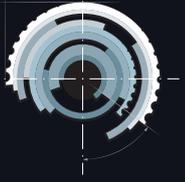




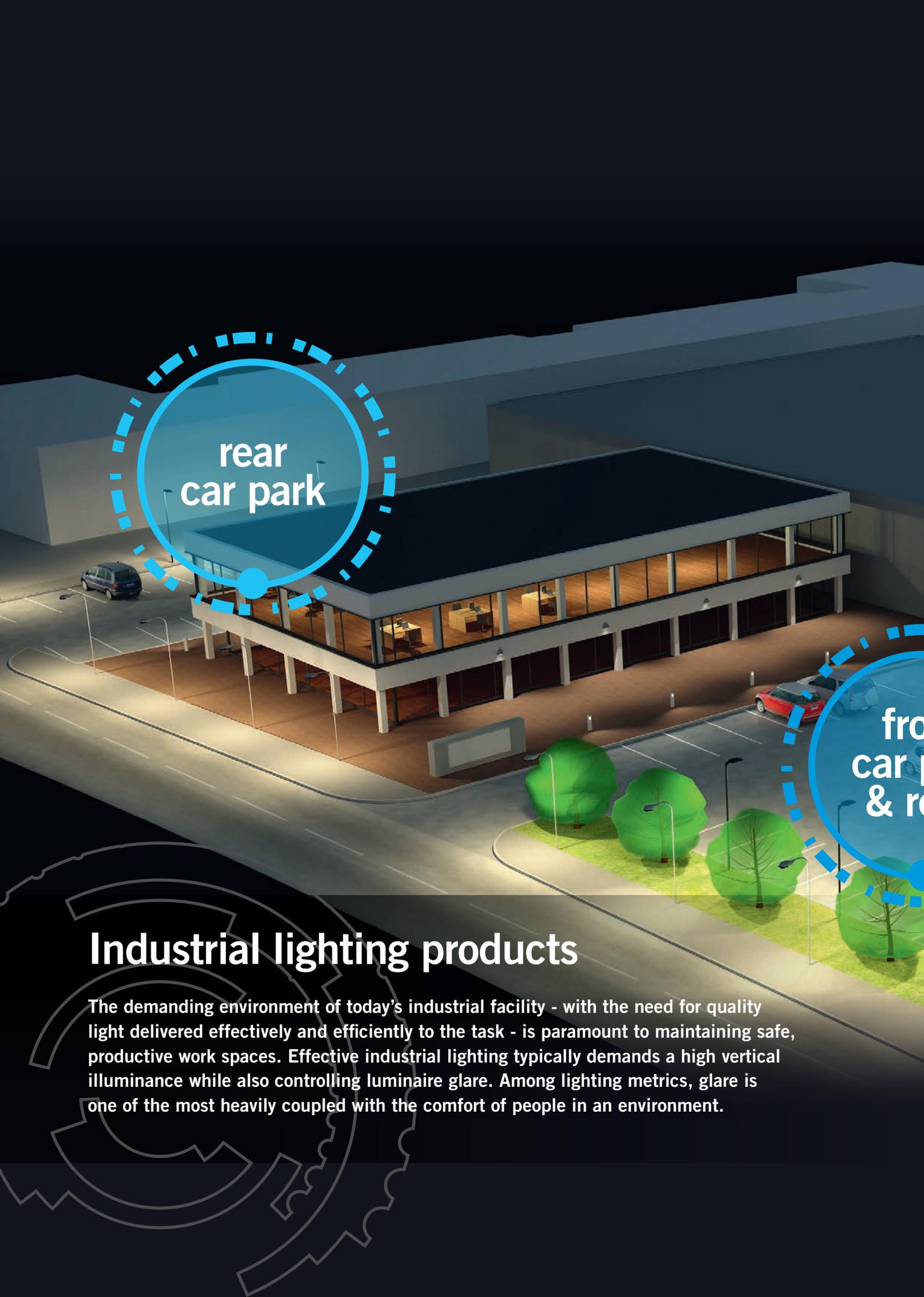
industrial
lighting solutions



Lighting accounts for 60% of your factory's electricity cost.

The ultimate goal when designing a lighting solution for any Industrial environment is to provide the highest quality of light with the lowest cost of ownership.

For more than a century, our unique approach to industrial lighting using the most efficient technologies, allows us to deliver the right lighting solution for our customers.

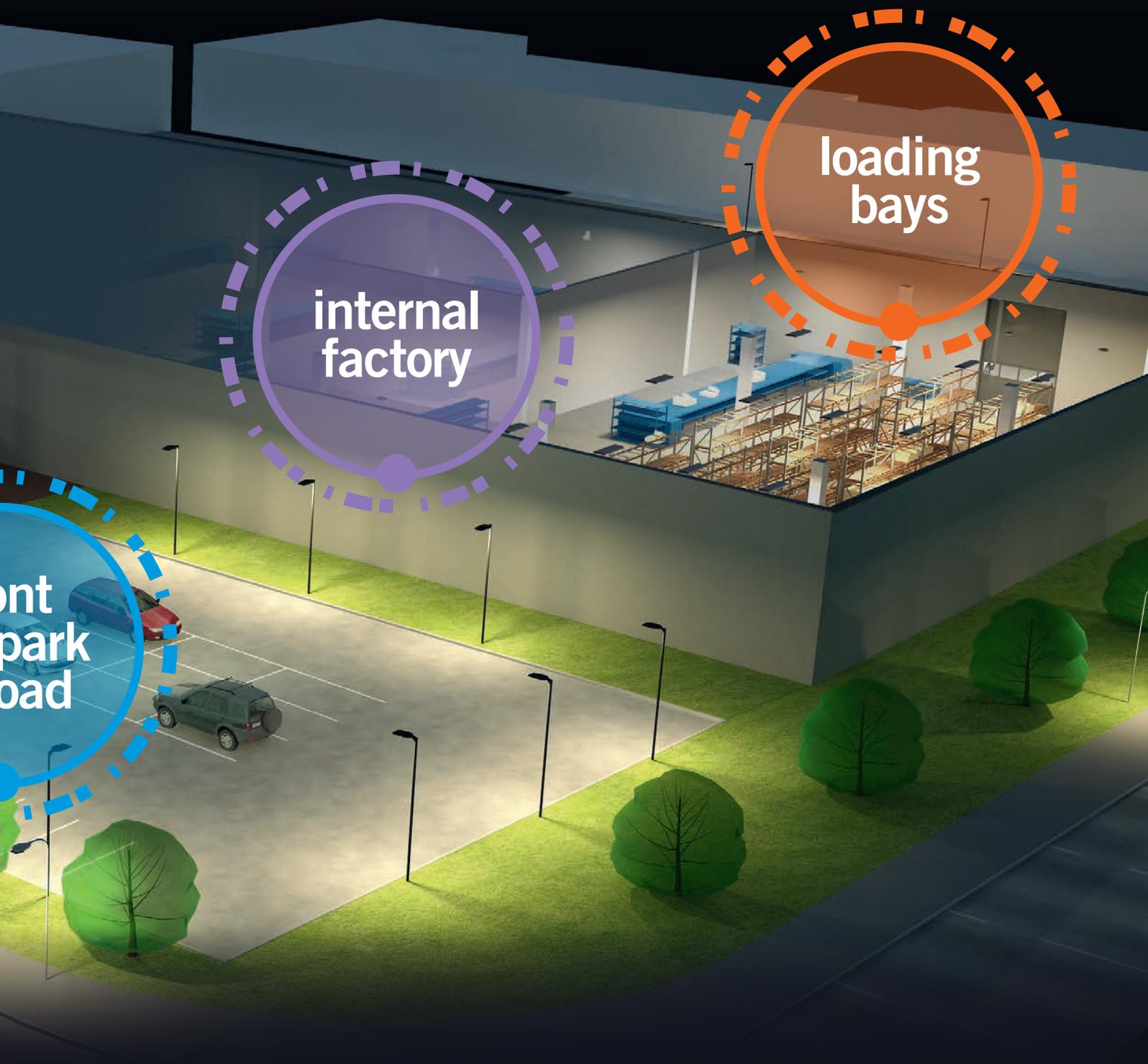
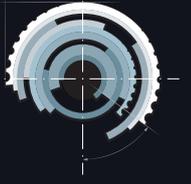


rear
car park

front
car park
& road

Industrial lighting products

The demanding environment of today's industrial facility - with the need for quality light delivered effectively and efficiently to the task - is paramount to maintaining safe, productive work spaces. Effective industrial lighting typically demands a high vertical illuminance while also controlling luminaire glare. Among lighting metrics, glare is one of the most heavily coupled with the comfort of people in an environment.



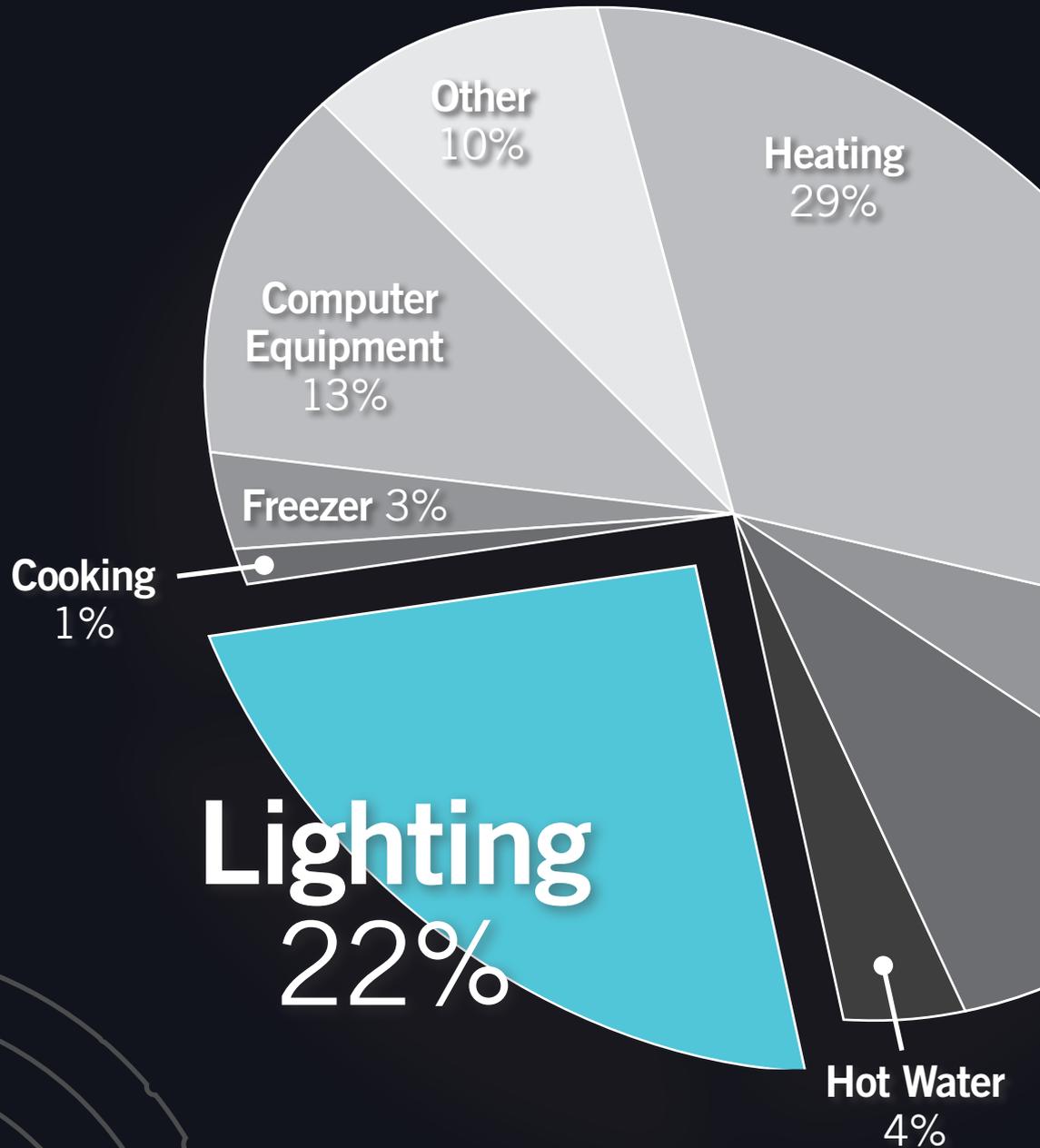
**internal
factory**

**loading
bays**

**ent
park
oad**

Energy saving facts

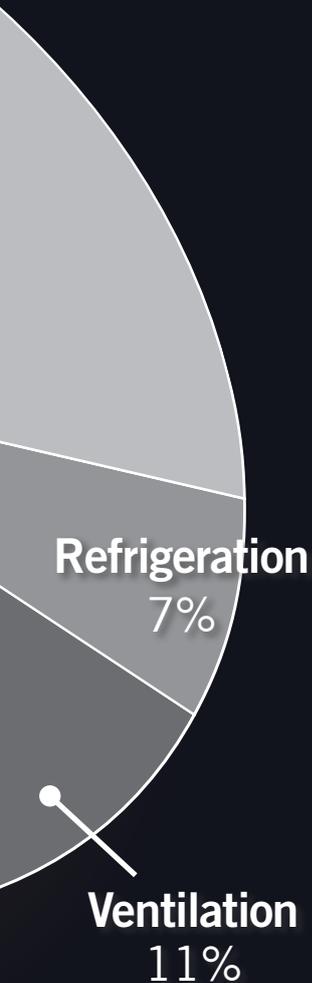
Lighting consumes 22% of all electricity in the world (source: IEA)



Replacing the old lighting with a new solution in a typical industrial environment can save between 60-70% on energy costs.



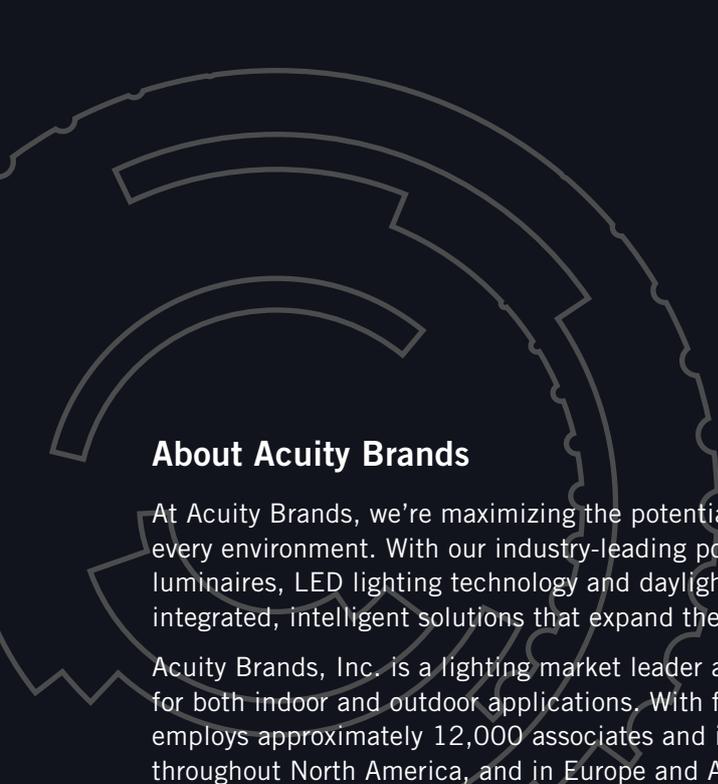
Efficient general lighting can save up to an average 40% This equates to 630 million tonnes of CO₂.



Public and commercial buildings represent

60% of global lighting electricity usage.

Nearly 80% of the lighting in existing industrial and office environments is old technology and energy hungry.



About Acuity Brands

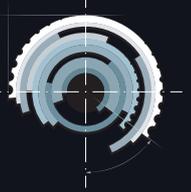
At Acuity Brands, we're maximizing the potential of technology to create the best quality of lighting for every environment. With our industry-leading portfolio and proven expertise in indoor and outdoor luminaires, LED lighting technology and daylighting, lighting controls and components, we deliver integrated, intelligent solutions that expand the boundaries of lighting.

Acuity Brands, Inc. is a lighting market leader and one of the world's leading providers of lighting solutions for both indoor and outdoor applications. With fiscal year 2016 net sales of over \$3.3 billion, Acuity Brands employs approximately 12,000 associates and is headquartered in Atlanta, Georgia with operations throughout North America, and in Europe and Asia. The Company's lighting solutions are sold under various brands, including Lithonia Lighting®, Holophane®, Peerless®, Gotham®, Mark Architectural Lighting™, Winona® Lighting, Healthcare Lighting®, Hydrel®, American Electric Lighting®, Carandini®, Antique Street Lamps™, Sunoptics®, Sensor Switch®, Lighting Control & Design™, Synergy® Lighting Controls, Pathway Connectivity™, Dark to Light®, ROAM®, RELOC® Wiring Solutions, EldoLED®, Juno Lighting and Acculamp®.

 **AcuityBrands**

Expanding the boundaries of lighting™





The Holophane Story

For over 121 years the name Holophane has enjoyed an enviable reputation throughout the world for expertise, quality, and innovation in lighting. From the earliest days, when the company pioneered its famous glass refractor, the Holophane name has been ever present as a leader in the field of luminaire and lighting design. Incorporating interior, exterior, amenity, road, rail and floodlighting luminaires alongside our control solutions, Holophane's product range is suitable for today's demanding, environmentally conscious world, offering lowest total cost of ownership, engineering quality, cutting-edge design and outstanding optical performance. Holophane provides a comprehensive range of professional lighting services which offer advice and support on all types of industrial lighting projects.

Lighting the Industrial Space

Quality Lighting In The Industrial Workspace

In the demanding environment of today's industrial facility, the need for quality light delivered effectively and efficiently to the task is paramount to maintaining safe, productive work spaces. Effective industrial lighting typically demands high vertical component lighting while also controlling luminaire glare contribution. Acuity Brands Lighting provides multiple new technologies to produce quality lighting in a broad range of industrial environments.

Energy Efficient Industrial Lighting

With recent rises in electrical prices of up to 20%, and rates only expected to continue to rise, it is critical to consider energy efficient lighting solutions. Whether considering the replacement of existing lighting in current facilities, or design of new facilities, Acuity Brands Lighting offers a broad selection of highly efficacious solutions to meet the every need of the modern industrial facility.

Brightness, Contrast And Reflectance

Surface characteristics, such as brightness and task contrast, must be considered when lighting an any application. The task at-hand, foreground and background brightness, and specularly or diffuseness of any surface in a worker's periphery can greatly contribute to the overall efficiency, productivity and comfort of workers. The material composition, paint colors, and surface orientations within any industrial facility, manufacturing area, or warehouse can improve the work atmosphere and eliminate needless fixtures and wattage if appropriately considered when lighting the facility.

Colour Rendition

Good colour rendering improves visual performance and the feeling of comfort and well-being. To provide an objective indication of the colour rendering properties

of a light source the general colour rendering index (CRI), sometimes referred to as Ra, is used. The maximum CRI value is 100. Colour rendering properties of light from a light source may be reduced by optics, glazing and coloured surfaces.

Glare Control

When the distribution of a fixture goes uncontrolled, the result is excessive brightness at typical viewing angles. In return, disturbing and debilitating glare present opportunities for human error, reduced productivity, and eye strain. Among lighting metrics, glare is one of the most heavily coupled with the comfort of people in an environment. The selection of a controlled distribution with a suitable amount of light in the viewing zones is necessary to ensure workers maintain task focus, ample depth perception, and the safety of all personnel working with moving machinery.

Seeing And Productivity

Visual acuity is based on several conditions including the age of the worker. As an example, as a person ages, the eye requires significantly more light to see and accomplish the same task.

Task size and contrast dramatically affect the amount of light necessary to perform the same task with the same precision. For example, small font size text, moving rapidly in and out of the field of view requires a substantial amount of light for user comprehension. In contrast, large, stationary objects typically require lower light levels in most applications. The lighting in any given area of an industrial, warehouse or manufacturing facility should satisfy the types of tasks performed in the space, with consideration given to the orientation and contrast of the task.



Creating an efficient industrial facility.

Sustainability

Reducing Energy Consumption

To pursue eco-friendliness, industrial sites can consider installing new lighting systems. Having lighting controls that include occupancy and daylight sensors will also cut back on unnecessary lighting and save you generously on energy bills.

Productivity

Technology Integration

Improved lighting levels enable your employees to read labels on racking and picking lists more efficiently. An efficient warehouse is one that also knows how to take advantage of connected devices and the “Internet of Things” to plan and manage its daily routines, work routes, schedules and inventory. Connected lighting is capable of optimising your warehouse in this way through the use of technology such as “Li-Fi”.

Benefits of an Optimised Industrial Facility

- S Savings**
Realised through reduced energy use, labour and maintenance.
- OE Operational Efficiency**
Achieved through increased safety, productivity and reallocated resource.
- F Flexibility**
Components providing control to your lighting environment via tools that evolve as your operation does.

Renovation Examples – 348 LED vs 388 HID High Bay – 5 year Lifecycle

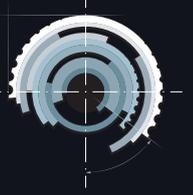
System	Average Yearly Operating Cost*		Investment Drivers**	Benefits
OPTIMISED Replace with: Haloprism with Wireless Controls & Occupancy and PhotoCell Sensor	£260,970	£423,470	2 Years payback	S OE F
Replace with: Haloprism Luminaire with standalone Occupancy Sensor	£278,877	£405,563	2.1 Years payback	S OE
Replace with: Haloprism Luminaire Only	£366,943	£317,497	2.8 Years payback	S
Existing High Bay Lighting: HID High Bay Luminaire	£684,440 (energy & maintenance)			

Operating Cost Potential Savings

*Figures are based on conversion from existing 430W HID high-bay luminaire to new 284W Haloprism LED high-bay luminaire. Savings and returns estimates assume £0.10/kWh utility rate, 8,736 yearly operating hours, projected typical control system performance, and typical HID lamp/ballast replacement and labour costs.

**Payback calculations include the initial capital expenditure for the LED luminaires and installation.

Note: Scheme designed to designed to: BS EN 12464-1:2011, REF 5.1.4, REF 5.5.2 150 LUX / 40% Uniformity.



Lighting that saves you money - LED Industrial application Luminaires



For every industrial application lighting budget, the Haloprism luminaire gives you a reliable and customisable LED lighting solution.

- Lower wattage LEDs save you up to 60% energy over traditional warehouse lighting.
- Reliable LED technology saves on maintenance and labour via longer life and lower operating cost.
- Volumetric lighting solution that delivers an optimal mix of light to walls, partitions, racking, vertical and horizontal work surfaces.

Lighting when you need it - Responsive Occupancy Sensor



Control devices allow you to create a more efficient work environment.

- These fully programmable sensors dim the lighting to pre-set illumination levels when motion is no longer detected. This increases energy saving and life of your luminaire.
- Light only the space you need with optional dimming and photocell settings.
- Suitable for 360°, aisle and end of aisle, from 3 to 13 metre mounting heights.



Lighting that changes with you - Flexible Network Controls



HOLOS3 Wireless gives you superior lighting-management capabilities through wireless communication between fixtures and sensors, facility-wide.

- Digitally controls lighting to boost your savings, increase luminaire life and comply with local codes.
- Flexible system allows you to configure individual fixtures or lighting zones according to changes in schedules, time of day, seasons or special projects.
- Tools for optimising through monitoring, configuration, re-zoning, task tuning, system alerts and energy reporting.





Holophane offers a unique combination of features and controls that yield a smarter solution for the industrial, warehouse and manufacturing space.

- Lighting controls, software and services work together to deliver the most appropriate solution in all areas of the manufacturing environment for both indoor and outdoor applications.
- The best-choice lighting solution should provide the right light, when you need it, every time you need it, site-wide.
- With our breadth of product offering spanning life safety, task illumination, ambient lighting and even daylighting, Holophane can provide the right solution for each application.


HOLOPHANE

HALOPRISM

 *prismaled*

HOLOS³air




Crafted in
Britain



Task Performance

Industrial environments range from general purpose to heavy duty to food processing and “clean” industrial environments. Considering the specific tasks associated with processing, manufacturing and storage, each task demands specific Lighting and Controls Solutions that are affected by mounting height, temperature and operating conditions among other considerations.

Operational Excellence

Partner with a company who understands the industrial space. Holophane has created innovative, technologically advanced, and sustainable lighting products and lighting-related solutions for a multitude of industrial facilities.

Depend on Holophane to design, engineer and deliver integrated lighting solutions for the many environments of manufacturing.

From the front road to the back fence, we help enhance worker safety, increase energy savings, reduce operational costs and improve sustainability.



The benefits of volumetric lighting.

‘Volumetric illumination’ delivers an optimal mix of light to walls, partitions, vertical and horizontal work surfaces that results in reduced shadow and increased perceived volume of space.

This helps to boost productivity and increase safety within the industrial environment.



Volumetric Lighting is achieved by using Holophane’s PrismaLED technology.

PrismaLED technology addresses the following:

- Reduces discomfort glare and allows for greater vertical visibility.
- Maximises optical control within the environment by creating a more uniform distribution.
- Distributes the light from individual LEDs so that any colour change is consistent..
- The effect of an LED failure is greatly reduced resulting in a general dimming instead of dark spots.

Studies have indicated that increased lighting levels in horizontal and vertical illuminance increase the productivity up to 5.7 %.

Luminaire assembly (Finland) 4.6%
Luminaire assembly (Germany) 5.7%
Electronic assembly (The Netherlands) 3%
Machine repair (The Netherlands) 3%
Luminaire assembly (The Netherlands) 5.5

Volumetric lighting in car manufacturing industry significantly reduces “write-ups” (deficiencies)*.

Open area **without** volumetric lighting



Open area **with** volumetric lighting

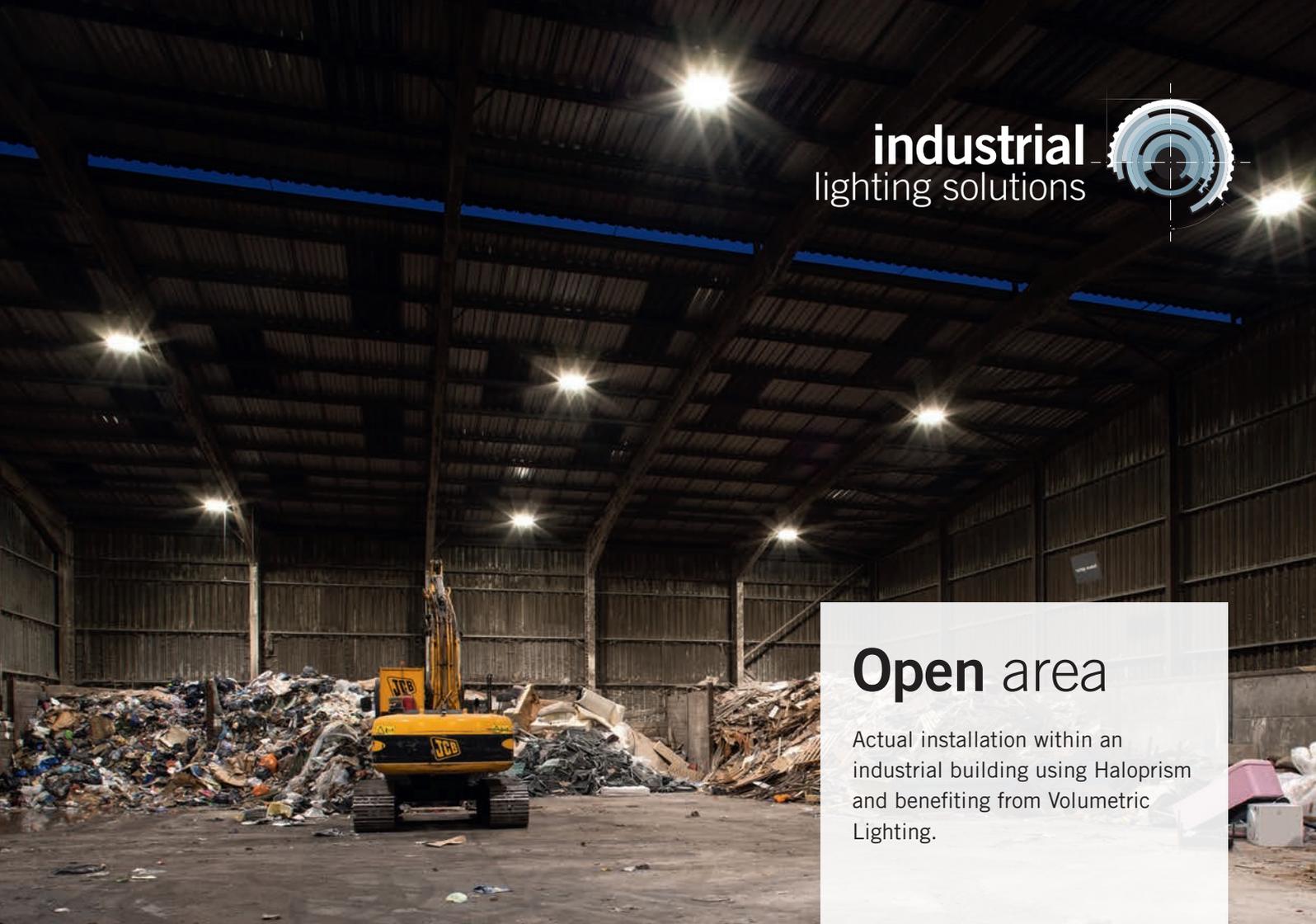


Aisle area **without** volumetric lighting



Aisle area **with** volumetric lighting





Open area

Actual installation within an industrial building using Haloprism and benefiting from Volumetric Lighting.

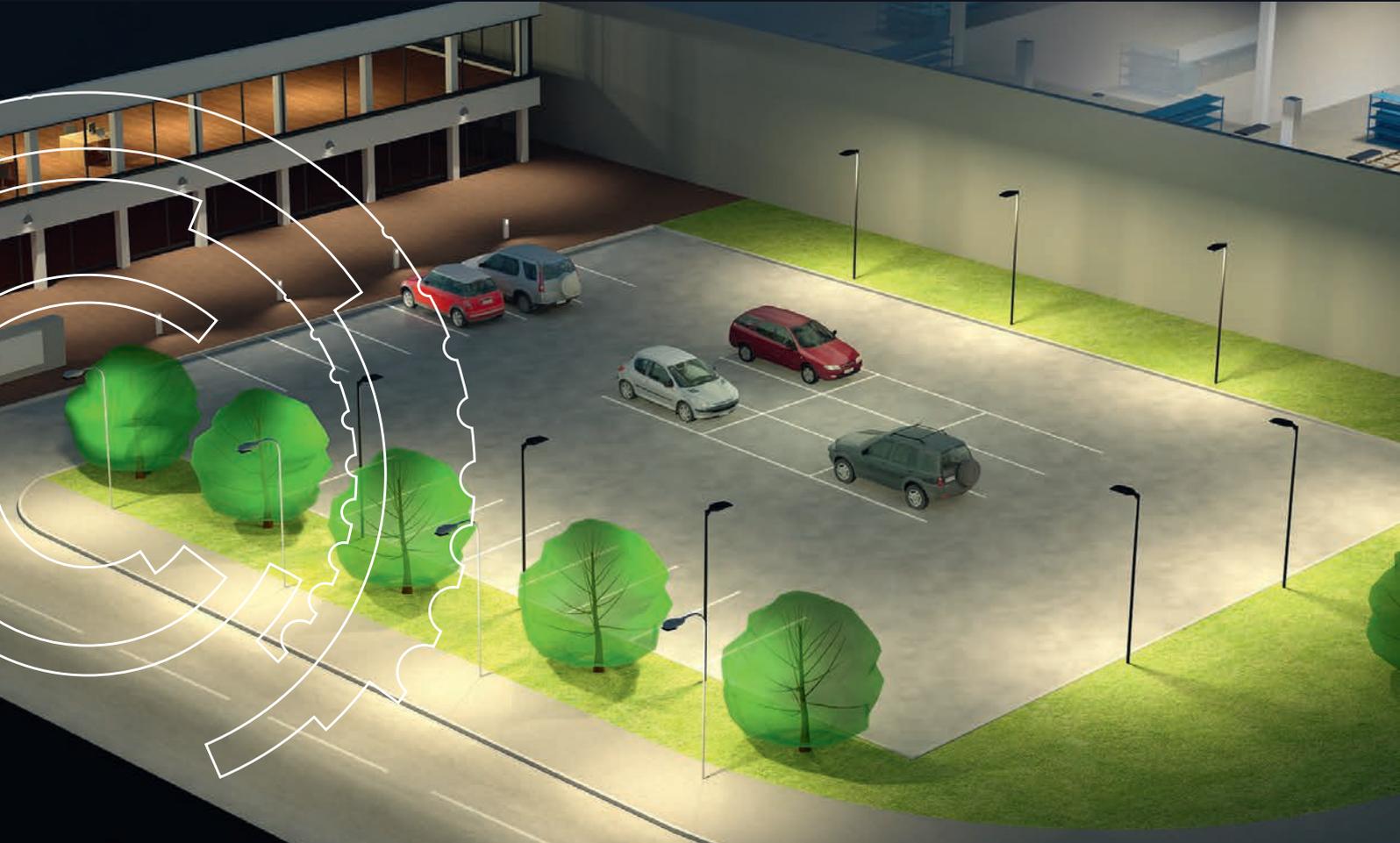


Aisle area

Actual installation with a warehouse building with racking, using PrismaSpace luminaires and benefiting from volumetric lighting.



front car park & road



Front Car Park and Road Lighting

Standards: Lighting of Outdoor Workplace EN12464-2 2011 / Code of practice – design of road lighting EN13201-1

Light Level	Colour Rendition	Uniformity	Glare Level
10 lux	80 Ra	0.25 U_0	50

Required BREEM rating: E2, E3, E4

- 50 Lm/W Walkways & Paths
- 70 Lm/W Car Parks & Roads

Challenges

Roadways around and within industrial facilities require a number of criteria to be met. They must create a visual impact for visitors and operatives, providing enough light to feel safe and secure. However, if located near to residential areas, light pollution must also be considered.

Solutions

Luminaires with a precise cut off light distribution and excellent optical control are ideal for this application. In order to minimise costs and maximise efficiency across the site, highly energy efficient luminaires with long lifetime's and the ability to incorporate lighting controls are ideal for this.



case study:

Scottish Water Roads

Holophane's Factor luminaires were chosen to illuminate the Scottish Water site's car park and roadways. The LED luminaire's optics provide a precise cut off and have dedicated optics designed specifically for roadway lighting. The luminaire offers efficiencies of up to 135 Lumens per Watt and has a long luminaire lifetime of over 100,000 hours, reducing energy and maintenance costs site-wide.

To find out more, visit www.holophane.co.uk

Products available



Denver™ Elite Wall



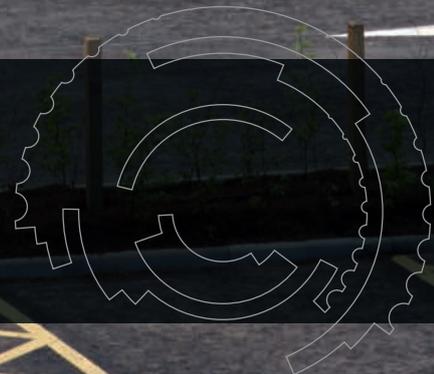
Denver™ Elite Pole



Denver™ Elite Bollard

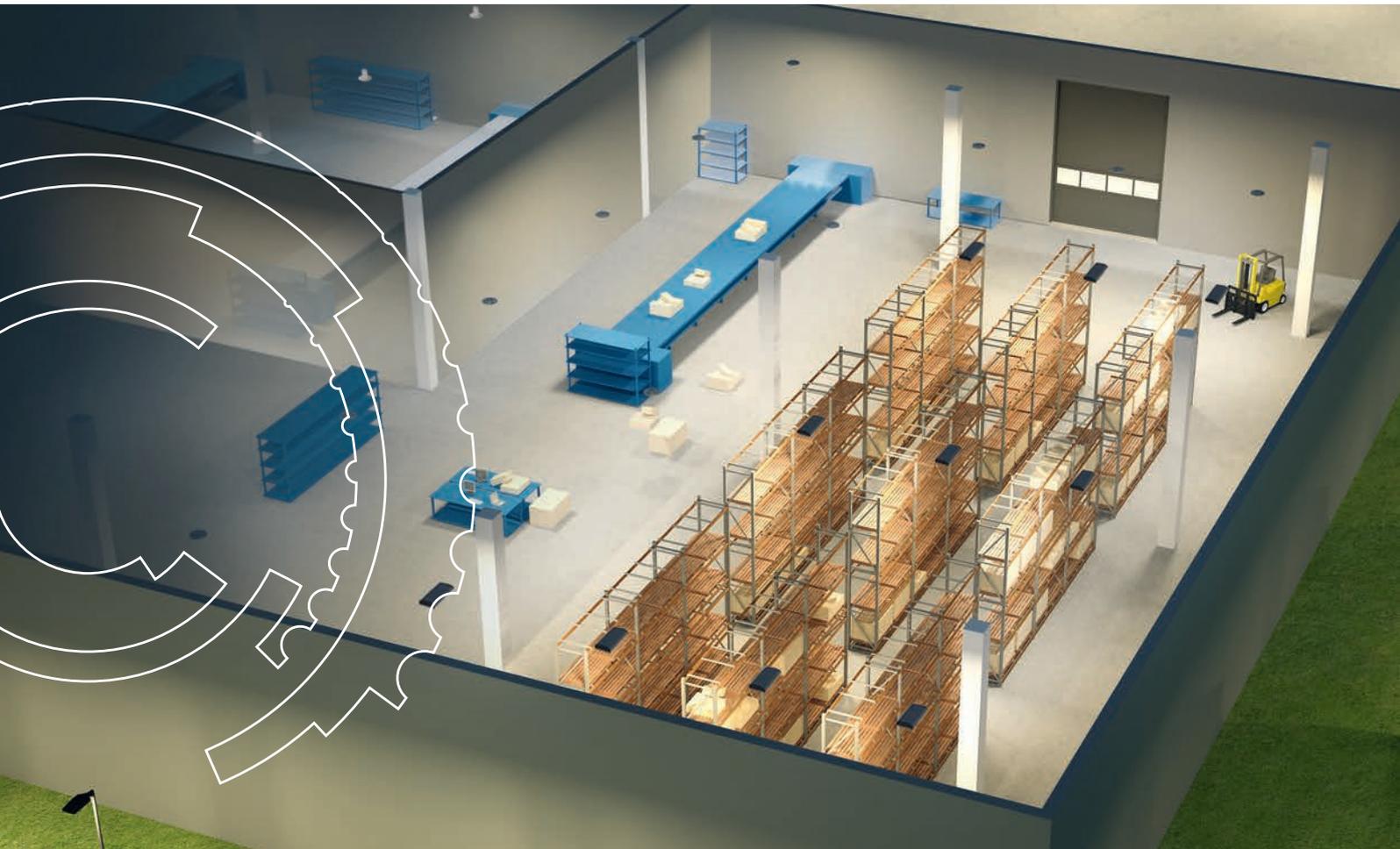


CityMAX®





internal factory



Internal Factory Lighting

Standards:

Lighting of Workplace EN12464-1 2011

Light Level	Colour Rendition	Uniformity	Glare Level
■ 500 lux	80 Ra	0.60 U_0	20
■ 200 lux	80 Ra	0.40 U_0	22

■ Assembly Areas ■ Racked Areas

Part L requirement:

No less than 55 lumens per watt (total installation)

Challenges

The energy savings that can be made with an efficient lighting system in any industrial environment can exceed 30%. This is done by simply upgrading to the existing lighting with the latest LED luminaires. Couple this with the benefits of controls you can expect to see savings of up to 68%.

Solutions

Luminaires that have open area distributions with prismatic control optics will provide the best light distribution and visual comfort for your operatives through 'volumetric illumination'. This delivers a mix of lights to walls, partitions, vertical and horizontal work surfaces, resulting in reduced shadows and an increased perceived volume of space. This helps to boost productivity and increase

safety within the industrial environment. Luminaires with a high energy efficiency and a reduced maintenance requirement are recommended to reduce overall site costs. Due to the large amount of lighting required to cover the operational space and the nature of the operation hours in these environments, an initial investment in integrated controls, such as presence detection or full luminaire controls, will provide a quick ROI.



case study:

Production Facility

In a typical 1500m² dirty environment, you can replace 84 existing 400W HID high bays with 50 Haloprisms and a controls package. This provides a dramatic 68% reduction in energy usage this also improved the average lighting levels by 27% from 510 lux to 650 lux. This typical retrofitting project would deliver an outstanding estimated project return of investment in just over 2.5 years.

To find out more, visit www.holophane.co.uk

Products available



Prismaspace™



IBH



Haloprism™

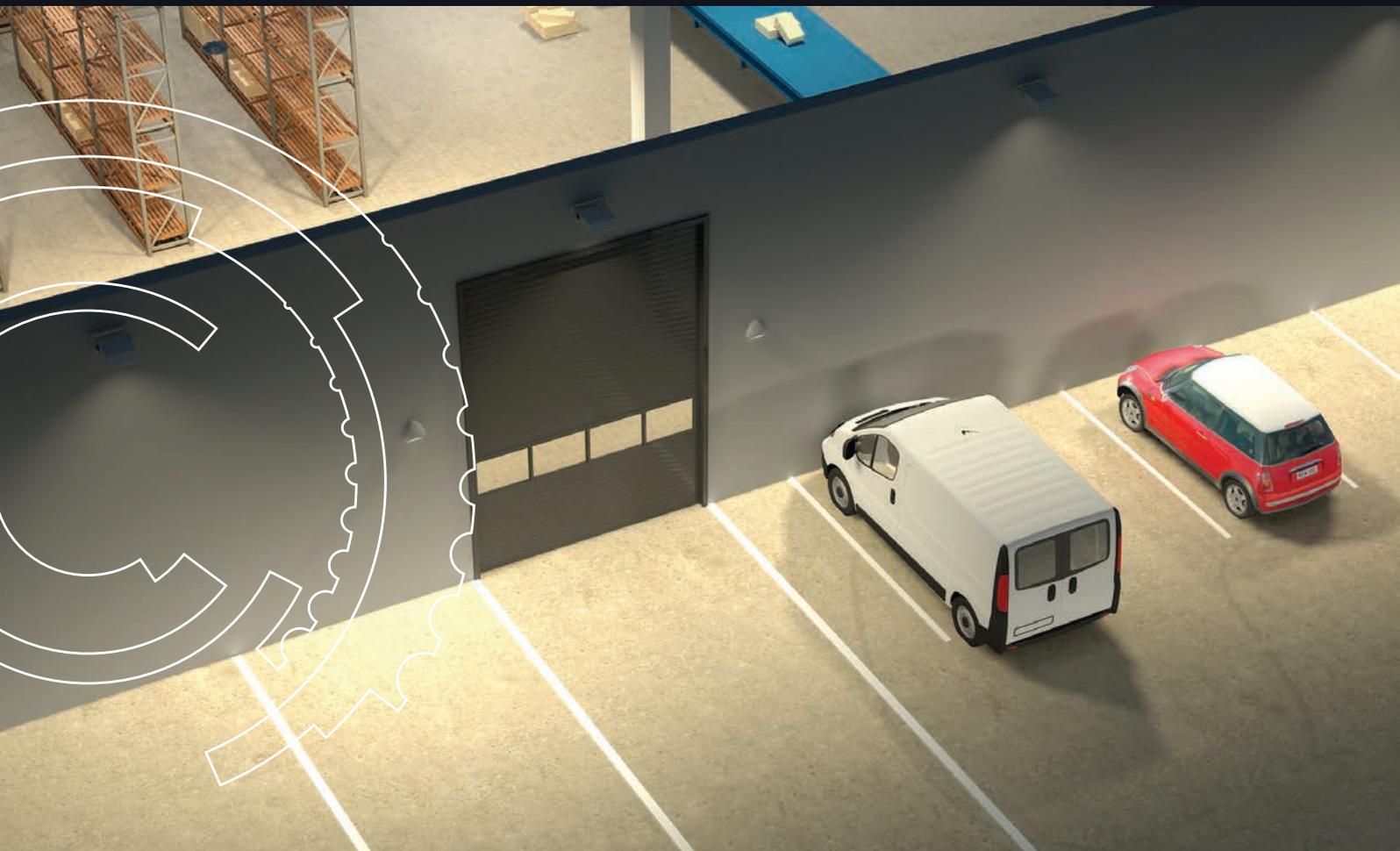


Vantage LED





loading bay



Loading Bay Lighting

Standards:

Lighting of Workplace EN12464-2 2007

Light Level	Colour Rendition	Uniformity	Glare Level
150 lux	20 Ra	0.40 U_0	50

Required BREEAM rating: E2, E3, E4

- 50 Lm/W Walkways & Paths
- 70 Lm/W Car Parks & Roads

Challenges

On top of the efficiency and reduced maintenance requirements of your lighting system, safety in the loading bay areas must be carefully considered and this includes the lighting scheme. Loading bays are a point of high activity in warehousing environments, bringing together a number of elements including; vehicles, forklifts,

warehouse staff and drivers. A lighting system that provides the minimum recommended minimum levels are a must to help prevent serious injury as well as for boosting productivity.

Solutions

It is recommended that energy efficient luminaires with a good optical distribution are used to help to

reduce glare and increase uniformity, thus improving visual acuity and comfort in the area. This will help to reduce workplace accidents and boost productivity whilst reducing energy consumption and reducing costs.



case study:

Travis Perkins Loading Bays - Warrington

The canopy lighting requirement was for efficient control with instant start-up, leading the team to choose the Haloprism LED luminaire. Mounted at 7m with 10m spacings, Haloprism features an advanced prismatic glass enclosure, utilising Holophane's PrismaLED technology, which ensures that the light is guided down to the floor as efficiently as possible whilst at the same time reducing glare to a minimum. Haloprism is capable of producing efficiencies of up to 136 Lumens per Watt, and has an L7B50 @ Ta 25°C rated lifetime of 100,000 + hours, drastically reducing maintenance costs when compared to conventional lighting systems.

To find out more, visit www.holophane.co.uk

Products available



T-MAX™



Haloprism™



D-Series™



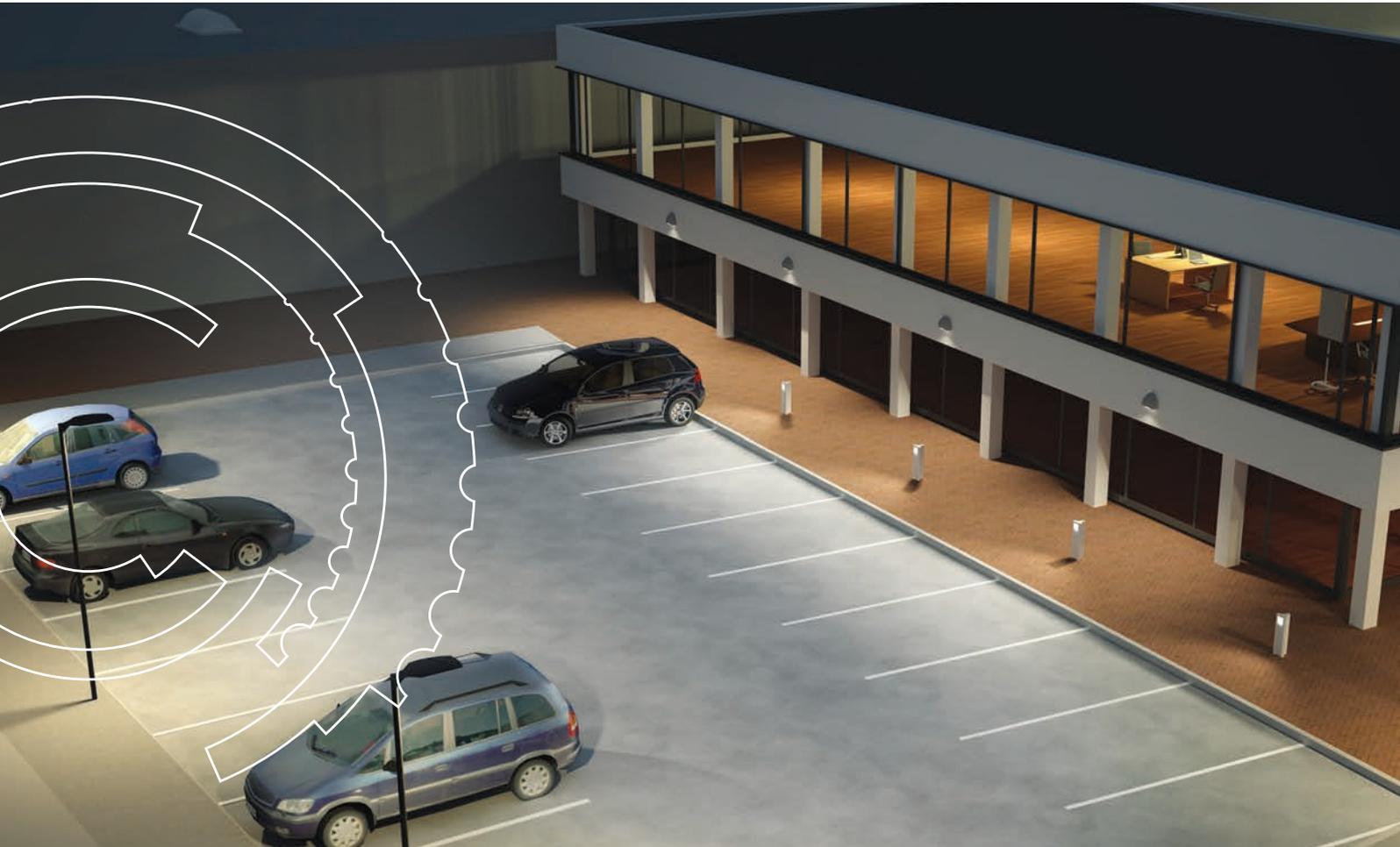
HF LED



Denver Elite™ Wall



rear car park



Rear Car Park Lighting

Standards:

Lighting of Workplace EN12464-1 2011

Light Level	Colour Rendition	Uniformity	Glare Level
10 lux	20 Ra	0.25 U_0	50

Required BREEAM rating: E2, E3, E4

- 50 Lm/W Walkways & Paths
- 70 Lm/W Car Parks & Roads

Challenges

Car park lighting requires a lighting installation that provides the required lighting level that allows drivers and pedestrians to safely use the area. The lighting should be unobtrusive and deliver a long energy efficient life.

Solutions

Luminaires with a precise cut off light distribution and excellent optical control are ideal for this application. If the luminaire is mounted in a low or accessible position, a luminaire able to withstand attempts of vandalism should be considered.



case study:

Travis Perkins Car Park

The Travis Perkins distribution centre in Warrington required a lighting scheme for their car park which satisfied a number of criteria. The close proximity of the M62 required a luminaire with an optical control that complies with the stringent planning constraints put in place by the Highways Agency. The luminaires also needed to be energy efficient and provide sufficient lighting levels to illuminate the car park.

The Holophane D-Series luminaire is "Dark Sky Compliant" meaning that the light cut-off is very tightly controlled. This was proven to the Highways Agency and provided Travis Perkins with a suitable solution. The D-Series luminaire also offers efficiencies of up to 135 lm/W. Des Whatton, Facilities Manager at Travis Perkins had this to say about the installation "I would certainly recommend Holophane to any other business who contacted me regarding lighting. They have always offered a very good service, which is what you need within this business."

To find out more, visit www.holophane.co.uk

Products available



HMAO



DPG



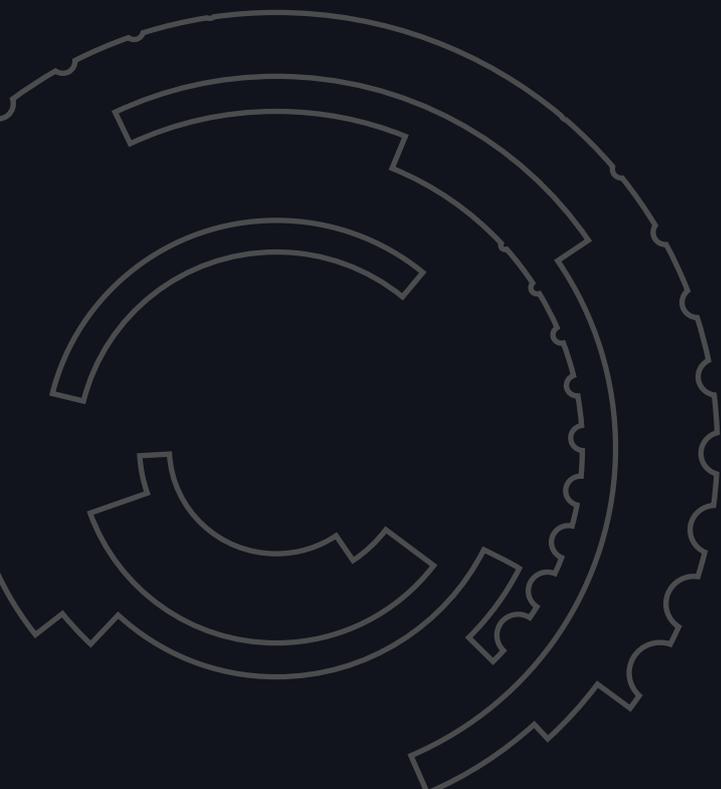
D-Series™



CityMAX®



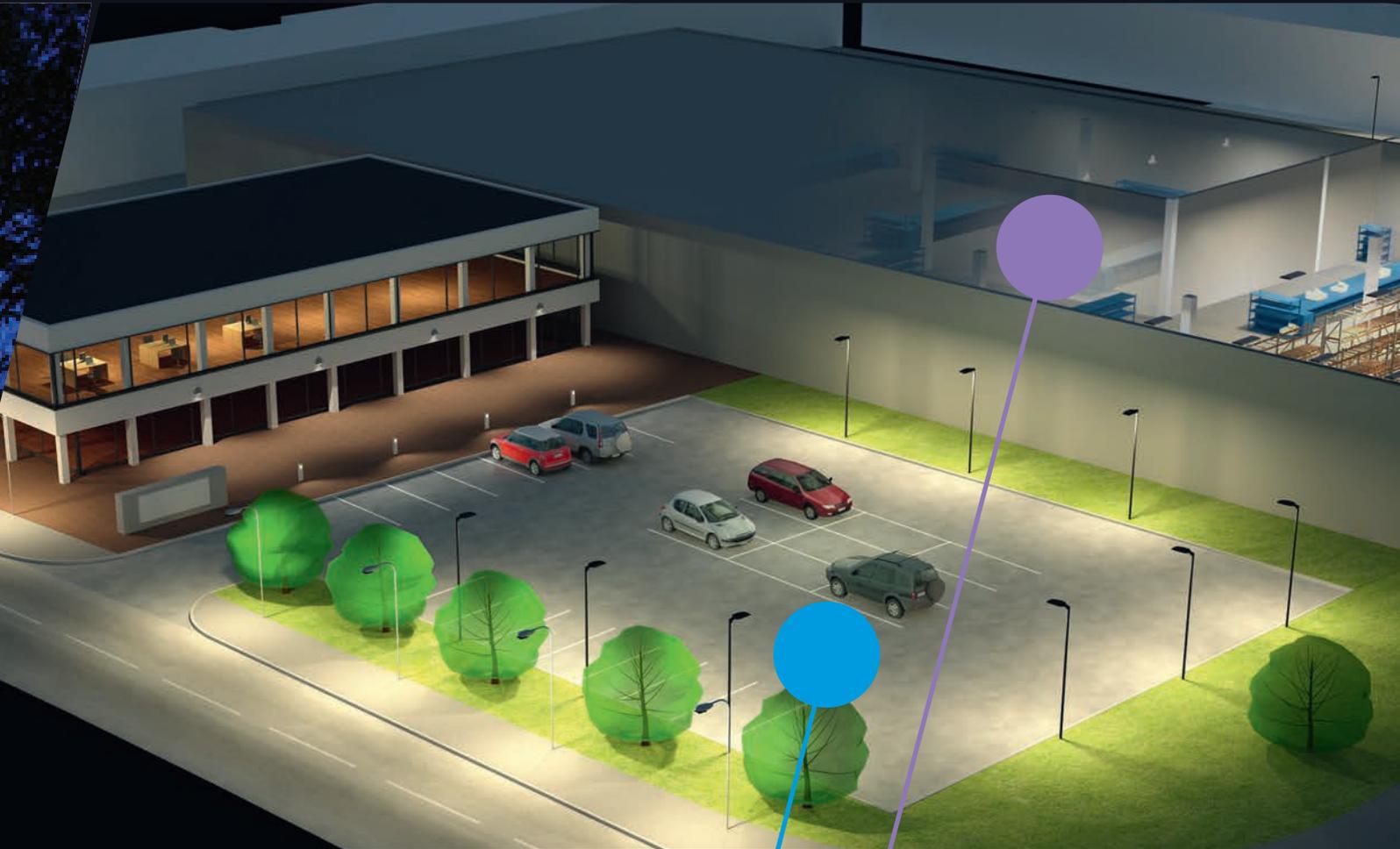
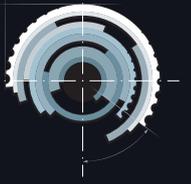
our industrial solution



Holophane's solutions for industrial spaces maximize energy savings while reducing maintenance costs through the use of advanced LED lighting technology, full range dimming, and flexible, intelligent control options.

Our systems include lighting and controls which, provide the flexibility to reconfigure lighting to accommodate changes in the warehouse configuration, and the ability to rezone and regroup fixtures for changing requirements.

Our standard and custom industrial lighting fixtures are known for their excellent thermal management, optical design and efficient illumination. Custom reflector designs, special finishes and unique housings satisfy the most challenging applications, and withstand dirt, heat, moisture and corrosiveness.



What using Holophane can do for you:

Energy Saving

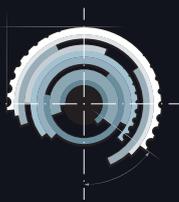
Internal Factory 68%

Car Park & Road 65%

over
60%
energy saving
across your
site



industrial
lighting solutions



Holophane Europe Limited
Bond Avenue, Bletchley, Milton Keynes MK1 1JG United Kingdom
Telephone: +44 (0) 1908 649292 UK Fax: +44 (0) 1908 367618
International Fax: +44 (0) 1908 363789
E-mail: info@holophane.co.uk

www.holophane.co.uk



THE QUEEN'S AWARDS
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