PHILIPS

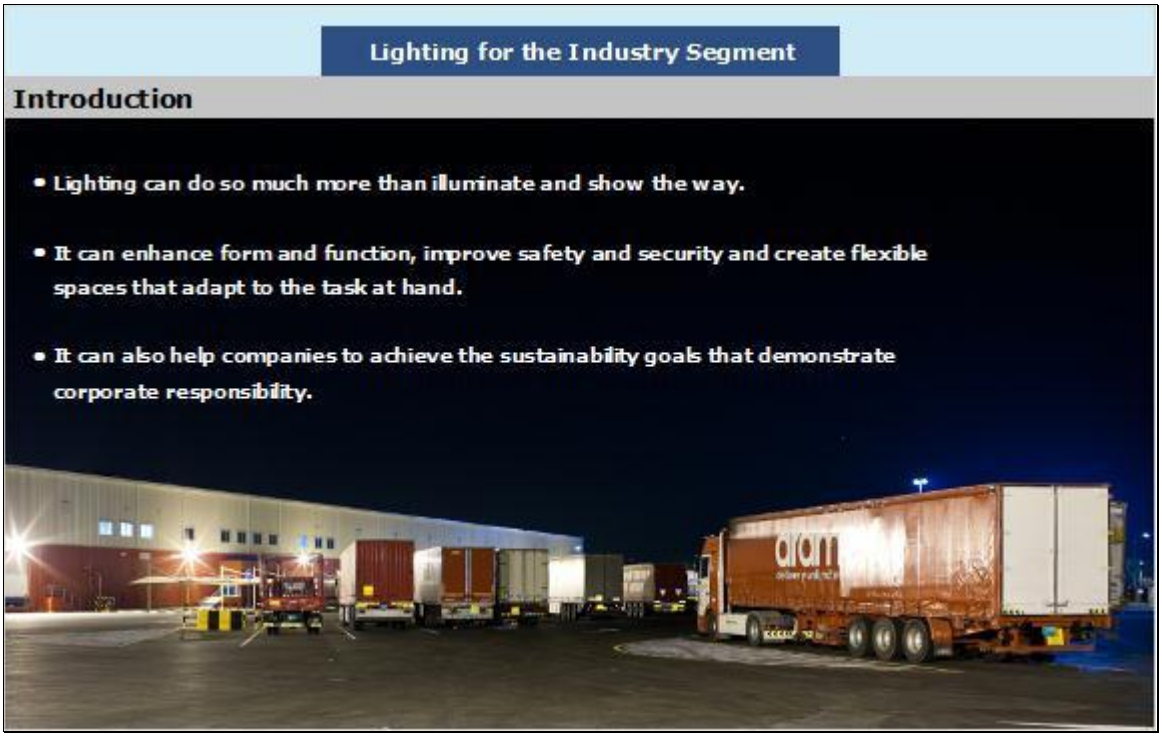
Introduction

Notes:

Let us begin by understanding how lighting can impact the industry segment.

PHILIPS

Introduction



Notes:

Lighting can do so much more than illuminate and show the way. It can enhance form and function, improve safety and security and create flexible spaces that adapt to the task at hand. In these difficult times of soaring energy prices and legislation targets, lighting can also help industrial companies to achieve the sustainability goals that demonstrate corporate responsibility. For the industry segment, we need energy-efficient lighting solutions that reduce environmental impact, save on costs, and at the same time increase quality and productivity.

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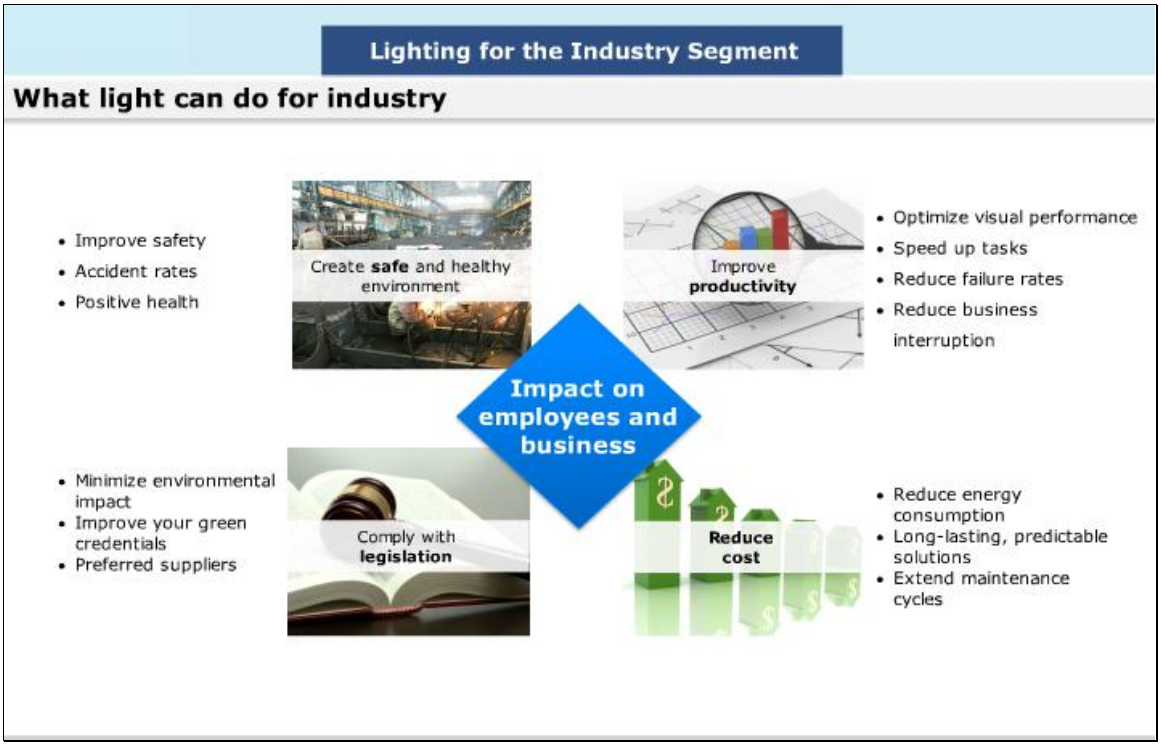
What light can do for industry



Notes:

Light has a profound effect on how we feel and plays a vital role in creating a healthy workplace. Daylight controls our natural biorhythms, influences our mood and creates a sense of well-being. But daylight alone is not enough in most work environments. Artificial light is also needed to produce the right light levels.

How can sustainable lighting have a positive impact on industry?

- Light creates a safe and healthy environment
- Light increases the productivity of the workplace
- Efficient lighting complies with legislation
- Efficient lighting can significantly reduce your energy cost

Requirements and regulations in industry lighting

Notes:

A number of requirements and regulations affect industry lighting. Let's take a quick look at the most important ones.

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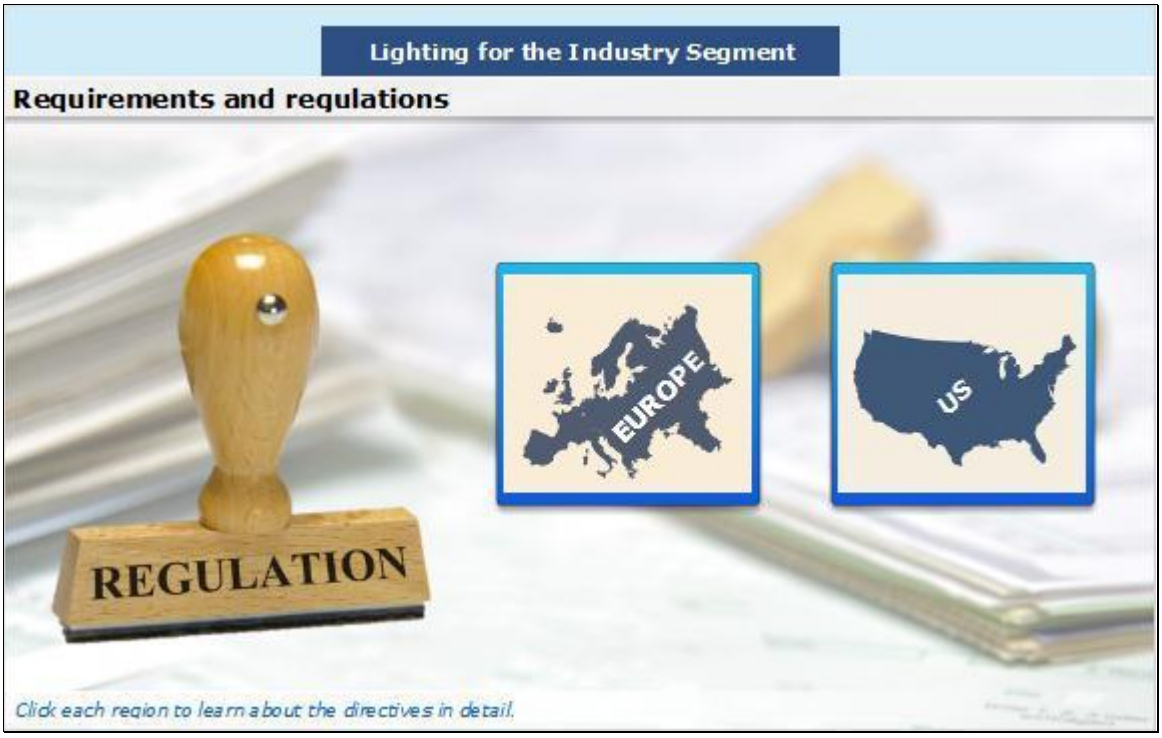
Requirements and regulations



Notes:

Let us first discuss some important directives and regulations for the Europe and US and how these affect the industry lighting in that region.

Click each region to learn about the directives in detail.

Key European standards and directives

Notes:

Lighting is generally affected by two types of regulations:

- Lighting application norms are the focus of the international commission on illumination, known as CIE
- System design and safety norms are the focus of the International Electrotechnical Commission

The recommendations of experts from both the groups are used by governments all over the world to set up their local standards.

In the European Union, these recommendations are picked up by the European Commission, which turns them into directives. These directives are then adapted and applied as national standards by the member countries.

Here is a list of some European directives that are most relevant for the industry segment:

Luminaire design

- EN 60598-1 and -2

Lighting application

- Indoor workplaces: EN 12464-1
- Emergency lighting: EN 1838

Environmental

- EPB (Energy performance of buildings)

- WEEE (Waste of Electrical and Electronic Equipment)
- RoHS (Restriction of the use of certain Hazardous Substances in electrical and electronic equipment)
- EuP (Energy Using products)

Key North American standards and directives

Notes:

Similar to the European standards, lighting North American region is also affected by two types of regulations:

- Lighting application norms - These are the focus of the Illuminating Society of North America, known as IES
- System design and safety norms - These are the focus of the International Electrotechnical Commission as well as the National Electrical Manufacturers Association

The recommendations of experts from both the groups are used by national standards organizations all over the world to set up their local standards, which can be backed by a government bill.

Here is a list of the North American standards and acts that are applicable to the industry segment:

Luminaire design

- IEC 60598-2

Lighting application

- Indoor workplaces: IES RP-1-12
- Emergency lighting: NEMA EM 1-2010

Environmental

EDEE (Environmental Design of Electrical Equipment - USA)

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Application areas

Notes:

Moving on, we will learn about the different application areas in an industrial environment and the recommended lighting solutions for each area.

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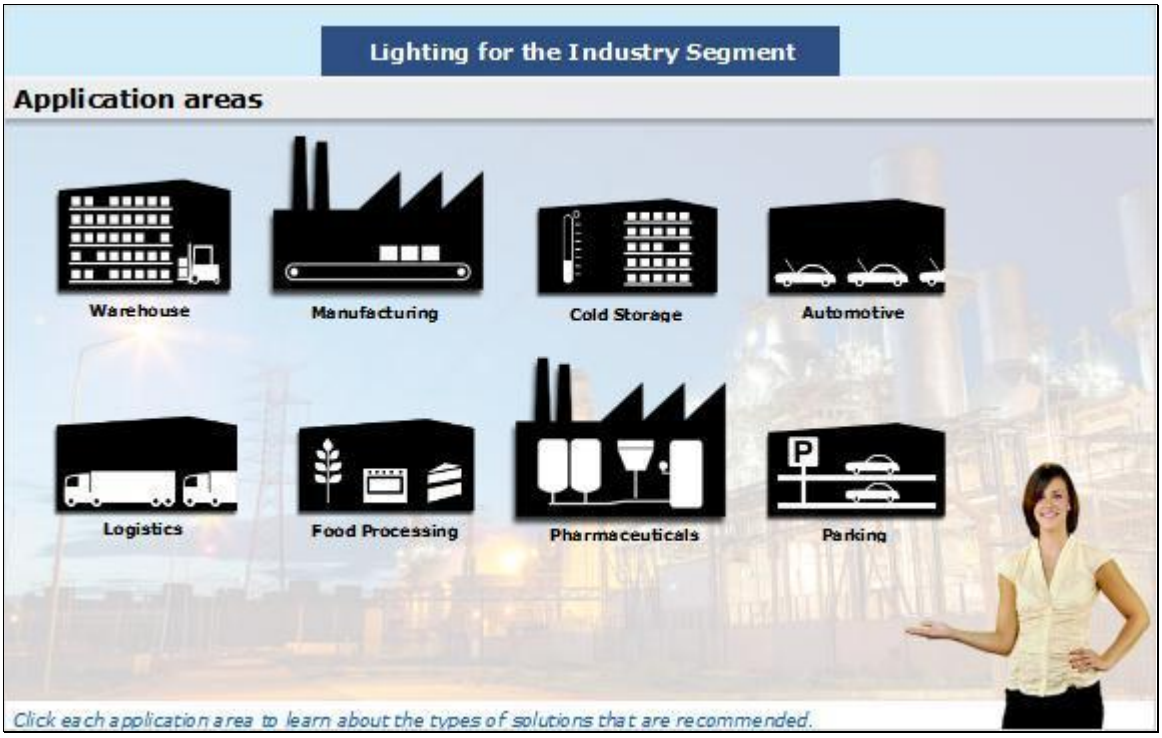
Application areas



Notes:

Lighting solutions can add value in many different ways throughout your building. There is no such thing as a 'standard' industrial lighting.

Click each application area to learn about the types of solutions that are recommended.

Warehouse

Notes:

Warehouses often operate round the clock and therefore, demand energy-efficient lighting solutions. Lighting plays an important role in ensuring that operations take place safely and efficiently with good quality, and with uniform illumination whenever and wherever needed.

We recommend the use of High Bay lighting or Trunking systems with a combination of Lighting controls.

So what are the benefits of Lighting controls?

In warehouse applications, most of the racks are never fully occupied, but a good quality of light is needed when you want to pick your merchandise. The incorporation of controls will let you adapt the light to the needs of the moment, creating energy savings through the use of presence detection, allowing for dimming as a standard, only increasing the light in an area when it is occupied.

Click each applicable solution type to view the corresponding products. Click the home icon to go back.

Manufacturing

Notes:

In the world of industry, light is productivity. Effective lighting not only keeps people alert and focused, it also lights up their tasks, improving performance and productivity. With fewer accidents and increased output, the benefits are clear.

In the production area, the need to improve productivity while maintaining safety is more critical than in any other areas. Add to this, the increasing pressure to lower energy consumption, and it becomes clear how lighting plays a vital role in these areas.

Lighting companies such as Philips can help you with a variety of solutions that can accommodate and meet your stringent design requirements. Sustainable lighting solutions can create a more efficient and productive workplace by providing better lighting that ensures task areas are well lit and have high visual comfort, helping to reduce mistakes and boost production. Operational costs are reduced by using less energy, minimizing lighting maintenance in hard-to-reach areas and reducing the carbon footprint of manufacturing in the supply chain.

Here, depending on the layout format of the manufacturing plant, we recommend High Bay lighting, Waterproof lighting, Workbench lighting, and Trunking systems, along with a combination of Lighting controls.

Workbench task lighting will only be ON when the workbenches are occupied. This can be done by simply combining the task lighting over the workbench with a narrow

area presence detector. The lighting over that workbench will detect when someone is there and switch the lights on. Once that person leaves the workbench, after a set time, the lights will be switched off automatically. Thus, lighting controls provide benefits by allowing savings related to energy, maintenance and carbon emissions.

Click each applicable solution type to view the corresponding products. Click the home icon to go back.

Cold storage

Notes:

There are a few areas that are relatively difficult to illuminate properly, for instance, cold storage areas. Philips Lighting solutions reduce carbon emissions and energy costs, and deliver high quality, uniform lighting to work areas only when and where it is needed. Philips LED lighting solutions perform better than conventional lighting technology at lower temperatures. This reduces the number of light points required, maintenance, and downtime to operations and associated costs.

Here, we recommend the use of High Bay lighting or Waterproof lighting with a combination of Lighting controls.

In this case, effective lighting controls will offer additional savings of 35% by linking the lighting to either presence or absence detectors or dimming. This would ensure that lighting is only on where and when required, thereby reducing energy costs and carbon emissions.

Click each applicable solution type to view the corresponding products. Click the home icon to go back.

Automotive

Notes:

On automotive assembly lines, vehicles are constantly moving, so lighting becomes a critical factor in achieving safety and quality. Continuous lines of luminaires parallel to the vehicles allow you to concentrate the lighting level on the assembly activity along the entire production line. Sustainable lighting solutions are ideal for production lines, painting booths and quality control departments, delivering exceptional levels of visual clarity. This results in an easier and safer environment, and optimal conditions for observation and inspection. The flexibility of Philips Lighting products also means that lighting can be easily adapted to accommodate changes in production processes and layouts, and being more energy and carbon efficient, it helps to enhance your sustainability credentials.

Depending on the layout format of the automotive plant, we recommend High Bay lighting, Waterproof lighting, Workbench lighting, and Trunking systems, along with a combination of Lighting controls.

Lighting controls can benefit by providing additional savings through effective lighting, that is, a further 35% savings by linking the lighting to either presence or absence detectors or dimming. This ensures that lighting is on only where and when required, thus reducing energy costs and carbon emissions.

In addition, controls can help us realize a further 25% savings by making use of

available natural daylight. Controls dim down the lighting when natural light is available, and increases the lighting levels when natural lighting levels drop - such as during bad weather or winter months.

Click each applicable solution type to view the corresponding products. Click the home icon to go back.

Logistics

Notes:

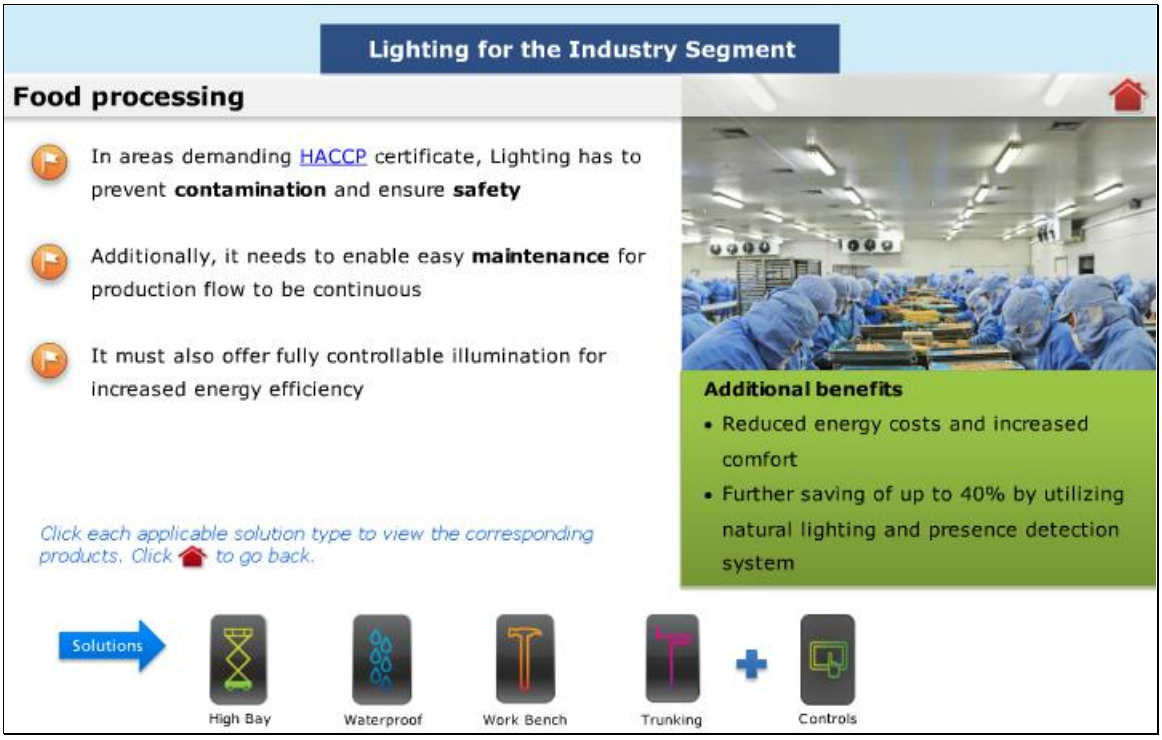
Like warehouses, logistics areas also, at times, operate 24 hours a day. Therefore, energy-efficient lighting solutions are essential here as well. LED lighting solutions reduce energy costs and maintenance time in hard-to-reach, high-ceilinged areas helping your business to stay functional day and night.

Here, due to the high ceiling, we recommend the use of High Bay lighting or Trunking systems or Workbench lighting with a combination of Lighting controls.

Linking Philips LineSense DALI with your warehouse or storage aisle, lighting ensures that lights are only on, where and when needed. The system detects occupancy in an aisle and then switches the lights on fully. After a set period of time, if no occupancy is sensed, the lights simply dim down in that aisle. LineSense is compatible with ceilings as high as 15 Meters and can help you realize an additional saving of up to 80% on energy, maintenance and carbon costs. Thus, the benefits of lighting controls are clear.

Click each applicable solution type to view the corresponding products. Click the home icon to go back.

Food processing (HACCP areas)



Notes:

In the food industry, safety isn't just important, it's critical. Your HACCP certificate demonstrates that your production, processing, packing, and hygiene procedures present a minimal risk to food safety. But falling glass from a broken lamp could still cause a major catastrophe. Increased use of LED lighting appreciably decreases the risks caused by broken lighting. Green solutions eliminate risks and maximize safety throughout your facilities.

Our robust and waterproof luminaires protect lamps from moisture and shield food from dangerous glass particles. Their long life also reduces the hassle, risk, and cost involved in stopping production to replace lamps. Broken lighting in your production facilities is also a danger to staff. Our secure LED lamps have a protective coating that keeps glass and lamp components from fracturing, if they get broken. This can avoid injuries to staff and ensure work safety, along with fully controllable illumination for increased energy efficiency.

Based on the layout format of the food processing plant, we recommend High Bay lighting, Waterproof lighting, Workbench lighting, and Trunking systems, along with a combination of Lighting controls.

So what benefits will Lighting controls offer in this case?

Managing the lighting in manufacturing and processing environments can significantly reduce costs and increase comfort and safety for the occupants. By coupling daylight and presence detection with the lighting scheme, savings of up to 40% are possible. Our networked solutions can dim the lighting when natural light is available and increase the lighting levels when natural levels drop. On the other hand, the presence detection solution, can dim or switch off the lights, in areas where no activity is detected, thus, allowing further savings.

Click each applicable solution type to view the corresponding products. Click the home icon to go back.

Pharmaceuticals

Notes:

Achieving optimum light conditions has long been a goal for the pharmaceutical industry. We fully understand the strict controls that affect product integrity, hygiene, safety, and security. LED lighting is specifically designed to operate within controlled clean room environments, removing the risk of contamination from lighting units and resulting in minimal disruption to laboratory and production work.

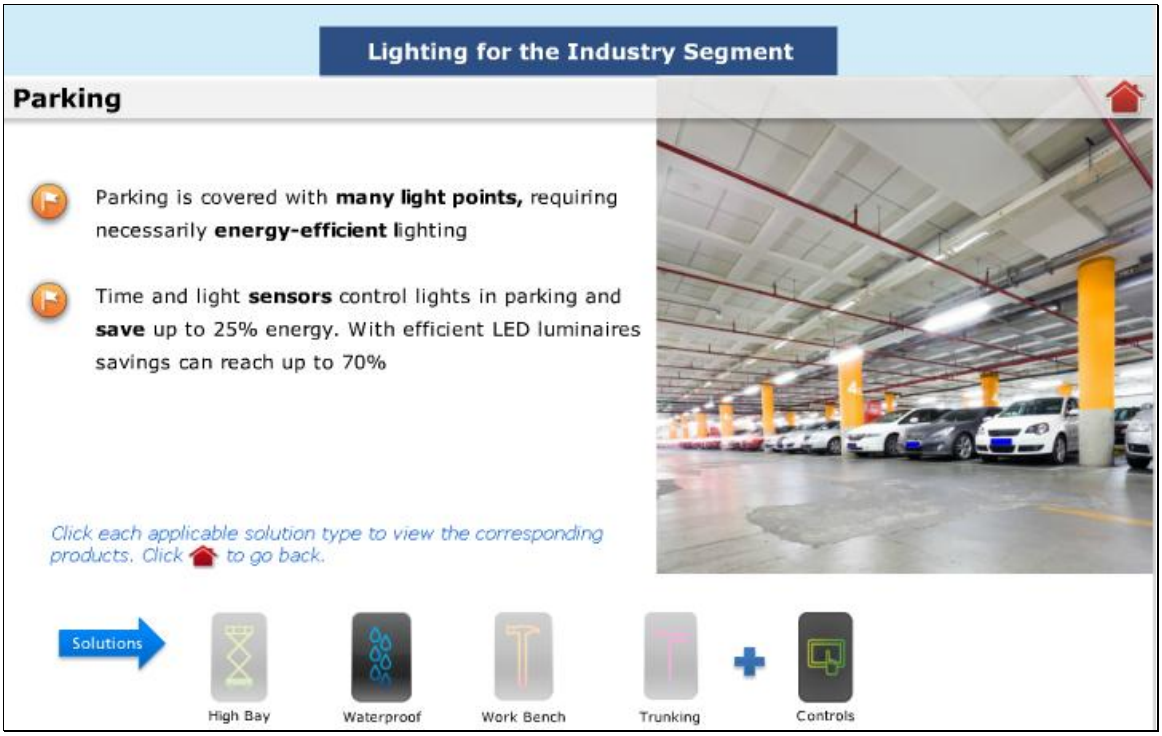
Here, we recommend a solution that is most suitable to the layout format of the pharmaceuticals plant.

This would include, Waterproof lighting, Workbench lighting, and Trunking systems, along with a combination of Lighting controls.

In this as well, lighting controls offer clear benefits in terms of additional savings through effective lighting, that is, a further 35% savings. Controls link the lighting to either presence or absence detectors or dimming, which ensures that lighting is only on where and when required, thereby reducing energy costs and carbon emissions.

Click each applicable solution type to view the corresponding products. Click the home icon to go back.

Parking



Notes:

With most parking facilities operating 24 hours a day, sustainable, energy-efficient lighting solutions are essential to help reduce carbon emissions and costs. Used with controls and presence detection systems, our lighting solutions provide illumination only when and where it is needed for increased energy-efficiency.

Waterproof luminaires are easy to clean and are well protected against dust and car emissions. Usually, car parks have very low ceilings (2m-3m) so uniformity becomes hard work.

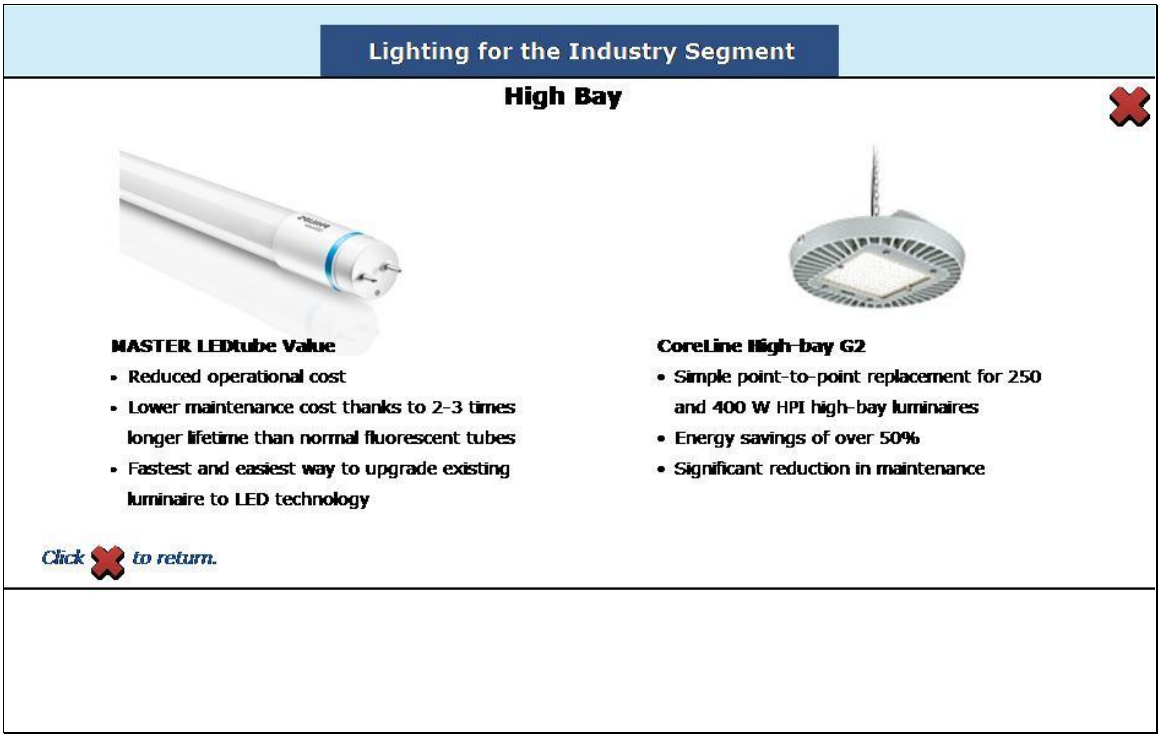
Depending on the layout format of the parking facility, we recommend Waterproof lighting with a combination of Lighting controls.

Benefits of Lighting controls:

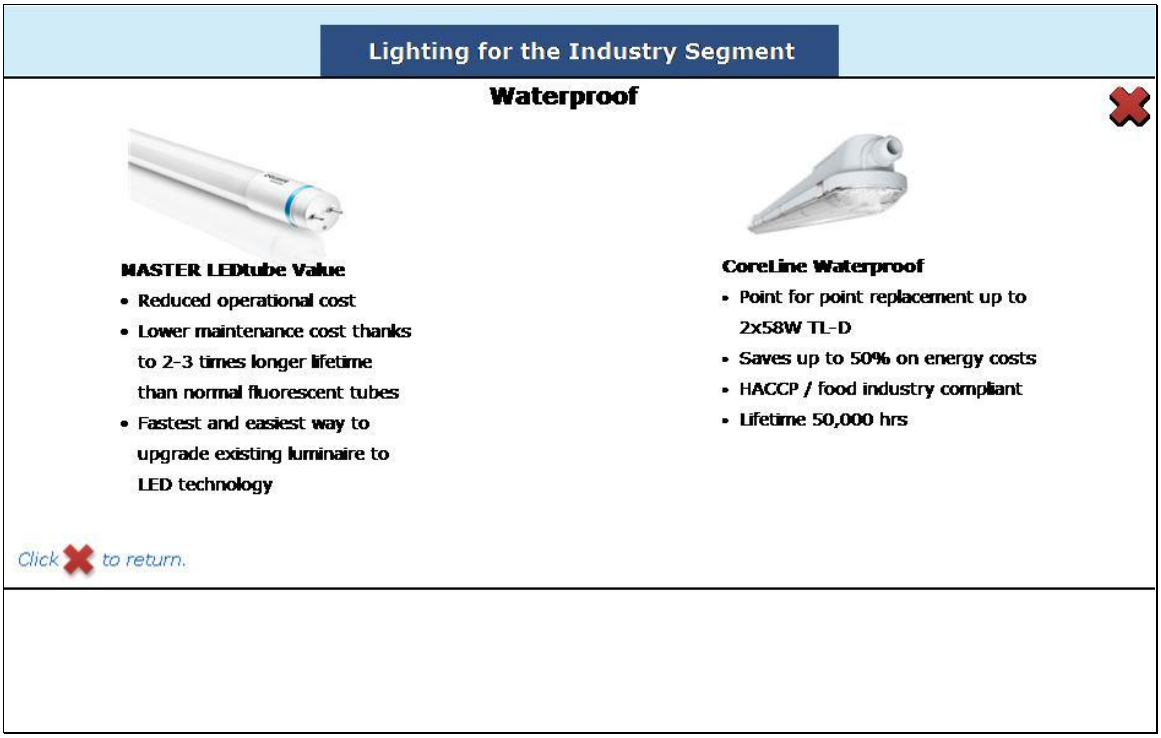
Indoor car park lighting is essential for safety and security reasons, which means that lighting is usually left on 24/7.

Click each applicable solution type to view the corresponding products. Click the home icon to go back.

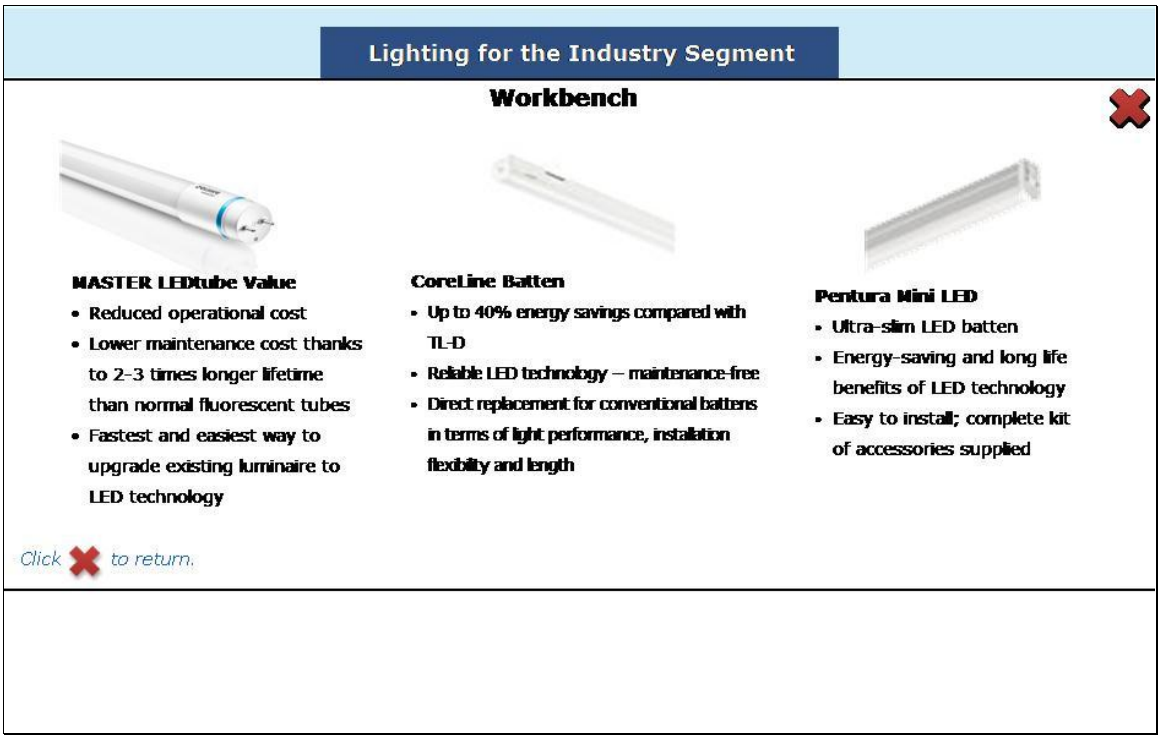
Highbay (Slide Layer)



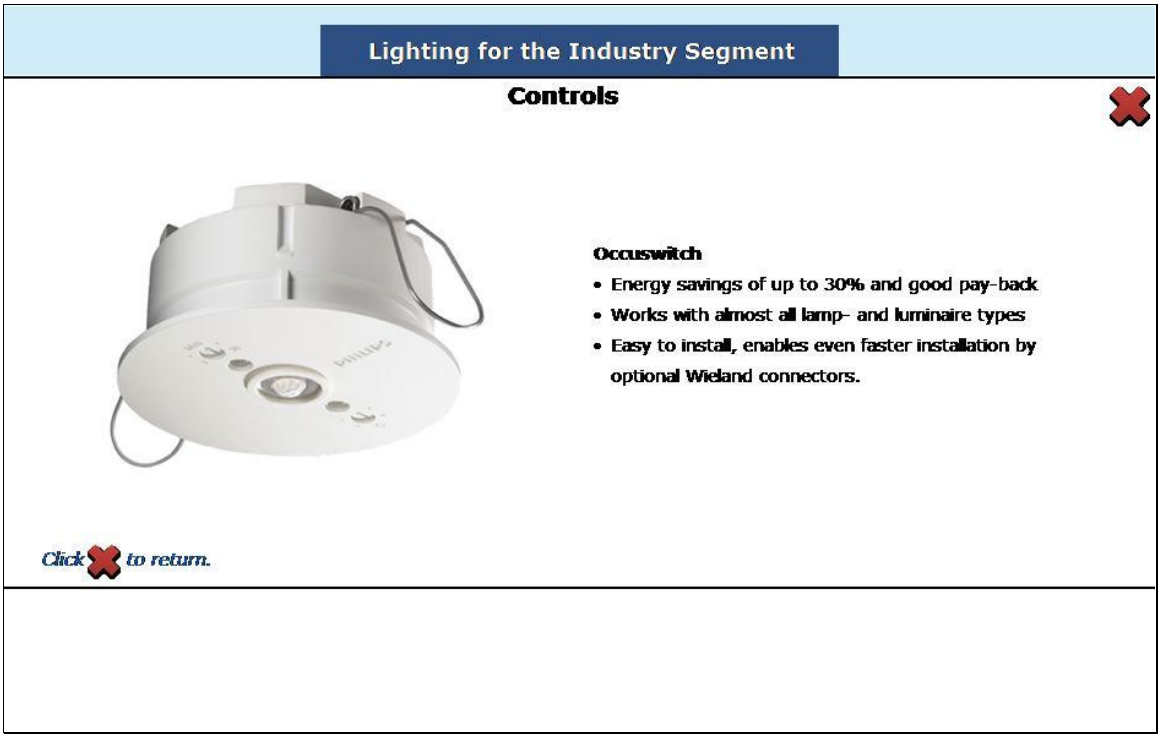
Waterproof (Slide Layer)



Workbench (Slide Layer)



Controls (Slide Layer)



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Trunking (Slide Layer)

Lighting for the Industry Segment

Trunking

MASTER LEDtube Value

- Reduced operational cost
- Lower maintenance cost thanks to 2-3 times longer lifetime than normal fluorescent tubes
- Fastest and easiest way to upgrade existing luminaire to LED technology

CoreLine Trunking

- High efficiency enables energy savings of more than 50%
- Attractive investment level and fast payback
- Easy to order and install

Click to return.

Basics of controls

Notes:

Let us discuss some important lighting controls and their functionalities for the industry segment.

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Lighting controls for industry: functionalities

Notes:

Lighting controls offer three main functionalities: presence detection, daylight linking, and scene-setting.

- In presence detection, the light is switched on when someone enters the room or area, and then switched off again after a certain period of time when the person leaves the room, thereby saving energy in lighting areas when no-one is there.
- Daylight linking saves energy by dimming the lighting or in some cases even switching it off completely when sufficient daylight is detected to be entering the area.
- Scene-setting controls make it easy to change lighting scenes to meet the needs of different activities and situations. The different scenes can be pre-programmed, so that they can be instantly selected when needed without the need to make manual settings.

Now we'll see how we can implement these three functionalities of lighting controls with actual products.

Click each functionality to learn more.

Presence detection

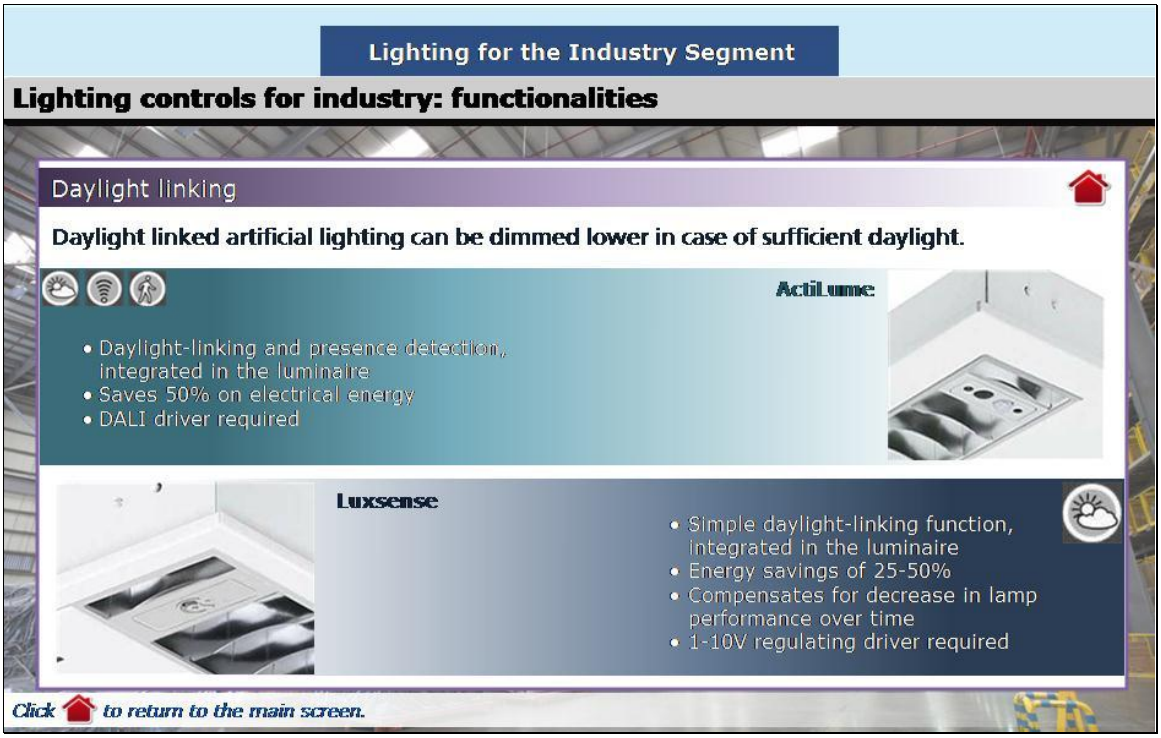
Notes:

For presence detection, the Occuswitch is an excellent investment. It can help in energy savings of up to 80% and has an extended maintenance period before it needs to be replaced. This movement detector switches the lights off when a room has been unoccupied for a certain time. It can work stand-alone or can be combined with Luxsense for daylight-linked lighting.

The various application areas include:

- Washing room
- Corridors
- Elevator
- Small conference areas (and)
- Other secondary areas

Daylight linking



Notes:

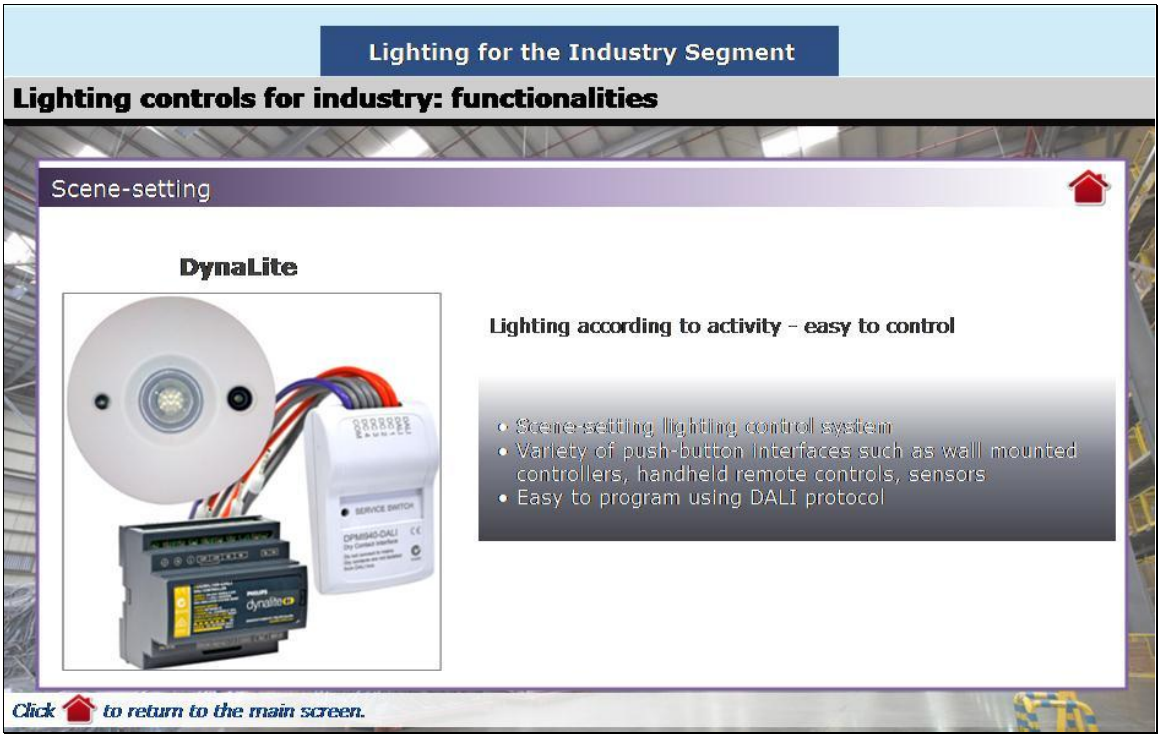
Daylight linked artificial lighting can be dimmed lower in case of sufficient daylight.

For daylight linking, we can choose between ActiLume and Luxsense.

ActiLume combines both daylight-linking and presence detection, integrated in the luminaire. This combination allows energy savings of up to 50%. A DALI driver is required for connecting the luminaire to the lighting control system.

Alternatively, we can choose Luxsense, which is a simple way to implement daylight-linking integrated in the luminaire. Energy savings of 25-50% can be achieved through this product. Luxsense compensates for the decreasing lamp performance over time by automatically increasing the luminaire power to reach the desired light level. A 1-10V regulating driver is required for connecting the luminaire to the lighting control system.

Scene-setting

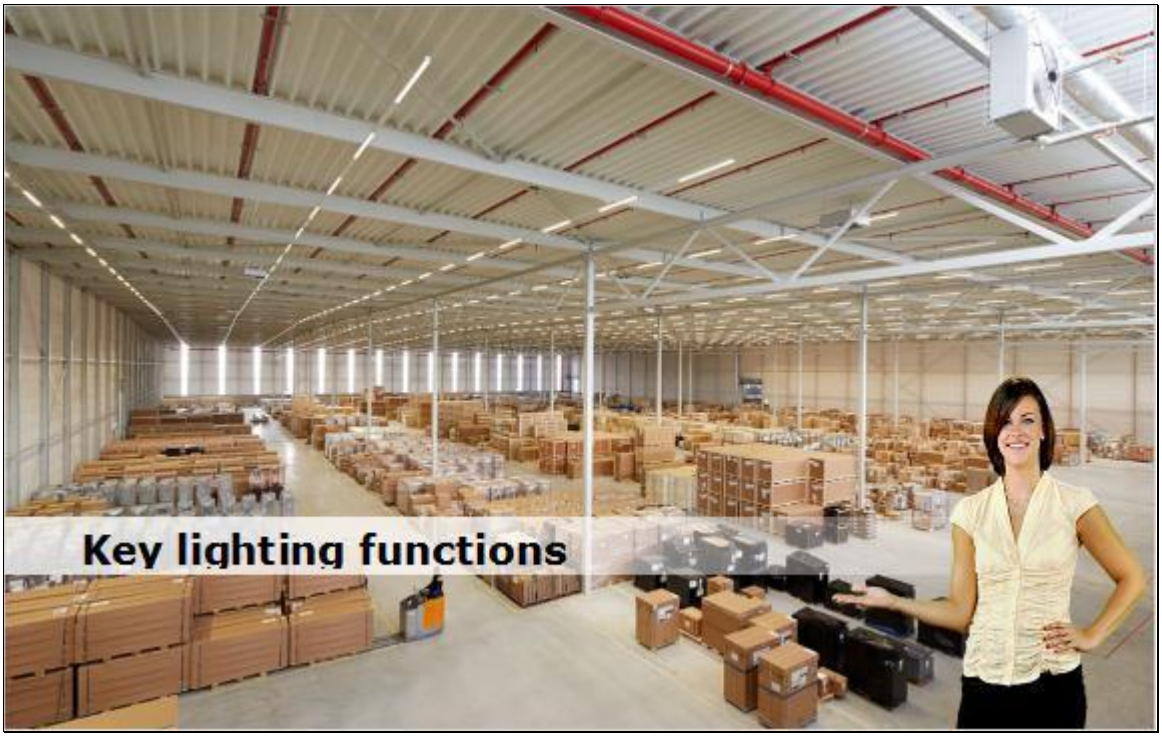


Notes:

DynaLite is a scene-setting lighting control system, and is available with a variety of push-button interfaces such as wall-mounted controllers and handheld remote control units, as well as with different sensors. Programming a DynaLite system is easy using the DALI protocol.

PHILIPS

Key lighting functions



Notes:

Let us now look at the key lighting functions of the industry segment.

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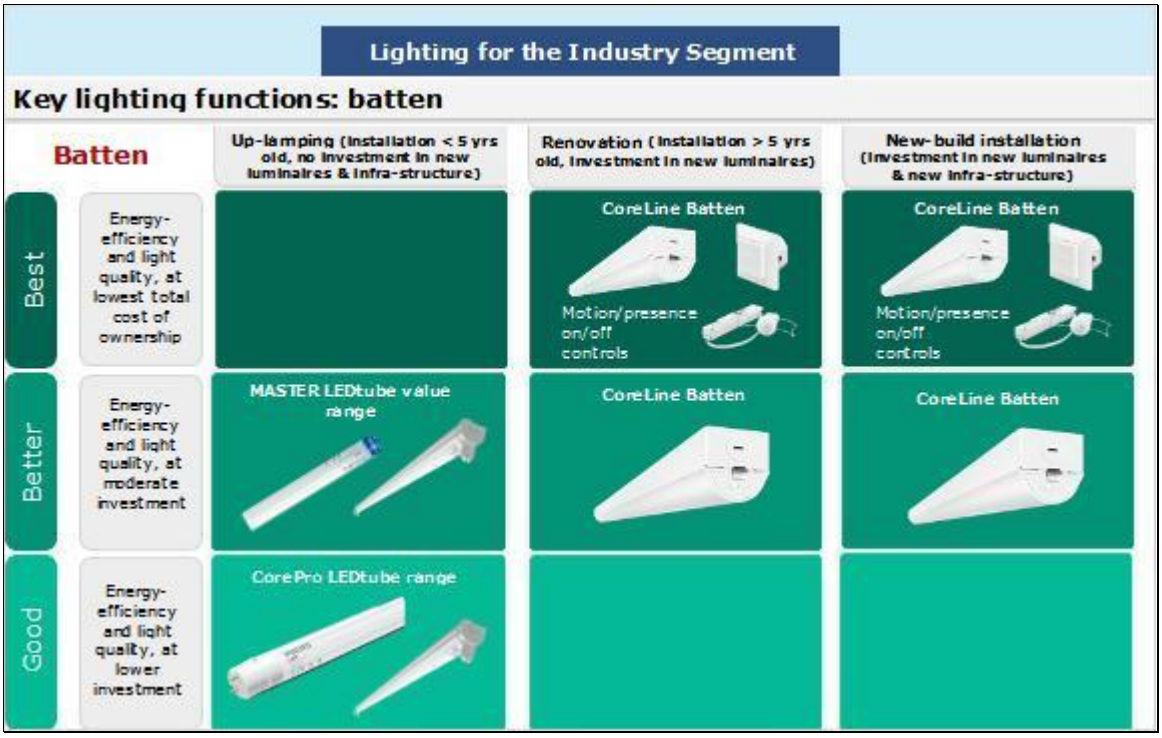
Key lighting functions: batten

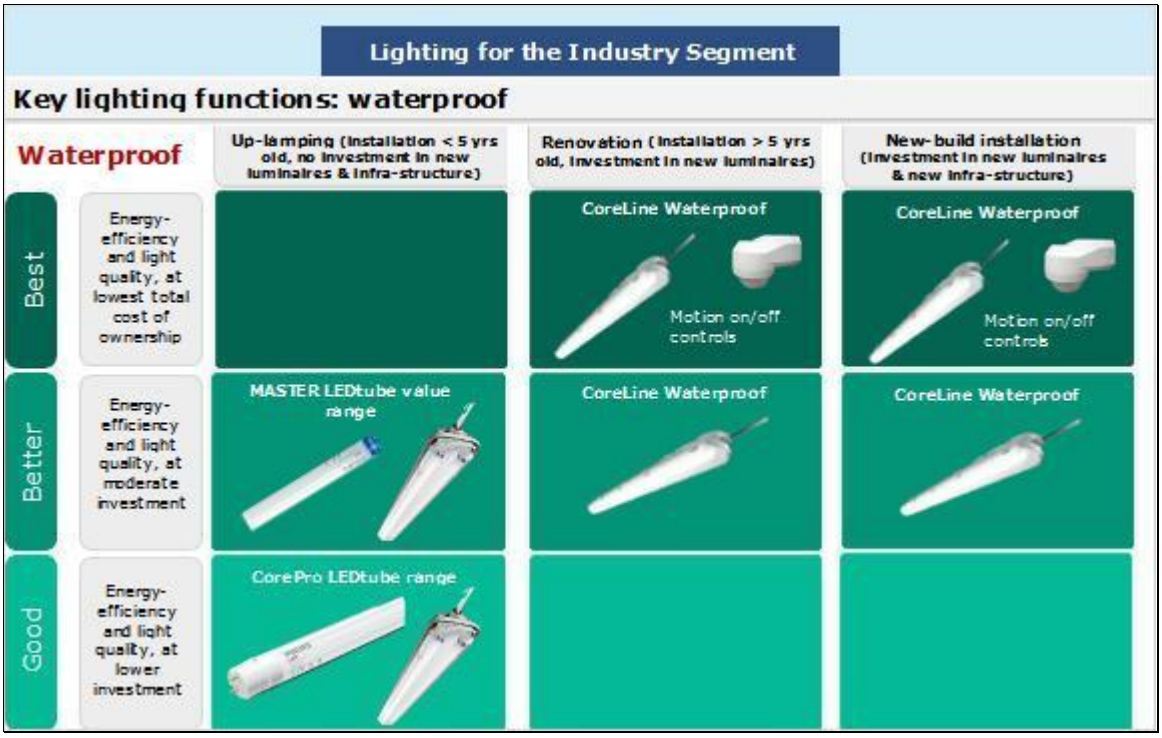


Notes:

Here is a comparative analysis of lighting solutions under batten lighting.

PHILIPS

Key lighting functions: waterproof

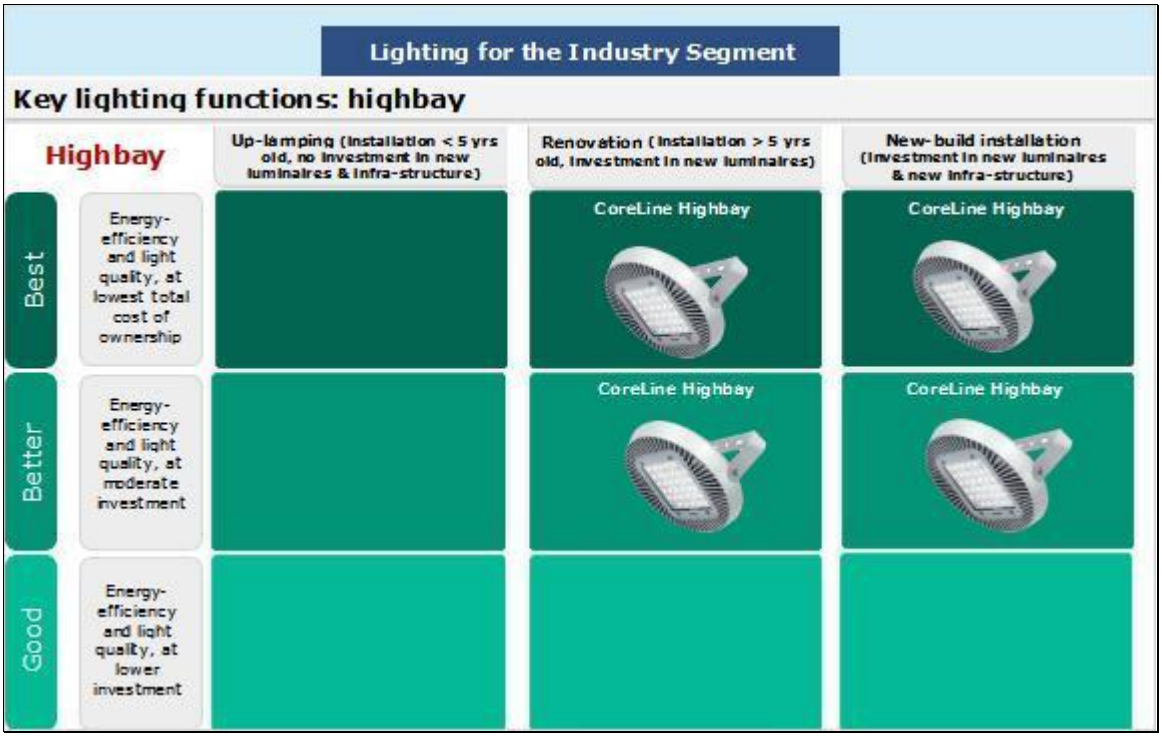


Notes:

Here is a comparative analysis of lighting solutions under waterproof lighting.

PHILIPS

Key lighting functions: highbay



Notes:

Here is a comparative analysis of lighting solutions under highbay lighting.

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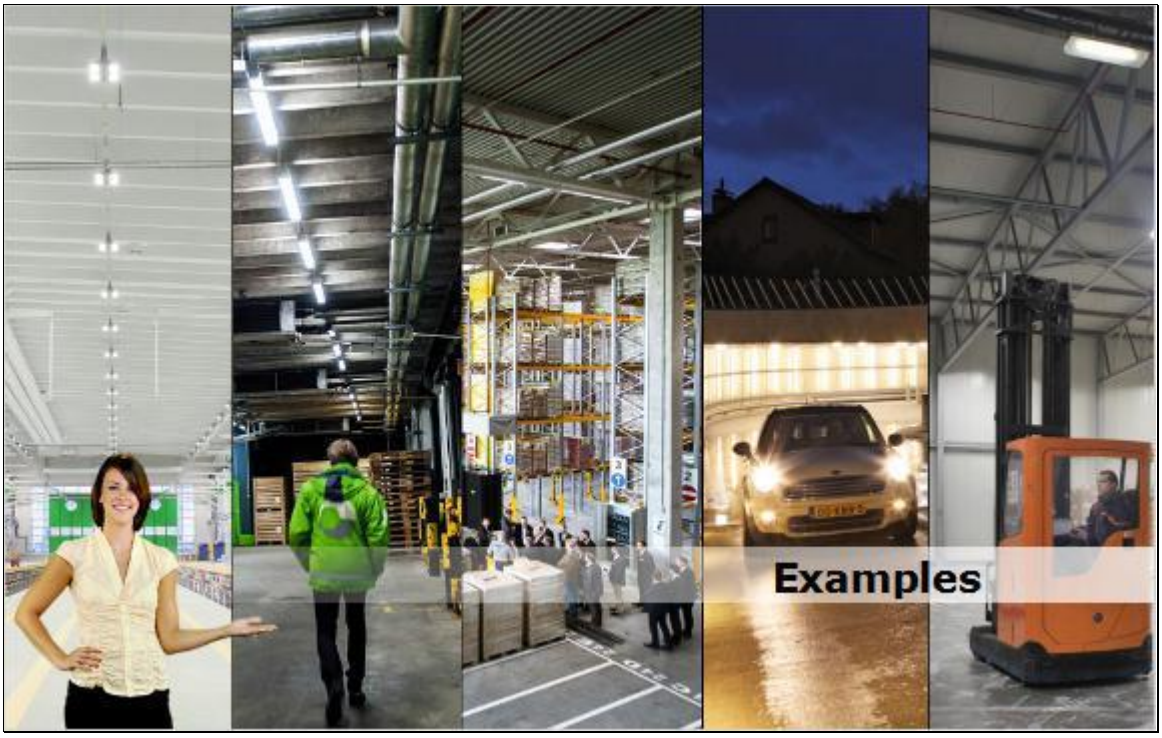
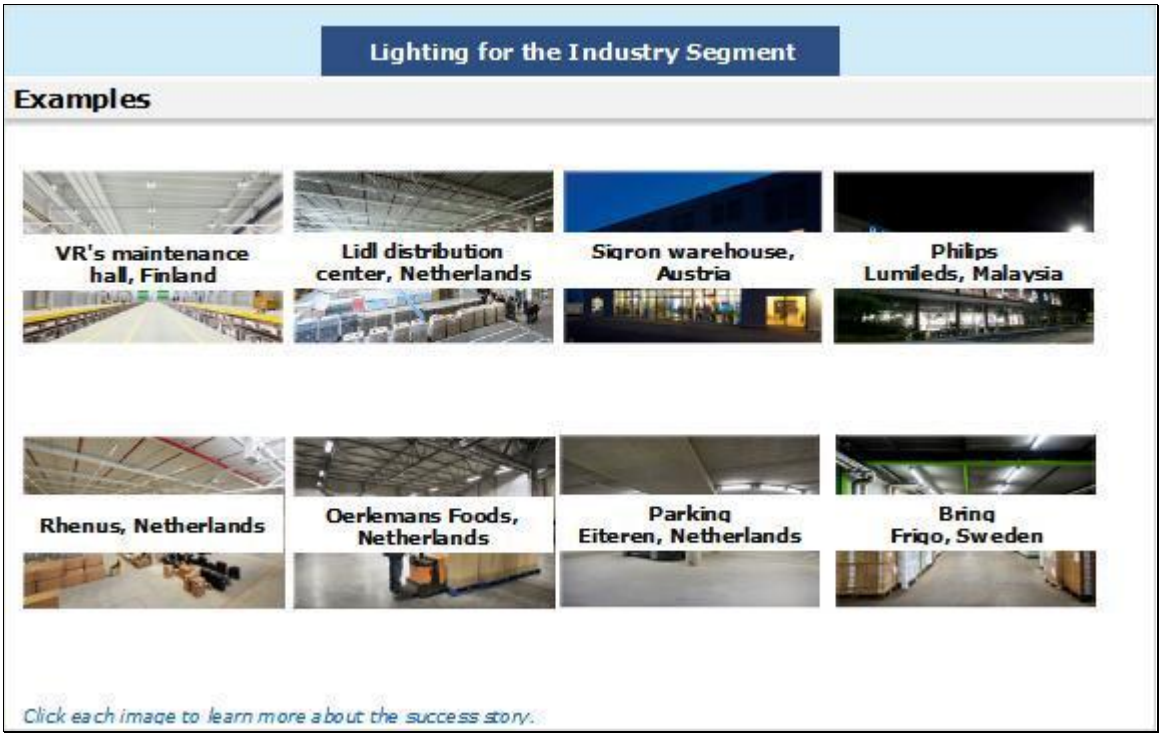
Examples



Notes:

Having taken a look at different application areas and recommended solutions, let's take a look at some real-life success stories.

Success Stories



Notes:

These success stories feature our clients who have benefited by using our innovative, advanced, and yet cost-effective lighting solutions.

Click each image to learn more about the success story.

Case Study: VR's Maintenance Hall

Notes:

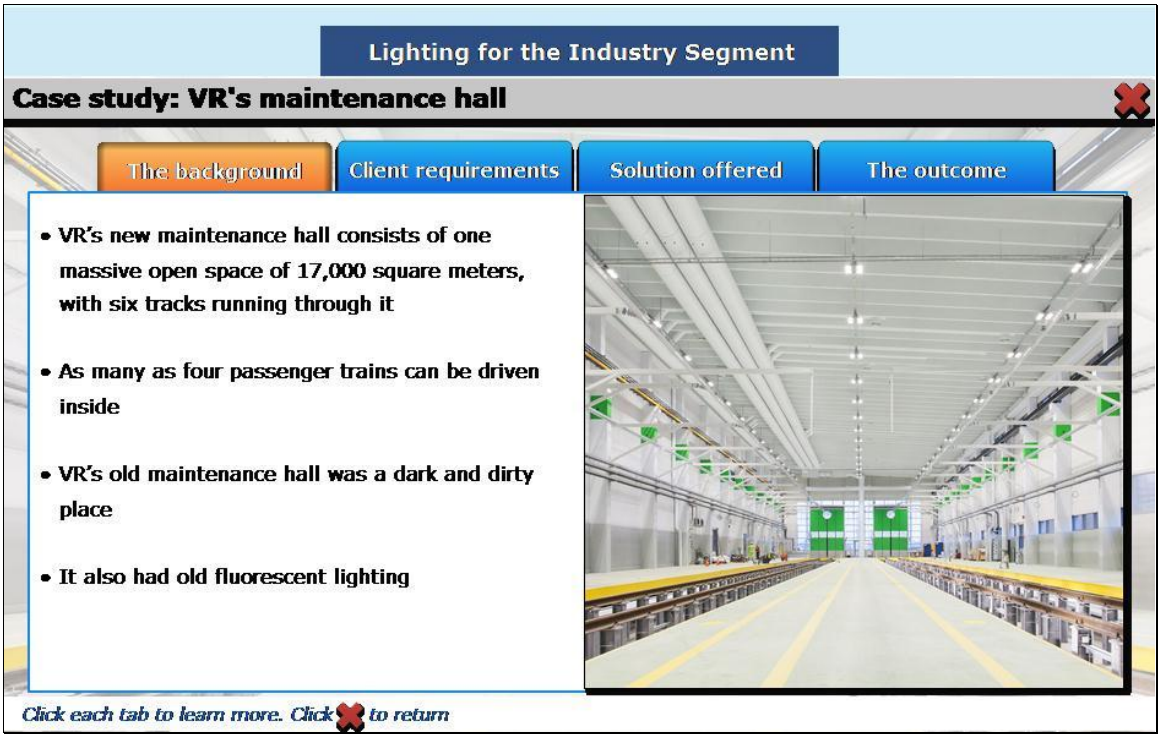
VR's maintenance hall

Oulu, Finland

VR is a state-owned railway company in Finland. The company's brand new maintenance hall is located near the Oulu town Center.

Click each tab to learn more.

The background

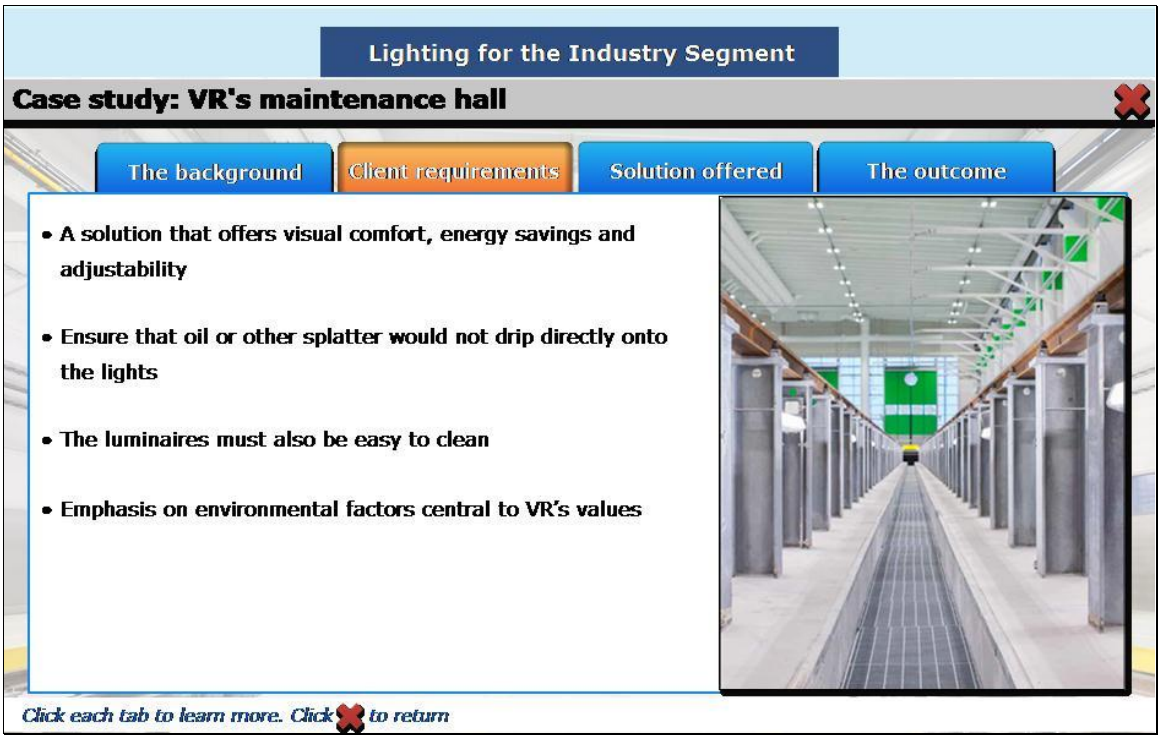


Notes:

The hall consists of one massive open space of 17,000 square meters, with six tracks running through it.

It has a maximum width of 77 meters, is 330 meters long and its internal height is over ten meters. As many as four passenger trains can be driven inside. VR's old maintenance hall was a dark and dirty place. It also had old fluorescent lighting. Having sufficiently powerful and well-placed lighting plays a large role in providing successful maintenance. The lighting is provided by Philips LED luminaires.

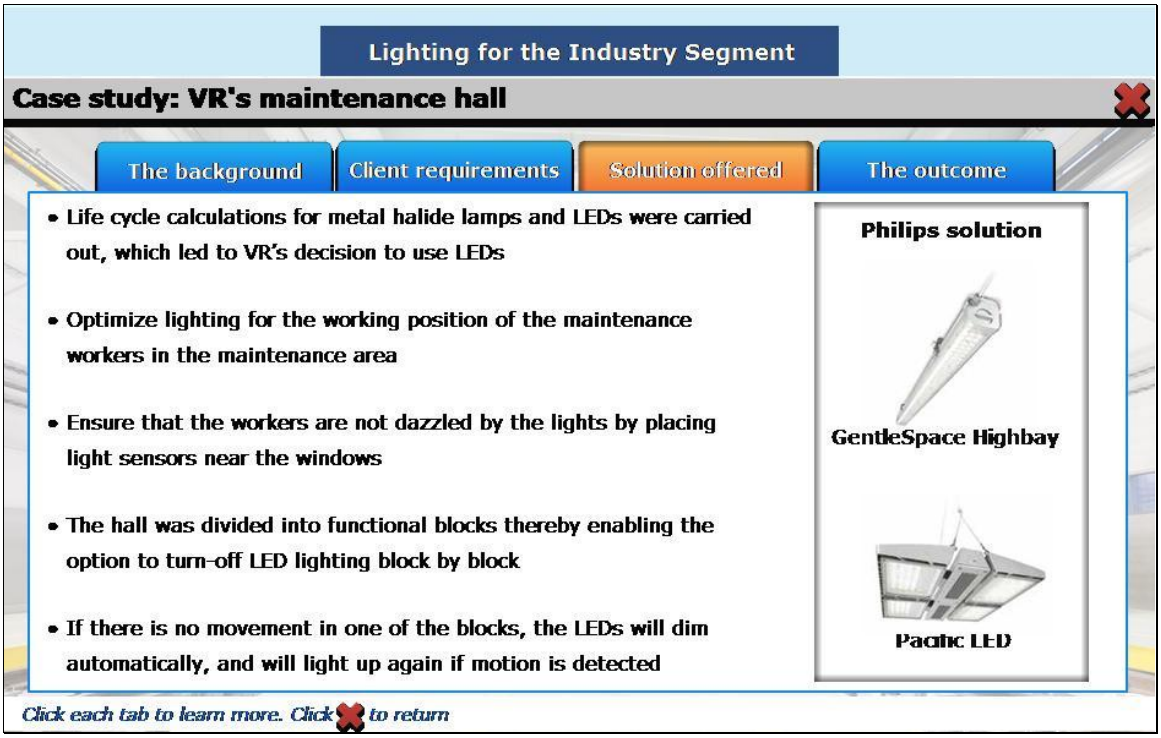
Client requirements



Notes:

The company wanted a solution that offers visual comfort, energy savings and adjustability. In placing the lighting, it was also important to make sure that oil or other splatter would not drip directly onto the lights. It was therefore of paramount importance that the hall had the right type of lighting. The luminaires must also be easy to clean. In determining the lighting, emphasis was also placed on environmental factors central to VR's values.

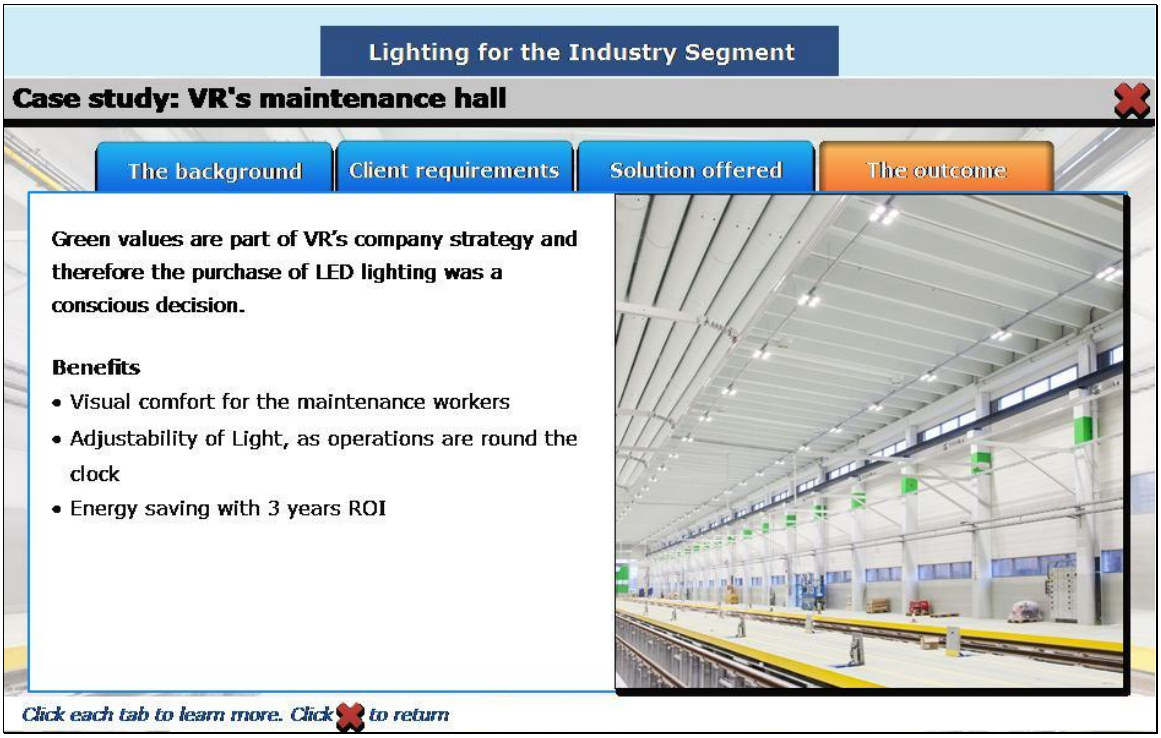
Solution offered



Notes:

To select the right type of lighting, we carried out life cycle calculations for metal halide lamps and LEDs, which led to VR's decision to use LEDs. In placing the LED luminaires, efforts have been made to optimize the lighting for the working position of the maintenance workers in the maintenance area, as well as to ensure that they are not dazzled by the lights. Because there are lots of windows, we took advantage of the natural light by placing light sensors near the windows. They measure the amount of daylight and they dim the lighting automatically when it is adequate. On both tracks, there is a 25-kV contact wire, so the long and maintenance-free life of LEDs was also a major factor in the decision-making process. The hall is divided into functional blocks. The LED lighting can be turned off block by block. For instance, if there is no movement in one of the blocks, the LEDs will dim automatically, and they will light up again if motion is detected.

The outcome

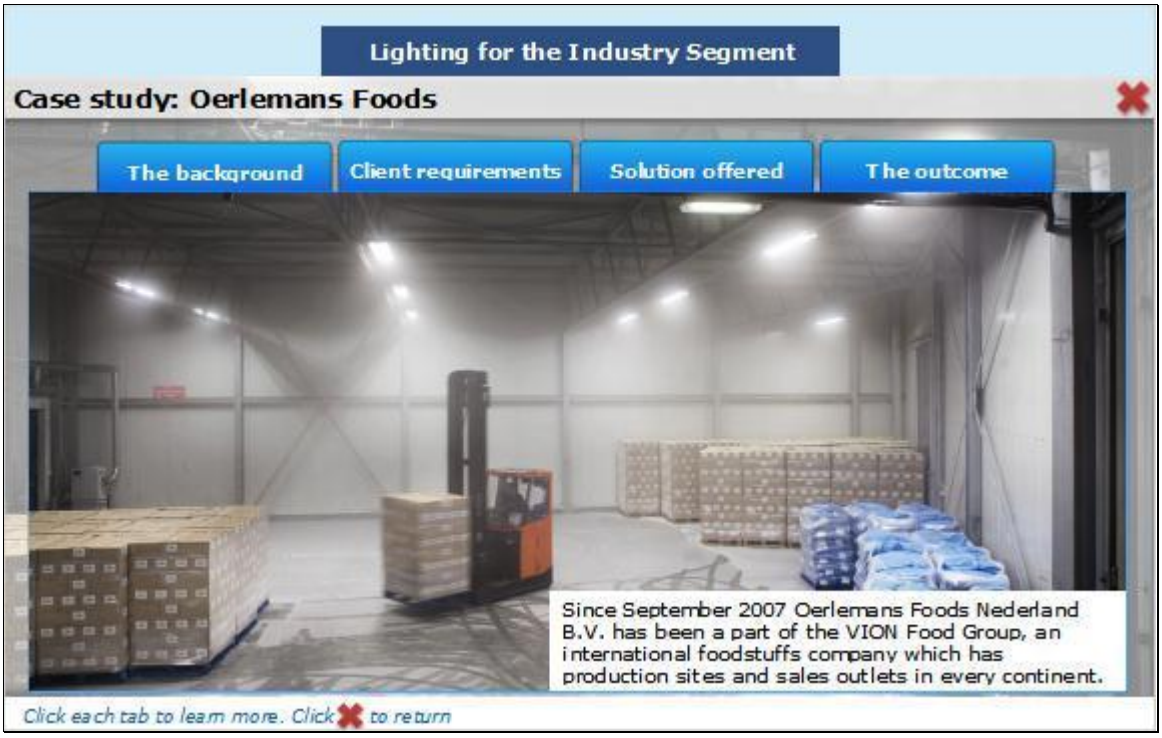


Notes:

Green values are part of VR's company strategy and therefore the purchase of LED lighting was a conscious decision. The overall investment for the hall came to about 50 million Euros, of which the lighting was a significant amount.

The hall now has high visual comfort for the maintenance workers and adjustable lighting to operate round the clock. Also, essential to the investment in the lighting was the payback period, which is three years on an average.

Case Study: Oerlemans Foods



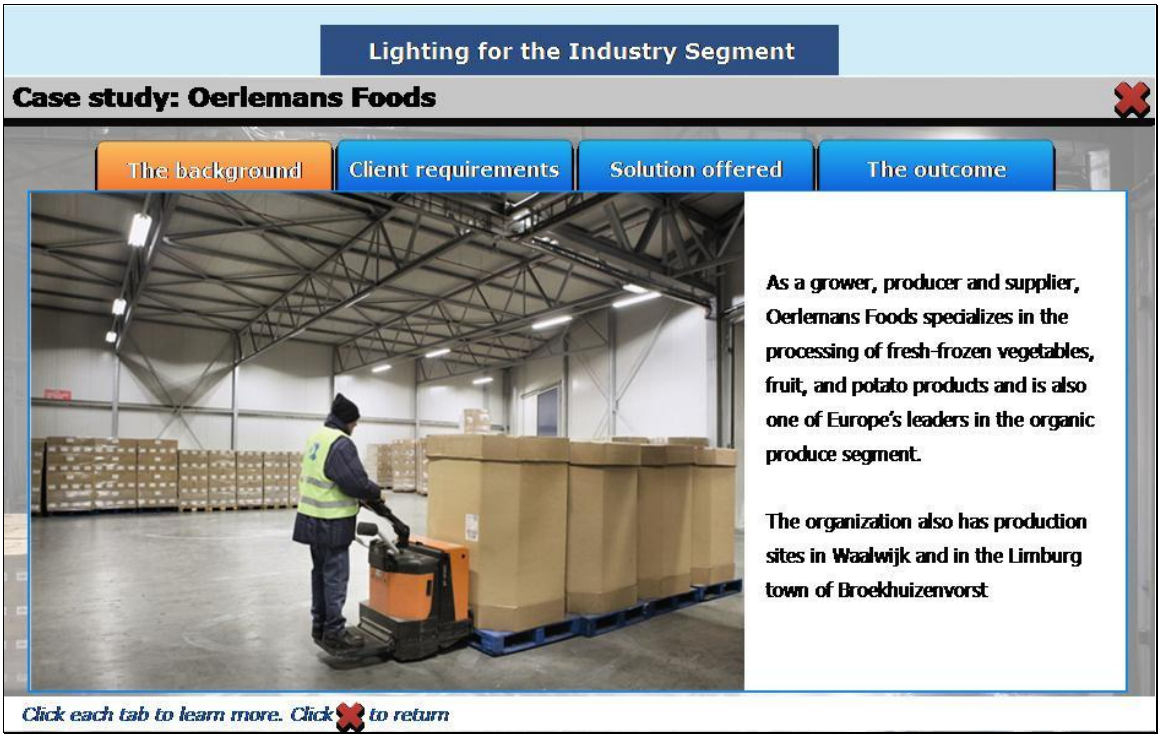
Notes:

Oerlemans Foods Nederland B.V.

Since September 2007, Oerlemans Foods Nederland B.V. has been a part of the VION Food Group, an international foodstuff company which has production sites and sales outlets in every continent.

Click each tab to learn more.

Background (Slide Layer)



Notes:

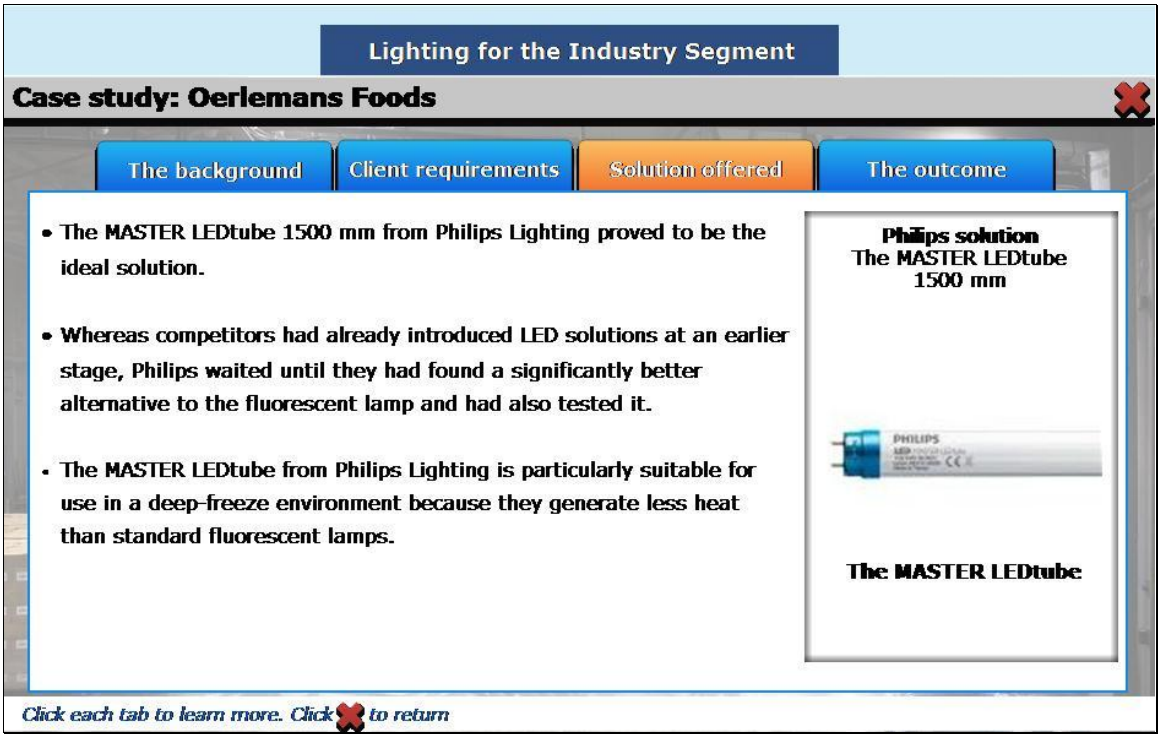
As a grower, producer, and supplier, Oerlemans Foods specializes in the processing of fresh-frozen vegetables, fruit, and potato products, and is also one of Europe's leaders in the organic produce segment. In addition to its headquarters in Venlo in the Netherlands, the organization also has production sites in Waalwijk and in the Limburg town of Broekhuizenvorst. Among other things, the packaged products are stored here and dispatched from this site.

Client requirement (Slide Layer)

Notes:

With a constant temperature of -19 °C, it is always cold in the goods receipt and dispatch hall at the production site in Broekhuizenvorst. Lighting was used 6 days a week, 24 hours a day, in freezing temperatures. Due to the low number of burning hours and the limited lifetime of the conventional fluorescent, there were frequent lighting failures. Therefore, the company started looking for an advanced lighting solution that offered energy efficiency and safety, low maintenance cost, and less disruptions to operations.

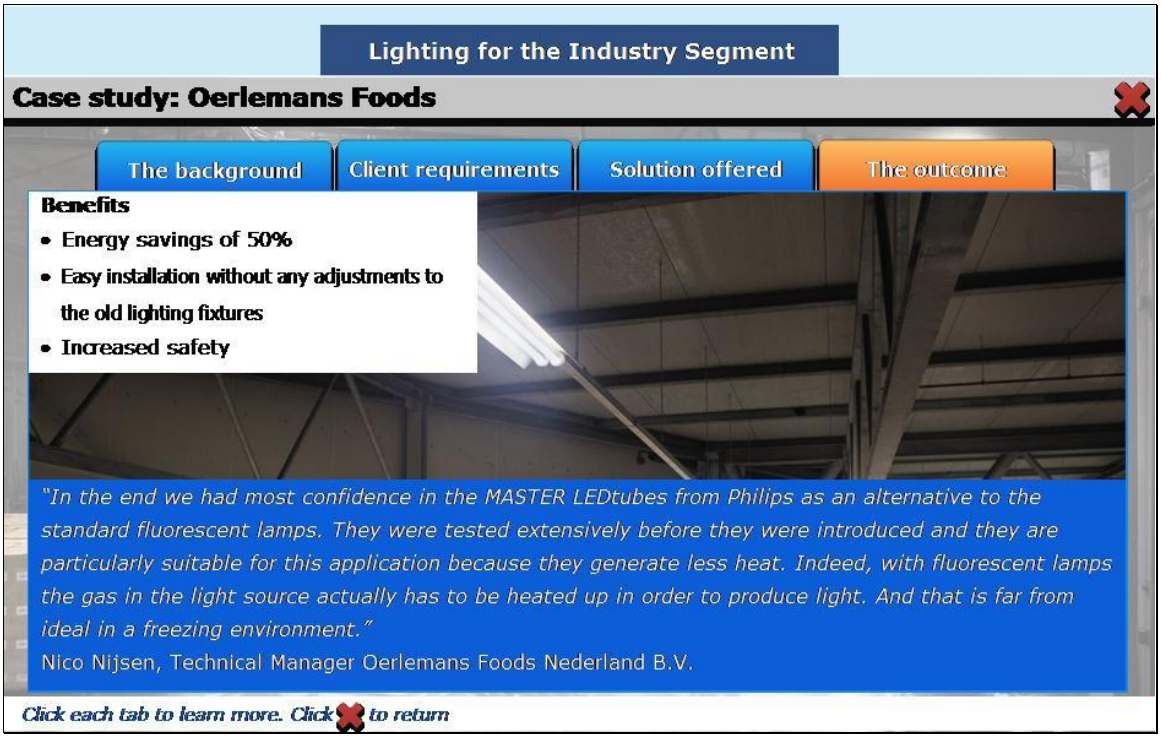
Solution offered (Slide Layer)



Notes:

The MASTER LEDtube 1500 mm from Philips Lighting proved to be the ideal solution. Whereas competitors had already introduced LED solutions at an earlier stage, Philips waited until they had found a significantly better alternative to the fluorescent lamp and had also tested it. The MASTER LEDtubes from Philips are particularly suitable for use in a deep-freeze environment because they generate less heat than standard fluorescent lamps.

The outcome (Slide Layer)



Notes:

Compared with the earlier conventional fluorescent lighting, the MASTER LEDtubes are expected to deliver an energy saving of approximately 50%. The company was able to replace the old lighting straightaway with the MASTER LEDtubes without the need for any adjustment at all. There was no need for new luminaires or external drivers. It was simply a matter of Plug & Play, which saved us a lot of time. And the color – 840 – also corresponds to what we had before. Compared to the previous situation, the light in the space is 'calmer'. And the MASTER LEDtubes are particularly safe. When you change a tube, it is not possible to come into contact with the power supply, and that is a reassuring thought!

Case Study: Lidl Distribution Centre

Notes:

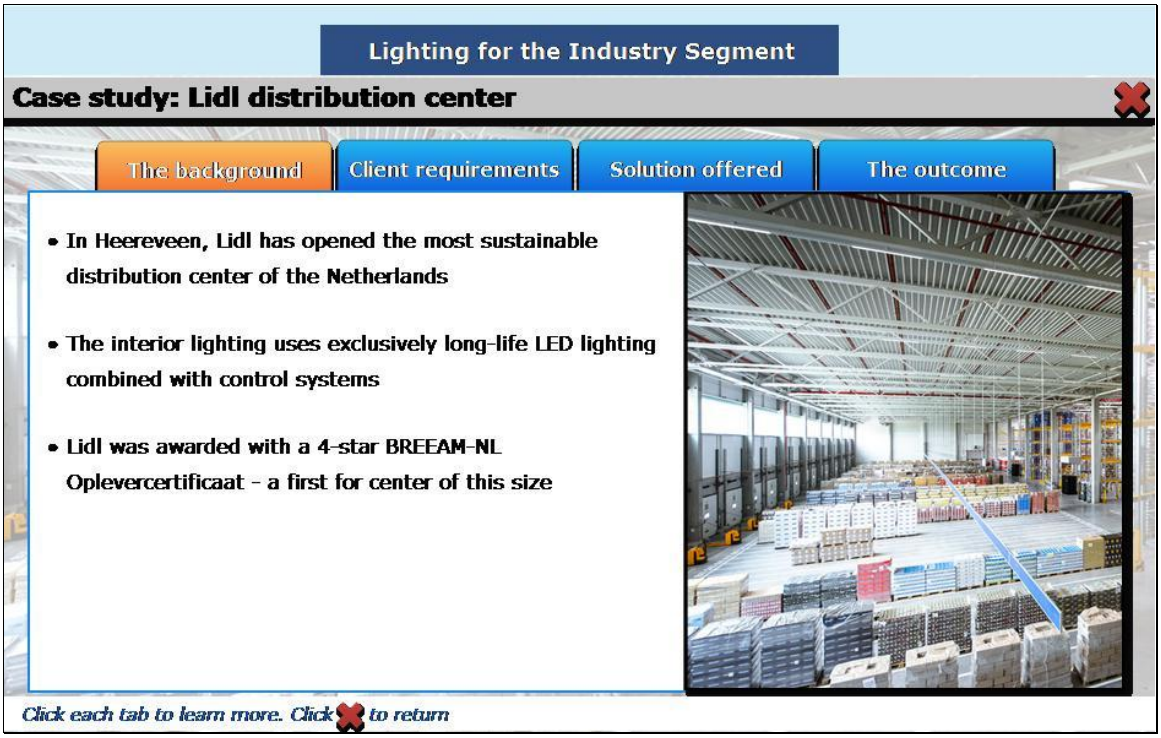
Lidl Distribution Center

Heerenveen, the Netherlands

The company Lidl, founded in Germany in 1930 as a grocery wholesaler, is one of the largest grocery retailers in Europe.

Click each tab to learn more.

Background (Slide Layer)



Notes:

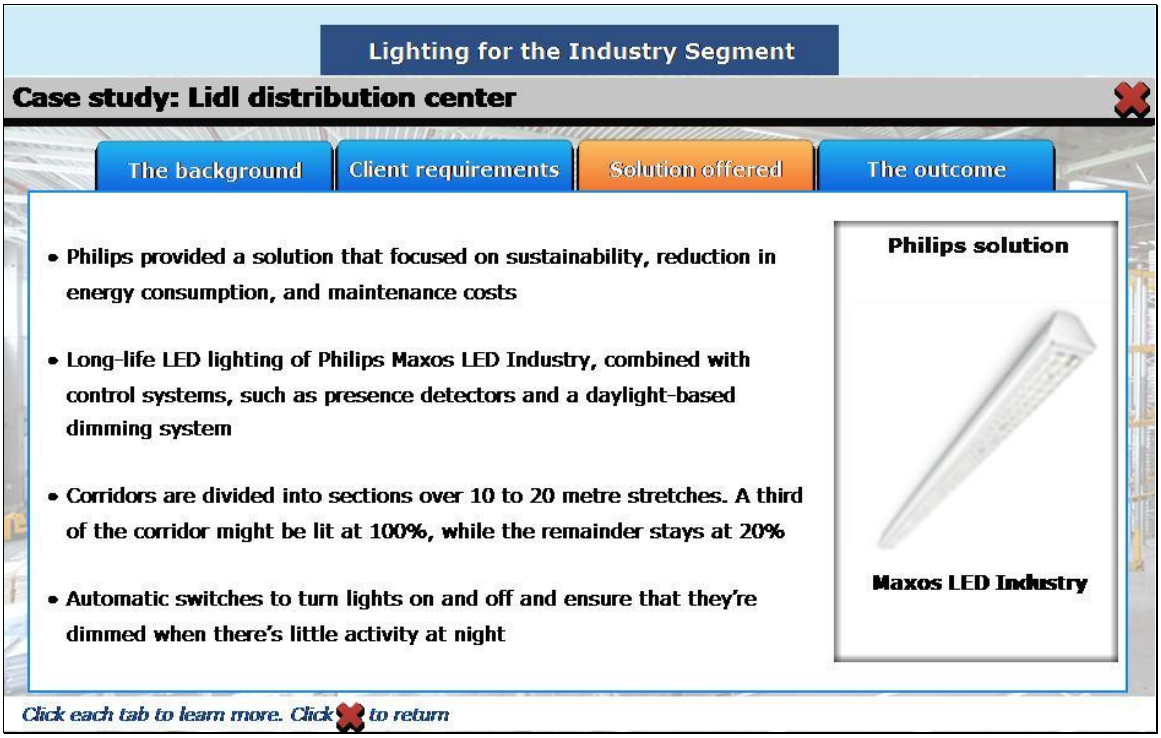
In Heerenveen, Lidl has opened the most sustainable distribution Center of the Netherlands. No distribution Center on this scale, that is 46,000 square meters, has ever earned such impressive sustainability credentials in this country. The interior lighting uses exclusively long-life LED lighting combined with control systems, such as presence detectors and daylight sensors. This is just one of the many sustainability techniques used in the building. Because of that, Lidl was awarded with it a 4-star BREEAM-NL Oplevercertificaat - a first for a center of this size.

Client requirements (Slide Layer)

Notes:

Lidl are using environmentally friendly refrigerants to cool and freeze products. This, when coupled with the high level of insulation and the triple glazing, results in an overall energy efficiency that is exceptional. Therefore, it was obvious that the company wanted a lighting solution that would fall in line with their theme of high efficiency and sustainability. The company already had a strong relationship with Philips following successful installations of LEDs in the supermarket's and the Dutch head office. Philips, therefore, was a natural choice for incorporating the lights internally at Heerenveen.

Solution offered (Slide Layer)



Notes:

Philips provided a total lighting solution for the building that focused on sustainability and a reduction in energy consumption and maintenance costs. The distribution Center is equipped with long-life LED lighting of Philips Maxos LED Industry, combined with control systems, such as presence detectors and a daylight-based dimming system that adjusts according to the light entering through the domes. Corridors are divided into sections over 10 to 20 metre stretches. A third of the corridor might be lit at 100%, while the remainder stays at 20%. A similar principle applies outdoors. Automatic switches can turn lights on and off and ensure that they're dimmed when there's little activity at night.

Outcome (Slide Layer)

Notes:

Our lighting solutions have resulted in clear savings of 45% per year as compared to the traditional fluorescent strips.

Case Study: Sigron Warehouse

Notes:

Sigron Warehouse

Vienna, Austria

Sigron is a wholesale company for cleaning chemicals, machines, equipment and accessories. The company was founded in 1972 in Dornbirn and has six locations throughout Austria.

Click each tab to learn more.

Background (Slide Layer)

Notes:

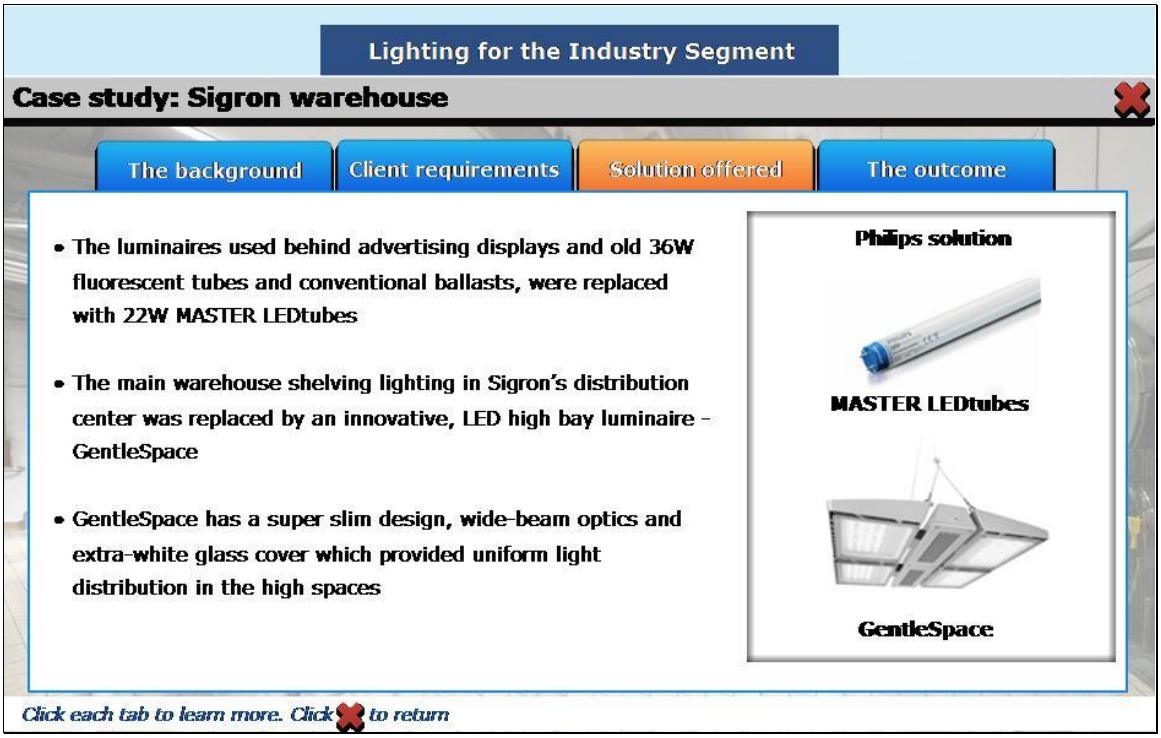
Since 1992, the company's head office, based in Vienna, serves as the hub for the company's activities. In addition to the offices, the headquarters also house a modern showroom and a training center for cleaning monuments, façades, and buildings.

Client requirement (Slide Layer)

Notes:

Over the years, the lighting at Sigron headquarters needed urgent replacement. The new lighting solution needed to provide cost efficiency, high-quality lighting, energy savings, durability, and needed to require low maintenance. In addition, the company needed to meet chemical storage requirements, including low heat generation and high moisture resistance.

Solution offered (Slide Layer)



Notes:

The first energy-saving measure was implemented in the company's showroom, where 100 luminaires - using old 36W fluorescent tubes and conventional ballasts, behind advertising displays - were replaced with 22W MASTER LEDtubes, enabling energy savings of up to 48%. An innovative, high-bay LED luminaire - GentleSpace, perfect for warehouse applications due to its high-quality light output was chosen to replace the main warehouse shelving lighting in Sigron's distribution center. The super slim design of GentleSpace, wide-beam optics and extra-white glass cover met the client's demands for uniform light distribution.

The outcome (Slide Layer)

Notes:

GentleSpace performed extremely well in its first practical use. Its excellent color reproduction and uniform light distribution led to an increase in the well-being and the productivity of the distribution center. A long lifespan of up to 75,000 hours and cost-effectiveness were also highly commended. As the four LEDGINE modules can be upgraded over the course of time to the most energy-efficient versions available, the system will stay up to date for years to come.

Case Study: Rhenus

Notes:

Rhenus

Son, The Netherlands

The new 57,000m² logistics property belonging to Rhenus, is one of the most sustainable and environment friendly Industrial buildings in the Netherlands. The facility is using the new Philips LED lighting installation with presence detection and daylight regulation that offer exceptional energy savings.

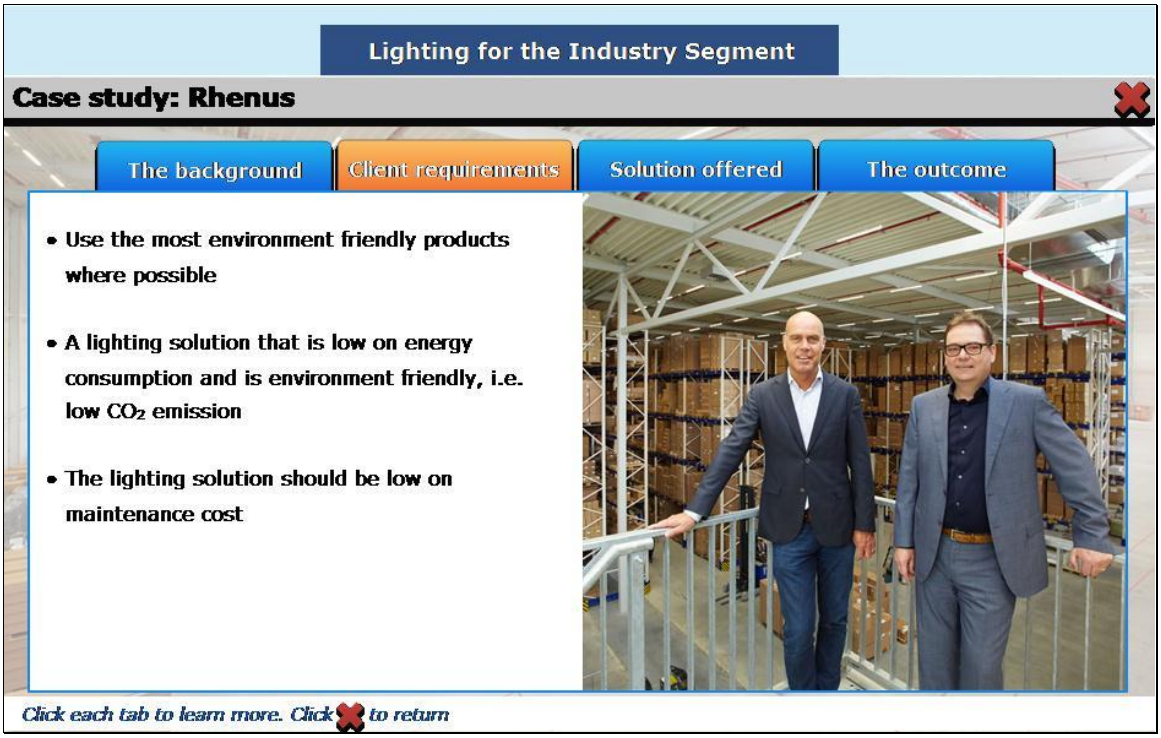
Click each tab to learn more.

Background (Slide Layer)

Notes:

The design of the building was focused on three key elements. How do we save energy? How do we generate energy from renewable sources? How do we use fossil fuels in an efficient manner?

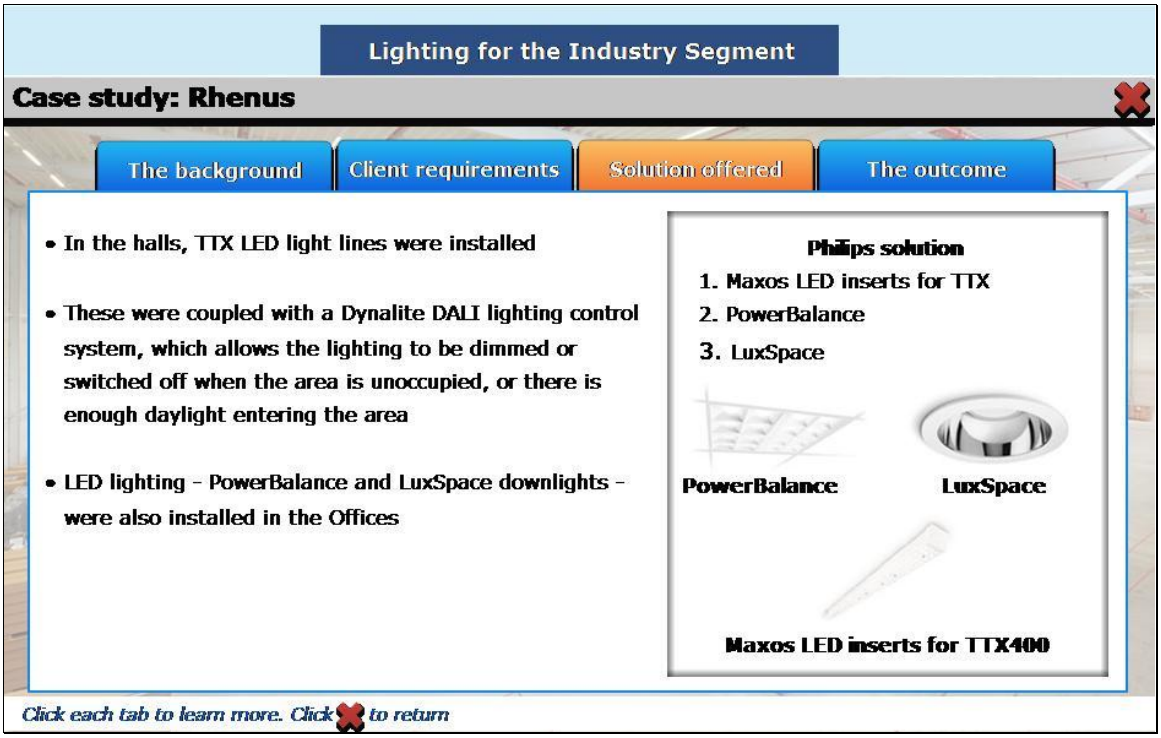
Client requirements (Slide Layer)



Notes:

The company wanted to use the most environment friendly products where possible. Therefore, a big focus area was light and lighting, as this is a large part of energy consumption in these property types. The company wanted a lighting solution that is low on energy consumption, CO_2 emissions, and maintenance cost.

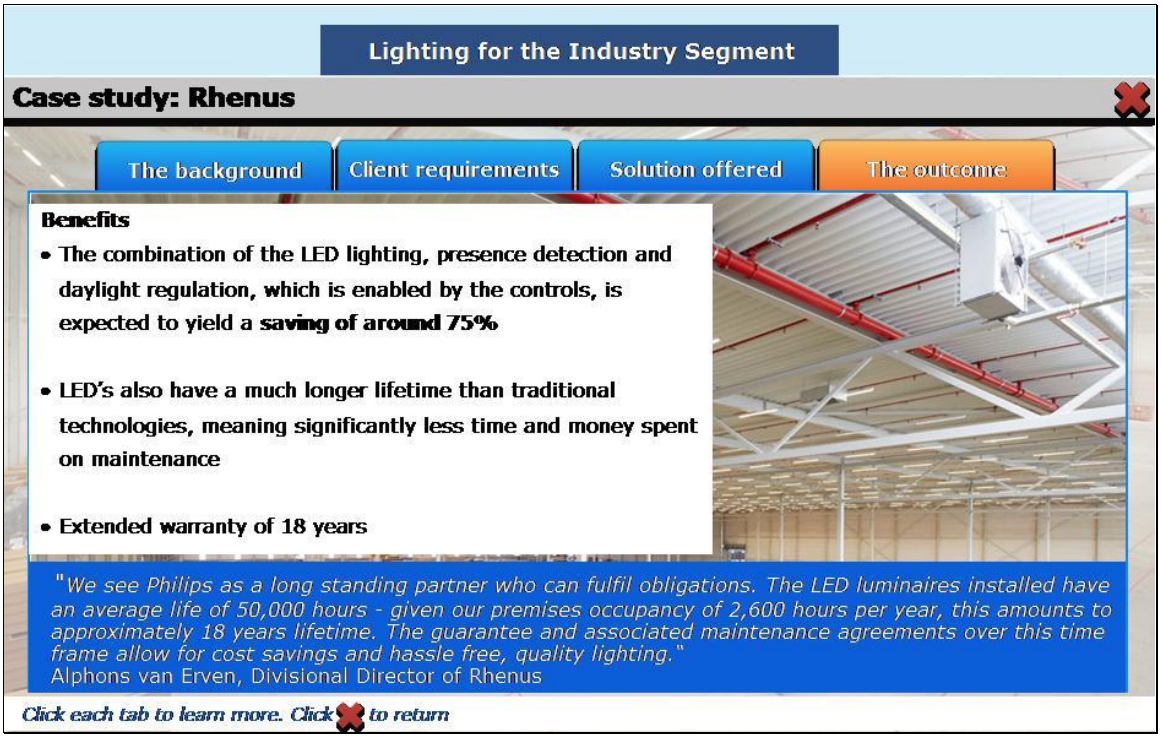
Solution offered (Slide Layer)



Notes:

In the halls, TTX LED light lines were installed. These were coupled with a Dynalite DALI lighting control system, which allows the lighting to be dimmed or switched off when the area is unoccupied, or when there is enough daylight entering the area. LED lighting products - PowerBalance and LuxSpace downlights - were also installed in the Offices.

The outcome (Slide Layer)



Notes:

The combination of the LED lighting, presence detection and daylight regulation, which is enabled by the controls, is expected to yield a saving of around 75% compared with a comparable fluorescent lighting system. LED's also have a much longer lifetime than traditional technologies, meaning significantly less time and money spent on maintenance.

The package supplied by Philips also included an extended warranty contract for 18 years which ensured further peace of mind for Rhenus.

Case Study: Philips Lumileds

Notes:

Philips Lumileds

Malaysia

Philips Lumileds Lighting Company is the world's leading manufacturer of high-power LEDs.

Click each tab to learn more.

Background (Slide Layer)

Notes:

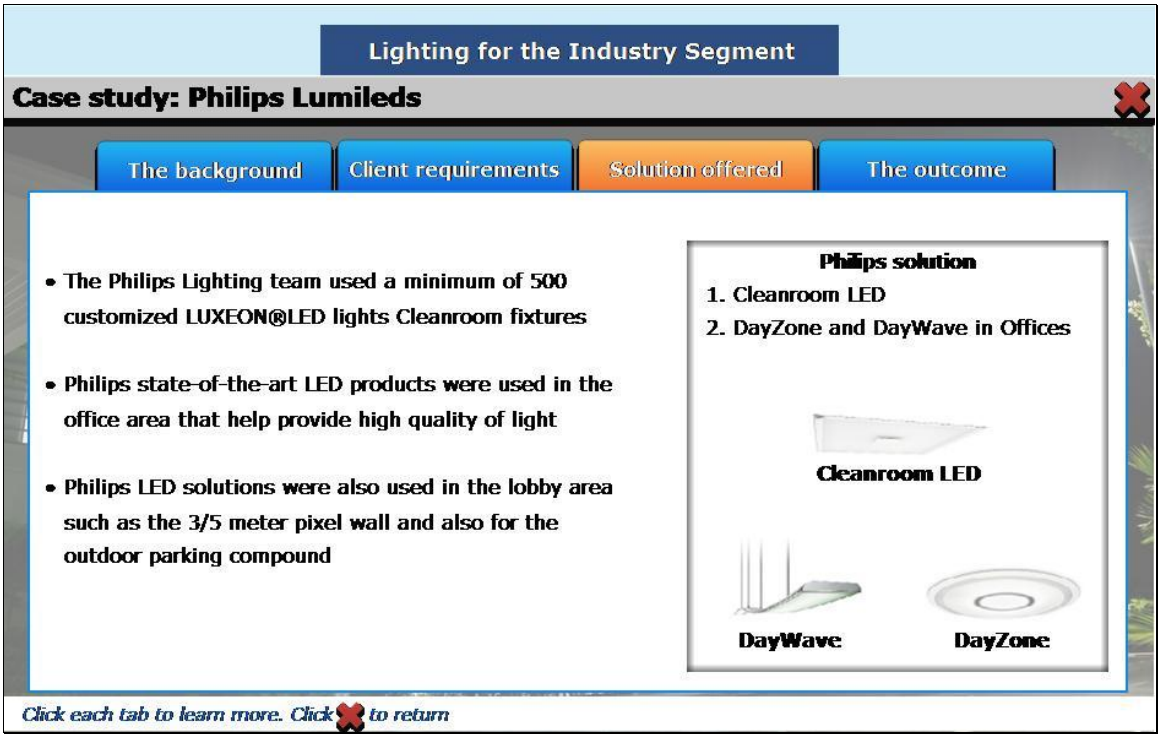
Philips Lumileds, Malaysia, is a pioneer in the use of solid-state lighting solutions for everyday purposes, including automotive lighting, computer displays, LCD televisions, signage and signaling, and general lighting.

Client requirement (Slide Layer)

Notes:

The company wanted to use only energy-efficient lighting solutions, and that the lighting conditions would provide a comfortable ambience in the offices and production areas. The lighting fixtures should also be consistent with its Environmental, Health, and Safety (EHS) policy to reduce environmental impact and provide safe working conditions for employees.

Solution offered (Slide Layer)



Notes:

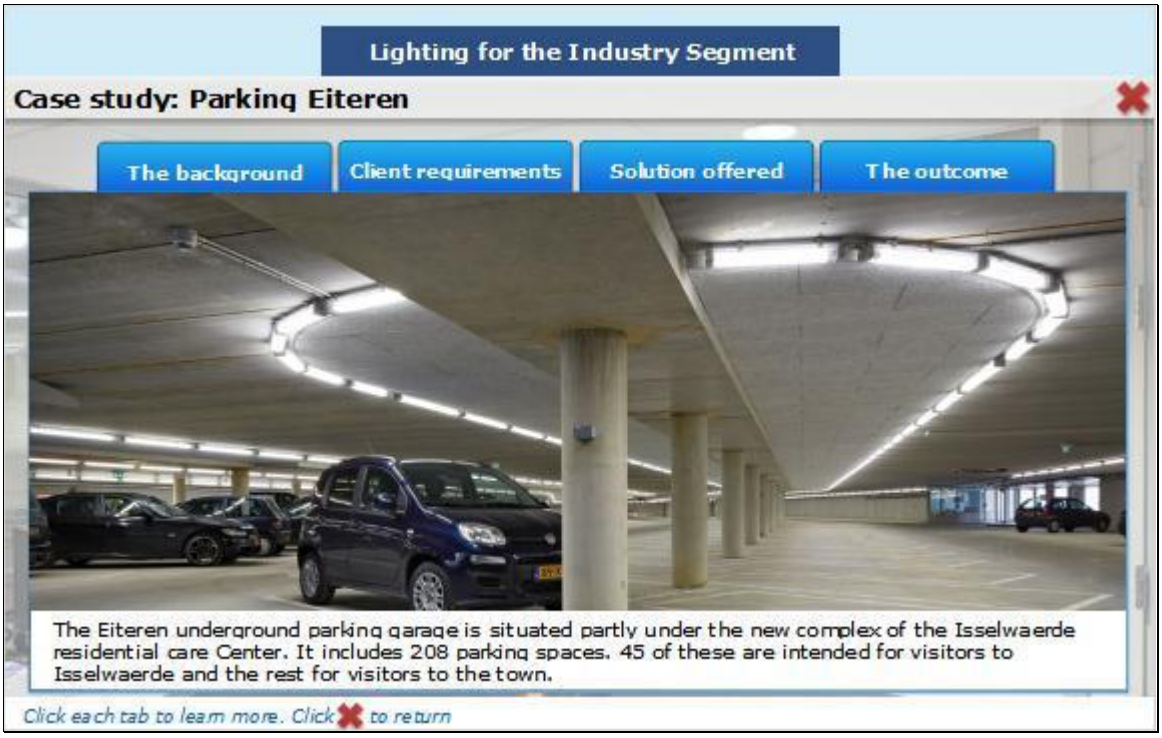
Integral to the project was the lighting of the production area. The Philips Lighting team used a minimum of 500 customized LUXEON® LED lights Cleanroom fixtures that provided excellent functional clean room performance to achieve hygienic, clean room facility standards, while offering low maintenance and energy efficiency. Philips state-of-the-art LED products were used in the office area to provide a high quality of light for a comfortable and conducive work environment. In addition to the office area, Philips LED solutions were also used in the lobby area such as the 3 by 5 meter pixel wall and also for the outdoor parking compound.

The outcome (Slide Layer)

Notes:

With Philips LED solutions, the factory was able to attain 30% energy savings as compared to the old facility. This allowed the factory to save a total of over US$22,000 per year in maintenance and replacement costs due to the benefits and long lifetime of LED lights.

Case Study: Parking Eiteren



Notes:

Eiteren Parking garage

IJsselstein, the Netherlands

Eiteren Parking garage is situated partly under the new complex and includes 208 parking spaces. 45 of these are intended for visitors to Isselwaerde and the rest for visitors to the town.

Click each tab to learn more.

Background (Slide Layer)

Notes:

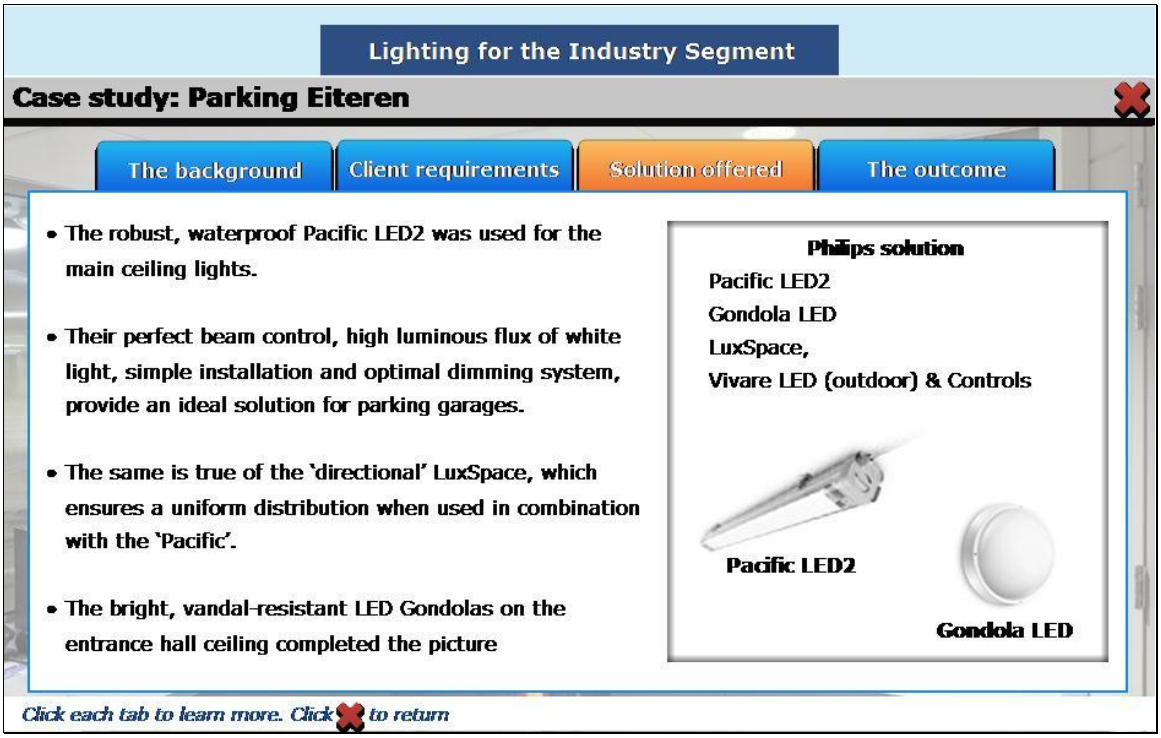
Following its motto 'Improve the Town Center' the municipality of IJsselstein wanted to upgrade its facilities whilst maintaining and strengthening the historic Center. An important step was the phased redevelopment and expansion of the Isselwaerde residential care Center. Phase one was reserved for the renovation of this historic building. Phase two was for the new build, including the construction of the Eiteren underground parking garage.

Client requirement (Slide Layer)

Notes:

The idea was to use fluorescent fixtures interconnected with a continuous light line to achieve an optimal lighting effect. This proved to be impossible using traditional lighting as the lighting was too intense, the dimming system very poor, and the operational and usage costs were extortionate.

Solution offered (Slide Layer)



Notes:

The robust and waterproof Pacific LED2 was used for the main ceiling lights. Due to their perfect beam control, high luminous flux of white light, simple installation and optimal dimming system, these are an ideal solution for parking garages. The same is true of the 'directional' LuxSpace, which ensures a uniform distribution when used in combination with the 'Pacific'. And the bright, vandal-resistant LED Gondolas on the entrance hall ceiling complete the picture.

The outcome (Slide Layer)

Notes:

LED lighting is more energy efficient than traditional lighting, especially as the lights dim when it detects that there are no people present. The solution offers savings of 50-60% on energy, screws and maintenance costs, and creates an optimum sense of safety through the flexible dimming system. With the continuous light line, Eiteren creates a more relaxing atmosphere with no dark corners. The solution fits in well with the town's sustainability goals and IJsselstein's pursuit to operate in a manner that is as climate neutral as possible.

Case Study: Bring Frigo

Notes:

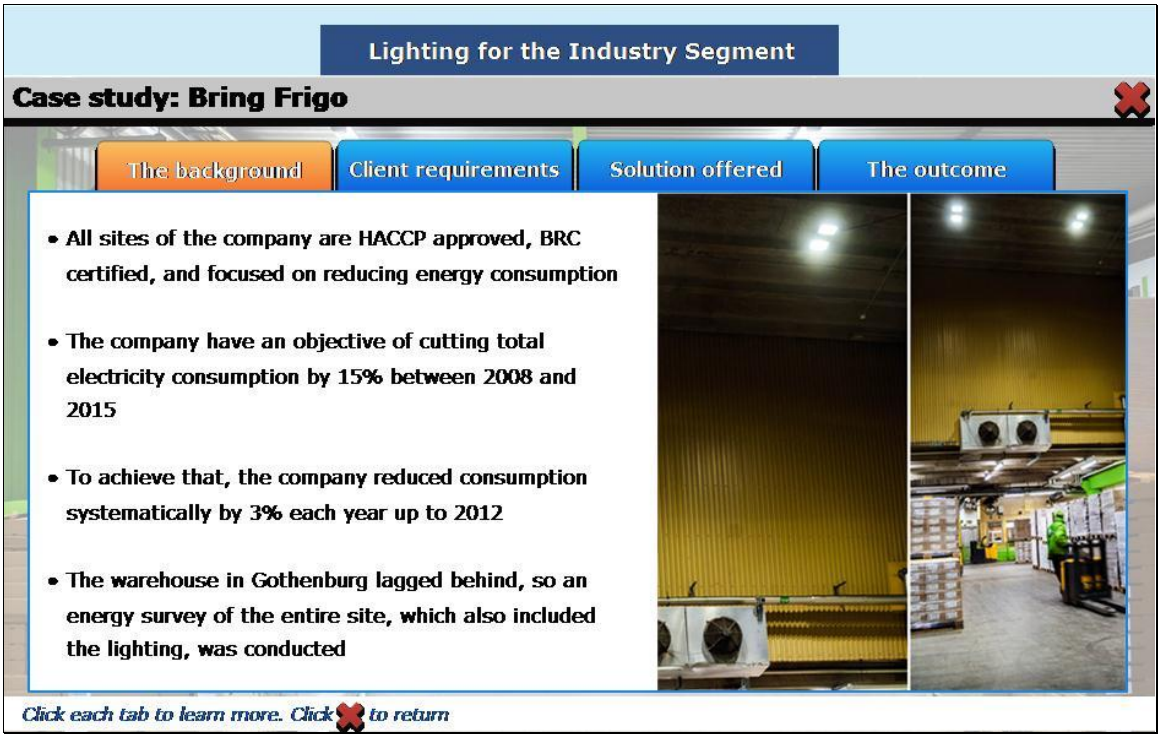
Bring Frigo

Gothenburg, Sweden

Bring Frigo has 15 temperature-controlled warehouses in Sweden, with space for 255,000 pallets containing frozen, chilled and dry foods.

Click each tab to learn more.

Background (Slide Layer)



Notes:

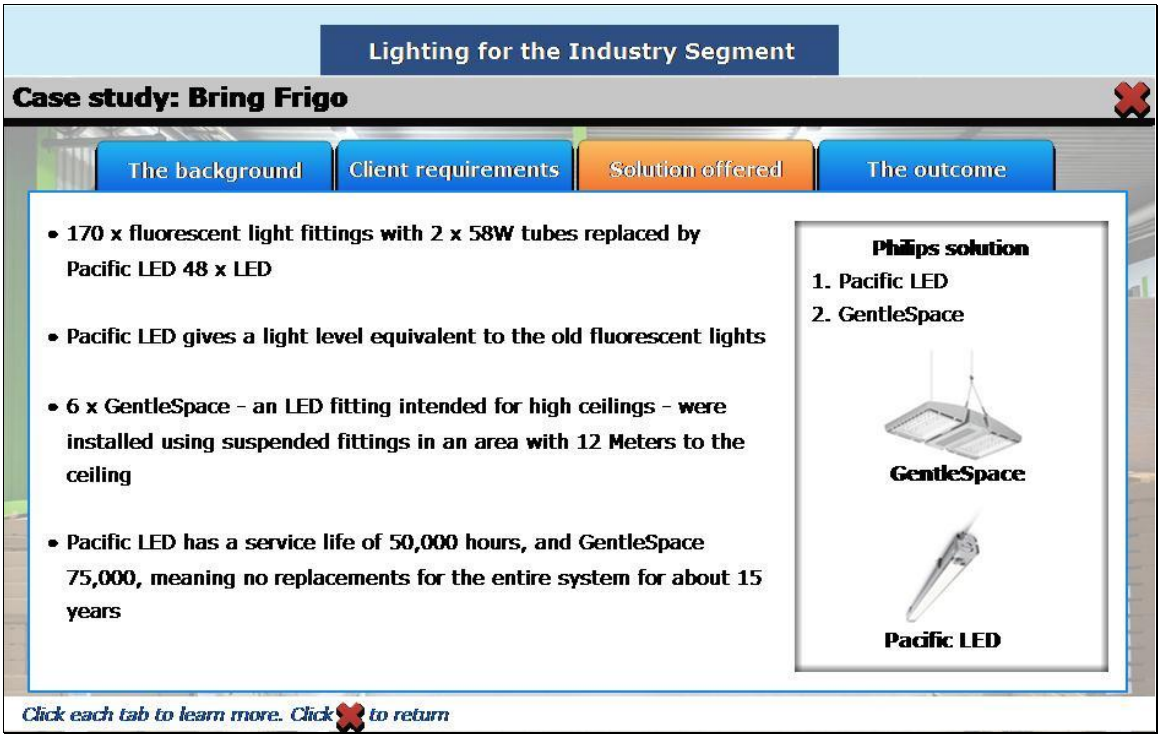
All sites of the company are HACCP approved, many have BRC certification for foodstuff, and all of them focus on reducing energy consumption.The company has an objective within the group of cutting total electricity consumption by 15% between 2008 and 2015. Therefore the consumption was reduced systematically by 3% each year up to 2012. The warehouse in Gothenburg lagged behind, so an energy survey of the entire site, which also includes lighting was conducted. It turned out that big savings could be made by switching to LED lighting!

Client requirements (Slide Layer)

Notes:

The biggest challenge was to find a lighting solution which met Bring Frigo's requirement for payback time and lighting level. The company wanted to reduce energy consumption, but had a payback time target of less than 5 years, whilst achieving a mean indoors lux level of 200 lux with lighting to be perceived as brighter and with less glare. In addition to this, company also wanted to cut maintenance and energy costs. The existing fluorescent tubes had to be replaced every 3 or 4 years due to the low temperatures in the cold store that affected the service life of the tubes.

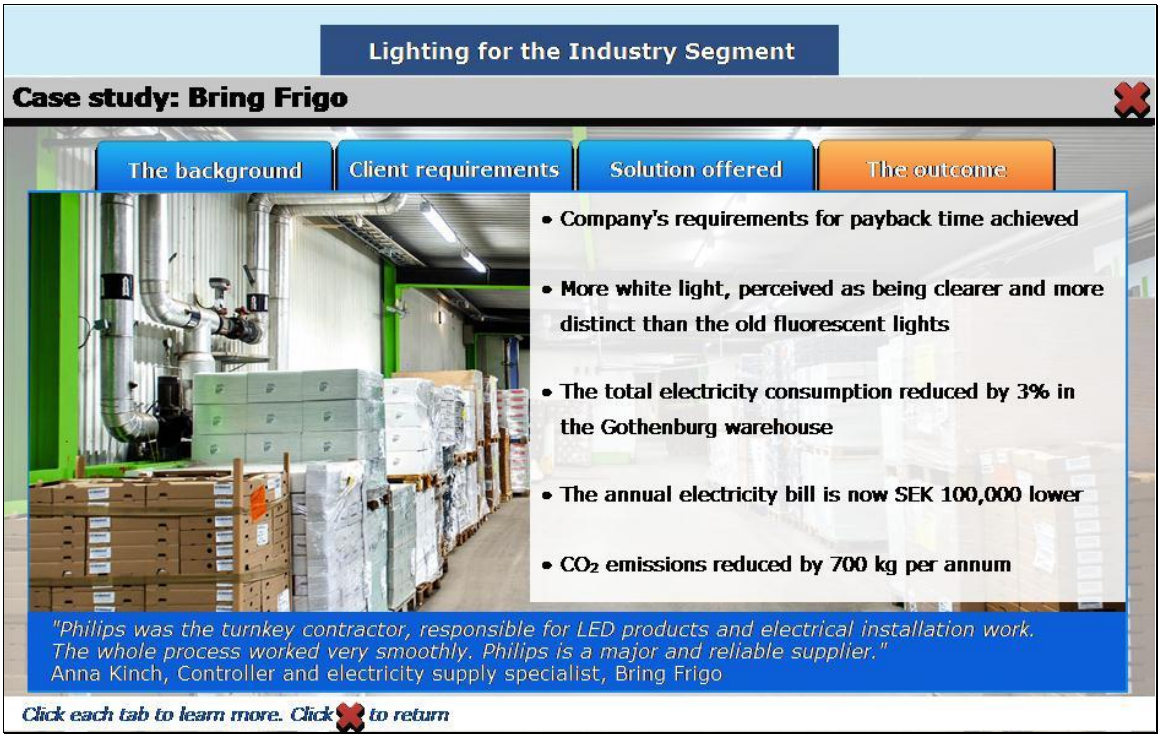
Solution offered (Slide Layer)



Notes:

170 x fluorescent light fittings with 2 x 58W tubes were replaced by Pacific LED 48 x LED. The LED fittings are mounted on wires along the transport gangways and cold store. Pacific LED gives a light level equivalent to the old fluorescent lights. 6 x GentleSpace, an LED fitting intended for high ceilings, were installed using suspended fittings in an area with 12 meters to the ceiling. Because LED lighting has lower effect, it generates less heat. Consequently, less energy is now needed to chill the cold stores. Pacific LED and GentleSpace have a service life of 50,000 hours, and 75,000 hours respectively which means that the entire system will not need replacement for about 15 years.

The outcome (Slide Layer)



Notes:

It fulfills the requirements Bring Frigo had for payback time. The warehouse has gained a much more even and whiter light, perceived as being clearer and more distinct than the old fluorescent lights. LED lighting also means better color identification at temperatures as low as they are in the cold store. By switching to low-energy LED lighting, the total electricity consumption was reduced by 3% in the Gothenburg warehouse as well. In addition to that, it saved 100 MWh and cut CO_2 emissions by 700 kg every year. The annual electricity bill is now SEK 100,000 lower.

Summary

Notes:

That brings us to the end of this module on lighting in the industry segment.

We have learnt that there is no one kind of 'industry'; the segment is quite varied with a lot of different environments and lighting demands. Even the same kind of processes can have completely different requirements in the different environments and applications within this segment.

Sustainable lighting can have a positive impact on industry by creating a safe and healthy environment, increasing the productivity of the workplace, complying with legislation, and reducing energy costs.

Lighting is generally affected by two types of regulations: lighting application norms, which are the focus of the international commission on illumination, and system design and safety norms, which are the focus of the International Electro-technical Commission.

This knowledge is useful in developing and using appropriate marketing themes and tools, and in dealing effectively with the different environments and applications in this lighting segment.

PHILIPS

Thank You

Notes: