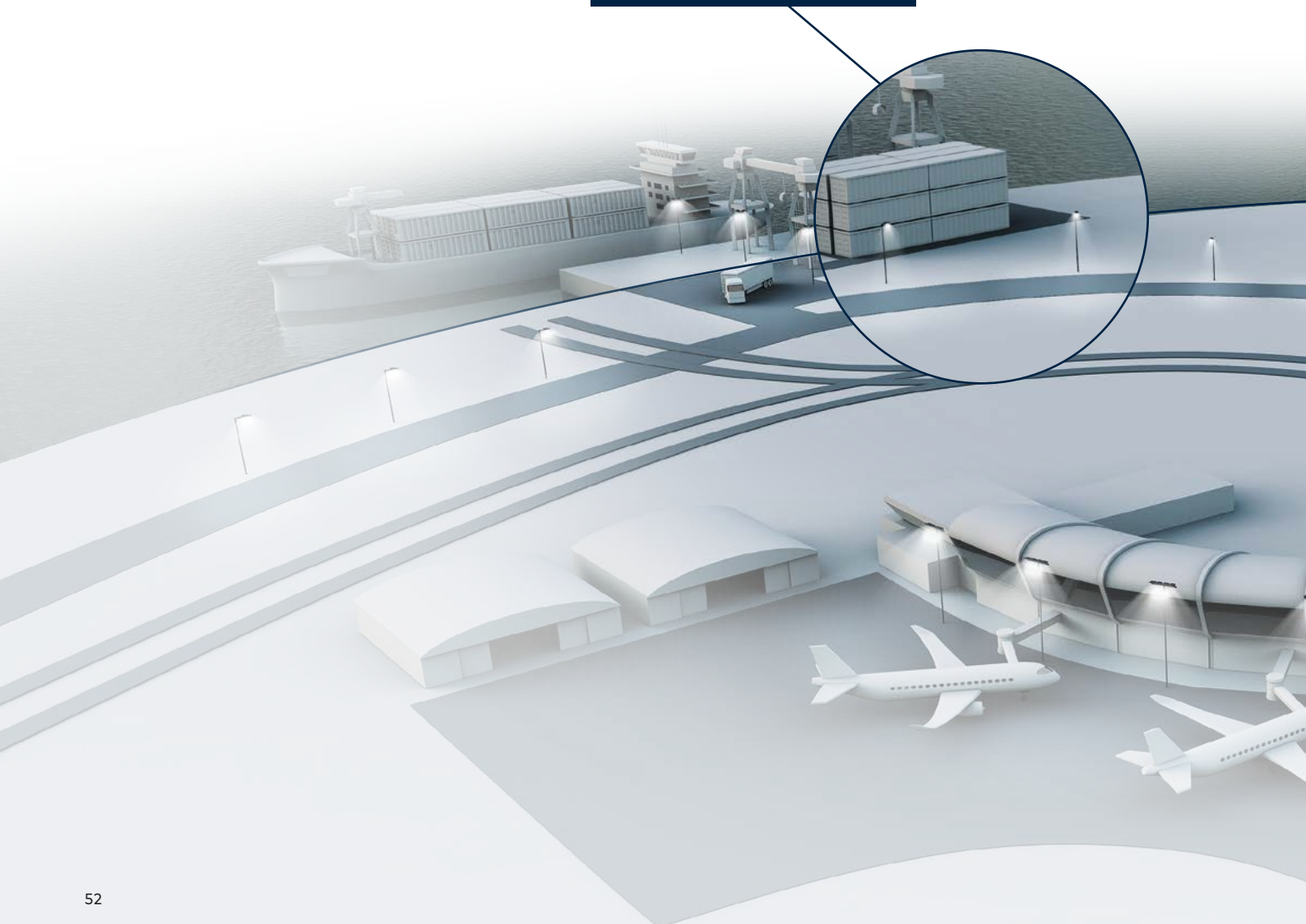
Our solutions for wireless controls



RF Controller
with Zhaga (ZG)
interface



Casambi Ready
basicDIM Wireless



REMOTE CONTROL

Conveniently manage luminaires individually or in groups, troubleshoot, access system status and analysis data and more – from anywhere. Smart lighting solutions with RF-based wireless remote control systems provide maximum flexibility at reduced energy and maintenance costs.

Thorn's remote control system



SINGLE LUMINAIRE CONTROL

Simple controls such as our time switches, photocells and motion detectors are easy to customise, require no external wiring, and provide steady savings with little effort. Our photocells reduce energy consumption by up to 50%. Even higher savings are possible with our motion sensors.

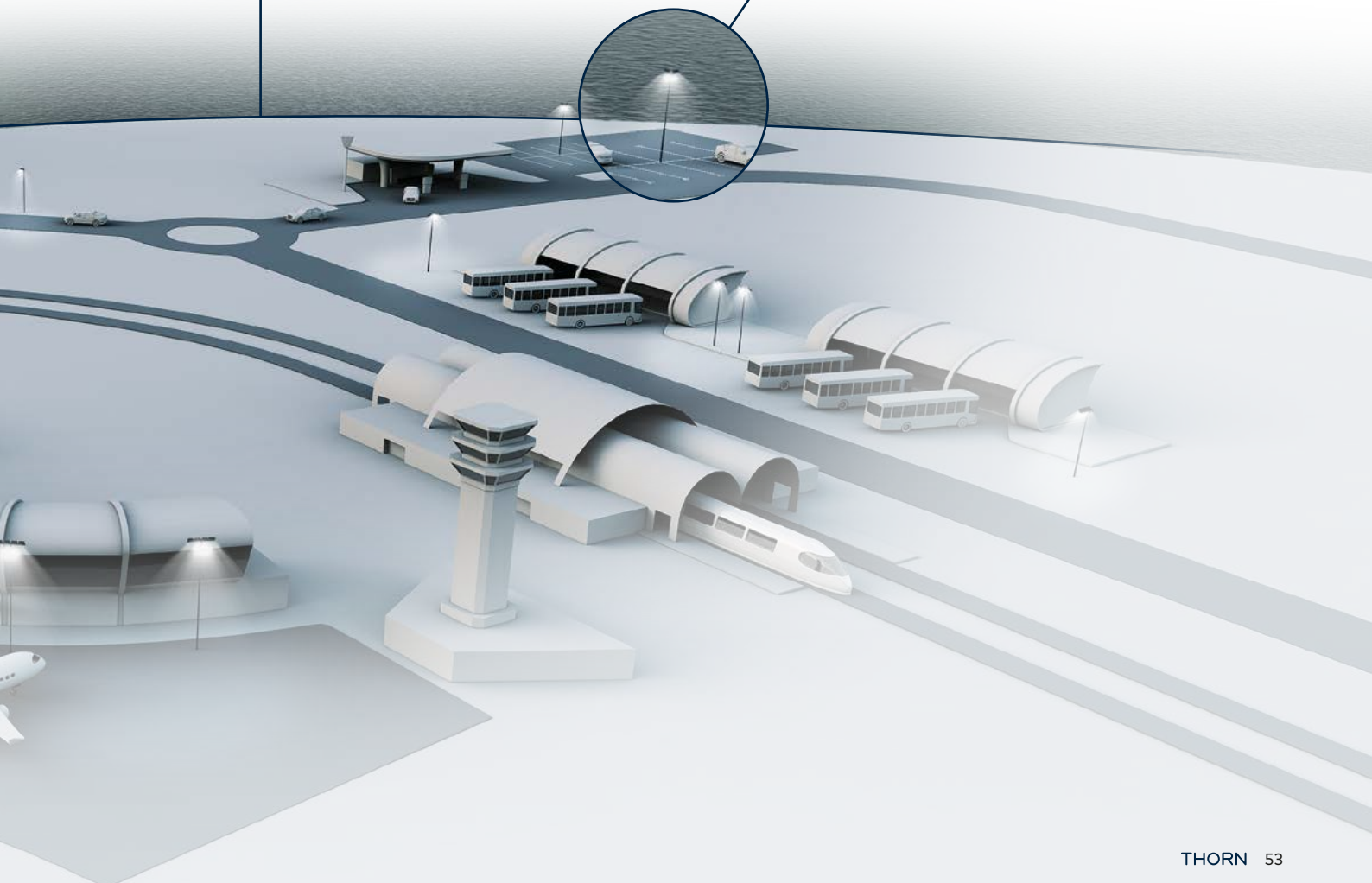
Our solutions for single luminaire controls



MovU PIR
(Lateral and
post-top)

MovU
Vehicle Radar

Integrated
sensor in
luminaires



THORN
LIGHTING

Exclusive Distributor 

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**WE
MAKE
LIGHT
WORK**

03/2020